

IBM Tealeaf CX
Version 9 Release 0.1
December 4, 20142014

Tealeaf Event Manager Manual



Note

Before using this information and the product it supports, read the information in "Notices" on page 477.

This edition applies to version 9, release 0, modification 1 of IBM Tealeaf CX and to all subsequent releases and modifications until otherwise indicated in new editions.

© **Copyright IBM Corporation 1999, 2013.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Tealeaf Event Manager Manual. ix

Chapter 1. Tealeaf Event Manager 1

Tour of the Event Manager	1
TEM global commands	2
Keyboard shortcuts	3
Save changes	4
Review history of changes	7
Object Change History	7
Global change history	8
Show dependent items	10
Working with Tealeaf Event Manager through RTV	11

Chapter 2. Getting Started with Tealeaf Events 13

Getting started	13
Basics	15
Portal application features	16
EventEngineScripting	17
Tealeaf Data Model	17
Structural Overview	17
Basics	18
Thinking about Events.	18
Events	21
Alerts	26
Report Groups	27
Dimensions	28
Facts.	29
Fact Values	30
Reporting Concepts.	30
Transitioning to the Current Event Model	31
Overview of Changes	32
Mapping Earlier Event Concepts to the New Model	33
Tutorials - Creating Earlier Event Functionality in the New Event Model	40

Chapter 3. TEM Events tab 45

Overview	45
Event List	46
Event Labels panel	51
Event Wizard.	54
Event summary	54
Order of evaluation.	57
Selecting Event Labels	58
Condition step	60
Value step	64
Report Groups step.	68
More Options step	70
Next steps.	76
Editing an event.	77
Deleting an Event	77
Special Event Types	77
Configuring Portal access to Events	78

Configuring Events to be searchable and reportable in the Portal	79
Configuration scenario - standard user created events	81
Configuration scenario - building block events	81
Configuration scenario - Tealeaf standard events	82
Configuration scenario - outdated events	82
Event Tester	83
Event history	83
Change history	83
Event Hierarchy	83
Event dependencies by trigger	84
Event icon editor	85
Icon editor toolbar	86
Drawing	87
Purging event data	88
Tealeaf standard events	89
Building block events	89
Editing Tealeaf standard events.	89
Default customer events	91
Login ID Sample event	91
Canister Safety Limits [BB] event	91
cxResults session filtering events	93
WorkingSet of events	93
Example - workingset versus tracked values	94
Example - referencing events in Basic Mode (tracked values) versus Advanced Mode (workingset values).	94
Tealeaf resources	95
Distance events and sequence events	98
Recommendations	98
Distance events	98
Condition	99
Value	101
Sequence events	103
Condition	103
Value	104
Step-based eventing	104
Overview.	105
Step-based objects	109
Replay.	111
Creating Step-Based Event Objects	113
Indexing	121
Reference.	122
Eventing for cxOverstat	123
cxOverstat usability data	123
cxOverstat step attributes	125
cxOverstat events	126
cxOverstat dimensions	127
cxOverstat report groups	128
cxOverstat report group templates	128
Tracking other usability events	130
Reporting	130
Mobile Events	130
Double Tap Gesture	130
Exception.	131

Gesture	131
Mobile Model	132
Mobile Session Count	133
Mobile Session Length (sec)	133
Mobile Session Size (MB)	134
Mobile Session Start [BB]	135
Pinch Gesture	135
Resize Gesture	136
Session with at least one exception	137
Step - Device Carrier [BB]	138
Step - Last Gesture [BB]	138
Step - Last Gesture Offset [BB]	139
Step - Device Model [BB]	139
Step - OS Version [BB]	140
Swipe Gesture	141
Tap and Hold Gesture	141
Unresponsive Gestures	142
Unresponsive Gestures [BB]	143
Goal Based Dimensions	144
Overview.	144
Goal Based Dimension events	147
Goal Based Dimensions and report groups	147
Tealeaf Standard Event Object Reference	148
Hit attributes	148
Events.	176
Session attributes	186
Dimensions	192

Chapter 4. TEM Hit Attributes tab . . . 201

Overview.	201
Hit Attributes tab	203
Hit attribute list	204
Hit Attribute Groups panel	206
Creating or editing a hit attribute.	208
Post-Match Operations	212
Using regular expressions in hit attributes.	212
Example start and end tags.	214
Hit attribute limits.	214
Hit attribute history	215
Change history.	215

Chapter 5. TEM Dimensions Tab . . . 217

Overview.	217
Features	217
Limitations	218
Dimensions and other event objects	218
Dimensions Tab	218
Dimension list	219
Report groups panel	220
Creating or editing a dimension	221
Recommended workflow	225
Dimension value limits and constants	225
Dimension values to record.	228
Logging of dimensional values	231
Whitelists and blacklists	234
Adding values from logs	238
Group lists	240
Report groups	246
Report group context menu	247
Filtering dimensions	247

Creating or editing a report group	247
Dimension objects provided by Tealeaf	251
Tealeaf report groups.	251
Connection type dimension.	253
Content type dimension.	253
Request canceled dimension	253
Traffic type dimension	254
Mobile device dimension	254
Purging dimension data	255
Examples of dimensions.	258
Data Management for Dimensions	263
High-volume dimensions	263
Storage of dimension values	263
Recommended workflow	264
Impacts of capturing observed values	266
Data integrity issues	266
Dimension definitions	267
Enabling logging for whitelist development	267
Avoid Whitelist + Observed Values dimensions	267
Avoid creating dimensions to contain a high number of values	268
Download log files and populate whitelists every day	268
Monitoring dimension data growth over time	268
Purging dimension data	268
Changes to the application	269
Global controls for managing dimension data	269
How it works	269
Monitoring defined limits	270
Defining the global limit	270
Updating counts for trimmed dimension values in report data	271
Scheduling	272
Managing URL and Other High-Volume Dimensions	272
How URLs are tracked by Tealeaf	273
Raw URLs	273
Captured URLs.	273
Normalized URLs	273
URLs for cxOverstat	274
Available URL values.	274
Storage of dimension values	275
Workflow for initial population of the URL dimension	276
1. Initial configuration for URL (Normalized)	276
2. Gather logged values	280
3. Download logged values.	281
3. Upload whitelist	282
4. Create Dimension Value Tracking report	282
Review report and iterate	284
Cleanup	285
Maintenance.	285
Reference.	286

Chapter 6. TEM Session Attributes tab 287

History of session attributes	287
Overview of session attributes.	288
How session attributes are populated	288
How session attributes are stored.	289
Uses for session attributes	290
Creating session attributes	291

Session attribute list	292
Session attributes panel	293
Adding or editing a session attribute	294
Deleting a session attribute	296
Session attribute history	296
Change history	296

Chapter 7. TEM Alerts Tab 297

Overview.	297
Alert list	298
Alert Groups panel	300
Creating or editing an alert.	301
Creating event alerts	302
Creating canister alerts	308
Creating Top Mover alerts	310
Creating Top Mover Report alerts	311
Viewing Alerts	313
Adding to alerts dashboards	313
Configuration	313
Enabling the Alert Service	313
Global configuration settings	313
Alert service configuration settings	313
Alert message configuration with XSL	314
XSL templates	315
Alert service XSL for event alerts	316
Alert service XSL for Canister alerts	322
Alert service XSL for Top Mover report alerts	326
External command shell invocation	328
Example XSL	328
Running programs	330
Execution method	330
Running batch files	330
Tealeaf resources	331

Chapter 8. TEM Top Movers Tab 333

Limitations	333
Overview.	334
Mover list	334
Mover Groups panel	335
Creating a mover	338
Selecting a specific dimension for the Mover	339
Auto-creation of Top Movers	340
Creating or editing a ratio	340
Portal Messages	342
Reporting on Movers.	342
Data management for Top Movers	343
Overview of Top Movers calculations	343
Updates	344
Storage	344
Data implications	344
Auto-creation of Top Movers	344
Limitations	345
Seeing updates in the Event Manager	345
Data implications of auto-creating Top Movers	346
Storage affects of auto-create	346
Calculation time	346
Recommended workflow	347
Recommended workflow for man events	347
Settings to enable auto-creation	348
Other configuration	348

Reporting	349

Chapter 9. TEM Import-Export Tabs 351

Export tab	351
Exported data objects.	351
Importable formats	352
XML formats	353
Import tab	353

Chapter 10. Event Tester 355

Overview.	355
Using the Event Tester	355
Workflow.	356
Closing the Event Tester.	356
Event Tester - Select Session Tab	356
Tips on selecting sessions	358
Event Tester - Select Events tab	359
Event Tester - Select Hit Attributes tab	360
Event Tester - View Results tab	361
Logging	363
Tealeaf resources	363

Chapter 11. Advanced Mode for Events 367

Functions.	367
Creating a New Report Group for the Current Event	367
Other commands	368
Validating JavaScript	368
JavaScript tutorial	369
External calls	369
References	369
Tealeaf EES tutorial	369
Overview.	370
Referencing event values	370
Object Type Identifiers	370
Syntax for Events	371
Basic Mode example	371
Advanced Mode JavaScript example.	371
Examining event behavior	373
Report group syntax	373
Adding multiple conditions	374
Recording counts from last hit.	375
Reference specific occurrences of events or hit attributes	376
Extracting values from inconsistent patterns using regular expressions	378
General regex reference	379
JavaScript for common Basic Mode objects	379
Conditions	380
Event values	386
More Options step.	388
Setting Report Groups	391
External calls	392
Best practices for Tealeaf EventEngineScripting	392
Creating regular expression patterns.	392

Chapter 12. EventEngineScripting reference 395

Tealeaf Object Model (TOM)	395

Event object internal identifiers	395
Examples	395
Counting a session	396
Counting a Status Code 404 hit	396
Store current value of shopping cart.	396
Record shopping cart value if abandoned session	396
Record search term in a fact (session temporary variable)	396
Record the number of searches in a session	396
Immediate match	396
Change session timeout	396
Discard session.	397
EES reference - object definitions	397
TLEnv Object (\$E)	397
TLSession Object (\$S)	397
SessionCloseReason	399
TLHit Object (\$H)	399
TLFactColl Object (\$F)	401
TLPatternColl Object (\$P)	401
TLFact Object	401
Null fact	402
TLPattern Object	402
Null hit attribute	402
EES reference - attribute reference	402
Legend	403
Session attribute reference	404
Hit attribute reference	408
Pattern objects reference.	412
Dimension reference	434
EES reference - Tealeaf event reference	438
Tealeaf standard event reference	438
Costly Session - Too Many Hits	439
Costly Session - Too Big [BB]	439
Costly Session - Too Big	440
Costly Session - Too Long	440
Http 400 - Bad Request	441
Http 401 - Unauthorized	441
Http 402 - Payment Required	441
Http 403 - Forbidden	442
Http 404 - Not Found	442
Http 405 - Method Not Allowed	443
Http 500 - Internal Server Error	443
Large Hit Size	443
Long Hit Generation Time	444
Long Gen Time and Large Hit Size	444
Content type [BB-NoDim]	445
Connection type [BB-NoDim]	445
Req Cancelled [BB-NoDim].	446
Mobile Device	446
Step - ScreenView URL [BB]	447
Step - ScreenView [BB]	447
Step - Usability Target ID + Type [BB]	447
Step - Usability Click	448
Step - Usability Attention Map Viewport Height [BB]	448
Step - Usability Focal Slice Y [BB]	449
Step - Usability Attention Map Y View Time	450
Step - Usability Form Field Visit	450
Tealeaf activity event reference	450
Page Count [BB]	451

Hit Generation Time Running Total (ms) [BB]	451
Hit Generation Time Running Max (ms) [BB]	452
Hit Generation Time (ms) [BB]	452
Hit Network Trip Time (ms) [BB].	453
Hit Network Trip Time Running Max (ms) [BB]	453
Hit Round Trip Time (ms) [BB]	454
Hit Round Trip Time Running Max (ms) [BB]	454
Hit Size Running Total (bytes) [BB]	455
Hit Size Running Max (bytes) [BB]	455
Session Count	456
Page Count	456
Hit Count	456
One Hit Session Count	457
CUI Hit Count	457
Session Length (sec)	458
Session Size (MB) [BB]	458
Session Size (MB)	458
Req Size for Session (MB) [BB]	459
Req Size for Session (MB)	459
Rsp Size Total (MB) [BB]	460
Rsp Size Total (MB)	460
Req Cancel Count	461
Hit Generation Time Total (ms) [BB].	461
Hit Generation Time Total (ms)	461
Hit Generation Max for Session (ms) [BB]	462
Hit Generation Max for Session (ms)	462
Hit Network Trip Time Total (ms) [BB].	463
Hit Network Trip Time Total (ms)	463
Hit Network Trip Time Max (ms) [BB]	464
Hit Network Trip Time Max (ms).	464
Hit Round Trip Time Total (ms) [BB]	465
Hit Round Trip Time Total (ms)	465
Hit Round Trip Time Max (ms) [BB].	466
Hit Round Trip Time Max (ms)	466
Hit Size Total (MB) [BB].	466
Hit Size Total (MB)	467
Hit Size Max (bytes) [BB]	467
Hit Size Max (bytes)	468
Fact Count [BB]	468
Fact count	469
Canister safety limits [BB]	469

Chapter 13. Event administration	471
Event storage	471
Enabling Tealeaf Event Manager access.	471
Loading event definitions	471
Canister loading of event definitions	471
Validation check	472
Event loading errors	473
Managing event icons	473
Event icon storage.	473
Editing event icons	473
Logging for the Tealeaf Event Manager.	474
System logging.	474
Audit logging	474

Chapter 14. IBM Tealeaf documentation and help.	475

Notices	477

Trademarks	479

Privacy Policy Considerations	479

Tealeaf Event Manager Manual

The Tealeaf[®] Event Manager enables users and administrators to configure events and event-related objects to monitor all aspects of their web application. Through a simple graphical interface, you can design the events, attributes, dimensions, alerts, and Top Movers that capture the most meaningful behaviors and issues in your web application. Additionally, you can access Advanced Mode, where advanced users can edit directly the underlying JavaScript that is used to define event-related objects.

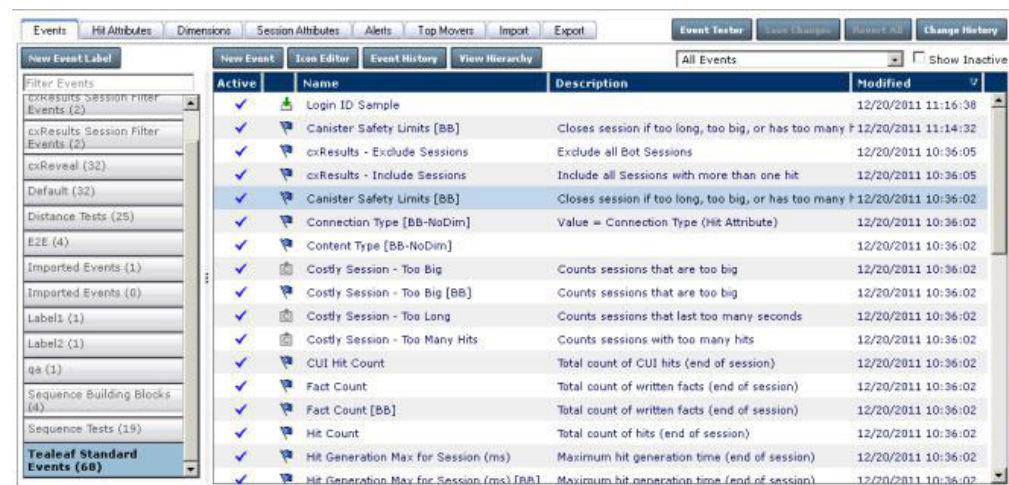
Chapter 1. Tealeaf Event Manager

The Tealeaf Event Manager provides the user interface for defining the event objects used to monitor your visitors' sessions. Here you can configure the events, hit attributes, dimensions, session attributes, alerts, and deviations to monitor customer success and struggle with your web application.

The objects created by the Event Manager are used by the Event Engine software running in the Canister. The events created through the Tealeaf Event Manager enable searching and reporting on events in the other parts of the Portal.

- To access the Tealeaf Event Manager in the Portal, select **Configure > Event Manager** from the Portal menu.

Tour of the Event Manager



The tabbed interface provides rapid access to clearly organized event-related entities. Through each tab, you can create and edit a type of event object and organize the set of objects into meaningful groups.

Tab Description

Chapter 3, "TEM Events tab," on page 45

The **Event** tab provides the primary interface for creating events. See Chapter 3, "TEM Events tab," on page 45.

Chapter 4, "TEM Hit Attributes tab," on page 201

Hit Attributes define matching sets of text in the request or response data that can be used as the basis for triggering events. Hit Attributes can be used in multiple events or dimensions. See Chapter 4, "TEM Hit Attributes tab," on page 201.

Chapter 5, "TEM Dimensions Tab," on page 217

Each event can have multiple dimensions that are associated with it. Dimensions are lists of values upon which you can segment or filter the data and generate reports. Dimensions definitions can be reused with different events. See Chapter 5, "TEM Dimensions Tab," on page 217.

Chapter 6, "TEM Session Attributes tab," on page 287

This tab shows system-populated session attributes and user-defined

session attributes, which can be used to track customized states during a session. See Chapter 6, “TEM Session Attributes tab,” on page 287.

Chapter 7, “TEM Alerts Tab,” on page 297

Triggered by events, alerts can provide up-to-the-minute status information about session data that is captured by Tealeaf. See Chapter 7, “TEM Alerts Tab,” on page 297.

Chapter 8, “TEM Top Movers Tab,” on page 333

Optionally, you can configure the calculation of standard deviations for events and dimensions over a four-week rolling period. See Chapter 8, “TEM Top Movers Tab,” on page 333.

Chapter 9, “TEM Import-Export Tabs,” on page 351

You can export and import event definitions through the Event Manager, which enables easy migration from development to production environments. See Chapter 9, “TEM Import-Export Tabs,” on page 351.

TEM global commands

At the top of the Tealeaf Event Manager, you can see the following buttons in a row on the right side of the screen.

Button Description

Event Tester

Test the currently active events, including any changed events that were saved as drafts, against sessions that you load in the Event Tester.

- See Chapter 10, “Event Tester,” on page 355.

Save Changes

Commit any unsaved draft changes to Tealeaf Event Manager objects to the server.

Note: Unsaved changes are highlighted in red in each tab. Tabs that contain unsaved changes are marked in red.

Note: Before committing events to the server, you should verify proper functionality in the Event Tester. See Chapter 10, “Event Tester,” on page 355.

- See “Committing Changes” on page 5.

Revert All

Revert all draft changes that you made to the saved versions on the server.

Note: With this command, all unsaved changes are lost.

- See “Undoing changes” on page 4.

Change History

Review the recent history of changes in the Tealeaf Event Manager.

- See “Review history of changes” on page 7.

Wildcards and Ranges

Except as noted below, the Event Manager does not support the use of wildcards when specifying values.

- Numeric list values for dimensions may be specified as a range of values.
 - See Chapter 5, “TEM Dimensions Tab,” on page 217.

- Event operators can be configured to specify ranges of values.
 - See Chapter 3, “TEM Events tab,” on page 45.
- Use of regular expressions is supported in some advanced Event Manager features.
 - Regular expressions can be configured for hit attribute evaluation. See Chapter 4, “TEM Hit Attributes tab,” on page 201.
 - For more information about regular expressions in Advanced Mode, see “Best practices for Tealeaf EventEngineScripting” on page 392.

Keyboard shortcuts

In addition to mouse controls, the following keyboard shortcuts can be used in any tab of the Event Manager.

Object lists

In the main list of each tab, the following keyboard controls can be used.

Keyboard Shortcut	Description

ENTER	Edit the selected item, if possible for the selected item. For more information about keyboard shortcuts while editing, see “Edit dialog.”

Edit dialog

In any editing dialog in the Event Manager, the following shortcuts can be used.

Keyboard Shortcut	Description

CTRL + S	Save draft and close the window.

Note: The changes are not applied until they are committed to the server. See “Save changes” on page 4.

ESC	Cancel edit and close the window.

Textbox

In Tealeaf Event Manager textboxes, you may use the following shortcuts.

Keyboard Shortcut	Description

SHIFT+HOME	Select contents in the textbox from the current position to the beginning of the text in the textbox.

SHIFT+END	Select contents in the textbox from the current position to the end of the text in the textbox.

CTRL + Z	Undo last change that is made to textbox contents.

Save changes

When creating events, you may need to create multiple events, hit attributes, or other objects at one time. The Event Manager allows the creation of multiple objects and their testing against an actual session to verify the wanted behavior before saving the changes. By testing before deploying, you ensure that your created objects operates properly on live data.

Saving changes to any object in the Tealeaf Event Manager is a three-step process:

- **Save Draft:** When you are creating or editing an object, you first save a draft of the object into the server memory, where it is stored for the time being. See “Saving drafts.”
 - In the Event Manager, objects that were saved in draft form are highlighted in the display list in each tab. Tabs that contain saved drafts are highlighted in red.
- **Save Changes:** When you are ready to commit all changes that were saved in draft mode, you can click the **Save Changes** button, which saves all uncommitted changes in each tab to the database. These changes are immediately available for all Tealeaf servers in the Tealeaf environment. See “Committing Changes” on page 5.
 - When saved drafts of objects are committed to the server, the draft indicators are removed.
- The saved changes are applied immediately to hits passing through the Short Term Canister, which may have unexpected implications. See “Saved changes and timestamps” on page 7.

Saving drafts

You can save your work in progress, as needed. If you have unsaved changes, the **Save Draft** button is red.

- To save your changes in draft form, click **Save Draft**.
- Events can be tested if they are saved in draft form. You do not need to commit the changes to the server before testing your events. See Chapter 10, “Event Tester,” on page 355.
 - If you opened multiple browser tabs in the Event Manager, changes saved in 1 browser tab may take 10 seconds to be reflected in the other browser tabs.

Note: Unsaved changes in the Event Manager are discarded if you log out of your Portal session or close your web browser.

Before you commit your changes to the server, you may be informed if changes you made in draft mode conflict with changes made by other users to the same object.

- You may undo changes. See “Undoing changes.”

Undoing changes

Uncommitted changes are saved in the session cache on the server. They remain in the cache as long as the session is available. The changed object is highlighted in the tab UI, and the **Save Changes** button is highlighted in red to indicate that there are changes to save.

You may undo the change depending on the following circumstances:

- To undo changes to an item you edited but were not committed to the server, right-click the item and select **Revert**. The changes are discarded, and the local version in memory reverts to the same version on the server.
- To undo changes to a newly created item, right-click it and select **Delete**. The new item is discarded.

To undo all unsaved changes in all tabs, click **Revert All** in the lower-right corner. All local changes in all tabs are discarded.

Committing Changes

After you saved the drafts of one or more objects in the Tealeaf Event Manager, you must commit the changes to the server before the changes to the objects are applied to the captured session data.

Note: Before you commit any changes to event definitions to the server, you should test them thoroughly using the Event Tester. See Chapter 10, “Event Tester,” on page 355.

When there are unsaved changes, the following button is highlighted in the button toolbar of each tab of the Event Manager.



To commit changes, click **Save Changes**. The Confirm Changes dialog is displayed.

- The description next to each object is displayed when you select it and then click the object's History button in the toolbar.
- The Change Description at the bottom applies to the saving of all objects. It is displayed when you click the global Change History button.

Confirm Changes

Type	Change	Name	Description
Dimension	Created	ABC	Created dimension

Change Description:

Created test dimension based on Accept Language pattern

Commit

Cancel

You may add notes for each item that is being committed, as well as a description of the entire set of changes.

- To commit your changes to the server, click **Commit**.
- To cancel changes, click **Cancel**.

Note: To revert all changes to the last unsaved state, you must click **Revert All**. Otherwise, your unsaved changes remain queued for saving.

Note: If you have enabled automatic creation of Top Movers, a Top Mover is immediately created and enabled to track changes in values each new event or dimension after your changes are committed to the server. You may wish to disable one or more of these new Top Movers.

- Each new Top Mover is created after the new event is committed to the server. No record of a changed or new Top Mover is displayed in the Top Movers tab.
- See Chapter 8, “TEM Top Movers Tab,” on page 333.
- For more information on auto-creation of Top Movers, see “Data management for Top Movers” on page 343.

Saved changes and timestamps

After you saved changes to any objects through the Tealeaf Event Manager, the changes are immediately applied to any subsequent hits passing through the Short Term Canister.

Note: When a hit is evaluated in the Short Term Canister, the STC has no awareness of when the active events were created or last saved. As a result, some hits may be evaluated by events whose creation timestamp occurs after the hit timestamp.

The Short Term Canister has no awareness of revision history and maintains one set of event and event-related definitions, which is applied to all hits at the time of evaluation.

- If the STC is spooling, when spooled hits are finally evaluated, the event definitions that are applied to them may be significantly different from they were at the time that the hit was created.
- There may be effects on reporting. Some reports bucket data into hourly segments. If you define and save a new event in the 10AM bucket when hits are being spooled, those hits may be evaluated against this new event and reported into earlier time buckets. This evaluation process may result in event counts and other event-related outcomes appearing in report buckets that occurred earlier than the hourly time bucket in which the event was created.

The key to remember is that the current set of events is applied to each hit at the time it is evaluated.

Review history of changes

The Tealeaf Event Manager enables the review of all changes to individual objects and recent global changes.

Object Change History

In each tab, you can select the **Object Change History** button to review the most recent changes to the currently selected object. For example, to review the changes to an event, select the event in the Event List and then click **Event Change History**.

Note: The listed changes are edits that were committed to the server.

Revision History for Event: Login happened			
User	Change	Modified	Comments
ADMIN	Modified	04/19/2010 12:04:10	
ADMIN	Modified	04/19/2010 11:57:45	
SYSTEM	Created	03/31/2010 19:32:22	

1

Page 1 of 1 (3 items)

OK

Column

Description

User The Tealeaf user who made the change

Change The type of change

Modified

Date and time when the change was saved

Comments

Any comments that are saved with the change

Global change history

In each tab, you can select the **Change History** button to review changes to any type of object for a specified number of days.

Note: The listed changes are edits that were committed to the server.



User	Modified	Comments
SYSTEM	05/04/2011 17:53:39	Event Manager Utility
SYSTEM	05/04/2011 17:53:39	Event Manager Utility
SYSTEM	05/04/2011 17:53:39	Event Manager Utility
SYSTEM	05/04/2011 17:53:39	Event Manager Utility
SYSTEM	05/04/2011 17:53:38	Event Manager Utility
SYSTEM	05/04/2011 17:53:38	Event Manager Utility
SYSTEM	05/04/2011 17:53:38	Event Manager Utility
SYSTEM	05/04/2011 17:53:37	Event Manager Utility
SYSTEM	05/04/2011 17:53:37	Event Manager Utility
SYSTEM	05/04/2011 17:53:37	Event Manager Utility
SYSTEM	05/04/2011 17:53:37	Event Manager Utility
SYSTEM	05/04/2011 17:53:35	Event Manager Utility
ADMIN	05/03/2011 16:31:09	
ADMIN	05/03/2011 15:31:43	
ADMIN	04/29/2011 15:57:01	

- To see change history for a different period, enter a new number of days to show, and click **Update**. All available changes for the preceding number of days are displayed.
- To review details of any change, select it and click **Details....** See “Change details.”

Column

Description

User The Tealeaf user who made the change

Modified

Date and time when the change was saved

Comments

Any comments that are saved with the change

Change details

In the Change details panel, you can review the individual objects that were changed in the listed commit to the server.

Change Details

User:ADMIN

Time:04/16/2010 15:12:54

Changes:

Type	Change	Name	Comments
Event	Created	st code - sve	
Fact	Created	st code - sve	

1

Page 1 of 1 (2 items)

Comments:

Item History

OK

- User - The Tealeaf user who made the change
- Time - Date and time when the change was saved

Column

Description

Type The type of event data that was changed

Change The type of change

Name The user-friendly name of the entity that was changed

Comments

Any comments that are saved with the change

For any listed item, you can review its change history. See “Object Change History” on page 7.

Show dependent items

Through the context menu, you can review the dependencies of individual items.

- To see an item's dependencies, right-click it in the item list and select **Show Dependent Items...**
- The Dependent Items dialog is available for events, hit attributes, dimensions, and session attributes, which can be used as inputs for other items.

Event Dependents	
Items dependent on Event: Grand Total	
Type	Name
Event	Abandoned
Event	Checkout Struggle
Event	Order Success
Event	Start Checkout

The list of Dependents indicates all items that require the successful execution or computation of the selected item. In the above image, the items that are listed as dependents for the event Hit Count are the event itself and an event deviation that is based on the event.

- To close the dialog, click **Close**.

Working with Tealeaf Event Manager through RTV

Through the IBM Tealeaf CX RealTea Viewer application, you can create events and hit attributes from content that you find in sessions that you are replaying. This capability enables you to instantly create tracking data from content that was captured.

- IBM Tealeaf CX RealTea Viewer (RTV) is a stand-alone desktop application that must be installed separately. RTV is considered an advanced search and replay application. See "RealTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealTea Viewer User Manual*.

To create TEM objects through RTV, select data in the request, response, or replay view of RTV. Right-click and select the event object that you want to create.

Note: When you are creating event objects from RTV, the application calls a service to link to Tealeaf Event Manager. Depending on how your default web browser is configured, this linking may create a new browser tab or a new browser window. If you are creating multiple objects through RTV, it is possible to create reconciliation issues across multiple browser tabs or windows. The safest approach is to save each created object before creating a new one.

See "RealTea Viewer - Main Window" in the *IBM Tealeaf RealTea Viewer User Manual*.

Chapter 2. Getting Started with Tealeaf Events

Tealeaf events provide the mechanisms for monitoring mission-critical metrics and other indicators of your web application's performance, including software errors, failures to complete transactions, customer struggles, and more. Through Tealeaf events, IT staff, business managers, and executives can keep tabs on critical aspects of the overall customer experience.

Tealeaf event features include:

- Multiple triggers for evaluating event conditions based on when they are expected to occur in the session
- Multiple types of conditions to capture the many business events for which Tealeaf users often search
- Multiple actions that enable different event and reference data to be stored and manipulated
- Triggering events off of events
- Support for creation and population of multiple reference dimensions to store contextual information about the event occurrence.
- User-defined variables for storing data for the duration of session evaluation
- Modifiable and extensible event definitions through customized version of Javascript
 - See Chapter 11, “Advanced Mode for Events,” on page 367.

This section provides some high-level information on Tealeaf events, including references to areas where you can explore Tealeaf events and other event-related data objects through the Tealeaf Portal.

Getting started

Events are triggered on Conditions, then record a Value, and Report dimensions. Event conditions and values are based on hit attributes, session attributes, other events, or a combination of all three.

Hit attributes

The Tealeaf Event Engine is based on its ability to recognize hit attributes in the session data. Hit Attributes, in the most generic sense, are the basis for recognizing data and marking it as an event in Tealeaf. The data that is gathered by Hit Attributes are available only for the hit on which the event is triggered. For example, Hit Attributes for the third hit of the session, for example, URL, hit number, response time, are specific to the third hit of the session. Those Hit Attributes are different for the fourth hit of the session.

There are two types of Hit Attributes:

- **System Hit attributes:** Tealeaf maintains a set of attribute values for each hit captured. These attributes are managed by the Canister and cannot be modified such as Network Trip Time. See “EES reference - attribute reference” on page 402.

- **Custom Hit Attributes:** The data object type Hit Attribute can be used to identify explicit strings in session data or the content between two specified tags.
 1. Text Pattern example: Logged Out. This text pattern example could be used as a condition for an event that identifies when the visitor explicitly logged out of your web application.
 - In Release 7.2 and earlier, these patterns were in the Immediate Match category. See "Transitioning to the Current[®] Event Model" in the *IBM Tealeaf Event Manager Manual*.
 2. Start Tag End Tag example: Suppose you wanted to identify the contents of the HTML table in the following code:


```
<TD ID="ShoppingCartValue">$999.95</TD>
```

 - You could configure a hit attribute to use StartTag=<TD ID="ShoppingCartValue"> and EndTag=</TD> to gather the contents of the cell (in this case: \$999.95).
From these types of hit attributes, you can create a wide variety of events to monitor your web application.
 - In Release 7.2 and earlier, these patterns were in String Pattern category. See "Transitioning to the Current Event Model" in the *IBM Tealeaf Event Manager Manual*.

Both types of Hit Attributes are displayed in the Hit Attribute tab of the Event Manager.

Session attributes

Session Attributes are values that are not specific to a hit. For example, Referrer for Session is a Session Attribute because it is the same throughout the session. Hit Referrer is a hit attribute because it changes per hit. Session Attributes need not to be constant throughout the session. The attribute Session Length changes on every hit. It is considered a Session Attribute and not a Hit Attribute because it is not specific to a hit. It is based on all hits up to that point in the session.

- **System Session attributes:** Similar to default hit attributes, default session attributes are commonly used properties that apply to the entire session such as Hit Count, Browser Type, or whether the session is from a Bot or not. See "EES reference - attribute reference" on page 402.
- **Custom Session attributes:** Custom session attributes are user-defined variables that are populated by events. While they can be used in an event, they are mostly useful for populating Session List Templates.

Both types of Session Attributes are displayed in the Session Attribute tab of the Event Manager.

Events

A Tealeaf Event defines a set of criteria for which to search the captured session data. When matches are found, one or more actions can be taken, including the saving and delivering of the recorded value to one or more systems.

When data captured from sessions of visitors to your web application arrive to the Processing Server, the Tealeaf Event Engine scans the data for the presence of these criteria. When these conditions are detected, the specified value is written.

Since Tealeaf captures all requests and responses from visitor sessions, events provide a flexible facility for monitoring and analyzing individual hits and complete sessions.

The Tealeaf event engine uses a customized version of JavaScript for event and event-related definitions. Events that you create are stored in JavaScript.

- See “EventEngineScripting” on page 17.

Dimensions

Tealeaf also enables the creation of reference dimensions, whose data is extracted from the session data when an event is triggered. When an event fires, the values of the associated dimensions are recorded with the event value. Suppose an event is triggered on a page with the following characteristics:

Dimension

Value

URL /checkout.asp

Host www.example.com

Application

shop

Server 255.255.255.255

The values for the URL, Host, Application, and Server for the page on which the event is triggered can be recorded in dimensions of the same name.

- The example set of dimensions is provided by Tealeaf.

In reporting, you can then use dimensions as the context for filtering event data. Suppose that you were interested in the URLs where a Status Code 500 (Internal Server Error) message appeared. You could create the Status Code 500 event, which looks for the appropriate message in the response. If the URL dimension is associated with the event, you can quickly generate a list of all URLs where the error occurred.

- The Tealeaf Portal includes an integrated dimensional report building facility. See “Tealeaf Report Builder” in the *IBM Tealeaf Reporting Guide*.

Using events and dimensions, you can configure a wide-range of monitoring mechanisms, while capturing the contextual information necessary to make superior decisions.

Dimensions can be populated by Events, Hit Attributes, or Session Attributes.

Basics

Before you begin, all Tealeaf users should review the Tealeaf Basics, a short document that summarizes how the Web works at a technical level and how Tealeaf works with it. See “Tealeaf Basics” in the *IBM Tealeaf Basics*.

- Tealeaf Basics also includes a general glossary of terms applicable to business and IT users of Tealeaf. See “Tealeaf Glossary” in the *IBM Tealeaf Glossary*.

Data overview

For users who are developing events and reports, it is important to know how data flows through the Tealeaf system.

The Tealeaf data pipeline is composed of four parts, which include the following processes:

- *Stream data* captured at the IBM Tealeaf CX Passive Capture Application server
- *Canister data*, which is passed from the Passive Capture to a Windows-based processing server for analysis and storage.
- *Index data*, which is gathered from Canister data that was written to disk
- *Database data*, which is aggregated from data that is stored in the Canister

See "Tealeaf Data Flow" in the *IBM Tealeaf cxImpact User Manual*.

In addition to events and dimensions, Tealeaf reporting features more data objects and structures, including:

- *Alerts* - email or log messages triggered based on event threshold values
- *Top Movers* - optional storage of averages and standard deviations for event and dimension values over a four-week rolling period

For more information about these structures and their interrelationships, see "Tealeaf Data Model" in the *IBM Tealeaf Reporting Guide*.

For experienced Tealeaf users

If you upgraded your Tealeaf system from a pre-Release 8.0 version, you may already be familiar with Tealeaf events. For more information about the event model for experienced Tealeaf users, see xsee "Transitioning to the Current Event Model" in the *IBM Tealeaf Event Manager Manual*.

Portal application features

The following event-related features are available through the Portal or, where noted, the IBM Tealeaf CX RealTea Viewer.

- The IBM Tealeaf CX RealTea Viewer (RTV) is a separate stand-alone application for advanced search and replay. RTV must be installed on your local desktop. See "RealTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealTea Viewer User Manual*.

Table 1. Portal Application Features

Feature	Configuring	Reporting
Events	Chapter 1, "Tealeaf Event Manager," on page 1	"Tealeaf Report Builder" in the <i>IBM Tealeaf Reporting Guide</i>
Dimensions	Chapter 5, "TEM Dimensions Tab," on page 217	"Tealeaf Report Builder" in the <i>IBM Tealeaf Reporting Guide</i>
Top Movers	Chapter 8, "TEM Top Movers Tab," on page 333	"Analyzing Top Movers" in the <i>IBM Tealeaf Reporting Guide</i>
Scorecards (IBM Tealeaf cxView)	"Configuring Scorecards" in the <i>IBM Tealeaf cxView User Manual</i>	"Using Scorecards" in the <i>IBM Tealeaf cxView User Manual</i>

Table 1. Portal Application Features (continued)

Feature	Configuring	Reporting
Dashboards (IBM Tealeaf cxView)	"Configuring Dashboards" in the <i>IBM Tealeaf cxView User Manual</i>	"Using Dashboards" in the <i>IBM Tealeaf cxView User Manual</i>

EventEngineScripting

Underlying the Tealeaf Event Manager, the Tealeaf event engine uses a version of the Google V8 JavaScript to define events, dimensions, and other data objects for monitoring session activities.

- For more information about this version of JavaScript, see Chapter 12, "EventEngineScripting reference," on page 395.

Tealeaf Data Model

Tealeaf Report Builder uses a dimensional data model that is populated by event-based mechanisms to deliver a reporting facility of unprecedented power and flexibility to manage the customer experience of your web application.

- Events and event-related mechanisms are developed and tested through the Tealeaf Event Manager, which is integrated into the Tealeaf Portal. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

This information provides an overview of the conceptual terms and data relationships of the Tealeaf event and report data model.

- For long-time Tealeaf users, the following sections include information about how the report data model has transitioned from Release 7.x to the current version.

Structural Overview

An *event* is a condition that is detected in the session data stream that triggers an action. See "Events" on page 21.

- A *hit attribute* is a specified start tag and end tag in session data that can be referenced as a condition for one or more events. Hit Attributes can also be explicit text strings in the data.

Note: Hit Attributes are not directly applicable to reporting. Hit Attributes are defined in the Tealeaf Event Manager. See "TEM Hit Attributes Tab" in the *IBM Tealeaf Event Manager Manual*.

An event is associated with one or more *report groups*, which are collections of dimensions on which you can report simultaneously. See "Report Groups" on page 27.

- A *dimension* is a list of values associated with an event. This list of values can be fixed or can be generated from the session data stream every hour. See "Dimensions" on page 28.
- A *fact* is the data entity that combines an *event* and a *report group*. Facts are the essential storage mechanism for reporting data. See "Facts" on page 29.
 - Some facts can have *fact values*, which are event instance data that can be configured in the event definition. See "Fact Values" on page 30.

- A *label* is a grouping mechanism for event and dimension objects. You can organize a set of related objects under a single label. Labels have no impact on data processing.

Basics

Tealeaf captures all HTTP or HTTPS transactions between the visitors to your web application and the servers that serve the application to them. Each request from the visitor and the corresponding response from the web server are forwarded to Tealeaf for capture, processing, analysis, and reporting.

- A *request* is a message that is sent from the client, typically the visitor's browser, to the server for one or more files.
- A *response* is the information that is sent from the web server back to the client. Any binary content in the response is typically dropped from Tealeaf capture.

A single request and a single response together form *ahit* , which is the basic unit of capture in Tealeaf.

The sequence of hits that are captured from a single visitor's contiguous experience with your web application is *asession*.

- See "Tealeaf Basics" in the *IBM Tealeaf Basics*.

Thinking about Events

Before you begin building events, you must spend some time considering how events can be used to model the business processes reflected in your web application. This information provides some up-front considerations in how to build events to manage important categories of information about your web application.

KPIs

Key Performance Indicators (KPIs) are the metrics that you define for measuring success toward strategic goals. Before you begin, you must attempt to identify conceptually what are the metrics to determine whether your web application is pursuing and reaching enterprise goals. These goals can include:

- Increase revenue from the site
- Increase brand awareness among visitors
- Increase the size of your site user base
- Decrease the volume of calls in your call center.

Specific goals include the following metrics:

- Conversion rates for the checkout process
- Average order value
- Percentage of search engine searches that use a sponsored or branded keyword
- Site registrations per campaign clickthrough
- Average number of call center calls per site visit

You can also use KPIs to identify aspects of the site that did not work, such as:

- Number of declined credit cards
- General failures to convert business process (start process but never complete)
- Server generation time takes too long
- Application-level errors
- System errors

Sometimes, identifying these conditions for building events to track them is not intuitive. For example, depending on how your web application is constructed, the basic user event of "abandon checkout process" can include the following events as failure steps:

- Moving back to product pages
- Clicking a Contact Us link
- Opening FAQ pages

If you are can develop separate events on these items and then consolidate them into a single "Abandon Process" event, you can quickly analyze the most common sources of customer abandonment.

- You can also create events that are identified as abandoned, but the reason for which is not known. For example, you can create an event checks for the general abandonment condition and the NOT conditions of the identified methods of abandonment. By identifying the unknown, you can begin to explore the reasons why it is not known.

KPIs are typically defined as one or more linked events, which are surfaced in reports or scorecards.

Note: cxView supports the development and publication of KPI scorecards. See "Configuring KPI Scorecards" in the *IBM Tealeaf cxView User Manual*.

Tealeaf provides an end-to-end scenario to describe how to monitor an example shopping cart process and to generate reporting on it.

- See "E2E Scenario - Create Conversion Rate Dashboard" in the *IBM Tealeaf cxImpact User Manual*.

Errors

Tealeaf is useful for monitoring and reporting on errors that are encountered during a visitor's experience with your web application. Errors can be categorized into the following types:

Type Description

System errors

Tealeaf provides a set of events for tracking HTTP Status Code errors (4xx/5xx). These events are enabled by default.

- See "Tealeaf Standard Event Object Reference" in the *IBM Tealeaf Event Manager Manual*.
- You can explore how to use these events through the end-to-end scenarios. See E2E Scenario - Getting Value out of Tealeaf in One Hour.

Application errors

These errors typically cause an error message to be generated and displayed in the response for visitors to your web application. Since these errors are specific to the web application, no default events are provided.

- Example application errors include JavaScript errors, other code exceptions, and services or APIs being unavailable.

Business rule errors

Business rule errors are violations of how data is expected to be submitted, which can result in things like rejected credit card numbers.

Usability errors

Usability errors are typically issues in which the submitted data fails validation, such as when a required form field is submitted with an empty value.

The preceding categorization covers a broad range of potential issues with any web application. As part of your event development, you must look to group errors into categories, by using group lists. For example, suppose that your web application generates over 2000 error messages. You can group error messages into categories to simplify reporting. Instead of looking at individual log error messages, for example, report consumers can analyze the counts of log error messages in reporting.

- Error messages can be categorized by storing their values in a dimension, which uses group lists to define the groupings of values.
- The error messages can be uploaded by a tab-delimited file to populate the available dimension values.
- See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

UI Capture tracking

If you are using the UI Capture solution to track events in the client interface, you can create events to capture and record these actions for reporting. Since the data that is submitted to Tealeaf from the client interface is different from the data that is submitted through standard browser capture, you may be required to create special events for these actions and, if desired, other events to normalize them to your standard reporting data.

- When creating events from UI Capture data, verify that your events are configured to match on the Last Match Per Hit value.
- The value of these events can be used to populate dimensions.
- Particularly for form fields, UI Capture can be instrumental in identifying areas of customer struggle, allowing you to redesign the sequence of fields or remove unused or confusing fields.

For more information on UI Capture, see the *IBM Tealeaf UI Capture for j2 Guide*.

Performance Monitoring

Tealeaf provides several events for monitoring application performance. These events enable tracking of the following types of application performance metrics:

- ReqCancelled by client or by server
- Server generation time
- Network time
- Roundtrip time
- Render time

Note: Some of the preceding metrics are not available in standard HTML traffic. You must deploy the UI Capture solution to track render time in the client. See the *IBM Tealeaf UI Capture for j2 Guide*.

Through Tealeaf reporting, you can compute average, minimum, and maximum values for these metrics. These reports are available through a separate reporting interface.

- See Analyzing Performance.

These events can be linked to other business process or performance events. For example, you can track the frequency of incidents when a large render time resulted in a client-initiated ReqCancelled event. Those events can then be correlated to your abandonment processes to identify if visitors are quitting because of performance issues and whether those issues apply to a specific page.

- For more information about multi-dimensional reporting, see Tealeaf Report Builder.

Segmentation

In Release 8, you can use dimensions to identify poor or well-performing segments. Example segments include:

- Process flows/abandonment
- Visitor acquisition (campaign, keywords) tracking
- Technical delivery of content that is based on browser version, platform, operating system, and so on.
- Different landing pages
- Internal marketing campaigns
- Internal search/failed search tracking
- Third party tools or site tools usage
- Customer profiling and loyalty
- Multi-channel conversion
- Time-of-day analysis
 - Tealeaf provides a number of default calendar dimensions. See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

Before you begin, you must consider the segments of your users that you want to analyze in reporting, which drive the events that you create and enable in Tealeaf.

Events

When triggered, an *event* is a situation or condition that is identified in data that is captured by Tealeaf that causes an action. An event definition specifies the hit attribute or other data that must appear in the request, response, or session as a whole. Using an event, you can detect and report on one or more conditions that occur in a single session.

- Events do not work across multiple sessions.

An event is defined as a combination of a trigger, a condition (such as a matching hit attribute), and an action. For example, an event can be configured to trigger at the start of a page to look for a specific set of HTML tags in the response and, if the tags are found, to store the value in between the tags.

- A Tealeaf event can be the appearance or absence of a specific data element or value in the request or the response.
- Resulting actions can include setting values and generating alerts.

Some events are specific to a hit, while others can be processed only with the entire session in hand. As each hit is added to a session in the Short-Term Canister, event definitions are compared against the data in the hit. When a session ends and is written to the Long-Term Canister, events that are associated with an entire session are evaluated.

Event Definitions

An event is defined as a combination of:

1. *Trigger* - The page- or session-level state at when the event is evaluated. See “Trigger” on page 24.
2. *Condition* - The event, session attribute, or hit attribute that is searched for in the session data. If the condition is detected, the event fires, and the specified value or values are recorded. See “Condition” on page 24.
3. *Action* - The data to record and the method of recording. The specification of the action indicates the type of value and the instance of it to record to the database. Event-related data is written to the Short-Term Canister and may be aggregated into the reporting database.
 - Recorded values can be used in reporting or to trigger a condition in a later event. See “Action” on page 25.
4. *Dimensions* - In addition to the values stored with an event, such as the current value of the shopping cart, an event can store other contextual information available at the time of the event. These contextual dimensions can include values such as the username, the browser type, or almost any data from a tracked data set. See “Dimensions” on page 28.

Event Relationships

The following diagram shows how the event-related components relate to the reporting capabilities of the Report Builder. Each event is defined by the trigger, the condition, the action, and values and dimensions to record.

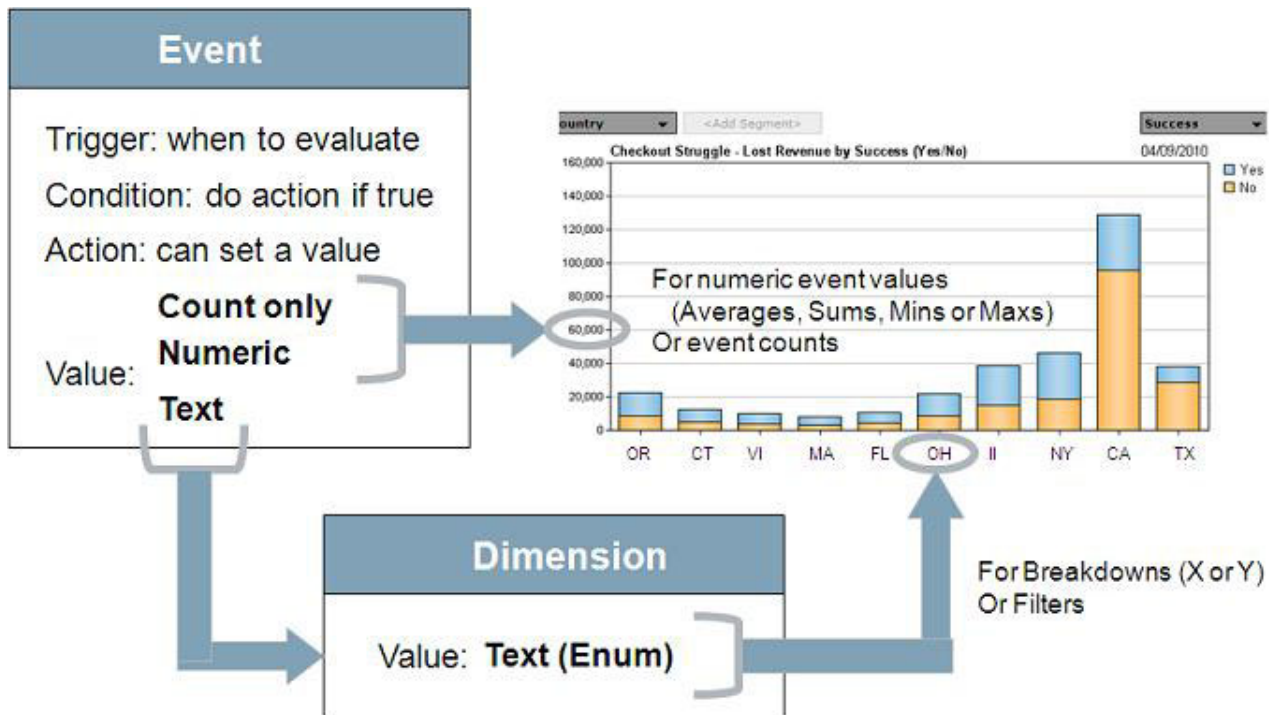


Figure 1. Event Objects

Values can be a count, a numeric value, or a text string.

- Numeric values that are associated with the events can be graphed in the Report Builder.
- The text values can be used as instances of a dimension.

Based upon when evaluation of an event occurs, conditions can depend on different data objects. Since some events are contingent upon various combinations

of hit attributes or other events, the Event Manager provides for various combinations of conditions, as shown in the following diagram.

Note: In practice, almost all conditions are based upon a text pattern that appears in the data stream.

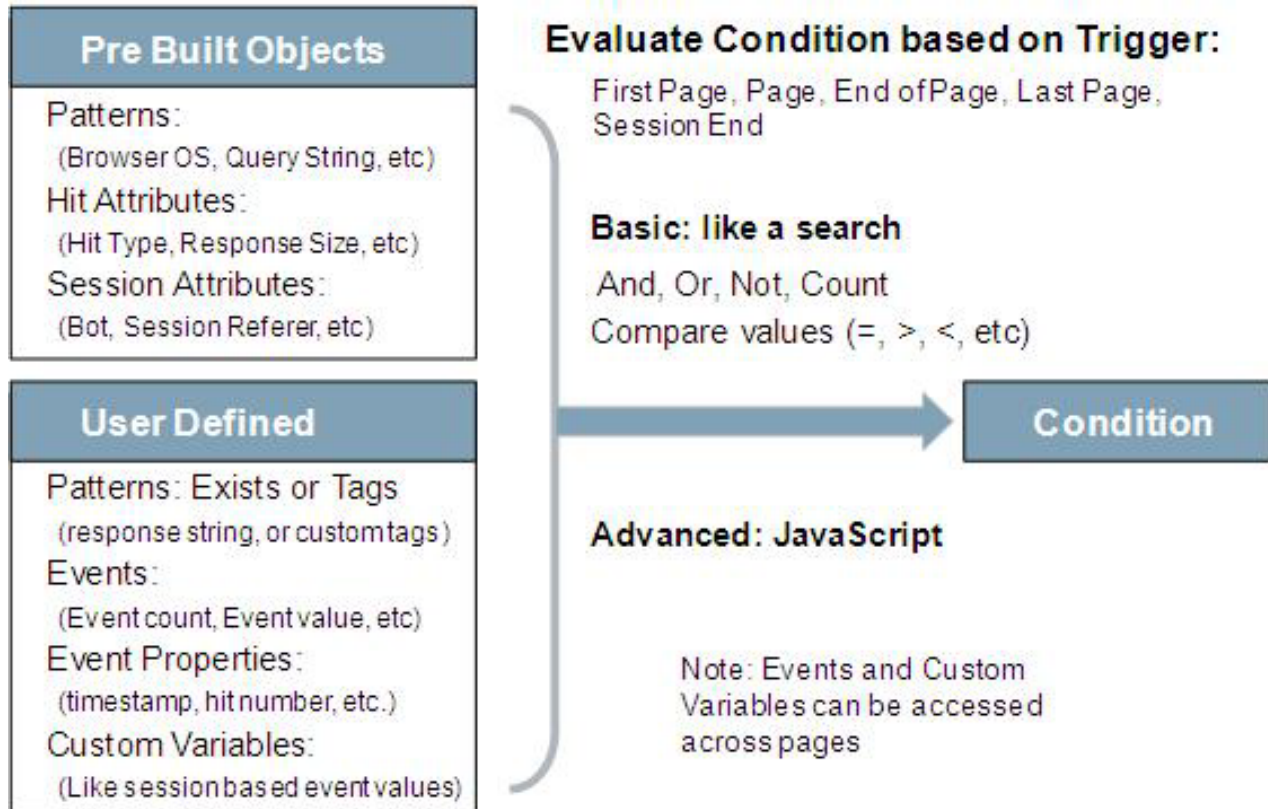


Figure 2. Tealeaf Event Conditions

Session attributes: In addition to managing events, hit attributes, and dimensions, the Event Manager also enables configuration of session attributes that can be read and set by events, which are used in alerts fired based upon events, and tracking of major movers (deviations).

- A session attribute is similar to a custom session attribute or UserDef (user-defined variable) in earlier Tealeaf versions. Session attributes are used to save interesting session state information with the session for later conditions or reporting. See "TEM Session Attributes Tab" in the *IBM Tealeaf Event Manager Manual*.

Event Types

Tealeaf supports two types of events:

1. *Standard Event:* A typical event is triggered based on pattern data that is detected in the capture stream.
2. *Canister Event:* Associated with each session in the Canister, Tealeaf maintains a set of events that track useful session-related information for you. These events cannot be configured. You can create alerts that are based on them. See "Alerts" on page 26.

Through the Tealeaf Event Manager, you can create events.

- See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

An event can also be a combination of one or more other events. For example, if the visitor received a specific error code and completed a purchase, you can record the occurrence of that event.

- You can create an alert that is based on an event firing. Alerts deliver information to Tealeaf users in one of multiple formats. See "Alerts" on page 26.

Event Components

This information describes the components of an event.

Trigger: An event can be triggered in any of the following situations, which are listed in the order of occurrence during a visitor session:

Trigger Description

First Hit of Session

Evaluated when a new visitor's session begins.

Every Hit

Evaluated before any part of a new hit is evaluated.

After Every Hit

Evaluated after all parts of a hit are evaluated.

Last Hit

Evaluated after the last hit of the session is captured and evaluated.

End of Session

Evaluated when a visitor's session ends, either as defined by event or system timeout.

Triggers are defined in the Event Wizard of the Tealeaf Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Condition: The condition defines the event, hit attribute, or session attribute that is searched in the session data. This data element is evaluated against criteria you define to yield a true or false value.

The conditions are evaluated at the Trigger time and are based upon the context. There are two contexts: one for the hit triggers and one at session end.

- *Hit conditions* include any text patterns in the current hit, the existence or value of any event that occur in the session, or any session attributes defined.
- *Event conditions* exclude the ability to evaluate hit attributes that occur in any hit but include support for the other conditions.

Evaluation criteria depend on the type of data.

- Conditions that evaluate numeric data have comparison and equivalency operators, null tests, and inclusion/exclusion tests. You can test first, last, count, and found patterns of the numeric data.
- Conditions that evaluate text data have equivalency operators, null tests, and inclusion/exclusion tests.

Conditions that evaluate as true cause the action that is specified in the event to be taken. See "Action" on page 25.

Conditions are defined in the Event Wizard of the Tealeaf Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Event dependencies: As part of the configuration of the conditions for an event, you can require the presence of another event or event value, which creates an event dependency.

There are two available methods for creating dependencies between events:

- *Implicit dependency* - Tealeaf events can be triggered at the start of session, first page, end of page, on the last page or at the end of the session. These discrete points of evaluation can be used to create implied dependencies. For example, you can guarantee that any event configured to trigger on the last page can reference the output generated by any event triggered at the start of the session.
- *Explicit dependency* - As one of the conditions of the event, you can specify that another event or event value must be present. Explicit dependencies are only valid between events that share the same trigger point. For example, an event configured to be triggered at Every Hit cannot reference events triggered at Last Hit.

Explicit dependencies can be reviewed through the Tealeaf Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Action:

In the event action, a value can be stored when the event occurs, which can be the count of the event that occurs, the text or numeric string that is obtained with a hit attribute, or the contents of a previous event value or a session attribute.

The action defines:

1. The value or values that are recorded
 - Values that are tracked for recording are defined in the Event Summary of the Event Wizard of the Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.
 - Values that are recorded are defined in the Value step of the Event Wizard of the Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.
2. The availability of the data for search and reporting
3. The session attributes populated by the event value
 - Actions are defined in the More Options step of the Event Wizard of the Tealeaf Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.
4. The report group or groups that are associated with the event. See "Dimensions" on page 28.
 - The reports groups that are associated with the event are defined in the Report Groups step of the Event Wizard of the Tealeaf Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Event Development

Access to the Event Manager is controlled by the User configuration under Portal Management.

- See "CX User Administration" in the *IBM Tealeaf cxImpact Administration Manual*.

Event testing: Since the number and complexity of events can affect system load, it is important to ensure that events produce the wanted data. The Event Manager includes an integrated tester to test your defined events against session data before it deploys them in the live environment.

- See "Event Tester" in the *IBM Tealeaf Event Manager Manual*.

Event execution: After objects are created or edited with the Tealeaf Event Manager are saved, the event definitions are replicated to the Processing Servers (Canisters) where they are run. Searchable and aggregated reporting data is generated when the event fires. The time lag between saving changes and being able to see results depends on both system configuration and load.

Changes to Events

Events are now defined through the Tealeaf Event Manager in the Tealeaf Portal.

- See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

The definition of events has changed significantly since Release 7.x. For example:

- Event categories, such as compound session close events and compound page events, have been largely eliminated, in favor of a simpler model that evaluates events that are simply based on where they occur in the session. Events can be organized into event labels, but a label is an organizational structure only.
- Compound events can be created simply by using the outputs of one or more events as inputs to another event. Outputs of page-level events can be mapped to the inputs of page-level or session-level events.
- Event hierarchies have changed. Hierarchies are essentially dependencies between events and are not explicit parent-child relationships. Hierarchies can no longer be necessary because of the potential for multiple triggers for an event.

Alerts

An *alert* is an action triggered off the triggering of an event or off a threshold value for an event. For example, if the number of application errors is tracked in an event, you can configure an alert to trigger off the occurrence of this event (meaning at least one application error has occurred) or off the occurrence of 10 application errors, which can require escalation of the issue.

- Alerts can be triggered off an event.

Based upon the criteria that are defined for the alert, you can trigger any combination of the following actions:

Alert Actions

Description

App Event Log

A log message is inserted into the application event log.

Email An email alert is delivered to a configured list of addresses.

Shell Command

An external shell command that you specify is run.

SNMP An SNMP message is delivered through the configured server.

XML Log File

An XML-formatted log file is generated and saved.

You can configure alerts for:

1. User-defined events
2. Canister events

Alerts are created in the Alerts tab of the Tealeaf Event Manager. For more information about creating alerts, see "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.

- For more information about enabling the Alert Service, see "Configuring the Alert Service" in the *IBM Tealeaf CX Configuration Manual*.

Changes to Alerts

Other than changes required to support the Release 8.0 data model, alerts have not changed much from Release 7.2.

Alerts are now defined through the Tealeaf Event Manager in the Tealeaf Portal.

- See "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.

Report Groups

An event can be associated with one or more report groups. A *report group* is a set of dimensions that can be displayed on the same report. A report group can be thought of as the parent of dimensions.

For example, you can create a report group that is called user agent properties to contain values for the following properties that are associated with mobile user agents:

- User agent name
- Screen width
- Screen height
- Javascript support

In the preceding example, the inclusion of the user agent name dimension is useful for combining dimensions into new reports. If another dimension also includes this dimension, then dimensions from each of the two dimensions can be displayed in the same report.

The preceding dimensions are of different data types, yet they can be added to the same report in the Tealeaf Report Builder.

Note: Up to a maximum of 4 dimensions can be displayed in the same report group. Dimensions in the same report group can appear in the same report. Dimensions in different report groups cannot appear in the same report.

Note: Since you can create events and report groups independently, some report groups can not exist for the lifetime of the event. For example, data that is acquired for the same dimension in two different report groups can not be entirely consistent if the dimension was added to one of the report groups after the other one was added. As a result, you can end up trying to pivot on the dimension across report groups for a report period that does not exist in one of the report groups.

All events are automatically aggregated by the No Dimension Report Group report group, which cannot be disabled.

- Events can be added to other report groups, as well.

Report Groups for Other Tealeaf Products

Other than cxImpact, some Tealeaf CX products can use report groups and dimensions.

Note: The use of dimensional data in cxResults is not supported in this release.

Changes to Report Groups

In Release 7.x and earlier, report groups did not exist specifically. However, the set of reference dimensions (Path, Server, Host, and Application) and their values essentially constituted a report group that was used to filter reports in the Portal.

Dimensions

A *dimension* is a list of values that are associated with an event. When an event is triggered, the detected value is reported into a dimension.

- The values to detect are configured in the Values tab in the Tealeaf Event Manager. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.
- The report groups into which the values are reported are specified in the Report tab of the Tealeaf Event Manager.
 - A dimension can belong to multiple report groups, which can be associated with multiple events.
 - See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

Dimension Types

There are two basic types of dimensions:

Unbounded Lists:

An *unbounded list* dimension type is generated by extracting values in the transaction stream for the dimension and building a list for each hourly time interval. If the limit for the dimension is configured to be 1000, the first 1000 values for a dimension that are detected in an hour become the available dimension values for that dimension during that period. Subsequent values that had not been previously detected during the hour are mapped to a single fixed value, TLT\$LIMIT.

Value Lists:

A *value list* dimension type contains a pre-defined set of values that are the only accepted values for the dimension. The list of the states of the United States of America is an example of this type of dimension. When an event fires, the values that are assigned to the event must come from one of these listed values.

Value lists can be of the following types:

Values to Record Description

Whitelist + Observed Values

Record values that are on the whitelist for the dimension, and also as non-blacklisted values detected in the capture stream.

Whitelist Only

Record only values that are displayed on the specified whitelist for the dimension.

Group Lists - Text

Populate the dimension from a group list of text values that are configured for the dimension.

Group Lists - Numeric

Populate the dimension from a group list of numeric values that are configured for the dimension.

Examples

For more information about examples of dimensions, see "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

Changes to Dimensions

In Release 7.1 and Release 7.2, Tealeaf supported the creation and reporting of four sets of references: TLT_Application, TLT_URL, TLT_Server, and TLT_Host. Essentially, these reference sets were data dimensions. In earlier releases, these reference dimensions were common to all events.

When the Tealeaf Reference session agent was enabled in the pipeline, you can map detected values for the following dimensions to a predefined list of values. The mapped value was inserted into the corresponding name-value pair in the [TltRef] section of the request.

The reference dimensions from earlier releases are available in the following dimensions, which can be added to reports:

Table 2. Changes to Dimensions

Dimension	Old Version	New Version
Application	TLT_Application	Application
Path	TLT_URL	URL
Server	TLT_Server	Server
Host	TLT_Host	Host

These predefined lists can be generated from values that are detected in session data and logged. Various reports and multiple Tealeaf CX products used these reference dimensions.

The new reporting model provides much greater flexibility in the dimensions that you can use.

For cxResults:

Note: The use of dimensional data in cxResults is not supported in this release.

Facts

A *fact* is a data structure that is generated when an event fires. It contains the triggering event, its value, and the related dimension or dimensions and values.

The fact is the essential data storage structure for Tealeaf reporting. This internal storage mechanism is not directly accessible to Tealeaf users through the Portal.

Note: Any data that is to be visible together in the same report must be stored in the same report group because data is stored at the fact level in the database.

All facts that are associated with an instance of a triggered event contain the same fact value.

- Each fact that is associated with a single event can contain dimension data for a different report group.

Multiple facts can be charted together if they share one or more common dimensions. For example, if two facts share the DimURL dimension, then they can be displayed in the same chart.

- Multiple time-based events can always be displayed in the same chart, since they always share time as a dimension-type axis.
- For reports not based on time, the events in them must share a common dimension to be displayed in the same chart.

Changes to Facts

Facts did not exist in Release 7.x or earlier.

Fact Values

Fact values are event instance data that can be configured in the event definition. When an event fires, any data that is found between a specified Start Tag and End Tag in a hit attribute is captured as a fact value and stored in the database. This data can be searched and reported in the Tealeaf Portal.

- Tealeaf fact values can be numeric or text values.
- By default, numeric fact values automatically trigger the computation and recording of the count, sum, average, minimum, and maximum values of the value for each hour.

All facts that are generated by a single event either fire or do not fire, which can be configured through the Tealeaf Event Manager.

- Fact values can be configured to be searchable and reportable in the Report tab of the Tealeaf Event Manager. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

Fact Value Types

This information describes the different types of fact values available in Tealeaf.

Count fact values: These fact values are undefined. The count of each triggered event is accumulated for reporting.

Numeric fact values: Numeric fact values are stored at the hourly level. For each hour of numeric fact values, you can apply the following operations to them:

- Sum
- Average
- Min
- Max

String fact values: Any non-numeric fact value is a string fact value. No predefined operations can be completed on detected values.

Changes to Fact Values

In Release 7.x, specific reference values as identified by events were identified by textfound values. In Release 8.0, these values correspond to facts, which are event-driven values in a data dimension.

- A fact value is data which is recorded with the triggered event.

Reporting Concepts

Next, to the following common reporting concepts in traditional analytics are listed the Tealeaf equivalent functions.

Analytics

Tealeaf

Slice In Tealeaf, you can create data slices by configuring multi-dimensional reports for specific fact values.

Dice The Tealeaf Report Builder does not currently support data dicing.

Drill Down

Tealeaf enables drill-down on reporting data to the underlying sessions from which the report values were extracted.

Note: Because of query complexity, Tealeaf provides limited support for drill-down when a whitelist or blacklist of values is configured for use with the report. You can drill into whitelists or blacklists limited to 30 values across all Segment dimensions of the report. Drill-down on other configurations, including Top N dimensions, is not supported.

Roll Up

Tealeaf data is aggregated at the hourly and daily level by the Data Collector, which polls the Canister data at scheduled intervals.

Pivot In the Tealeaf Report Builder, you can pivot report data across multiple report groups that share common dimensions.

For more information about building reports, see Tealeaf Report Builder.

Transitioning to the Current Event Model

Note: This section is intended for Tealeaf administrators or event developers who became familiar with Tealeaf event mechanisms on Release 7.2 or earlier. The information in this section only applies if you are upgrading from a release earlier than Tealeaf release 8.0.

In Release 8.0, the event model and event engine for the IBM Tealeaf CX platform were redesigned to enhance performance and flexibility while simplifying the process of developing useful events for your web application.

The greater flexibility of the event engine and method for designing events results in a more consistent overall event management model. Event-related data such as child events, compound events, and pipeline rules for events have been eliminated or migrated into the single event interface in the Tealeaf Event Manager.

For Tealeaf users familiar with the previous event model, this page provides some overview information about how to transition event concepts and your way of thinking about them to the new model. For more information about event concepts, see "Tealeaf Data Model" in the *IBM Tealeaf Reporting Guide*.

Note: The Tealeaf EES event engine represents a paradigm shift in how events are defined and processed in the IBM Tealeaf CX platform. The new event model provides much greater flexibility in how you design events by loosening the requirements of the earlier event model. You should avoid simply replicating your existing event structures in the new event environment.

Overview of Changes

Expansion of Dimensions

In Release 7.2 and earlier, Tealeaf could be configured to capture contextual reference data into four pre-defined dimensions:

- TLT_URL
- TLT_HOST
- TLT_APPLICATION
- TLT_SERVER

When enabled, the Tealeaf Reference session agent extracted these hardcoded values from the request of each hit. These dimensions could be used in reports to filter the content.

Starting in Release 8.0, you can create your own dimensions, using the outputs of events or hit attributes as the data source. For example, you could define a hit attribute to look for credit card type and then use the output of that hit attribute as the data source for the Credit Card dimension.

- The four dimensions available in earlier releases are also available by default in Release 8.0 and later. See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

Dimensions can be applied to any type of report available in Tealeaf, which includes ad hoc reports, Top Mover reports, scorecards, and dashboards.

- For more information about creating dimensions, see "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.
- For more information about using dimensions in reports, see "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.
- See "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.
- See "Configuring Scorecards" in the *IBM Tealeaf cxView User Manual*.
- See "Configuring Dashboards" in the *IBM Tealeaf cxView User Manual*.

Event Editor

The Event Editor has been removed from the IBM Tealeaf CX RealTime Viewer standalone application. Event creation and management capabilities and more are now available through the Tealeaf Portal in the Tealeaf Event Manager.

- See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

Event Engine and JavaScript

The underlying engine for processing events has been rebuilt to use the more flexible event model. Event definitions that are specified in the Portal are written in a customized version of JavaScript.

- You can review and modify the underlying JavaScript for event definitions through Advanced Mode in the Tealeaf Event Manager. See "Advanced Mode for Events" in the *IBM Tealeaf Event Manager Manual*.
- For more information about the EventEngineScripting language, see "EventEngineScripting Reference" in the *IBM Tealeaf Event Manager Manual*.

Report Builder

Before Release 8.0, you could generate reports from event data through the Custom Charts facility. This feature has been replaced by the Tealeaf Report Builder, which

enables the configuration of reports using multiple events across multiple dimensional axes and filtered by segments you define. This more flexible interface is available through the Tealeaf Portal.

- See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.
- A separate report builder is available for visitor data, which is accessible to users of IBM Tealeaf cxResults. See "Tealeaf Visitor Report Builder" in the *IBM Tealeaf cxResults User Manual*.

Near-Real Time Availability of Event Data

In Release 7.2 and earlier, event data was published by the Canister only after the session had been closed. The timing of this publication meant that reports were updated for completed sessions only.

Beginning in Release 8, the Canister published event data every minute, as the events are tabulated in the Canister, including for events occurring in active sessions.

Note: Event counts in reporting data in Release 8 may include data from active sessions.

Since event data is published every minute by each Canister, report data is updated in near real-time for all events that have been detected in the Canister. There are some impacts:

- Reporting data for end-of-session events is still not tabulated until the end of the session.
- Reporting data for page-level sessions is tabulated as it is detected.
 - Page-level events may be available in reporting data before the end-of-session events have been triggered, which may impact reporting.

Note: Be careful mixing page-level events and session-level events in your reporting for the current hour. Since session-level events may not be tabulated until the session is closed or times out, ratios involving these events may be inaccurately reported. For reports focusing on the current hour of data, do not mix page-level and session-level events.

- If a session is discarded after reporting data has already been tabulated for some events that have already been processed by the Canister, the report counts for those events are not removed from the database.

Note: Since event data is tabulated as it is detected in the Canister, it is important to identify sessions for discarding as early as possible in the hit stream. Otherwise, you may generate event counts for data that is subsequently discarded when the source session is no longer available. These event counts already recorded for discarded sessions cannot be removed from the database.

Mapping Earlier Event Concepts to the New Model

Below you can review common terms that apply to events.

- In the Release 7.X Equivalent column, you can review the corresponding term from Release 7.x or earlier. An * indicates that there are significant changes between the older version and the current one.

Table 3. Mapping Earlier Event Concepts to the New Model

Term	Description	Release 7.x Equivalent	For more information
Hit Attribute	A hit attribute applies to an individual hit. User-configured hit attributes are demarcated by start and end tags, which can be used to extract the text inside. Hit attributes can be explicit strings of text, as well.	Category	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Event	An event monitors a condition in the session data stream and, when it is detected, performs a configured action.	Event	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Trigger	Point in the session when the event is evaluated	Implicit in the type of event	"Tealeaf Data Model" in the <i>IBM Tealeaf Reporting Guide</i>
Condition	The criterion or criteria in the event definition that are evaluated to determine if an event fires. If the condition or conditions evaluate to true, the action is taken.	Match Type	"Tealeaf Data Model" in the <i>IBM Tealeaf Reporting Guide</i>
Action	The data written as a result of the triggered event	Various event properties	"Tealeaf Data Model" in the <i>IBM Tealeaf Reporting Guide</i>
Report Group	An entity for organizing dimensions. A report group may contain multiple dimensions, and each dimension may appear in multiple report groups.	N/A	"TEM Dimensions Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Dimension	A defined type of contextual data extracted from the session at the moment of event execution	Reference dimension	"TEM Dimensions Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Fact	An internal data structure, a fact is the combination of the event, event value, and any associated dimension values for each triggered event instance.	N/A	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Fact Value	The instance data of the event	textfound value	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Label or Group	An organizing structure for events, hit attributes, and other event-related objects	N/A	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>

Table 3. Mapping Earlier Event Concepts to the New Model (continued)

Term	Description	Release 7.x Equivalent	For more information
Alert	An email or SNMP message, event log, or XML log file generated when a configured threshold value is detected in an event	Alert	"TEM Alerts Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Session Attribute	A user-defined value that can be referenced and updated by event activities during the course of a session	LoginID, UserDef values and session attributes	"TEM Session Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Top Mover	A calculated standard deviation for event and dimension values or ratios of those values over a rolling four-week period	N/A	"TEM Top Movers Tab" in the <i>IBM Tealeaf Event Manager Manual</i>

For more information about Tealeaf terminology, see "Tealeaf Glossary" in the *IBM Tealeaf Glossary*.

Event Properties

The screen capture below shows the Event Properties window. In Release 7.2 and earlier, the Event Editor is integrated into the IBM Tealeaf CX RealiTea Viewer, a separate desktop application.

- This image was taken from RTV Build 7.2.11.7276. Release 7.2 users may notice some minor differences between the image and their systems.

The above image illustrates the properties for a simple page event in Release 7.2.

- Depending on the type of event you were configuring in Release 7.2, the event properties may vary.
- In Release 8.0, the available properties are consistent regardless of the type of event you are creating.

In the table below, you can see how these event properties map to Release 8.0 event definitions.

- In some cases, the properties have been removed from the event definition.
- For more information about Release 8.0 properties, see "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Table 4. Event Properties

Release 7.2 property	Release 8.0 property	How to find	Notes
Active	Active	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	

Table 4. Event Properties (continued)

Release 7.2 property	Release 8.0 property	How to find	Notes
Event ID	Event ID	In the event tooltip in the Event Manager. See "TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Category	Hit Attributes	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Name	Name	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Group	Labels	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, an event may be associated with multiple labels.
Description	Description	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
	Evaluate on	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, event firing is constrained to specific points in the evaluation of a session.
Value Type	Deprecated. See Notes.		This functionality is managed in part through the conditions and dimensions that are defined for the event. • Conditions: "Tealeaf Event Manager" in the <i>IBM Tealeaf Event Manager Manual</i> • Dimensions: "TEM Dimensions Tab" in the <i>IBM Tealeaf Event Manager Manual</i>
Match Type	Deprecated. See Notes.	"Tealeaf Event Manager" in the <i>IBM Tealeaf Event Manager Manual</i>	This functionality is managed in part through the conditions that are defined for the event.
Buffer	See Notes.	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	Search In value in Hit Attribute definition
Case	See Notes.	"Tealeaf Event Manager" in the <i>IBM Tealeaf Event Manager Manual</i>	Some types of conditions support case-sensitive matching.
Pattern Data	Hit Attributes	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	

Table 4. Event Properties (continued)

Release 7.2 property	Release 8.0 property	How to find	Notes
Actions	Hit Attributes	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, hit attributes are defined outside of events and may match on exact values or the contents between start and end tags.
Session Time Out	See Notes.	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, you may change the session timeout under More Options in the Value Tab of the Tealeaf Event Manager. See "TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>.
Icon	Icon	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i> You may create or edit event icons through the Event Manager. See "TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>.	
Interesting Event	Deprecated. See Notes.		In Release 8.0, the Interesting Event flag is deprecated. All events are interesting.
App/Client/Server/Size/Time Error	Active	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, error types are no longer defined by default as a property of an event.
Event Result Type	Value to record in Value Step	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Encoding	See notes.	"TEM Hit Attributes Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, encoding is configured for individual hit attributes, when you are searching the response. In Advanced mode, you may configure the encoding for the JavaScript of the event. See "Advanced Mode for Events" in the <i>IBM Tealeaf Event Manager Manual</i>.

Table 4. Event Properties (continued)

Release 7.2 property	Release 8.0 property	How to find	Notes
Building Block Event	See notes.	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	In Release 8.0, if the Searchable and Reportable and Display in Portal check boxes are cleared, the event behaves like a building block event in Release 7.2 and earlier.
Archive Searching	Searchable and Reportable in Event Summary	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Display Event in Portal	Display in Portal	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Report Event	Track	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	
Send to Event Bus	Send to Event Bus	"TEM Events Tab" in the <i>IBM Tealeaf Event Manager Manual</i>	

Deprecated aspects

Child events

In Release 7.2 and earlier, child events were explicitly defined in relation to a parent event.

In Release 8.0 or later, there are no explicit event hierarchies. Any event can be dependent on another event with the following limitations:

- Events cannot have circular dependencies; event A cannot depend on Event B if it has a dependency on Event A.
- You can review the hierarchical relationships between event-related objects through the Portal. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.

Compound events

In Release 7.2 and earlier, you could create events that were dependent on the successful triggering of two or more other events.

In Release 8.0 or later, the outputs of events or their existence can be used as the conditions of another event, effectively making the event a compound event.

- See "Compound Events" on page 40.

Lists and Groups

In Release 7.2 and earlier, you could create lists of values that could be referenced by other events.

In Release 8.0 and later, this functionality is managed by dimensions, which can store data that is sourced from:

- session data
- event data
- event count
- hit attributes
- custom session attributes
- manually entered values
 - See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

"Interesting" sessions

In Release 7.2 and earlier, you could flag individual sessions as "Interesting" for search and reporting purposes. This feature has been present for a number of major releases. By Release 7.2, it was no longer in regular use.

In Release 8.0, all sessions are considered interesting. Specifically, in the STS file that is associated with each session:

```
TltStsInteresting=true
```

Tutorials - Creating Earlier Event Functionality in the New Event Model

The following tutorials provide basic instruction for how to re-create some of the event structures that were present in Release 7.2 or earlier.

- During the upgrade, most existing events in your Release 7.2 or earlier system are automatically converted to the new event model.

Note: The new event model is much more flexible. Wherever possible, Tealeaf recommends starting your event development from scratch by using the new event structures, instead of simply replicating your earlier events in the new environment.

Alerts Based on Events

As in Release 7.2, Release 8.0 supports two types of alerts. Configuration of these alerts is managed through the Tealeaf Event Manager and is similar to Release 7.2 and earlier.

- Event alerts - These alerts are driven by the values of events that are detected in the transaction stream. For more information about creating these alerts, see "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.
- Canister alerts - These alerts are driven by variables that are tracked in the Tealeaf canister. For more information about creating these alerts, see "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.

Compound Events

In Release 8.0, the outputs of events can be used as the conditions of other events. To create a compound event, you must create the two or more events and then use their outputs as conditions for the compound event.

You must first determine if the input events can exist in the same trigger and if the compound event can exist in that trigger, too.

- If the events cannot be in the same trigger, you must write the output of one or more of the events to a session attribute, which can be used as a condition for the compound event.

If the input events are not to be exposed for use by Tealeaf users, remember to disable the Display in Portal setting.

Compound Page Events

Compound page events can be created with two or more input events that occur on the same hit. As a result, they are only available on the following hit-based triggers:

- First Hit of Session
- Every Hit
- After Every Hit
- Last Hit

The component input events do not need to share the same trigger. However, you should ensure that the events may occur on the same hit. For example, since the Last Hit trigger is a subset of Every Hit, you can use both triggers in the input events on the same compound page event. In this case, the parent compound event can only fire on the Last Hit.

You should also ensure that the trigger of the parent compound event itself makes sense with the triggers of the input events. For example, if the parent compound event trigger is Last Hit and one input event's trigger is First Hit of Session and all conditions must be true, then this event rarely fires, if ever, since the parent can only fire on the last hit and an input event can only fire on the first hit. The conditions of this event can be true only for 1-hit sessions.

Compound Session Events

Compound session events can be created with any trigger. The input events can have any trigger as well. However, the portal prevents you from making combinations that are incompatible. For example, you cannot use an input event with the trigger End of Session in a parent compound event with the trigger First Hit of Session.

Compound Session Distance Events

In Release 7.2, a compound session distance event enabled the evaluation of the distance between two component events that are based on time or number of pages. When distances between the triggering of the two events exceeded the threshold value, the event fired.

In Release 8.0, you can create distance events in the Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Compound Session Sequence Events

In Release 7.2, a compound session sequence event could be used to check for events that occur in a specified sequence within an event. When the listed events occurred in the proper sequence, the event fired.

In Release 8.0, you can create sequence events in the Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Default Categories and Events

At the evaluation level, the concept of the event category has been largely replaced by the event trigger. Each event is assigned to an event trigger, which is a defined point in the session when the event may be evaluated.

- See "Tealeaf Data Model" in the *IBM Tealeaf Reporting Guide*.

For purposes of organization, events can be organized in the Tealeaf Event Manager by event labels. These labels have no operational role, other than to simplify the display of events.

- See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.
- Except for top movers, each type of data object in the Tealeaf Event Manager can be organized using labels or groups.

Icon Editor

In Release 7.2 and earlier, a lightweight editor was embedded in the Event Editor for creating the icons that represent events in the Portal.

In Release 8.0 and later, you may create event icons through the Event Manager or use the graphics editor of your choice to create these simple images before uploading them.

- See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Value Group Events

In Release 7.2 or earlier, list events could be created that referenced a specific list of values. These events were created as simple page events that used a list of values that are defined in the Lists/Groups tab.

In Release 8.0 and later, these lists are replaced by dimensional data. Dimensions can be defined in the Tealeaf Event Manager.

- See "Lists and Groups" on page 39.
- See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

Session Attribute Events

In Release 7.2 and earlier, you could create events that are based on user-defined values called session attributes. Session attributes included the following variables:

- LoginID
- UserDef1 - UserDef4
- Session Attribute 00 - Session Attribute 63

In Release 8.0 and later, the session attributes are normalized into a single array of session attributes. Tealeaf supports the creation of up to 64 custom session attributes.

- At a technical level, a session attribute is called a Custom Var.

Note: During upgrades, LoginID and all UserDef variables are converted to Custom Var 00 through Custom Var 04. Session attributes are converted into the next available slots. Session attributes 59-63 from Release 7.2 and earlier are not supported in Release 8.0.

Session attributes can be defined and updated at any point in any trigger of the session. For example, you may put the value 1 in Session Attribute 12 in the first hit of the session and then write the value 2 to the variable at the end of the session.

- In Release 7.2, session attribute events could be defined per page or per session. In Release 8.0, you may reference session attributes in any trigger, so you may constrain their values to the current hit, set them at the end of the session, or update them at any point during the evaluation of the session.

You can use session attributes as the inputs (or conditions) of events. Additionally, events can write output values to session attributes.

- See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Session attributes can be defined through the Tealeaf Event Manager.

- See "TEM Session Attributes Tab" in the *IBM Tealeaf Event Manager Manual*.

Threshold Events

In Release 7.2 and earlier, a threshold event was triggered based on the number of occurrences of an event in the session.

In Release 8.0 and later, the fact collection maintains a counter of the number of instances that a fact (event + report group) has occurred in a session. This value can be retrieved by the JavaScript reference in your event definition:

```
$F.factCount(n)
```

where (n) is the name of the fact.

You can create an event that uses this value as an input and then triggers the action of your choice.

Note: The ability and permissions to write JavaScript in Advanced Mode for events are required. See "Advanced Mode for Events" in the *IBM Tealeaf Event Manager Manual*.

- You may use this method to trigger an alert that is based on the threshold, too. See "TEM Alerts Tab" in the *IBM Tealeaf Event Manager Manual*.

Session Close Events

In Release 7.2, you could create an event that forced the session to be closed. This type of event is useful for terminating a session at the conclusion of a sequence or transaction that you would like to store in individual sessions.

In Release 8.0, you may close a session by applying one of the Additional Actions in the More Options step of the event definition. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Session Clone and Close Events

In Release 7.2, you could create an event that forced the session to be closed and to clone the session-level information in a newly started session.

In Release 8.0, you can clone and close a session by applying one of the Additional Actions in the More Options step of the event definition. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Discard Session Events

In Release 7.2, you could create an event that, when triggered, would discard the event from the Canister.

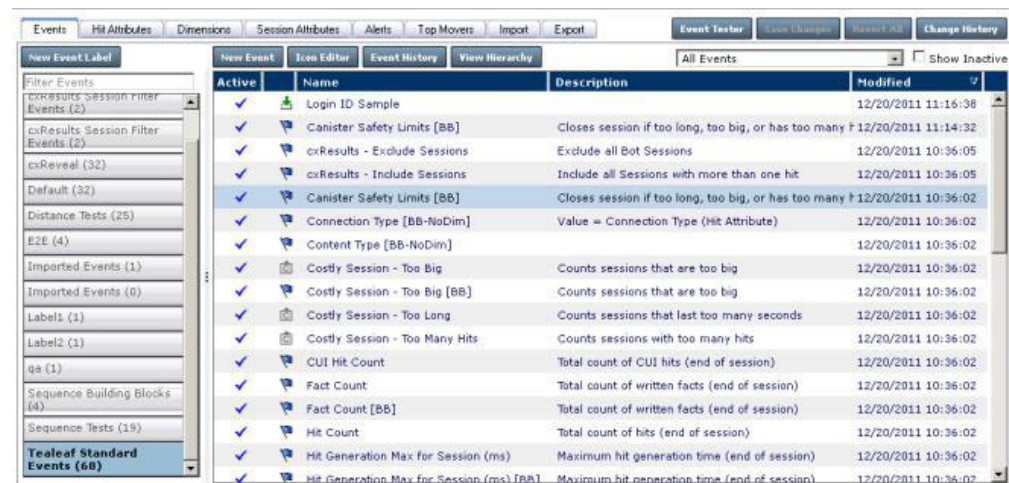
In Release 8.0, you may discard a session by applying one of the Additional Actions in the More Options step of the event definition. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Chapter 3. TEM Events tab

Through the **Events** tab in the Tealeaf Event Manager, you can define, edit, test, and organize events to monitor specific conditions in your visitors' sessions. Tealeaf events provide a flexible and powerful mechanism for tracking at the most granular level what is happening during a visitor's session.

- To see the list of available events, click the **Events** tab in the Tealeaf Event Manager.

Overview



On the left side of the screen, you can access the available set of events or filter the display to show only the events of interest to you. The selection and filters that you specify are applied to the list of events.

- See “Event Labels panel” on page 51.

The main panel displays the list of events for the currently configured view.

- See “Event List” on page 46.

Above the main pane, you can select any of the following commands.

- To create event, click **New Event**. See “Event Wizard” on page 54.
- To create or edit Portal icons for events, click **Icon Editor**. See “Event icon editor” on page 85.
- To edit an existing event, double-click it or right click to see more options. See “Editing an event” on page 77.
- To review the history of a selected event, click **Event History**. See “Event history” on page 83.
- To review the event hierarchy, click **View Hierarchy**. See “Event Hierarchy” on page 83.
- To save changes to all objects you drafted in the Tealeaf Event Manager, click **Save Changes**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
 - For more information about the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.

- To filter the display of events that are based on the trigger, select a filter from the drop-down. See “Event list filters” on page 48.
- To display inactive items, click the Show Inactive check box. See “Inactive events” on page 51.

Event List

In the Event list, you can review all of the available events for the currently selected event label.

- To step through the list of items, press the Up or Down arrows on your keyboard.
- To scroll through the list, press the Page Up or Page Down keys on your keyboard.
- To select an item, click the item or highlight using keyboard navigation.
- To edit an item, press ENTER or double-click it.
- To see detailed information about a listed event, move the mouse cursor over it. See “Event list tooltip” on page 47.
- On the left side of the screen, you can click an event label to display a different set of related events. See “Event Labels panel” on page 51.

Note: Inactive events that are part of the current event label may not be displayed. See “Inactive events” on page 51.

- To sort the list by a column, click the column header. To sort the list in the reverse order, click the column header again.
- To open the context menu for events, right-click an event in the event list. See “Event list context menu” on page 47.

Table 5. Event List column descriptions

Column	Description
Active	When a check mark is present, the event is active and available for use. See “Configuring Portal access to Events” on page 78.
Icon	The icon identifier for the event. This icon appears in the session list for returned results. See “Searching Session Data” in the <i>IBM Tealeaf cxImpact User Manual</i>. • To prevent an icon indicator for this event from appearing in session lists, select No icon for the event icon. • For more information about editing or creating these icons, see “Event icon editor” on page 85.
Name	The user-friendly name of the event.
Description	The description of the event, as provided in the event definition.
Modified	Timestamp of when the event was last modified.

List highlighting

The following highlighting identifies the state of individual events.

Table 6. State of individual events

Highlighting	Description
None	Event was not changed from version that is saved on the server.
Blue	The currently selected event(s).
Purple	Event was modified locally and was not yet been saved on the server.
Pink	Event was marked for deletion locally but was not yet removed from the server.
Red	Event was marked for deletion locally but was not yet removed from the server.
Yellow	Event was disabled Report Groups.

Event list tooltip

The following information is displayed in the tooltip for each event in the event list. Except as listed below, these fields are part of the event definition and can be viewed when you create or edit an event. See “Event Wizard” on page 54.

To see the information that is listed below, move the mouse cursor over a listed event.

Table 7. Event list tooltip

Field	Description
Internal Name	The internal name of the event that is assigned by Tealeaf cannot be changed. This name is referenced when editing events in Advanced mode. See Chapter 11, “Advanced Mode for Events,” on page 367.
Event ID	An internal numeric identifier for the event. This value cannot be modified and is referenced in various areas of the IBM Tealeaf CX system. Specifically, the event identifier is listed in the session attributes written to the STS file for each session. See “RealTea Viewer - Session Attributes” in the <i>IBM Tealeaf RealTea Viewer User Manual</i> .
Updated	Timestamp for the last time that the event definition was modified.

Event list context menu

When you right-click an event in the Event List, the following commands are available.

Note: In the Events tab, you can select multiple events and open a context menu of commands that can be applied to more than one event. Select an event and then press SHIFT or CTRL to select extra ones.

Table 8. Event list context menu commands

Command	Description
Edit Event...	Edit the selected event. See "Event Wizard" on page 54.
New Copy of Selected Event...	Create a copy of the selected event. Note: If the selected event was created or edited in Advanced mode for events, it cannot be edited in basic mode and cannot be copied. As a workaround, you can copy and paste the contents of the JavaScript editing window in Advanced mode. See Chapter 11, "Advanced Mode for Events," on page 367.
Add Label to Event(s)...	Assign a label to the selected event or events. See "Creating or editing an event label" on page 53.
Remove Selected Label	Remove the selected label from the selected event or events. - You may not remove the label if it is the only label for the event. An event must be assigned to at least one label. - You may not remove the pre-configured labels from events that are provided by Tealeaf.
Create Dimension Using Event...	Create a dimension that uses the selected event as its source of data. See Chapter 5, "TEM Dimensions Tab," on page 217.
Show Dependent Items	Displays a list of items that depend on this event evaluating to true. See Chapter 1, "Tealeaf Event Manager," on page 1.
Event History...	Show the history of changes to the event. See "Event history" on page 83.
Make Inactive/Make Active	Make the selected event inactive (or active if currently inactive). See "Inactive events" on page 51.
Delete	Delete an event. See "Deleting an Event" on page 77.
Purge Data...	Purge data for the selected event and all related facts. See "Purging event data" on page 88.
Export Item	Mark item for inclusion in the next export. Items can be exported through the Export tab in the Event Manager. See Chapter 9, "TEM Import-Export Tabs," on page 351.

Event list filters

You can filter the displayed list of events using one of the predefined filters available in the event list filter drop-down. These selections enable filtering the displayed list by trigger, configuration setting, or current condition of the event.

- The displayed list of events also factors the selected event label, so you can effectively apply two filters.



The following filters are available. These filters show only the events that meet the selected condition:

Table 9. Event list filters

Filter Name	Description
All Events	Events for the selected event label without filtration.
First Hit of Session	Events that are configured to fire on the first hit of the session. See "Firing trigger" on page 56.
Every Hit	Events that are configured to fire on every hit of the session. See "Firing trigger" on page 56.
Every Step	Events that are configured to fire on every step. See "Firing trigger" on page 56. Step-based eventing enables the evaluation of data that is captured from one of Tealeaf's client-side capture solutions. See "Step-Based Eventing" in the <i>IBM Tealeaf Event Manager Manual</i> .
After Every Step	Events that are configured to fire after every step. See "Firing trigger" on page 56. Step-based eventing enables the evaluation of data captured from one of Tealeaf's client-side capture solutions. See "Step-Based Eventing" in the <i>IBM Tealeaf Event Manager Manual</i> .
After Every Hit	Events configured to fire after every hit of the session. See "Firing trigger" on page 56.
Last Hit	Events configured to fire on the last occurrence of a hit in the session. See "Firing trigger" on page 56.
End of Session	Events configured to fire at the end of the session. See "Firing trigger" on page 56.
Only Searchable & Reportable	Events configured to be searchable and reportable. See "Event summary" on page 54.
Only not-Searchable & Reportable	Events configured to be not searchable and reportable. These events are considered building block events. See "Configuration scenario - building block events" on page 81.
Events with Disabled Report Groups	To display report groups that have been deactivated due to exceeding the hourly limit on number of recorded facts, select Events with Disabled Report Groups from the Events tab drop-down. For more information about reactivating facts, see "Report group context menu" on page 69.

Table 9. Event list filters (continued)

Filter Name	Description
Event Sent to Event Bus	Events sent to the Tealeaf Event Bus. If you have licensed the IBM Tealeaf cxReveal database, you can configure events to send session attributes through the Event Bus to the designated pipeline for capture into the database, which enables you to search for sessions based on session attributes. Use of this feature also requires the IBM Tealeaf cxConnect for Data Analysis license. See "Configuring Session Attribute Search" in the <i>IBM Tealeaf cxReveal Administration Manual</i>. Note: The Tealeaf Event Bus is a component of IBM Tealeaf cxConnect for Data Analysis, a separately licensable component of the IBM Tealeaf CX platform.
Events that Update Session Timeout	Events that override the system timeout settings with a new timeout value.
Close Session Events	Events configured to close the session in which they fired. See "Close session" on page 75.
Clone & Close Session Events	Events configured to clone the session and then close the session in which they fired. See "Clone and close session" on page 75.
Discard Session Events	Events configured to mark the session for discarding. See "Discard session" on page 75.
cxResults Session Inclusion Events	Events configured to be included in IBM Tealeaf cxResults. See "cxResults session filtering events" on page 93. Note: IBM Tealeaf cxResults is a separately licensable component of the IBM Tealeaf CX platform. IBM Tealeaf cxResults is no longer available as a newly licensed product as of Release 8.7. Customers that licensed IBM Tealeaf cxResults in Release 8.6 and earlier may continue to use and receive support for the product in Release 8.7 and later. For more information, please contact Tealeaf Customer Support .
cxResults Session Exclusion Events	Events configured to be excluded from IBM Tealeaf cxResults. See "cxResults session filtering events" on page 93. Note: IBM Tealeaf cxResults is a separately licensable component of the IBM Tealeaf CX platform. IBM Tealeaf cxResults is no longer available as a newly licensed product as of Release 8.7. Customers that licensed IBM Tealeaf cxResults in Release 8.6 and earlier may continue to use and receive support for the product in Release 8.7 and later. For more information, please contact Tealeaf Customer Support .

Table 9. Event list filters (continued)

Filter Name	Description
cxResults Included Events	Events configured to be included in IBM Tealeaf cxResults. See “Event and session filtering for cxResults” on page 74.
Only Minute Data ON Events	Events configured to capture data at the minute level. See “Minute-level event counts” on page 73.

Inactive events

You can disable the use of any event that you created by making it inactive. You cannot make Tealeaf Standard Events inactive.

Note: You cannot make an event inactive if other events are dependent on it. You must remove those dependencies first. However, you can multi-select the event and its dependents to make them inactive at the same time.

Note: When you make an event inactive, any associated Top Mover that is active is not made inactive. You must manually deactivate the associated Top Mover. See Chapter 8, “TEM Top Movers Tab,” on page 333.

- To make an event inactive, right-click it and select **Make Inactive**.
- To toggle the display of inactive events, click the Make Inactive checkbox in the toolbar.

When an event is inactive yet is configured for display in the Portal, you can still select it in search, search templates, scorecards, dashboards, and Tealeaf Report Builder, since those features may be configured to display data from a time period when the event was active and being triggered. However, this event cannot be configured to be an input for other items or to be triggered by other items while it is inactive.

Event Labels panel

In the left column of the Events tab, you can review the event labels that was created or provided by Tealeaf. In parentheses next to the event label, you can see the number of events that are currently stored in it.

- To review details on an event label, move the mouse over it. The tooltip is displayed. See “Event labels” on page 52.
- During installation, Tealeaf provides a set of events. To see the events that are provided by Tealeaf, click the **Tealeaf Standard Events** label.

Filtering events

To filter the list of events in the Event Labels Panel, enter a string in the Filter Events textbox and press RETURN. The filter is applied in real time to display only the matching events.

- Leading and trailing blank spaces are not removed from the filter.

Event labels

An event label is used to organize one or more events under a common heading. Event labels have the following properties:

Column

Description

Name	User-friendly name of the label

Internal Name

Internal identifier of the label, as used in EventEngineScript. This value cannot be edited.

- See Chapter 12, “EventEngineScripting reference,” on page 395.

Description

Description of the label

The following options are available in the context menu. Right-click a label and select one of the following:

Note: You may assign multiple items to a newly created label at the same time.

Option Description**New Event Label...**

Create an event label. See “Creating or editing an event label.”

Edit Event Label...

Right-click the label to edit and select this option. See “Creating or editing an event label.”

Delete Delete the label. See “Deleting an event label.”

Creating or editing an event label

To create or edit a new event label:

1. **Name** - Enter a user-friendly name. This name appears in the left navigation panel.
2. **Description** - Enter a meaningful description of the event label. This description appears when you point to the label in the left navigation panel.
 - An Internal Name is automatically assigned to the label when you save it.
3. To save a draft of your new event label, click **Save Draft**.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

- To cancel your new label, click **Cancel**.

Deleting an event label

You may delete event labels that contain no events.

To remove an event label:

1. Right-click the event label in the left-navigation panel of the Events tab.
2. Select **Delete**.

Note: Do not delete event labels that are included in the default system. For example, if you delete the Imported Events label, you may lose track of the events that were imported into your system.

3. If the label is empty and was not committed to the server, the label is removed.

Note: If the label is empty and was committed to the server, you must commit your changes to the server to complete the removal. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Event Wizard

The Event Wizard provides a step-by-step method of configuring the properties and relationships for individual events. You can edit existing events or create new events through the Event Wizard.

- To create an event, click **New Event** in the toolbar.
- To edit an existing event, right-click the event in the Event list and select **Edit Event....**

Events may be composed through the “Event Wizard.” To a new event in the Event Wizard, complete the following steps:

1. **“Event summary”** - Configure the event properties. See “Event summary.”

Note: You must provide a valid name for the event before continuing to the following steps.

2. **“Condition step” on page 60** - The event conditions are one or more tests that are evaluated at the appropriate time to determine if the event actions should be taken. Depending on the event configuration, any condition or all conditions must evaluate to true to trigger the event action. See “Condition step” on page 60.
 - Events are configured to be triggered at one of five trigger points during a session. See “Order of evaluation” on page 57.
3. **“Value step” on page 64** - When the event conditions are satisfied, the values that are configured in the Value step are recorded, depending on the configured Value Type. See “Value step” on page 64.
4. **“Report Groups step” on page 68** - If the event was configured to be reportable, then you can specify the data dimensions that are recorded along with the event values. See “Report Groups step” on page 68.
 - For more information about dimensions, see Chapter 5, “TEM Dimensions Tab,” on page 217.
5. **“More Options step” on page 70** - You can configure extra options and actions that are undertaken when the event fires. See “More Options step” on page 70.

Event summary

In the Event Summary, you specify the basic parameters of the event, including the trigger point for the event.

The screenshot shows the 'Add Event: Test Ev01' window. At the top, it says 'Created: 09/06/2011 11:17:06' and 'Updated: 09/06/2011 11:17:06'. The 'Name' field contains 'Test Ev01' and the 'Description' field contains 'Test event 01'. There are 'Save Draft' and 'Cancel' buttons. Below the description field are 'Icon' and 'Labels' (with a dropdown set to 'Default') buttons. The 'Evaluate' dropdown is set to 'Every Hit', 'Track' is 'First per Session', and 'Value Type' is 'Count Only'. At the bottom, there are tabs for 'Condition', 'Value', 'Report Groups', and 'More Options'. There are also checkboxes for 'Active' and 'Searchable & Reportable', and an 'Advanced Mode' button.

Property

Description

Name The display name of the event

Note: After the event is saved to the server for the first time, the defined display name is used to generate the internal identifier for the event and for recording occurrences of the event in session data. If the display name is changed:

- The internal names for event objects cannot be updated to reflect the change.
- The display names that are used in the event and event occurrence definitions are updated.

Description

A description for the event.

Icon The icon to display for the event.

- To select a different icon to display, click **Icon List**. Click the icon to use.
- For more information about editing or creating these icons, see Chapter 13, “Event administration,” on page 471.

Labels Select or create one or more labels to apply to the event. See “Event labels” on page 52.

Evaluate

The trigger when the event is evaluated. This setting can affect the conditions and values that are available for this event and any event that references this event. See “Firing trigger” on page 56.

Track Select the occurrence of this event's data to track and make available for other events in the session. See “Event occurrence tracking” on page 59.

Value Type

Select the type of value to track for the event. See “Event value types” on page 59.

Active Select the Active check box to enable the event. Inactive events do not fire.

- This setting should be configured with other event settings. See “Configuring Portal access to Events” on page 78.

Note: Before saving events to the server, you should test them. See Chapter 10, “Event Tester,” on page 355.

Searchable & Reportable

To make the event and event values searchable and reportable in the Portal, select the Searchable & Reportable check box.

Note: To make the event and event value data available for IBM Tealeaf cxResults and IBM Tealeaf cxConnect for Data Analysis, the Searchable & Reportable check box must be selected.

- Searchable and reportable properties are integrated into a single setting.
- To track movement of event values, Searchable & Reportable must be enabled. If an event is changed to disable this option, the associated Top Mover is also disabled. Re-enabling the option does not re-enable the Top Mover. See Chapter 8, “TEM Top Movers Tab,” on page 333.
- Clearing this option turns the event into the equivalent of a building block event in the event model from Release 7.2 and earlier.
- This setting should be configured with other event settings. See “Configuring Portal access to Events” on page 78.
- To save a draft of the event in development, click **Save Draft**.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

- To cancel event creation or editing, click **Cancel**. Unsaved changes are lost.

- In Advanced Mode, events may be edited in the EventEngineScript form in which they are stored. Click **Advanced Mode**.
 - For Tealeaf Standard Events, you can view the underlying JavaScript in a read-only version of Advanced Mode. Click **View Javascript**. See “Editing Tealeaf standard events” on page 89.
- See Chapter 11, “Advanced Mode for Events,” on page 367.

Firing trigger

The Evaluate value defines the point during the session when the event is evaluated.

Note: The selected trigger impacts the available conditions that can be used in the event. Changing the trigger may force the removal of one or more incompatible conditions.

Possible values:

Fires On Trigger

Description

First Hit of Session

The first hit of a new session is captured

Note: Some session-level data was not populated when the first hit of the session is captured. For example, Tealeaf system session attributes are populated, while user-defined session attributes are not and cannot be used as conditions for events within this trigger.

Note: Step attributes cannot be used on the First Hit of Session trigger. See “Step-Based Eventing” in the *IBM Tealeaf Event Manager Manual*.

Every Hit

Each time that a hit is captured

Every Step

For step-based events, you can configure an event to be evaluated on each step.

- Step-based eventing enables the evaluation of data that is captured from one of Tealeaf's client-side capture solutions. See “Step-Based Eventing” in the *IBM Tealeaf Event Manager Manual*.

After Every Step

For step-based events, you can configure an event to be evaluated after each step was evaluated.

- Step-based eventing enables the evaluation of data that is captured from one of Tealeaf's client-side capture solutions. See “Step-Based Eventing” in the *IBM Tealeaf Event Manager Manual*.

After Every Hit

After each hit was captured and evaluated

Last Hit

A hit is captured and determined to be the last one of the sessions

End of Session

After the session closed. Events that are assigned to this trigger are given the timestamp and hit number of the last page of the session, which is the end of the session by definition.

- End of session events are limited to First Occurrence for the Tracked Event Occurrence, as defined in the Event Summary. See “Event summary” on page 54.

Note: End of Session events cannot access hit attributes or other hit-based data. References to these objects are removed from the event definition.

The trigger is used with the event condition to determine when the event fires. For example, if the trigger is set to First Hit of Session, the event can be evaluated for firing only when the first hit of a new session is detected and not at any other time of the session. When the first hit is detected, the conditions of the event are evaluated; the event fires only if the conditions are met and the hit is the first one of the sessions. The event never fires on any other page.

Note: The trigger for the event must be specified with the availability of the conditions that trigger the event, since both must evaluate to true for the event to be fired.

- For more information about event conditions, see “Condition step” on page 60.
- For more information about event trigger dependencies for conditions, see “Event dependencies by trigger” on page 84.

Order of evaluation

The following triggers are listed in the order of evaluation for events.

Event triggers

- First Hit of Session - when the session begins
- Every Hit - when the hit is detected
 1. Every Step - when the step is detected
 2. After Every Step - when the step is detected
 - For more information about steps, see “Step-Based Eventing” in the *IBM Tealeaf Event Manager Manual*.
- After Every Hit - when the hit is unloaded
- Last Hit - the last hit of the session
- End of Session - when the session closes

For any event, the specified Conditions must be configured so that they can be evaluated within the selected trigger. For example, an event that is configured to fire on First Hit of Session must use conditions that can evaluate to true at the moment of evaluation of the first hit of the session. Otherwise, the event never fires. The trigger and the conditions of the event must both be true for the event to fire.

See “Event dependencies by trigger” on page 84.

End of Session trigger

Events that you want to be evaluated in the End of Session trigger have the following extra conditions that are applied to them:

- The last event of a session to be evaluated is always the Fact Count for Session event. It is evaluated after distance events and sequence events.

Note: Any fact that is configured to have a dependency on the Fact Count for Session event have its dependencies voided, and the results of the evaluation is always false.

- Hit attributes are not available in the End of Session trigger. Report groups that reference hit attributes are not available in this trigger. See Chapter 4, “TEM Hit Attributes tab,” on page 201.

Selecting Event Labels

In the **Event Labels** window, you can create new labels or select existing ones to apply to the selected event. These labels are for organization purposes.

- An event can have multiple labels.



- To filter the display, enter a string in the Filter textbox. The string is applied in real time. For more information about accepted values, see “Filtering events” on page 52.
- To select a label, click it. To apply multiple labels, click **Select...** again and make another selection.

- To create an event label, click <New Event Label>. See “Creating or editing an event label” on page 53.

Event occurrence tracking

In the Event Summary, you can configure the occurrences of the event in a session to track.

Note: The tracked occurrence affects the fact occurrence that returned when a fact is referenced.

Note: For any event that is triggered off step-based data, you should configure it to track occurrences at the individual hit level. Do not use session-level tracking, as those options only operate on the first or last hit of the session.

Type Description

First Per Session

Track the first detected value in the session. Do not track any subsequent values in the session.

Last Per Session

Track the last detected value in the session.

Note: When this option is selected, you cannot search for this event in active sessions, since the meaning of "last" is not known until the session is closed. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Every Occurrence

Track each occurrence in the session as a separate fact value and increment the count each occurrence.

Suppose a fact is set to track the last occurrence (Last Per Session), and this fact occurs on hits 1, 5 and 7. If a session-end event references this fact's value or dimension values, it retrieves the values that were recorded on hit 7 because that is the last occurrence of the event. Conversely, if the event is set to track the first occurrence (First Per Session), then the session end event receives the values that were recorded on hit 1.

Event value types

Select the Value type to record:

Type Description

Numeric

Record the event occurrence and a separate numeric value. Non-numeric values are recorded as 0.

- For Numeric or Text events, you may select the hit attribute, session attribute, or event value to record for the current event. Click **Select Item to Record...** and make your selection accordingly.

Text Record the event occurrence and a separate text value.

- For Numeric or Text events, you may select the hit attribute, session attribute, or event value to record for the current event. Click **Select Item to Record...** and make your selection accordingly.

Count Only

Count of instances that were recorded for reporting. For example, if the tracked value is the last one, the count is set to 1.

Distance

The distance value to record.

Note: This option is only available if you configured distance-based event conditions. See “Distance Events” on page 77.

For more information about these options, see “Value step” on page 64.

Condition step

In the Condition step, you specify one or more conditions under which the event fires. If the conditions are detected, the event evaluates as True, and the resulting value or values are stored and, if configured, made available for reporting.

- You select specific conditions and specify whether All or Any of the conditions must be met for the event to fire.
- The maximum length for selected values of text for step attributes, hit attributes, and events is 256 characters.

Each event must have at least one condition. There is no maximum limit to the number of conditions that an event can have.

Note: You can configure an event to be triggered on every hit by specifying a condition that occurs in each hit, such as the presence of TLTSID.

- To create complex rules using multiple logical operators (for example, if ((A and B) or C) = true, then fire event), you must configure multiple events or use Advanced Mode, which must be enabled. See Chapter 11, “Advanced Mode for Events,” on page 367.

The screenshot shows the 'Add Event: Test Ev01' configuration window. The 'Condition' tab is selected, displaying a list of hit attributes on the left and a configuration area on the right. The configuration area shows a dropdown menu set to 'All of the following conditions must be met'. Below this, there is a table for 'Hit Attribute' with columns for 'Client IP Address', 'First Value', 'Equals', and a value field containing '123.456.789.122'. An 'Add Condition' button is located at the bottom of the configuration area.

1. From the drop-down in the right panel, select the evaluator among the following that must be met in order for the condition to evaluate as True:

Evaluator

Description

Any	Any of the listed conditions must be true.
All	All of the listed conditions must be true.

Events occur in the following sequence

The listed events must occur in the order in which they are listed. See “Sequence Events” on page 77.

Distance between events is between the following number of seconds

The distance between the listed events is measured to be within the specified range of seconds. See “Distance Events” on page 77.

Distance between events is between the following number of hits

The distance between the listed events is measured to be within the specified range of hits. See “Distance Events” on page 77.

2. From the left panel, you may add Events, Hit Attributes, or Session Attributes as conditions:
 - a. To add a condition, click the name for object type to use in the condition to expand the section. Then, select the object to be used for the condition. All available objects are displayed.

Note: End of Session events cannot reference hit attributes. Similarly, First Hit of Session events cannot reference user-defined session attributes, which were not yet defined.

Condition Type	Description

Events

Events	Apply a configured event as the basis for the condition. See “Event conditions” on page 62.

Hit Attributes

Hit Attributes	Use a pre-defined or user-defined hit attribute to create the condition. See “Hit attribute conditions” on page 63.

Session Attributes

Session Attributes	Use one of the pre-defined or user-defined session attributes to create the condition. See “Session attribute conditions” on page 64.

- b. Select or populate any displayed fields for the condition.
 - To perform a case-sensitive matching for the condition, click the **Case Sensitive** (☐ **A≠a**) check box.

Note: Text values for conditions can be a maximum of 255 characters in length.

3. If you created a condition that compares the selected event or attribute to another value, you may configure a specified value or the value of another event, hit attribute, or session attribute.
 - a. To specify a fixed value for comparison, enter the value in the textbox.
 - b. To compare the value to the value of another data object, click **Set Item**. In the dialog, select the object whose value you want to use in the comparison.
 - To remove the comparison to a data object, click **Set Item** again. In the dialog, select the value under Fixed User Defined Value. When the dialog closes, enter the fixed value in the textbox.
 - Set Item cannot be used with some events, such as distance and sequence events.
4. Add and configure extra conditions as needed.
5. Click the next step. See “Value step” on page 64.

Event conditions

Event conditions evaluate the existence, count, timestamp, hit number, or value of the selected event and enable comparative evaluations to constants.

Note: By creating an event that references another event, you can create compound events and specify parent-child relationships.

- If your compound event uses a step-based event as one of its conditions, it must be configured to be evaluated on the After Every Hit trigger. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Event match conditions

- Exists on Page - event looks for the existence of the event in the current page
- Exists in Session - event looks for the existence of the event in the session
- Current Count in Session - event counts the number of instances of the event in the session
- Timestamp - event evaluates the timestamp for when the selected event fired
- Hit Number - event evaluates the hit number in the session where the event fired
- Value - event evaluates the value that is detected when the event fired
- You can configure conditions to be triggered on the firing of the event and a specific dimension condition. See "Event + dimension combinations."

To perform a case-sensitive match for the event, click the Case Sensitive check box.

Event + dimension combinations

For Event conditions, you can specify an event + dimension combination to be used as one of the conditions triggering the event. For example, you can configure a condition for Event B to be the firing of Event A and the recording of Value 1 in Dimension A.

The screenshot shows a configuration window titled "Event" with a close button (X). At the top, a dropdown menu is set to "All of the following conditions must be met". Below this, there is a table-like structure with columns for "Event", "Condition", "Operator", and "Value". The first row shows "Test Ev01" as the event, "Test Ev01 URL (Normalized) Value" as the condition, "Includes" as the operator, and "reviewOrder" as the value. To the left of the table is an "Add Condition" button. A dropdown menu is open from the "Condition" column, listing various options: "Exists on Hit", "Exists in Session", "Current Count in Session", "Timestamp", "Hit Number", "TLT URL", "Test Ev01 URL (Normalized) Value" (which is highlighted), "Traffic Type", "Test Ev01 Traffic Type Value", "URL/Host/App/Server", "Test Ev01 Host Value", "Test Ev01 Application Value", and "Test Ev01 Server Value". To the right of the table are buttons for "Set Item" and a checkbox labeled "A#a".

In the above example, the event is configured to be triggered when the event Test Ev01 fires and when the dimension Test Ev01 URL (Normalized) is set to include the value reviewOrder.

- Report groups that are associated with the event in the condition are listed in bold-italics. Report groups cannot be used in event conditions.

When you select the dimension to include, you must specify the operator to test against the dimension value:

- Equals

- Not equal
- Includes
- Excludes
- Is empty
- Is not empty

Hit attribute conditions

Hit attribute conditions examine the specified hit for the existence of the hit attribute, a defined number of instances of it, or the first or last value of the hit attribute data.

- Hit attribute conditions evaluate the hit where the event fired for any matching data. If the hit attribute for which you are searching exists on a previous page, the hit attribute value is blank.
- Hit attributes that do not contain an ending tag return the starting tag as the hit attribute.
- See Chapter 4, "TEM Hit Attributes tab," on page 201.

Note: Hit attributes are available only within the scope of a hit. You cannot use hit attributes as conditions for events that are configured to fire on session-level triggers; instead, you should store hit-level data as session attributes, which can be evaluated at the end of the session.

- Step attributes cannot be used on the First Hit of Session trigger.
- The values of step attributes are always treated as text patterns. As a result, operators such as equals perform text-based comparisons, even if the captured value is a numeric or Boolean value.
- See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Note: If you create hit attributes from the request buffer, note that the [HitType] section and [TLFID_*] sections (where * is the identifier for the fact) are generated by the event engine and cannot be detected in live sessions. As a result, any events using these hit attributes do not fire in the Windows pipeline and are therefore not available for searching. They do fire, however, when they are evaluated in the Event Tester on sessions that were already passed through the Canister.

Hit attribute match conditions

- First Value - event looks for the first value of the hit attribute in the current page or session
- Last Value - event looks for the last value of the hit attribute in the current page or session
- Match Count - event looks for the number of instances of the hit attribute in the current page or session
- Hit Attribute Found - event looks for the existence of the hit attribute in the current page or session

Note: For step attribute conditions, Match Count and Last Value are not applicable, as there is only one unique match and its value on the hit.

To perform a case-sensitive match for the hit attribute, click the Case Sensitive check box.

Session attribute conditions

The configured event can compare the detected values of the session attributes to constants you specify.

- See Chapter 6, “TEM Session Attributes tab,” on page 287.

Value step

In the Value step, you configure the value or values to be recorded. First, you must specify the type of value to record. You may record just the count or a specific value in text or numeric format.

- Depending on the type of event, you can select different things to record as the value. The recorded value depends on the selected value type, basis of the value, and the specific value to record.

Note: The trigger for the event affects the available values that you can record for an event. For example, if the event is configured to be triggered at the end of the session, you cannot select hit attributes as values to record.

The screenshot shows the 'Add Event: Test Ev01' configuration window. At the top, it says 'Created: 09/06/2011 11:17:06 Updated: 09/06/2011 11:17:06'. Below this are fields for 'Name' (Test Ev01) and 'Description' (Test event 01). There are buttons for 'Save Draft' and 'Cancel'. Below these are 'Icon' and 'Labels' (x Default) buttons. The 'Evaluate' dropdown is set to 'Every Hit', 'Track' is 'First per Session', and 'Value Type' is 'Count Only'. There are tabs for 'Condition', 'Value', 'Report Groups', and 'More Options'. The 'Value' tab is selected, showing 'Selected Value Type: Count' and a list of values to record: 'Event occurrence'. There are also checkboxes for 'Active' and 'Searchable & Reportable', and an 'Advanced Hide' button.

1. In the Event Summary, review the Value Type that you are recording. See “Event value types” on page 59.
2. The occurrence of the event is automatically recorded.
3. Depending on the value type, extra event values may be recorded. See “Recording event values.”
 - For more information about how event values are recorded, see “Examples of recorded values” on page 65.
4. Click the next step. See “Report Groups step” on page 68.

Recording event values

If an event is referenced by another event as a condition or a value, the value of the first event that is used by the second event is the last recorded value.

The last recorded value is not equivalent to the value when the event last fired. For example, if Event A is configured to record the value on its first instance, then the value when the event first fires is its last recorded value. During the remainder of the session, the event may fire multiple times. The value when the event fires the last time is not the last recorded value.

Note: If you configure the referenced event to record the value each time that it fires, to reference values other than the first or last recorded value requires the use of Advanced Mode. See Chapter 11, “Advanced Mode for Events,” on page 367.

Examples of recorded values

Event count

Suppose you choose to select just the event count. In this case, you cannot select it to record a specific hit attribute or value other than recording that the event did fire.

Note: When the value type is set to event count, selecting a value is not permitted.

If you choose to record a value that is text or numeric, you can record a hit attribute value, session or hit attribute, or even the value of another event.

The recorded value depends on the combination of the following elements:

- The instance of the Value on a page
- The occurrence of the event in a session
- The other properties of that event

For example, suppose you are looking for a value in a hit attribute that can be on a single page multiple times. You can specify whether you want to record the first match, last match, the number of matches, or if there was a match at all.

Dimensions that are populated by events that record the Count Only of the event record the current count of the event in the session at the time of recording.

- See Chapter 5, “TEM Dimensions Tab,” on page 217.

Event occurrence in session

If an event can fire multiple times in a single session, you can choose the occurrence of the event in the session to record.

Another event

If you want to record the value of another event as the value of this event, the combinations of Value Type, Basis Type, Value of Basis Type, and other options are outlined in the table below.

- N/A means that the option is not available for that set of conditions. For example, if you select value type of count, no other options are available.
- If the basis type is another event, there are more options depending on what value type of the basis event.

Table 10. Examples of recorded values

Value Type	Basis Type	Basis Event Value Type	Basis Event Fires On	Valid Drop down Options
Count	n/a	n\	a	n/a

Table 10. Examples of recorded values (continued)

Value Type	Basis Type	Basis Event Value Type	Basis Event Fires On	Valid Drop down Options
Text	Pattern	n\ a	n\ a	• First value in page/hit • Last value in page/hit • Match Count • Pattern found
Event	Count	First Hit/Last Page/End of Session	First/Last/ After All Hits	The selected event fires a max of once per session
			Start of Page/End of Page	n\ a
		Numeric/Text	First Hit	The selected event fires once on the first hit of a session
			Start of Page	• First/Last Occurrence per Session
			End of Page	• First/Last Occurrence per Session
			Last Page	"The selected event fires once on the LAST hit of a session"
			Every Page/End of Session	"The selected event fires once AFTER all hits at the end of a session"
	Session Attributes	n\ a	n\ a	n\ a
	Hit Attributes	n\ a	n\ a	n\ a
Numeric	Hit attribute	n\ a	n\ a	• First value in hit • Last value in hit • Match Count • Pattern found
	Event	Count/Text		• Count in Session • Timestamp • Hit Number

Table 10. Examples of recorded values (continued)

Value Type	Basis Type	Basis Event Value Type	Basis Event Fires On	Valid Drop down Options
		Numeric		- Count in Session - Timestamp - Hit Number - Last Value of Selected Event in Session
	Session Attributes	n\	n\	n\
	Hit Attributes	n\	n\	n\

Fact retrieval matrix

When an event references the recorded value of another event, it is referencing a specifically recorded fact, which may be different from the recorded value for the event.

For example, suppose Event A is configured to be recorded only on its first occurrence, even though the event value (its fact value) can change over the course of a session. Suppose Event B's recorded value is the value of Event A. If the values of Event A are 100, 200, and 300 over the course of the session, the recorded values of Event A and Event B are both 100.

In the matrix below, you can review the fact values that are retrieved based on the values that are recorded.

Table 11. Fact retrieval matrix

Recorded Values	First	Last	All
Retrieved Values			
First	First	Last	First
Last	First	Last	Last
Nth	First	Last	Nth

Legend

- Recorded Values - Facts can be defined to track only certain occurrences of the event in the session.
 - First - The first occurrence of the fact is recorded for reporting and searching. Subsequent facts in the session are dropped.
 - Last - The last occurrence of the fact is recorded for reporting and searching. All previous fact occurrences are replaced with the last occurrence.
 - All - Every occurrence of the fact is retained for reporting and searching.
- Retrieved Values - During evaluation of an event's properties, facts can be retrieved. The first or last occurrence of the fact to retrieve can be specified.
 - First - Retrieves the first occurrence.
 - Last - Retrieves the last occurrence.
 - Nth - The nth occurrence while iterating through the list.

Report Groups step

In the Report Groups step, you can configure whether the dimensions of selected report groups are recorded with the event and its captured values. Report groups enable multi-dimensional analysis of the attributes of an event.

A report group is a collection of dimensions, each of which may contain a different set of context data that is detected when the event is triggered. These attributes are recorded along with the value of the event. For example, the condition causing an event to fire could be that a user went to the checkout page. The value of the event could be the amount of the shopping cart. The attributes could be browser type, OS type, credit card type, and others.

- These individual attributes are called *dimensions*.
- Groups of dimensions are called *report groups*.
- See Chapter 5, “TEM Dimensions Tab,” on page 217.

The screenshot shows the 'Add Event: Test Ev01' configuration window. The 'Report Groups' tab is active, displaying a list of report groups on the left and a detailed view of the selected 'URL/Host/App/Server' group on the right. The selected group lists dimensions: URL (Normalized), Host, Application, and Server. The interface includes tabs for Condition, Value, Report Groups, and More Options, along with buttons for Save Draft, Cancel, and Advanced Mode.

1. To associate the specified event with a report group, click **Add Report Group**.
2. Click the report group to add.

Note: Do not add a dimension that is populated by an event to the same event. For example, if Dimension X is populated by Event Y, do not make Dimension X a dimension of Event Y. All values and dimensions are written at the same time. In the above scenario, the value of Event Y is unpredictable.

Note: You may not add a IBM Tealeaf cxOverstat report group to a non-IBM Tealeaf cxOverstat event. See "Eventing for cxOverstat" in the *IBM Tealeaf Event Manager Manual*.

- To create a report group, click **<New Report Group**. See Chapter 5, “TEM Dimensions Tab,” on page 217.
3. The report group is displayed in the Report Groups step.
 - To remove the report group, click the X icon in the upper-right corner of the report group.
 - Report groups that were disabled for this event are highlighted in red. See “Inactive report groups” on page 69.
 - You may associate multiple report groups with the event.
 4. When you add all wanted report groups, click the next step. See “More Options step” on page 70.

Report group context menu

After a report group was added to the Report Groups step, you can access the following commands through the drop-down menu in the report group title bar.

Command

Description

Reactivate

After a report group was made inactive, you can choose to reactivate the report group.

Note: A report group may be made inactive if the number of facts that are recorded for the report group exceeds a predefined limit. Before you reactivate a report group, you should attempt to identify why so many facts were written and, if possible, to correct the issue. See “Inactive report groups.”

Purge Data

Remove all data that was stored for the fact.

Note: Purging fact data cannot be recovered. Proceed with caution.

Inactive report groups

In the Report Groups step, the panel of a report group may be highlighted in gray. These report groups were disabled due to a high number of instances of the dimension (called *facts*) recorded for this report group over a one-hour interval.

- Tealeaf enforces a global limit of 500,000 on the number of facts that can be recorded for a specific event over a one-hour interval. If this limit is exceeded, the fact is disabled, as well as any scorecards or dashboards that use the fact.
- This limit is imposed to prevent runaway fact creation and needless growth of the database.

A disabled fact must be re-enabled through the event definition.

Note: Before a fact is re-enabled, you should resolve why the fact was recorded so many times and correct the issue.

- To re-enable a disabled fact, click the arrow to display the report group menu, then select **Reactivate**. The fact is now active and is recorded when it is detected in the capture stream.

Example event reporting

In the following example, suppose you have a Purchase Event that records the total value of the products that were purchased. In this case, price is the event value.

You could then specify a report group to record the following dimensions:

- Membership Type
- Credit Card
- Product
- Price (event value)

Suppose the recorded purchases for a day look like the following:

Table 12. Example event reporting

Membership Type	Credit Card	Product	Price
Bronze	Amex	Plane	72
Bronze	Disc	Plane	72
Gold	Amex	Car	24
Gold	Visa	Boat	45
Gold	Visa	Car	32
Silver	Amex	Boat	43

Depending on how you configured your report group, you may be able to perform additional segment analysis by examining the purchases by Gold members who used Visa cards. Since you specified that the dimensions Membership Type, Credit Card, and Product are to be recorded in the same report group with the value price, you can segment the data for further analysis. For example, you can examine just the purchases where Membership Type = Gold.

Table 13. Example event reporting

Membership Type	Price	Credit Card	Price	Product	Price
Bronze	72	Amex	72	Plane	72
Bronze	72	Disc	72	Plane	72
Gold	24	Amex	24	car	24
Gold	45	Visa	45	boat	45
Gold	32	Visa	32	car	32
Silver	43	Amex	43	boat	43

However, if you choose to record those dimensions but did not include them in the same report group, you could not see the purchases of Gold members who used Visa cards.

- You could see the purchases of Gold members, or the purchases by Visa cards, but not both together.
- Data for each report group is stored in individual tables. Since the data for two unconnected report groups is stored in different tables, there is no common key to specify how the data in one table is associated with data in the other table.
- For more information about this report segmentation, see "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

More Options step

In the More Options step, you can configure the availability of the event occurrence and values in the Portal, replay, and to third-party consumers of the data through the Event Bus.

Note: The Tealeaf Event Bus is a component of cxConnect for Data Analysis, a separately licensable component of the Tealeaf CX platform. please contact your IBM Tealeaf representative.

Dashboards Active Search Analyze Configure Tealeaf Help (UTC-07) ADMIN: Logout
 tealeaf
 Add Event: Test Ev01 Created: 03/30/2012 15:38:41 Updated: 03/30/2012 15:38:41
 Name: Test Ev01
 Description: Test event 01
 Evaluate: Every Hit Track: First per Session Value Type: Count Only
 Condition Value Report Groups More Options Active Searchable & Reportable Advanced Mode
 Display in Portal: ☒
 Display in Session List: ☒
 Flag Every Occurrence in Replay: ☒
 Send to Event Bus: ☐
 Minute Data On: ☐
 Update Session Attribute: Select...
 Update Session Timeout: ☒ 20 minutes
 Additional Actions: None
 Include Event in cxResults: ☒
 cxResults Session Filter: No Action

Property Description

Display in Portal

Select this check box to make the event available for reporting purposes and display in the Portal.

- If this setting is disabled, you can still use this event as input for a session attribute. See Chapter 6, "TEM Session Attributes tab," on page 287.
- If Searchable & Reportable is disabled for this event, it cannot be displayed in the Portal. Events that are configured in this manner are building block events. See "Configuration scenario - building block events" on page 81.
- This setting should be configured in conjunction with other event settings. See "Configuring Portal access to Events" on page 78.
- Most Tealeaf standard events cannot be displayed in the Portal or in session lists. For more information about session lists, see "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about reporting on events, see "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Display in Session List

When enabled, the icon for the event is displayed among the list of event icons in the Portal session list.

- If this option is disabled, you can still report on the event.
- This setting should be configured with other event settings. See "Configuring Portal access to Events" on page 78.
- Most Tealeaf standard events cannot be displayed in the Portal or in session lists.
- For more information about session lists, see "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Flag Every Occurrence in Replay

To flag every event occurrence in replay, select the Flag Every Occurrence in Replay check box.

- If cleared, only the Tracked Event Occurrences of the event in the session is recorded for display in the navigable page list during replay.

Send to Event Bus

To send the event and event values to the Tealeaf Event Bus for use by third-party systems, select the Send to Event Bus check box.

- The Tealeaf Event Bus is a special Windows pipeline for delivering event data to third-party systems configured to receive it.

Note: Tealeaf Event Bus is a component of cxConnect for Data Analysis, a separately licensable component of the Tealeaf CX platform. please contact your IBM Tealeaf representative.

- This option is available if IBM Tealeaf cxConnect for Data Analysis is licensed.
- If you licensed the IBM Tealeaf cxReveal database, you can configure events to send session attributes through the Event Bus to the designated pipeline for capture into the database, which enables you to search for sessions that are based on session attributes. Use of this feature also requires the IBM Tealeaf cxConnect for Data Analysis license. See "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.
- See "Tealeaf Event Bus" in the *IBM Tealeaf cxConnect for Data Analysis Administration Manual*.

Minute Data On

When enabled, this option forces the Canisters to capture event counts on a minute-to-minute basis. See "Minute-level event counts" on page 73.

Update Session Attribute...

Optionally, you can select or define a session attribute that is populated with values from this event. Click **Select...** Choose an existing session attribute or create a new one. You cannot update system session attributes via event.

Note: In the Events tab, you may create a session attribute that is not populated by an event. However, it does not appear in the Conditions list or the Session Attribute selector until you assign an event to it. You must edit it first in the Session Attributes tab. See Chapter 6, "TEM Session Attributes tab," on page 287.

Note: You can select only session attributes that were populated from this list.

Update Session Timeout

To update the session timeout setting for the session when this event is triggered, click the check box. Enter a new session timeout value in minutes. See "Updating session timeout" on page 73.

Additional Actions

If wanted, you can select an extra action to perform when the event is triggered. See "Special extra actions" on page 75.

Include Event in cxResults

If you licensed IBM Tealeaf cxResults, you can configure whether the event is included in IBM Tealeaf cxResults.

Note: cxResults is a component of CX platform, a separately licensable component of the Tealeaf CX platform. please contact your IBM Tealeaf representative.

Note: If the event is not configured to be searchable and reportable, it cannot be included in IBM Tealeaf cxResults.

See “Event and session filtering for cxResults” on page 74.

cxResults Session Filter

If you licensed IBM Tealeaf cxResults, this option can be used to define whether to include the session where the event fired.

Note: cxResults is a component of CX platform, a separately licensable component of the Tealeaf CX platform. please contact your IBM Tealeaf representative.

See “Event and session filtering for cxResults” on page 74.

Updating session timeout

You may optionally configure the event to change the session timeout setting for this specific session. When a new value is entered for the session timeout, the Canister waits until the specified number of minutes elapsed without extra activity before timing out the session and closing it. Other actions, such as the visitor terminating the session through the web application, may also force the session to close.

- To change the session timeout, click the Update Session Timeout check box. Enter a value in minutes to set the new session timeout for the session. When changes are saved, all subsequent sessions in which the event is triggered are automatically updated with the new session timeout.
- By default, the Tealeaf Canister automatically closes sessions that were not augmented for a specified number of seconds. The changes that you make for the specific event override the configured session timeout value for the Canister. For more information about this setting, see "Configuring the CX Canister" in the *IBM Tealeaf CX Configuration Manual*.

Minute-level event counts

When Minute Data On is enabled for an event, the Alert Service is used to record minute-level event counts for reporting purposes. You can use this event data to track event activities up to the most recent minute, which is useful for highly sensitive or important metrics.

- The Alert Service is a component that is configured to capture event information every minute.
- Data is retained by the Alert Service for the preceding 24-hour rolling period.

Note: Minute-level tabulation of event counts requires that the Alert Service is enabled and at least one alert is configured and active.

- If the Alert Service is stopped or restarted, the available minute data from the previous 24 hours is lost. When the Alert Service is restarted, it immediately begins acquiring minute-level event counts.
- For more information about enabling the alert service, see "Configuring the Alert Service" in the *IBM Tealeaf CX Configuration Manual*.
- For more information about configuring alerts, see Chapter 7, “TEM Alerts Tab,” on page 297.

Events with minute-level data can be used as sources for Live Event dashboard components. See "Configuring Dashboards" in the *IBM Tealeaf cxView User Manual*.

- This option is functional only if the event is configured to be Searchable & Reportable. See “Event summary” on page 54.

Note: This option should be enabled only for events for which you want to create minute-level dashboard components.

Event and session filtering for cxResults

In the More Options step, you can configure whether to include the event in IBM Tealeaf cxResults, whether the session where the event fire is to be included.

By default, all events and sessions are included in the IBM Tealeaf cxResults data set. However, for purposes of tracking visitor behavior, you may decide that you want to remove, for example, application error message events. Through the More Options step, you can choose to remove these events.

Additionally, you can design events to identify in the session data whether the session is suitable for IBM Tealeaf cxResults. For example, you may create an event that indicates when a visitor has not been properly identified. If the event fires, you may not be able to identify the visitor, which may mean that the session is of little value in IBM Tealeaf cxResults.

Setting Description

Include Event in cxResults

When this check box is selected, any instances in which the event fired in a session is included in the session data that is passed to IBM Tealeaf cxResults.

Note: IBM Tealeaf cxResults is no longer available as a newly licensed product as of Release 8.7. Customers that licensed IBM Tealeaf cxResults in Release 8.6 and earlier may continue to use and receive support for the product in Release 8.7 and later. For more information, contact Tealeaf Customer Support .

Note: To make the event and event value data available for IBM Tealeaf cxResults, the Searchable & Reportable check box must be selected.

- Dimensional data is not passed to IBM Tealeaf cxResults at all.

cxResults Session Filter

From the drop-down, you can select how to process the session for IBM Tealeaf cxResults when the event fires:

- No Action - (default) No action is taken.
- Include Session - Session is included in IBM Tealeaf cxResults.
 - Through the default IBM Tealeaf cxResults session filtering events, Tealeaf is configured to include all sessions with a hit count greater than 1. See "cxResults Session and Event Filtering" in the *IBM Tealeaf cxResults Administration Manual*.
- Exclude Session - Session is excluded from IBM Tealeaf cxResults.

Note: If any event excludes the session, the session is excluded, regardless of other event evaluations.

If a session is excluded from IBM Tealeaf cxResults, all event occurrences that are recorded in the session are excluded.

See "cxResults Session and Event Filtering" in the *IBM Tealeaf cxResults Administration Manual*.

Special extra actions

Optionally, you may configure one of the following extra actions to be performed when the event you are defining is triggered.

Extra Action

Description

None No additional action is performed. The default setting.

Close Session

Session is forced to close. Session timeout settings are ignored. See “Close session.”

Clone and Close Session

Clone the session-related data and close the session. See “Clone and close session.”

Discard Session

If needed, an event can cause the discarding of the session. See “Discard session.”

Close session

Sessions are often closed based on a specific URL or a string in the response, such as Order Confirmation. When the event fires, the session fragment is closed, and the other session events are evaluated, after which the session is marked for long-term storage or removal.

A session close event is designed to artificially terminate a visitor's session fragment. These events are useful in two scenarios:

- If the visitors to your website perform the same business transaction multiple times in a single user session, you may desire to have the business transaction tabulated one time only as a session event.
- If your web application is supporting a group of customer service representatives who are constantly repeating the same business transaction on behalf of a phone customer, then you may desire to have the business transaction that is counted once per RTV user session.

When these instances occur, the session should be forced to close, and a new session fragment should be initiated. Any additional hits that are associated with the session ID for this session are added to the new session and assigned the new internal Tealeaf session index identifier.

- No session data from the original session is preserved.

Clone and close session

When configuring a session to close, you can optionally choose to clone the session attributes that were accumulated in the original session. If extra hits arrive carrying the same session ID as the original session, then a new session is created, and the session attributes values from the original session are added to it, as well as the new hits. The new session is assigned a new internal Tealeaf session index identifier.

Discard session

When a session is marked for discard by an event, the session is deleted when the session closes. Since the session is not archived for storage, it is not indexed for search and is not retrievable.

- Pages in discarded sessions are not counted. Pages are counted as a session-end event, and all event processing in the session stops when the discard action is executed.
- Hits arriving subsequent to the discard session event action are not evaluated for events.

Note: Any events that were triggered before the session is discarded are retained in the reporting database. Tealeaf recommends testing sessions for discarding in the first hit of the session.

- Session discard events can be configured to be reportable, but you cannot search for or drill-down into these events.
- If the discard session event is configured to fire on the last hit, the session is counted as a session for reporting purposes by default, even though the pages are not counted. To prevent the session being counted, you must either:
 1. Move the discard session event to fire on an earlier trigger
 2. Add the Session Count event as a condition for the firing of the event in which the session is discarded.

If you licensed IBM Tealeaf cxReveal, setting a session to be discarded automatically forces the event to be sent to the Event Bus. IBM Tealeaf cxReveal database search requires updating when sessions were discarded, so this configuration is required.

Note: In Advanced Mode, the `TLDiscardSession()` function call discards the session. For more information, Chapter 11, “Advanced Mode for Events,” on page 367.

- However, you must manually configure to send the session to the Event Bus through the More Options step. See “More Options step” on page 70.

Next steps

After you completed your event definition, you should complete the following steps to finish specifying your event.

1. If the event is intended to be active immediately, verify that you selected the Active check box in the event definition.
2. Save the event in draft form. Click **Save Draft**.
3. Test the event before you commit the changes. See Chapter 10, “Event Tester,” on page 355.
 - Create a test session in the live web application, which triggers the event. Be sure to close the session by logging out or exiting the web application.
4. After testing, save the event to the database for use by the available Canisters. See Chapter 1, “Tealeaf Event Manager,” on page 1.
5. For events that are configured for display in the Portal:
 - You can generate a report using the event and its specified report groups to verify that data is being processed all the way through the system.

Note: Data may not appear immediately in the generated report.

Note: If you enabled automatic creation of Top Movers, a Top Mover is immediately created and enabled to track changes in values for your new event after your changes are committed to the server. Depending on the type of event, you may want to disable this Top Mover.

- The new Top Mover is created after the new event is committed to the server. No record of a changed or new Top Mover is displayed in the Top Movers tab.
- See Chapter 8, “TEM Top Movers Tab,” on page 333.
- For more information about auto-creation of Top Movers, see “Data management for Top Movers” on page 343.

Editing an event

See “Event Wizard” on page 54.

Deleting an Event

Before the delete is permitted, you must remove the dependencies between the event and other event-related objects.

Note: Deleting an object removes it from the server. A deleted object cannot be restored. To remove the object from use, make it inactive. See “Inactive events” on page 51.

Note: Deleting an event also deletes any data that is associated with the event from the reporting database. This deletion occurs on the next scheduled run of the Data Collector.

Note: Deleting an event does not remove the recorded instances of the event and associated dimension values from the session data that is retained in each Canister.

Note: When an event is deleted, any associated Top Mover is also deleted automatically. See Chapter 8, “TEM Top Movers Tab,” on page 333.

- You cannot delete Tealeaf system objects.

To delete an event, right-click the event and select **Delete**. The event is deleted.

Special Event Types

The following types of special events can be configured in Basic Mode through the Event Wizard.

- Distance Events
- Sequence Events
- You may also configure special actions for events. See “Special extra actions” on page 75.

Distance Events

See “Distance events and sequence events” on page 98.

Sequence Events

See “Distance events and sequence events” on page 98.

Configuring Portal access to Events

Depending on the configuration options you select in the event definition, the event and its data may be displayed in various areas of the Portal. In this section, you can review the controls available for making events accessible through the Portal, including search and reporting functions, followed by several configuration scenarios.

The following settings determine event availability in the Portal:

- **Active**
- **Searchable & Reportable** - when enabled, the following settings become available:
 1. **Display in Portal**
 2. **Display in Session List**
 - See “Configuring Events to be searchable and reportable in the Portal” on page 79.

The two primary configuration options are the following:

Setting Description

Active Is the event evaluated in the Tealeaf Canister?

- If an event is made inactive, the event is no longer evaluated in the Canister. As a result, the event does not exist in any sessions for as long as the event is inactive.

Searchable & Reportable

Is the event data recorded in the Tealeaf databases to make it available for searching and reporting?

- Whether the events are available for searching and reporting is configured by two extra settings. See “Configuring Events to be searchable and reportable in the Portal” on page 79 below.

These two settings can be configured independently of each other:

Table 14. Configuring Portal Access to Events

Active	Searchable & Reportable	Net effect
true	true	The event is configured to be evaluated in the Canister, and the results that are stored in the database for Portal access. For events that you want Tealeaf users to have full access, configure both of these settings to be true. • See “Configuring Events to be searchable and reportable in the Portal” on page 79.
true	false	The event is evaluated in the Canister, but the results are not stored in the database. These events, called building block events, can be used in the creation and evaluation of other event objects, such as session attributes. • See “Configuration scenario - building block events” on page 81.

Table 14. Configuring Portal Access to Events (continued)

Active	Searchable & Reportable	Net effect
false	true	This configuration is used for events that are no longer to be actively evaluated in the Canister but should be available for search and reporting reasons in the Portal because they contain historical data that may still be useful to Portal users. • See “Configuring Events to be searchable and reportable in the Portal.”
false	false	The event is not evaluated in the Canister, is not usable by other event objects, and is not available through the Portal. Effectively, the event is removed from the system.

Configuring Events to be searchable and reportable in the Portal

When the Searchable & Reportable setting was enabled, the following settings can now be configured in the Event Summary:

- If Searchable & Reportable is disabled for an event, it cannot be displayed in the Portal, and the following settings are not available for selection. Events that are configured in this manner are considered to be building block events. See “Configuration scenario - building block events” on page 81.
- Display in Portal - When this setting is enabled, the event can be displayed in the Portal in the following areas:
 1. Selectable event in the Report Builder. See “Tealeaf Report Builder” in the *IBM Tealeaf Reporting Guide*.
 2. Selectable event and its values for which to search in the Portal.
 - See “Searching Session Data” in the *IBM Tealeaf cxImpact User Manual*.
 - See “Searching Session Data” in the *IBM Tealeaf cxImpact User Manual*.
 3. Event is displayed in Browser-Based Replay.
 - For more information about replay through the Portal, see “CX Browser Based Replay” in the *IBM Tealeaf cxImpact User Manual*.
- Display in Session List - This setting is available only if Display in Portal is enabled. When this option is selected, the icon for the event is displayed in the collection of event icons in the Events column of the session list.
 - For more information about session lists, see “Searching Session Data” in the *IBM Tealeaf cxImpact User Manual*.

Note: These settings do not completely control the availability of facts in the Portal. See “Availability of facts in the Portal” on page 80.

Note: Event availability in RTV is configured independently. See “Event availability in RTV” on page 80.

See “Configuration scenario - standard user created events” on page 81.

Availability of facts in the Portal

When an event is configured to be active and searchable & reportable, the facts that are associated with the event may be written into the request of the hit where they occurred.

- Associated with each occurrence of an event may be one or more facts. A *fact* contains the event, its value, and the dimensions and values for one report group. If the event is associated with multiple report groups, multiple facts are written to the request in each firing of the event.
- Events that are not configured to be searchable & reportable do not generate facts in the request.

Only some facts may be marked for indexing and search.

- The Tracked Event Occurrence setting for the event defines the first, last, or all occurrences of the event in the session to track. Depending on the value for this setting, the Searchable flag in the fact that is recorded in the request is set to true, thus making the fact available for indexing and search. So, you can search for the event name, event value, and dimension values that are recorded in that fact instance.
- If the occurrence of the fact does not match the Tracked Event Occurrence setting and Flag Every Occurrence for Replay is set to true, the Searchable flag in the fact that is written into the request is set to false. The fact information is displayed during replay but is otherwise not searchable.

Since facts are written to the request, they cannot be separated from session data and exist in the data for as long as the session is retained.

- Other components and services, such as IBM Tealeaf cxConnect for Data Analysis, may acquire fact information independent of whether the fact is configured for display in the Portal.
- If the Display in Portal setting is disabled, the fact data cannot be retrieved by searching for events through the Portal. However, you may be able to retrieve the data by searching the request for fact data. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Note: To disable a fact, you must remove the report group that is associated with the event. See Chapter 5, "TEM Dimensions Tab," on page 217.

Event availability in RTV

In the event properties, the two properties that are listed in the left columns in the table determine availability and behaviors in the Portal and in RTV. Note that the behaviors are slightly different.

Note: As in the Portal, you can still search for, replay, and report on inactive events in RTV. The events do not fire, but they are available for your use. See the third row in the table.

Table 15. Event availability in RTV

Active	Display in Portal	Fires?	Portal - search for event "Searching Session Data" in the IBM Tealeaf cxImpact User Manual	Portal - display event icon "Searching Session Data" in the IBM Tealeaf cxImpact User Manual	RTV - search for event "RealTea Viewer - Session Search and Subsearch" in the IBM Tealeaf RealTea Viewer User Manual
true	true	Y	Y	Y	Y
true	false	Y	N	N	Y
false	true	N	Y	Y	Y
false	false	N	N	N	N

Note: If an event was deleted, it cannot be fired, displayed in the Portal, or searched for. For all functional purposes, the event no longer exists.

Configuration scenario - standard user created events

For a standard, user-created event in which you want to enable Tealeaf users to full Portal access for searching and reporting purposes, apply the following configuration to the event definition.

Table 16. Configuration Scenario - Standard User-Created Events

Setting	Value	Notes®
Active	true	
Searchable & Reportable	true	
Display in Portal	true	
Display in Session List	true	Typically, this setting is used to display only the most important events in the session list. If too many events are listed, the event list becomes cluttered.

Configuration scenario - building block events

A building block event is an event that is used only within the Tealeaf Canister for purposes of defining or populating other event objects. For example, you can use an event to populate a session attribute. Since the data is stored in the attribute, you may not want to store the data as an event, as well.

- In the event list, building block events that were provided by Tealeaf are identified by the [BB] addition to the event name.
- Building block events allow you to track significant items in the session without incurring the recording costs of writing them to the session record. See "WorkingSet of events" on page 93.

To configure a building block event, apply the following configuration to the event definition:

Table 17. Configuration Scenario - Building Block Events

Setting	Value	Notes
Active	true	
Searchable & Reportable	false	
Display in Portal	false	
Display in Session List	false	

Configuration scenario - Tealeaf standard events

Tealeaf provides a set of events to monitor important session activities in the Canister as they are detected. You can use these events to write session information to attributes or to capture contextual information as needed.

Note: Tealeaf Standard Events are read-only and cannot be modified.

- These events are stored in the Tealeaf Standard Events event group. See “Tealeaf standard events” on page 89.

Table 18. Configuration Scenario - Tealeaf Standard Events

Setting	Value	Notes
Active	true	Cannot be edited.
Searchable & Reportable	true	Cannot be edited.
Display in Portal	either	Most Tealeaf standard events cannot be displayed in the Portal or in session lists.
Display in Session List	either	Most Tealeaf standard events cannot be displayed in the Portal or in session lists.

Configuration scenario - outdated events

An outdated event is an event that was previously active, capturing data, and recording it to the database, but it is no longer active in the system. For example, suppose you previously created an event to capture shopping cart values. But due to a change in the web application, these values are now calculated through a different method using a different event. To ensure continuity in reporting, you may want to disable the earlier event but retain it for reporting purposes, so that you can report these events side-by-side.

Outdated events can be configured using the following scenario:

Table 19. Configuration Scenario - Outdated Events

Setting	Value	Notes
Active	false	

Table 19. Configuration Scenario - Outdated Events (continued)

Setting	Value	Notes
Searchable & Reportable	true	
Display in Portal	true	Typically, a historical event is displayed in the Portal as long as search and reporting functions require access to the data. When the session is trimmed from the Canister, this setting can be disabled.
Display in Session List	false	Historical events may cause unnecessary clutter to the session list.

Event Tester

The Event Tester can be used to test events in development against captured data or specific sessions that you upload for evaluation.

Note: All events in development should be tested in the Event Tester before deploying in a live data environment.

- See Chapter 10, “Event Tester,” on page 355.

Event history

See “Object Change History” on page 7.

Change history

See “Global change history” on page 8.

Event Hierarchy

In the Event Hierarchy dialog, you can review the event hierarchy. Items that are listed above other items are dependent on the items below them being triggered. Dependent items are listed higher in the hierarchy.

Antecedents that are listed below an event in the hierarchy can be one of the following:

- Conditions in the event
- A source for the value that is recorded for the event
- A javascript reference in Advanced Mode
 - For more information about Advanced Mode, see Chapter 11, “Advanced Mode for Events,” on page 367.



- To review the internal name for the event, move your mouse over it.

Event dependencies by trigger

Events are evaluated in the order of event dependencies within each trigger. Events that are referenced by another event are evaluated before the dependent event is referenced.

In the following diagram, you can see event dependencies that are permitted by trigger. For each trigger listed in the leftmost column, the table displays the triggers containing events that can be evaluated as a condition in the event trigger in the left column. Read the table in the following manner:

Events in event trigger <Column 1> can use as conditions the events that are available in trigger(s) <Column 2> - <Column 6>.

Table 20. Event Dependencies by Trigger

Can Depend on Events in trigger -> Event trigger:	First Hit	Every Hit	After Every Hit	Last Hit	End of Session
First Hit	Y				
Every Hit	Y	Y	Y		
After Every Hit	Y	Y	Y		
Last Hit	Y	Y	Y	Y	

Table 20. Event Dependencies by Trigger (continued)

Can Depend on Events in trigger -> Event trigger:	First Hit	Every Hit	After Every Hit	Last Hit	End of Session
End of Session	Y	Y	Y	Y	Y

Note: Events with incompatible dependencies or circular dependencies always write a null value as the value to record. Since the conditions cannot be evaluated, there is nothing to record. See “Value step” on page 64.

Circular dependencies

Events whose output is used as an input for the event itself create circular dependencies. The Event Manager does not prevent the specification of circular dependencies through the UI, even though they cannot be resolved.

Below are examples in which event outputs are used as the conditions (inputs) for other events:

```
event A > event A
event A > event B > event A
event A > event B > event C > event A
```

All of the above references are flagged as errors in the following locations:

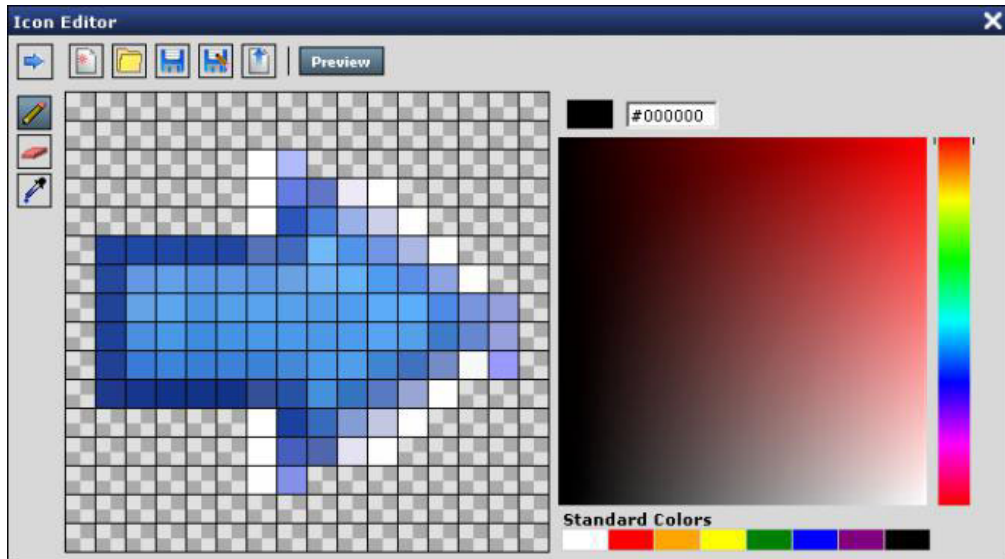
- Chapter 10, “Event Tester,” on page 355 when any of the events are tested

Note: If you pass newly created or edited events through the Event Tester, any circular references are flagged for review and correction. During event execution, an error is logged in the system event log, and the event is never evaluated. See Chapter 10, “Event Tester,” on page 355.

- canister reports an error message in the system event log when event definitions are loaded
- error message logged in system event log during execution

Event icon editor

Through the Event Manager, you can create and modify icons that are used to identify events in the Portal. This simple point-and-click interface enables you to create event icons from scratch or to touch up icons that you uploaded for use in the Portal.



Icon editor toolbar

File tools

Table 21. Icon Editor Toolbar

Icon	Name	Description
	New	Clear the editor and create an icon
	Open	Open an icon stored on the server
	Save	Save the current icon on the server Saved icons are stored as 16 x 16 images in .PNG format on the server.
	Save As	Save the current icon as a different name on the server
	Upload	Upload a local image file to the icon editor. Click Browse... . Navigate your local environment to select the image file to upload. Then, click Open . Click OK . The file is uploaded and displayed in the icon editor. - Formats that are supported for uploading include .PNG, .JPG, .BMP, .GIF, and other formats that are supported by .NET. - Uploaded images are scaled to 16 x 16 pixels, while respecting aspect ratio. No cropping is performed.
	Preview	Click to force a refresh of the preview pane.

Editing tools

Down the left side of the editing pane, you can select one of the following tools in the toolbar.

Table 22. Icon Editor Toolbar

Icon	Name	Description
	Preview Panel	(Display only) Preview of the icon in development, as it would appear in the Portal
	Draw	Click this icon to begin drawing. See "Drawing."
	Erase	Click this icon to begin erasing your work. See "Erasing" on page 88.
	Color Picker	Click this icon and then click a color to select the color to use with the editing tools.

Drawing



To draw, click the Pencil () in the toolbar.

- To change the color, use the color selectors to the right of the editing pane. See "Selecting colors."
- To update the Preview pane, click **Preview** in the toolbar.
- See "Erasing" on page 88.

Selecting colors

You may select a color in any of the following ways:

- **Color picker:** Click the Color Picker tool in the toolbar. Click the color that you want to use.
 - You may select colors only from within the drawing area.
 - If a color is chosen, the Pencil tool is immediately selected. If a blank square is chosen, the Eraser is automatically selected.
- **Enter the hex value:** In the textbox indicating the current color's hexadecimal RGB values, you may enter new values to select a new color.
- **Hue and gradient:** To the right of the editing pane, you may select the current color using the following color selectors:
 1. **Hue:** In the vertical bar, you may select the hue of the color.
 2. **Gradient:** For the selected hue, you may adjust the gradient in the large square.
- **Standard colors:** You may select any of the colors that are displayed in the Standard Colors toolbar.

The currently selected color and its hexadecimal RGB value are displayed above the color selectors.

Erasing

You can erase your work in the Icon Editor. To erase, click the Eraser () icon. Then, click the pixel that you want to erase. The pixel is returned to a transparent color.

Purging event data

If needed, you can purge data for a selected event and all related report groups and dimensions. Suppose when you are configuring events, you discover that you captured inaccurate or bad data for the event. You can purge the data for a selected event and all recorded dimensional data that is related to the event.

- To purge data for an event, right-click the event name in the Event list. Select **Purge Data....** The following window is displayed:



Figure 3. Purge data confirmation

In the Details panel, you can review the related report groups and dimensions, whose values is purged.

Note: Purging data is an irreversible step. Do not purge data unless you are sure that it is no longer needed.

Note: Purging event data removes event counts and occurrences of the event from the reporting database. It does not remove event occurrences and dimension data that were recorded in the sessions and are currently stored in the Canister.

- To purge the data, click **Purge Data**. The data is removed.

- To cancel and return to the Events tab, click **Cancel**.

You can also purge dimensional data. See “Purging dimension data” on page 255.

Tealeaf standard events

Tealeaf provides a set of events that can be used to track useful general attributes of your web application. These events are stored in the Tealeaf Standard Events event label.

Building block events

A *building block* event is an event that exists only in the Canister for purposes of creating or populated other event-related objects. It is not stored to disk and is therefore not available at any time through the Portal.

A building block event is configured to be active and disabled for all other Portal-related configuration settings. The event is never used outside of the in-memory evaluation of the session. Unless the detected data is saved to a different event or a session attribute, it is not retained beyond the time when the session is closed.

- See “Configuration scenario - building block events” on page 81.

For example, suppose that you were interested in the elapsed time of the hit across the network. Since this value is detected at the individual hit level, saving values for each hit may be expensive, and you may be interested only in exceptional values for the network time. So, the best practice is to create a building block event to capture high-volume events and then to create an event or attribute to detect the exceptions.

- The building block event to detect network time is provided by Tealeaf: Hit Network Trip Time (ms) [BB].

In the Tealeaf Event Manager, Tealeaf Standard Events that are building blocks are identified by the [BB] tag at the end of their names.

- To see the list of building block events, enter [BB] in the Event filter textbox on the Events tab.
- The [BB] suffix is a naming convention that was applied to the Tealeaf Standard Events. It is not automatically added to events that are not searchable and reportable by definition.

Editing Tealeaf standard events

You may perform some modifications to a selected set of events that are provided by Tealeaf. For example, Tealeaf Standard Events capture useful information such as hit count, and it is useful to be able to associate report groups of your own creation with that event.

- These events are listed in the Tealeaf Standard Events event label.
- The internal names of Tealeaf Standard Events begin with TL.
- You can review the underlying JavaScript of Tealeaf Standard Events. Click **View Javascript** in Basic Mode. The event JavaScript is displayed in Advanced Mode but cannot be edited there.

The following events can be edited in Basic Mode:

Note: Do not edit of the building block versions of the following events. The names of the building block versions are appended with [BB]. These events are helper events for editing the original events in Basic Mode and are not intended to be modified.

- Costly Session - Too Big
- Costly Session - Too Many Hits
- CUI Hit Count
- Fact Count
- Hit Count
- Hit Generation Max for Session (ms)
- Hit Generation Time Total (ms)
- Hit Network Trip Time Max (ms)
- Hit Network Trip Time Total (ms)
- Hit Round Trip Time Max (ms)
- Hit Round Trip Time Total (ms)
- Hit Size Max (bytes)
- Hit Size Total (MB)
- Http 400 - Bad Request
- Http 401 - Unauthorized
- Http 402 - Payment Required
- Http 403 - Forbidden
- Http 404 - Not Found
- Http 405 - Method Not Allowed
- Http 500 - Internal Server Error
- Large Hit Size
- Long Gen Time and Large Hit Size
- Long Hit Generation Time
- One Hit Session Count
- Page Count
- Req Cancel Count
- Req Size for Session (MB)
- Rsp Size Total (MB)
- Session Count
- Session Length (sec)
- Session Size (MB)

Permitted modifications

The following modifications are permitted.

In Basic mode, you can change any of the following:

- Name, Description, icon in use, or labels
- The configuration options in the More Options tab
- Adding new report groups

Note: You may not remove the report groups that are originally configured for use with a Tealeaf Standard Event.

Advanced Mode

Note: Editing a Tealeaf Standard Event in Advanced Mode is not permitted.

Default customer events

During installation or upgrade, Tealeaf provides the following events, which you can use or modify to meet the requirements of your web application.

- These events are defined in the customer namespace, which means that you can edit them like any other events.

Login ID Sample event

The Login ID Sample event provides an example configuration for how to track login identifiers to your web application.

This event is configured to be triggered when the hit attribute Login ID is detected on each hit and to record the first found instance to the Login ID session attribute. This attribute is used in multiple locations in the Portal to indicate the login identifier of visitors to your web application.

This event is considered a "sample" event. The best method for capturing login identifiers depends on how your web application is configured. At a minimum, you must review the definition for the hit attribute Login ID to configure the proper start tag and end tag for capturing the login information.

Tealeaf provides an end-to-end tutorial for how to configure the Login ID Sample event so that you can capture login identifiers from your web application and make them searchable through the Portal.

- See "E2E Scenario - Configure Login ID to be Searchable" in the *IBM Tealeaf cxImpact User Manual*.

Canister Safety Limits [BB] event

This building block event is used to place threshold limits on how large sessions can grow in the Short-Term Canister in terms of:

- Number of hits
- Size in bytes
- Time in seconds

If a session exceeds any of the defined limits in this event, it is automatically closed by the Canister and moved to the Long-Term Canister for indexing.

You may modify this event in Advanced Mode to change the Canister Safety Limits imposed on each active session in each Canister in your environment. Changes to these limits apply only to currently active sessions and all sessions that are subsequently captured by Tealeaf.

Note: After you install or upgrade your Tealeaf solution, you should review and modify the settings for Canister Safety Limits.

Note: Do not delete this event or make it inactive. If this event is not active or otherwise available, sessions are permitted to grow without limit in the Canister and can only be closed by session timeout or by the visitor.

- If you accidentally deleted this event or if it is not available in the Events tab, restore it immediately. See “Restoring canister safety limits.”

Restoring canister safety limits

If the Canister Safety Limits event is not visible in the Events tab of the Events Manager, complete the following steps to restore it.

Here is the default definition that must be applied through Advanced Mode:

```
// Canister Safety Limits [BB]
function PALI$E_SAFETY_LIMITS()
{
  //Default: 2048 Hits
  if ($$.NumberOfHits > 2048)
    TLCloseSession.CloseForSafetyHits();

  //Default: 5242880 Bytes (5MB)
  if (($$.TotalREQBytes + $$.TotalRSPBytes) > 5242880)
    TLCloseSession.CloseForSafetySize();

  //Default: 3600 Seconds (1 hour)
  if ($$.TotalTime> 3600)
    TLCloseSession.CloseForSafetyTime();
}
```

1. From the drop-down at the top of the Events tab, select All Events.
2. Select the **Show Inactive** check box to show events that may be inactive.
3. Enter the value Canister Safety in event filter in the left bar of the Events tab.
4. If Canister Safety Limits [BB] is visible:
 - a. Right-click the event.
 - b. Select **Make Active** if it is listed.
 - c. If **Make Inactive** is in the context menu, the event is present and active. It was simply hidden from view by display settings. You may skip the rest of these steps.
5. If Canister Safety Limits [BB] is not visible in the filtered list:
 - a. Contact your Tealeaf administrator or other members of the Tealeaf team to see if the event was not renamed.
 - b. You can mouse over event names to reveal their tooltips. In the tooltip for this event, the internal contains E_SAFETY_LIMITS.
6. If you determined that the event was deleted, complete the following steps, which enable you to re-create the event through Advanced Mode in the Event Manager using the JavaScript definition above.
 - a. Copy to the clipboard the JavaScript definition for this event.

Note: Do not copy the function line. Copy all lines below the function line and use them to paste into the new event, which will have a function line provided for you.

- b. In the Events tab, click **New Event**.
- c. Enter the following properties:
 - 1) Name: Canister Safety Limits [BB] (New)
 - 2) Description: Enter a meaningful description. Be sure to note that this is the re-created version.
 - 3) Set Evaluate on to After Every Hit.
 - 4) Select the Active check box.
 - 5) Clear the **Display** in Portal and Display in Session List check box.

- 6) In the Value step, clear the **Searchable & Reportable and Flag Every Occurrence in Replay** check box.
- 7) In the edit window, delete any text that is displayed there.
- 8) Paste the version of the event that you copied from above.

Note: Remember to leave the function line that is listed in the window unchanged.

- To locate your customer namespace value, open an event that you created and switch to Advanced Mode. The namespace value should appear in a similar location in that event.
- d. You may now edit the JavaScript to change the safety limit values. See “Example - changing the Canister safety limits” on page 381.

cxResults session filtering events

If you licensed IBM Tealeaf cxResults, Tealeaf provides two events for including or excluding sessions from IBM Tealeaf cxResults.

- When the exclude event fires, the session in which the event fired is excluded from IBM Tealeaf cxResults.
- When the include event fires, the session in which the event fired is included in IBM Tealeaf cxResults.
- Exclusion trumps inclusion.

To locate these events in the Events tab, enter `cxResults` in the Filter Events textbox.

- See “cxResults Session and Event Filtering” in the *IBM Tealeaf cxResults Administration Manual*.

WorkingSet of events

In Tealeaf, the *workingset* of events is the set of all event firings that were triggered at any time during the session up until the present time.

- Some captured values may not be recorded for an event; captured values are typically a subset of the workingset.

During the session, each time that an event is triggered, the detected value for the event is stored in memory. However, this value may not be the value that you specified for recording. For example, an event that is configured to record the first value may be triggered six times during a session.

The purpose of the working set is to provide access for other events to values other than the tracked value. By default, events that reference other events use the latest tracked value of the other events. For example, if Event 1 is used by Event 2, Event 2 uses the latest tracked value of event 1 by default. However, you may want Event 2 to use a different instance value of Event 1. In this case, you would reference a value from Event 1's workingset.

- Referencing workingset values requires editing Event 2 in Advanced Mode. See Chapter 11, “Advanced Mode for Events,” on page 367.

WorkingSet, Tracked Occurrence, and Building Block Events can be thought of as follows:

- WorkingSet - The value of an event when it fires.

- Tracked Occurrence - A instance of the workingset, that is, first, last, or every. This instance is the one that recorded and available for basic reference by other event-related objects.
- Building Block Events - An event whose tracked instance is not searchable or reportable.

Example - workingset versus tracked values

Suppose you defined Event 1 to fire on every hit, track the last value, and is searchable & reportable. In the table below, you can see the values for Event 1 in a five-hit session:

Hit	Event 1
1	A
2	B
3	C
4	D
5	E

Values A through E for Event 1 are the workingset for Event 1.

However, if you added Event 1 to a report, the report shows only 1 instance of Event 1 with a value E. Since the event is defined to track the last value, value E appears in the report.

Example - referencing events in Basic Mode (tracked values) versus Advanced Mode (workingset values)

Suppose you define the following events in Basic Mode:

- Event 1 fires on every hit, tracks the last value, and is **not** searchable & reportable.
- Event 2 fires whenever Event 1 fires and Event 2's value is the value of Event 1. Event 2 tracks all instances and is searchable & reportable.

In the table below, you can see the values of these two events in each hit of a five-hit session:

Table 23. Example - Referencing Events in Basic Mode (Tracked Values) vs Advanced Mode (WorkingSet Values)

Hit	Event 1	Event 2
1	A	A
2	B	B
3	C	C
4	D	D
5	E	E

Because Event 1 is not searchable & reportable, it cannot be added to a report. It can only be used by other events, such as Event 2. Event 1 is a building block event.

Since Event 1 is set to track its **last** value, Event 1's value changes each time that it fires. Since Event's 2 value is the value of Event 1, the value of Event 2 also changes each time Event 2 fires.

If you add Event 2 to a report, there would be five instances of Event 2. The instances would have the values A, B, C, D, and E respectively since those were the value of Event 1 when Event 2 fired.

- Using a similar construction, you can report on building block events.

If you were to modify Event 2 in Advanced Mode, you can require that Event 2 use the first instance of Event 1. In this case, adding Event 2 to a report shows 5 instances of Event 2, all containing the value A. Event 1, the building block event, still contains the five separate values.

Table 24. Example - Referencing Events in Basic Mode (Tracked Values) vs Advanced Mode (WorkingSet Values)

Hit	Event 1	Event 2
1	A	A
2	B	A
3	C	A
4	D	A
5	E	A

Tealeaf resources

Tealeaf provides a broad library of resources, including web conferences, on-demand tutorials, and report templates, for use with your Tealeaf solution. These resources span the breadth of experience in your enterprise with Tealeaf, from novice users to Tealeaf administrators and developers and best practice experts.

- See <https://community.tealeaf.com/display/res>.

The following resources are available for this topic.

Table 25. Tealeaf Resources

Resource	Resource Type	Description
https://community.tealeaf.com/display/res/Basic+Eventing	Web conference (new user)	A brief overview of the Tealeaf event model and processing pipeline precedes an in-depth demonstration of building events in version 7.x. The two events that are built are based on a message that is displayed to the customer and on a URL; compound events are previewed.
https://community.tealeaf.com/display/res/Capture+a+Value+with+an+Event	Tutorial	Capture numeric values, such as a shopping cart total, or text values, such as promotion codes or login name, by creating a Hit Attribute and an Event.
https://community.tealeaf.com/display/res/Test+an+Event	Tutorial	Navigate the Event Manager, and test an Event to verify it is working properly.
https://community.tealeaf.com/display/res/Business+Impact+Analysis	Web conference (new user)	An overview of performing business impact analysis in Tealeaf, what Tealeaf modules are required, and a suggested methodology.
https://community.tealeaf.com/display/res/Custom+er+Experience+KPIs	Web conference (new user)	Introduction to Tealeaf KPIs and reporting capabilities, including a demonstration on creating and viewing a Tealeaf KPI scorecard.

Table 25. Tealeaf Resources (continued)

Resource	Resource Type	Description
https://community.tealeaf.com/display/res/Investigating+Differences+in+Conversion+Rates	Web conference (advanced user)	How to investigate changes in conversion rates by using process scorecards and dashboards to discover a change, gain insight by completing qualitative analysis, and quantify the impact to determine steps to resolve the issue.
https://community.tealeaf.com/display/res/Pinpoint+Struggle+with+Business+Process+Scorecards	Tutorial	Identify checkout struggle with a Business Process Scorecard. Build a new process scorecard based on your findings, and add it to an existing dashboard.
https://community.tealeaf.com/display/res/Understanding+Bot+Traffic	Web conference (advanced user)	An overview of the benefits of analyzing Bot Traffic and methodology for tracking bots in Tealeaf.

The following areas are good to bookmark and to check periodically for updates.

Resource

Description

<https://community.tealeaf.com/display/res/Home>

Home page for Tealeaf Resources area, where you can access best practices, web conferences, tutorials, classroom training information, and more. Details are below.

<https://community.tealeaf.com/display/res/Best+Practices>

Home page of Tealeaf's best practices, including web conferences, white papers, report templates, and more.

<https://community.tealeaf.com/display/res/Best+Practice+Report+Templates>

(<https://community.tealeaf.com/display/res/Report+Templates+v7>,

<https://community.tealeaf.com/display/res/Report+Templates+v8>)

Report templates available for download by Tealeaf Release.

<https://community.tealeaf.com/display/res/Best+Practice+Webinars>

Tealeaf's Best Practice Webcast Series provides a series of web conferences on how to leverage Tealeaf capabilities to enhance your customer's experience.

<https://community.tealeaf.com/display/res/Webinars+for+New+Users>

All available web conferences for new users

<https://community.tealeaf.com/display/res/Webinars+for+Advanced+Users>

All available web conferences for advanced users

<https://community.tealeaf.com/display/res/On-Demand+Tutorials>

Tealeaf publishes a series of online tutorials on a range of topics, from basic user search exercises to technical topics, such as privacy rules creation.

<https://community.tealeaf.com/display/kb>

The Tealeaf Knowledge Base contains a large library of articles on troubleshooting and performance topics that are related to Tealeaf.

Distance events and sequence events

Distance events and sequence events are special kinds of events that you can create to measure the distance between events or to monitor if events occur in a specified sequence within a session.

Note: Distance and sequence events fire as soon as they occur in the session. They are not limited to the End of Session trigger. The exception is when a sequence or distance event that is defined with a NOT exists event condition.

- Distance and sequence events should not be configured to fire on the first hit of a session.

Recommendations

When creating distance and sequence events, Tealeaf recommends the following:

Note: Create the component events first. Test them and save them. Then, create the distance or sequence event that references those component events.

Note: If you deployed IBM Tealeaf CX UI Capture for AJAX, avoid creating distance and sequence events that are based on events that track UI hits. Due to how UI hits are batched and submitted, determining distances and sequences among them is ambiguous and may lead to inaccurate results.

Distance events

A distance event evaluates the distance of the occurrence of two conditional events in order between a specified range of time (in seconds) or hits within the session. Suppose you have a well-defined checkout process consisting of four pages. You could create a distance event to determine if people who are completing the first and last steps of the registration process are doing so in no more than four pages. Similarly, you could create another distance event to measure when the registration process exceeds a pre-determined time, reporting values that exceed that threshold time.

- Hit-based distance events are measured based on the hit numbers in the session.

- Time-based distance events are measured based on the ResponseTimeEx timestamp, which is written as a request variable by the IBM Tealeaf CX Passive Capture Application. See "Performance Measurement" in the *IBM Tealeaf Passive Capture Application Manual*.

Condition

1. In the Condition step, you must select one of the following options from the drop-down.

Evaluator

Description

Distance between events is between the following number of seconds

The distance between the listed events is measured to be between the specified range of seconds.

Distance between events is between the following number of hits

The distance between the listed events is measured to be between the specified range of hits.

2. When either selection is made, you must then populate the range within which the triggered events must occur. The range is inclusive, meaning that the end values are included in determining whether the distance between events is between the acceptable range.
 - **For time events:** Enter a real number in seconds in each textbox between 0.001 and 10000. For example, values of 0.25 and 2 means the time between the events must be greater than or equal to 0.25 seconds but less than or equal to 2 seconds to trigger the event.
 - **For hit events:** Enter positive integers in each textbox 1 - 2048. For example, values of 3 and 8 mean the number of hits between the events must be either 3, 4, 5, 6, 7, or 8 hits to trigger the event.

Note: If the lower bound of the distance is set to 0, then the events can occur on the same hit.

Note: You must specify exactly two event conditions to complete a valid evaluation for a distance event. For more information about creating distance events from the start or end of session, see "Distance events from start or to end of session" on page 100.

Condition types for distance events

For distance events, use the following operands for evaluation of a condition:

- **Exists in Session** - Tests whether the condition exists (Is true) or does not (Is false). Within the context of a distance event, this operator evaluates whether the condition occurred or did not occur within the specified range of hits or time
- **Dimension Value** - Dimension values can be used in the conditions for distance events.
- **Event Value** - Event values can be used in the conditions for distance events.

When a value is used, the following operators are available, depending on the type of the operand:

- **Text:**
 - Equal
 - Does not equal
 - Includes

- Does not include
- Is Empty
- Is not empty
- Numeric:
 - Equal
 - Does not equal
 - Less than
 - Less than or equal
 - Greater than
 - Greater than or equal

Evaluating *not* conditions

When the condition type is set to *Exists in Session* and is configured to evaluate *Is false*, you effectively created a *not* condition. These *not* conditions are evaluated as did not occur within the specified range of hits or time.

When a *not* condition is defined as the second event condition, execution of the distance event is delayed to the end of the session, even though an in-session trigger is specified for the event because non-existence of an event cannot be determined until session end.

Distance events from start or to end of session

To measure the distance between the beginning or end of a session and an event, you must add an event condition that is always triggered on the first or last hit of the session.

To create a distance event from start to a specific event or from a specific event to the end of session:

1. If you do not have a beginning of session/end of session event, create the event that marks the beginning of the session.
 - a. Set the trigger for the event to be *First Hit of Session* or *End of Session*.
 - b. Set the condition for the event to be an attribute that is always present. For example, you can use the Tealeaf system attribute *Session GUID*, which is assigned a value on the first hit of every valid Tealeaf session by the Canister.
 - c. Save the event draft.
 - d. Run it through the Event Tester. See Chapter 10, “Event Tester,” on page 355.
 - e. Commit the changes.
2. Create the distance event.
 - a. Specify whether you are measuring distance as time or pages.
 - b. If you are measuring the distance from the start of session, add your *Start of Session* event first. If you are measuring the distance between your event and the end of session, add your event first.
 - c. Add the other event:
 - 1) Distance from start of session: your event
 - 2) Distance from event to end of session: *End of Session* event.
 - d. Specify the other properties of the distance event as needed.
 - e. Save the event draft.
 - f. Run it through the Event Tester. See Chapter 10, “Event Tester,” on page 355.

- g. Commit the changes.

Value

1. From the **Value Type** drop-down in the Event Summary, select Distance.
2. In the Value step, you must specify the distance value to record. From the second drop-down, select the distance instance to record.
 - For distance events defined in a trigger other than End of Session, you may select only Last.
 - For distance events defined in the End of Session trigger, you may select one of the following.

Distance Instance

Description

First	First recorded instance in the session where the distance between the two events falls inside the specified range (a =< distance =< b).
Last	Last recorded instance in the session where the distance between the two events falls inside the specified range (a =< distance =< b).
Min	Minimum distance between two events in the session that falls inside the specified range (a =< distance =< b).
Max	Maximum distance between two events in the session that falls inside the specified range (a =< distance =< b).

- See “Distance event evaluation.”
3. This recorded value is then applied to the tracked event occurrences, as specified in the drop-down.
 4. The recorded value is treated as Numeric when the event value type Distance is selected.

Distance event evaluation

Distance events may be configured to be evaluated in any trigger of the session. The range of hits that are evaluated is from the last tracked instance to the current hit.

Depending on the trigger in which the distance event is evaluated, the following values may be returned:

Trigger Returnable Value

**First Hit of Session, Every Hit,
After Every Hit, Last Hit**

Last value

End of Session

First, Minimum, Maximum, and Last values

The calculation method applies to all four distances: first, last, minimum, and maximum. To find a distance between Event A and Event B:

- Event B is found.
- Step backwards through the session to find Event A.
- The distance between these two events is calculated.
 - If the two events occur on the same hit, the distance is recorded as 0 (zero).
- Pairs of events are gathered, and their distances and are calculated in this manner until all condition events are traversed for the session.

1. This process may be shortened in some situations. For example, if the first distance is wanted, then when the first distance is found, the traversal of the condition events is stopped.
2. In the worst case scenario, the maximum, minimum, and last distances are known after all event conditions are traversed.

The distance evaluation is reset if any of the following conditions is met:

- A complete match is found.

For example, assume that the events triggered as below and the event measures the distance between events A and B. Disregard the specified range for the first part of this example.

Hit Number	Event
1	A
2	A
3	B
4	B
5	A
6	C
7	B

Your allowable values would be as follows:

- First = 1: This value is the distance between event B on hit 3 and event A on hit 2.
- Last = 2: This value is the distance between event B on hit 7 and event A on hit 5.
- Minimum = 1
- Maximum = 2

The distance between event B on hit 4 and event A on hit 1 is not used because event A also occurred on hit 2. This scenario would reset the evaluation to start from hit 2. Event B on hit 4 is not used since a complete match is found by hit 3, which resets the evaluation. Event A does not occur again after the complete match (hit 3) and hit 4.

Hits 4 and 5 are not used because the events occur in the wrong order. B occurs first, followed by A. However, the conditions are looking for A then B.

If you specified that the distance must be 2 - 4 hits, then the first, last, minimum, and maximum values would all be 2. Only the match between event B on hit 7 and event A on hit 5 is at least 2 hits but less than 4 hits apart.

- Since event B on hit 3 and event A on hit 2 are just 1 hit apart, that distance does not fall within the acceptable range and is discarded.

Sequence events

A sequence event detects when two or more events occur in a specified order in the session. The sequence event is used to detect that they fired and that they fired in a specific order. This event fires on the first detection of the sequence in the completed session.

- Sequence events may be evaluated in any trigger of the session. Sequence events that are evaluated in the End of Session trigger are always evaluated after dependent events in the trigger were evaluated.

Suppose there are three events: Add to Basket (A), Error (B), and Purchase (C). In a session, the sequence of events occurs in the following order: A, A, B, A, C, A, B. For a specified event sequence of A,B, the events fires in the session even though Event A occurs again after Event B was fired for the first time. The event fires even though the visitor added an item to basket after the error, but they did not receive another error before the purchase.

All sequences are evaluated independently of each other. In this manner, you can create nested sequences.

Note: Events that occur on the same hit are always considered to be in the proper sequence.

Note: If you are mixing hit-based events and step-based events in your sequence, you should set the trigger to evaluate the event on After Every Hit or End of Session. If the trigger is Every Hit, the event is evaluated before the steps that are part of the event, and the sequence may not be properly evaluated.

- Step-based triggers can be created based on data that is submitted from the Tealeaf client frameworks. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Before you define an event of this type, you need the following information:

- Each event and the sequence to test

Condition

In the **Condition** step, you must select the following option in the drop-down.

Evaluator

Description

Events occur in the following sequence

The listed events must occur in the order in which they are listed. See "Sequence events."

Then, you must select the events as conditions in the order that they must occur in the session for the event to evaluate to true.

Note: For sequence events, you may not use hit attributes as conditions.

Not conditions in sequence events

If the trailing event condition for a sequence event is configured to trigger when Exists in Session is false, then the sequence cannot be properly evaluated until the end of session. Although the Event Manager may indicate that the sequence is evaluated in a different trigger, the Event Engine performs the actual evaluation in

the Last Hit of session trigger. These *not* conditions are evaluated as "did not occur."

Value

To record the total distance in the sequence, select Distance from the **Value Type** drop-down in the Event Summary.

Distance values in sequence events

In a sequence of events, the distance is computed from the hit on which the first condition is true to the hit on which the last condition occurs.

- If the first condition is a *not* condition, for purposes of measuring distance, the first hit where the *not* condition evaluates to true is used.
- If the last condition is a *not* condition, for purposes of measuring distance, the ending hit is considered the last hit of the session.

When a sequence occurs multiple times in a session, the evaluation of the second and later sequences may begin on the hit where the last condition of the previous sequence occurrence was true. From that hit onward, the distance for these sequences begins to be measured from the hit where the first condition of the sequence is again satisfied.

Step-based eventing

On the traditional, HTML-based web, user actions typically triggered a single responding action from the web server. When you clicked a button, a form was submitted. When you clicked a link, a new page was loaded. For applications built on this framework, an individual event might occur only once per page.

In rich internet applications, however, this paradigm was altered. Many user interactions on a page do not change the page itself. In fact, a user can complete the same action of interest multiple times. For example, suppose that your web application enables the entry of multiple addresses from a single form. When **Submit** is clicked, the address data is submitted, and the form is cleared, enabling another entry. In this case, the same event, `SubmitAddress`, can occur multiple times on the same page. In Tealeaf, you want to be able to track all of these occurrences, instead of just the first one.

Note: A primary usage for step-based eventing is to track events that may occur multiple times on a single page.

Through *step-based eventing*, you can create Tealeaf events of these user interface events that are generated by your rich internet application. In addition to creating events from individual hits, you can also create events from steps, which are individual user actions that are captured from the client application and submitted to Tealeaf by using one of Tealeaf's client frameworks

- A step can be considered a "subhit" of a hit; a step reflects a discrete, trackable user action, or a server-side action that does not result from a user action (such as a redirect).
- Steps are captured by a client framework, which is bundled together, and submitted as JSON messages to Tealeaf. These messages are then inserted into a designated section of the request of the parent hit.

Step-based eventing enables the capture of multiple events from a single page of your client application.

Note: Step-based eventing requires licensing, installation, and configuration of one of the Tealeaf client frameworks, including IBM Tealeaf CX UI Capture for AJAX, IBM Tealeaf CX Mobile Android Logging Framework, and IBM Tealeaf CX Mobile iOS Logging Framework. Beginning in Release 8.5, new versions these frameworks are required to enable step-based eventing. For more information, contact Tealeaf Professional Services.

Note: IBM Tealeaf CX UI Capture for AJAX is only available to legacy users.

This information provides background information about client framework-generated steps and step-based eventing.

Overview

An overview of step-based events, including prerequisites, limitations, message types, and example messages.

Pre-requisites

To create step-based events, the following components are required:

1. Tealeaf Release 8.5 or later
2. PCA Build 33xx. Tealeaf recommends using PCA Build 3330 at a minimum.

Note: Since PCA Build 3330, there were bug fixes and new features that can be of interest to you, including the ability to capture IPv6 addresses and support for new Linux platforms. See "Release Notes - PCA" in the *IBM Tealeaf Release Notes - Passive Capture Application*.

You must be able to configure the capture of the application/json POST data types through the IBM Tealeaf CX Passive Capture Application.

3. One or more of the Tealeaf capture solutions:

Table 26. Pre-Requisites

Solution	Description	Documentation
IBM Tealeaf CX UI Capture for AJAX	Used to capture client-side user interface events for AJAX-based applications	"UI Capture for Ajax Guide" in the <i>IBM Tealeaf UI Capture for Ajax Guide</i>
IBM Tealeaf CX Mobile Android Logging Framework	Used to capture client-side from Android-based mobile native applications	"Tealeaf Android Logging Framework Reference Guide" in the <i>IBM Tealeaf Android Logging Framework Reference Guide</i>
IBM Tealeaf CX Mobile iOS Logging Framework	Used to capture client-side from iOS-based mobile native applications	"Tealeaf iOS Logging Framework Reference Guide" in the <i>IBM Tealeaf iOS Logging Framework Reference Guide</i>

Limitations

The maximum length for selected values of text for attributes and events is 256 characters.

UI Capture for Flex: Use of JSON messaging and step-based eventing is not supported in UI Capture for Flex.

- You can continue to use your current UI Capture for Flex solution.

Sequence and distance events:

Note: Distance and Sequence events operate on hits, not steps. As a result, the distance between events on multiple steps of the same hit evaluates to zero (0).

Technical definition

A *step* is defined as a specially formatted JSON message that is submitted by the Tealeaf client frameworks to represent a session state of a form field.

- Step messages can contain any type of data. The data depends on the specific client framework that is sending the message.
- A step contains UI events from a single session only.
- In Tealeaf, these messages are submitted in JSON format and are not easy to decipher in raw format.

Message types

Events that are captured from client frameworks are bundled together and submitted as a set of messages. A *message* from a client framework is what defines a single step in Tealeaf, which is a single event that is identified and captured by a client framework.

Multiple messages can represent a single action of the visitor. For example, clicking a radio button might result in two messages of different types: one for the click event and one for change event.

Note: If you do not want to double count actions, use both the event type AND the ID/name when you create events for a specific action. If you look only for ID = checkout method for example, then this event fires twice when you only wanted it to fire once.

The volume of messages can depend on the configured logging level, which is defined in the client frameworks.

Client Framework

Documentation

IBM Tealeaf CX UI Capture for AJAX

UI Capture does not support dynamic logging levels.

IBM Tealeaf CX Mobile Android Logging Framework

"Tealeaf Android Logging Framework Configuration File" in the *IBM Tealeaf Android Logging Framework Reference Guide*

IBM Tealeaf CX Mobile iOS Logging Framework

"Tealeaf iOS Logging Framework Installation and Implementation" in the *IBM Tealeaf iOS Logging Framework Reference Guide*

Example messages

You can review the raw format of a submitted set of JSON messages and the format in which they are displayed after processing in Tealeaf.

Raw request body: The [RequestBody] following information includes a sample raw request, which contains a set of JSON messages.

Note: In the raw request, the following entry is a single paragraph. You cannot use this section to create step-based attributes.

- While it is possible to create hit attributes from the [RequestBody] section, it is not recommended, as this format might change over time.

```
[RequestBody]
{"version":"0.0.0.4","serialNumber":1,"sessions":[{"id":"ID14H2M3S663R0.36228193
267311725","startTime":1326837723663,"timezoneOffset":480,"messages":[{"type":2,
"offset":2226,"count":1,"context":{"type":"LOAD","name":"root","renderTime":
2226}},{"type":6,"offset":2230,"count":2,"exception":{"description":"Unable to
get value of the property 'nodeValue': object is null or undefined",
"url":"http://straussandplessner.com/store/js/coremetrics/eluminate.js",
"line":1}},{"type":4,"offset":24878,"count":3,"event":{"type":"click"},"target":
{"id":["main'],[DIV',1],[DIV',0],[TABLE',0],[TR',0],[TD',0],[DIV',0],
[P',0],[A',0]]","idType":-2,"type":"A"}},
{"type":2,"offset":24880,"count":4,"context":{"type":"UNLOAD","name":"root"}}]}]}
```

After the messages were passed through Tealeaf, the raw request is stored in the [RequestBody] section of the request, which is viewable through Request View in BBR.

Formatted request body:

When the JSON messages are received, Tealeaf reformats them into a more legible format, which is listed here.

- This information is available at the bottom of the request, which is formatted for view in Request View in BBR.

Click to view expanded example messages.

```
{
  "version": "0.0.0.4",
  "serialNumber": 1,
  "sessions": [
    {
      "id": "ID14H2M3S663R0.36228193267311725",
      "startTime": 1326837723663,
      "timezoneOffset": 480,
      "messages": [
        {
          "type": 2,
          "offset": 2226,
          "count": 1,
          "context": {
            "type": "LOAD",
            "name": "root",
            "renderTime": 2226
          }
        },
        {
          "type": 6,
          "offset": 2230,
          "count": 2,
          "exception": {
            "description": "Unable to get value of the property
            'nodeValue': object is null or undefined",
            "url": "http://straussandplessner.com/store/js/
            coremetrics/eluminate.js",
            "line": 1
          }
        },
        {
          "type": 4,
          "offset": 24878,
          "count": 3,

```

```

        "event": {
          "type": "click"
        },
        "target": {
          "id":
            "[['main'], ['DIV', 1], ['DIV', 0], ['TABLE', 0],
             ['TR', 0], ['TD', 0], ['DIV', 0], ['P', 0], ['A', 0]]",
          "idType": -2,
          "type": "A"
        }
      },
      {
        "type": 2,
        "offset": 24880,
        "count": 4,
        "context": {
          "type": "UNLOAD",
          "name": "root"
        }
      }
    ],
  }
}

```

In the preceding example, the content after the following string is a set of four separate messages:

```
"messages": [
```

Each message is demarcated by a set of curly brackets.

- Data that is defined at the same level as messages (such as `serialNumber` or `timezoneOffset`) is considered environmental data.

Each step message constitutes a single step.

- Step-triggered events can fire per message step.
- In the preceding example, there are four-step messages. As a result, step-triggered events can fire up to four times on this hit.

Note: Each step-triggered event also has access to the hit attribute data of its parent hit and the environmental data included for reference in each step.

When you create step attributes, the value that is extracted is the contents between the colon (:) and the final comma (,) on the line.

Suppose you want to monitor exception messages that are submitted from the client framework. In the example above, the data is in the following area.

- In the following example, message data that was present in the previous example but is not relevant to the example is replaced with the `<omitted>` string.

```

"sessions": [
  {
    <omitted>
    "messages": [
      <omitted>
      {
        "type": 6,
        "offset": 2230,
        "count": 2,
        "exception": {
          "description": "Unable to get value of the property

```

```
'nodeValue': object is null or undefined",
"url": "http://straussandplessner.com/store/js/
coremetrics/eluminate.js",
"line": 1
```

In the preceding example, you can see that the exception message is stored in the description value. To reference this value in step-based eventing, when you create the step attribute to monitor the above, the node in the tree is referenced by using the following structure:

```
sessions[0].message.exception.description
```

The naming structures for the sessions and messages nodes are changed, and the type identifier is omitted.

Note: When you create step attributes through BBR, you use the menu, which automatically pre-populates the attribute with the appropriate reference within the Event Manager. These steps are described later.

Step-based objects

In Tealeaf, you can create two types of objects to monitor events that are captured from a client framework and passed as messages to Tealeaf:

- *Step attributes* are hit attributes that acquire its data from a step. Step attributes are specified in a slightly different manner but complete an identical function.
- *Step-based events* are standard Tealeaf events that are configured to fire on one of the steps triggers. As conditions, they can use any standard type of Tealeaf condition, and also step attributes.

Default step objects

Tealeaf provides a number of step-based events and attributes for use in step-based eventing.

- For more information about provided step attributes, see "Pattern Objects Reference" in the *IBM Tealeaf Event Manager Manual*.
- For more information about provided step-based eventing, see "EES Reference - Tealeaf Event Reference" in the *IBM Tealeaf Event Manager Manual*.

Step trigger types

To support step-based eventing, the Event Manager now provides two more trigger types:

Trigger Description

Every Step

Event is evaluated with other events in each step.

After Every Step

Event is evaluated after every step is evaluated.

Note: This trigger is rarely used.

In the previous example, any event triggered to fire on Every Step is checked for each combination of JSON message and environmental data. In the previous example, any Every Step event is checked for the load, unload, exception, and other data message.

Note: Step attributes are permitted to reference objects from the parent hit. As a result, you can reference hit attributes in step events, but not vice versa.

In the event definition, the trigger can be selected from the Evaluate drop-down:



Figure 4. Available event triggers

Available triggers are displayed in the order of evaluation. For a particular hit with underlying steps, each Every Hit event is evaluated first, followed by each Every Step event and After Every Step event. Then, the After Every Hit events are evaluated.

Note: The events that fire on each trigger determine the availability of data. An event can use data from any event that fired before the current event. In a multi-hit session, the After Every Hit trigger fire on the previous hit before the events configured to fire on Every Hit from the next hit. The same applies to step-based triggers.

The order of firing is more accurately displayed as a nested structure:

- * First Hit of Session
 - * Every Hit
 - * Every Step
 - * After Every Step
 - * After Every Hit
 - * Last Hit
- * End of Session

Notes on using after every step trigger: In almost all cases, when you create step attributes, you are interested in the current context of the session. You create attributes to monitor the current data that is available as of the current step. As a result, the After Every Step trigger is rarely used.

In the example below, the After Every Step trigger is used. This scenario mirrors the After Every Hit trigger usage, except that it applies to steps instead of hits.

The After Every Step trigger is useful when you must compare the current state with the previous state. For example, suppose you want to know whether users clicked the same object twice in a row.

- To test this scenario, you must know both the object currently being click, and the previously clicked object. If the events that track both the current and previous states fire on the same trigger, they are updated at the same time and therefore always have the same value.

- However, if the previous state event fires just after the current state value by using the After Every Step trigger, the previous state event is not updated when the current state event fires. Therefore, you can compare the current state with the previous state by using an event that fires on the Every Step trigger.

Note: Form messages contain the `currState` and `prevState` properties within a step. The `currState` property refers to the final value of the form field after editing, and `prevState` refers to the default value before editing. These references do not work for testing if the same action occurred twice, since the default value can be reset to blank each time it is accessed.

Privacy

To manage blocking or masking of sensitive data, Tealeaf provides privacy mechanisms to manage specific data before it is transmitted to Tealeaf.

Note: Application of privacy blocking or masking in the PCA or in the Windows pipeline requires complex regular expressions, which can cause significant performance degradation if improperly specified. Tealeaf strongly recommends using the privacy solution that is provided with your client framework to manage sensitive data.

Replay

In Browser-Based Replay, steps are displayed as subpages to the main page on which they occurred. Any triggered events are displayed beneath them.

- During replay, steps can be displayed in a more user-friendly format.

Note: Replay of step-based events in RTV is not supported.

Navigable Pages List

Through the request view of BBR, you can create hit attributes and events for steps. When you load a session that contains JSON-based steps into BBR, the Navigable Pages List looks like:

Navigation	
Page	
--	301 Moved Permanently
--	301 Moved Permanently
1	Home page
UI --	UIEvent: 1 - 4
2	Sony VAIO VGN-TXN27N/B 11
UI --	UIEvent: 1 - 4
--	http://straussandplessner.com/
--	http://straussandplessner.com/
3	Strauss and Plessner
UI --	UIEvent: 1 - 4
4	Digital Cameras - Cameras - E
UI --	UIEvent: 1 - 3
--	http://straussandplessner.com/
5	Strauss and Plessner
UI --	UIEvent: 1 - 4
6	Cameras - Electronics - Englis
7	Digital Cameras - Cameras - E
UI --	UIEvent: 1 - 3
--	http://straussandplessner.com/
8	Strauss and Plessner
UI --	UIEvent: 1 - 4
9	Cell Phones - Electronics - Eng
UI --	UIEvent: 1 - 3
--	http://straussandplessner.com/
10	Strauss and Plessner
UI --	UIEvent: 1 - 4
11	Digital Cameras - Cameras - E
UI --	UIEvent: 1 - 3
--	http://straussandplessner.com/

Figure 5. BBR Navigable Pages List

In the preceding image, the step that is captured from the visitor's user interface are indicated by the UIEvent label. In the preceding example, each instance also

lists the range of user interface events captured. UIEvent: 1 -4 indicates that the specific step includes 4 individual user interface events.

Viewing formatted JSON messages

When one of the UIEvent steps is selected, you can review the JSON messages that are submitted as part of the step.

Note: Any BBR user can view the formatted client framework messages. To create attributes and events from them, you must have access permissions to the Tealeaf Event Manager.

1. Click **Request** in the toolbar to display the request data.
2. Click one of the UIEvent entries in the Navigable Pages List.
3. The raw JSON messages are displayed in the [RequestBody] section.
4. However, this information is not easy to read. To review the JSON messages in a more legible format, click the **Click here to view Step Attributes** link at the top of the request pane.

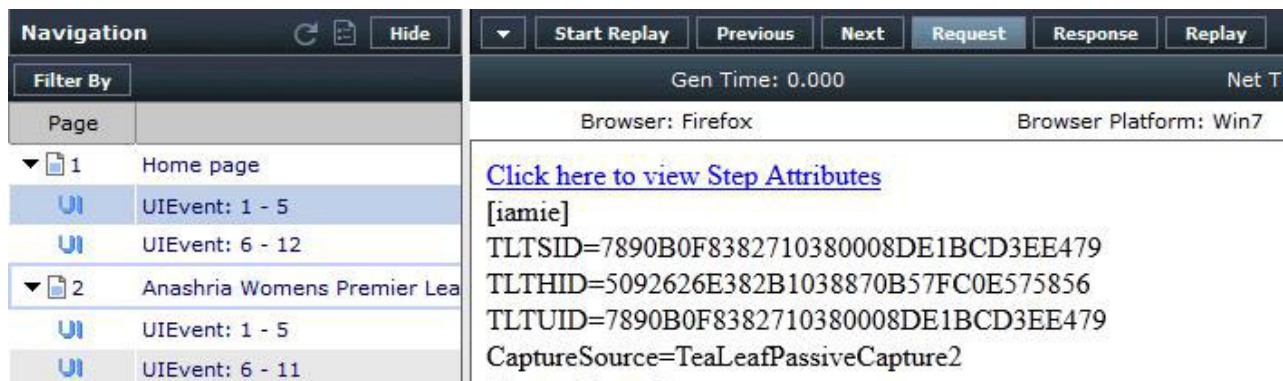


Figure 6. Step Attributes link in BBR

5. The list of JSON messages are broken out into separate lines for easier reading.
 - Each selectable item is a name-value pair that is highlighted when you move your mouse over it.
 - Null values can be selected for creation of step-based attributes.
 - Hit and event objects that you create search for the values for the specified JSON item.

Creating Step-Based Event Objects

You can create step attributes through Request view in Browser Based Replay.

Note: Creation of step attributes is not supported in RTV.

When you create objects through Browser Based Replay, the Event Manager checks to see if the selected content is already referenced in an existing event object. If so, the Event Manager selects that object for you to edit.

In some cases, the selected event object is provided by Tealeaf and is therefore not editable. For example, Tealeaf provides the CUI Hit hit attribute, which references the contents of the HTTP_X_TEALEAF request variable. When you choose to create attributes or events from the values of this request variable, the Event Manager selects the CUI Hit attribute for you to edit. This hit attribute cannot be edited.

Note: If you want to create more step attributes and events from session data for which attributes or events are already created, you must create them manually through the Event Manager.

Note: There is a known issue in which the PCA fails to properly recognize UTF-8 encoding in data that is submitted from client frameworks, and the data can be mangled in the stored session, causing issues in eventing and search.

Note: The following information applies to IBM Tealeaf version 9.0A only.

9.0A can properly recognize UTF-8 encoding in data that is submitted from client frameworks.

Required access

Note: To create step attributes, you must have permissions to access the Tealeaf Event Manager, where event-related objects are created in the Portal.

To test access, select **Configure > Event Manager**.

BBR step attribute context menu

To create a step attribute or event in BBR, right-click a name-value pair in the formatted JSON message. The context menu is displayed:

- These items are disabled if you do not have access to the Event Manager.

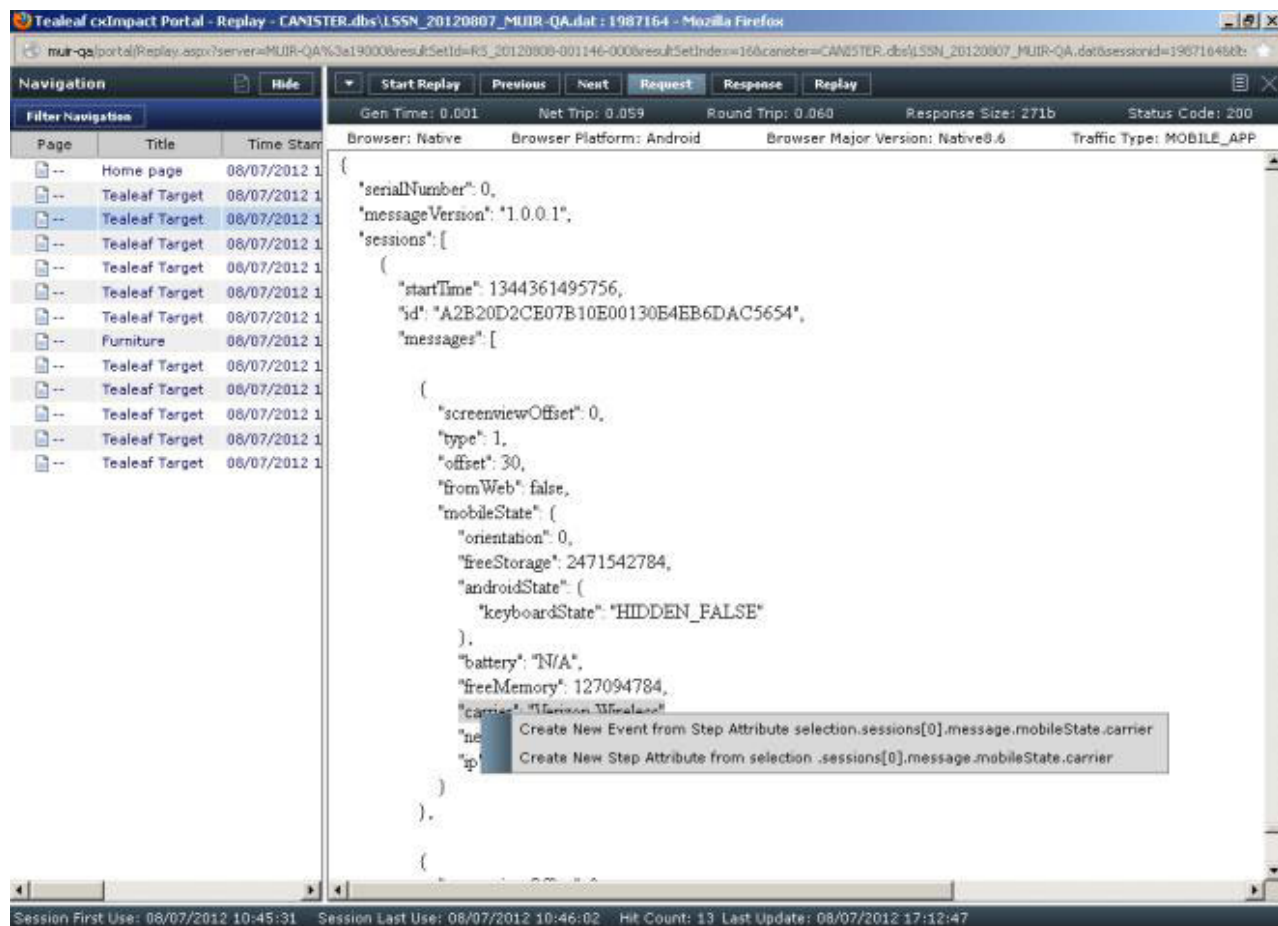


Figure 7. BBR Context Menu

Option Description

Create New Event from Step Attribute selection

Create a step-based event and any necessary hit attribute to gather the data.

Create New Step Attribute from selection

Create a step attribute.

Creating a step attribute

When you select a JSON item in BBR and choose to create a step attribute, the Event Manager is opened in the browser window currently opened to the Portal. The following dialog is displayed:

Note: Depending on your browser type and configuration, you can manually switch over to the Portal window.

Mobile Manufacturer

Name

Mobile Manufacturer

Description:

Manufacturer of the mobile device

Active:

☒

Group:

Mobile

Select...

Search in:

Request

☐ Use Start Tag/End Tag

☐ Use Text Pattern

☒ Use Step Pattern

Step Attribute Path:

.clientEnvironment.mobileEnvironment.manufacturer

Case Sensitive:

☒

All Matches:

☒

Encoding:

UTF-8

► Post-Match Operations

Save Draft

Cancel

Figure 8. Creating a step attribute

Step attributes are commingled with hit attributes. They do not belong to a special category. What defines an attribute as a step attribute are the properties that are listed.

Table 27. Key Properties:

Attribute Properties	Description
Use Step Pattern	For step attributes, the Use Step Pattern radio button is selected for you, which enables specification of the xpath to the node whose value you want to track. When a step pattern is used to identify an attribute, the check is completed by using a case-sensitive search by default. If you choose to change the type of pattern tag to a step pattern, the existing case-sensitive settings are preserved.

Table 27. Key Properties: (continued)

Attribute Properties	Description
Step Attribute Path	The Step Attribute Path value contains the node information to uniquely identify the JSON value to acquire in the attribute. For the preceding example, the path is: <pre>.sessions[0].message.exception.description</pre> This provides a unique path to the description value for the exception message that was submitted from a client framework to Tealeaf.

Note: You can complete the same Post-Match Operations on a step attribute that you can complete on a hit attribute.

Data format: The values of step attributes are always treated as text patterns. As a result, operators such as equals perform text-based comparisons, even if the captured value is a numeric or Boolean value.

Data availability: Like the hits that contain them, steps are processed in isolation from all other steps. For example, if you want to use data from step 1 for use on step 2, you must create an event to record the data from step 1 for later use.

- Since each step is associated with a parent hit, any hit attributes triggered on the parent hit are available for reference in each step of the hit.
- However, step attributes are available only within the single step that is being evaluated.
- If you want to use a hit attribute in a step attribute, the event trigger must be configured to be evaluated on one of the step triggers.
- Data from events that are triggered on previous steps is available in later steps.

Using data between step attributes: A step triggered event uses only data that is contained in the step in which it is triggered, which is a similar behavior to how hits are triggered. To use data from step 1 in step 2, you must record the data from step 1 in an event and then reference the event in step 2.

For example, suppose your request data for a single hit looks like:

```
[appdata]
TLT_URL=/tealeaftarget.php
TLT_CUI_URL= /checkout
```

```
[StepAttributes]
{
  "type": 4,
  "offset": 8063,
  "count": 1,
  "event": {
    "type": "change"
  },
  "target": {
    "id": "firstname",
    "idType": -1,
    "type": "INPUT",
    "dwell": 2196,
    "currState": {
      "value": "MyName"
    }
  }
},
```



```

{
  "type": 4,
  "offset": 2293,
  "count": 2,
  "event": {
    "type": "click"
  },
  "target": {
    "id": "login:guest",
    "type": "INPUT",
    "subType": "radio",
    "currState": {
      "checked": true,
      "value": "guest"
    }
  }
},

```

In the preceding data:

- [appdata] data is available through standard hit attributes.
- There are 2-step messages:
 - Step 1: The first step identifies the change client event, in which the `firstname` form field is set to `MyName`.
 - Step 2: The second step identifies the `click` client event, in which the `login.guest` element is set to `guest`.

A single step-triggered event cannot use data from both step 1 and step 2 at the same time. For example, you cannot create a step-triggered event that fires on the click message and records the value of the `firstname` value by using only step attributes.

To capture the value of Step 1 based on the condition of Step 2, you must:

- Create a step attribute to capture `firstname`'s value on Step 1.
- Create an event that records the value of the step attribute for Step 1.
- Create an event that fires on the click for guest and uses the value for the Step 1 event for the guest value.

Important notes on step-based eventing:

- A single web action can require multiple attributes and events to track. You can create multiple attributes, which are inputs to a single compound event to track a single user action.

Capturing a specific value:

By default, a step attribute captures all possible values for the selected JSON path. When the attribute is specified, any value that is detected for the node becomes the value for the attribute.

In some situations, you can gather in the step attribute only specified values. For example, suppose that you are tracking the following JSON path:

```
.sessions[0].message.clientState.event
```

By default, any step attribute can capture any instance of any value. So, your attribute can capture values such as `load`, `attention`, `resize`, or `scroll`. Suppose that you are interested in creating a step attribute to track only the `scroll` values. After you create the step attribute through BBR, you can complete the following modifications to the attribute definition through the Event Manager.

1. Edit the step attribute.
2. Click the **Post Match Operations** caret.
3. Select the **User RegEx** check box.
4. In the RegEx textbox, enter:
`scroll`
5. To save the change, click **Save Draft**.
6. To commit the change, click **Save Changes**.

Now, the step attribute records only the instances of the `scroll` value for the specified JSON path.

As an alternative, you can specify a step attribute without using the RegEx portion. When you use the step attribute in an event, specify that the value of the step attribute equals `scroll`.

Creating a step event

When you select a JSON item in BBR and choose to create an event, the Event Manager is opened in the browser window currently opened to the Portal. The Event Wizard is displayed.

Note: Depending on your browser type and configuration, you can manually switch over to the Portal window.

The default event checks every step to see whether the JSON item is present and records the last occurrence in the event by default. Using this configuration, you can track the number of sessions in which the event occurred.

Note: If you cancel creation of a step-based event, you must revert the step attribute, if created, through the Hit Attributes tab.

Triggers for step objects: Step-based events can be evaluated on the Every Step and After Every Step trigger.

Triggers for compound events using step-based events as conditions:

Note: If you are creating an event with multiple conditions that uses one or more step-based events, you must set the event to be evaluated on After Every Hit. That trigger is evaluated after Every Hit, Every Step, and After Every Step, in that order.

Tracked Occurrences for step events:

Note: For any event that is triggered off step-based data, you must configure it to track occurrences at the individual hit level. Do not use session-level tracking, as those options operate only on the first or last hit of the session.

Condition step: The Event Manager pre-populates the event definition with properties to identify the specific JSON item to track.

The screenshot shows the Tealeaf Event Manager interface. At the top, there's a navigation bar with 'Dashboards', 'Active', 'Search', 'Analyze', 'Configure', 'Tealeaf', and 'Help'. The user is logged in as 'ADMIN' with a '(UTC-08)' time zone. The main header shows the Tealeaf logo and a 'Search Online Help' button. The event being created is named '.sessions[0].message.context.type Event', with a description of the same. The 'Evaluate' setting is 'Every Step', 'Track' is 'First per Session', and 'Value Type' is 'Count Only'. The 'Condition' tab is active, showing a list of conditions on the left (Events, Hit Attributes, Session Attributes) and a configuration area on the right. The right area shows a dropdown for 'All of the following conditions must be met'. Under 'Hit Attribute', there's a condition for '.sessions[0].messa step entry in Request' with 'First Value' and 'Equals' operators. Buttons for 'Save Draft', 'Cancel', 'Add Condition', and 'Set Item' are visible.

Figure 9. Creating a step-based event - Condition step

When you create an event to track a JSON message item, the step attribute that is required to detect the name-value pair is also created in draft mode for you. In the above, the Hit Attribute condition specifies the step attribute that the Event Manager has also created for you.

Note: For step attribute conditions, Match Count and Last Value value tests are not useful, as there is only one unique match and its value for a specified property on the hit.

Note: If you do not want to double count actions, use both the event type and the ID/name when you create events for a specific action.

- If you look only for ID = checkout method, then this event fires twice when you only wanted it to fire once. Suppose you want to track clicked objects. Each object has the event type click.
- To track clicks of a specific object, you must specify both the event type and object ID.
- If a step attribute with the same properties exists, the Event Manager uses the existing step attribute.
- As needed, you can add extra conditions to the event you are creating.

Table 28. Key Properties:

Attribute Properties	Description
Icon	You must select an identifying icon for your step-based events.
Labels	You can organize your step-based events into labels within the Event Manager.
Evaluate	Set the trigger to be either of the step-based triggers.
Track	Set the occurrences to track to monitor the first or last occurrence in the session or every occurrence. • If you want to track the number of sessions in which the event occurrence, set the value to Last Occurrence. • If you want to track each time that the event occurred in a session, set the value to Every Occurrence.
Value Type	Step-based events can track numeric or text values or the count of occurrences of the event.

Value step:

The screenshot shows the Tealeaf Event Tester interface. At the top, there's a navigation bar with links: Dashboards, Active, Search, Analyze, Configure, Tealeaf, Help. On the right, it shows '(UTC-08) ADMIN: Logout'. Below the navigation bar is the Tealeaf logo and a search bar. The main content area is titled ':sessions[0].message.context.type Event' with 'Created: 02/23/2012 11:18:42' and 'Updated: 02/23/2012 11:18:42'. There are 'Save Draft' and 'Cancel' buttons. The 'Name' field contains ':sessions[0].message.context.type Event'. The 'Description' field also contains ':sessions[0].message.context.type Event'. Below these are 'Icon' and 'Labels' (with a dropdown set to 'Default'). The 'Evaluate' dropdown is set to 'Every Step'. The 'Track' dropdown is set to 'First per Session'. The 'Value Type' dropdown is set to 'Count Only'. There are tabs for 'Condition', 'Value', 'Report Groups', and 'More Options'. The 'Value' tab is selected. Below the tabs, there are checkboxes for 'Active' and 'Searchable & Reportable', and an 'Advanced Mode' button. A message states 'No selections necessary for Count Only or Distance Value'. A section titled 'Selected Value Type: Count' explains that if conditions are true, the following is recorded: 'Event occurrence'.

Figure 10. Creating a step-based event - Value step

Note: The value of step-based events can be specified like any other event.

Other steps: For step-based events, you can configure the other steps as you would any other event.

Advanced Mode: To see the native JavaScript created for your step-based event, click **Advanced Mode**.

Creating a dimension

After you create the step attribute, event, or both to track a value in a submitted message, you can create a dimension to record values from the event or attribute in the standard manner.

Note: Dimensions that are populated by step attributes or events can capture new values from multiple steps in a hit.

In RTV

Creation of step attributes and events is not supported in RTV.

In request view, you can review the raw JSON messages in the [RequestBody] section of the request.

You can use RTV to save test TLA sessions, which can be loaded into the Event Tester to use as test data for step-based events.

In Event Tester

In the Event Tester, you can validate the triggering of step-based attributes and events. Step attributes and the events that are triggered from them are displayed as regular hit attributes and events in the test results.

Note: After you create step-based objects, it can take a few minutes before they are available for selection in the Event Tester.

Indexing

Step-based event data is not indexed by default. You can, however, search for events through BBR and RTV.

It is possible to move data from one location in the request into another section which is automatically indexed for search.

Note: If you must index some JSON-based session data for search, you must use a privacy rule to insert the data into the [appdata] section. Creation of the rule requires configuration of a regular expression to locate the data. Regular expressions are considered an advanced configuration option, as if they are poorly specified, they can significantly impact system performance.

- For more information about configuring regular expressions, contact Tealeaf <http://support.tealeaf.com>.
- Use of privacy rules against JSON message data is likely to be supported in a later release.

Reference

Section

Description

"CX Browser Based Replay" in the IBM® Tealeaf cxImpact User Manual
BBR documentation

"Browser Based Replay Interface" in the IBM Tealeaf cxImpact User Manual
How to use BBR, including how to access request view

"TEM Hit Attributes Tab" in the IBM Tealeaf Event Manager Manual
How to create hit attributes or step attributes in Event Manager

"TEM Events Tab" in the IBM Tealeaf Event Manager Manual
How to create events in Event Manager

"UI Capture for Ajax Guide" in the IBM Tealeaf UI Capture for Ajax Guide
Reference guide for the IBM Tealeaf CX UI Capture for AJAX solution

"Tealeaf Android Logging Framework Reference Guide" in the IBM Tealeaf Android Logging Framework Reference Guide
Reference guide for the IBM Tealeaf CX Mobile Android Logging Framework

"Tealeaf iOS Logging Framework Reference Guide" in the IBM Tealeaf iOS Logging Framework Reference Guide
Reference guide for the Tealeaf IOS Logging Framework

"Event Tester" in the IBM Tealeaf Event Manager Manual
Portal-based Event Tester displays step-based attributes and events transparently

"Searching Session Data" in the IBM Tealeaf cxImpact User Manual
Searching for sessions through the Portal

"RealiTea Viewer - Request View" in the IBM Tealeaf RealiTea Viewer User Manual
Request view page for RTV.

Note: You cannot create step attributes through RTV.

"RealiTea Viewer - Session Search and Subsearch" in the IBM Tealeaf RealiTea Viewer User Manual
Searching for sessions through RTV

"Configuring CX Indexing" in the IBM Tealeaf CX Configuration Manual
How sessions are indexed and how data is added for indexing

Eventing for cxOverstat

IBM Tealeaf cxOverstat enables the capture of usability information from the visitor's web experience, as detected in the client and transmitted to Tealeaf. This information is anonymously aggregated for reporting purposes.

Note: IBM Tealeaf cxOverstat is a separately licensable product of the IBM Tealeaf CX platform. For more information, contact your representative.

When the IBM Tealeaf cxOverstat JavaScripts are deployed on pages or ScreenViews of your web application, usability data such as X-Y location, relative location, and focal point are captured and transmitted to Tealeaf. A provided set of events is designed to capture the usability data.

- You can optionally associate other events with usability dimensions by using the report group templates that are provided by Tealeaf.

In this section, you learn more about the usability data that is captured for IBM Tealeaf cxOverstat, the data objects that are provided by Tealeaf to record them, and other eventing possibilities for usability data.

- The maximum length for selected values of text for attributes and events is 256 characters.

cxOverstat usability data

IBM Tealeaf cxOverstat data is submitted from the IBM Tealeaf CX UI Capture j2 solution, when it was enabled for IBM Tealeaf cxOverstat.

IBM Tealeaf cxOverstat data comes in the following forms:

Type Description

Comparison Analytics

With the Comparison Analytics overlay, you can view selected metrics for a web page and apply specific segments and filters to create customized reports.

- For more information about this feature, see "Comparison Analytics Overlay" in the *IBM Tealeaf cxOverstat User Manual*.

Heat mapping

Identifies regions on a page or ScreenView where visitors click, regardless of whether an object was selected.

- For more information about this feature, see "Using Heat Maps" in the *IBM Tealeaf cxOverstat User Manual*.

Attention mapping

Identifies the regions on a page or ScreenView that are most frequently displayed within the visitor's browser window.

- For more information about this feature, see "Using Attention Maps" in the *IBM Tealeaf cxOverstat User Manual*.

Form Identifies visitor activities on forms on a page or ScreenView.

- For more information about this feature, see "Using Form Analytics" in the *IBM Tealeaf cxOverstat User Manual*.

Link Identifies links that are most frequently selected by visitors to a page or ScreenView.

- For more information about this feature, see "Using Link Analytics" in the *IBM Tealeaf cxOverstat User Manual*.

JSON schema

Usability data is submitted as a set of JSON objects from the client.

For more information about the schema, see "Tealeaf JSON Object Schema Reference" in the *IBM Tealeaf Client Framework Data Integration Guide*.

- For more information about the properties that pertain to IBM Tealeaf cxOverstat, see "Tealeaf JSON Properties" in the *IBM Tealeaf Client Framework Data Integration Guide*.

Usability eventing

To support the tracking and recording of usability activities on your web application, IBM Tealeaf provides a set of event objects to process usability data that is submitted in JSON format from the client framework.

cxOverstat objects must be enabled

In addition to providing the standard reporting and search capabilities, IBM Tealeaf cxOverstat events are also used by the usability application itself. For example, when the Tealeaf user chooses to display the Form Analytics overlay in Browser Based Replay, the usability components in BBR query the Reporting database for the event data that pertains to form analysis for the current page or ScreenView.

Note: For correct capture and display of usability data in the IBM Tealeaf cxOverstat overlays in Browser Based Replay, all hit attributes, events, and dimensions must be enabled through the Event Manager. By default, these objects are installed and enabled. Disabling can disable usability functions and data.

Goal Based Dimensions

By default, Tealeaf publishes event data as soon as the Canister detects and processes it. IBM Tealeaf cxOverstat events, however, are configured to publish their event data at the end of the session. The event values that were detected at the time the event fired are recorded, but the recording does not occur until the session is completed by the user, or session timeout. This method for event publishing enables the support of the capturing of the dimension values associated with the event from their last occurrence in the session.

For example, suppose you use a dimension to capture whether a purchase was made. Since that information is not known until the end of the session, you can delay the publishing of IBM Tealeaf cxOverstat events and their related dimensions until the end of the session so the definitive answer (Yes or No) is captured in the dimension value.

Note: All IBM Tealeaf cxOverstat events are configured to have their data published at the end of the session. This setting cannot be modified for these events.

See "Goal Based Dimensions" in the *IBM Tealeaf Event Manager Manual*.

Data storage

After the IBM Tealeaf cxOverstat step attributes and events are triggered, they are recorded in the standard locations for Tealeaf.

Session: When the Event Engine detects an event, it records the event as data in the request of the hit on which the event occurred, along with any related dimensional data. IBM Tealeaf cxOverstat events are recorded in this manner. Below is an example recording of the event + dimension combination in a request:

- These elements of data are written to the bottom of the request for each event that is triggered on the hit.

```
[TLFID_359]
Searchable=True
TLFID=359
TLFactValue=200
TLDimHash1=C6F8B06175B0630687EB80DF913A30CE
TLDimHash2=B0437419D4F0575FABDB726AAE61039C
TLDimHash3=3CFBA54F6873DFD55B0B09D32910B20E
TLDimHash4=0BDB5F014A7574C3B6DCCAD319321FED
TLDimHash5=7954797EAEBD4BD8B816EA63AF1CE05A
TLDimHash6=7954797EAEBD4BD8B816EA63AF1CE05A
TLDimHash7=7954797EAEBD4BD8B816EA63AF1CE05A
TLDimHash8=7954797EAEBD4BD8B816EA63AF1CE05A
TLDim1=/store/defaultpage
TLDim2=www.straussandplessner.com
TLDim3=store
TLDim4=206.169.17.19
TLDim5=TLT$NULL
TLDim6=TLT$NULL
TLDim7=TLT$NULL
TLDim8=TLT$NULL
```

For the listed event + dimension combination ([TLFID_359]), the event value (TLFactValue) is recorded for the Searchable event.

- Beneath the event value, each possible dimension value is listed in both hashed (TLDimHash) and standard (TLDim) form.
- Hashed dimension values are stored to support searching for dimension values that are longer than 32 characters. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about request view in BBR, see "CX Browser Based Replay" in the *IBM Tealeaf cxImpact User Manual*.
- For more information about the data that is stored for events and dimensions in the request, see the [TLFID_] section in "RealTea Viewer - Request View" in the *IBM Tealeaf RealTea Viewer User Manual*.

Database: Usability data is stored as event counts of the predefined usability events. This data is stored in the Reporting database as normal event data.

When a page or ScreenView for stored usability data is displayed in BBR, the application queries the Reporting database for the correct event counts to display in the selected overlay.

cxOverstat step attributes

To facilitate the tracking of usability data that is submitted from UI Capture, Tealeaf provides a set of step attributes to track this information.

- When IBM Tealeaf cxOverstat is licensed and enabled, these attributes are automatically enabled, and Tealeaf is tracking usability data.

Note: If you are licensing IBM Tealeaf cxOverstat for an existing Tealeaf installation, you must use the Tealeaf Upgrader to install the IBM Tealeaf cxOverstat event objects. See "cxOverstat Installation and Configuration" in the *IBM Tealeaf cxOverstat User Manual*.

- A step attribute is a hit attribute that is configured to track values that are stored in JSON data that is submitted from a client framework. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.
- In the Events tab, these step attributes are contained in the System Step Attributes.
- For more information about the step attributes pertaining to IBM Tealeaf cxOverstat, see "Tealeaf JSON Properties" in the *IBM Tealeaf Client Framework Data Integration Guide*.
 - For more information about all event objects that are provided by Tealeaf, see "Tealeaf Standard Event Object Reference" in the *IBM Tealeaf Event Manager Manual*.

cxOverstat events

Usability events require dimensional data in order for them to properly function. The following events are provided by Tealeaf for IBM Tealeaf cxOverstat, and associated with each of these events is a set of pre-configured dimensions.

- In the Events tab, these events are contained in the System Step Events.
- Building block events are not displayed in the Portal at all.
- By default, the non-building block events for IBM Tealeaf cxOverstat are configured to be displayed in the Portal for search and reporting purposes. However, they are configured to not be displayed in session lists in the Portal, which includes QuickView and the Page List. While you can modify the event definitions to display them in these views, they are likely to be displayed in every session and thus clutter the display. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

Note: Except to add or remove dimensions that you created, do not edit these System Step Events. Do not edit the event definitions or remove any of dimensions that are listed for each event.

Primary Reporting Events

The following events are the primary events that are used for the reporting of IBM Tealeaf cxOverstat data.

Table 29. Primary Reporting Events

Event Name	Description	Default Dimensions
Step - Usability Attention Map Y View Time	Attention View Time (Y) Event for Usability data	• ScreenView URL • Step - ScreenView • Step - Usability Focal Slice Y • Step - Usability View Port Height
Step - Usability Click	Click event for Usability data. This event is used for comparison analytics, heat maps, and link analytics data.	• Step - ScreenView URL • Step - ScreenView • Step - Target ID • Step - Target Relative XY
Step - Usability Form Field Visit	Field Visits + Dwell time for Event for Usability data	• Step - ScreenView URL • Step - ScreenView • Step - Target ID

Building block events

A "building block" event is available in the Short Term Canister while the session is being captured. The event expires when the session is closed and moved to the Long Term Canister. Building block events cannot be used in search or reporting.

See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.

The following table describes the building block events that are defined. These events are unlikely to need modification.

Table 30. Building Block Events

Event Name	Description	Default Dimensions
Step - ScreenView (BB)	(Building Block) Latest ScreenView from ScreenView LOAD message	None
Step - ScreenView URL (BB)	(Building Block) Latest URL from ScreenView LOAD message	None
Step - Usability Attention Map Viewport Height	Normalized Viewport height (min of Viewport or Page height) Note: This event can be reviewed and modified in JavaScript only.	None
Step - Usability Focal Slice Y (BB)	(Building Block) Focal Slice BB event for Usability data Note: This event can be reviewed and modified in JavaScript only.	None
Step - Usability Target ID + Type (BB)	(Building Block) Combines Target ID and ID Type into a single string Note: This event can be reviewed and modified in JavaScript only.	None

- For more information about the events that pertain to IBM Tealeaf cxOverstat, see "Tealeaf JSON Properties" in the *IBM Tealeaf Client Framework Data Integration Guide*.
 - For more information about all event objects that are provided by Tealeaf, see "Tealeaf Standard Event Object Reference" in the *IBM Tealeaf Event Manager Manual*.

cxOverstat dimensions

To capture IBM Tealeaf cxOverstat data for reporting purposes, Tealeaf provides a set of dimensions, which are used to store client usability data.

To locate these dimensions, enter Step in the filter text box in the **Dimensions** tab.

Table 31. cxOverstat Dimensions

Dimension Name	Description	Source Event
Step - ScreenView	Records the latest Screenview for each Screenview LOAD message	Step - ScreenView [BB]
Step - ScreenView URL	Records the latest URL for each Screenview LOAD message	Step - ScreenView URL [BB]

Table 31. *cxOverstat Dimensions (continued)*

Dimension Name	Description	Source Event
Step - Target ID	ID of object that is acted on	Step - Usability Target ID + type [BB]
Step - Target Relative XY	Records the relative position of the action that is based on the object that is acted on	Step - Target Relative XY
Step - Usability Focal Slice Y	Records the Y focal slice. Dimension includes a predefined whitelist of values for bucketing of slices for reporting.	Step - Usability Focal Slice Y [BB]
Step - Usability View Port Height	Viewport height of the browser window that explores usability overlays Dimension includes a predefined whitelist of values for bucketing of slices for reporting.	Step - Usability Attention Map Y View Time

For more information about the dimensions that pertain to IBM Tealeaf *cxOverstat*, see "Tealeaf JSON Properties" in the *IBM Tealeaf Client Framework Data Integration Guide*.

For more information about all event objects that are provided by Tealeaf, see "Tealeaf Standard Event Object Reference" in the *IBM Tealeaf Event Manager Manual*.

cxOverstat report groups

IBM Tealeaf *cxOverstat* provides a set of report groups that contain the provided IBM Tealeaf *cxOverstat* dimensions. These report groups are predefined to contain only the dimensions that are required for IBM Tealeaf *cxOverstat*.

The following list displays the dimensions:

- Usability - Attention Map
- Usability - Click
- Usability - Form Analytics

IBM Tealeaf recommends creating separate report groups for use with the IBM Tealeaf *cxOverstat* system dimensions and then add dimensions as needed. These custom report groups can be added, modified, and removed as needed.

Note: After a dimension is added to any report group and committed to the database, it cannot be removed. Since you are not allowed to remove the default IBM Tealeaf *cxOverstat* report groups from the IBM Tealeaf *cxOverstat* events, any dimensions added to these report groups are retained permanently.

cxOverstat report group templates

For IBM Tealeaf *cxImpact*, the base report group template is Standard. This report group template supports up to four dimensions of your choosing.

For IBM Tealeaf *cxOverstat*, if you want to associate the usability data with other dimensions for cross-dimensional reporting, you can use report group templates as the basis for creating new report groups. A report group template is a template

that contains pre-configured dimensions for a new report group when it is created. The report group template can be selected when you create a report group.

Note: You can create multiple of custom report groups from these templates. Only report groups that are based on these associated templates are available for usability events.

Note: You cannot make report group templates.

Add Report Group: Usability - Heat Map

Name: Usability - Heat Map

Description: Report group for heat map data

Template: Usability - Click

Dimensions:

- Step - ScreenView URL
- Step - ScreenView
- Step - Target ID
- Step - Target Relative XY

Buttons: Add Dimensions..., Save Draft, Cancel

Figure 11. Creating report groups with a Usability template

The following report group templates are available to capture for IBM Tealeaf cxOverstat:

Note: A report group that is created from one of the IBM Tealeaf cxOverstat report group templates can contain up to eight dimensions.

Note: After you select a report group template, choosing a new report group template automatically removes all dimensions from the report group and starts with the included dimensions of the newly selected report group template.

Table 32. cxOverstat Report Group Templates

Name	Description
Usability - Click	Events operating on comparison analytics, heat map, or link analytics data require these contextual dimensions
Usability - Attention Map	Events operating on attention map data require these contextual dimensions

Table 32. *cxOverstat Report Group Templates (continued)*

Name	Description
Usability - Form Analytics	Events operating on form analytics data require these contextual dimensions

See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

Tracking other usability events

The IBM Tealeaf CX UI Capture j2 solution provides more usability data that is not natively captured by Tealeaf. Specifically, you can create custom step messages to submit data of interest to you pertaining to the client activities of your web application.

See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Reporting

By using viaTealeaf, you can access a set of reports that are configured for the usability data that is submitted to Tealeaf.

Mobile Events

Tealeaf provides a set of Mobile events to support the tracking of user interface events that are captured through a Tealeaf client framework. These objects can be used as the basis for building other event objects for tracking the specifics of your client application.

Information about Mobile

The IBM Tealeaf CX Mobile module is a separately licensed module of the IBM Tealeaf CX platform. please contact your IBM Tealeaf representative.

Double Tap Gesture

.session(0) message Event

Display Name

Double Tap Gesture

Internal Name

CUST.E_DOUBLE_TAP_GESTURE

Advanced Mode

true

Description

.session(0) message Event

ImageSrc

default.gif

DisplayInPortal

true

DisplayInSessionList

true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_DOUBLE_TAP_GESTURE()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $P["TL.P_SESSIONS_0_MESSAGE_STEP_ENTRY_IN_REQUEST"].firstValue().toUpperCase() == "DOUBLETAP")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_DOUBLE_TAP_GESTURE", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_DOUBLE_TAP_GESTURE_FACT2", "TLT$NULL");
    }
}
```

Exception

General exception

Display Name

Exception

Internal Name

CUST.E_EXCEPTION

Advanced Mode

true

Description

General exception

ImageSrc

default.gif

DisplayInPortal

true

DisplayInSessionList

true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_EXCEPTION()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $P["TL.STEP_MESSAGE_TYPE"].firstValue().toUpperCase() == "6")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_EXCEPTION", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_EXCEPTION_FACT2", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group 3
        $F.setFact("CUST.F_E_EXCEPTION_FACT3", "TLT$NULL");
    }
}
```

Gesture

Any recorded gesture qualifies.

Display Name
Gesture

Internal Name
CUST.E_GESTURE

Advanced Mode
true

Description
Any recorded gesture qualifies.

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_GESTURE()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $P["TL.STEP_
MESSAGE_TYPE"].firstValue().toUpperCase() == "11")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_GESTURE", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_GESTURE_FACT2", "TLT$NULL");
    }
}
```

Mobile Model

Mobile model name

Display Name
Mobile Model Name

Internal Name
CUST.E_MOBILE_MODEL

Advanced Mode
true

Description
Mobile model name

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_MOBILE_MODEL()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $P["TLT.P__MODEL"].
patternFound())
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_MOBILE_MODEL", $P["TLT.P__MODEL"].firstValue());
    }
}
```

Mobile Session Count

Count of mobile sessions.

Display Name

Mobile Session Count

Internal Name

CUST.E_MOBILE_SESSION_COUNT

Advanced Mode

true

Description

Count of mobile sessions

ImageSrc

default.gif

DisplayInPortal

true

DisplayInSessionList

true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_MOBILE_SESSION_COUNT()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0)
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_MOBILE_SESSION_COUNT_DG_NONE", "TLT$NULL");
        // Set fact for Report Group: Gesure Report Group
        $F.setFact("CUST.F_E_MOBILE_SESSION_COUNT_FACT1", "TLT$NULL");
        // Set fact for Report Group: Gesure Report Group 2
        $F.setFact("CUST.F_E_MOBILE_SESSION_COUNT_FACT2", "TLT$NULL");
        // Set fact for Report Group: Gesure Report Group 3
        $F.setFact("CUST.F_E_MOBILE_SESSION_COUNT_FACT3", "TLT$NULL");
        // Set fact for Report Group: Device Model / OS Version
        $F.setFact("CUST.F_E_MOBILE_SESSION_COUNT_FACT4", "TLT$NULL");
    }
}
```

Mobile Session Length (sec)

Total length of the session in seconds (end of session).

Display Name
Mobile Session Length (sec)

Internal Name
CUST.E_MOBILE_SESSION_SECS

Advanced Mode
true

Description
Total length of the session in seconds (end of session).

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
false

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_MOBILE_SESSION_SECS()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0)
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_MOBILE_SESSION_SECS_DG_NONE", $S.TotalTime);
        // Set fact for Report Group: Traffic Type
        $F.setFact("CUST.F_E_MOBILE_SESSION_SECS_DG_TLT_TRAFFIC_TYPE",
        $S.TotalTime);
        // Set fact for Report Group: Gesure Report Group 3
        $F.setFact("CUST.F_E_MOBILE_SESSION_SECS_FACT1", $S.TotalTime);
        // Set fact for Report Group: Gesure Report Group
        $F.setFact("CUST.F_E_MOBILE_SESSION_SECS_FACT2", $S.TotalTime);
    }
}
```

Mobile Session Size (MB)

Total of all Rep and Req sizes (end of session)

Display Name
Mobile Session Size (MB)

Internal Name
CUST.E_MOBILE_SESSION_MB

Advanced Mode
true

Description
Total of all Rep and Req sizes (end of session)

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
false

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_MOBILE_SESSION_MB()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0)
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_MOBILE_SESSION_MB_DG_NONE", $F.getLastFact
("TL.F_E_REPORT_WS_SESSION_MB_DG_NONE").NumericValue);
        // Set fact for Report Group: Traffic Type
        $F.setFact("CUST.F_E_MOBILE_SESSION_MB_DG_TLT_TRAFFIC_TYPE", $F.getLastFact
("TL.F_E_REPORT_WS_SESSION_MB_DG_NONE").NumericValue);
        // Set fact for Report Group: Gesure Report Group 3
        $F.setFact("CUST.F_E_MOBILE_SESSION_MB_FACT1", $F.getLastFact
("TL.F_E_REPORT_WS_SESSION_MB_DG_NONE").NumericValue);
        // Set fact for Report Group: Gesure Report Group
        $F.setFact("CUST.F_E_MOBILE_SESSION_MB_FACT2", $F.getLastFact
("TL.F_E_REPORT_WS_SESSION_MB_DG_NONE").NumericValue);
    }
}
```

Mobile Session Start [BB]

Start of a mobile session.

Display Name

Mobile Session Start [MB]

Internal Name

CUST.E_MOBILE_SESSION_START_BB

Advanced Mode

true

Description

Start of a mobile session

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function TL$E_MOBILE_SESSION_START_BB()
{
    if ($P["TL.TLT_TRAFFIC_TYPE"].firstValue() == "MOBILE" ||
$P["TL.TLT_TRAFFIC_TYPE"].firstValue() == "MOBILE_APP")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("TL.F_E_MOBILE_SESSION_START_BB", "TLT$NULL");
    }
}
```

Pinch Gesture

.sessions(0) message Event

Display Name
Pinch Gesture

Internal Name
CUST.E_PINCH_GESTURE

Advanced Mode
true

Description
.sessions(0) message Event

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_PINCH_GESTURE()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $P["TL.P_SESSIONS_0_MESSAGE_STEP_ENTRY_IN_REQUEST"]
    .firstValue().toUpperCase() == "PINCH")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_PINCH_GESTURE", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_PINCH_GESTURE_FACT2", "TLT$NULL");
    }
}
```

Resize Gesture

Any pinch or double tap gesture

Display Name
Resize Gesture

Internal Name
CUST.E_RESIZE_GESTURE

Advanced Mode
true

Description
Any pinch or double tap

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_RESIZE_GESTURE()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 || $F.getLastFact("CUST.
F_E_DOUBLE_TAP_GESTURE").HitNumber == $H.HitNumber && $F.getLastFact
("CUST.F_E_DOUBLE_TAP_GESTURE").StepNumber ==
$H.StepNumber || $F.getLastFact("CUST.F_E_PINCH_GESTURE")
.HitNumber == $H.HitNumber && $F.getLastFact("CUST.F_E_PINCH_GESTURE").
StepNumber == $H.StepNumber)
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_RESIZE_GESTURE", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_RESIZE_GESTURE_FACT2", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group 3
        $F.setFact("CUST.F_E_RESIZE_GESTURE_FACT3", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group 2
        $F.setFact("CUST.F_E_RESIZE_GESTURE_FACT4", "TLT$NULL");
    }
}
```

Session with at least one exception

Any session that has at least one exception

Display Name

Session with at least one exception

Internal Name

CUST.E_SESSION_WITH_AT_LEAST_ONE_EXCEPTION

Advanced Mode

true

Description

Any session that has at least one exception

ImageSrc

default.gif

DisplayInPortal

true

DisplayInSessionList

true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_SESSION_WITH_AT_LEAST_ONE_EXCEPTION()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $F.
factCount("CUST.F_E_EXCEPTION") > 0)
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_SESSION_WITH_AT_LEAST_ONE_EXCEPTION",
"TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_SESSION_WITH_AT_LEAST_ONE_EXCEPTION_FACT2",
"TLT$NULL");
        // Set fact for Report Group: Gesture Report Group 2
        $F.setFact("CUST.F_E_SESSION_WITH_AT_LEAST_ONE_EXCEPTION_FACT3",
```

```

"TLT$NULL");
    // Set fact for Report Group: Gesure Report Group 3
    $F.setFact("CUST.F_E_SESSION_WITH_AT_LEAST_ONE_EXCEPTION_FACT4",
"TLT$NULL");
    }
}

```

Step - Device Carrier [BB]

Mobile Device Carrier BB Event for Dimensions

Display Name

Step - Device Carrier [BB]

Internal Name

CUST\$E_STEP_CARRIER_BB

Advanced Mode

true

Description

Mobile Device Carrier BB Event for Dimensions

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

// Generated by Tealeaf Event Manager

```

// NOTE: Do not change event name
function CUST$E_STEP_CARRIER_BB()
{
    if ($P["CUST.P_CARRIER"].patternFound())
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_STEP_CARRIER_BB_DG_NONE", $P
["CUST.P_CARRIER"].firstValue());
    }
}

```

Step - Last Gesture [BB]

Last Gesture BB for Unresponsive Gestures

Display Name

Step - Last Gesture [BB]

Internal Name

TL\$E_LAST_GESTURE_BB

Advanced Mode

true

Description

Last Gesture BB for Unresponsive Gestures

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

// Generated by Tealeaf Event Manager

// NOTE: Do not change event name

function TL\$E_LAST_GESTURE_BB()

{

 // Set fact for Report Group: No Dimension Report Group

 \$F.setFact("TL.F_E_LAST_GESTURE_BB", 1);

}

Step - Last Gesture Offset [BB]

Last Gesture Offset BB for Unresponsive Gestures

Display Name

Step - Last Gesture Offset [BB]

Internal Name

TL\$E_LAST_GESTURE_OFFSET_BB

Advanced Mode

true

Description

Last Gesture Offset BB for Unresponsive Gestures

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

// Generated by Tealeaf Event Manager

// NOTE: Do not change event name

function TL\$E_LAST_GESTURE_OFFSET_BB()

{

 // Set fact for Report Group: No Dimension Report Group

 \$F.setFact("TL.F_E_LAST_GESTURE_OFFSET_BB", 1);

}

Step - Device Model [BB]

Mobile Device Model BB Event for Dimensions

Display Name

Step - Device Model [BB]

Internal Name

CUST\$E_STEP_DEVICE_MODEL_BB

Advanced Mode

true

Description

Mobile Device Model BB Event for Dimensions

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

// Generated by Tealeaf Event Manager

// NOTE: Do not change event name

```
function CUST$E_STEP_DEVICE_MODEL_BB()
{
    if ($P["CUST.P_STEP_DEVICE_MODEL_STEP_ENTRY_IN_REQUEST"].patternFound())
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_STEP_DEVICE_MODEL_BB_DG_NONE", $P["CUST.P_STEP_DEVICE_MODEL_STEP_ENTRY_IN_REQUEST"].firstValue());
    }
}
```

Step - OS Version [BB]

Mobile OS Version BB Event for Dimensions

Display Name

Step - OS Version [BB]

Internal Name

CUST\$E_STEP_OS_VERSION_BB

Advanced Mode

true

Description

Mobile OS Version BB Event for Dimensions

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

// Generated by Tealeaf Event Manager

// NOTE: Do not change event name

```
function CUST$E_STEP_OS_VERSION_BB()
{
    if ($P["CUST.P_STEP_OS_VERSION_ENTRY_IN_REQUEST"].patternFound())
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_STEP_OS_VERSION_BB_DG_NONE", $P["CUST.P_STEP_OS_VERSION_ENTRY_IN_REQUEST"].firstValue());
    }
}
```

Swipe Gesture

.sessions(0) message Event

Display Name
Swipe Gesture

Internal Name
CUST.E_SWIPE_GESTURE

Advanced Mode
true

Description
.sessions(0) message Event

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_SWIPE_GESTURE()
{
    if ($P["CUST.P_SESSIONS_0_MESSAGE_STEP_ENTRY_IN_REQUEST"]
    .firstValue().toUpperCase() == "SWIPE")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_SWIPE_GESTURE", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_SWIPE_GESTURE_FACT2", "TLT$NULL");
    }
}
```

Tap and Hold Gesture

.sessions(0) message Event

Display Name
Tap and Hold Gesture

Internal Name
CUST.E_TAP_AND_HOLD_GESTURE

Advanced Mode
true

Description
.sessions(0) message Event

ImageSrc
default.gif

DisplayInPortal
true

DisplayInSessionList
true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_TAP_AND_HOLD_GESTURE()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $P["TL.P_SESSIONS_0_MESSAGE_STEP_ENTRY_IN_REQUEST"].firstValue().toUpperCase() == "TAPHOLD")
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_TAP_AND_HOLD_GESTURE", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_TAP_AND_HOLD_GESTURE_FACT2", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group 2
        $F.setFact("CUST.F_E_TAP_AND_HOLD_GESTURE_FACT3", "TLT$NULL");
    }
}
```

Unresponsive Gestures

Any unresponsive gesture.

Display Name

Unresponsive Gestures

Internal Name

CUST.E_UNRESPONSIVE_GESTURES

Advanced Mode

true

Description

Any unresponsive gesture

ImageSrc

default.gif

DisplayInPortal

true

DisplayInSessionList

true

JavaScript: (Advanced Mode only)

```
// Generated by Tealeaf Event Manager

// NOTE: Do not change event name
function CUST$E_UNRESPONSIVE_GESTURES()
{
    if ($F.factCount("TL.F_E_MOBILE_SESSION_START_BB") > 0 && $F.getLastFact("CUST.F_E_UNRESPONSIVE_GESTURES_BB").HitNumber == $H.HitNumber && $F.getLastFact("CUST.F_E_UNRESPONSIVE_GESTURES_BB").StepNumber == $H.StepNumber)
    {
        // Set fact for Report Group: No Dimension Report Group
        $F.setFact("CUST.F_E_UNRESPONSIVE_GESTURES", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group
        $F.setFact("CUST.F_E_UNRESPONSIVE_GESTURES_FACT2", "TLT$NULL");
        // Set fact for Report Group: Gesture Mobile Device
        $F.setFact("CUST.F_E_UNRESPONSIVE_GESTURES_FACT3", "TLT$NULL");
        // Set fact for Report Group: Gesture Report Group 3
        $F.setFact("CUST.F_E_UNRESPONSIVE_GESTURES_FACT4", "TLT$NULL");
    }
}
```


Unresponsive Gestures [BB]

Detect root ScreenView load from UIC as an unresponsive state.

Display Name

Unresponsive Gestures [BB]

Internal Name

CUST.E_UNRESPONSIVE_GESTURES_BB

Advanced Mode

true

Description

Detect root ScreenView load from UIC as an unresponsive state

ImageSrc

default.gif

DisplayInPortal

false

DisplayInSessionList

false

JavaScript: (Advanced Mode only)

```
function CUST$E_UNRESPONSIVE_GESTURES_BB()
{
    var ugDetected = false;
    var offsetThreshold = 100; //in ms

    //Detect root ScreenView load from UIC as an unresponsive state
    //Event offset in UIC reset on each page so it is unreliable
    //when the page changes
    if($P["TL.STEP_SCREENVIEW_TYPE"].firstValue().toUpperCase() == "LOAD"
        && $P["TL.STEP_SCREENVIEW_NAME"].firstValue().toUpperCase() == "ROOT")
    {
        ugDetected = true;
        $F.setFact("TL.F_E_LAST_GESTURE_OFFSET_BB", "-1");
        $F.setFact("TL.F_E_LAST_GESTURE_BB", "");
    }
    else
    {
        if($P["TL.STEP_MESSAGE_TYPE"].patternFound() && $P["TL.STEP_
OFFSET"].patternFound())
        {
            var lastGestureOffset = $F.factCount("TL.F_E_LAST_GESTURE_
OFFSET_BB") > 0 ? parseInt($F.getLastFact("TL.F_E_LAST_
GESTURE_OFFSET_BB").Value) : -1;
            var lastGestureType = $F.factCount("TL.F_E_LAST_
GESTURE_BB") > 0 ? $F.getLastFact("TL.F_E_LAST_
GESTURE_BB").Value : "";
            var messageType = $P["TL.STEP_MESSAGE_TYPE"].firstValue();
            var offset = parseInt($P["TL.STEP_OFFSET"].firstValue());
            var tooLong = lastGestureOffset != -1 && (offset - lastGestureOffset)
>= offsetThreshold;
            var isExpectedMessageType = false;

            //Detect unresponsive gesture (gesture not followed by the
expected type within the threshold [default 100ms])
            if(lastGestureOffset != -1)
            {
                switch(lastGestureType)
                {
                    case "pinch":
                        isExpectedMessageType = messageType == "1";
```

```

        break;
    case "swipe":
        isExpectedMessageType = messageType == "1" || messageType
== "2";
        break;
    case "tap":
    case "doubleTap":
    case "tapHold":
    default:
        isExpectedMessageType = messageType == "4";
        break;
    }

    ugDetected = !isExpectedMessageType && tooLong;
}

//If we see a gesture, track its timestamp for the next call of
this event
if(messageType == "11")
{
    lastGestureOffset = offset;
    if($P["TL.P_SESSIONS_0_MESSAGE_STEP_ENTRY_IN_REQUEST"].
patternFound())
        $F.setFact("TL.F_E_LAST_GESTURE_BB", $P["TL.P_SESSIONS_
0_MESSAGE_STEP_ENTRY_IN_REQUEST"].firstValue());
    else
        $F.setFact("TL.F_E_LAST_GESTURE_BB", "");
}
else
    $F.setFact("TL.F_E_LAST_GESTURE_OFFSET_BB", "-1");
}
}

if (ugDetected)
    $F.setFact("CUST.F_E_UNRESPONSIVE_GESTURES_BB", "TLT$NULL");
}

```

Goal Based Dimensions

By default, Tealeaf events and event-related objects, such as dimensions, are recorded as soon as they occur. This immediate responsiveness ensures that event activity and contextual data are captured as a snapshot of the current state of the session or application.

Goal Based Dimensions enable reporting to be segmented based on factors that occur after the actual event occurrence. For example, you might want to track the count of users who trigger a search on your web application and who failed to complete a purchase transaction. Since it is not possible to evaluate this failure event until all the hits of the session are processed, you must delay the tabulation of the other event, which tracks search + failed to complete, until the end of the session. In this manner, you can define current events to measure the effectiveness of business goals in the session.

Overview

With Goal Based Dimensions, events fire when they occur, yet the data is not published until the end of the session so that all required data to properly evaluate the event is tabulated. Events that are configured to be evaluated at the end of the session are not published until that time. At the end of the session, the last known value for each dimension is back-populated to the event occurrences earlier in the session.

For example, the event that identifies when a user goes to the shopping cart occurs on hit 6, yet there are references to dimensional data populated by this event earlier in the session, on hits 2 and 4.

You can configure the event to properly capture the event on hit 6 and then to apply the dimensional values backward in the session. In the following image, you can see the detected values for this event and dimension in a session in the Event Tester:

The screenshot displays the Event Tester interface for a session replay. The top navigation bar includes tabs: **Select Session**, **Select Events**, **Select Hit Attributes**, and **View Results**. Below the tabs, the **Selected Session: Replay** is shown with a **Replay** button. The results are filtered by **Event / Hit Attribute**, with options to **Include Zero-Count Items** and **Limit Event Results to 1**.

The session consists of three hits, each with a vertical timeline of events and hit attributes:

- Hit 2: /TealeafTarget.php**
 - Events:**
 - 1 - Step - Usability Click
 - Step 5
 - Shopping Cart (RG)
 - Value: Count Only
 - Step - ScreenView URL: /index.php/
 - Step - ScreenView: root
 - Step - Target ID: [["HTML",0],["BODY",0]]
 - Step - Target Relative XY: 0.3,0.5
 - Went to Cart: YES
 - Hit Attributes:**
 - 1 - Step - Usability Click
 - Step 5
 - Shopping Cart (RG)
 - Value: Count Only
 - Step - ScreenView URL: /index.php/sony-vaio-vgn-txn27n-b-11-1-notebook-pc.ht
 - Step - ScreenView: root
 - Step - Target ID: [["product_addtocart_form"]]
 - Step - Target Relative XY: 0.4,0.6
 - Went to Cart: YES
- Hit 4: /TealeafTarget.php**
 - Events:**
 - 1 - Step - Usability Click
 - Step 5
 - Shopping Cart (RG)
 - Value: Count Only
 - Step - ScreenView URL: /index.php/sony-vaio-vgn-txn27n-b-11-1-notebook-pc.ht
 - Step - ScreenView: root
 - Step - Target ID: [["product_addtocart_form"]]
 - Step - Target Relative XY: 0.4,0.6
 - Went to Cart: YES
 - Hit Attributes:**
 - 1 - Step - Usability Click
 - Step 5
 - Shopping Cart (RG)
 - Value: Count Only
 - Step - ScreenView URL: /index.php/sony-vaio-vgn-txn27n-b-11-1-notebook-pc.ht
 - Step - ScreenView: root
 - Step - Target ID: [["product_addtocart_form"]]
 - Step - Target Relative XY: 0.4,0.6
 - Went to Cart: YES
- Hit 6: /index.php/checkout/cart/**
 - Events:**
 - 1 - Went to Cart [bb]
 - No Dimension Report Group
 - Value: Count Only

In the above image, the Went to Cart event fires on hit 6. You can see that the Shopping Cart report group on hits 2 and 4 includes a YES value for the Went to Cart dimension, even though the populating event is not yet fired at the time of the recording of the report group on the earlier hits.

Note: Since the data is not populated until the end of the session, Goal Based Dimensions and events are not searchable and reportable until after the end of the session, if they are configured to be searchable and reportable in the event definition.

Differences from end of session events

A GBD event can fire multiple times in a session. An event that is configured to fire on the End of Session trigger occurs only one time at the end of the session. As a result, the End of Session event contains none of the context of the hit on which the GBD event occurred.

Event publishing

The firing of an event and its publication are different:

- **Firing:** When an event is evaluated to be true, it is deemed to "fire." In the Canister, when an event fires, a marker for the event is stored on the hit of the event where it was evaluated.
- **Publishing:** An event is considered to be published when the Canister makes the event and its recorded data available to other Tealeaf services, such as search indexing and the Data Collector.

By default, the Canister publishes an event and its related dimensional data as soon as possible after it fires. With Goal Based Dimensions, the event and its data are not available until the end of the session, even though the event fires normally, as specified.

GBD affects events and dimensions in the following ways:

- **Events:** Events that use Goal Based Dimensions still evaluate and fire normally. The results of the event evaluation are not written to the database or search indexes until the end of the session.
 - GBD events can be used as building blocks for other events between firing and the end of the session. They behave normally, except that Goal Based Dimensions must not be referenced.
- **Dimensions:** Goal Based Dimensions are not evaluated at all until the end of session. Until the end of the session, these dimensions are NULL values.

Note: Do not reference the value of a Goal Based Dimension in another event. The values are always NULL.

- Even for other End of Session events, it is not possible to guarantee that the dimension values are populated at the time that the other event is evaluated. It is still possible to record nulls for the dimensions that are associated with other End of Session events.
- **Alerts:** Since alerts do not use dimensions, alerts that are triggered on GBD events are generated at the time that the event fired, instead of at the time of event publication.
- **Session Attributes:** User-defined session attributes that reference GBD events are updated at the time that the event fires, instead of at the time of event publication.

When an event is published, the search index is populated with the event value and the related dimension values. If the dimension is configured for delayed publishing and the event is published immediately, then the search index is populated with the correct event value, yet all Goal Based dimensions are recorded with NULL values. By forcing the event and the dimension to be published at the end of the session, the correct values for both event and dimension are recorded for indexing.

Note: The purpose of Goal Based Dimension events is to support the evaluation of dimensions later. As a result, all events that use Goal Based Dimensions must be published at the end of session.

Enabling Goal Based Dimensions

For each Processing Server, Goal Based Dimensions are enabled by default. When enabled, a Processing Server detects GBD settings on events and dimensions and publishes the data accordingly.

- Goal Based Dimensions are enabled through the raw configuration of each Canister. See "Configuring the CX Canister" in the *IBM Tealeaf CX Configuration Manual*.

All IBM Tealeaf cxOverstat events are automatically configured for delayed publishing.

- See "Goal Based Dimension events."

On individual dimensions that are part of IBM Tealeaf cxOverstat report groups, you can configure them to be evaluated and published at the end of the session.

- See "Goal Based Dimensions and report groups."

Goal Based Dimension events

Note: Since IBM Tealeaf cxOverstat events are configured to be published at the end of a session, IBM Tealeaf cxOverstat does not contain any data about active sessions.

Note: For this release, the only events that are configured for Goal Based Dimensions are IBM Tealeaf cxOverstat events. No other events can be configured as GBD events. See "Eventing for cxOverstat" in the *IBM Tealeaf Event Manager Manual*.

Goal Based Dimensions and report groups

By default, dimensions are evaluated immediately when the event occurs. Optionally, you can configure individual dimensions to be evaluated at the end of the session.

Goal Based Dimensions can be used only in IBM Tealeaf cxOverstat report groups. You can mix delayed and non-delayed dimensions in the same IBM Tealeaf cxOverstat report group. These report groups can be associated only with IBM Tealeaf cxOverstat events.

Limitations

- For this release, all Goal Based Dimensions must be associated with a IBM Tealeaf cxOverstat report group template.
- After a Goal Based Dimension is defined and saved, you cannot change when it is evaluated.
- Goal Based Dimensions must be populated by an event or a session attribute. You cannot populate the dimension from a hit attribute.
- After a Goal Based Dimension is saved, you cannot change the report group template with which it is associated.
- After you save your event definition, you cannot change event publishing.
- All events that use a GBD can be configured for end of session publishing.

See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.

Tealeaf Standard Event Object Reference

This reference section contains summary information on the default events and event objects provided by Tealeaf.

These objects can be used as the basis for building other event-related objects to monitor your web applications.

- These objects can be reviewed through the Event Manager. See "Tealeaf Event Manager" in the *IBM Tealeaf Event Manager Manual*.
- The events and dimensions listed below can be used in reports you create. For more information on these reports, see "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.
For event developers, additional detailed documentation on the technical event definitions.
- For more information on the technical definitions of hit attributes and step attributes, see "EES Reference - Attribute Reference" in the *IBM Tealeaf Event Manager Manual*.
- For more information on the technical definitions of events, see "EES Reference - Tealeaf Event Reference" in the *IBM Tealeaf Event Manager Manual*.
- For more information on JavaScript objects, see "EES Reference - Object Definitions" in the *IBM Tealeaf Event Manager Manual*.

Note: If the products with which these objects were installed is removed, the objects are not removed. Removing them may break reporting and other event objects that rely on these objects.

Click to display list of all default event objects.

Hit attributes

A *hit attribute* gathers patterns of data or specific strings from the request or response of individual hits. Hit attributes are evaluated for each hit that is passed through the event engine on the Processing Server.

- Hit attributes are created and edited in the Event Manager. See "TEM Hit Attributes Tab" in the *IBM Tealeaf Event Manager Manual*.
- Event objects are defined using a customized version of JavaScript. For more information about the advanced mode versions of hit attributes, see "Hit Attribute Reference" in the *IBM Tealeaf Event Manager Manual*.

Legend for hit attribute definitions

Field Name

Description

Display Name

The name of the hit attribute, as it appears in the Portal

Description

The description for the hit attribute that appears in the Portal

Buffer The part of the hit that is scanned:

- Request - hit attribute scans the request of the hit
- Response - hit attribute scans the response of the hit

Internal Name

The internal identifier for the event

Note: This value is referenced when editing the hit attribute in Advanced Mode. See "Advanced Mode for Events" in the *IBM Tealeaf Event Manager Manual*.

Start Tag

The value of the request or response that indicates the start of the pattern of data to collect

End Tag

The value in the request or response occurring after the Start Tag that indicates the end of the pattern of data to collect.

Note: If this value is not specified, then the hit attribute only scans for the occurrence of the Start Tag as the matching string.

Default hit attributes

Table 33. Default hit attributes

Display name	Default hit attributes
Accept Language	Description: Visitor language preference. For example, en-us. Buffer: Request Internal name: HTTP_ACCEPT_LANGUAGE Start tag: \r\nHTTP_ACCEPT_LANGUAGE= End tag: \r\n
App Name (Normalized)	Description: Buffer: Request Internal name: TLT_APPLICATION_NAME Start tag: \r\nTLT_APPLICATION_NAME= End tag: \r\n
Application Context Action	Description: Mobile application context action, LOAD or UNLOAD. Requires Tealeaf Mobile Capture SDK. Buffer: Request Internal name: APPLICATIONCONTEXT_TYPE Start tag: \r\nApplicationContext_Type= End tag: \r\n
Browser	Description: Visitor browser type. For example, Internet Explorer (IE). Buffer: Request Internal name: TLT_BROWSER Start tag: \r\nTLT_BROWSER= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Browser OS	Description: Visitor operating system. For example, WinXP. Buffer: Request Internal name: TLT_BROWSER_PLATFORM Start tag: \r\nTLT_BROWSER_PLATFORM= End tag: \r\n
Browser Version	Description: Visitor browser type and version. For example, IE7.0. Buffer: Request Internal name: TLT_BROWSER_VERSION Start tag: \r\nTLT_BROWSER_VERSION= End tag: \r\n
Capture Source	Description: Hostname of Tealeaf PCA Buffer: Request Internal name: CAPTURE_SOURCE Start tag: \r\nCaptureSource= End tag: \r\n
Capture Type	Description: Buffer: Request Internal name: CAPTURE_TYPE Start tag: \r\nCaptureType= End tag: \r\n
Client IP Address	Description: Visitor IP Address (REMOTE_ADDR) Buffer: Request Internal name: REMOTE_ADDR Start tag: \r\nREMOTE_ADDR= End tag: \r\n
Connection Speed	Description: Buffer: Request Internal name: CONN_SPEED Start tag: \r\nConnSpeed= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Connection Type	Description: Buffer: Request Internal name: CONN_TYPE Start tag: \r\nConnType= End tag: \r\n
Context Load Message	Description: Mobile application context load message. Requires Tealeaf Mobile Capture SDK. Buffer: Request Internal name: CONTEXT_LOAD Start tag: "Type": "LOAD" End tag:
CUI Alert Count	Description: Count of client user interface alerts. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_ALERT_COUNT Note: This header is not supported by IBM Tealeaf CX UI Capture j2. Start tag: \r\nHTTP_X_TEALEAF_ALERT_COUNT= End tag: \r\n
CUI Application Name	Description: Application name, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: TLT_CUI_APPLICATION_NAME Start tag: \r\nTLT_CUI_APPLICATION_NAME= End tag: \r\n
CUI Browser Resolution	Description: Visitor browser resolution, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_BROWSER_RES Note: This header is not supported by IBM Tealeaf CX UI Capture j2. Start tag: \r\nHTTP_X_TEALEAF_BROWSER_RES= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
CUI Event Count	Description: Count of client user interface events, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_PAGE_CUI_EVENTS Note: This header is not supported by IBM Tealeaf CX UI Capture j2. Start tag: \r\nHTTP_X_TEALEAF_PAGE_CUI_EVENTS= End tag: \r\n
CUI Event Message Size	Description: Message size in characters of client user interface events, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_PAGE_CUI_BYTES Note: This header is not supported by IBM Tealeaf CX UI Capture j2. Start tag: \r\nHTTP_X_TEALEAF_PAGE_CUI_BYTES= End tag: \r\n
CUI Hit	Description: Hit type, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF Start tag: \r\nHTTP_X_TEALEAF= End tag: \r\n
CUI Hit Dwell Time (ms)	Description: Hit dwell time in milliseconds, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_PAGE_DWELL Start tag: \r\nHTTP_X_TEALEAF_PAGE_DWELL= Note: This header is provided for legacy support only. It is no longer supported generally. Access to this header information requires a special build of UI Capture. For more information, please contact Tealeaf Professional Services. End tag: \r\n
CUI Hit Image Failure Count	Description: Count of broken images on hit, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_PAGE_IMG_FAIL Note: This header is not supported by IBM Tealeaf CX UI Capture j2. Start tag: \r\nHTTP_X_TEALEAF_PAGE_IMG_FAIL= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
CUI Hit Render Time (ms)	Description: Hit render time in milliseconds, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_PAGE_RENDER Note: This header is provided for legacy support only. It is no longer supported generally. Access to this header information requires a special build of UI Capture. For more information, please contact Tealeaf Professional Services. Start tag: \r\nHTTP_X_TEALEAF_PAGE_RENDER= End tag: \r\n
CUI Hit Type	Description: Type of hit, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_TYPE Note: This header is not supported by IBM Tealeaf CX UI Capture j2. Start tag: \r\nHTTP_X_TEALEAF_TYPE= End tag: \r\n
CUI Hit URL	Description: URL of hit, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: HTTP_X_TEALEAF_PAGE_URL Start tag: \r\nHTTP_X_TEALEAF_PAGE_URL= End tag: \r\n
CUI URL	Description: URL, as reported from client user interface. Requires Tealeaf UI Capture. Buffer: Request Internal name: TLT_CUI_URL Start tag: \r\nTLT_CUI_URL= End tag: \r\n
Hit GUID	Description: Buffer: Request Internal name: TLTHID Start tag: \r\nTLTHID= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Host Name	Description: Buffer: Request Internal name: HTTP_HOST Start tag: \r\nHTTP_HOST= End tag: \r\n
Host Name (Normalized)	Description: Buffer: Request Internal name: TLT_HOST_NAME Start tag: \r\nTLT_HOST_NAME= End tag: \r\n
HTTP Connection	Description: Type of HTTP connection. Example: keep-alive Buffer: Request Internal name: HTTP_CONNECTION Start tag: \r\nHTTP_CONNECTION= End tag: \r\n
Mobile Device Type	Description: Mobile device type. Requires Tealeaf Mobile Capture SDK. Buffer: Request Internal name: TEALEAF_MOBILE_DEVICE_TYPE Start tag: \r\nHTTP_X_TEALEAF=Device (End tag:)
Mobile Hit	Description: Mobile hit. Requires Tealeaf Mobile Capture SDK. Buffer: Request Internal name: HTTP_X_TEALEAF_DEVICE Start tag: \r\nHTTP_X_TEALEAF_DEVICE= End tag:
Mobile View Name	Description: Mobile view name when application context changes. Requires Tealeaf Mobile Capture SDK. Buffer: Request Internal name: APPLICATIONCONTEXT_LOGICALPAGENAME Start tag: \r\nApplicationContext_LogicalPageName= End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Network Time (?sec)	Description: Time in microseconds between server starting to send response and client acknowledges response. Formula: (Rsp ACK Time Epoch - Rsp Start Time Epoch) Buffer: Request Internal name: NT_TOTAL Start tag: \r\nNT_Total= End tag: \r\n
Page Gen Time	Description: Buffer: Request Internal name: WS_GENERATION Start tag: \r\nWS_Generation= End tag: \r\n
Query String	Description: Buffer: Request Internal name: QUERY_STRING Start tag: \r\nQUERY_STRING= End tag: \r\n
Referrer	Description: Buffer: Request Internal name: HTTP_REFERER Start tag: \r\nHTTP_REFERER= End tag: \r\n
Referrer Domain	Description: Referrer domain for hit Buffer: Request Internal name: REFERRER_DOMAIN Start tag: \r\nREFERRER_DOMAIN= End tag: \r\n
Req Buffer Encoding	Description: Encoding of request. Example: UTF-8 Buffer: Request Internal name: REQ_BUFFER_ENCODING Start tag: \r\nREQ_BUFFER_ENCODING= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Req Buffer Encoding (Original)	Description: Encoding of original request before any transformation. Example: UTF-8 Buffer: Request Internal name: REQ_BUFFER_ORIG_ENCODING Start tag: \r\nREQ_BUFFER_ORIG_ENCODING= End tag: \r\n
Req Cancelled Type	Description: Request cancelled? (False/Client/Server) Buffer: Request Internal name: REQ_CANCELLED Start tag: \r\nReqCancelled= End tag: \r\n
Req Data Size (bytes)	Description: Size in bytes of request data Buffer: Request Internal name: REQ_DATA_SIZE Start tag: \r\nRequestDataSize= End tag: \r\n
Req Discarded	Description: Request discarded? (T/F) Buffer: Request Internal name: REQ_DISCARDED Start tag: \r\nReqDiscarded= End tag: \r\n
Req Header Size (bytes)	Description: Size in bytes of request header Buffer: Request Internal name: REQ_HEADER_SIZE Start tag: \r\nRequestheaderSize= End tag: \r\n
Req Method	Description: Method of request. Example: POST Buffer: Request Internal name: REQUEST_METHOD Start tag: \r\nREQUEST_METHOD= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Req Size (bytes)	Description: Buffer: Request Internal name: REQUEST_SIZE Start tag: \r\nRequestSize= End tag: \r\n
Req Timestamp	Description: Time when server receives request Buffer: Request Internal name: REQUEST_TIME_EX Start tag: \r\nRequestTimeEx= End tag: \r\n
Round Trip Time	Description: Buffer: Request Internal name: RT_TOTAL Start tag: \r\nRT_Total= End tag: \r\n
Rsp Ack Timestamp	Description: Time when client acknowledges response Buffer: Request Internal name: RESPONSE_ACK_TIME_EX Start tag: \r\nResponseAckTimeEx= End tag: \r\n
Rsp Body Encoding	Description: Encoding of response. For example, iso-8859-1. Buffer: Request Internal name: RSP_BODY_ENCODING Start tag: \r\nRESP_BODY_ENCODING= End tag: \r\n
Rsp Data Size (bytes)	Description: Size in bytes of response data Buffer: Request Internal name: RSP_DATA_SIZE Start tag: \r\nResponseDataSize= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Rsp End Timestamp	Description: Time when server ends sending response Buffer: Request Internal name: RESPONSE_TIME_EX Start tag: \r\nResponseTimeEx= End tag: \r\n
Rsp Header Size (bytes)	Description: Size in bytes of response header Buffer: Request Internal name: RSP_HEADER_SIZE Start tag: \r\nResponseHeaderSize= End tag: \r\n
Rsp Size (bytes)	Description: Buffer: Request Internal name: RESPONSE_SIZE Start tag: \r\nResponseSize= End tag: \r\n
Rsp Start Timestamp	Description: Time when server starts sending response Buffer: Request Internal name: RESPONSE_START_TIME_EX Start tag: \r\nResponseStartTimeEx= End tag: \r\n
Rsp Type	Description: Buffer: Request Internal name: RESPONSE_TYPE Start tag: \r\nResponseType= End tag: \r\n
Server (Normalized)	Description: Buffer: Request Internal name: TLT_SERVER Start tag: \r\nTLT_SERVER= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Server IP Address	Description: Server IP Address (LOCAL_ADDR) Buffer: Request Internal name: LOCAL_ADDR Start tag: \r\nLOCAL_ADDR= End tag: \r\n
Server Protocol	Description: Protocol used by Tealeaf server. Example: HTTP/1.1 Buffer: Request Internal name: SERVER_PROTOCOL Start tag: \r\nSERVER_PROTOCOL= End tag: \r\n
Session GUID	Description: Tealeaf session identifier Buffer: Request Internal name: TLTSID Start tag: \r\nTLTSID= End tag: \r\n
SSL Used	Description: SSL in use? (On or Off) Buffer: Request Internal name: HTTPS Start tag: \r\nHTTPS= End tag: \r\n
Status Code	Description: Buffer: Request Internal name: STATUS_CODE Start tag: \r\nStatusCode= End tag: \r\n
Step - Client Environment Library Version	Description: Buffer: Request Internal name: STEP_CLIENT_ENV_LIB_VERSION Start tag: .sessions[0].clientEnvironment.webEnvironment.libVersion End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Client Environment OS Version	Description: OS Version Buffer: Request Internal name: STEP_CLIENT_ENV_OS_VERSION Start tag: .clientEnvironment.osVersion End tag:
Step - Client Environment Page	Description: Buffer: Request Internal name: STEP_CLIENT_ENV_PAGE Start tag: .sessions[0].clientEnvironment.webEnvironment.page End tag:
Step - Client Environment Screen Orientation	Description: Screen orientation in degrees Buffer: Request Internal name: STEP_CLIENT_ENV_SCREEN_ORIENTATION Start tag: .sessions[0].clientEnvironment.webEnvironment.screen.orientation End tag:
Step - Client Environment Screen Orientation Mode	Description: Screen orientation in Portrait or Landscape Buffer: Request Internal name: STEP_CLIENT_ENV_SCREEN_ORIENTATION_MODE Start tag: .sessions[0].clientEnvironment.webEnvironment.screen.orientationMode End tag:
Step - ClientState Event	Description: Client state event type Buffer: Request Internal name: STEP_CLIENTSTATE_EVENT Start tag: .sessions[0].message.clientState.event End tag:
Step - ClientState Page Height	Description: Rendered height of a page Buffer: Request Internal name: STEP_CLIENTSTATE_PAGE_HEIGHT Start tag: .sessions[0].message.clientState.pageHeight End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - ClientState Page Width	Description: Rendered width of a page Buffer: Request Internal name: STEP_CLIENTSTATE_PAGE_WIDTH Start tag: .sessions[0].message.clientState.pageWidth End tag:
Step - ClientState Scale	Description: Scale factor of page (useful for devices that scale display) Buffer: Request Internal name: STEP_CLIENTSTATE_SCALE Start tag: .sessions[0].message.clientState.scale End tag:
Step - ClientState View Time	Description: Time duration of client event in ms Buffer: Request Internal name: STEP_CLIENTSTATE_VIEW_TIME Start tag: .sessions[0].message.clientState.viewTime End tag:
Step - ClientState Viewport Height	Description: Viewable height of page Buffer: Request Internal name: STEP_CLIENTSTATE_VIEWPORT_HEIGHT Start tag: .sessions[0].message.clientState.viewPortHeight End tag:
Step - ClientState Viewport Width	Description: Viewable width of the page Buffer: Request Internal name: STEP_CLIENTSTATE_VIEWPORT_WIDTH Start tag: .sessions[0].message.clientState.viewPortWidth End tag:
Step - ClientState Viewport X	Description: X offset of Viewport with (0,0) being the upper left corner Buffer: Request Internal name: STEP_CLIENTSTATE_VIEWPORT_X Start tag: .sessions[0].message.clientState.viewPortX End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - ClientState Viewport Y	Description: Y offset of Viewport with (0,0) being the upper left corner Buffer: Request Internal name: STEP_CLIENTSTATE_VIEWPORT_Y Start tag: .sessions[0].message.clientState.viewPortY End tag:
Step - Connection Description	Description: Buffer: Request Internal name: STEP_CONN_DESC Start tag: .sessions[0].message.connection.description End tag:
Step - Connection Init Time	Description: Epoch time in ms Buffer: Request Internal name: STEP_CONN_INIT_TIME Start tag: .sessions[0].message.connection.initTime End tag:
Step - Connection Load Time	Description: Epoch time in ms Buffer: Request Internal name: Start tag: STEP_CONN_LOAD_TIME End tag: .sessions[0].message.connection.loadTime
Step - Connection Response Data Size	Description: Buffer: Request Internal name: STEP_CONN_RSP_DATA_SIZE Start tag: .sessions[0].message.connection.responseDataSize End tag:
Step - Connection Response Time	Description: Buffer: Request Internal name: STEP_CONN_RSP_SIZE Start tag: .sessions[0].message.connection.responseTime End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Connection Status Code	Description: Buffer: Request Internal name: STEP_CONN_STATUS_CODE Start tag: .sessions[0].message.connection.statusCode End tag:
Step - Connection URL	Description: Buffer: Request Internal name: STEP_CONN_URL Start tag: .sessions[0].message.connection.url End tag:
Step - Event Type	Description: Event type Buffer: Request Internal name: STEP_EVENT_TYPE Start tag: .sessions[0].message.event.type End tag:
Step - Focus Offset	Description: Time in ms that object got focus from start of session Buffer: Request Internal name: STEP_FOCUS_OFFSET Start tag: .sessions[0].message.focusInOffset End tag:
Step - Message Count	Description: Running count of step messages per session. For UISDK, a session can be from page load, not the start of the user session. Buffer: Request Internal name: STEP_MESSAGE_COUNT Start tag: .sessions[0].message.count End tag:
Step - Message From Web	Description: Indicates if action is from Web. Returns True or False Buffer: Request Internal name: STEP_MESSAGE_FROM_WEB Start tag: .sessions[0].message.fromWeb End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Message Type	Description: Internal categorization of message type. Buffer: Request Internal name: STEP_MESSAGE_TYPE Start tag: .sessions[0].message.type End tag:
Step - Objects Performance Redirect Count	Description: Buffer: Request Internal name: STEP_OBJECTS_PERF_REDIRECT_COUNT Start tag: .sessions[0].message.objects.performance.redirectCount End tag:
Step - Objects Performance Referrer	Description: Buffer: Request Internal name: STEP_OBJECTS_PERF_REFERRER Start tag: .sessions[0].message.objects.performance.referrer End tag:
Step - Objects Performance Type	Description: Buffer: Request Internal name: STEP_OBJECTS_PERF_TYPE Start tag: .sessions[0].message.objects.performance.type End tag:
Step - Objects Performance URL	Description: Buffer: Request Internal name: STEP_OBJECTS_PERF_URL Start tag: .sessions[0].message.objects.performance.url End tag:
Step - Offset	Description: Time in ms from the start of the 'session'. For UISDK, a session can be from page load, not the start of the user session. Buffer: Request Internal name: STEP_OFFSET Start tag: .sessions[0].message.offset End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Performance Connect End	Description: Time immediately after the user agent finishes establishing the connection to the server to retrieve the current document Buffer: Request Internal name: STEP_PERF_CONNECT_END Start tag: .sessions[0].message.performance.timing.connectEnd End tag:
Step - Performance Connect Start	Description: Time immediately before the user agent start establishing the connection to the server to retrieve the document Buffer: Request Internal name: STEP_PERF_CONNECT_START Start tag: .sessions[0].message.performance.timing.connectStart End tag:
Step - Performance Dom Complete	Description: Time immediately before the user agent sets the current document readiness to "complete" Buffer: Request Internal name: STEP_PERF_DOM_COMPLETE Start tag: .sessions[0].message.performance.timing.domComplete End tag:
Step - Performance Dom Content Loaded Event End	Description: Time immediately after the document's DOMContentLoaded event completes Buffer: Request Internal name: STEP_PERF_DOM_CONTENT_LOADED_EVENT_END Start tag: .sessions[0].message.performance.timing.domContentLoadedEventEnd End tag:
Step - Performance Dom Interactive	Description: Time immediately before the user agent sets the current document readiness to "interactive" Buffer: Request Internal name: STEP_PERF_DOM_INTERACTIVE Start tag: .sessions[0].message.performance.timing.domInteractive End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Performance Dom Loaded Event Start	Description: Time immediately before the user agent fires the DOMContentLoaded event at the Document Buffer: Request Internal name: STEP_PERF_DOM_LOADED_EVENT_START Start tag: .sessions[0].message.performance.timing.domContentLoadedEventStart End tag:
Step - Performance Dom Loading	Description: Time immediately before the user agent sets the current document readiness to "loading" Buffer: Request Internal name: STEP_PERF_DOM_LOADING Start tag: .sessions[0].message.performance.timing.domLoading End tag:
Step - Performance Dom Lookup End	Description: Time immediately after the user agent finishes the domain name lookup for the current document Buffer: Request Internal name: STEP_PERF_DOM_LOOKUP_END Start tag: .sessions[0].message.performance.timing.domainLookupEnd End tag:
Step - Performance Dom Lookup Start	Description: Time immediately before the user agent starts the domain name lookup for the current document Buffer: Request Internal name: STEP_PERF_DOM_LOOKUP_START Start tag: .sessions[0].message.performance.timing.domainLookupStart End tag:
Step - Performance Fetch Start	Description: Time immediately before the user agent starts checking any relevant application caches Buffer: Request Internal name: STEP_PERF_DOM_FETCH_START Start tag: .sessions[0].message.performance.timing.fetchStart End tag:
Step - Performance Load Event End	Description: Time when the load event of the current document is completed Buffer: Request Internal name: STEP_PERF_DOM_LOAD_EVENT_END Start tag: .sessions[0].message.performance.timing.loadEventEnd End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Performance Load Event Start	Description: Time immediately before the load event of the current document is fired Buffer: Request Internal name: STEP_PERF_DOM_LOAD_EVENT_START Start tag: .sessions[0].message.performance.timing.loadEventStart End tag:
Step - Performance Navigation Redirect Count	Description: Number of redirects from initial request to current hit Buffer: Request Internal name: STEP_PERF_NAV_REDIRECT_COUNT Start tag: .sessions[0].message.performance.navigation.redirectCount End tag:
Step - Performance Navigation Start	Description: Time immediately after the user agent finishes prompting to unload the previous document Buffer: Request Internal name: STEP_PERF_NAV_START Start tag: .sessions[0].message.performance.timing.navigationStart End tag:
Step - Performance Navigation Type	Description: Buffer: Request Internal name: STEP_PERF_NAV_TYPE Start tag: .sessions[0].message.performance.navigation.type End tag:
Step - Performance Redirect End	Description: Time immediately after receiving the last byte of the response of the last redirect Buffer: Request Internal name: STEP_PERF_REDIRECT_END Start tag: .sessions[0].message.performance.timing.redirectEnd End tag:
Step - Performance Redirect Start	Description: Starting time of the fetch that initiates the redirect Buffer: Request Internal name: STEP_PERF_REDIRECT_START Start tag: .sessions[0].message.performance.timing.redirectStart End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Performance Response End	Description: Time immediately after the user agent receives the last byte of the current document or immediately before the transport connection is closed, whichever comes first Buffer: Request Internal name: STEP_PERF_RESPONSE_END Start tag: .sessions[0].message.performance.timing.responseEnd End tag:
Step - Performance Response Start	Description: Time immediately after the user agent receives the first byte of the response from the server, or from relevant application caches or from local resources Buffer: Request Internal name: STEP_PERF_RESPONSE_START Start tag: .sessions[0].message.performance.timing.responseStart End tag:
Step - Performance Secure Connection Start	Description: Time immediately before the user agent starts the handshake process to secure the current connection Buffer: Request Internal name: STEP_PERF_SECURE_CONN_START Start tag: .sessions[0].message.performance.timing.secureConnectionStart End tag:
Step - Performance Unload Event End	Description: Time immediately after the user agent finishes the unload event of the previous document Buffer: Request Internal name: STEP_PERF_UNLOAD_EVENT_END Start tag: .sessions[0].message.performance.timing.unloadEventEnd End tag:
Step - Performance Unload Event Start	Description: Time immediately before the user agent starts the unload event of the previous document Buffer: Request Internal name: STEP_PERF_UNLOAD_EVENT_START Start tag: .sessions[0].message.performance.timing.unloadEventStart End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Performance URL Render Time	Description: Render time of page/URL in ms Buffer: Request Internal name: STEP_PERF_URL_RENDER_TIME Start tag: .sessions[0].message.objects.performance.loadEventStart End tag:
Step - Render Time	Description: Page render time Buffer: Request Internal name: STEP_RENDER_TIME Start tag: .sessions[0].message.performance.timing.renderTime End tag:
Step - ScreenView Name	Description: Name of Screenview Buffer: Request Internal name: STEP_SCREENVIEW_NAME Start tag: .sessions[0].message.screenview.name End tag:
Step - ScreenView Offset	Description: Time offset in ms from the last ScreenView load. If there is no ScreenView load for a page load, ScreenView offset is the epoch in ms. Buffer: Request Internal name: STEP_SCREENVIEW_OFFSET Start tag: .sessions[0].message.screenviewOffset End tag:
Step - ScreenView Referring ScreenView	Description: Referring screenview for the current screenview Buffer: Request Internal name: STEP_SCREENVIEW_REFERRING_SCREENVIEW Start tag: .sessions[0].message.screenview.referrer End tag:
Step - ScreenView Referring URL	Description: Referring URL for the current screenview Buffer: Request Internal name: STEP_SCREENVIEW_REFERRING_URL Start tag: .sessions[0].message.screenview.referrerUrl End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - ScreenView Render Time	Description: Time to render screenview in ms Buffer: Request Internal name: STEP_SCREENVIEW_RENDER_TIME Start tag: .sessions[0].message.screenview.renderTime End tag:
Step - ScreenView Type	Description: Indicates whether a screenview was loaded or unloaded Buffer: Request Internal name: STEP_SCREENVIEW_TYPE Start tag: .sessions[0].message.screenview.type End tag:
Step - ScreenView URL	Description: URL where the screenview occurs Buffer: Request Internal name: STEP_SCREENVIEW_URL Start tag: .sessions[0].message.screenview.url End tag:
Step - SDK Version	Description: SDK Version Buffer: Request Internal name: STEP_SDK_VERSION Start tag: .messageVersion End tag:
Step - Serial Number	Description: Running count of SDK sessions in the user session. With a UI SDK, a session can equal page load. Buffer: Request Internal name: STEP_SERIAL_NUMBER Start tag: .serialNumber End tag:
Step - Session Start Time	Description: Epoch in ms for start of this 'session'. For UISDK, a session can be from page load, not the start of the user session. Buffer: Request Internal name: STEP_SESSION_START_TIME Start tag: .sessions[0].startTime End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Target Current Label	Description: Label of object after being acted on Buffer: Request Internal name: STEP_TARGET_CURRENT_LABEL Start tag: .sessions[0].message.target.currState.label End tag:
Step - Target Current Text	Description: Text of object after being acted on Buffer: Request Internal name: STEP_TARGET_CURRENT_TEXT Start tag: .sessions[0].message.target.currState.text End tag:
Step - Target Current Value	Description: Value of object after being acted on Buffer: Request Internal name: STEP_TARGET_CURRENT_VALUE Start tag: .sessions[0].message.target.currState.value End tag:
Step - Target Dwell Time	Description: Dwell time in field Buffer: Request Internal name: STEP_TARGET_DWELL_TIME Start tag: .sessions[0].message.target.dwell End tag:
Step - Target Height	Description: Height of object being acted on Buffer: Request Internal name: STEP_TARGET_HEIGHT Start tag: .sessions[0].message.target.position.height End tag:
Step - Target ID	Description: ID of object being acted on Buffer: Request Internal name: STEP_TARGET_ID Start tag: .sessions[0].message.target.id End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Target ID Type	Description: ID Type of object being acted on Buffer: Request Internal name: STEP_TARGET_ID_TYPE Start tag: .sessions[0].message.target.idType End tag:
Step - Target Name	Description: Name of object being acted on Buffer: Request Internal name: STEP_TARGET_NAME Start tag: .sessions[0].message.target.name End tag:
Step - Target Position X	Description: X coordinate of object being acted on. (0,0) is the upper left corner Buffer: Request Internal name: STEP_TARGET_POSITION_X Start tag: .sessions[0].message.target.position.x End tag:
Step - Target Position Y	Description: Y coordinate of object being acted on. (0,0) is the upper left corner Buffer: Request Internal name: STEP_TARGET_POSITION_Y Start tag: .sessions[0].message.target.position.y End tag:
Step - Target Prev Label	Description: Label of object before being acted on Buffer: Request Internal name: STEP_TARGET_PREV_LABEL Start tag: .sessions[0].message.target.prevState.label End tag:
Step - Target Prev Text	Description: Text of object before being acted on Buffer: Request Internal name: STEP_TARGET_PREV_TEXT Start tag: .sessions[0].message.target.prevState.text End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Target Previous Value	Description: Value of object before being acted on Buffer: Request Internal name: STEP_TARGET_PREV_VALUE Start tag: .sessions[0].message.target.prevState.value End tag:
Step - Target Relative XY	Description: Relative position of action based on object being acted on Buffer: Request Internal name: STEP_TARGET_RELATIVE_XY Start tag: .sessions[0].message.target.position.relXY End tag:
Step - Target Subtype	Description: Subtype of object being acted on Buffer: Request Internal name: STEP_TARGET_SUBTYPE Start tag: .sessions[0].message.target.subType End tag:
Step - Target TL Type	Description: Normalized type of object being acted on Buffer: Request Internal name: STEP_TARGET_TL_TYPE Start tag: .sessions[0].message.target.tlType End tag:
Step - Target Type	Description: Type of object being acted on Buffer: Request Internal name: STEP_TARGET_TYPE Start tag: .sessions[0].message.target.type End tag:
Step - Target Visit Count	Description: Count of times object received focus Buffer: Request Internal name: STEP_TARGET_VISIT_COUNT Start tag: .sessions[0].message.target.vistedCount End tag:

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Step - Target Width	Description: Width of object being acted on Buffer: Request Internal name: STEP_TARGET_WIDTH Start tag: .sessions[0].message.target.position.width End tag:
Step - Timezone Offset	Description: Time offset in minutes from GMT. Buffer: Request Internal name: STEP_TIMEZONE_OFFSET Start tag: .sessions[0].timezoneOffset End tag:
Step - TL Event Type	Description: Normalized event type Buffer: Request Internal name: STEP_TL_EVENT_TYPE Start tag: .sessions[0].message.event.tlEvent End tag:
Streaming Hit	Description: Hit is a stream hit? (T/F) Buffer: Request Internal name: STREAMING_HIT Start tag: \r\nStreamingHit= End tag: \r\n
Streaming Hit Type	Description: Type of streaming hit Buffer: Request Internal name: STREAMING_HIT_TYPE Start tag: \r\nStreamingHitType= End tag: \r\n
TL API Arrival Timestamp	Description: Buffer: Request Internal name: TLAPI_ARRIVAL_TIME_EX Start tag: \r\nTLapiArrivalTimeEx= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Traffic Type	Description: Type of traffic. Example: Bot Buffer: Request Internal name: TLT_TRAFFIC_TYPE Start tag: \r\nTLT_TRAFFIC_TYPE= End tag: \r\n
Transfer Encoding	Description: Type of encoding used in transfer. Example: chunked Buffer: Request Internal name: TRANSFER_ENCODING Start tag: \r\nTRANSFER_ENCODING= End tag: \r\n
URL	Description: Buffer: Request Internal name: URL Start tag: \r\nURL= End tag: \r\n
URL (Normalized)	Description: URL for hit without arguments. Buffer: Request Internal name: TLT_URL Start tag: \r\nTLT_URL= End tag: \r\n
User Agent	Description: Buffer: Request Internal name: USERAGENT Start tag: \r\nHTTP_USER_AGENT= End tag: \r\n
User GUID	Description: User GUID Buffer: Request Internal name: TLTUID Start tag: \r\nTLTUID= End tag: \r\n

Table 33. Default hit attributes (continued)

Display name	Default hit attributes
Version of Tealeaf Capture	Description: Version of Tealeaf PCA Buffer: Request Internal name: CAPTURE_VERSION Start tag: \r\nCaptureVersion= End tag: \r\n
Visitor GUID	Description: Visitor GUID Buffer: Request Internal name: TLTVID Start tag: \r\nTLTVID= End tag: \r\n

Events

In Tealeaf, an event is a condition that is identified in data that is captured by Tealeaf that, when triggered, results in an action. A Tealeaf event can be the appearance or absence of a specific data element or value in the request or the response, and resulting actions can include recording values and generating alerts.

- Events are created and edited in the Event Manager. See "TEM Events Tab" in the *IBM Tealeaf Event Manager Manual*.
- Event objects are defined using a customized version of JavaScript. For more information about the advanced mode versions of events, see "EES Reference - Tealeaf Event Reference" in the *IBM Tealeaf Event Manager Manual*.

Legend for event definitions

Field Name

Description

Display Name

The name of the event, as it appears in the Portal

Description

The description for the event that appears in the Portal

Value Type

The type of value that is recorded by the event:

- Numeric - event records numeric values
- Text - event records text values
- Count - event records the count of event instances

Display in Portal?

When True, the event can appear in lists of events in the Portal.

Display in Session List?

When True, the event can appear in session lists in the Portal.

Internal Name

The internal identifier for the event

Note: This value is referenced when editing the event in Advanced Mode. See "Advanced Mode for Events" in the *IBM Tealeaf Event Manager Manual*.

Advanced Mode?

When True, the event can be edited in Advanced Mode only.

Default events

Table 34. Default events

Display Name	Description
Connection Type [BB-NoDim]	Value = Connection Type (Hit Attribute) - Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_CONNECTION_TYPE - Advanced mode: False
Content Type [BB-NoDim]	- Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_CONTENT_TYPE - Advanced mode: True
Costly Session - Too Big	Counts sessions that are too large - Value type: Count - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_SESSION_COSTLY_TOO_BIG - Advanced mode: False
Costly Session - Too Big [BB]	Counts sessions that are too large - Value type: Count - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_COSTLY_TOO_BIG - Advanced mode: True
Costly Session - Too Long	Counts sessions that last too many seconds - Value type: Count - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_SESSION_COSTLY_DURATION_TOO_LONG - Advanced mode: False
Costly Session - Too Many Hits	Counts sessions with too many hits - Value type: Count - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_SESSION_COSTLY_TOO_MANY_HITS - Advanced mode: False

Table 34. Default events (continued)

Display Name	Description
CUI Hit Count	Total count of CUI hits (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_CUI_HIT_COUNT - Advanced mode: False
Fact Count	Total count of written facts (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_FACT_COUNT - Advanced mode: False
Fact Count [BB]	Total count of written facts (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_FACT_COUNT - Advanced mode: True
Hit Count	Total count of hits (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_HIT_COUNT - Advanced mode: False
Hit Generation Max for Session (ms)	Maximum hit generation time (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_GEN_MAX - Advanced mode: False
Hit Generation Max for Session (ms) [BB]	Maximum hit generation time (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_GEN_MAX - Advanced mode: True
Hit Generation Time (ms) [BB]	Time in seconds to generate hit - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_PAGE_GEN - Advanced mode: True

Table 34. Default events (continued)

Display Name	Description
Hit Generation Time Running Max (ms) [BB]	Running maximum hit generation time - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_GEN_MAX - Advanced mode: True
Hit Generation Time Running Total (ms) [BB]	Running total of hit generation time - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_GEN - Advanced mode: True
Hit Generation Time Total (ms)	Total hit generation time (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_GEN - Advanced mode: False
Hit Generation Time Total (ms) [BB]	Total hit generation time (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_GEN - Advanced mode: True
Hit Network Trip Time (ms) [BB]	- Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_NET_TRIP - Advanced mode: True
Hit Network Trip Time Max (ms)	Maximum hit network trip time (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_NET_TRIP_MAX - Advanced mode: False
Hit Network Trip Time Max (ms) [BB]	Maximum hit network trip time (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_NET_TRIP_MAX - Advanced mode: True

Table 34. Default events (continued)

Display Name	Description
Hit Network Trip Time Running Max (ms) [BB]	Running maximum hit network trip time - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_NET_TRIP_MAX - Advanced mode: True
Hit Network Trip Time Total (ms)	Total hit network trip time (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_NET_TRIP - Advanced mode: False
Hit Network Trip Time Total (ms) [BB]	Total hit network trip time (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_NET_TRIP - Advanced mode: True
Hit Round Trip Time (ms) [BB]	- Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_ROUND_TRIP - Advanced mode: True
Hit Round Trip Time Max (ms)	Maximum hit round trip time (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_ROUND_TRIP_MAX - Advanced mode: False
Hit Round Trip Time Max (ms) [BB]	Maximum hit round trip time (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_ROUND_TRIP_MAX - Advanced mode: True
Hit Round Trip Time Running Max (ms) [BB]	Running maximum hit round trip time - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_ROUND_TRIP_MAX - Advanced mode: True

Table 34. Default events (continued)

Display Name	Description
Hit Round Trip Time Total (ms)	Total hit round trip time (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_ROUND_TRIP - Advanced mode: False
Hit Round Trip Time Total (ms) [BB]	Total hit round trip time (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_ROUND_TRIP - Advanced mode: True
Hit Size Max (bytes)	Maximum hit size in bytes (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_PAGE_SIZE_MAX - Advanced mode: False
Hit Size Max (bytes) [BB]	Maximum hit size in bytes (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_PAGE_SIZE_MAX - Advanced mode: True
Hit Size Running Max (bytes) [BB]	Running maximum hit size in bytes - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_SIZE_MAX - Advanced mode: True
Hit Size Running Total (bytes) [BB]	Running total of hit size in bytes - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_SIZE - Advanced mode: True
Hit Size Total (MB)	Total hit size in MB (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_SESSION_PAGE_SIZE - Advanced mode: False

Table 34. Default events (continued)

Display Name	Description
Hit Size Total (MB) [BB]	Total hit size in MB (end of session) • Value type: Numeric • Display in Portal: False • Display in Session List: False • Internal name: E_REPORT_WS_SESSION_PAGE_SIZE • Advanced mode: True
Http 400 - Bad Request	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_400 • Advanced mode: False
Http 401 - Unauthorized	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_401 • Advanced mode: False
Http 402 - Payment Required	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_402 • Advanced mode: False
Http 403 - Forbidden	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_403 • Advanced mode: False
Http 404 - Not Found	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_404 • Advanced mode: False
Http 405 - Method Not Allowed	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_405 • Advanced mode: False
Http 500 - Internal Server Error	• Value type: Count • Display in Portal: True • Display in Session List: True • Internal name: E_REPORT_HIT_HTTP_500 • Advanced mode: False

Table 34. Default events (continued)

Display Name	Description
Large Hit Size	Counts hits that are large - Value type: Count - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_HIT_LARGE_PAGE_SIZE - Advanced mode: False
Long Gen Time and Large Hit Size	Counts hits that are both large and take a long time to generate - Value type: Count - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_HIT_LONG_PAGE_GEN_AND_LARGE_PAGE_SIZE - Advanced mode: False
Long Hit Generation Time	Counts hits that take a long time to generate - Value type: Count - Display in Portal: True - Display in Session List: True - Internal name: E_REPORT_HIT_LONG_PAGE_GEN - Advanced mode: False
Mobile Device	The hit is from a mobile device. - Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_MOBILE_DEVICE_TYPE - Advanced mode: False
One Hit Session Count	Counts sessions that contain 1 hit - Value type: Count - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_ONE_HIT_SESSION_COUNT - Advanced mode: False
Page Count	Total page count (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_PAGE_COUNT - Advanced mode: False
Page Count [BB]	Total licensed page count (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_COUNT - Advanced mode: True

Table 34. Default events (continued)

Display Name	Description
Req Cancel Count	Total count of cancelled requests (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_REQ_CANCEL - Advanced mode: False
Req Cancelled [BB-NoDim]	Returns True or False for each hit - Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_PAGE_REQ_CANCEL - Advanced mode: True
Req Size for Session (MB)	Total of Req sizes in MB (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_REQ_TOTAL - Advanced mode: False
Req Size for Session (MB) [BB]	Total of Req sizes in MB (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_REQ_TOTAL - Advanced mode: True
Rsp Size Total (MB)	Total of Rsp sizes in MB (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_RSP_TOTAL - Advanced mode: False
Rsp Size Total (MB) [BB]	Total of Rsp sizes in MB (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_RSP_TOTAL - Advanced mode: True
Session Count	Increments count at the end of session - Value type: Count - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_COUNT - Advanced mode: False

Table 34. Default events (continued)

Display Name	Description
Session Length (sec)	Total length of the session in seconds (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_SECS - Advanced mode: False
Session Size (MB)	Total of all Rsp and Req sizes (end of session) - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_REPORT_SESSION_MB - Advanced mode: False
Session Size (MB) [BB]	Total of all Rsp and Req sizes (end of session) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_REPORT_WS_SESSION_MB - Advanced mode: True
Step - ScreenView [BB]	Latest ScreenView from ScreenView LOAD message - Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_STEP_SCREENVIEW - Advanced mode: False
Step - ScreenView URL [BB]	Latest URL from ScreenView LOAD message - Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_STEP_SCREENVIEW_URL - Advanced mode: False
Step - Usability Attention Map Viewport Height [BB]	Normalized Viewport height (min of Viewport or Page height) - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_STEP_USABILITY_ATTENTION_VIEWPORT_HEIGHT - Advanced mode: True
Step - Usability Attention Map Y View Time	Attention View Time (Y) Event for Usability data - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_STEP_USABILITY_ATTENTION_Y_VIEW_TIME - Advanced mode: False

Table 34. Default events (continued)

Display Name	Description
Step - Usability Click	Click Event for Usability data - Value type: Count - Display in Portal: True - Display in Session List: False - Internal name: E_STEP_USABILITY_CLICK - Advanced mode: False
Step - Usability Focal Slice Y [BB]	Focal Slice BB event for Usability data - Value type: Numeric - Display in Portal: False - Display in Session List: False - Internal name: E_STEP_USABILITY_FOCAL_SLICE_Y - Advanced mode: True
Step - Usability Form Field Visit	Field Visits + Dwell time for Event for Usability data - Value type: Numeric - Display in Portal: True - Display in Session List: False - Internal name: E_STEP_USABILITY_FORM_FIELD_VISIT - Advanced mode: False
Step - Usability Target ID + Type [BB]	Combines Target ID and ID Type into a single string - Value type: Text - Display in Portal: False - Display in Session List: False - Internal name: E_STEP_USABILITY_TARGET_ID - Advanced mode: True

Session attributes

A *session attribute* is a system or user-defined variable that can be used to store data about the state of the session. This variable can be updated at any time during the evaluation of the session.

In this section, the session attributes provided by Tealeaf and maintained within the event engine are listed.

- You may create up to 64 user-defined session attributes. Session attributes are created and edited in the Event Manager. See "TEM Session Attributes Tab" in the *IBM Tealeaf Event Manager Manual*.
- Event objects are defined using a customized version of JavaScript. For more information about the advanced mode versions of session attributes, see "Session Attribute Reference" in the *IBM Tealeaf Event Manager Manual*.

Legend for session attribute definitions

Field Name

Description

Display Name

The name of the session attribute, as it appears in the Portal

Description

The description for the session attribute that appears in the Portal

Data type

The type of data that is recorded in the session attribute:

- Int32 - 32-bit integer
- Int64 - 64-bit integer
- String - string of text
- Boolean - True/False

Source Type

The type of source data for the attribute

- PATTERN - source is from specified hit attribute
- CALCULATED_SOURCE - source is from listed source

Source

The internal name of the data source

- Values that begin with TL. are objects that are provided by Tealeaf.

Method

The session object property that is populated by definition

Internal Name

The internal identifier for the session attribute

Note: This value is referenced when editing the session attribute in Advanced Mode. See "Advanced Mode for Events" in the *IBM Tealeaf Event Manager Manual*.

Default session attributes

Table 35. Default session attributes

Display Name	Description
Bot (T/F)	• Description: Is bot? (T/F) • Data type: Boolean • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: IsBot • Internal name: S_IS_BOT
Browser OS	• Description: Visitor operating system. Example: WinXP • Data type: String • Source type: PATTERN • Source: TL.TLT_BROWSER_PLATFORM • Method: BrowserOS • Internal name: S_BROWSER_OS
Browser Traffic Type	• Description: User agent traffic type. Examples: BROWSER, MOBILE, BOT • Data type: String • Source type: PATTERN • Source: TL.TLT_TRAFFIC_TYPE • Method: TrafficType • Internal name: S_TRAFFIC_TYPE

Table 35. Default session attributes (continued)

Display Name	Description
Browser Type	• Description: Visitor browser type. Example: IE • Data type: String • Source type: PATTERN • Source: TL.TLT_BROWSER • Method: BrowserType • Internal name: S_BROWSER_TYPE
Browser Version	• Description: Visitor browser type and version. Example: IE7.0 • Data type: String • Source type: PATTERN • Source: TL.TLT_BROWSER_VERSION • Method: BrowserVersion • Internal name: S_BROWSER_VERSION
Client IP Address	• Description: Visitor IP address • Data type: String • Source type: PATTERN • Source: TL.REMOTE_ADDR • Method: IP • Internal name: S_IP
CUI Hit Count Running Total	• Description: Running count of CUI hits • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: CUICount • Internal name: S_CUI_COUNT
Discard Session Flag	• Description: Discard session event triggered? (T/F) • Data type: Boolean • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: DiscardSession • Internal name: S_DISCARD_SESSION
Domain Name of Server	• Description: Domain name of Tealeaf server • Data type: String • Source type: PATTERN • Source: TL.HTTP_HOST • Method: DomainName • Internal name: S_DOMAIN_NAME

Table 35. Default session attributes (continued)

Display Name	Description
Expiration Time Epoch for Session (sec)	• Description: Time in seconds between the last hit of session and session timeout value • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: ExpirationTime • Internal name: S_EXPIRATION_TIME
Fact Count Running Total	• Description: Running count of written facts • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: FactCount • Internal name: S_FACT_COUNT_TOTAL
First Hit Req Time Epoch (?sec)	• Description: Time epoch in microseconds when server receives the first request in session • Data type: Int32 • Source type: PATTERN • Source: TL.REQUEST_TIME_EX • Method: StartTimeEpoch • Internal name: S_START_TIME_EPOCH
First Page of Session URL	• Description: • Data type: String • Source type: PATTERN • Source: TL.TLT_URL • Method: FirstPageURL • Internal name: S_FIRST_PAGE_URL
Hit Count Running Total	• Description: Running count of hits • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: NumberOfHits • Internal name: S_HIT_COUNT
Image Count Running Total	• Description: • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: ImgCount • Internal name: S_IMG_COUNT

Table 35. Default session attributes (continued)

Display Name	Description
Interesting Flag	• Description: Is interesting session? (Always true) • Data type: Boolean • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: Interesting • Internal name: S_INTERESTING
Last Hit Req Time Epoch (?sec)	• Description: • Data type: Int32 • Source type: PATTERN • Source: TL.RESPONSE_TIME_EX • Method: LastHitEpoch • Internal name: S_LAST_HIT_TIME_EPOCH
Last Page of Session URL	• Description: • Data type: String • Source type: PATTERN • Source: TL.TLT_URL • Method: LastPageURL • Internal name: S_LAST_PAGE_URL
Licensed Page Count Running Total	• Description: Running count of licensed pages • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: LicensedPageCount • Internal name: S_LICENSED_PAGE_COUNT
Other Hit Type Running Total	• Description: • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: OtherCount • Internal name: S_OTHER_COUNT
Page Count Running Total	• Description: Running count of pages • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: PageCount • Internal name: S_PAGE_COUNT

Table 35. Default session attributes (continued)

Display Name	Description
Referrer Domain for Session	• Description: Domain of session referrer • Data type: String • Source type: PATTERN • Source: TL.REFERRER_DOMAIN • Method: ReferrerDomain • Internal name: S_REFERRER_DOMAIN
Referrer for Session	• Description: • Data type: String • Source type: PATTERN • Source: TL.HTTP_REFERRER • Method: Referrer • Internal name: S_REFERRER
Req Size Running Total (bytes)	• Description: Running total of Req sizes • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: TotalREQBytes • Internal name: S_TOTAL_REQ_BYTES
Request Cancelled Running Total	• Description: Running count of request canceled hits • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: ReqCancelledHitCount • Internal name: S_REQ_CANCELLED_HIT_COUNT
Rsp Size Running Total (bytes)	• Description: Running total of Rsp sizes • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: TotalRSPBytes • Internal name: S_TOTAL_RSP_BYTES
Session GUID	• Description: • Data type: String • Source type: PATTERN • Source: TL.TLTSID • Method: TLTSID • Internal name: S_TLTSID

Table 35. Default session attributes (continued)

Display Name	Description
Session ID in Canister	• Description: ID of session in Tealeaf canister where it is stored • Data type: Int64 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: ID • Internal name: S_ID
Session Length Running Time (sec)	• Description: • Data type: Int64 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: TotalTime • Internal name: S_TOTAL_TIME
Session Timeout Value (sec)	• Description: Session timeout value in seconds • Data type: Int32 • Source type: CALCULATED_SOURCE • Source: TL.CALCULATED_SOURCE • Method: SessionTimeOut • Internal name: S_TIME_OUT
User Agent of Client	• Description: • Data type: String • Source type: PATTERN • Source: TL.USERAGENT • Method: UserAgent • Internal name: S_USER_AGENT
User GUID	• Description: • Data type: String • Source type: PATTERN • Source: TL.TLTUID • Method: TLTUID • Internal name: S_TLTUID
Visitor GUID	• Description: • Data type: String • Source type: PATTERN • Source: TL.TLTVID • Method: TLTVID • Internal name: S_TLTVID

Dimensions

A *dimension* contains a set of context values that are recorded when an event occurs. This contextual data can contain the current values of hit attributes, session attributes, or events at the time that the event associated with the dimension is triggered.

- Dimensions are created and edited in the Event Manager. See "TEM Dimensions Tab" in the *IBM Tealeaf Event Manager Manual*.
- For a list of topics that are related to dimensions, see "TLTopic - Dimensions" in the *IBM Tealeaf Topics*.
- Event objects are defined using a customized version of JavaScript. For more information about the advanced mode versions of dimensions, see "Dimension Reference" in the *IBM Tealeaf Event Manager Manual*.

Legend for dimension definitions

Field Name

Description

Display Name

The name of the dimension, as it appears in the Portal

Description

The description for the dimension that appears in the Portal

Populated Type

The type of event object that populates the dimension:

- Pattern - hit attribute
- Fact - recorded as a dimension value of the listed event
- System - maintained by the event engine internally

Populated Name

Name of the object that populates the dimension

- A value of No Source is used for System objects.

Populated Instance

The occurrence of the Populated Name object that populates the dimension: First or Last.

Dim Type

How the dimension is populated:

- Whitelist - Populated by whitelist + observed values

Note: By default, many provided dimensions are configured to capture observed values so that the dimensions are immediately populated when the system is installed or upgraded. However, observed values may be captured and stored in the database indefinitely, causing unnecessary data storage. These dimensions should be converted to whitelist-only dimensions where possible. See "Data Management for Dimensions" in the *IBM Tealeaf Event Manager Manual*.

- WhitelistOnly - Populated by a whitelist of values only

Log Values

When True, the dimension is pre-configured to log detected values in the database

Note: Logged values for a dimension are purged automatically on a periodic basis. See "Data Management for Dimensions" in the *IBM Tealeaf Event Manager Manual*.

Internal Name

The internal identifier for the session attribute

Note: This value is referenced when editing the session attribute in Advanced Mode. See "Advanced Mode for Events" in the *IBM Tealeaf Event Manager Manual*.

Default dimensions

Table 36. Default dimensions

Display Name	Description
Application	• Populated type: Pattern • Populated name: App Name (Normalized) • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_TLT_APP
Connection Type	• Populated type: Fact • Populated name: Connection Type [BB-NoDim] • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_CONN_TYPE
Content Type	• Populated type: Fact • Populated name: Content Type [BB-NoDim] • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_TLT_CONTENT_TYPE
Day	Dimension defining the day as a timestamp for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_DAY
Day and Hour	Dimension defining the hour of day as a timestamp for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_HOUR

Table 36. Default dimensions (continued)

Display Name	Description
Day of Month	Dimension defining the day of the month for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_DAY_OF_MONTH
Day of Week	Dimension defining the day of the week as a number (0-6) for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_DAY_OF_WEEK
Day Of Week Name	Dimension defining the day of the week as the day name for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_DAY_OF_WEEK_NAME
Day Of Year	Dimension defining the day of the year (0-364) for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_DAY_OF_YEAR
Host	• Populated type: Pattern • Populated name: Host Name (Normalized) • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_TLT_HOST

Table 36. Default dimensions (continued)

Display Name	Description
Hour of Day	Dimension defining the hour of the day as a number (0-23) for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_HOUR_OF_DAY
Mobile Device	• Populated type: Fact • Populated name: Mobile Device (DG_NONE) • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_MOBILE_DEVICE
Month	Dimension defining the month as a number (0-11) for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_MONTH
Month Name	Dimension defining the month name for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_MONTH_NAME
Quarter	Dimension defining the QUARTER as a number (1-4) for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_QUARTER

Table 36. Default dimensions (continued)

Display Name	Description
Quarter Starting	Dimension defining the first day of the quarter as a datetime for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_START_OF_QUARTER
Request Cancelled	• Populated type: Fact • Populated name: Req Cancelled [BB-NoDim] • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_REQ_CANCEL
Server	• Populated type: Pattern • Populated name: Server (Normalized) • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_TLT_SERVER
Step - ScreenView	Records the lastest Screenview for each Screenview LOAD message • Populated type: Fact • Populated name: Step - ScreenView [BB] (DG_NONE) • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_STEP_SCREENVIEW
Step - ScreenView URL	Records the lastest URL for each Screenview LOAD message • Populated type: Fact • Populated name: Step - ScreenView URL [BB] (DG_NONE) • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_STEP_SCREENVIEW_URL

Table 36. Default dimensions (continued)

Display Name	Description
Step - Target ID	ID of object being acted on • Populated type: Fact • Populated name: Step - Usability Target ID + Type [BB] (DG_NONE) • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_STEP_TARGET_ID
Step - Target Relative XY	Records the relative position of action based on object being acted on • Populated type: Pattern • Populated name: Step - Target Relative XY • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_STEP_TARGET_RELATIVE_XY
Step - Usability Focal Slice Y	Records the Y focal slice • Populated type: Fact • Populated name: Step - Usability Focal Slice Y [BB] (DG_NONE) • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_STEP_FOCAL_SLICE_Y
Step - Usability View Port Height	Records the View Port Height of the browser • Populated type: Fact • Populated name: Step - Usability Attention Map Viewport Height [BB] (DG_NONE) • Populated instance: Last • Dim type: Whitelist • Log values: False • Internal name: DIM_STEP_VIEW_PORT_HEIGHT
Traffic Type	• Populated type: Pattern • Populated name: Traffic Type • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_TLT_TRAFFIC_TYPE
URL (Normalized)	• Populated type: Pattern • Populated name: URL (Normalized) • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_TLT_URL

Table 36. Default dimensions (continued)

Display Name	Description
Week	Dimension defining the week as a number (1-53) for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_WEEK
Week Starting	Dimension defining the start of the week as a datetime for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_START_OF_WEEK
Year	Dimension defining the YEAR as a number for reporting • Populated type: System • Populated name: No Source • Populated instance: First • Dim type: Whitelist • Log values: False • Internal name: DIM_YEAR

Chapter 4. TEM Hit Attributes tab

When processing hit data, the Tealeaf event engine searches each hit for patterns of text. These patterns can signify an event of interest, such as the occurrence of the word Sorry in the response, or can bracket a text string of interest, such as the value of a form field. These patterns can be explicitly specified or can be defined using the start and end tags for which an event should look when evaluating a condition or setting a value.

For example, suppose you want to configure an event to fire whenever a visitor goes to the Contact Us page. You can use one of the pre-defined Tealeaf patterns to identify the URL in the request that matches the page.

- In the URL example, Tealeaf provides the predefined hit attribute URL, which is built upon the URL hit attribute that is provided by Tealeaf.
- Tealeaf provides an extensive set of pre-defined hit attributes that can be used as conditions for an event or as text or numeric inputs into event values and dimensions. For a complete list of provided hit attributes, click the System Hit Attributes group in the left panel.

To monitor the behaviors of your web application, you should create hit attributes specific to your site. Through the Hit Attributes tab of the Event Manager, you can create and edit application-specific hit attributes.

- To review and edit the list of available hit attributes, click the Hit Attributes tab in the Tealeaf Event Manager.

Overview

Types of hit attributes

Tealeaf supports five basic types of hit attributes. Hit attributes may be configured to match:

- Data in the request or data in the response
- Data between start and end tags or exact data

Note: Tealeaf maintains a hidden, fifth set of hit attributes, which is derived from other hit attributes, system attributes, and events. These types are defined by the system and cannot be created or edited by users.

- Values that are stored in JSON message nodes that are submitted by Tealeaf client-side frameworks
 - See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

The following matrix indicates the four kinds of hit attributes and how they interact with the example data listed below:

- Request data:
REMOTE_ADDR=63.194.158.158
- Response data:
You have no items in your cart

Table 37. Overview

	Request Tags	Request Match	Response Tags	Response Match
Start Tag/ End Tag	Start Tag: \r\nREMOTE_ADDR= End Tag: \r\n (denotes end of line)	63.194.158.158	Start Tag: \r\nYou have End Tag: items in your cart\r\n	no
Exact Match	Start Tag: 63.194.158.158 End Tag: (nothing)	63.194.158.158	Start Tag: You have no items in your cart End Tag: (nothing)	You have no items in your cart

Hit Attribute Evaluation

When a hit attribute defined with a start tag and an end tag is evaluated against a text buffer, the results are returned according to the following criteria:

Table 38. Overview

Start Tag	End Tag	Returns
found	found	correct value is returned
not found	found	returns: Not found
found	not found	returns: Not found
not found	not found	returns: Not found

How Patterns Are Matched

When the event engine is evaluated, a pattern is compared against the request or response buffer to look for start tag/end tag patterns. Matches are found only for the innermost tags. For each found start tag, matching text is found only if the nearest end tag appears before another start tag.

- For exact matches that use start tags only, the following does not apply.

Suppose you have defined a pattern definition with the following tags:

- Start Tag: foo=
- End Tag: bar

Suppose the text in the buffer looks like the following:

```
foo=1foo=2foo=3barfoo=4bar
```

In the above example, match values are the following:

- 3
- 4
- The number of matches is 2.

Note that other potential matches (e.g. foo=3barfoo=4bar) are not recorded because the end tag overlaps another start tag.

Note: Using well-defined start and end tags enables efficient extraction of data from the hit. Using common start and end tags such as < and /> impacts hit processing performance because of the numerous matches. To reduce the number of returned matches, additional processing of the data is likely to be required.

Hit Attribute Availability

Hit attributes and any values recorded for them are available in any trigger for individual hits:

- First Hit of Session
- Every Hit
 1. Every Step
 2. After Every Step

Note: Step-based eventing captures events submitted from one of Tealeaf's client-side capture solutions. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

- After Every Hit
- Last Hit

Note: In the End of Session trigger, hit attributes and their values are not available for evaluation. Report groups containing dimensions populated by hit attributes can be used by end of session events, but the hit attribute value is not recorded for that dimension.

Hit Attributes tab

Events	Hit Attributes	Dimensions	Session Attributes	Alerts	Top Movers	Import	Export	Event Tester	Event Manager	Hit Attribute History	Change History
New Hit Attribute Group											
Filter Hit Attributes											
All Hit Attributes (96)											
Child Event Hit Attributes (0)											
Default (3)											
Imported Hit Attributes (0)											
Mobile (11)											
Mobile-Android (1)											
System Hit Attributes (76)											
Active	Name	Description	Search In	Start Tag	End Tag	Modified					
✓	Mobile-Android Session		Request	HTTP_X_TEALEAF=device (Android)		03/06/2012 15:15:49					
✓	LMTStepAttr	TestStepAttr	Request	\$M.id		03/06/2012 11:22:24					
✓	Client UI Hit (T/F)	Client user-interface hit (T/F). Requ				03/05/2012 16:45:49					
✓	Connection Speed	Connection speed in bytes/second	Request	\nConnSpeed=	\n	03/05/2012 16:45:49					
✓	Connection Type	Connection speed category. Examp	Request	\nConnType=	\n	03/05/2012 16:45:49					
✓	Content Encoding	Content encoding format of respo	Request	\nResponseType=	\n	03/05/2012 16:45:49					
✓	Hit Generation Time (usec)	Time in microseconds between serv	Request	\nWS_Generation=	\n	03/05/2012 16:45:49					
✓	Hit GUID		Request	\nTLTHID=	\n	03/05/2012 16:45:49					
✓	Hit Number in Session	Hit number in session				03/05/2012 16:45:49					
✓	Hit Referrer	Referrer value for hit	Request	\nHTTP_REFERER=	\n	03/05/2012 16:45:49					
✓	Hit Type	Hit and Capture Type	Request	\nCaptureType=	\n	03/05/2012 16:45:49					
✓	Network Time (usec)	Time in microseconds between serv	Request	\nNT_Total=	\n	03/05/2012 16:45:49					
✓	Query String for Request		Request	\nQUERY_STRING=	\n	03/05/2012 16:45:49					
✓	Req Cancelled		Request	\nReqCancelled=	\n	03/05/2012 16:45:49					
✓	Req Discarded		Request	\nReqDiscarded=	\n	03/05/2012 16:45:49					
✓	Req Size (bytes)	Size in bytes of request data + req	Request	\nRequestSize=	\n	03/05/2012 16:45:49					
✓	Req Time Fourth (usec)	Time in microseconds when a Reque		\nRequestTimeF=	\n	03/05/2012 16:45:49					

On the left side of the screen, you can access the available set of hit attribute groups or filter the display to show only the hit attributes of interest to you. The selection and filters that you specify are applied to the list of hit attributes.

- See “**Hit Attribute Groups** panel” on page 206.

The main panel displays the list of hit attributes for the currently selected view.

- See “**Hit attribute list**” on page 204.

Above the main pane, you can select any of the following commands.

- To create a new hit attribute, click **New Hit Attribute**. See “Creating or editing a hit attribute” on page 208.
- To review the history of changes to the selected attribute, click **Hit Attribute History**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
- To edit an existing hit attribute, double-click it. See “Creating or editing a hit attribute” on page 208.

Note: You cannot edit System Hit Attributes. Those attributes that rely on patterns can be reviewed. Some detail information is available in the tooltip of each of these attributes.

- To save any changes that are made to the currently selected hit attribute, click **Save Changes**.
- For more information about the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.
- To filter the displayed list of hit attributes, make a selection from the drop-down box. See “Filtering the hit attribute list” on page 206.
- To display inactive items, click the Show Inactive check box.

Hit attribute list

In the Hit Attribute list, you can review all of the available hit attributes for the currently selected hit attribute group.

- To review details on the hit attribute, move the mouse over the item in the list. The tooltip is displayed.
- To step through the list of items, press the Up or Down arrows on your keyboard.
- To scroll through the list, press the Page Up or Page Down keys on your keyboard.
- To select an item, click it or highlight it using keyboard navigation.
- On the left side of the screen, you can click a hit attribute group to display a different set of related hit attributes. See “**Hit Attribute Groups** panel” on page 206.

Note: Inactive hit attributes that are part of the current hit attribute group are only displayed if the Show Inactive check box is checked.

- To sort the list by a column, click the column header. To sort the list in the reverse order, click the column header again.
- A context menu is available for selected items. To see the context menu, right-click one or more items in the list. See “Hit Attribute list context menu” on page 205.
- To select multiple items in the list, press SHIFT or CTRL and select the items.
- Items are highlighted in the list based on the current edit state of the item. See Chapter 3, “TEM Events tab,” on page 45.

Column

Description

Active When a check mark is present, the hit attribute is active and available for use.

Name The user-friendly name of the hit attribute

Description

The description of the hit attribute, as provided in the hit attribute definition

Search In

The data in which to search: Request or Response

Start Tag

The starting tag of the data with which to match

End Tag

The ending tag of the data with which to match

Modified

Timestamp of when the hit attribute was last modified

Hit Attribute list context menu

When you right-click a hit attribute in the Hit Attribute List, the following commands are available:

Command**Description****Edit Hit Attribute...**

Edit the selected hit attribute. See “Creating or editing a hit attribute” on page 208.

Create Dimension Using hit attribute...

Create a new dimension using the selected hit attribute as the source data for the dimension. See Chapter 5, “TEM Dimensions Tab,” on page 217.

Show Dependent Items

Displays a list of items that depend on this hit attribute. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Hit Attribute History

Review the history of changes to the hit attribute definition. See “Hit attribute history” on page 215.

Make Inactive

Make the selected hit attribute inactive.

- If the attribute includes a start tag, an end tag, or both, it can be disabled.
- If the attribute does not include tags, it is used by the Canister and cannot be disabled.

Note: You cannot make a hit attribute inactive if events are dependent on it. To make a hit attribute inactive, you must remove all dependencies from it first.

Delete Delete a hit attribute. Before the delete is permitted, you must remove the dependencies between the hit attribute and other event-related objects.

Note: Deleting an object removes it from the server. A deleted object cannot be restored.

- Dependency checks on reports, scorecards, and dashboards that may use the hit attribute are not checked.
- You cannot delete System Hit Attributes attributes.

Revert Revert the changes to the hit attribute that were not committed to the version stored on the server. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Export Item

Mark item for inclusion in the next export. Items can be exported through the **Export** tab in the Event Manager. See Chapter 9, “TEM Import-Export Tabs,” on page 351.

Filtering the hit attribute list

From the drop-down at the top of the Hit Attribute list, you can filter the types of hit attributes to display in the list.

Filter	Description

All Hit Attributes	Display hit attributes of all types

Start Tag/End Tag Hit Attributes	Display only hit attributes that use start and end tags to specify the pattern to capture

Text Pattern Hit Attributes	Display only hit attributes that are specified with a start tag only. These patterns explicitly search for the value that is specified in the start tag.

System Hit Attributes	Display only the hit attributes provided by Tealeaf.

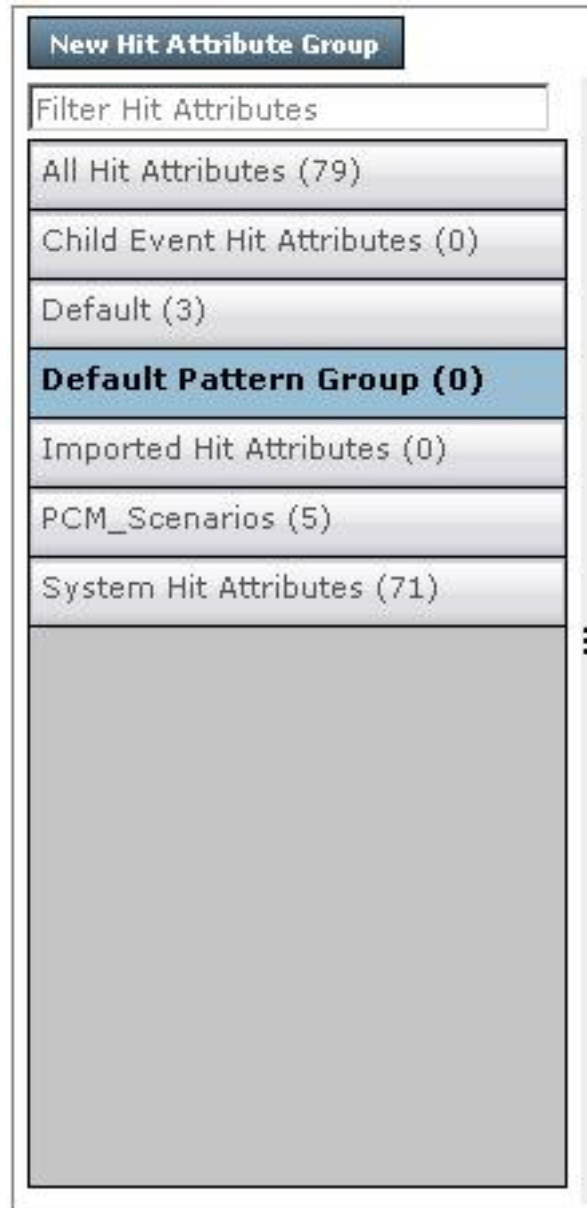
Step Attributes	Display only the step attributes.

- Step attributes are created to locate values in JSON messages that are submitted from Tealeaf's client-side frameworks. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Hit Attribute Groups panel

In the left column of the **Hit Attributes** tab, you can review the hit attribute groups that were created or provided by Tealeaf. In parentheses next to the hit attribute group name, you can see the number of hit attributes currently stored in it.

- To review details on a hit attribute group, move the mouse over it. The tooltip is displayed.
- During installation, Tealeaf provides a set of hit attributes. To see the hit attributes provided by Tealeaf, click the System Hit Attributes group.



Filtering hit attributes

To filter the list of hit attributes in the Hit Attribute Groups Panel, enter a string in the Filter Hit Attributes textbox. The filter is applied in real time to display only the matching hit attributes.

- Leading and trailing blank spaces are not removed from the filter.

Hit Attribute groups

A hit attribute group is used to organize one or more hit attributes under a common heading. Hit Attribute groups have the following properties:

Column

Description

Name User-friendly name of the group

Internal Name

Internal identifier of the group, as used in EventEngineScripting. This value cannot be edited.

Description

Description of the group

The following options are available in the context menu. Right-click a group and select one of the following:

Option Description**New Hit Attribute Group...**

Create a hit attribute group. See “Creating or editing a hit attribute group.”

Edit Hit Attribute Group...

Right-click the group to edit and select this option. See “Creating or editing a hit attribute group.”

Delete Delete the group. See “Deleting a hit attribute group.”

Creating or editing a hit attribute group

To create or edit a new hit attribute group:

1. **Name** - Enter a user-friendly name. This name appears in the left navigation panel.
2. **Description** - Enter a meaningful description of the hit attribute group. This description appears when you mouse over the group in the left navigation panel.
 - An Internal Name is automatically assigned to the group when you save it.
3. To save a draft of your new hit attribute group, click **Save Draft**.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

- To cancel your new group, click **Cancel**.

Deleting a hit attribute group

You can delete hit attribute groups that do not contain any hit attributes.

To remove a hit attribute group:

1. Right-click the hit attribute group in the left-navigation panel of the Hit Attribute tab.
2. Select **Delete**.
3. If the group is empty and was not committed to the server, the group is removed.

Note: If the group is empty and was committed to the server, you must commit your changes to the server to complete the removal. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Creating or editing a hit attribute

You can create or edit hit attributes through the Hit Attribute tab.

- To create hit attribute, click **New Hit Attribute**.

- To edit an existing hit attribute, right-click it in the Hit Attributes list and select **Edit Hit Attribute....**

Note: Hit Attributes that are part of the System Hit Attributes and System Step Attributes groups are provided by Tealeaf. These hit attributes can be reviewed through the Tealeaf Event Manager, but you cannot change the hit attribute. You may create a copy of them as needed.

Note: If you create hit attributes from the request buffer, note that the [HitType] section and [TLFID_*] sections (where * is the identifier for the fact) are generated by the event engine and cannot be detected in live sessions. As a result, any events using these hit attributes do not fire in the Windows pipeline and are therefore not available for searching. They do fire, however, when they are evaluated in the Event Tester on sessions that already passed through the Canister.

Add Hit Attribute: **Test Hit Attribute - URL**

Name
Test Hit Attribute - URL

Description:
URL

Active:
☒

Group:
Default
Select...

Search in:
Request

☒ Use Start Tag/End Tag
☐ Use Text Pattern
☐ Use Step Pattern

Start Tag:
\r\nURL=

End Tag:
\r\n

Case Sensitive:
☐

All Matches:
☒

Encoding:
UTF-8

▼ Post-Match Operations

Change Case:
No Change

Use RegEx:
☐

RegEx:

Save Draft
Cancel

- To save a draft of your new hit attribute, click **Save Draft**.
 - If your hit attribute contains a regular expression, it is validated before the hit attribute is saved.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

- To cancel your new hit attribute, click **Cancel**.

The following properties are available:

Note: The maximum length for selected values of text for step attributes, hit attributes, and events is 256 characters.

Property

Description

Name The user-friendly name of the hit attribute

Description

The description of the hit attribute

Active Click this check box to make the hit attribute active and available for use.

Group From the drop-down, select the hit attribute group to which to assign the hit attribute.

Search in

The data in which to search: Request or Response

Use Start Tag/End Tag

When selected, the start tag and end tag values are used to determine the beginning and ending of the pattern text with which to match.

Use Text Pattern

When selected, the start tag identifies the pattern to find in the text. The end tag is not used.

Note: Hit attributes that use this option cannot be used as the source data for a dimension, since the value for these dimensions would be always the text pattern value.

Use Step Pattern

When selected, you can specify for the step attribute the location of the source data as a path to the JSON message node. The source node is specified as the Start Tag, and the End Tag is left blank.

Note: Step attributes apply to data that is submitted from UI Capture in JSON format. See "UI Capture FAQ" in the *IBM Tealeaf UI Capture for Ajax FAQ*.

- Values that are captured by step attributes are always treated as text patterns, even if they are numeric or Boolean values.
- It is easier to create step attributes from the context menu within Request View in Browser-Based Replay.
- For more information about step attributes, see "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Start Tag

The starting tag of the data with which to match. See "Hit attribute limits" on page 214.

End Tag

The ending tag of the data with which to match. See "Hit attribute limits" on page 214.

Case Sensitive

Select the check box to perform case-sensitive matching of the pattern

Note: In UTF-8 charset encoding environments, such as on German-OS, start tags, and end tags cannot be defined to perform case-insensitive matching. All matches must be defined as case-sensitive.

- This check box applies to the start tag, end tag, and any regular expressions used in the hit attribute. See “Using regular expressions in hit attributes.”

All Matches

Select the check box to return matches for all matches in the searched data. Use this option if you anticipate using the hit attribute to count the number of occurrences of it on the page or want to sum all instances of a numeric hit attribute on the page.

- If this check box is not selected, only the first match is returned.

Note: Deselecting All Matches is effectively an override of configuration that is made for the event. For example, if All Matches is not checked and the hit attribute is used in the Condition step or Value step of an event, the hit attribute provides only one value to the event, even if you selected to use the last value.

Encoding

The type of encoding for the buffer searched:

- The encoding option is only active when you are searching in the response.
- If you select request, the string is encoded in UTF-8 only.

Post-Match Operations

The following properties pertain to operations that are performed on the set of matched values in the hit attribute. Suppose the attribute is configured to return All Matches, and four matching strings are found in a hit. The configured Post-Match Operations are applied to the returned four strings, which may result in further refining the returned set.

Property

Description

Change Case

If needed, the case of all returned matches can be normalized to Uppercase or Lowercase or left untouched.

Use RegEx

When enabled, the regular expression in the RegEx field is applied to each matching string for the hit.

Note: If this option is selected, a regular expression must be specified.

RegEx The regular expression to apply to the matching strings detected in the hit. If the regular expression matches multiple sequences in the matching string, the first matching value is returned. See “Using regular expressions in hit attributes.”

Using regular expressions in hit attributes

In many situations, the start and end tags of a hit attribute cannot provide an exclusive and unique match to an item of interest on the page. For example, suppose you have the following HTML on the page:

```
<error id="35">Coupon Code is invalid<\error>
```

In the above case, the value for the id may change with each message. As a result, a basic hit attribute cannot be constructed to retrieve this error message every time.

Optionally, you can apply a regular expression to the strings that are matched by the hit attribute. After the hit attribute beginning and end tags found one or more matches in the scanned text, the optional regular expression can be applied to the matching strings to further refine the results, returning one, or more values for the hit attribute after the regular expression was applied.

When configuring a hit attribute as an event condition, the Match Count and Hit Attribute Found operators are based on the number of values that are returned by the hit attribute after the regular expression was applied.

- See “Limitations in the use of regular expressions in hit attributes” on page 214.

Suppose the hit attribute is defined with the following tags:

- Start tag: `<error id=`
- End tag: `</error>`

In a hit, the following error messages are detected by the hit attribute:

```
<error id="35">Coupon Code is invalid<\error>
<error id="15">Please enter a zip code<\error>
<error id="12">Please enter a state<\error>
<error id="13">The credit card is invalid<\error>
```

Suppose you wanted the hit attribute to track error messages on the page where a required text entry was not provided at all. If these messages begin with Please enter, the regular expression matches this string:

```
^Please enter
```

In the above example, the regular expression matches errors 12 and 15. If the event specifies to record the match count, the count is 2.

- The first returned value is Please enter a zip code, and the second/last value is Please enter a state.
- If a regular expression is not applied to the above set, the match count is four. The first value is 35">Coupon Code is invalid, and the last value is 13">The credit card is invalid.

Note: When using the hit attribute as a condition in an event, the values that are returned after the regular expression was applied are available for the evaluation.

After you defined the regular expression, you can test the hit attribute in the Event Tester. See Chapter 10, “Event Tester,” on page 355.

If the configured hit attribute was functioning properly, you could create a copy of it and modify the regular expression to detect invalid entry error messages. If these messages all end with invalid, the following regular expression matches the string:

```
invalid$
```

In the above example, the regular expression matches errors 13 and 35.

Note: Regular expressions are considered a developer-level method for matching strings. When improperly specified, they can consume significant resources. Tealeaf recommends applying them cautiously.

Note: You may also use regular expressions in conditions through Advanced Mode. See Chapter 11, “Advanced Mode for Events,” on page 367.

Limitations in the use of regular expressions in hit attributes

The hit attribute `matchCount()` returns the number of strings in the hit that passed the regular expression filtering.

- If the hit attribute matches multiple times in a single string, the first matching instance in the string is returned. The Match Count, however, is still the number of matches for the hit.
- Regular expressions may be up to 256 characters in length.

Note: Avoid creating regular expressions that match multiple instances in a single string.

If a grouping operator, which is specified by enclosing parentheses, is present in the regular expression, the first group pattern is returned. Grouping operators beyond the first group are not returned.

- If no grouping operators are specified, the entire matching string is returned.
- If a grouping operator is required before the wanted group pattern, a non-capturing group operator can be specified with a `?:` after the opening parenthesis, as in the following example, which matches on content after the first group operator:
(?:not capturing this group)

Case-sensitive regular expression filtering is controlled by the Case Sensitive check box in the Hit Attribute definition.

Example start and end tags

Suppose you want to locate the URL variable that is listed in the request:

```
REQUEST_METHOD=GET
URL=/company/contact.asp
HTTPS=off
```

- **Start Tag:** `\r\nURL=`
 - The `\r\n` markings indicate a new line and are used to differentiate this specific URL from other possible URLs that are embedded in the page somewhere.
- **End Tag:** `\r\n`
 - The end tag `\r\n` indicates that the included text is everything after the start tag until the end of the line.

To create an event that looks for the `contact.asp` page, the event must use this hit attribute and set the value for the event to be `/contact.asp`. The event is then configured to look for `/contact/asp` between the tags `\r\nURL=` and `\r\n` in the request.

Hit attribute limits

When creating a hit attribute, here are some important limits to consider:

- Start tags and End tags may be up to 256 characters in length.
- There is no effective limit to the number of characters between the start tag and end tag.

- The maximum length of a value that is used as an event condition is 128 characters.

Note: Other Tealeaf objects may impose limits on the captured data. For example, dimensions that are populated by hit attributes may contain values up to a maximum of 256 characters in length.

The above limitations have the following implications:

- If you create a hit attribute that uses only a Start Tag, the value of the Start Tag is the exact pattern that you are trying to match. Even though this pattern may be up to 256 characters, the event condition may only be 128 characters in length. So, a found pattern of length that is greater than 128 characters cannot be matched in an event condition.
- If your hit attribute contains start and end tags, the effective limit on the content to be matched between the tags is 128 characters for the same reason as above.

Hit attribute history

See Chapter 1, “Tealeaf Event Manager,” on page 1.

Change history

See Chapter 1, “Tealeaf Event Manager,” on page 1.

Chapter 5. TEM Dimensions Tab

Through the Tealeaf Event Manager, you can specify data dimensions to track metadata associated with an event. They can be considered the contextual data captured at the moment of event execution.

- To review the list of available dimensions and to create new ones, click the Dimensions tab in the Tealeaf Event Manager.

Overview

A *dimension* contains a set of values that are captured from the session data stream, which is based on the evaluation of an event, hit attribute or session attribute. For example, you can configure a dimension to capture the URL of the requested page from the request buffer. This specific dimension might be configured to be sourced from a hit attribute that is defined to recognize the start and end of the URL information in the standard request.

- Tealeaf provides the URL dimension specifically for this purpose.
- See “Managing URL and Other High-Volume Dimensions” on page 272.

Dimensions can be grouped into report groups and associated with events for reporting purposes.

- A report group that contains multiple dimensions is called a *crossed-dimension report group*.

In Tealeaf reports, you can then report on event counts and values in the presence of specific dimensions or dimension values. These associations provide essential context for when the event occurred; when the event fires, the data of the associated dimension provide a snapshot of the context.

In the preceding example, you might want to know the shopping cart value when the visitor arrives at the Checkout page (`checkout.asp`). To do so:

- Create your shopping cart value event, which gathers the value of the shopping cart.
- Assign the URL dimension to a report group.
- Assign this report group to the shopping cart event.
- Create your Tealeaf report such that the dimension is included as the segment. You can then filter the report that is based on the specific value `checkout.asp` to see a report of shopping cart values on the Checkout page.
 - For more information about the reporting data model in general, see “Tealeaf Data Model” in the *IBM Tealeaf Reporting Guide*.
 - For more information about reporting, see “Tealeaf Report Builder” in the *IBM Tealeaf Reporting Guide*.

Features

In Tealeaf, dimension features include the following:

- User-defined dimensions can be populated from internally captured data or externally loaded lists, as both whitelists and blacklists
- Defined limit to the number of unique values that are captured on an hourly basis to limit database growth

- Can be associated with multiple report groups and events
- Can be created from an event, hit attribute, or session attribute
- Defined dimensions that are provided by Tealeaf to support reference data available in earlier versions of Tealeaf and new dimensional data

Limitations

To ensure that the database does not grow out of control, the following general limitations are applied to dimensions:

- Each report group may have up to 4 dimensions.
 - For report groups used by IBM Tealeaf cxOverstat events, you may add up to 8 dimensions.
- There is a fixed limit of 10,000 total facts. One fact is a combination of one event and one report group.
- Dimension values can be up to 450 characters. Longer dimension values are truncated at 450 characters.
- There is a fixed limit of 256 total dimensions, which includes pre-configured date dimensions such as Day, Day of Year, Month, among others.

Dimensions and other event objects

Experienced event designers may notice that it is possible to create a dimension that is populated directly from a source hit attribute. Tealeaf does not recommend this approach.

- By creating an event that is populated from the hit attribute first, you can apply modifications to the conditions and states in which the event is triggered, limiting the processing.
- If the dimension is populated directly from the hit attribute, the dimension is updated with each hit, which is not necessarily true in most cases.
- Particularly for user agent data, which may not change from hit to hit, it is a best practice to create an event source from the hit attribute, which is used in turn as the source of the dimension.

Dimensions Tab

Name	Description	Modified
Test Export Dim		12/21/2011 10:57:19
Export Dimension Test		12/21/2011 10:17:23
TEST_DIM		12/20/2011 11:21:51
dim_ShoppingCartValue		12/20/2011 11:16:32
dim_SearchTerms		12/20/2011 11:16:25
dimProductAdded		12/20/2011 11:16:16
dim_IP_Address		12/20/2011 11:16:12
Event_C		12/20/2011 11:14:53
Event_D		12/20/2011 11:14:48
Event_A		12/20/2011 11:14:37
Event_B		12/20/2011 11:14:37
Connection Type		12/20/2011 10:36:03
Content Type		12/20/2011 10:36:03
Request Cancelled		12/20/2011 10:36:03
Application		12/20/2011 10:35:56
Host		12/20/2011 10:35:56
Server		12/20/2011 10:35:56
Traffic Type		12/20/2011 10:35:56
URL (Normalized)		12/20/2011 10:35:56
[CF] Server Name + Hit ID		12/19/2011 18:10:24

On the left side of the screen, you can access the available set of dimensions or filter the display to show only the dimensions of interest to you. The selection and filters that you specify are applied to the list of dimensions.

- See “Report groups panel” on page 220.

The main panel displays the list of dimensions for the currently selected view.

- You may create up to a total of 256 dimensions.
- See “Dimension list.”

Above the main pane, you can select any of the following commands.

- To create a dimension, click **New Dimension**. See “Creating or editing a dimension” on page 221.
- To review the history of changes to the selected dimension, click **Dimension History**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
- To save changes to all objects you drafted in the Tealeaf Event Manager, click **Save Changes**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
 - For more information about the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.

Dimension list

In the Dimension list, you can review all of the available dimensions for the currently selected report group.

- To step through the list of items, press the Up or Down arrows on your keyboard.
- To scroll through the list, press the Page Up or Page Down keys on your keyboard.
- To select an item, click the item or highlight using keyboard navigation.
- To edit an item, press ENTER or double-click it.
- To review more information about the dimension, hover the mouse cursor over the dimension name. The tooltip is displayed.
- On the left side of the screen, you can click a report group to display a different set of related dimensions. See “Report groups panel” on page 220.
- To sort the list by a column, click the column header. To sort the list in the reverse order, click the column header again.
- A context menu is available for selected items. To see the context menu, right-click one or more items in the list. See “Dimension list context menu.”
- To select multiple items in the list, press SHIFT or CTRL and select the items.
- Items are highlighted in the list that is based upon the current edit state of the item. See Chapter 3, “TEM Events tab,” on page 45.

Column

Description

Name The user-friendly name of the dimension

Description

The description of the dimension, as provided in the dimension definition

Modified

Timestamp of when the dimension was last modified

Dimension list context menu

When you right-click a dimension in the Dimension List, the following commands are available:

Command**Description****Edit Dimension...**

Edit the selected dimension. See “Creating or editing a dimension” on page 221.

Create Report Group Using Dimension(s)...

Create a report group that includes the selected dimension or dimensions. See “Creating or editing a report group” on page 247.

Dimension History

Show the history of changes to the dimension. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Show Dependent Items

Displays a list of items that depend on this dimension being present. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Delete Delete a dimension. Before the delete is permitted, you must remove the dependencies between the dimension and other event-related objects.

Note: Deleting an object removes it from the server. A deleted object cannot be restored. You cannot delete Tealeaf system objects.

Purge Data...

Purge all data that is stored in the database and Canisters for the selected dimension. See “Purging dimension data” on page 255.

Revert Revert the changes to the dimension that was not committed to the version stored on the server. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Export Item

Mark item for inclusion in the next export. Items can be exported through the **Export** tab in the Event Manager. See Chapter 9, “TEM Import-Export Tabs,” on page 351.

Report groups panel

In the left column of the Dimensions tab, you can review the report groups that were created or provided by Tealeaf. In parentheses next to the report group, you can see the number of dimensions that are currently stored in it.

- Select a report group to display only its dimensions in the main window.
- To review details about the report group, move the mouse over its entry in the panel.
- See “Report groups” on page 246.
- More commands are available in the context menu. See “Report groups panel context menu.”

Report groups panel context menu

When a report group is selected in the left panel of the Dimensions tab, the following options are displayed.

Option Description**Edit Report Group...**

Right-click the group to edit and select this option.

Note: Report groups that are provided by Tealeaf cannot be edited.
See “Creating or editing a report group” on page 247.

New Report Group...

Create a report group. See “Creating or editing a report group” on page 247.

Show Dependent Items

Displays a list of items that depend on this report group being present.

- Dependent items are listed higher in the event hierarchy. See Chapter 3, “TEM Events tab,” on page 45.

Delete Delete the group.

Note: Report groups that are provided by Tealeaf cannot be deleted.
See “Deleting a report group” on page 250.

Export Item

Select the report group for export through the **Export** tab. See Chapter 9, “TEM Import-Export Tabs,” on page 351.

Creating or editing a dimension

You can create or edit dimensions through the Dimensions tab.

- To create a dimension, click **New Dimension**.
- To edit an existing dimension, right-click it in the Dimensions list and select **Edit Dimension....**

Add Dimension: **test_dim**

Name: test_dim

Description: test dimension

Populated By: Login ID
Select...

Populate With: First Value in Session

Advanced Options

Values to Record: Whitelist + Observed Values

Default Value: [Others]

Max Values Per Hour: 1000

Allow Empty Values:

Set Value Display Order:

Evaluated At: Immediate

Edit WhiteList...

Edit BlackList...

Turn On Logging

Reset Trim Flag

Save Draft

Cancel

- To save a draft of your new dimension, click **Save Draft**.

Note: If you enabled automatic creation of Top Movers, a Top Mover is immediately created and enabled to track changes in values for your new dimension after your changes are committed to the server. Depending on the type of dimension, you may want to disable this Top Mover.

- The new Top Mover is created after the new dimension is committed to the server. No record of a changed or new Top Mover is displayed in the Top Movers tab.
- See Chapter 8, “TEM Top Movers Tab,” on page 333.
- For more information about auto-creation of Top Movers, see “Data management for Top Movers” on page 343.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

- To cancel your new dimension, click **Cancel**.

The following properties are available.

- To see more options, expand Advanced Options.
- For dimensions provided by Tealeaf, you may edit the following properties:
Values to Record
Allow Empty Values

Property

Description

Name The user-friendly name of the dimension

Description

The description of the dimension

Fixed WhiteList

Select this checkbox to limit the whitelist to a fixed set of values.

Populated By

Select the event, hit attribute, or session attribute whose value populates this dimension:

Note: Dimension values can be up to 450 characters in length. Values that are longer than this limit are truncated, which may impact dimensions populated by hit attributes that match long character strings in the session data.

- Events - The No Dimension Report Group fact for the event is used to populate the dimension. See Chapter 3, “TEM Events tab,” on page 45.
- Hit Attributes - Tealeaf and user-defined hit attributes are available.

Note: Hit attributes that match on fixed text strings, such as those created in BBR, cannot be used as the source for a dimension, since they can only return the fixed text string. These hit attributes are filtered from the available selections.

- See Chapter 4, “TEM Hit Attributes tab,” on page 201.
- You may also use step attributes as the source of your dimensions. See “Step-Based Eventing” in the *IBM Tealeaf Event Manager Manual*.

- Session Attributes - Tealeaf and user-defined session attributes are available. See Chapter 6, “TEM Session Attributes tab,” on page 287.

Populated With

Select the value to populate in the dimension:

- First Value - First value on the hit (hit attribute source) or session (event or session attribute source)
- Last Value - Last value on the hit (hit attribute source) or session (event or session attribute source)
- Current Count in Session - (event source only) Current count of the event occurrence in the session
- See “Dimension value limits and constants” on page 225.

Values to Record

Select the scope of values that can be recorded for the dimension. See “Dimension values to record” on page 228.

Default Value

- If Values to Record is set to Whitelist + Observed Values and the observed value is on the blacklist, the observed value is not recorded and is instead added to count of instances of the default value.
- If Values to Record is set to Whitelist Only or configured to use a Group List and the observed value is not covered by the settings, the observed value is not recorded and is instead added to count of instances of the default value. For more information about default values, see “Dimension default values” on page 227.

Max Values Per Hour

If desired, you can specify a maximum number of values per Canister to capture and report for this dimension for each hour. See “Maximum number of dimension values” on page 226.

- Whitelisted and blacklisted values do not count against this limit. See “Whitelists and blacklists” on page 234.
- Depending on the type of dimension, this value may be applied in different ways. See “Value limits for list dimensions” on page 235.

Allow Empty Values

When this checkbox is selected, empty dimension values are permitted.

- If the source value is a null value and this checkbox is selected, the defined [Empty] value is assigned. Otherwise, null values result in [Null] value assignments. See “Dimension constants” on page 227.

Set Value Display Order

When selected, values in the whitelist or groups lists are displayed in the order specified in the Report Builder. You may re-order the displayed whitelist using the up and down arrow keys in the Whitelist or Group List editors.

- The display order is not applied if Value to Record is set to Whitelist + Observed.

Evaluated At

By default, all dimensions are evaluated immediately. When the event is triggered, the current value for the dimension is immediately recorded. For IBM Tealeaf cxOverstat, you can optionally configure a dimension to be evaluated at the end of the session, at which time previous occurrences of the dimension are backfilled with the last recorded dimension value for the session.

- Dimensions populated by hit attributes cannot be configured to be published at the end of the session.

Note: If you choose the End of Session option, the dimension must be populated by an event or a session attribute. You cannot populate the dimension from a hit attribute.

Note: After you have saved your event definition, you cannot change this setting. In almost all cases, set this value to Immediate. See “Goal Based Dimensions” in the *IBM Tealeaf Event Manager Manual*.

This setting is available only if you have licensed IBM Tealeaf cxOverstat. For more information about IBM Tealeaf cxOverstat, see “cxOverstat User Manual” in the *IBM Tealeaf cxOverstat User Manual*.

Edit Whitelist...

When one of the whitelist options is selected as the Values to Record, you may specify the set of values that are permitted to be reported in this dimension. See “Whitelists and blacklists” on page 234.

Edit Blacklist...

When one of the whitelist options is selected as the Values to Record, you may specify the set of values that are not permitted to be reported in this dimension. See “Whitelists and blacklists” on page 234.

Edit Group List...

When one of the group list options is selected as the Values to Record, you may specify the set of values in the group and the values to which they map. See “Group lists” on page 240.

Turn On/Off Logging

Enable or disable logging of values for this dimension. Logged values can be used as a source of data for the dimension. See “Logging of dimensional values” on page 231.

Reset Trim Flag

To prevent runaway growth of observed values for a dimension, Tealeaf imposes an upper limit on the number of values that can be stored in the database. When this limit is reached, the Data Collector automatically trims values, and the Portal inserts a warning message that the dimension values have been trimmed when the dimension is used in a report. See “Data Management for Dimensions” on page 263.

- If your dimension values have been trimmed, you should review the reporting results. You can reset this trim flag, which removes the message from display in the Report Builder.
- For more information about the Report Builder message, see “Tealeaf Report Builder” in the *IBM Tealeaf Reporting Guide*.

Recommended workflow

Note: When creating a dimension, Tealeaf recommends immediately converting it to a **Whitelist Only** dimension and then using the recommended workflow to populate the dimension. This workflow is especially important for high-volume dimensions. See “Data Management for Dimensions” on page 263.

Dimension value limits and constants

Dimensions are populated by event, hit attribute or session attribute data that is detected in the capture stream or by values that you manually specify. In the dimension definition, you can specify the data source and values for the object that is detected in the session.

You may configure whether the first or last value of the attribute or event is used. The value that you specify to populate the dimension definition depends on the configuration for the populating event or hit attribute.

- A hit attribute can acquire either the first match or all matches.
- Events can acquire the first, last, or all matches.

The value of the **Populate With** setting (first or last value) on the dimension only matters if the hit attribute or event is returning multiple values.

- If the hit attribute or event returns a single value, then the dimension has only one possible value to retrieve, so the **Populate With** setting is irrelevant.

If the dimension is populated by an event or session attribute, you may populate it with the first or last value in the session only.

Text format for dimension values

Note: Dimension values are always stored as text data. Even if the captured value is numeric, the stored dimension value is of text type. Dimension values are case-insensitive.

To perform numeric comparisons between dimension values, you must use JavaScript in Advanced Mode to convert the values to numeric values and perform your comparisons.

- See Chapter 11, “Advanced Mode for Events,” on page 367.

Maximum number of dimension values

For data storage purposes, each dimension can be assigned a maximum number of values to be captured per hour for each Tealeaf Processing Server. For example, in a large website, a dimension that captures visited URLs may quickly exceed this value. Imposing a limit on the number of values ensures that a statistically meaningful sample of the available values is captured and reported.

Note: This value indicates the total number of instances of unique values permitted per hour for each Processing Server. For example, if your environment contains three Processing Servers and this value is set to 500, then a total of 1500 unique dimension values can be captured system-wide in an hour, with no more than 500 captured by an individual Processing Server.

- It is possible to have specific values that are repeated in the hourly data set. For example, if the value `shirt` appears 10 times in an hour for a dimension, it is recorded only once as a dimension value.
- By default, this limit is set to 1000. It can be set a maximum value of 50000 values per hour.
- Processed values include whitelisted values, which also count against this limit. Blacklisted values do not count. * If the actual number of captured values exceeds this limit for a given hour, the default value for the dimension is recorded. See “Dimension default values” on page 227.

Each hour, the counter of dimension values resets to zero for each Processing Server. See “Value limits for list dimensions” on page 235.

Global fact limit

As a safeguard, Tealeaf also enforces a maximum number of facts that can be generated. For each event, this limit is tested each user-defined interval (Fact Limits - Check Interval (minutes)) for the preceding hour.

- By default, the limit for number of facts that are recorded per hour for an event is set to 500,000.
- If this limit is exceeded, any associated scorecard or dashboard is disabled. The fact is also disabled and must be re-enabled through the Report Groups step of the Event Wizard. See Chapter 3, “TEM Events tab,” on page 45.
- See “CX Settings” in the *IBM Tealeaf cxImpact Administration Manual*.

Global dimension value limit

To prevent runaway growth of the number of values that are stored for dimension data, Tealeaf enforces a global limit on the number of dimensions that are retained for any individual dimension. Periodically, the Data Collector scans the values that are stored in the database for each dimension and removes the oldest values that

exceed the defined number of permitted values, which are based on the timestamps when the values were recorded.

- Counts for dimension values that are trimmed in this manner are moved to the [others] category.

Note: The global dimension value limit is not intended to replace effective management of dimension data. Dimensions that reach the global limit are trimmed back to the global limit. If new values are added, the trimming is repeated, which can significantly burden the system over time. Tealeaf recommends converting all high-volume dimensions to whitelists. See “Data Management for Dimensions” on page 263.

Dimension default values

You can specify default values for the dimension. If a value detected the capture stream does not map to a whitelist or blacklist value, the specific Default Value is inserted in the data.

The default value can be specified to be a custom value or one of the values available in the drop-down.

Default Value	Description

[Others]	The inserted value indicates that a value was detected but was not reportable.

- The inserted value indicates that a value was detected but was not reportable.
- This value is consistent with dimensional data from pre-Release 8.0 versions.

[Empty]	Insert a blank value. The value exists but contains nothing.

To specify a default value that is not listed, select Custom Value... in the drop-down and insert the default value for the dimension in the textbox.

If Allow Empty Values is selected, then the [Empty] constant is applied when no value is detected otherwise the [Null] constant is applied. See “Dimension constants.”

Dimension constants

Depending on the number of values that are captured for a dimension and their data type, one of the following constants may be inserted for the dimension value in place of the captured value:

Note: All dimension constants are searchable except for [Null]. See “Searching Session Data” in the *IBM Tealeaf cxImpact User Manual*.

Constant	Description

[Null]	This constant is inserted as the dimension value if a null value is detected for the dimension. A null value occurs if the criteria for detecting the dimension value cannot be satisfied.

Note: The null value constant is not indexed for search. You cannot retrieve results when searching for this value. Where it appears in reports, drill-down to the underlying data is disabled.

Note: Advanced users may be able to record a separate value for null values for dimension constants. Using an ELSE clause in the definition that records the dimension value, you can store a specific value (for example, t1null), which is then available for indexing and search. You can also drill down on these values to search for underlying sessions where they appear. However, non-default "null" values should be used carefully, as they can significantly increase the size of the indexes and reporting data for sparsely populated dimensions. See "Tealeaf EES tutorial" on page 369.

[Empty]

This constant is inserted if the dimension value is empty. For example, if a dimension is created to detect the value of the address field, the [Empty] constant is inserted if the field is found yet it contains no value.

[Others]

If a whitelist is used to define the values that are accepted for use in the dimension, the [Others] constant is inserted when any value that is not on the whitelist is detected for the dimension.

[Limit]

Dimensions can be configured to accept a defined number of values per hour. If the number of values that are captured within an hour exceeds this value, the [Limit] constant is inserted as the dimension value.

Dimension values to record

By default, a dimension is populated by all data values detected in the capture stream. Optionally, to normalize or otherwise restrict the source data, you may choose to record values for a dimension from values that are specified in lists. For each dimension, you can define the scope of values to be recorded for the dimension.

- To specify the values, select an option from the Values to Record drop-down in the Add/Edit Dimension dialog.
 - For events that record Count Only values, you may choose to record to the dimension the first, last, or current count of the event in the session.
- For each dimension, you can specify a maximum number of values to capture per hour, which allows you to limit the data size for the dimension. See "Maximum number of dimension values" on page 226.

For each dimension, you can specify one of the following to record:

Note: After you save the dimension that includes a specified list, you cannot change the source values in the list, and the Values to Record cannot be changed if a Group List type is used.

For these types, you should export the list to a file, delete the dimension, and create a dimension with the same properties, making changes as needed. Then, import the file, if needed, as the source for the values to record.

Values to Record

Description

Whitelist + Observed Values

Record values that are on the whitelist for the dimension, as well as non-blacklisted values detected in the capture stream. A Whitelist + Observed Values configuration may be used when populating a dimension that is not dynamic or is populated by a very limited set of dynamic data. For example, you might use observed values to capture a limited set of query strings associated with a small subset of hit or event occurrences.

Note: When dimensions are created to capture data using **Whitelist + Observed Values**, the volume of data can grow without limit, which result in a very large number of either individual dimension values or combinations of values with other dimensions. A high number of dimension values can also become a bottleneck in the Data Service and the Portal, which attempt to pass these values upon request. Because **Whitelist + Observed Values** is the easiest way for a dimension to immediately gather values without extra configuration, **Whitelist + Observed Values** is the default method of recording for dimensions. As a result, however, data management issues can occur for any newly created dimension. See “Data Management for Dimensions” on page 263.

Whitelist Only

Record only values that appear on the specified whitelist for the dimension.

Group Lists - Text

Populate the dimension from a group list of text values that are configured for the dimension. See “Group lists” on page 240.

Group Lists - Numeric

Populate the dimension from a group list of numeric values that are configured for the dimension. See “Group lists” on page 240.

Note: Since dimension values are recorded as text values, logging of dimension values is disabled for numeric group lists.

Sources for dimension values

The recorded values for a dimension are generated from the data sources that are listed below:

- **Whitelist** - For a dimension, you can specify the list of values that are accepted to populate the dimension. This list can be generated from the following mechanisms.
 1. **Logs** - When logging for a dimension is enabled, all detected values are stored in a log file. You can select to permit individual values in the logs or all values. See “Adding values from logs” on page 238.
 2. **Importing a List** - You can import a set of values into your whitelist. See “Importing a list” on page 238.
 3. **Manual Entry** - You can also specify individual entries for the dimension. See “Manually editing values” on page 237.
 4. **Observed values** - You may choose to include observed values in raw form in the dimension data. This population occurs when you select **Whitelist + Observed Values** for the values to record.
- **Blacklist** - A blacklist contains the list of values that are not permitted to populate the dimension. Blacklists are specified in the same manner as whitelists.
 - A dimension may have both a whitelist and a blacklist.
- **Group list** - A group list is used to specify dimension values in which multiple detected values are normalized to a single value. For example, you might use a group list that is called **States** to normalize values of **CA** and **California** to **California**. See “Group lists” on page 240.

Processing of dimension values

After a dimension value is retrieved from the data source for the dimension, leading and trailing spaces are stripped from the value, and it is converted to uppercase. A copy of the trimmed dimension string is saved as the source value.

Each source value is processed through the dimension's whitelist or group list and then the blacklist.

- If a match in a fixed whitelist is found, the display value is returned.
 1. If a display value is not found, the default dimension value is used.
 2. There is no logging for fixed whitelist values.
- If the source value is not in a fixed whitelist, the value is submitted for the blacklist processing.
 1. If it is not in the blacklist, the value is logged for checking against permitted value limits.
- Dimension logging and limit checking are run against the trimmed dimension value.

Recording of dimension values

Note: Dimension values can be recorded as soon as the following occurs:

- Dimension definition is saved.
- Dimension is associated with a report group.
- Report group is assigned to an event.
- Event is triggered.

The above has some implications that are best explained by example. Suppose you have an event with the following configuration:

Table 39. Recording of dimension values

Event	Report Group	Included dimensions	Start Date for Recording Dim Values
EventA	ReportGroup1	• DimA • DimB	Day 1

As soon as the dimensions are associated with the report group and the report group is associated with EventA, values are recorded for DimA and DimB whenever EventA fires.

Suppose that three days later two more report groups are created and associated with EventA, so that the configuration now looks like the following:

Table 40. Recording of dimension values

Event	Report Group	Included dimensions	Start Date for Recording Dim Values
EventA	ReportGroup1	• DimA • DimB	Day 1
	ReportGroup2	• DimC • DimD	Day 4
	ReportGroup3	• DimC • DimE	Day 4

Now, when EventA fires, dimension values are recorded for dimensions A-E, yet there is no data at all for DimC, DimD, and DimE before Day 4. When dimensions from ReportGroup2 and ReportGroup3 are added to reports, there are no values from before Day 4.

Suppose that another three days passes, and then DimC is added to ReportGroup1. The event configuration now looks like the following:

Table 41. Recording of dimension values

Event	Report Group	Included dimensions	Start Date for Recording Dim Values
EventA	ReportGroup1	• DimA • DimB • DimC	• Day 1 for DimA and DimB • Day 7 for DimC
	ReportGroup2	• DimC • DimD	Day 4
	ReportGroup3	• DimC • DimE	Day 4

Since DimC was added to ReportGroup1, there is no data for DimC in recorded instances of EventA + ReportGroup1 combination before Day 7. While the dimension is included as part of the report group, all values displayed for ReportGroup1\DimC before Day 7 are null values.

However, if you use EventA + ReportGroup2 or EventA + ReportGroup3, there are reported values for DimC for Days 4 and onward.

This distinction can be confusing in reports using the configured dimensions.

Note: For purposes of reporting, different data sets are recorded for event + report group\dimension combinations in the Reporting database. So, the data set referenced in a report uses the specific instances of the event + report group\dimension values, instead of all data that is captured since the dimension was created. This space-saving mechanism works as designed.

Logging of dimensional values

For purposes of populating whitelists, blacklists and group lists, you may enable the logging of values for the dimension from which you can extract source values for the dimension. When logging is enabled, dimensional values that are detected in hit data for the dimension are recorded in a database log. These log values can then be used as the basis for building your list for the dimension.

- Dimension values do not appear and therefore cannot be logged until the dimension is included in a report group.

When enabled, the logging of dimensional values is recorded from the date when it was enabled for the number of days that log values are configured to be retained. See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

- To enable logging of values for the configured dimension, click **Turn On Logging**.
- To disable logging, click **Turn Off Logging**.

Note: Changes to the logging setting are applied after the dimension definition was saved and committed to the server.

Management of the logging of values is especially important in high-volume dimensions, such as URL.

- See “Managing URL and Other High-Volume Dimensions” on page 272.

Configuration

Default logging behaviors

For Tealeaf system dimensions, logging is enabled by default. However, you must specify the whitelists, blacklists, or group lists for accepted values before data begins to appear in these dimensions.

- See “Whitelists and blacklists” on page 234.
- See “Group lists” on page 240.

For user-created dimensions, logging is disabled by default. To begin populating dimensions with values, do the following:

- Verify that collection of values is enabled. See “Aggregating data log values.”
- Enable logging for the dimension. It must be manually enabled for each created dimension.
- Specify the type of dimension data to capture.
- Add values from logs.
 - These steps are outlined below. See “Recommended workflow for creating dimension populated by logged values” on page 233.

Aggregating data log values

By default, log values are gathered from the Canisters and inserted into the database on an hourly basis. After the Data Collector process runs at ten minutes past the hour, these values become available for use in specifying whitelists, blacklists, and group lists.

- If needed, you can configure the aggregation of these values to be on a daily or weekly basis at a specified, off-peak time.
- Aggregation of dimension log values can be disabled.
- See “Data Aggregation and Retention” in the *IBM Tealeaf cxImpact Administration Manual*.

Monitoring limit configuration

After you enabled logging of dimensions, you can monitor your limit configuration by checking the number of counts of the [Limit] value for the dimension in each hour of reports that are configured to include the dimension.

- In the Report Builder, you add the dimension to the report and check the counts for the [Limit] row in the detail table.

Note: The appearance of the [Limit] value consistently in your reports indicates that some values are not being factored into the dimension data for the hours where the limit is reached.

If you are consistently reaching the [Limit] value for the dimension, you should consider raising the limit. Caveats:

- Raising the limit requires more disk space to store the values. These hourly entries in the database can grow quite large and may not be detected unless you carefully monitor the counts of [Limit] values.
- If you are consistently hitting the limit even after it was raised, the dimension may not be able to reflect an accurate sample of the real data set.

Suppose you configured a dimension to capture a maximum of 1000 values per hour, which is the default setting. In the table below, you can see the logged values are recorded for successive hours.

- Assume that the values are detected and recorded in the sequence that is listed below. For Hour 0, values are detected in the following order: v0000, v0001, v0002, etc.

Table 42. Monitoring limit configuration

Hour	Detected Values	Captured Values	Values Overwritten with [Limit]
0	v0000 - v1200	v0000 - v0999	v1000 - v1200
1	v1000 - v1200, v0000 - v0999	v1000 - v1200, v0000 - v0799	v0800 - v0999

In Hour 0, the first 1000 values (0-0999) are captured, and all subsequent values are stored as [Limit]. In Hour 1, new values (1000-1200) are detected and captured initially, but then the sequence of values from Hour 0 starts again. However, since the limit is capped at 1000, [Limit] is assigned to the last two hundred values for the hour, even though the values were already captured and recorded in the previous hour. As a result, contextual information for data that is already known to the system is not captured in Hour 1.

Note: If you enabled logging of a dimension that captures a high number of discrete values per hour, you may be challenged to capture and use a useful selection of them. For example, recording IP addresses for a high-volume site may result in explosive log growth and a varying set of values that are recorded as the dimension limit value.

A potential solution for addressing these issues is to do the following:

- Enable logging for a day or two.
- Export the list as a text file.
- Change the dimension to use a whitelist only.
- Import the export list as your whitelisted values.

Note: This solution does not work for data that varies significantly over time.

Recommended workflow for creating dimension populated by logged values

If you are creating a whitelist, blacklist, or group list dimension that is populated by source values from logs, the following workflow is recommended for creating the dimension.

1. Create the dimension. See “Creating or editing a dimension” on page 221.
 - a. For the Values to Record, select the type of data you want to record. See “Dimension values to record” on page 228.
 - b. Turn on logging.
 - c. Do not specify your list yet.

- d. Specify other properties as you see fit.
2. Click **Save Draft**.
3. Before dimension values can be logged, you must add the dimension to a report group. See “Creating or editing a report group” on page 247.
4. Click **Save Changes**.
5. Allow sufficient time for the database log to be populated by a representative sample of values that are detected in the capture stream. Typically, 24 hours is a sufficient waiting period.
6. Review the dimension logs to verify that all values you want to detect were captured. See “Adding values from logs” on page 238.
7. Create the list or lists from the logged values.
8. After you specified the list for the dimension, you may want to export the list to a file for recordkeeping.
9. Click **Save Draft**.
10. Click **Save Changes**.

Monitoring dimension data growth over time

Periodically, review the Database Table Size report, which contains details on the daily and monthly growth patterns of dimension data. See “System Status” in the *IBM Tealeaf cxImpact Administration Manual*.

Whitelists and blacklists

A dimension is automatically populated based on the data detected each hour for the dimension values that are configured to populate it. Depending on the traffic volume and the variation in the data, the maximum values per hour can be quickly filled with data that is not important for meaningful evaluation.

- A logged value for a dimension can be in the whitelist or the blacklist, but not both.

You can use whitelists and blacklists to specify the values that are permitted or forbidden from populating the configured dimension, which allows you to restrict the possible data set to the most useful values.

- If you are mapping multiple detected values to a single recorded value, you must use a group list as your data source. See “Group lists” on page 240.

List types

- **Whitelist:** defines values that are permitted to populate the dimension
 - A fixed whitelist specifies the only values that are permitted. If the specified whitelist is configured to be fixed, then any value that is not on the whitelist is forbidden.
- **Blacklist:** defines values that are not permitted to populate the dimension
- You can create lists of both types for a single dimension. If a dimension uses both a whitelist and a blacklist, the whitelist is evaluated first.
 - If the dimension value is not in a non-fixed whitelist, it is evaluated against the blacklist.

Note: If there are significant changes to your web application, your dimension whitelists are likely to need rebuilding. Contact your web application development team for details on the changes.

Value limits for list dimensions

Total

A whitelist or blacklist may contain up to 50,000 total values.

- Your solution may be configured to limit whitelists and blacklists to 5,000 total values, if you had Release 8.0, Release 8.1, or Release 8.2 installed previously.

Hourly

By default, Tealeaf limits the number of unique values that are recorded for a dimension per hour. Suppose you capture 110 unique values in a given hour and configured the dimension to capture 100 unique values per hour. The last 10 captured values are assigned the [Limit] value.

- Dimension limits are enforced on an hourly basis per Processing Server.
- When a dimension limit is reached, an error is reported in the Event Log:
Dimension ID = XXX has surpassed its hourly limit of YYY values
- Dimension values can be up to 255 characters. Longer dimension values are truncated at 255 characters.

For blacklist dimensions: The Max Values per Hour setting is enforced for values outside of the blacklist, which does not include the configured Default Value for the dimension.

- **Fixed whitelist dimensions:** No hourly limit is imposed on these dimensions, but any captured value must appear in the whitelist. Otherwise, the value is substituted by the specified default value.
- **Non-fixed whitelist dimensions:** The Max Values per Hour setting is enforced. It is discounted by the size of the whitelist. The number of permitted unique values is the following:
MaxPerHour - <items in whitelist>

Under Advanced Options in the Add or Edit Dimension dialog, you can configure the maximum values that are captured per hour and the default value for the dimension. Increasing the number of dimensional values that are captured per hour requires extra storage space in the database. See “Creating or editing a dimension” on page 221.

Specifying whitelists and blacklists

Through the Edit List window, you can manually create whitelists and blacklists or populate them with values retrieved from reference value log files.

Note: After you specified the values in your whitelist and saved the changes to the server, you cannot change the source value for existing items.

Note: After you specified your whitelist and blacklist for a dimension, you should export the list to a file. In case you need to make changes at some future time, you can use the exported file as one of your data sources for population of the list in the new dimension.

Note: After you created a whitelist of values, newly added values are not automatically included in Top Mover calculations. Any imported or manually added values must be specifically selected for inclusion in Top Mover calculations.

Value (read-only after committed)	Display Value	Track Top Movers
detectedvalue1	recordedvalue1	☒
detectedvalue2	recordedvalue2	☒

Buttons: Add, Remove All, Download Log Values, Import File..., Export File..., Track All, Untrack All, Done, Cancel

If you selected Order whitelist as shown in the Dimension properties, you may use the up and down arrows next to the Value column to reorder the display of whitelist values.

- To move an item to the top or bottom of the list, press SHIFT and then click the appropriate arrow.
- See “Creating or editing a dimension” on page 221.

Column

Description

Value Value that is detected in the capture stream

Display Value

Value to record, which is displayed in reports

Track Top Movers

Click this check box to track the variations in the detected value as a potential source for a Top Mover.

- See Chapter 8, “TEM Top Movers Tab,” on page 333.

The following commands are available at the bottom of the screen.

Command

Description

Add Manually add values to the list. See “Manually editing values” on page 237.

Remove All

Remove all values from the list.

Note: You can remove only values if the list was not yet saved to the server.

Download Log Values

Download all values that are captured in the logs to a compressed file. See “Downloading log values” on page 239.

- For more information about workflow, see “Adding values from logs” on page 238.

Import File...

Import a list of values into your list. See “Importing a list” on page 238.

- For more information about workflow, see “Adding values from logs” on page 238.

Export File...

Export the list of values in the above format.

Track All

Click to select all values for tracking as Top Movers.

Untrack All

Click to clear the Track Top Movers check box for each value.

Done Complete your changes to the list and return to the Edit Dimension window. Data is not saved until you select **Save Draft**.

Cancel

Cancel your changes and return to the Edit Dimension window.

You can specify a whitelist or blacklist in one of the following ways:

- **“Importing a list” on page 238:** A whitelist or blacklist can be imported from a text file to the server.
- **“Adding values from logs” on page 238:** Add values to your list from a database log of captured values.

Note: Logging of dimension values must be enabled.

- **“Manually editing values”:** A whitelist or blacklist can be manually created.

Manually editing values

1. In the List editor, click **Add**.
2. Enter the value and display value in the available textboxes. If no display value is specified, then the value is used for display in reports.
 - Avoid adding entries that match your dimension constants, such as `others` and `limit`, which may cause confusion.
3. For values that you want to be included in deviations calculations, click the check box in the Track Top Movers column.
 - To track all values in the list for deviation calculations, click **Track All**.
 - To ignore all values in the list for deviation calculations, click **Untrack All**.

Note: Tracking dimensional values for deviation calculations can affect data storage. You should track only the dimensional values that are most meaningful to the accurate computation of the standard deviation of the dimension. For more information about deviations, see Chapter 8, “TEM Top Movers Tab,” on page 333.

4. Click **Add** again.
5. Repeat the above steps until you specified all values.
 - To remove a value, click the **X** icon next to it.
 - To remove all values, click **Remove All**.
6. To save a draft, click **Done**.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

- To cancel your new list, click **Cancel**.

Importing a list

You can import text files to augment your whitelists, blacklists, or group lists.

- For group lists, the **ListName** and **DisplayName** are the same value. Both values are required in the imported file.
- To import a list, click **Import File....**

Note: No data validation is performed during import. Duplicate values are not allowed. If a value appears in a dimension whitelist, it cannot be added to the blacklist until you delete the value from the whitelist.

Values should be in the following tab-separated format:

DetectedValue1	DisplayValue1
DetectedValue2	DisplayValue2
DetectedValue3	DisplayValue3

For whitelists and blacklists, the second column is optional.

- For group lists, both columns are used and should contain the same value.

Steps:

To import a list:

1. In the Dimension edit window, click **Edit Whitelist...** or **Edit Blacklist...**
2. In the **Edit List** window, click **Import File....**
3. In the file uploader, click **Browse....** Navigate your local system to select the file to upload. Click **Open**.
4. To upload the selected file, click **Import**.
5. The values are added to the dimension list accordingly.

Note: To include the items in deviation calculations, you must manually edit the list. For more information about editing the imported list, see “Manually editing values” on page 237.

Adding values from logs

To simplify the list creation process, you can gather values from the set of dimension values that are automatically stored in the database logs for 14 days. When a sufficient sample accrued in the log files, you may download those values, edit them, as needed, and then import back into the dimension whitelist, blacklist, or group list.

Note: After you initially create a dimension, it may take a variable length of time before the database logs begin to be populated with a meaningful number of values. If no values for the dimension were detected in the transaction stream or if the logs were recently purged, the list of available values may be empty. See “Recommended workflow for creating dimension populated by logged values” on page 233.

Workflow for adding values from logs

To create or edit a whitelist, blacklist, or group list that is based on values that are captured and stored in the log files, complete the following general steps.

1. Enable logging for the dimension. See “Logging of dimensional values” on page 231.
2. After dimension value logging was enabled, allow a sufficient time to pass to collect values in the logs. See “Log value storage” on page 239.

3. When you are ready to add the values, edit the dimension. Then, choose to edit the whitelist, blacklist, or group list of the dimension.
 - See “Whitelists and blacklists” on page 234.
 - See “Group lists” on page 240.
4. In the Edit Dimension dialog, download the log values. See “Downloading log values.”
5. Edit the log file locally to add, edit, or remove values for inclusion in your list. See “Editing dimension values.”
6. Import the file into the Edit Dimension dialog for inclusion as values in your list. See “Importing a list” on page 238.
7. Add the values to the dimension.
 - For more information about adding values to group lists, see “Adding or editing a list value” on page 243.
8. New values may become available for logging when the Data Collector performs its next collection run. See “Updating of log values” on page 240
9. Repeat the above steps periodically to capture new values appearing in the capture stream.

Log value storage

After you configured a dimension to be populated with log file data, the Tealeaf Reference Session Agent begins capturing any detected values and automatically inserting them into the logs.

- Values are reviewed and inserted once per hour.
- All detected values are inserted. Any whitelist and blacklist that you specify does not filter the recorded values.
- These logs are retained for 14 days, after which they are purged, and a new set of log files begins to accumulate.
- By default, the values are inserted into the database once per hour.

Downloading log values

To download all values that accrued in the dimension's log files, click **Download Log Values?** in the Edit Dimension dialog. Save the compressed file to your local desktop.

- A downloaded log file can contain up to the top 250,000 values by occurrence over the duration that they collected in the logs.

Extract the file. Values appear in the following tab-separated format:

```
DetectedValue1      NumberOfOccurrences1
DetectedValue2      NumberOfOccurrences2
DetectedValue3      NumberOfOccurrences3
```

Editing dimension values

You may edit a downloaded file of log values or create one as a text file in the above tab-separated format.

Note: If you downloaded log values from Tealeaf, you may need to remove or replace the content of column 2, which contains number of occurrences. When a dimension list is imported, column 2 can optionally contain the display name value for the log value.

Note: You may find it useful to use a spreadsheet editor like Microsoft Excel, which enables you to sort downloaded log value files that are based on the number of occurrences. You can then selectively choose to upload the Top-N values.

- If you use Microsoft Excel or other editor to create or edit your dimension values, be sure to save the file as a tab-separated text file.

Note: If you chose to purge dimension data, you cannot edit the dimension values for the dimension until the Data Collector completed its operations to purge values from each Canister. These operations occur every 5 minutes.

Importing dimension values

To import dimension values to a whitelist, blacklist, or group list, click **Import File?** in the Edit Dimension dialog. Navigate your local desktop to select the file to import.

- See “Importing a list” on page 238.

Updating of log values

Every hour at the top of the hour, each Tealeaf Processing Server makes the dimension log values captured in the previous hour that is exposed for collection. Ten minutes later, the Data Collector service pulls the values from each Processing Server. Depending on the data and the current load on the system, the collected values may be available for immediate use in the Tealeaf Event Manager.

Group lists

You can use group lists to normalize values that are detected in the capture stream to internally meaningful values. For example, if your enterprise underwent two mergers recently, you may want to create a dimension that uses a group list to normalize the names of each company (Company A and Company B) to the name of the current organization (Company C).

- For an example of a numeric group list, see “Example - Creating a dimension to track whether a login occurred” on page 260.

A dimension can be populated by one or more group lists. A *group list* is a specified value (value to record) and an associated list of values that, when detected, are recorded as the specified group value. A dimension can be populated by one or more group lists. These lists may be manually specified or generated from log values.

- A group list is not the same thing as a whitelist. Use a whitelist to specify individual values that are permitted and recorded as the original value. See “Whitelists and blacklists” on page 234.

Creating a group list dimension

A dimension that uses a group list is created in a manner similar to how you create a whitelist dimension, with the following differences.

To specify the use of a group list, you must select one of the following values in the Values to Record drop-down in the dimension definition:

Value	Description

Group Lists - Text	

	Record dimension values that are based on a group list that contains text values.

Group Lists - Numeric

Record dimension values that are based on a group list that contains numeric values.

To create a group list dimension:

1. In the Event Manager, select the **Dimension** tab.
2. Click **New Dimension....**
3. Enter a Name and Description for the dimension.
4. Specify the other properties as needed.
 - If you want to change the order of display of whitelist values, select Order whitelist as shown.
 - See “Creating or editing a dimension” on page 221.
5. Select one of the group list types as the value to record.
6. Edit the group list. See “Editing a group list.”
7. If you want to use logged values as source data, click **Turn On Logging....** See “Logging of dimensional values” on page 231.
8. Edit the group list. See “Editing a group list.”
9. Click **Save Draft**.
10. To commit your changes, click **Save Changes** in the Dimensions tab.

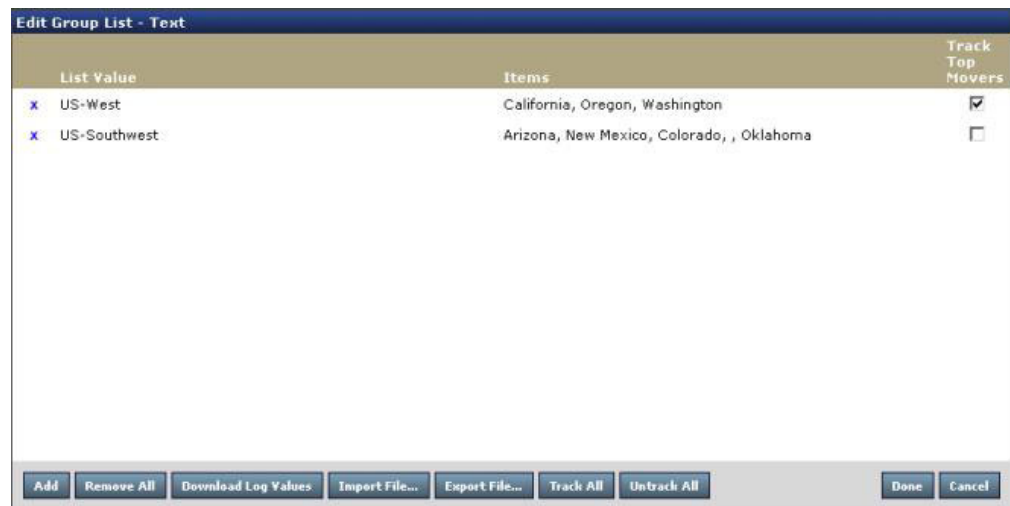
Editing a group list

In the Edit Group List window, you can edit your group list from logged values, imported files, and lists that you manually enter.

- See “Sources for dimension values” on page 229.

Note: After you specified the values in your group list and saved the changes to the server, you cannot change the source values. You can change the List Value, which is displayed in reporting.

Note: After you specified your group list, you should export the list to a file. In case you need to make changes at some future time, you can use the exported file as one of your data sources for population of the group list in the new dimension.



Changing list values:

- To add a list value, click **Add....** See “Adding or editing a list value” on page 243.
- To edit an existing list value, double-click the entry in the List Value column. See “Adding or editing a list value” on page 243.
- To delete a list value, click the X next to the List Value entry.
- If you selected Order whitelist as shown in the Dimension properties, you may use the up and down arrows next to the Value column to reorder the display of whitelist values.
 - To move an item to the top of bottom of the list, press SHIFT and then click the appropriate arrow.
 - See “Creating or editing a dimension” on page 221.

Column

Description

List Value

The value that is recorded and is displayed in reporting.

Items A comma-separated list of detected values that are mapped to the List Value, which is recorded.

Track Top Movers

Select this check box to track these values for creation of Top Movers. See Chapter 8, “TEM Top Movers Tab,” on page 333.

The following commands are available at the bottom of the screen.

Command

Description

Add Add values to the group list. See “Adding or editing a list value” on page 243.

Remove All

Remove all list values from the group list.

Note: You can remove only values if the group list was not yet saved to the server.

Download Log Values

Download all values that are captured in the logs to a text file in your default text editor. Values appear in the following tab-separated format:

```
DetectedValue1    NumberOfOccurrences1
DetectedValue2    NumberOfOccurrences2
DetectedValue3    NumberOfOccurrences3
```

- See “Adding values from logs” on page 238.
- To capture values to the log files, dimension logging must be enabled in the dimension properties. See “Creating or editing a dimension” on page 221.

Import File...

Import a list of values as a group list. For group lists, the ListName and DisplayName are the same value. Both values are required in the imported file. See “Importing a list” on page 238.

- For more information about workflow, see “Adding values from logs” on page 238.

Export File...

Export the group list as a list of values in the above format.

Track All

Click to select all List Values for tracking as Top Movers.

Untrack All

Click to clear the Track Top Movers check box for each List Value.

Done Complete your changes to the group list and return to the window. Data is not saved until you select **Save Draft**.

- If the group list contains no values, the default value for the dimension is used.

Cancel

Cancel your changes and return to the Edit Dimension window.

Adding or editing a list value

Text list values: In the Edit List window, you can specify the List Value that you are adding or editing and the source values as individual entries.

Edit List (Text)

Name:

	Value
x	California
x	Oregon
x	Washington
x	

- To create a List Value, enter the Name of the value.
- You may edit the Name of a List Value of a group list that was saved.

Note: Changing the List Value that is recorded does not apply the change to any values that were already captured and saved to the database.

Changing values in the list:

- To add a value to the list, click **Add**. Enter the value and press ENTER.

Note: Do not add multiple values as a comma-separated list. Each value must be inserted as a separate entry.

- To remove a value from the list, click the X icon next the value entry.
- To edit a value, click it.

Numeric list values:

For numeric list values, you can specify ranges of values to map to the list value you are creating.

Edit List (Numeric)

Name: Page Height px - Small

Expression

X is within 0 and 479

=
!=
<
<=
>
>=
is within
is not within

Add Remove All Done Cancel

The values and ranges of values are evaluated in the order in which they are listed in the Edit List window. So, data validation is not required, and ranges of values can overlap.

- If there are gaps in the range of values, no error or warning is displayed.
- Values that are detected but are not specified in the numeric list are recorded as another instance of [others].

Adding a numeric list value or range of values:

1. To add a value, click **Add**.
2. The default value of =0 is displayed.
3. Select a new operator from the drop-down list. Available operators:

Operator

Description

=	Detected value is equal to value you specify.
!=	Detected value is not equal to value you specify.
!<	Detected value less than value you specify.

- =!<** Detected value less than or equal to value you specify.
- !>** Detected value greater than value you specify.
- !>=** Detected value greater than or equal to value you specify.

is within

Detected value is within the range of values you specify. Boundary values are not within the range.

is not within

Detected value is not within the range of values you specify. Boundary values are not within the range.

- For the within operators, an extra textbox is displayed.

Note: The first textbox is used to specify the lower bound of the range, and the second textbox is used to specify the upper bound of the range.

If you are finished specifying numeric value and ranges of values, click **Done**.

Common commands: The following commands are available at the bottom of the screen.

Command

Description

Add Add a value.

Remove All

Remove all values from the list.

Download Log Values

Download all values that are captured in the logs to a text file in your default text editor. Values appear in the following tab-separated format:

```
DetectedValue1    NumberOfOccurrences1
DetectedValue2    NumberOfOccurrences2
DetectedValue3    NumberOfOccurrences3
```

- See “Adding values from logs” on page 238.
- To capture values to the log files, dimension logging must be enabled in the dimension properties. See “Creating or editing a dimension” on page 221.

Import File...

Import a file containing values as group values for the current list. The file should be in the following format:

```
value1
value2
value3
```

- See “Importing a list” on page 238.

Done Complete your changes and return to the Edit Group List window, which is updated with any changed list values. See “Editing a group list” on page 241.

Cancel

Cancel your changes and return to the Edit Group List window. See “Editing a group list” on page 241.

Report groups

A *report group* is a mechanism for organizing one or more dimensions under a common heading. Tealeaf events can be associated with a report group, which enables segmented reporting that is based on the presence of individual dimensions or dimension values within associated report groups.

- Report groups have significant implications on the scope of reporting data for an event.
- See "Tealeaf Data Model" in the *IBM Tealeaf Reporting Guide*.

In the left navigation panel of the Dimensions tab, you can review and select from the list of available report groups to update the list of dimensions that are displayed in the main panel.



- To display only the dimensions from a specific report group in the main panel, select the report group entry in the left navigation panel.

- To filter the list of report groups, enter a filter string. See “Filtering dimensions.”
- The All Dimensions entry can be selected to display all available dimensions.
- To review details on a report group, move the mouse over it. The tooltip is displayed.
- To create a report group, click **New Report Group**. See “Creating or editing a report group.”

Report group context menu

Extra options are available in the context menu. Right-click a report group and select one of the following:

Option Description

New Report Group...

Create a report group. See “Creating or editing a report group.”

Edit Report Group...

Right-click the group to edit and select this option. See “Creating or editing a report group.”

Show Dependent Items

Displays a list of items that depend on this report group being present.

- Dependent items are listed higher in the event hierarchy. See Chapter 3, “TEM Events tab,” on page 45.

Delete Delete the group. See “Deleting a report group” on page 250.

Filtering dimensions

To filter the list of dimensions in the Report Groups Panel, enter a string in the Filter Dimensions textbox. The filter is applied in real time to display only the matching dimensions.

- Leading and trailing blank spaces are not removed from the filter.

Creating or editing a report group

To create a report group, click **New Report Group** above the filter textbox.

- To edit an existing report group, right-click the report group label and select **Edit Report Group....**

Note: Some report groups that are provided by Tealeaf cannot be edited.

Note: If you licensed IBM Tealeaf cxOverstat, Tealeaf recommends that you do not modify the report groups that are provided with IBM Tealeaf cxOverstat. See “Eventing for cxOverstat” in the *IBM Tealeaf Event Manager Manual*.

1. The following properties are available:

Property

Description

Name Enter a user-friendly name. This name appears in the left navigation panel.

Description

Enter a meaningful description of the report group. This description appears when you mouse over the group in the left navigation panel.

Template

Select the type of report group template to use. See “Report group templates.”

2. To add dimensions to the report group, click **Add Dimensions....** See “Adding dimensions to a report group” on page 249.
 - To remove a dimension from the report group, click the X next to it.
3. To save a draft of your new report group, click **Save Draft**.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Note: After you saved a report group that includes dimensions, you cannot change its report group template.

- To cancel your new group, click **Cancel**.

Report group templates

From the **Template** drop-down, you may select one of the following report group templates. A report group template is a preconfigured set of dimensions that can be added to a report group.

- The **Template** drop-down is visible only if you licensed a Tealeaf product or module that enables extra report group templates.

Note: Use of the IBM Tealeaf cxOverstat report group templates requires IBM Tealeaf cxOverstat, a separately licensable product for the IBM Tealeaf CX platform. You cannot use these report group templates to create report groups for use with non-IBM Tealeaf cxOverstat events.

For some types of events, a predefined set of dimensions must be added in order for the event to function. For example, IBM Tealeaf cxOverstat-related events require specific sets of dimension in order to work.

Note: IBM Tealeaf cxOverstat is a separately licensable product for the IBM Tealeaf CX platform. please contact your IBM Tealeaf representative.

Table 43. Report group templates

Template Type	Description	Maximum Number of Dimensions
Standard	Standard IBM Tealeaf cxImpact report group template. This template is empty of dimensions.	4
Usability - Click	This template is used for events tracking heat map and link analytics-related activities for IBM Tealeaf cxOverstat.	8
Usability - Attention Map	This template is used for events tracking attention map-related activities for IBM Tealeaf cxOverstat.	8
Usability - Form Analytics	This template is used for events tracking form analytics-related activities for IBM Tealeaf cxOverstat.	8

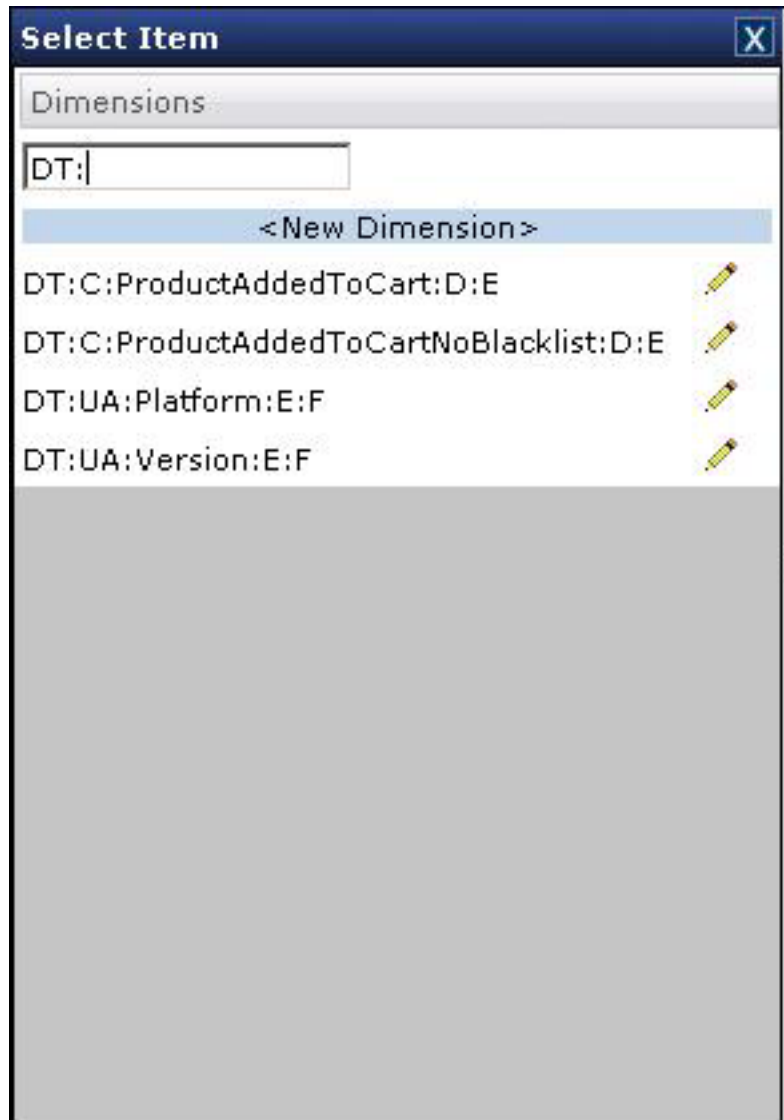
For more information about report group templates, see "Eventing for cxOverstat" in the *IBM Tealeaf Event Manager Manual*.

Adding dimensions to a report group

When you edit a report group, you can change the dimensions that belong to it.

- A report group may contain up to four dimensions.
 - For report groups used by IBM Tealeaf cxOverstat events, you may add up to eight dimensions.

Note: After a dimension is added to a report group and saved to the database, it cannot be removed from the report group. See Chapter 3, "TEM Events tab," on page 45.



- To filter the display, enter a string in the Filter textbox. The string is applied in real time.
- To add a dimension to the group, select it.
- To edit a dimension, click the Pencil () icon. See “Creating or editing a dimension” on page 221.
 - Dimensions that are provided by Tealeaf cannot be edited. They can be viewed.
- To create a dimension, click <New Dimension>. See “Creating or editing a dimension” on page 221.

Deleting a report group

To remove a report group:

1. Right-click the report group in the left-navigation panel of the Dimension tab.
2. Select **Delete**.
3. The group is removed.
 - The group is removed from any dimensions that were assigned to it. The dimensions are otherwise unchanged.

Dimension objects provided by Tealeaf

Tealeaf report groups

Tealeaf provides the following special report groups as part of the installation.

No Dimension Report Group report group

The No Dimension Report Group report group is the automatically added to all events. It records the event's value.

- It cannot be removed.
- It cannot be modified.

The No Dimension Report Group report group is hidden in the Dimensions tab and elsewhere in the basic Tealeaf Event Manager. References to the report group may be available in the following areas:

- Event JavaScript. See Chapter 11, “Advanced Mode for Events,” on page 367.
- In the Event Tester, it is referenced as (No Dimension Report Group). See Chapter 10, “Event Tester,” on page 355.

URL/Host/App/Server report group

Tealeaf provides four pre-defined dimensions to track contextual information about the activities of visitors to your web application.

These four dimensions are contained in the URL/Host/App/Server report group and are as follows:

Dimension Name	Description

URL	Identifies the URL of the hit

Note: The URL for the root page of your web application is reported as the following:

/defaultpage

Host	Identifies the host of your web application

App	Identifies the application name

Server	Identifies the name of the server hosting your application

On a large and busy website, the values that correspond to these items may rapidly overshadow the valid data of interest. For example, unique URLs may include a wide variety of query parameters. To ensure that the Tealeaf reporting data are clear and concise, dimension values are restricted or normalized to a subset of the values observed by the Tealeaf pipeline.

Note: These values are extracted in the pipeline from the capture stream by the Tealeaf Reference session agent, which must be deployed in your pipeline to capture these values. The Tealeaf Reference session agent provides extra configuration options, including the capture of user interface events on the client and user agent detection. See “Tealeaf Reference Session Agent” in the *IBM Tealeaf CX Configuration Manual*.

Note: The TealeafTarget page should not be whitelisted as an accepted URL for the URL dimension of the URL, Host, App, Server report group.

For more information about configuring pipelines, see "TMS Pipeline Editor" in the *IBM Tealeaf cxImpact Administration Manual*.

Before Release 8.0, for reporting purposes Tealeaf enabled the capture of values to these four dimensions only. Starting in Release 8.0, Tealeaf supports the capture of any detectable or assignable values to any user-defined dimension.

Enabling URL, host, app, server dimensions:

When Tealeaf is initially installed or upgraded, these dimensions are pre-defined for you. In order to enable the capture of values to them, extra configuration may be required.

Note: Management of the URL dimension can be especially important for managing database size. See "Managing URL and Other High-Volume Dimensions" on page 272.

To enable Tealeaf-provided dimensions:

1. Before you begin, you must deploy the Tealeaf Reference session agent in your pipeline.
 - See "Tealeaf Reference Session Agent" in the *IBM Tealeaf CX Configuration Manual*.
 - For more information about configuring pipelines, see "TMS Pipeline Editor" in the *IBM Tealeaf cxImpact Administration Manual*.
2. When the Tealeaf Reference session agent was deployed and configured, you must enable the logging of values for these dimensions:
 - a. In the Dimensions tab, select the URL/Host/App/Server report group in the left panel. Repeat the following steps for each dimension:
 - 1) Right-click one of the dimensions and select **Edit Dimension....**
 - 2) In the Edit Dimension dialog, check whether logging of reference values was enabled.
 - If the **Turn Off Logging** button is displayed, logging for the selected dimension is enabled.
 - Otherwise, click **Turn On Logging** to enable logging of reference values for the dimension.
 - 3) When logging is enabled, the Logging Values date stamp indicates that values is logged for the dimension until the listed date.
 - This date stamp corresponds to the current date plus the number of days that reference log values are retained in the database. For more information about configuring data retention settings, see "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.
 - 4) Click **Save Draft**.
 - b. Repeat the above steps for the other three dimensions.
 - c. When you saved drafts that enable logging for all four Tealeaf dimensions, you must save the changes to the server. In the Dimensions tab, click **Save Changes**.
 - d. Logging of the values for the Tealeaf reference dimensions was now enabled.
 - In most cases, a sufficient cross-sample of these values is accumulated in the database within 24 hours.
 - These values are extracted from the capture stream, which is converted into SQL, and submitted to the database once per hour. After initially

enabling the logging of these values, you should wait at least an hour before continuing with the following steps.

- e. After at least one hour has elapsed since logging was enabled, you can add values to each dimension from the logged reference values.
 - See “Adding values from logs” on page 238.

Connection type dimension

For each request made to the web application, Tealeaf monitors using timestamps the connection speed between the web server and the client requesting the content. By dividing the size of the response by the time it took to deliver, Tealeaf calculates a value for the connection speed.

Note: This dimension must be associated with a report group and the report group that is associated with an event before data is captured for it.

This value is then bucketed into one of the following designations, the value for which is assigned as the dimension value for the hit.

- Dialup
- ISDN
- DSL
- T1

When data is collected for this dimension, the associated event data can be broken out by the type of connection, which may be useful in diagnosing networking issues and generating usage statistics that are based on your visitors' Internet connections.

This data appears in a performance report that is provided by Tealeaf. See "Analyzing Performance" in the *IBM Tealeaf Reporting Guide*.

- For more information about the computations, see "Performance Measurement" in the *IBM Tealeaf Passive Capture Application Manual*.

Content type dimension

For customers who licensed Tealeaf products that are based on the licensed page model, this dimension can be used to identify activities on licensed pages. For licensed pages, this dimension value is set to PAGE. When used in your reports, you can identify activities that occur on pages that are counted toward your licensed limit as well as monitor activities on the non-counted pages.

Note: This dimension must be associated with a report group and the report group that is associated with an event before data is captured for it.

Request canceled dimension

If the request is canceled by client or by server, this dimension value is set to True. Since transfer of data is interrupted, the resulting hit can be malformed or incomplete. This dimension is a useful means of eliminating spurious data from your report.

Note: This dimension must be associated with a report group and the report group that is associated with an event before data is captured for it.

Traffic type dimension

When extended user agent parsing is enabled, the Traffic Type dimension is populated with a general categorization of the type of traffic sending requests to your web application.

- The Traffic Type dimension is populated from data extracted from the user agent string inserted into the header. Using the string, extended user agent parsing performs a lookup against a public standard to identify the type of user agent, type of traffic, and other useful data.

Note: Traffic originating from mobile web browsers is identified by the value MOBILE for this dimension. This value is inserted only if IBM Tealeaf CX Mobile has been licensed and enabled, and the related WURFL public standard has been made available for Tealeaf's use.

- See "Configuring Tealeaf for Mobile Visitors" in the *IBM Tealeaf CX Mobile Administration Manual*.
- For more information on IBM Tealeaf CX Mobile, see "Overview of CX Mobile" in the *IBM Tealeaf CX Mobile User Manual*.
- See "Managing User Agents" in the *IBM Tealeaf cxImpact Administration Manual*.
- Extended user agent parsing is a feature of the Tealeaf Reference session agent included in the Windows pipeline. See "Tealeaf Reference Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

Note: This dimension must be associated with a report group and the report group associated with an event before data is captured for it.

- The Traffic Type dimension may also be populated when values detected in the HTTP_X_TEALEAF header indicate that the session is sourced from a mobile native application. In such cases, the Traffic Type dimension value is set to MOBILE_APP. See "Integrating Client Framework Data into Tealeaf" in the *IBM Tealeaf Client Framework Data Integration Guide*.

Mobile device dimension

For sessions generated from mobile native applications that are monitored by Tealeaf, the Mobile Device dimension is provided and populated with information identifying the type of mobile device from which the session originated.

Note: The Tealeaf Logging Frameworks, which capture user and application data from mobile native applications, are components of the IBM Tealeaf CX Mobile license. If you did not license and deploy one of the Tealeaf Logging Frameworks, this dimension contains no data.

Sessions that are generated from one of the Tealeaf client frameworks are identified by the following request variable, which is inserted into the HTTP header:

HTTP_X_TEALEAF=device (<framework>) Lib/<version>

where

- device = a hardcoded string
- <framework> = UIC, iOS or Android
- Lib/ = a hardcoded string
- <version> = the version number of the capturing framework

The above header is scanned using the Mobile Device Type hit attribute, which is the source of the Mobile Device event. This event records the captured value to the Mobile Device dimension.

For mobile native application sessions, the following values are recorded to the dimension:

Dimension Value	Description

iOS	Indicates a session that is captured from an iOS device by the IBM Tealeaf CX Mobile iOS Logging Framework

Android	Indicates a session that is captured from an iOS device by the IBM Tealeaf CX Mobile Android Logging Framework

Null value	

Note: For any other session, including sessions that are captured from IBM Tealeaf CX UI Capture for AJAX, a null value is recorded.

For more information about using this dimension to locate sessions that are initiated from mobile native applications, see "Search and Replay for Mobile App" in the *IBM Tealeaf CX Mobile User Manual*.

- For more information about integrating data from client frameworks, see "Integrating Client Framework Data into Tealeaf" in the *IBM Tealeaf Client Framework Data Integration Guide*.

Purging dimension data

As needed, you can clear all data that is stored in the database and the active Canisters for the selected dimension. For example, you may discover that your dimension data set contains a high number of unwanted values that are caused by a poorly defined dimension or a change to the web application being monitored.

Note: Purging dimension data removes all of the list data types for the specified dimension from the Tealeaf databases and all active Canisters. This step cannot be reverted.

Purged data includes

- Event data from report groups using the dimension
- Top Mover data for this dimension
- Dimension values
- Dimension filters in Report Builder and Top Movers reports

Note: Reports using dimension filters must be reconfigured after dimension purging.

- Group lists that are not whitelisted.

Note: Group lists that are whitelisted, dimension values that are whitelisted, and dimension values that are blacklisted are retained.

- Scorecard data
- Log and performance data

Ancillary effects

As a result of purging of the above data, the following effects may occur:

- Since dimension filters are purged, any reports that are filtering on the purged dimension retain the filter yet have no values. If the filter values were contained in a whitelist, then the report contains no data and appears to be broken.
- Scorecards that are configured to filter using a dimension value have the entire filter that is removed and are still available. As a result, the counts reported in the scorecard may appear to suddenly increase.
- Saved searches for sessions or visitors using event + dimension combinations that include a specific dimension value now contain just the event as the search term. When the search is loaded, the dimension value is replaced by the <Any Dimension> indicator.
- Alerts using this dimension are cleared and set to inactive.
- In general, in the locations in the Portal where references to specific dimension values were used, these values are cleared.

Note: Dimension data that is recorded in the requests of the sessions is not purged. You can still search for this data through the Portal.

- To purge dimension data, right-click the dimension whose data you want to purge in the Dimension List. Then, select **Purge Data....**

Note: After you choose to purge the data, you cannot edit the dimension values for the dimension until the Data Collector completed its operations to purge values from each Canister. These operations occur every five minutes.

Purge Data Confirmation

Warning: Purging dimension values will:

- Delete event data from report groups using this dimension.
- Delete top mover data for this dimension.
- Deactivate alerts using this dimension.
- Remove references to this dimension's values in saved searches.
- Clear whitelist and blacklist filters for this dimension in Report Builder reports.

It is recommended that you purge dimension values during testing only. Avoid purging after the dimension has been in use for production data.

The affected report groups, dimensions, reports (including top movers,) scorecards, and events are shown below.

Dimension values will be purged by the Data Collector service, which occurs every 5 minutes. Until the dimension is purged, the dimension cannot be edited. Do you want to continue?

Summary

Dimension Data to Purge:	Traffic Type
Affected Events:	27
Unique Report Groups:	2
Report Group Instances:	27

Details

Affected Report Groups

Traffic Type

- Traffic Type

TrafficType/Browser

- TLT_Browser
- Traffic Type

Affected Events

- Hit Network Trip Time Total (ms)
- Http 200
- Costly Session - Too Big
- Req Size for Session (MB)
- Costly Session - Too Long
- Hit Generation Time Total (ms)
- Hit Size Total (MB)
- Hit Size Max (bytes)

Purge Data

Cancel

Figure 12. Purging values from a dimension

In the Summary, you can review the totals of data to be purged.

Field Description

Dimension Data to Purge

Name of the dimension whose data is to be purged

Affected Events

The count of events that are affected by this purge

Unique Report Groups

Number of unique report groups to which the dimension is assigned

Report Group Instances

Instances of the report groups

Below, you can review the list of affected Report Groups and dimensions, and Events.

- To complete the purge, click **Purge Data**.

Note: This step removes the data permanently and cannot be reverted.

- To cancel purging, click **Cancel**.

Note: When a dimension is purged, it is automatically switched to Whitelist Only method of recording.

- If you specified a whitelist, it is retained.
- If you did not specify a whitelist, no data is captured to the dimension until you enable logging, download values, and then upload your defined whitelist.

Note: For reports that use this dimension, you may need to refresh the Report Builder to see the removal of dimension data. Click **Refresh**.

You can also purge event data. See Chapter 3, “TEM Events tab,” on page 45.

Examples of dimensions

Segmented reporting example

Dimensions and their containing report groups provide a flexible means to report on events and event values. After you defined these data objects and associated them with an event, dimension data is collected and available for reporting when the event fires.

For example, if an event is tracking the shopping cart value, when a figure of 1000 is detected in the shopping cart, the following dimensions and values may be detected in the session and then recorded:

Dimension Name	Dimension Value

Credit Card	Visa

Membership Type	Gold

State	CA

Dimensions can be used to store the recorded values for an event and as the condition inputs for events.

To understand dimensions, the following diagram provides a conceptual view of what Dimension data is and how it is used.

Suppose you created an event that is called Abandoned Cart. This event is configured to fire at Session End if both of the following conditions occur:

- Another event collecting Cart values from Shopping Cart pages was fired
- Another event detecting a successful checkout has not.

The value of the Abandon Cart event is taken from the last instance of the event collecting cart values, so it has the last shopping cart amount.

For reporting purposes, suppose you are interested in the following contextual information that is captured when the cart is abandoned.

- **State:** What state was the user in? This data could come from login or other means.
- **Error Message:** What was the last error message the visitor saw, if any? This message could come from the value of another event that is designed to detect the occurrence of an error message.
- **Referrer:** What was the external Referrer for the session? Assume that another event detected this value on the first hit, so only the first value was recorded.
- **Browser:** What browser was used? This information might have been obtained from a session attribute.

In this example, you can capture each of these data into a different dimension in a single report group. By combining these into a report group, you can now record the aggregated counts and sums for every detected combination of State, Error Message, Referrer, and Browser:

Fact	Hour	Count	Event Values			Cart Metrics Report Group			
			Sum	Min	Max	State Dim1	Error Msg Dim 2	Referrer Dim 3	Browser Dim 4
Abandoned Cart:									
Cart Metrics	1:00	25	\$5,230	\$10	\$1,120	CA	Out of Stock	Google	IE
*	*	10	\$1,547	\$15	\$1,500	CA	Out of Stock	Google	FF
*	*	20	\$6,300	\$5	\$2,005	CA	Out of Stock	Bling	IE
*	*	12	\$2,300	\$20	\$890	CA	Invalid Credit	Google	FF
*	*	25	\$5,230	\$10	\$1,120	WA	Out of Stock	Google	IE

In the above diagram, the Abandoned Cart event for visitors from California who received the "Out of Stock" error message and referred by Google while using Internet Explorer occurred 25 times during the 1:00 hour. The sum of the Abandoned Carts was \$5,230.

If you wanted to know the total amount of dollars that are abandoned by users from California during the 1pm hour, the Report Builder could sum the totals for those rows (\$15,377). Or, you could sum the 1:00, California, Firefox users (\$3,847).

Example - Top N reporting

You can report on the values of each dimension. For example, you can configure a report to show the top N error messages associated with the Abandonment event.

When an event fires, the event value and dimensions are written to the request buffer of the hit; for session end events, they are written to the request buffer of the last hit of the session. Below, you can see the structure of this data record in the request for the data in the preceding example.

```
[TLFID_277]
Searchable=True
TLFID=277
TLFactValue= 55.20
TLDimHash1=513982?
TLDimHash2=795479?
TLDimHash4=795479?
TLDimHash4=7954797?
TLDim1=CA
TLDim2=Out of Stock
TLDim3=Google
TLDim4=IE
```

In the above sample, the event was marked as searchable (Searchable=True). Using search, Tealeaf users can search for all sessions where the abandonment event occurred for the state of California using the dimension values of the human-readable versions (TLDim1, TLDim2, TLDim3, and TLDim4). The hashed versions (TLDimHash1, TLDimHash2, TLDimHash3, and TLDimHash4) of the text provide unique values for searching.

Note: The data records written to the request are optimized for storage, instead of human readability.

Top N reporting is managed by adding a dimension to the report and then filtering the dimension to display only selected values, to exclude selected values, or to display the topmost values.

- See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Example - Creating a dimension to track whether a login occurred

Tealeaf provides the Login ID hit attribute and event, which can be configured to identify and track the login identifiers for each session on your web application.

Note: The Login ID hit attribute and event require additional configuration. If you did not do so already, you should configure these items to capture the login identifiers for your web application. See "E2E Scenario - Configure Login ID to be Searchable" in the *IBM Tealeaf cxImpact User Manual*.

These event objects track and record the login identifiers. However, they are not suitable for detecting whether an identifier occurred or not.

- While it may be useful to create a dimension to capture the login identifier values, the number of dimension values may be too great to provide meaningful information in reporting and may be expensive to capture and store in the database. In general, Tealeaf recommends avoiding the creation of dimension with a high-number of values.
 - See "Data Management for Dimensions" on page 263.

- An exception to this general rule is the URL dimension. See “Managing URL and Other High-Volume Dimensions” on page 272.

In this example, you can create a dimension to track whether the visitor who created the session was logged in or not. For reporting purposes, this dimension is very useful for segmenting whether known customers are performing specific actions, which are tracked by other events, in your application. For example, you may find it useful to track whether a visitor was logged in when your Completed Order event is triggered.

Create the dimension:

In the diagram below, you can see the specified dimension.

- The dimension is Populated With the count of the Login ID Sample event.
- The Values to Record is configured to be based on a numeric group list, which is specified later.

Add Event: Advanced Mode Event

Name: Advanced Mode Event Created: 12/22/2010 16:04:17

Description: Updated: 12/22/2010 16:04:17

Labels: Default x Select...

Evaluate on: Every Hit ☒ Active ☒ Display in Portal Icon: Icon List

Condition **Value** **Report** **Advanced Mode**

Events

Hit Attributes

Session Attributes

All of the following conditions must be met

Session Attribute X

Bot (T/F) Is false

The count of the event is always measured as a non-negative integer (for example, 0, 1, 2, 3, etc.). In this example, depending on the count, the recorded value needs to be either Yes or No. For this dimension, then, the outputted values must be referenced based on specified numeric lists.

- You could create the dimension to simply capture the number of times that the referenced event occurred. For some applications, it may be useful. For example, you may wish to create a dimension to count the number of times that an order was placed (your Completed Order event) on your web application.

To configure the numeric group list, click **Edit Group List...**

Condition **Value** **Report** **Advanced Mode**

Report Groups

Filter

With Report Group(s):

Add Report Group

For this example, the relevant information is whether the visitor was logged in, and not how many times. In the above configuration, two buckets have been created:

Table 44. Examples of Dimensions

Bucket	Values	Description
No	Count of Login ID Sample = 0	Visitor did not login.

Table 44. Examples of Dimensions (continued)

Bucket	Values	Description
Yes	Count of Login ID Sample > 0	Visitor logged in at least once during the session.

For the Bucket value, you might consider substituting True and False for the above values. However, since the recorded value is a string, as opposed to T/F Booleans, it is appropriate to leave the value as specified.

In the table below, you can see how the event and dimension are populated based on an example session:

Table 45. Examples of Dimensions

Page	Event	Count of Login Event	Dimension Value
1	Start of Session	0	No
2	Login	1	Yes
3	View Product	1	Yes
4	Shopping Cart	1	Yes
5	Checkout	1	Yes
6	Order	1	Yes
7	End of Session	1	Yes

For any hit after hit 2, the count of the Login event is greater than 0, so any event that uses the Logged In? dimension records the value Yes for the dimension.

- If the dimension is associated with the Order event, since the Order event occurs on hit 6, it records a Yes value.

Suppose the following session occurs, in which the Login ID Sample event never occurs. The count of the Login ID Sample event is 0 when the Order event fires.

Table 46. Examples of Dimensions

Hit	Event	Count of Login Event	Dimension Value
1	Start of Session	0	No
2	View Product	0	No
3	Shopping Cart	0	No
4	Checkout	0	No
5	Order	0	No
6	End of Session	0	No

If the dimension is associated with the Order event, since the Order event occurs on hit 6, it records a No value.

To apply this dimension to your environment, save your group list and the dimension in draft form. Then, click **Save Changes**.

Data Management for Dimensions

When dimensions are created to capture data using **Whitelist + Observed Values**, the volume of data can grow without limit, which result in a very large number of either individual dimension values or combinations of values with other dimensions.

- Data management issues are most acute for **Whitelist + Observed Values** dimensions.
- Because **Whitelist + Observed Values** is the easiest way for a dimension to immediately gather values without additional configuration, **Whitelist + Observed Values** is the default method of recording for dimensions. As a result, however, data management issues can occur for any newly created dimension.
- In addition to data management issues, a high number of dimension values can become a bottleneck in the Data Service and the Portal, which attempt to pass these values upon request.

This section provides background information on configuring high-volume dimensions and managing the stored data over time.

High-volume dimensions

Data management of dimensions is especially important for dimensions that capture a high volume of values, such as URL. Implementation of specific instructions for managing URL and other high-volume dimensions can help to prevent runaway database growth.

- See “Managing URL and Other High-Volume Dimensions” on page 272.

Storage of dimension values

When dimensions are created, by default they are defined with the following settings:

- Values to Record: **Whitelist + Observed Values**
- Max Values Per Hour: 1000

The above configuration means the following:

- Any observed value is saved to the dimension and thus is stored in the database.
- For each Canister, up to 1000 unique values can be detected and recorded per hour. The set of unique values is cleared each hour.

Under these settings, data volumes can grow very quickly for the following reasons:

1. **The uniqueness of values is reset each hour.** The list of unique, observed values in the Canister is reset each hour. Once per hour, the observed values are collected from the Canister and written into the database, and the list of values that are known to the Canister is cleared. As a result, the total number of values can be greater than the unique values per hour. For example, if the limit is 1000 unique value per hour and in hour 1 you have 1000 unique values and in hour 2 you have a completely different set of 1000 unique values, you will have 2000 unique values.
2. **The limit to the number of values is applied per Canister.** Each Canister is permitted to capture 1000 unique values per hour. In an environment with 20 Canisters, the maximum potential number of values is 20,000 per hour by

default. While it is unlikely that each Canister captures 1000 unique values, it is important to remember that the data grows based on the number of Canisters capturing values.

3. **The default capture limit may not seem to be large, but over time it can be.**
In a one-Canister environment that is configured to capture 1,000 unique values per hour, the total number of values that could be captured in a day is 24,000 values. The number of values that are written to the database is then multiplied by the number of Canisters in the environment.

The above data management issues are most significant in dimensions that are configured to use `Whitelist + Observed Values`. Since observed values are typically unfiltered or are highly dynamic, maximum permitted values for each hour can be reached quickly.

Note: When creating a dimension, Tealeaf recommends immediately converting it to a `Whitelist Only` dimension and then using the recommended workflow to populate the dimension. This workflow is especially important for high-volume dimensions. See "Recommended workflow" below.

Recommended workflow

For high-volume dimensions, the following section provides a recommended workflow for populating the dimension with a data set that maintains data integrity while limiting database growth.

1. If possible, validate the data before creating the dimension.
 - a. For some dimensions, the data is already recorded in the request.
 - b. For example, the `TLT_URL` value is automatically inserted by the Tealeaf Reference session agent, which is included and enabled in the default pipeline configuration. URL normalization is enabled by default, too. See "Tealeaf Reference Session Agent" in the *IBM Tealeaf CX Configuration Manual*.
 - c. For other high-volume dimensions that extract from request or response data, you may want to verify that the data is being appropriately captured in a session through replay before you create the dimension. For example, you can search for specific event values or indexed request/response data. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
 - d. If the values do not appear to be recorded properly:
 - 1) Ascertain if they are being inserted by Tealeaf or your web application:
 - a) If the data is being inserted by Tealeaf, verify that the appropriate component is inserting the data. Data may be inserted by the PCA, Canister, or event that is defined in the Event Manager.
 - b) If the data is inserted by your web application, verify the data with your web development team.
2. Create the dimension.
 - a. Make sure to set the Values to Record to be `Whitelist Only`.
 - b. You may want to adjust the Max Values Per Hour as needed.
 - Processed values include whitelisted values, which also count against this limit. Blacklisted values do not count.

Note: For testing purposes, you may want to add this dimension to a report group that is associated with an event that occurs in each session. Later, through the Tealeaf Report Builder, you can create a simple report with the event + dimension combination to review the captured values.

- c. Enable logging of values for the dimension. Dimension logging enables the capture of observed values for purposes of downloading and creating your whitelist. These values are captured in logs that are stored in the database, which are automatically cleared after a period of days. See Chapter 5, “TEM Dimensions Tab,” on page 217.
3. Let the log fill with a sufficient volume of values to be a meaningful cross-section of activity. For a high-volume dimension, you may have a representative data set by waiting a single hour.

Note: A downloaded log file can contain up to the top 250,000 values by occurrence over the duration that they were collected in the logs.

4. Edit the log values to be your first pass at the whitelist.
 - a. Download the logged values to your local desktop.
 - b. Load the values into Microsoft Excel. Sort them based on the occurrences.
 - c. You can decide the top number of values to insert into your whitelist. You should copy and paste these values to a separate XLS sheet.

Note: A whitelist can contain up to 5,000 values.

- Retain the file that you used to upload for recordkeeping.

5. Load the values into your whitelist through the Dimension editor.
 - See Chapter 5, “TEM Dimensions Tab,” on page 217.
6. Monitor the captured values.
 - a. After you loaded the dimension values into the whitelist, all subsequent observed values are checked against the whitelist.
 - b. If the Maximum Number Per Hour of values is exceeded, an instance of the [Limit] value is recorded for the dimension.
 - c. If an observed value does not appear in the whitelist and the Max Number Per Hour of values was not exceeded, an instance of the [Others] is recorded for the dimension.
 - d. Through the Tealeaf Report Builder, create a report:
 - 1) Add an event that occurs each session.
 - 2) Add the dimension, which should be available if you added it to a report group associated with the event.
 - 3) Each hour, you can track the count of occurrences of the [Others] and [Limit].
7. Periodically, you should download a new set of log values and compare it to the set that you saved.
 - a. Look for logged values that have a number of occurrences greater than 1 and that do not appear in the whitelist. These values should be added.
 - b. Look for values in the whitelist that do not appear in the set of logged values. These values should be removed.
 - c. In Microsoft Excel, the VLOOKUP function can be used to check the contents of one worksheet against another. For more information, see the documentation available inside Microsoft Excel.

Note: If there are significant changes to your web application, your dimension whitelists are likely to need rebuilding. Contact your web application development team for details on the changes.

8. When the values appear to stabilize, you can turn off logging of values.

Impacts of capturing observed values

To begin populating a newly created dimension, use of whitelists only is recommended because the data volume for capturing observed values can become problematic.

Note: Even if you created a whitelist to normalize observed values, the entire set of observed values is still captured to the database. In **Whitelist + Observed Values**, the whitelist functions only to normalize values. It does not filter the data set that is written to the database. Enabling the capture of observed values allows these values to be recorded into the database without limit.

Unbounded dimensions can affect the Tealeaf solution in the following ways:

- Cleared growth of the TL_REPORTS database
- Bottlenecks in the Data Service and Portal
- Performance in the Event Manager, as well as the Portal and user client UI

Data integrity issues

Ideally, a dimension is configured to capture all meaningful values. In practice, however, it may not be possible. Whether you are capturing whitelisted values only or whitelist + observed values, there are data integrity issues that should be considered.

If you configured a **Whitelist Only** dimension, the whitelist is the set of all values. All values that are detected in the capture stream and do not appear in the whitelist are identified as **[Others]** values in the data set. You can still perform data analysis, but detailed analysis on the individual **[Others]** values is not possible.

For **Whitelist + Observed Values**, data integrity is a bit more complicated. Suppose your dimension is configured to capture 1000 values per hour in a one-Canister environment, and you are interested in two values: Value A and Value B.

- Neither value is stored in the whitelist.

Recorded values are indicated below. The **Detected** columns indicate the number of values that were captured for the dimension before the value instance was detected; if the number of values is over 1000, then by default the recorded value is **[Others]**.

Table 47. Data integrity issues

Hour	Value A Detected #	Value A Recorded	Value B Detected #	Value B Recorded
1	100	Value A	200	Value B
2	100	Value A	1200	[Others]
3	1100	[Others]	200	Value B
4	1100	[Others]	1200	[Others]

According to the data, Value A occurred only in Hours 1 and 2, while Value B occurred in Hours 1 and 3.

However, if both values are added to the whitelist, then they are detected and recorded every hour.

Note: Whether you are using Whitelist Only or Whitelist + Observed Values, it is important to review and update your whitelists regularly to maintain data integrity and to limit the volume of captured data.

Dimension definitions

You can use the following configuration methods to reduce the volume of data available for capture into dimensions.

All high-volume dimensions should have their values that are normalized by one of the following methods:

1. Use a session agent such as Tealeaf Reference session agent to normalize values in the Windows pipeline.

Note: The Tealeaf Reference session agent is deployed into the default Windows pipeline, and the raw values for URL, Host, App, and Server dimensions are normalized. The values that are captured for these values are normalized by default. See "Tealeaf Reference Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

2. Create a whitelist to normalize values to useful data for reporting purposes.

Depending on how you define your dimensions and manipulate captured data, you can significantly reduce the volume of data that is captured for individual dimensions.

Enabling logging for whitelist development

For dimensions for which you are trying to build whitelists, you must enable logging to capture the values to the database. If you do not enable logging, you must enter values manually.

Note: You should keep a list of dimensions for which you enabled logging and enabled the capture of observed values.

Avoid Whitelist + Observed Values dimensions

Data growth issues are most prevalent in dimensions that are configured to record Whitelist + Observed Values. Since the observed values are renewed each hour on each Canister, the data volume can grow large.

Note: Define dimensions that record Whitelist + Observed Values only where necessary. Data for these dimensions can grow without bound.

If you are able to define a whitelist that captures all interesting dimension values for you, you should switch the dimension to record only from the whitelist that you defined.

Note: Tealeaf recommends building your dimension value that is set by recording values to Whitelist Only and enabling logging of observed values. These logged values can be used to populate the whitelist and are automatically purged later. See "Recommended workflow" on page 264.

See Chapter 5, "TEM Dimensions Tab," on page 217.

A Whitelist + Observed Values configuration may be used when populating a dimension that is not dynamic or is populated by a limited set of dynamic data.

For example, you might use observed values to capture a limited set of query strings associated with a small subset of hit or event occurrences.

Avoid creating dimensions to contain a high number of values

Avoid creating dimensions that contain a high number of unique values, as they can unnecessarily clutter the reporting database and your reports. For example, it may be tempting to create a dimension to track shopping cart values. However, this dimension could contain thousands of different values. When applied to a report, the report can become cluttered. Filtering the report by Top-N values or a specific set of values may not be meaningful.

Note: To capture data such as price, which could contain theoretically a limitless number of values, Tealeaf recommends using numeric group lists to bucket the dimension values into groupings such as low, medium and high. See Chapter 5, “TEM Dimensions Tab,” on page 217.

Download log files and populate whitelists every day

When logging is enabled for a dimension, you should download the log files every day for a few days. Through Excel, you may be able to compute the frequency of specific values over time and to tune the Whitelist and maximum number of captured values accordingly.

- See “Recommended workflow” on page 264.

Monitoring dimension data growth over time

Periodically, you should review the Database Table Size report, which contains details on the daily and monthly growth patterns of dimension data.

Note: Immediately after installation or configuring a Whitelist + Observed Values, Tealeaf recommends reviewing this report on a daily basis. Over time, you may lengthen the period between review.

1. From the **Portal** menu, select **Tealeaf > System Status > Database Table Size**.
2. From the drop-down, select **Dimension**.
3. Set **Focus Period** to an appropriate date range.
4. Download report.
5. Load into Excel.
6. Sort by the Daily growth, Monthly growth, or row count column to identify the fastest-growing or largest dimensions.
7. Based on the values for specific dimension tables, you can determine whether configuration changes must be made to the dimension.
 - The tables of interest are listed as TD_DIMENSION_XXX, where XXX is a numeric identifier.

Note: The _LOG table references indicate dimensions that have logging enabled to capture detected values.

See “System Status” in the *IBM Tealeaf cxImpact Administration Manual*.

Purging dimension data

Beginning in Release 8.3, you can purge the data for individual dimensions through the Event Manager.

Note: When a dimension is purged, it is automatically switched to Whitelist Only method of recording.

- If you specified a whitelist, it is retained.
- If you not specified a whitelist, no data is captured to the dimension until you enable logging, download values, and then upload your defined whitelist.
- Dimension blacklists and group lists are not retained.

Note: Purging dimension data removes all dimension values stored in the database for the selected dimension. This purging can impact multiple reports and other data objects in the Tealeaf system. Review the warnings before purging dimension data. For more information, see Chapter 5, “TEM Dimensions Tab,” on page 217.

Note: For Release 8.2 and earlier, purging dimensions is not available through the Portal. A SQL-based solution is available through Customer Support. For more information, contact Tealeaf <http://support.tealeaf.com>.

Changes to the application

When your web application development team changes your web application, you may need to change your dimension whitelists. For example, if you defined a whitelist to manage URLs, changes to the URLs for the web application may not appear in the whitelist and balloons the counts for the [Others] category.

Note: If possible, ask your web application team to keep you apprised of changes to the web application. For example, if they can produce a definitive set of URLs for each revision of the web application, you can quickly update the whitelists for URL-related dimensions.

Additionally, hit attributes are likely to be impacted by changes to the web application. See Chapter 4, “TEM Hit Attributes tab,” on page 201.

Global controls for managing dimension data

To prevent unbounded growth of the database tables that are used to store dimension values, Tealeaf enforces the automated trimming of dimension values.

When a dimension is configured to capture and store observed values, each instance of a detected value is stored in the database, which means that the database can grow without limit. The automation of dimension value trimming is intended to place an upper limit on the volume of data stored in your system for each dimension and to prevent total consumption of available disk space.

Note: Dimension trimming is intended to prevent the database from completely consuming available storage space and causing system-wide failures. It should not be used as a replacement for monitoring the data growth of individual dimensions. Tealeaf recommends using whitelists wherever possible for tracking dimension values.

How it works

Periodically, the Data Collector scans the dimension values for each dimension in the TL_REPORTS database. If the number of stored values for any dimension exceeds the globally defined limit for a dimension, then the Data Collector trims the oldest values in the database, which is based on the timestamp when the value was last captured. The oldest values are trimmed until the number of values for the dimension is less than the specified limit. For example, if the defined global limit is

1,000,000 values per dimension and Dimension A contains 1002,000 values, the next trimming that is run by the Data Collector will remove the 2,000 oldest values.

- The oldest values are determined by the timestamps that are associated with each value. These timestamps are updated whenever the dimension values are updated in a separate process.
 - Suppose Dimension A is captured before Dimension B, and then Dimension A is captured again. In this case, Dimension B is considered to be older than Dimension A, since the timestamp for Dimension A occurred more recently.
 - The time when the dimension values were last updated is available through the Data Collector log in the Portal. See "Portal Logs" in the *IBM Tealeaf cxImpact Administration Manual*.
- In the reporting data, all references to the dimension values above the global limit may be remapped to the [others] category as part of the dimension trimming run. This step in the process is resource-intensive. See "Updating counts for trimmed dimension values in report data" on page 271.
- Whitelisted values are not removed during a dimension trimming.

Note: Except for calendar-related dimensions, all dimensions that are visible to Tealeaf users are analyzed and, if necessary, trimmed, which includes dimensions that are provided by Tealeaf.

Note: If the number of values that are stored for a dimension reaches the defined global limit, the number of values is trimmed to the global limit. However, if new values are detected for the dimension, then they are stored until the next time the Data Collector trims dimension values, adding more values above the global limit. In this manner, a dimension that is trimmed once can be trimmed each time the Data Collector runs, which further impedes system performance. As more dimensions reach the global limit, the process to trim them takes longer and longer. Tealeaf recommends that any dimension that was trimmed should be converted to a whitelist if possible.

Monitoring defined limits

In the Portal's System Status report, you can review the Database Table Size report, which contains information about the growth of dimension data tables. This report can be used to monitor the size of the dimension data in your system.

By default, the Database Table Size report runs once per day at 2:00 AM. By default, dimension trimming happens at 3:00 AM. Therefore, by default the Database Table Size report monitors table size before trimming has occurred, effectively reporting on yesterday's growth.

- You can change the timing of the dimension trim operation. See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

For more information about using this report for monitoring dimension growth, see "Monitoring dimension data growth over time" on page 268

- For more information about the report, see "System Status" in the *IBM Tealeaf cxImpact Administration Manual*.

Defining the global limit

By default, the global limit for the number of values that can be stored in any individual dimension is 750,000 values. When dimension trimming occurs, each dimension is trimmed to contain no more than 750,000 values.

Depending on the volume of data that Tealeaf is capturing, you may want to adjust this value for your available storage resources. Keep in mind that this setting is applied to all dimensions that Tealeaf provides and that you define. The value that you define should be sufficiently high to effectively manage the highest volume dimensions in your environment.

Note: The global limit for number of values that are stored in a dimension should be defined such that few dimensions ever reach it. A dimension that is continuously being trimmed needs to be managed through a whitelist.

For more information, see the Dimension Trimming = # of Most Recent Values to Keep setting. See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Updating counts for trimmed dimension values in report data

When the oldest values for a dimension are automatically trimmed, reporting data that uses the dimension values can be optionally updated, too. This updating involves replacing each instance of a trimmed value with the [others] dimension constant.

- By default, the Dimension Trimming - Update Fact Counts setting is enabled. See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

For a dimension trimming operation, the number of database changes is factored by:

1. The number of instances of a trimmed value in the reporting database
2. The number of reports using the value
3. The number of values that are trimmed for the dimension
4. The number of dimensions being trimmed

For data-intensive dimensions, such as URL (Normalized), it is especially important to manage the dimension values using white lists.

Note: Updating the event + dimension counts for trimmed values in the reporting data can take a few minutes to multiple hours to complete.

- See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Reviewing results

When the option to update fact counts is disabled, reporting data is not updated during dimension trimming operations. As a result, discrepancies can be introduced between the sum of event counts not filtered by the trimmed dimension and the sum of event counts filtered by the trimmed dimension. If a set of dimension values was trimmed and the corresponding report data was not updated retroactively, a warning message is displayed in the Portal when the dimension is used in a Report Builder report.

Note: If you do not update counts in the reporting data as part of your dimension trimming, updates for previously reviewed dimension values are not then applied to the reporting data if the option is enabled later.

- See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.
- After you reviewed the results of the trimming operation in your reports, you can reset the trim flag on the dimension so that the Portal message is no longer displayed when the dimension is used in reports. See Chapter 5, "TEM Dimensions Tab," on page 217.

Scheduling

The trimming process can take a long time, especially if there is a high volume of reporting data to update. It should be defined to be run during off-peak hours.

In particular, the URL (Normalized) dimension that is provided by Tealeaf can generate a high number of values in a short period of time, and since it appears in various performance reports that are provided by Tealeaf as well as any user-defined reports referencing the dimension, trimming of the dimension can require a great deal of updating of the report data, which is resource-intensive.

Note: Tealeaf recommends scheduling the dimension trimming to occur as early as possible during the evening, after Tealeaf users are no longer heavily using the system **and** after the Scheduling Service cycled all services.

- An early scheduling ensures that other processes scheduled for off-peak hours, such as scorecard calculation and scheduled reports delivery, can use the most up-to-date dimension values.
- For more information about cycling services, see "Configuring the Scheduling Service" in the *IBM Tealeaf CX Configuration Manual*.

Note: While the Data Collector trims dimension values, report data is not updated from the Canisters. As a result, any scheduled reports that are configured to be run while the dimension trimming is occurring may have incomplete data. Report data is not updated until the next scheduled run of the Data Collector.

In the Data Collector setting of the IBM Tealeaf CX Settings category of the Portal Management page, you may configure the following settings to define the scheduling of dimension trimming:

Setting Description

Dimension Trimming - Time of Day

The time of day when the Data Collector run occurs to trim dimension values.

Note: Tealeaf recommends scheduling dimension trimming as early as possible after Tealeaf users are no longer using the system for the day.

Dimension Trimming - Day of Week

Day of week to run the dimension trimming. This setting does not apply to daily trimming operations.

Dimension Trimming - Frequency

How often dimension trimming occurs: Daily, Weekly, or Monthly.

See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Managing URL and Other High-Volume Dimensions

By default, Tealeaf tracks the URLs of your web application that are reached by your visitors. Depending on how your application is structured, the number of possible URLs generated by visitor behaviors can range from 1 to millions.

Tealeaf can capture each recorded instance of an URL and store it into the Reporting database as a separate record. If your web application generates millions of URLs, the volume of data can become prohibitively large and, if unbounded, can consume all available storage.

This section provides guidance on how to manage the URL (Normalized) dimension provided by Tealeaf, using the dimension logs to populate values for a whitelist of accepted dimension values.

Note: You may also use the methods in this section to manage any dimension that generates a large number of values. Some contents apply only to the URL dimension.

How URLs are tracked by Tealeaf

Since the URLs visited by your visitors are so important to identifying issues and behaviors of your web application, Tealeaf automatically captures these for you, if the Tealeaf Reference session agent is deployed in your Windows pipeline.

Note: For the capture of URL, Server, Host, and Application information, the Tealeaf Reference session must be included in any Windows pipeline that processes hits for search and reporting purposes. See "Tealeaf Reference Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

Raw URLs

When a visitor to your web application requests a page, the raw request that is submitted to the web server is similar to the following:

```
[RawRequest]
GET /news/news-releases/2011//Tealeaf-Acquires-Overstat.php?NewVisitor=true
HTTP/1.1
If-Modified-Since: Mon, 21 Sep 2009 17:44:54 GMT
If-None-Match: "2f50428-654-4741a0a159180"
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 6.1; en-US; rv:1.9.3a1pre)
Gecko Minefield/3.7a1pre
Host: www.tealeaf.com
Cache-Control: no-cache
TLTUID=DB7A473CFFAD10FF0246A7393024FD9A;
TLTHID=F0F495041470101401A1F9982C669B36;
TLTSID=A4F96798140610140066B956324A693B;
```

Captured URLs

In the above, the value next to GET contains the URL information for the page that is requested from the domain that is defined for the Host value. The web server managing www.tealeaf.com returns the requested page as the response.

When this hit is later passed to Tealeaf, the IBM Tealeaf CX Passive Capture Application scans the raw request to locate the URL value and stores the URL in the URL variable in the [env] section:

```
[env]
...
URL=/news/news-releases/2011//Tealeaf-Acquires-Overstat.php?NewVisitor=true
```

Query parameters are also written to the [urlfield] section of the request as name-value pairs.

Normalized URLs

When the hit is passed through the Canister, a pipeline session agent normalizes this value and three other values and writes them into the [appdata] section.

```
[appdata]
TLT_URL=/news/news-releases/2011/tealeaf-acquires-overstat.php
TLT_SERVER=192.168.100.76
TLT_HOST_NAME=www.tealeaf.com
TLT_APPLICATION_NAME=news
```

This normalization and insertion is performed by the Tealeaf Reference session agent, which is required for proper parsing of the URL, Host, App, and Server dimensions.

- Normalization includes the removal of query parameters from the URL string and converting it to all lowercase.

Note: Do not attempt to create hit attributes to scan for this value and capture those values to a dimension. Use the Tealeaf Reference session agent, which performs extra functions.

- For more information about how URL values are parsed by Tealeaf Reference session agent, see "Determining Path Values" in the *IBM Tealeaf CX Configuration Manual*.
- See "Tealeaf Reference Session Agent" in the *IBM Tealeaf CX Configuration Manual*.

URLs for cxOverstat

Introduced in Release 8.6, IBM Tealeaf cxOverstat enables the capture of usability data from the visited pages of each visitor session that is monitored by Tealeaf.

IBM Tealeaf cxOverstat includes a dimension for tracking the URLs from which usability data was extracted. The ScreenView - URL dimension included with IBM Tealeaf cxOverstat may be vulnerable to data explosion. You should use the same dimension value logging and population strategies that are used to populate the URL (Normalized) dimension to manage the growth of the IBM Tealeaf cxOverstat URL dimension.

Note: Failing to track a URL value in the ScreenView - URL dimension breaks the drill-down access to the IBM Tealeaf cxOverstat reports available on the URL through Browser Based Replay. See "cxOverstat Interface" in the *IBM Tealeaf cxOverstat User Manual*.

Available URL values

When the hit is passed through the Event Engine, the value that is contained in the TLT_URL request parameter is detected by the provided hit attribute URL (Normalized). This hit attribute checks the first value on the page or hit for the presence of the TLT_URL= request variable and returns the value after the equals sign.

- The (Normalized) suffix is added to indicate that it is sourced from the output of the Tealeaf Reference session agent, which normalizes the values and inserts them into the request variable.

That value that is captured to the hit attribute then can be added as a new value in the URL (Normalized) dimension.

Depending on how the dimension is configured, this value may be recorded in the database. The following sections describe how to populate the URL (Normalized) dimension from the TLT_URL value that is inserted into the request.

Storage of dimension values

When values are detected, they may be stored based on the following configuration options, which operate independently of each other.

- These options are selectable in the dimension definition. See “1. Initial configuration for URL (Normalized)” on page 276.

Logging of dimension values

If logging for the dimension is enabled, all observed values for the dimension are stored in the database. Each instance of each value is counted when detected.

Values stored in the dimension logs are removed after two weeks, so the logs can be kept to a manageable size.

These logs can be used to build up whitelists, blacklists, and group lists while keeping down data growth.

- See “Logging of dimensional values” on page 231.

Whitelists versus observed values

For the Values to Record setting, you can choose one of the following options:

Option Description

Whitelist Only

When this option is selected, only the detected values that are matched against the whitelist that you defined and uploaded are allowed to be recorded for the dimension. All other values are recorded as an [others] value or, if the maximum number of values per hour was reached (Max Values Per Hour), the [limit] value.

- For more information about these dimension constant values, see “Dimension constants” on page 227.
For the URL (Normalized) dimension, the goal is to build a representative whitelist of the URLs of the web application. The remainder of this page works towards building a useful whitelist for this dimension.

Whitelist + Observed Values

When this option is selected, values that match whitelisted values are recorded, as well as any other value detected in the capture stream. The net effect is that each URL value for each hit is captured by the URL (Normalized) hit attribute, which then populates the URL (Normalized) dimension. Each of these values is then recorded.

Note: For high-volume dimensions the Whitelist + Observed Values can generate unbounded growth of the dimension tables in the database. This setting can be dangerous to the overall health of the Tealeaf system, as these observed values may not be purged for some time. Particularly for high-volume dimensions, this setting should be avoided. See “Data Management for Dimensions” on page 263.

Note: The maximum number of values that can be contained in a whitelist is 50,000. For a high-volume dimension, you may need to make some decisions about the sample of URLs of your web application that you want to track. Tealeaf provides some guidance, as discussed later.

Workflow for initial population of the URL dimension

The sections below show how to populate the URL dimension immediately after Tealeaf begins receiving data from your web application.

1. Initial configuration for URL (Normalized)

To review the initial configuration for the URL (Normalized) dimension, complete the following steps.

1. Log in to the Portal as an administrator.
2. From the **Portal** menu, select **Configure > Event Manager**.
3. The **Event Manager** is displayed. Click the **Dimensions** tab.
 - See Chapter 5, “TEM Dimensions Tab,” on page 217.
4. In the **Report Group** panel on the left, select the URL/Host/App/Server report group.
5. The dimensions of the report group are displayed in the dimension list.
6. Right-click the URL (Normalized) dimension and select **Edit Dimension...**
7. The dimension definition is displayed for editing and review.

When Tealeaf is first installed or upgraded, the URL (Normalized) is configured in the following manner.

Note: Tealeaf Professional Services may already perform the initial configuration and population of the URL (Normalized) dimension for your Tealeaf solution.

Edit Dimension: URL (Normalized)

Name: URL (Normalized)

Description:

Populated By: URL (Normalized)

Populate With: First Value on Page/Hit

▼ Advanced Options

Values to Record: Whitelist Only

Default Value: [Others]

Max Values Per Hour: 0

Allow Empty Values: ☐

Set Value Display Order: ☐

Edit WhiteList...

Edit BlackList...

Turn On Logging

Save Draft

Cancel

Dimensions and other event-related objects such as events, hit attributes, session attributes, and alerts are configured through the Tealeaf Event Manager.

- See Chapter 1, “Tealeaf Event Manager,” on page 1.
- For more information about configuring dimensions, see Chapter 5, “TEM Dimensions Tab,” on page 217.

In the above configuration, the following values should be reviewed immediately:

Table 48. 1. Initial Configuration for URL (Normalized)

Setting	Default Value	Description
Values to Record	Whitelist Only	This setting defines the values that are captured to this dimension. The default setting for the URL (Normalized) dimension captures values to the dimension from the whitelist, which contains no values until you add them. For other dimensions that you create or that are provided by Tealeaf, the default configuration sets this option to Whitelist + Observed Values. In addition to populating the data from any configured whitelist, it is also populated by all values that are detected in the capture stream. Immediately after saving the configuration, any detected values are recorded to the dimension. Note: All observed values are written into the database as new entries for the dimension value. For high-volume dimensions such as URL (Normalized), Tealeaf recommends setting this option to Whitelist Only. Make the following configuration changes.

Table 48. 1. Initial Configuration for URL (Normalized) (continued)

Setting	Default Value	Description
Max Values Per Hour	1000	This setting defines the maximum number of unique values that can be captured for this dimension in a given hour. Each hour, the counter resets to zero, and the next 1000 detected values are available for capture or logging. Note: Depending on the number of normalized URLs that can be generated by visitor activities on your web application, this setting may be too low, and you may begin seeing dimension values that are recorded as the [limit] value. You may want to change this immediately. See “Monitoring limit configuration” on page 232. Note: This setting does not apply if the dimension is configured to use a whitelist only. For these dimensions, you should monitor the [others] value, which identifies values that are not included in the whitelist. • For dimensions using whitelist + observed values, you may still reach the [limit] value, in which case your whitelist should be updated.
Logging	OFF	When logging is ON, all observed values are written into database logs, even if they are on a whitelist. This feature is provided for the creation of whitelists, which is very important to do for the URL (Normalized) dimension. Note: Enable the logging of the URL (Normalized) dimension.

Table 48. 1. Initial Configuration for URL (Normalized) (continued)

Setting	Default Value	Description
Other configuration		Dimension values do not appear and cannot be logged or recorded as observed values until the dimension was associated with a non-default report group. This limitation does not apply to the URL (Normalized) dimension, which is part of the URL/Host/App/Server report group. For other high-volume dimensions that you create, you must add them to a report group. • See “Report groups panel” on page 220.

Other approaches

Immediate capture: The above configuration is the recommended approach to limit database growth.

Note: If observed values are not captured, then values for the dimension are not recorded until the whitelist is populated.

As an alternative, you can enable the capture of observed values.

Note: If capture of observed values is enabled, it is important to disable it after the whitelist was initially populated.

For dynamic dimensions: For dimensions whose values are constantly changing, you may need a different approach, in which you are capturing whitelist + observed values and trimming your whitelist regularly.

This approach requires more regular management of the population of your whitelist. The remainder of the section provides an overview of the approach.

Note: Keep in mind that when observed values are enabled for capture, growth of the table containing the dimension values is not checked. Purging may be required from time to time. See “Purging dimension data” on page 255.

2. Gather logged values

After logging is enabled, all raw URLs in the capture stream are detected by the URL (Normalized) hit attribute and logged in the database table that is associated with the URL (Normalized) dimension.

Note: You should allow sufficient time to pass to create a representative sample of URLs in the dimension log. Depending on the volume of your site and any schedule-based variances in visitor activities, the length of this time period may vary. Typically, a day should gather a representative sample.

The maximum number of files that can be downloaded from the logs is 250,000 values.

3. Download logged values

After the time period passed, you must download the logged values to a file and review them locally.

Note: The downloaded file contains all values that are currently stored in the database. The log values are not trimmed based on downloading values or on the presence of values in any list. It contains all values that were detected for the dimension over the preceding two weeks while logging was enabled.

Do the following:

1. Before you begin, you may want to create a directory structure. The following directories are recommended for storing your dimension log files:
 - `source` - raw downloaded files from the Portal are stored here.
 - `whitelist` - the edited whitelist that you uploaded to the Portal.
2. Edit the URL (Normalized) dimension. See “1. Initial configuration for URL (Normalized)” on page 276.
3. In the Edit Dimension dialog, click the **Advanced Options** caret.
4. Click **Edit Whitelist...**
5. In the Edit Whitelist dialog, click **Download Log Values**. Save the file locally to your source directory.
6. Create a copy of the file and save it in your `whitelist` directory. Edit this new file.
7. More documentation on the recommended workflow is in the following location.
 - See “Adding values from logs” on page 238.
8. Some tips for populating the URL dimension:
 - In the text file, the logged values are displayed in column 1, and the count of occurrences of each value is displayed in column 2.
 - If you are using a tabular editor such as Excel, you should sort by column 2 in descending order, which displays the detected values by number of occurrences. You can then determine a cutoff threshold for occurrences, above which values are included. For example, you may decide that any URL can be included in the whitelist if it was visited at least two times.
 - The maximum number of values that can be contained in a whitelist is 50,000. For a high-volume dimension, you may need to make some decisions about the sample of URLs of your web application that you want to track.
 - You may not want to populate all 50,000 values in the initial pass. Adding any additional values to a maxed whitelist requires removing an individual value, which must be performed through the Edit Whitelist dialog.

Note: By default, Microsoft® Excel® 2003 limits the number of rows that a worksheet can contain to 65,535. To display a downloaded log file with more entries than this limit, you may need to use a different tool or upgrade to Microsoft Excel 2007.

 - See http://msdn.microsoft.com/en-us/library/aa730921%28v=office.12%29.aspx#Office2007excelPerf_BigGridIncreasedLimitsExcel.
9. After you completed your editing, do the following:
 - Delete all rows that are not to be included in the whitelist.
 - Delete column 2 that contains the number of occurrences of the whitelisted values.

10. Save the file into the whitelist directory.

Note: In the future, when you update your whitelist, you can use the saved versions of previous updates, such as this initial version, to compare occurrences in the whitelist and to determine the values that are newly detected.

3. Upload whitelist

After you edited the whitelist, you can upload the file as the whitelist for your dimension.

1. Edit the URL (Normalized) dimension. See “1. Initial configuration for URL (Normalized)” on page 276.
2. In the Edit Dimension dialog, click the **Advanced Options** caret.
3. Click **Edit Whitelist...**
4. In the Edit Whitelist dialog, click **Import File....** Select the file saved you are your whitelist directory.
5. The new values are added to the whitelist.
6. If you want to track any values as Top Movers, click the **Track Top Movers** check box next to the value.
 - To track all displayed values, click **Track All**.
7. To save your whitelist, click **Done**.

Note: Although you created your whitelist for the dimension, you may want to keep logging enabled for some time, as updates may be required. See “Maintenance” on page 285.

8. To save changes to the dimension, click **Save Draft**.
9. To apply the whitelist to the dimension, save changes to the server. Click **Save Changes**.
10. All subsequent values that are detected for the URL (Normalized) are processed based on the whitelist. Only URL values that are on the whitelist are permitted, if the values to record setting is configured as **Whitelist Only**.
11. If you are satisfied with the values on your dimension whitelist, disable logging.

Note: Logging is automatically disabled after a period. To update your dimension whitelist, you must re-enable logging to capture observed values, if the count of [others] begins to climb.

4. Create Dimension Value Tracking report

For purposes of tracking how accurate your whitelist is mapping to the observed values, you must track the occurrences of the values in a report. The following dimension constants are important to review:

Dimension constant	Description

[others]	

By default, a dimension is configured to insert the default value "[others]" if a detected value is not on the whitelist in **Whitelist Only** mode. The appearance of a high number of instances of [others] indicates that the whitelist may need new values added to it.

[limit]	

If the number of values that are detected in an hour exceeds the defined

maximum number of values per hour for the dimension, the [limit] dimension constant is inserted for the dimension value. This capping prevents runaway growth of dimension values in Whitelist + Observed Values mode.

Performance reports

Note: Performance reports are sorted by occurrence. The values for [others] and [limit] may not be displayed if an insufficient number of these values appear in the specified report.

Custom report

If you are creating a whitelist for a dimension that is not URL, the best approach to tracking the occurrences of these constants is to create a report in the Report Builder, applying the URL (Normalized) dimension to an event that fires on every hit.

Note: The use of a dimension that occurs on every hit with an event that occurs on every hit in a report causes a significant jump in the data that is saved in the reporting database. Tealeaf recommends using this approach for a very limited duration. This duration should be no longer than the duration used to initially populate the dimension logs.

- When you are satisfied with your dimension list, you should remove the dimension from the report. See “Cleanup” on page 285.

Add dimension to the event

You must select an event that occurs on every hit (for example, Hit Count) or that occurs frequently enough (for example, Status Code 200) to provide a representative sample of hits passing through the pipeline.

1. In the Portal, select **Configure > Event Manager**.
2. In the Event Manager, click the **Events** tab.
 - See Chapter 3, “TEM Events tab,” on page 45.
3. In the Event List, right-click the event to use and select **Edit Event...**
4. In the Event Wizard, click the **Report Group** tab.
5. In the left panel, click the **Report Groups** pane.
6. In the Report Groups pane, click **URL/Host/App/Server**.
7. The URL/Host/App/Server report group, of which the URL (Normalized) dimension is a member, is now associated with the event.
8. Click **Save Draft**.
9. To post changes to the server, click **Save Changes**.

Note: As soon as the event is saved, subsequent occurrences of the event are recorded with any applicable data for the dimensions in the report group. You should immediately create the report, as described below.

Create report

After you associated the dimension with an event, you can create a report to track it.

1. In the Portal, select **Analyze > Report Builder**.
2. The Report Builder is displayed.
3. In the toolbar, click the **New** icon.

4. In the left navigation panel, click **Add Event**.
5. Select the event in the Event Selector. Click **Select**.
6. The event is added to the report.
7. In the left panel, click the **Dimensions** tab.
8. All dimensions that were associated with the event are displayed for selection.
9. Click and drag the URL (Normalized) dimension to the **<Add X-Axis>** box.
10. The event data is now filtered by the URL (Normalized) dimension.
11. In the detail table, look for the [others] and [limit] entries.
 - See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Review report and iterate

From time to time, you should monitor the dimension constants in the report that you are using.

Table 49. Review report and iterate

Constant	Values	Description
[others]	of values > 1% of total values	In a large enough sample size, if more than 1% of the values are recorded as [others], some useful data is not appearing in the whitelist. You should download the log values again and compare the downloaded values to the values that you stored in your whitelist directory to determine the missing values with the highest counts. See "3. Download logged values" on page 281.
	consistent counts of 0	Your whitelist is tracking all recorded values. Although it is possible that your whitelist may contain values that are not detected in the capture stream, you should not revise it unless necessary.
[limit]	of values > 3% of (Max Values Per Hour * 24)	If the number of values that are stored as [limit] is greater than 3% of the total possible values that are recorded in the dimension for a day, then the maximum number of dimension values that can be recorded per hour may be configured to be too low. If possible, you should raise the value so that more meaningful value can be captured. See "1. Initial configuration for URL (Normalized)" on page 276.
	consistent counts of 0	The maximum number of values that are captured per hour is not being exceeded, which means that you allocated sufficient storage space to track the dimension data on an hourly basis.

Note: Changing one of the above limits can have impacts on the other. For example:

- If you raise the [limit] value, then Tealeaf may begin detecting less frequently visited URLs, which may not appear in the whitelist. These values are recorded as [others], which may increase the count of that metric.
- If you expand your whitelist, the [others]} count may go down, but you also raise the potential number of detected values, which increases the chances of triggering {[limit] conditions.

Cleanup

After you stabilized your URL (Normalized) whitelist, complete the following tasks:

- You should consider disabling logging for the dimension, if you did not do so already.
 - **Pro:** Reduces the overall data footprint of the URL (Normalized) dimension, which can be significant.
 - **Con:** If you see a significant uptick in the [others] entries, you cannot immediately explore the cause of them through the dimension logs. You must re-enable dimension logging and then perform your compare.
 - See “1. Initial configuration for URL (Normalized)” on page 276.
- If you did not do so already, switch the URL (Normalized) dimension to record in Whitelist Only mode.

Note: For any high-volume dimension, you should disable capture of observed values after the whitelist for the dimension was stabilized.

- If you created a custom report using the URL (Normalized) dimension for purposes of tracking the dimension constants, you should remove the dimension from the report or delete the report, so that unnecessary data is not stored in the database.
 - The dimension can always be added back later.

Maintenance

Over time, the values for URLs and other high-volume dimensions of your web application may change. For example, if a new release is completed of the web application, it is likely that the published URLs may need to be revisited.

Note: For significant changes to the web application, you may have to rebuild the whitelist from scratch.

Some tips for managing this process:

Note:

- Continue saving each version of the whitelists that you create. Over time, you can track changes that are based on your downloaded and edited lists.
- If possible, try to acquire the new set of URLs for the new release of the application in advance of its release. That way, you can build your whitelist in advance and deploy it as soon as the new application is online.
- Do not forget to re-enable logging of the dimension before the release date. See “1. Initial configuration for URL (Normalized)” on page 276.
- Continue to track [others] and [limits] on a periodic basis and especially before, during, and after the release date. Iteration on the whitelist may be required. See “4. Create Dimension Value Tracking report” on page 282.

Reference

- Chapter 1, "Tealeaf Event Manager," on page 1
- Chapter 3, "TEM Events tab," on page 45
- Chapter 5, "TEM Dimensions Tab," on page 217
 - "Data Management for Dimensions" on page 263
- "Analyzing Performance" in the *IBM Tealeaf Reporting Guide*
- "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*

Chapter 6. TEM Session Attributes tab

A *session attribute* is a pre-defined variable that is persistent throughout the life of a Tealeaf session. Session attributes may be used to store various data that may be referenced by events at any point during the session.

- A user-created session attribute may be populated by the output of multiple events.

There are two types of session attributes:

- *System Session Attributes*: Tealeaf provides a set of session attributes that are automatically tabulated and updated by the Tealeaf Canister. These attributes are available for use in generating events through the Tealeaf Event Manager.
 - For more information about system session attributes, see “Session attributes populated by system” on page 289.
- *User-Defined Session Attributes*: Through the Event Manager, you may create up to 64 session attributes for tracking session data specific to your web application.

Note: Write access to user-defined session attributes is permitted only through the defined action of an event.

- Session attribute values are strings with a maximum length of 255 characters.
- Session attributes are indexed automatically.

You assign and reassign values to session attributes through events.

Name	Populated By Event	Index	Tracked	Searchable	Modified
Bot (T/F)	Populated by system				12/20/2011 15:02:26
Browser OS	Populated by system				12/20/2011 10:35:57
Browser Traffic Type	Populated by system				12/20/2011 10:35:57
Browser Version	Populated by system				12/20/2011 10:35:57
Client IP Address	Populated by system				12/20/2011 10:35:57
CUI Hit Count Running Total	Populated by system				12/20/2011 10:35:57
Discard Session Flag	Populated by system				12/20/2011 10:35:57
Domain Name of Server	Populated by system				12/20/2011 10:35:57
Expiration Time Epoch for Session (sec)	Populated by system				12/20/2011 10:35:57
First Hit Req Time Epoch (usec)	Populated by system				12/20/2011 10:35:57
First Page of Session URL	Populated by system				12/20/2011 10:35:57
Hit Count Running Total	Populated by system				12/20/2011 10:35:57
Image Count Running Total	Populated by system				12/20/2011 10:35:57
Interesting Flag	Populated by system				12/20/2011 10:35:57
Last Hit Req Time Epoch (usec)	Populated by system				12/20/2011 10:35:57
Last Page of Session URL	Populated by system				12/20/2011 10:35:57
Licensed Page Count Running Total	Populated by system				12/20/2011 10:35:57
Other Hit Type Running Total	Populated by system				12/20/2011 10:35:57
Page Count Running Total	Populated by system				12/20/2011 10:35:57
Referrer Domain for Session	Populated by system				12/20/2011 10:35:57

History of session attributes

Release 8.0 unified several user-defined variable types into session attributes.

The following table indicates how specific user-defined are mapped to session attributes in Tealeaf Release 8.0 or later.

- For more information about how session attributes are used in Release 8.0 or later, see “Overview of session attributes” on page 288.

Note: These assignments are automatically managed during upgrade from pre-Release 8.0 systems. New installs of Release 8.0 or later are not affected.

Table 50. History of Session Attributes

Pre-Release 8.0 variable name	Description	Session Attribute Assignment
LoginID	Used to store the login identifier of the visitor	Session Attribute 00
UserDef1	User-defined variable 1	Session Attribute 01
UserDef2	User-defined variable 2	Session Attribute 02
UserDef3	User-defined variable 3	Session Attribute 03
UserDef4	User-defined variable 4	Session Attribute 04

Session Attributes from pre-Release 8.0 systems are then sequentially mapped into the next available session attributes in Release 8.0.

Overview of session attributes

Session attributes can be configured to hold string or numeric values. By definition, a session attribute is a string value. However, you can use Advanced mode to convert the string to a numeric type and perform operations on it.

- See Chapter 11, “Advanced Mode for Events,” on page 367.

When a session attribute is created, it is automatically assigned an internal index number, which corresponds to the first available slot (0 - 63).

How session attributes are populated

Session attributes are populated by the output values of events. Whenever the populating event is triggered in the session, the event value can be written to a specified session attribute.

- A user-created session attribute may be populated by the output of multiple events.
- Session attribute assignments are managed through the More Options step of the event definition. When the event is triggered, the detected value for the event can populate any of the defined session attributes. See Chapter 3, “TEM Events tab,” on page 45.

That variable and its value are added to the session object, which means it becomes part of the session data. As soon as the variable is created, it is part of the session, regardless of whether the session is active or completed.

When the session attribute gets populated is determined by the trigger for the populating event. Events can be triggered in the following points of a session:

- First Hit of Session - when the session begins
- Every Hit - when the hit loads
- After Every Hit - when the hit is unloaded
- Last Hit - the last hit of the session
- End of Session - when the session closes

For example, suppose Event A is triggered on the First Hit of the Session and populates Session Attribute A. When the first hit occurs in an active session, the session attribute and its current value are added to the session object.

- Session attributes are updated at the end of each trigger. They are available at the beginning of the next trigger. For example, if a session attribute is defined to trigger on After Every Hit, then it is set at the conclusion of evaluation of each hit, and the new value is available for the next hit, until the value is set again.
- In EventEngineScripting, session variables are accessed as a property of the session object (\$\$). See "EES reference - attribute reference" on page 402.

When a search template is configured to include a session attribute as a field, users can search for the existence of the session attribute in all active sessions. The value of the variable may subsequently change.

- Other events that are triggered later in the session can overwrite the value in the session attribute. For example, suppose Event B is triggered on Hit 12 as an After Every Hit and changes the value of Session Attribute A. This variable value is now present in the session object. The original value is no longer available, and searches for it do not return the affected session.
- End of Session events can be configured to write the final value of the session attribute. This final value is carried forward when the session is moved from the Short Term Canister (active sessions) to the Long Term Canister, where completed sessions are indexed and stored.
- For completed session searches, session attributes are stored in the [CanisterSummary] section of the request, where they are automatically indexed. See "Configuring CX Indexing" in the *IBM Tealeaf CX Configuration Manual*.

Session attributes populated by system

In the Session Attributes tab, some of the listed attributes are identified as Populated by System. These attributes are defined within the Tealeaf Canister and cannot be edited or viewed through the Portal interface. These attributes are provided by Tealeaf and do not count against the 64 session attributes available for your use.

How session attributes are stored

Session attribute values are stored as text data. This method of storage has several implications:

- When specifying search terms, you cannot use comparative operators on session attribute data. A text value for a session attribute cannot be specified as "greater than" another text value, for example.
- By default, in the search interface, characters that are not indexed are removed from the inputs, which includes punctuation such as , and . and \$.

Note: For searches of the IBM Tealeaf cxReveal Search database, the submitted query does not perform any modifications for the text-based search. So, the input, which is received from the search interface, is unchanged, meaning that the punctuation that is stripped by the search interface never reappears in the query to enable an exact match of data in the database.

If you must record numeric data in a session attribute:

- Store values as non-negative integers.
- Do not include any punctuation.
- Consider storing values as a range of values in different attributes.

- When performing a search for these values, use the like operator.

Uses for session attributes

The session attributes that you define can be used in the following areas of Tealeaf.

Tealeaf Feature

Description of Usage

Event conditions

Session attributes can be used as conditions to trigger other events. You may configure the test to detect for the presence of the session attribute or for specific values.

- See Chapter 3, "TEM Events tab," on page 45.

Event values

Session attributes can be used to store event values that persist throughout the session. You may configure the event to populate a session attribute.

- See Chapter 3, "TEM Events tab," on page 45.

Search Templates

Tealeaf administrators can configure search templates to include fields for searching for the existence of a session attribute or for specific values of a variable.

- Search templates can be made available to users to help the configuration of search parameters. See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

Session List Templates

When a session search runs, the results are displayed in a session list template. You may configure session list templates to display one or more session attributes as columnar fields. See "Configuring Search Templates" in the *IBM Tealeaf cxImpact Administration Manual*.

Search

If the selected Active, Completed, or All Sessions search template includes the session attribute as one of the search fields, you can search for the existence or for specific values of the session attribute.

Note: Depending on the trigger of its populating event, a session attribute may not be available in a search template, even if you configure it. For example, if the session attribute is populated by an event that is triggered by End of Session, it is possible to add the session attribute as a field to an Active search template, even though the field is not yet populated for active sessions.

- See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Data Export

Through a session list template that was configured to include one or more session attributes, you can export session data for use by third-party tools.

Note: The value reported in the session list template is always the last recorded value in the session. If you need to export all detected values of a session attribute, you must install and deploy IBM Tealeaf cxConnect for Data Analysis. See "cxConnect for Data Analysis Administration Manual" in the *IBM Tealeaf cxConnect for Data Analysis Administration Manual*.

- For more information about data export through the session list, see "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

Replay

You can replay sessions through the session list. When you have defined and executed a search that includes a session attribute as a criterion for display in a session list template that includes the criterion, you can find and replay a session that includes this value. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

During replay, you can identify session attributes in the request. The [CanisterSummary] section of the request contains all session attributes that have been detected up to the point of the page. See "Configuring CX Indexing" in the *IBM Tealeaf CX Configuration Manual*.

Reporting

Session attributes can be configured to appear in reports after dimensions have been designed to be populated by them. An event must be configured to be triggered based upon the existence of a session attribute and to populate a dimension with its detected value. See Chapter 3, "TEM Events tab," on page 45.

- Then, the dimension can be selected for inclusion in a configured report. See "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Creating session attributes



Name	Populated By Event	Index	Tracked	Searchable	Modified
Bot (T/F)	Populated by system				12/20/2011 15:02:26
Browser OS	Populated by system				12/20/2011 10:35:57
Browser Traffic Type	Populated by system				12/20/2011 10:35:57
Browser Version	Populated by system				12/20/2011 10:35:57
Client IP Address	Populated by system				12/20/2011 10:35:57
CUI Hit Count Running Total	Populated by system				12/20/2011 10:35:57
Discard Session Flag	Populated by system				12/20/2011 10:35:57
Domain Name of Server	Populated by system				12/20/2011 10:35:57
Expiration Time Epoch for Session (sec)	Populated by system				12/20/2011 10:35:57
First Hit Req Time Epoch (usec)	Populated by system				12/20/2011 10:35:57
First Page of Session URL	Populated by system				12/20/2011 10:35:57
Hit Count Running Total	Populated by system				12/20/2011 10:35:57
Image Count Running Total	Populated by system				12/20/2011 10:35:57
Interesting Flag	Populated by system				12/20/2011 10:35:57
Last Hit Req Time Epoch (usec)	Populated by system				12/20/2011 10:35:57
Last Page of Session URL	Populated by system				12/20/2011 10:35:57
Licensed Page Count Running Total	Populated by system				12/20/2011 10:35:57
Other Hit Type Running Total	Populated by system				12/20/2011 10:35:57
Page Count Running Total	Populated by system				12/20/2011 10:35:57
Referrer Domain for Session	Populated by system				12/20/2011 10:35:57

On the left side of the screen, you can access the available set of session attributes or filter the display to show only the session attributes of interest to you. The selection and filters that you specify are applied to the list of session attributes.

- See "Session attributes panel" on page 293.

The main panel displays the list of session attributes.

- See "Session attribute list" on page 292.

Above the main pane, you can select any of the following commands.

- To create a session attribute, click **New Session Attribute**. See "Adding or editing a session attribute" on page 294.
- To review the history of changes to the selected attribute, click **Session Attribute History**. See Chapter 1, "Tealeaf Event Manager," on page 1.
- To edit an existing session attribute, double-click it. See "Adding or editing a session attribute" on page 294.

Note: Populated by system session attributes cannot be viewed or edited. Some detail information is available in the tooltip. See “Session attributes populated by system” on page 289.

- To save changes to all objects that you drafted in the Event Manager, click **Save Changes**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
 - For more information about the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.

Session attribute list

In the Session Attribute list, you can review all of the available session attributes.

- To step through the list of items, press the Up or Down arrows on your keyboard.
- To scroll through the list, press the Page Up or Page Down keys on your keyboard.
- To select an item, press ENTER or double-click it.
- On the left side of the screen, you can filter the displayed session attributes. See “Session attributes panel” on page 293.
- To review details of a session attribute, move the mouse over it. The tooltip is displayed.
- To sort the list by a column, click the column header. To sort the list in the reverse order, click the column header again.
- To select multiple items in the list, press SHIFT or CTRL and select the items.
- To open the context menu for session attributes, right-click a session attribute in the session attribute list. See “Session attribute list context menu” on page 293.
- Items are highlighted in the list that is based upon the current edit state of the item. See Chapter 3, “TEM Events tab,” on page 45.

Column

Description

Name The user-friendly name of the session attribute

Populated By

The event that populates the session attribute

Index For session attributes that were created by Tealeaf users, the Index column indicates the index number (0-63) corresponding to the session attribute. This index number appears in various locations in the Portal where the custom session attribute is referenced.

- This index number is assigned by the Tealeaf Event Manager and cannot be modified.

Tracked

When a check mark appears in this column, the custom session attribute was configured to be tracked in the IBM Tealeaf cxReveal database. Up to 32 custom session attributes can be configured to be tracked in the IBM Tealeaf cxReveal database.

- For more information about configuring session attributes, see “Adding or editing a session attribute” on page 294.
- For more information about IBM Tealeaf cxReveal session attribute search, see “Configuring Session Attribute Search” in the *IBM Tealeaf cxReveal Administration Manual*.

Searchable

When a check mark appears in this column, the session attribute was

configured to be searchable in the IBM Tealeaf cxReveal database. Up to five custom session attributes can be configured to be searchable in the IBM Tealeaf cxReveal database.

- For more information about configuring session attributes, see “Adding or editing a session attribute” on page 294.
- For more information about IBM Tealeaf cxReveal session attribute search, see “Configuring Session Attribute Search” in the *IBM Tealeaf cxReveal Administration Manual*.

Modified

Timestamp of when the session attribute was last modified

Session attribute list context menu

When you right-click a session attribute in the Session Attribute List, the following commands are available:

Command

Description

Edit Session Attribute...

Edit the selected session attribute. See “Adding or editing a session attribute” on page 294.

Show Dependent Items

Displays a list of items that depend on this session attribute evaluating to true. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Session Attribute History

Review the revision history for the selected session attribute. See “Session attribute history” on page 296.

Delete Delete a session attribute. See “Deleting a session attribute” on page 296.

Revert Revert the changes to the session attribute that were not committed to the version stored on the server. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Export Item

Mark item for inclusion in the next export. Items can be exported through the **Export** tab in the Event Manager. See Chapter 9, “TEM Import-Export Tabs,” on page 351.

Session attributes panel

In the left column of the Session Attributes tab, In parentheses next to the session attribute group, you can see the number of session attributes currently stored in it.

The screenshot shows a web interface for managing session attributes. At the top, there is a text input field labeled "Filter Session Attributes". Below this field is a blue header bar that reads "All Session Attributes (32)". The main area of the panel is a large, empty gray rectangle, which represents the list of session attributes. To the right of this gray area, there is a vertical ellipsis (three dots) indicating that the list can be expanded or scrolled.

Filtering session attributes

To filter the list of session attributes in the Session Attributes Panel, enter a string in the Filter Session Attributes textbox. The filter is applied in real time to display only the matching session attributes.

- Leading and trailing blank spaces are not removed from the filter.

Adding or editing a session attribute

- To create a session attribute, click **New Session Attribute**.

- To edit an existing session attribute, right-click it and select **Edit Session Attribute....**

Property

Description

Name The name of the session attribute

Description

A meaningful description of the session attribute. You may want to include the name of the populating event.

Populated By

To select the event that populates the session attribute, click **Select....**

- A user-created session attribute may be populated by multiple events.

Tracked in cxReveal DB

When selected, the custom session attribute is tracked in the IBM Tealeaf cxReveal database.

Note: This option is available only if IBM Tealeaf cxReveal database search has been licensed. please contact your IBM Tealeaf representative.

- IBM Tealeaf cxReveal supports the capture and tracking of up to 32 custom session attributes. Through the Portal, you can search the database using five of these 32 sessions attributes to locate sessions, which are immediately available for search as soon as the first session attribute is written to the database.
- For more information about configuring IBM Tealeaf cxReveal search, see "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.
- For more information about running IBM Tealeaf cxReveal searches, see "cxReveal - Searching Sessions by Session Attribute" in the *IBM Tealeaf cxReveal User Manual*.

Searchable in cxReveal DB

When selected, the custom session attribute is marked as one of the five searchable fields in the IBM Tealeaf cxReveal database.

Note: For an event to be searchable in the IBM Tealeaf cxReveal database, it must also be configured to be tracked.

Note: This option is available only if IBM Tealeaf cxReveal database search has been licensed. please contact your IBM Tealeaf representative.

- For more information about configuring IBM Tealeaf cxReveal search, see "Configuring Session Attribute Search" in the *IBM Tealeaf cxReveal Administration Manual*.
- For more information about running IBM Tealeaf cxReveal searches, see "cxReveal - Searching Sessions by Session Attribute" in the *IBM Tealeaf cxReveal User Manual*.

Deleting a session attribute

To delete a session attribute, right-click the variable name in the list and select **Delete**. Before the delete is permitted, you must remove the dependencies between the event and other event-related objects.

Note: Deleting an object removes it from the server. A deleted object cannot be restored.

- Dependency checks on reports, scorecards, and dashboards that may use the event are not checked.
- You cannot delete Tealeaf system objects.

Session attribute history

See Chapter 1, "Tealeaf Event Manager," on page 1.

Change history

See Chapter 1, "Tealeaf Event Manager," on page 1.

Chapter 7. TEM Alerts Tab

Through the Tealeaf Event Manager, you can define alerts that are triggered based on Tealeaf events or Top Movers. When threshold values are detected in the related event or Top Mover, an alert is generated and delivered in the appropriate format to the designated recipients.

- The Alerts tab is available if you have licensed IBM Tealeaf cxImpact.

There are four kinds of alerts:

- **“Creating event alerts” on page 302:** These alerts are triggered by user-defined events. The events that you create can be used as the trigger for these alerts.
- **“Creating Top Mover alerts” on page 310:** These alerts are triggered by user-defined Top Movers. Values in Top Movers that you create can be used as the trigger for these alerts.
- **“Creating Top Mover Report alerts” on page 311:** These alerts are triggered by reports that you have created to track Top Movers and associated dimensional values. Values in Top Mover reports can be used as the trigger for these alerts.
- **“Creating canister alerts” on page 308:** These alerts are triggered by any of the status metrics automatically monitored by the Tealeaf Canister. These metrics are available for selection when you create the alert.

Alerts are defined, configured, and enabled through the Alert tab in the Tealeaf Event Manager.

- You may create up to 2048 alerts, although Tealeaf does not recommend approaching this limit.
- After an alert is created and saved to the server, it may take 30 minutes for the alert definition to be used by the Alert Service. Alert generation and appearance of alerts in the Alert Monitor in the Portal may be impacted.
 - See "Alert Monitor" in the *IBM Tealeaf cxImpact User Manual*.
 - See "Configuring the Alert Service" in the *IBM Tealeaf CX Configuration Manual*.

Overview

To create, edit, or remove alerts, select the Alerts tab in the Tealeaf Event Manager.

- Alerts that you create may be monitored through the Portal. See “Viewing Alerts” on page 313.
- Use of alerts in the Tealeaf system may require more configuration. See “Configuration” on page 313.



- See “Alert Groups panel” on page 300.

The main panel displays the list of alerts for the currently configured view.

- See “Alert list.”

Above the main pane, you can select any of the following commands.

- **“Creating event alerts” on page 302:** These alerts are triggered by user-defined events. The events that you create can be used as the trigger for these alerts.
- **“Creating canister alerts” on page 308:** These alerts are triggered by any of the status metrics that are automatically monitored by the Tealeaf Canister. These metrics are available for selection when you create the alert.
- To create an event alert, click **New Event Alert**. See “Creating event alerts” on page 302.
- To create a Canister alert, click **New Canister Alert**. See “Creating canister alerts” on page 308.
- To edit an existing alert, double-click it or select it and press ENTER. See “Creating or editing an alert” on page 301.
- To save changes to all objects you have drafted in the Tealeaf Event Manager, click **Save Changes**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
 - For more information about the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.

Alert list

In the Alert list, you can review all of the available alerts for the currently selected alert group.

- To step through the list of items, press the Up or Down arrows on your keyboard.
- To scroll through the list, press the Page Up or Page Down keys on your keyboard.
- To select an item, click it or highlight it using keyboard navigation.
- To display inactive alerts, click the Show Inactive check box.
- On the left side of the screen, you can click an alert group to display a different set of related alerts. See “Alert Groups panel” on page 300.
- To sort the list by a column, click the column header. To sort the list in the reverse order, click the column header again.

- A context menu is available for selected items. To see the context menu, right-click one or more items in the list. See “Alert list context menu.”
- To select multiple items in the list, press SHIFT or CTRL and select the items.
- Items are highlighted in the list based on the current edit state of the item. See Chapter 3, “TEM Events tab,” on page 45.

Column

Description

Active When a check mark is present, the alert is active and available for use.

Event Name

The user-friendly name of the event that triggers the alert

Alert Name

The user-friendly name of the alert

Type Type of alert:

- Event (Type) - Event alert of the listed type. See “Creating event alerts” on page 302.
- Top Mover (H/D) - Top mover alert set to hourly (H) or daily (D) interval. See “Creating Top Mover alerts” on page 310.
- Top Mover Report (H/D) - Top mover report alert set to hourly (H) or daily (D) interval. See “Creating Top Mover Report alerts” on page 311.
- Canister (Type) - Canister alert of the listed type. See “Creating canister alerts” on page 308.

Modified

Timestamp of when the alert was last modified

Alert list context menu

When you right-click an alert in the Alert List, the following commands are available:

Command

Description

Edit Alert...

Edit the selected alert. See “Creating or editing an alert” on page 301.

Make Active/Inactive

Make the selected alert active or make it inactive.

Delete Delete an alert. Before the delete is permitted, you must remove the dependencies between the event and other event-related objects.

Note: Deleting an object removes it from the server. A deleted object cannot be restored.

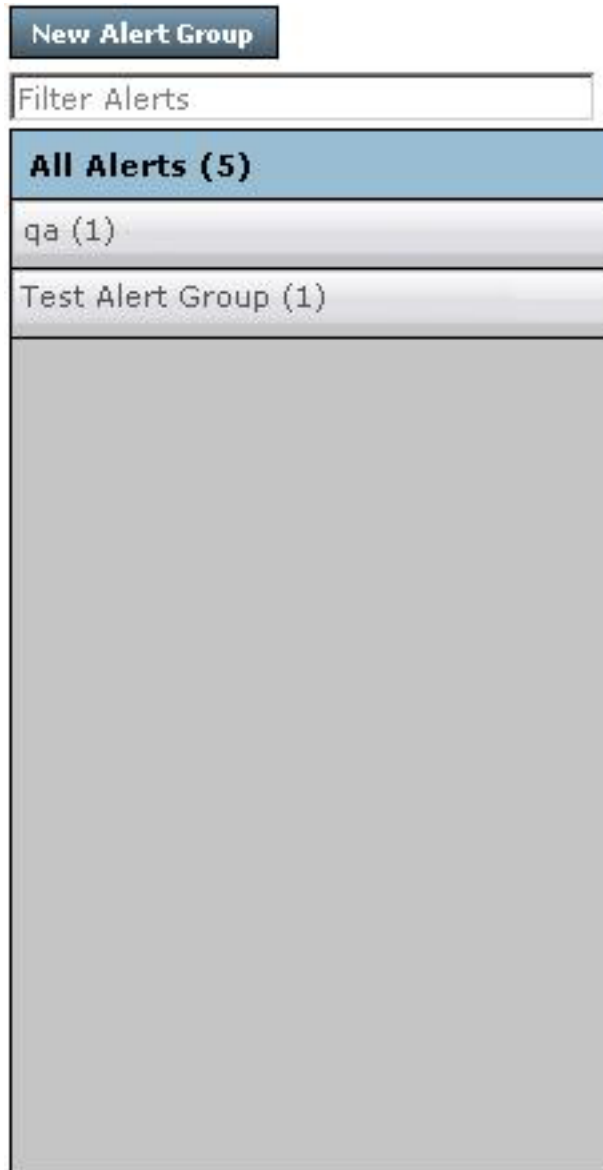
- Dependency checks on reports, scorecards, and dashboards that may use the event are not checked.
- You cannot delete Tealeaf system objects.

Revert Revert the changes to the alert that were not committed to the version stored on the server. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Alert Groups panel

In the left column of the **Alerts** tab, you can review the alert groups that have been created or provided by Tealeaf. In parentheses next to the alert group, you can see the number of alerts currently stored in it.

- See “Alert groups.”



The screenshot shows the 'Alert Groups panel' interface. At the top is a dark blue button labeled 'New Alert Group'. Below it is a white text input field labeled 'Filter Alerts'. Under the filter field is a blue header bar labeled 'All Alerts (5)'. Below the header are two list items: 'qa (1)' and 'Test Alert Group (1)'. The bottom half of the panel is a large, empty gray rectangular area.

Filtering alerts

To filter the list of alerts in the Alert Groups Panel, enter a string in the Filter Alerts textbox. The filter is applied in real time to display only the matching alerts.

- Leading and trailing blank spaces are not removed from the filter.

Alert groups

An alert group is used to organize one or more alerts under a common heading.

The following options are available in the context menu. Right-click a group and select one of the following:

Option Description

Edit Alert Group...

Right-click the group to edit and select this option. See “Creating or editing an alert group.”

New Alert Group...

Create an alert group. See “Creating or editing an alert group.”

Delete Delete the group. See “Deleting an alert group.”

Creating or editing an alert group: To create an alert group, click **New Alert Group**.

- To edit an existing one, right-click its entry in the Alert Groups panel and select **Edit Group...**

An alert group is defined by entering a unique name for the group in the textbox.

- To save a draft, click **Save Draft**.

Deleting an alert group:

You may delete alert groups that do not contain any alerts.

To remove an alert group:

1. Right-click the alert group in the left-navigation panel of the Alert tab.
2. Select **Delete**.
3. If the group is empty and was not committed to the server, the group is removed.

Note: If the group is empty and was committed to the server, you must commit your changes to the server to complete the removal. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Creating or editing an alert

There are four kinds of alerts:

- **“Creating event alerts” on page 302:** These alerts are triggered by user-defined events. The events that you create can be used as the trigger for these alerts.
 - To create an event alert, click **New Event Alert**. See “Creating event alerts” on page 302.
- **“Creating Top Mover alerts” on page 310:** Top Mover alerts are triggered off changes in the values reported for individual Top Movers.
 - To create a Top Mover alert, click **New Top Mover Alert**. For more information, “Creating Top Mover alerts” on page 310.
- **“Creating Top Mover Report alerts” on page 311:** Top Mover report alerts are triggered off changes in values that are reported in a selected Top Mover report.
 - To create a Top Mover Report Alert, click **New Top Mover Report Alert**. For more information, “Creating Top Mover Report alerts” on page 311.
- **“Creating canister alerts” on page 308:** These alerts are triggered by any of the status metrics that are automatically monitored by the Tealeaf Canister. These metrics are available for selection when you create the alert.
 - To create a canister alert, click **New Canister Alert**. See “Creating canister alerts” on page 308.

Creating event alerts

Event alerts are triggered off user-defined events that are created in the Tealeaf Event Manager. For example, you can create an event that accumulates the number of Failed Logins per hour. In the alert definition, if the threshold exceeds 5, you can configure an email to be sent to the interested parties.

One event can be the trigger for multiple alerts. In the above example, you could create a higher-priority alert that is sent to the IT department if the threshold exceeds 20, which could indicate a problem with the web server.

- Events that have the Display in Portal setting disabled are not available for generating alerts.

Note: When creating ratio alerts, timestamps for events are assigned in real time, while session-end events for alerts receive a timestamp when the session closes, which may be in a different alert time period window. Unexpected ratio counts may be generated if these two types of events are mixed in ratio alerts. Whenever possible, compare events with the same execution timeframe.

To create an event alert:

1. In the Portal, select **Configure > Event Manager**.
 - See Chapter 1, “Tealeaf Event Manager,” on page 1.
2. In the Tealeaf Event Manager, click the **Alerts** tab.
3. In the toolbar, click **New Event Alert**.
 - To create a Canister alert, click **New Canister Alert**. See “Creating canister alerts” on page 308.
4. The Event Alert Properties dialog is displayed:

Add Alert: (new alert)

Name:

Group:

☒ Active

Configuration | Notification | Blackout

Alert Type:

Event:

Threshold:

Direction:

Interval: minutes

Reset: minutes

Enable Warnings ☒

Threshold:

Reset: minutes

5. Enter a user-friendly name for the alert.
 - If no text is entered, a default description is created by appending the event description to the text "Alert On - ". Descriptions do not have to be unique.

6. To assign the alert to an alert group, click **Select....** A new group name can be entered for the alert, or you can select an existing group that is selected from the drop-down.
 - Groups aid in managing alert display and selection within Tealeaf Event Manager.
 - Event groups and alert groups are separate and independent of one another.
 - See “Creating or editing an alert group” on page 301.
7. To activate the alert, click the **Active** check box. When selected, alert is enabled and processed as configured by Tealeaf.
8. Configure the properties in each tab:
 - a. “Alert configuration properties”
 - b. “Alert notification properties” on page 304
 - c. “Alert blackout properties” on page 305
9. To save the alert, click **Save Draft**. The alert is saved to your local computer.
10. To commit the alert to the server, click **Save Changes**.
11. Alert definitions are saved separately from the event information. The Alert Service becomes aware of the new alert definition when the alert definitions are refreshed.
 - a. Typically, this interval is 10 minutes.
 - b. To force a refresh, you can restart the Alert Service. However, this method causes all accumulated event alert counts to be reset to zero.

Alert configuration properties

Property

Description

Alert Type

The available options are Count (default), Mean, Minimum, Maximum, and Ratio. See “Alert types” on page 305.

Event Click the <Select Event> link to select the event that is the trigger for the alert. The Event Selector is displayed. Click the triggering event. The event name is inserted into the Configuration tab.

- Only events whose Display in Portal flag was sent to true are available for selection. See Chapter 3, “TEM Events tab,” on page 45.
- To remove the selected event, click the X icon next to the event name.

Alert Threshold

The value at which an alert message is created.

- Threshold values must be greater than zero. For Top Mover, Top Mover report, and event ratio alerts, you may enter decimal values. For other alert types, entered values must be integers.
- For Mean alerts, this field accepts values as integer percentages, representing percentage deviations of a sample value from an AlertService calculated mean value.

Direction

The available options are Positive (default) and Negative.

- A negative alert results in alerting when a value less than the Alert Threshold was recorded.

Alert Interval

Time in minutes to accumulate the event values for alerting. The interval is a rolling window of time.

- Values range from 1 minute to a maximum value of 1440 minutes (24 hours).

Note: Since the alert service operates on time-based intervals, you cannot configure alerts to fire on each page or for each occurrence of the underlying event.

Alert Reset

The time interval in minutes after an alert of this type was created and no other alerts of this type can be created. After the reset period expired, the alert counter is reset back to zero.

Enable Warnings

When selected, warning alerts are generated when the specified warning thresholds were reached.

Warning Threshold

The value at which a warning message is created. For Mean alerts, this field accepts values as integer percentages, representing percentage deviations of a sample value from an AlertService calculated mean value.

- Threshold values must be greater than zero. For Top Mover, Top Mover report, and event ratio alerts, you may enter decimal values. For other alert types, entered values must be integers.

Warning Reset

The time interval in minutes after a warning was created and no other warnings can be created. An alert can be created during this interval.

Alert notification properties

Property

Description

App Event Log

Create an entry in the event log for each warning/alert message.

Email This check box enables email messaging for warnings and alerts.

Email Format

Select the email message format from the drop-down:

- HTML for rich-media delivery
- SMS for delivery to mobile devices
- Text for text-only format. No drill-down is available.

Email Addresses

The email addresses for the recipients (maximum 255 characters)

Shell Command

Specify output to a custom executable command. See “External command shell invocation” on page 328.

SNMP Send SNMP message.

XML Log File

Create an entry in the Alerts log file for each warning/alert message.

- The Alerts log file (Alerts_YYYYMMDD.log) is created when one or more alerts has the XML log file option enabled.

Alert blackout properties

An alert blackout is a time frame in which an alert is prevented from triggering. You can use blackouts to avoid generating skewed event values that might be generated because of system backups, restarts, and other activities.

You can specify one time period per day to blackout an alert. For example, you can configure an alert blackout out from 2100 hours to 2200 hours on Monday, Wednesday, and Sunday.

You can also configure alert blackouts during the same time frame every day by selecting **Enable Common Blackout** and selecting a time period.

Complete the following steps to configure an alert blackout:

1. Click the **Enable Alert Blackout** check box.
2. Select the days of the week for the blackout, and click the **View/Edit** button against the days.
3. In the Blackout Interval window, configure the start time and the end time for the alert blackout, and click **Save**.

Note: You can use the Blackout Interval window to configure multiple blackouts on the same day.

4. To configure a common blackout for multiple days, in the Edit Alert window, select the days and click the **Enable Common Blackout** check box.
5. Click the **View/Edit** button.
6. In the Blackout Interval window, configure the start time and the end time for the alert blackout, and click **Save**.

Time is the Tealeaf system time. See "Configuring the System Timezone" in the *IBM Tealeaf CX Configuration Manual*.

Alert types

The available options are Count (default), Mean, Minimum, Maximum, and Ratio:

Type	Description

Count	Fires an alert when a count threshold was exceeded.

Mean	Fires on percentage deviations from the mean value. The mean is calculated for the window of prior values of width Alert Interval. When Alert Interval values accumulated, the current value is calculated for a 1 minute period immediately following the end of the Alert Interval. This current value is compared to the average of values over the Alert Interval, and an alert is generated if that value differs by the percentage that is specified as Alert Threshold or Warn Threshold. For example, if the specified threshold percentage is 20, then a current value of over 1.2 times the mean value triggers an alert.

- The triggering percentage is interpreted as a positive or negative percentage, deviating from the mean value, as defined by the Direction setting. See "Alert configuration properties" on page 303.

Minimum or Maximum	Fires on integer count deviations from either the minimum or maximum value. The extremes are for the window of prior values of width Alert Interval. When Alert Interval values accumulated, the current value is compared to the Minimum or Maximum of values over that interval and an alert is generated if that value differs by the count that is specified as Alert Threshold or Warn Threshold. The triggering deviation can be

specified as either positive or negative. The available options are Positive (default) and Negative. Selecting Negative sends a flag to signal that this is a negative alert. This results in alerting when less than, rather than greater than.

Ratio Fires a warning or alert when the ratio of the incidences of this event to an arbitrarily selected denominator event exceeds a fractional threshold. When the Ratio option is selected, percentage signs appear next to the Threshold field values. The ratio is X/Y, where Y is a counter-event. Select a sampling interval that yields actual statistically meaningful results. See “Configuring ratio alerts.”

Configuring ratio alerts:

Add Alert: (new alert)

Name:

Group:

☒ Active

Configuration **Notification** **Blackout**

Alert Type:

Numerator:

Denominator:

Event:

Min. Value:

Threshold: %

Direction:

Interval: minutes

Reset: minutes

Enable Warnings ☒

Threshold: %

Reset: minutes

Note: When creating ratio alerts, timestamps for events are assigned in real time, while session-end events for alerts receive a timestamp when the session closes, which may be in a different alert time period window. Unexpected ratio counts may be generated if these two types of events are mixed in ratio alerts. Whenever possible, compare events with the same execution timeframe.

The following properties apply when the alert type is set to Ratio.

- In the generated alert, drill-down is disabled for ratio alerts.

Property	Description

Alert Type

Type of alert is set to Ratio. See “Alert types” on page 305.

Numerator

Click the <Select Event> link to select the event that is the numerator for the ratio. The Event Selector is displayed. Click the event. The event name is inserted into the Configuration tab.

- To remove the selected event, click the X icon next to the event name.

Denominator

Select the type of denominator for the event:

- Event List - List of values that are specified in the whitelist for a selected event. When this option is selected, click <Select Event> link to open the Event Selector.
- Page Count - A count of pages in a 1 minute interval
- Session Count - A count of sessions in a 1 minute interval

Min. Value

This setting determines when a ratio event has enough samples to be meaningful (for example, the denominator must be at least the number in this field before the threshold is evaluated).

Alert Threshold

The value at which an alert message is created.

- Threshold values must be greater than zero. For ratio alerts, you may enter decimal values.

Direction

The available options are Positive (default) and Negative.

- A negative alert results in alerting when a value less than the Alert Threshold was recorded.

Alert Interval

Time in minutes to accumulate the event values for alerting. The interval is a rolling window of time.

- Values range from 1 minute to a maximum value of 1440 minutes (24 hours).

Note: Since the alert service operates on time-based intervals, you cannot configure alerts to fire on each page or for each occurrence of the underlying event.

Alert Reset

The time interval in minutes after an alert of this type was created and no other alerts of this type can be created. After the reset period expired, the alert counter is reset back to zero.

Enable Warnings

When selected, warning alerts are generated when the specified warning thresholds were reached.

Warning Threshold

The value at which a warning message is created. For Mean alerts, this field accepts values as integer percentages, representing percentage deviations of a sample value from an AlertService calculated mean value.

- Threshold values must be greater than zero. For Top Mover, Top Mover report, and event ratio alerts, you may enter decimal values. For other alert types, entered values must be integers.

Warning Reset

The time interval in minutes after a warning was created and no other warnings can be created. An alert can be created during this interval.

Creating canister alerts

A *canister alert* is a Tealeaf alert that is triggered when a threshold was exceeded on one of the many statistics that are generated from the Tealeaf canisters. A Tealeaf canister may process a high volume of data, so you can create canister alerts to identify when potential issues may be occurring in the canister. By monitoring one or more threshold levels in the reported Canister statistics, you may be able to alert the appropriate personnel before a potential issue causes a significant problem. The Canister statistics are also published in the Portal in a System Status report. For definitions of these statistics, see "System Status" in the *IBM Tealeaf cxImpact Administration Manual*.

To create a canister alert, click the Alert tab in the Tealeaf Event Manager; then, select **New Canister Alert....** The following dialog is displayed:

Add Alert: (new alert)

Name: test canister alert

Group: tested Select...

☒ Active

Configuration **Notification** **Blackout**

Alert Type: Count

Event: Total STC sessions

Server: Sum All Servers

Alert Function: Positive

Threshold: 10

Interval: 30 minutes

Reset: 10 minutes

Enable Warnings: ☒

Threshold: 5

Reset: 10 minutes

Save Draft Cancel

The alert properties window for canister alerts is similar to the window for configuring event-based alerts. The following properties are specific to Canister alerts:

Property

Description

Servers

Select the Canister server or servers from which to gather event values. To gather Canister event statistics from all Canisters, select Sum All Servers.

For more information about the other properties:

- "Alert configuration properties" on page 303

- “Alert notification properties” on page 304
- “Alert blackout properties” on page 305

Canister status metrics

For more information about the available canister events, see "System Status" in the *IBM Tealeaf cxImpact Administration Manual*.

Example - alert when number of sessions waiting to be indexed grows too large

When sessions are closed, they are moved from the Short-Term Canister to the Long-Term Canister, where they are queued for indexing. If the session indexer is unable to index the queued sessions fast enough, the queue can grow and grow. This unhealthy situation should be investigated.

In the following example, you can configure a canister alert to issue an alert when the number of queued sessions exceeds 1,000.

Note: For testing purposes, you may want to set this to a low value that you know is exceeded. Remember to reset the alert to appropriate threshold values after you tested it.

1. In the Tealeaf Event Manager, click the **Alerts** tab.
2. Select **New Canister Alert...** The Add Alert window is displayed.
3. For the Name of the Alert, enter the following:
Alert - Sessions waiting for index > 1000
4. Select a group for the alert, as needed. You might create a group such as the following:
Canister - Spooling
5. Select the **Active** check box.
6. Click the **Configuration** step.
 - a. For Alert Type, select Count.
 - b. For the Event, click **Select...** Select Un-indexed Sessions. Click **OK**.
 - c. Do not configure a dimension value.
 - d. Select the server. For this example, select Sum All Servers.
 - e. For Direction, select Positive.
 - f. For the Alert Threshold, set it to 1000.
 - You can specify the reset interval after the alert fired. If the interval is exceeded again before this time period expired, then another alert is not fired.
 - g. If wanted, you can configure a warning threshold, which can be designed to fire when the alerting threshold is close to being exceeded. For this example, set the Warning Threshold to 750. For this example, leave the default value of 10 minutes.
 - You can specify the reset interval after the warning alert fired. If the warning interval is exceeded again before this time period expired, then another warning alert is not fired. For this example, leave the default value of 10 minutes.
7. Click the **Notification** step.
 - a. You can specify where you want to have the alert that is delivered and in the preferred format.
 - For testing purposes, you should send the alert to your email address.
8. Click the **Blackout** step.

- a. If Canister maintenance is performed every night, you may want to schedule a blackout during the time of maintenance and for some time afterward, so that sessions that were queued during maintenance can be processed without triggering an alert.
9. After you specified the alert, click **Save Draft**.
10. The new alert appears in the Alerts tab in highlighted text.
11. To commit the changes to the server, click **Save Changes**.
 - If you entered test values for the thresholds, remember to change the values to appropriate ones after testing is complete.
 - You may also want to revisit the Alert Notification properties.

Creating Top Mover alerts

A Top Mover alert can be created to monitor changes in the values reported for daily or hourly Top Movers. Although you may be able to track Top Movers through configured Top Mover reports, it may be more useful to configure alerts to notify you of significant changes or abnormal values reported in each Top Mover of interest to you.

Note: Creating Top Mover alerts is a component of cxView, a separately licensable component of the Tealeaf CX platform. please contact your IBM Tealeaf representative.

Top Movers can be created to monitor deviations in event values or ratios of values. They can be configured in the Tealeaf Event Manager. See Chapter 8, “TEM Top Movers Tab,” on page 333.

To create a Top Mover alert, click the **Alert** tab in the Tealeaf Event Manager. Then, select **New Top Mover Alert....** The following dialog is displayed.

Add Alert: (new alert)

Name:

Group:

☒ Active

Configuration | Notification | Blackout

Top Mover: Hit Count x

Interval: Hourly

Threshold:

Direction:

Enable Warnings ☒

Threshold:

The alert properties window for Top Mover alerts is similar to the window for configuring event-based alerts. The following properties are specific to alerts of this type:

Property	Description

Top Mover

Click to select the saved Top Mover that you want to monitor through this alert.

- Top Movers are grouped by frequency in Hourly and Daily panels.
- If the Top Mover is a dimensional Top Mover, the dimension and all values in the dimension are automatically selected for tracking.
 - When all values are tracked, any value that exceeds the threshold triggers the alert.
 - To select specific dimension values to track, click <Any Dimension Value>.
- When a Top Mover is selected, the Interval is taken from the interval that is defined for the Top Mover. An interval setting for the alert is not separately available for user configuration.

For more information about the other properties:

1. "Alert configuration properties" on page 303
2. "Alert notification properties" on page 304
 - When email recipients drill into the alert, the Portal creates a report using the monitored Top Mover and opens it in the Portal. See "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.
3. "Alert blackout properties" on page 305

Note: For Top Mover alerts, the blackout settings are applied based on when the data was acquired. For example, daily Top Movers are calculated the day after acquisition, so the blackout periods are configured to apply to the previous date. Blackouts for hourly Top Movers are similarly offset to the period when they were captured.

Data updates

Top Mover alert data is gathered and calculated on the following intervals:

- Hourly Top Mover alert updates: 30 minutes after the hour
- Daily Top Mover alert updates: 30 minutes after the time configured for the daily Top Mover data collection run. By default, this run occurs at 4:30am.
 - The Daily Top Mover collection run time can be configured by Portal setting. See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Creating Top Mover Report alerts

A Top Mover report alert notifies the configured recipient list of significant changes reported in the selected Top Mover report. Since a Top Mover report may contain dimensional data, these alerts can be used to narrow the focus of a Top Mover alert to only monitor significant changes or abnormal values appearing in the Top Mover report.

Note: Creating Top Mover report alerts is a component of cxView, a separately licensable component of the Tealeaf CX platform. please contact your IBM Tealeaf representative.

- Top Movers can be created to monitor deviations in event values or ratios of values. They can be configured in the Tealeaf Event Manager. See Chapter 8, "TEM Top Movers Tab," on page 333.

- For more information about Top Mover reports, see "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.
- To create a Top Mover report alert, click the Alert tab in the Tealeaf Event Manager. Then, select **New Top Mover Report Alert....** The following dialog is displayed.

The alert properties window for Top Mover alerts is similar to the window for configuring event-based alerts. The following properties are specific to alerts of this type:

Property	Description

Top Mover Report	Click to select the saved Top Mover report that you want to monitor through this alert.

- | |
|--|
| Click to select the saved Top Mover report that you want to monitor through this alert. |
| <ul style="list-style-type: none"> • When a Top Mover is selected, the Interval is taken from the interval that is defined for the Top Mover. An interval setting for the alert is not separately available for user configuration. |

For more information about the other properties:

- "Alert configuration properties" on page 303
- "Alert notification properties" on page 304
 - When email recipients drill into the alert, the report is opened in the Top Mover page in the Portal. See "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.
- "Alert blackout properties" on page 305

Note: For Top Mover alerts, the blackout settings are applied based on when the data was acquired. For example, daily Top Movers are calculated the day after acquisition, so the blackout periods are configured to apply to the previous date. Blackouts for hourly Top Movers are similarly offset to the period when they were captured.

Viewing Alerts

Through the Tealeaf Portal, you can view the status of each alert in the system. In the Tealeaf Portal, select **Active > Alert Monitor**. See "Alert Monitor" in the *IBM Tealeaf cxImpact User Manual*.

Adding to alerts dashboards

In addition to generating alerts and delivering them through the mechanisms you define in the Event Manager, you can add them as components to your dashboards.

Note: Creating and viewing dashboards is a feature of IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX platform. please contact your IBM Tealeaf representative.

- See "Configuring Dashboards" in the *IBM Tealeaf cxView User Manual*.
- For more information about viewing dashboards, see "Using Dashboards" in the *IBM Tealeaf cxView User Manual*.

Configuration

Enabling the Alert Service

Before you begin, the Alert Service must be enabled and configured.

1. To enable the Alert Service, login as a Tealeaf administrator.
2. Select **Tealeaf > Portal Management**.
3. In the left pane, select **IBM Tealeaf CX Settings > Alerts/Thresholds**.
4. Set Alerting Control Service to the appropriate value:
 - PORTAL enables viewing alerts through the Portal.
 - SERVICE enables viewing the Alert Status page.
 - BOTH enables viewing the Alert Status page and alerts through the Portal.
5. When the above setting is changed, you must log in to the Portal again to see the changes.
 - The data collector service does not need to be restarted.

See "Configuring the Alert Service" in the *IBM Tealeaf CX Configuration Manual*.

Global configuration settings

The Alert Service has several global settings that are used for processing the data and delivering messages. These settings can be configured through TMS in the Portal.

- See "TMS WorldView Tab" in the *IBM Tealeaf cxImpact Administration Manual*.
- See "Tealeaf Management System" in the *IBM Tealeaf cxImpact Administration Manual*.

Alert service configuration settings

For more information about changing configuration settings, see "Configuring the Alert Service" in the *IBM Tealeaf CX Configuration Manual*.

Alert message configuration with XSL

You can customize the formatting for your alert messages by modifying one of the default XSL style sheets, or creating your own XSL template. The default XSL style sheets are divided into different sections for each type of alert messages. Tealeaf administrators who are comfortable with XSL can modify the text and formatting of each type of alert.

Before you can use the customized template for your alert messages, make sure that the customized template exists on your local computer.

Consider the following points before customizing templates:

- If the Tealeaf server cannot access the customized template that you specified, the default alert template is used and a message is logged in the log file.
- The alert service identifies a template by the file name. To avoid overwriting a template, the administrators can follow a specific naming scheme for your templates.
- The template XSLs must have the following tags to generate the subject and body of the email:

The following section lets the server select the email body or email subject from template:

```
<xsl:template match="AlertServiceAlertMessage">
  <xsl:choose>
    <xsl:when test="@MessageType[.='Default']">
      <xsl:call-template name="MailBodyDefault" />
    </xsl:when>
    <xsl:when test="@MessageType[.='SubjectDefault']">
      <xsl:call-template name="MailSubjectDefault" />
    </xsl:when>
  </xsl:choose>
</xsl:template>
```

The following sections defines the email body:

```
<xsl:template name="MailBodyDefault">
  <HTML>
    <HEAD>
      ...
    </BODY>
  </HTML>
</xsl:template>
```

The following sections defines the email subject:

```
<xsl:template name="MailSubjectDefault">
  Tealeaf Event Test Email <xsl:value-of select="ThresholdCategory" />
  <xsl:value-of select="EventTitle" />
</xsl:template>
```

Complete the following steps to use your customized template for alert messages:

1. On the computer where you have saved the customized template, go to the Tealeaf Portal and open the Edit Alert window.
2. Click the **Notification** tab.
In the **Current template** field, you can see the template that is currently used for your alert messages.
3. Select the **Use template** check box, and browse to the customized template.

4. Select the **Overwrite Existing File** check box to update the templates that are already being used. If you do not select the **Overwrite Existing File** check box, you can see the following error message:
Error saving Alert (draft)! File Already Exists:<file path to template>
5. Click **Save draft** to save your changes.

The server attempts to validate that the template is a valid xsl. If there is a problem, you can see an error message.

XSL templates

The appropriate XSLs are stored in the following directory:

<Tealeaf_install_directory>\Portal

In the table below, the AlertService files apply to event alerts or Canister status alerts.

- For more information about event alert configuration, see “Alert service XSL for event alerts” on page 316.
- For more information about Canister alert configuration, see “Alert service XSL for Canister alerts” on page 322.

Note: If you rename any of the following files, the Alert Service generates a new one with the default settings the next time it is started.

Note: If you rename the files, you may use this method to check for updates to these files when you upgrade. After the Alert Service runs again, you can use a text editor to check for differences between the renamed version and the newly generated version to see if there are changes or more formatting features that were introduced in the upgrade.

File name

Description

AlertServiceText.xsl

XSL file for formatting text-based alerts

Note: The Subject line for HTML alerts must be in text format. The formatting of them is managed through the AlertServiceText.xsl file.

AlertServiceHTML.xsl

XSL file for formatting HTML-based alerts

AlertServiceSMS.xsl

XSL file for formatting SMS email alerts

AlertServiceSNMP.xsl

XSL file for formatting SNMP alerts

AlertServiceTopMoversHTML.xsl

XSL file for formatting HTML-based Top Movers alerts

AlertServiceReportsHTML.xsl

XSL for formatting HTML-based Top Movers Reports alerts

AlertServiceAppLog.xsl

Formatting for the alert service log messages

- Log is written to <Tealeaf_install_directory>\Logs\Alerts_YYYYMMDD.log.

AlertShellCmd.xsl

XSL file for formatting alerts that are generated through a custom external application. See “External command shell invocation” on page 328.

Documentation, including variable descriptions, is included as comments in each file. A default formatting is also provided to serve as an example for user customization.

Note: Some target devices may be fixed limits to the amount of text that can be displayed. For example, a cell phone may be able to display only 50 characters with no distinction between the message header and body. For each type of alert, you should review a generated text alert on the likely targets.

Alert service XSL for event alerts

The following example configuration is the default AlertServiceText.xsl.

Click to display default XSL.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="text" indent="no" omit-xml-declaration="yes"
    encoding="iso-8859-1"/>
  <!-- XML format for Alert Messaging -->
  <!-- <AlertServiceAlertMessage MessageType="Default"> -->
  <!-- <AlertServiceAlertMessage MessageType="TopMovers"> -->
  <!-- <AlertServiceAlertMessage MessageType="SubjectDefault"> -->
  <!-- <AlertServiceAlertMessage MessageType="ReportsHead"> -->
  <!-- <AlertServiceAlertMessage MessageType="ReportsBody"> -->
  <!-- <AlertServiceAlertMessage MessageType="ReportsTail"> -->
  <!-- <AlertID>1</AlertID> -->
  <!-- <EventID>1</EventID> -->
  <!-- <AlertTime>0</AlertTime> -->
  <!-- <Title>*** TEALEAF ALERT ***</Title> -->
  <!-- <SubTitle>WARNING DETAILS</SubTitle> -->
  <!-- <AlertTitle>Alert Name</AlertTitle> -->
  <!-- <EventTitle>Event Name</EventTitle> -->
  <!-- <AlertGroup>Alert Group</AlertGroup> -->
  <!-- <ThresholdValue>1.0</ThresholdValue> -->
  <!-- <LastValue>2.0</LastValue> -->
  <!-- <ThresholdType>Positive or Negative</ThresholdType> -->
  <!-- <ThresholdCategory>Alert or Warning</ThresholdCategory> -->
  <!-- <AlertTimeStamp>Monday, July 02, 2007 08:00</AlertTimeStamp> -->
  <!-- <AlertTimeStampShort>07/02/07 08:00:00</AlertTimeStampShort> -->
  <!-- <ReportPeriod>Monday, July 02, 2007 08:00</ReportPeriod> -->
  <!-- <PortalURL>http://localhost/portal</PortalURL> -->
  <!-- <AlertEngineVersion>4.0.0.4500</AlertEngineVersion> -->
  <!-- <AlertEngineTimeStamp>Monday, July 02, 2007 08:00:00 -->
</AlertEngineTimeStamp> -->
  <!-- <CanistersLagging>george, sam, bobo</CanistersLagging> -->
  <!-- <LaggingCount>3</LaggingCount> -->
  <!-- <CanistersStopped>fox, hound</CanistersStopped> -->
  <!-- <StoppedCount>2</StoppedCount> -->
  <!-- The below are only populated for MessageType="TopMovers" -->
  <!-- <Frequency>Hourly or Daily</Frequency> -->
  <!-- <ReportID>1</ReportID> -->
  <!-- <DimensionID>1</DimensionID> -->
  <!-- <DimValueID>1,2,3 ... </DimValueID> -->
  <!-- <ReportTitle>Report Name</ReportTitle> -->
  <!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
  <!-- <DimensionTitle>Dimension Name</DimensionTitle> -->
  <!-- <DimValueTitle>Value0 Name,Value1 Name </DimValueTitle> -->
  <!-- </AlertServiceAlertMessage> -->
```

```

<xsl:template match="AlertServiceAlertMessage">
  <xsl:choose>
    <xsl:when test="@MessageType[.='Default']">
      <xsl:call-template name="MailBodyDefault"/>
    </xsl:when>
    <xsl:when test="@MessageType[.='TopMovers']">
      <xsl:call-template name="MailBodyTopMovers"/>
    </xsl:when>
    <xsl:when test="@MessageType[.='SubjectDefault']">
      <xsl:call-template name="MailSubjectDefault"/>
    </xsl:when>
  </xsl:choose>
</xsl:template>

<!-- Main Text Subject. Remember, the space and new lines are taken
literally! -->
<!-- The Subject line is truncated to yield a maximum length of 64
characters -->

<xsl:template name="MailSubjectDefault">Tealeaf Event <xsl:value-of
  select="ThresholdCategory"/> - <xsl:value-of
  select="EventTitle"/></xsl:template>

<!-- Main Text Body. Remember, the space and new lines are
taken literally! -->

<xsl:template name="MailBodyDefault">
-----
- <xsl:value-of select="Title"/>
- <xsl:value-of select="SubTitle"/>
-----
<xsl:if test="CanistersLagging">
  - Slow Servers      : <xsl:value-of select="CanistersLagging"/>
</xsl:if>
<xsl:if test="CanistersStopped">
  - Silent Servers    : <xsl:value-of select="CanistersStopped"/>
</xsl:if>
  - Event              : <xsl:value-of select="EventTitle"/>
  - Alert              : <xsl:value-of select="AlertTitle"/>
  - Threshold          : <xsl:value-of select="ThresholdValue"/>
  - Last Value         : <xsl:value-of select="LastValue"/>
  - Threshold Type     : <xsl:value-of select="ThresholdType"/>
  - Generated At       : <xsl:value-of select="AlertTimeStamp"/>
  - Report Period      : <xsl:value-of select="ReportPeriod"/>
<xsl:if test="CanistersLagging or CanistersStopped">
  - Notes              : This alert has been delayed due to extra time
                        required to process event data from the listed Slow or Silent Servers.
                        Event data is still recorded as occurring at the correct times
                        but the recording process is delayed. As a result, this will be
                        the only notification for this specific alert during the delayed
                        processing period. Please refer to the Alert Service Debug Log
                        and Windows Application Event Log for more details.
</xsl:if>
-----
Notification sent by Tealeaf Alert Service
(<xsl:value-of select="AlertEngineVersion"/>)
Timestamp: <xsl:value-of select="AlertEngineTimeStamp"/>
</xsl:template>

<!-- Main Text Body for TopMovers. Remember, the space and new lines
are taken literally! -->

<xsl:template name="MailBodyTopMovers">
-----
- <xsl:value-of select="Title"/>
- <xsl:value-of select="SubTitle"/>
-----

```

```

        Alert:          <xsl:value-of select="AlertTitle"/>
<xsl:if test="not(ReportTitle='')">
        Report:        <xsl:value-of select="ReportTitle"/>
</xsl:if>
        TopMover:      <xsl:value-of select="EventTitle"/>
<xsl:if test="not(DimensionTitle='')">
        Dimension:     <xsl:value-of select="DimensionTitle"/>
</xsl:if>
<xsl:if test="not(DimValueTitle='')">
        Dim Value:     <xsl:value-of select="DimValueTitle"/>
</xsl:if>
        Frequency:     <xsl:value-of select="Frequency"/>
        Last Value:    <xsl:value-of select="LastValue"/>
        Alert Threshold: <xsl:value-of select="AlertThreshold"/>
        Warn Threshold: <xsl:value-of select="WarningThreshold"/>
        Threshold Type: <xsl:value-of select="ThresholdType"/>
        Generated At:   <xsl:value-of select="AlertTimeStamp"/>
        Report Period:  <xsl:value-of select="ReportPeriod"/>
        QUICK LINK
<xsl:choose>
        <xsl:when test="not(DimValueID='0')">
                View Event <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="EventID"/>?dimid0=<xsl:value-of select="DimensionID"/>?<xsl:value-of
select="DimValueID"/>
                </xsl:when>
                <xsl:when test="not(DimensionID='0')">
                        View Event <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="EventID"/>?dimid0=<xsl:value-of select="DimensionID"/>
                        </xsl:when>
                <xsl:otherwise>
                        View Event <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="EventID"/>
                </xsl:otherwise>
        </xsl:choose>
<xsl:if test="not(ReportID='')">
        View Report <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?reportid=<xsl:value-of
select="ReportID"/>
</xsl:if>
Notification sent by Tealeaf Alert Service (<xsl:value-of
select="AlertEngineVersion"/>)
Created on <xsl:value-of select="AlertEngineTimeStamp"/>

</xsl:template>

<!-- XML format for Report Messaging -->
<!-- <AlertServiceReportMessage> -->
<!-- <Head> -->
<!-- <Title>*** TEALEAF ALERT ***</Title> -->
<!-- <SubTitle>WARNING DETAILS</SubTitle> -->
<!-- <AlertTitle>Alert Name</AlertTitle> -->
<!-- <ReportTitle>Report Name</ReportTitle> -->
<!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
<!-- <AlertID>1</AlertID> -->
<!-- <EventID>1</EventID> -->
<!-- <ReportID>1</ReportID> -->
<!-- <PortalURL>http://localhost/portal</PortalURL> -->
<!-- <Frequency>Hourly or Daily</Frequency> -->
<!-- <Day>YYYY-MM-DD</Day> -->
<!-- <Hour>0 to 23</Hour> -->
<!-- </Head> -->
<!-- <Body> -->
<!-- <EventTitle>TopMover Name</EventTitle> -->

```



```

<!-- <DimensionTitle>Dimension Name</DimensionTitle> -->
<!-- <DimValueTitle>Value Name </DimValueTitle> -->
<!-- <TopMoverID>1</TopMoverID> -->
<!-- <DimensionID>1</TopMoverID> -->
<!-- <DimValueID>1</DimValueID> -->
<!-- <LastValue>2.0</LastValue> -->
<!-- <LastCount>1000</LastCount> -->
<!-- <PortalURL>http://localhost/portal</PortalURL> -->
<!-- </Body> -->
<!-- <Tail> -->
<!-- <ThresholdValue>1.0</ThresholdValue> -->
<!-- <AlertThreshold>1.0</AlertThreshold> -->
<!-- <WarningThreshold>1.0</WarningThreshold> -->
<!-- <ThresholdType>Positive or Negative</ThresholdType> -->
<!-- <ThresholdCategory>Alert or Warning</ThresholdCategory> -->
<!-- <AlertTime>0</AlertTime> -->
<!-- <AlertTimeStamp>Monday, July 02, 2007 08:00</AlertTimeStamp> -->
<!-- <AlertTimeStampShort>07/02/07 08:00:00</AlertTimeStampShort> -->
<!-- <ReportPeriod>Monday, July 02, 2007 08:00</ReportPeriod> -->
<!-- <PortalURL>http://localhost/portal</PortalURL> -->
<!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
<!-- <AlertEngineVersion>4.0.0.4500</AlertEngineVersion> -->
<!-- <AlertEngineTimeStamp>Monday, July 02, 2007 08:00:00 -->
</AlertEngineTimeStamp> -->
<!-- <Frequency>Hourly or Daily</Frequency> -->
<!-- <Day>YYYY-MM-DD</Day> -->
<!-- <Hour>0 to 23</Hour> -->
<!-- </Tail> -->
<!-- </AlertServiceReportMessage> -->

<xsl:template match="/">
  <xsl:apply-templates />
</xsl:template>

<xsl:template match="/AlertServiceReportMessage">
  <xsl:apply-templates />
</xsl:template>

<xsl:template match="/AlertServiceReportMessage/Head">
-----
- <xsl:value-of select="Title"/>
- <xsl:value-of select="SubTitle"/>
-----
Alert: <xsl:value-of select="AlertTitle"/>
<xsl:if test="not(ReportTitle='')">
Report: <xsl:value-of select="ReportTitle"/>
</xsl:if>
</xsl:template>

<xsl:template match="/AlertServiceReportMessage/Body">
TopMover: <xsl:value-of select="EventTitle"/>
<xsl:if test="not(DimensionTitle='')">
Dimension: <xsl:value-of select="DimensionTitle"/>
</xsl:if>
<xsl:if test="not(DimValueTitle='')">
Dim Value: <xsl:value-of select="DimValueTitle"/>
</xsl:if>
Last Value: <xsl:value-of select="LastValue"/>
<xsl:choose>
<xsl:when test="not(DimValueID='0')">
View Event
<xsl:value-of select="PortalURL"/>
/DeviationReports.aspx?devid0=<xsl:value-of
select="TopMoverID"/>?dimid0=<xsl:value-of
select="DimensionID"/>?<xsl:value-of select="DimValueID"/>
</xsl:when>

```

```

        <xsl:when test="not(DimensionID='0')">
            View Event      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="TopMoverID"/>?dimid0=<xsl:value-of select="DimensionID"/>
        </xsl:when>
        <xsl:otherwise>
            View Event      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="TopMoverID"/>
        </xsl:otherwise>
    </xsl:choose>
</xsl:template>

<xsl:template match="/AlertServiceReportMessage/Tail">
    Frequency:      <xsl:value-of select="Frequency"/>
    Alert Threshold: <xsl:value-of select="AlertThreshold"/>
    Warn Threshold: <xsl:value-of select="WarningThreshold"/>
    Threshold Type: <xsl:value-of select="ThresholdType"/>
    Generated At:   <xsl:value-of select="AlertTimeStamp"/>
    Report Period:  <xsl:value-of select="ReportPeriod"/>
    <xsl:if test="not(ReportID='')">
        View Report      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?reportid=<xsl:value-of
select="ReportID"/>
    </xsl:if>
    Notification sent by Tealeaf Alert Service (<xsl:value-of
select="AlertEngineVersion"/>)
    Created on <xsl:value-of select="AlertEngineTimeStamp"/>
</xsl:template>

</xsl:stylesheet>

```

XML alert message format

Below are the attributes of the XML messages that are generated by the Alert Service for event alerts.

Attribute

Description

AlertServiceAlertMessage

Identifier for the type of message you are configuring.

- Default - selects the Body formatting for all messages except Top Movers
- TopMovers - selects the Body formatting for Top Movers
- SubjectDefault - selects the Subject line formatting for all messages
- ReportsHead - (Top Movers alerts only) selects the header of a generated report
- ReportsBody - (Top Movers alerts only) selects the body of a generated report
- ReportsTail - (Top Movers alerts only) selects the detail of a generated report

AlertID

Internal identifier for the alert.

- This value is displayed in the tooltip in the Alerts tab.

EventID

Internal identifier for the event.

- This value is displayed in the tooltip in the Events tab. See Chapter 3, “TEM Events tab,” on page 45.

AlertTime

Time that alert occurred in Tealeaf system time.

Title Subject of the alert email.

SubTitle

You can use this field to provide a subtitle for the alert.

AlertTitle

Title of the alert

EventTitle

Title of the event

AlertGroup

Group to which the alert belongs

ThresholdValue

The threshold value for the alert

LastValue

The last recorded value for the event at the time when the alert was generated

ThresholdType

The Direction value in the Configuration tab. Set to Positive or Negative.

ThresholdCategory

Category for the alert: Alert or Warning.

- By default, all alerts are defined as Alert type. If the Enable Warnings check box is selected, a {Warning} type alert is generated when the specified thresholds are exceeded.

AlertTimeStamp

Timestamp when the alert was generated. Example: Monday, July 02, 2010 08:00.

AlertTimeStampShort

Timestamp when the alert was generated in short format. Example: 07/02/10 08:00:00.

ReportPeriod

Timestamp of the beginning of the alert Interval.

PortalURL

URL to reach the Portal login screen

AlertEngineVersion

Build number of the version of the alert engine

AlertEngineTimeStamp

Timestamp that is generated by the alert engine on last alert evaluation run

- The alert engine evaluates active alerts every minute.

CanistersLagging

If alert information obtained from one or more individual Canisters is delayed for longer than 10 minutes, the names of those Canisters are listed here in comma-separated format.

LaggingCount

Count of lagging Canisters

CanistersStopped

If alert information from one or more individual Canisters was not available for more than 3 minutes, the names of those Canisters are listed here in comma-separated format.

StoppedCount

Count of stopped Canisters

Alert service XSL for Canister alerts

For alerts based on Canister metrics, the following XSL provides an example configuration, including the available data fields, for formatting Canister alerts.

Click to display default XSL.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="text" indent="no" omit-xml-declaration="yes"
encoding="iso-8859-1"/>
  <!-- XML format for Alert Messaging -->
  <!-- <AlertServiceAlertMessage MessageType="Default"> -->
  <!-- <AlertServiceAlertMessage MessageType="TopMovers"> -->
  <!-- <AlertServiceAlertMessage MessageType="SubjectDefault"> -->
  <!-- <AlertServiceAlertMessage MessageType="ReportsHead"> -->
  <!-- <AlertServiceAlertMessage MessageType="ReportsBody"> -->
  <!-- <AlertServiceAlertMessage MessageType="ReportsTail"> -->
  <!-- <AlertID>1</AlertID> -->
  <!-- <EventID>1</EventID> -->
  <!-- <AlertTime>0</AlertTime> -->
  <!-- <Title>*** TEALEAF ALERT ***</Title> -->
  <!-- <SubTitle>WARNING DETAILS</SubTitle> -->
  <!-- <AlertTitle>Alert Name</AlertTitle> -->
  <!-- <EventTitle>Event Name</EventTitle> -->
  <!-- <AlertGroup>Alert Group</AlertGroup> -->
  <!-- <ThresholdValue>1.0</ThresholdValue> -->
  <!-- <LastValue>2.0</LastValue> -->
  <!-- <ThresholdType>Positive or Negative</ThresholdType> -->
  <!-- <ThresholdCategory>Alert or Warning</ThresholdCategory> -->
  <!-- <AlertTimeStamp>Monday, July 02, 2007 08:00</AlertTimeStamp> -->
  <!-- <AlertTimeStampShort>07/02/07 08:00:00</AlertTimeStampShort> -->
  <!-- <ReportPeriod>Monday, July 02, 2007 08:00</ReportPeriod> -->
  <!-- <PortalURL>http://localhost/portal</PortalURL> -->
  <!-- <AlertDateForReportBuilder>2012-06-30</AlertDateForReportBuilder> -->
  <!-- -->
  <!-- <AlertEngineVersion>4.0.0.4500</AlertEngineVersion> -->
  <!-- <AlertEngineTimeStamp>Monday, July 02, 2007 08:00:00 -->
</AlertEngineTimeStamp> -->
  <!-- <CanistersLagging>george, sam, bobo</CanistersLagging> -->
  <!-- <LaggingCount>3</LaggingCount> -->
  <!-- <CanistersStopped>fox, hound</CanistersStopped> -->
  <!-- <StoppedCount>2</StoppedCount> -->
  <!-- The below are only populated for MessageType="TopMovers" -->
  <!-- <Frequency>Hourly or Daily</Frequency> -->
  <!-- <ReportID>1</ReportID> -->
  <!-- <DimensionID>1</DimensionID> -->
  <!-- <DimValueID>1,2,3 ... </DimValueID> -->
  <!-- <ReportTitle>Report Name</ReportTitle> -->
  <!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
  <!-- <DimensionTitle>Dimension Name</DimensionTitle> -->
  <!-- <DimValueTitle>Value0 Name,Value1 Name </DimValueTitle> -->
  <!-- </AlertServiceAlertMessage> -->

  <xsl:template match="AlertServiceAlertMessage">
    <xsl:choose>
      <xsl:when test="@MessageType[.='Default']">
```

```

        <xsl:call-template name="MailBodyDefault"/>
    </xsl:when>
    <xsl:when test="@MessageType[.='TopMovers']">
        <xsl:call-template name="MailBodyTopMovers"/>
    </xsl:when>
    <xsl:when test="@MessageType[.='SubjectDefault']">
        <xsl:call-template name="MailSubjectDefault"/>
    </xsl:when>
</xsl:choose>
</xsl:template>

<!-- Main Text Subject. Remember, the space and new lines are taken
<!-- The Subject line is truncated to yield a maximum length of 64
characters -->

    <xsl:template name="MailSubjectDefault">Tealeaf Event <xsl:value-of
select="ThresholdCategory"/> - <xsl:value-of
select="EventTitle"/></xsl:template>

    <!-- Main Text Body. Remember, the space and new lines are
    taken literally! -->

    <xsl:template name="MailBodyDefault">
-----
- <xsl:value-of select="Title"/>
- <xsl:value-of select="SubTitle"/>
-----
<xsl:if test="CanistersLagging">
- Slow Servers      : <xsl:value-of select="CanistersLagging"/>
</xsl:if>
<xsl:if test="CanistersStopped">
- Silent Servers    : <xsl:value-of select="CanistersStopped"/>
</xsl:if>
- Event              : <xsl:value-of select="EventTitle"/>
- Alert              : <xsl:value-of select="AlertTitle"/>
- Threshold          : <xsl:value-of select="ThresholdValue"/>
- Last Value         : <xsl:value-of select="LastValue"/>
- Threshold Type     : <xsl:value-of select="ThresholdType"/>
- Generated At       : <xsl:value-of select="AlertTimeStamp"/>
- Report Period      : <xsl:value-of select="ReportPeriod"/>
QUICK LINK
- View Alert Status : <xsl:value-of
select="PortalURL"/>/alerts.aspx?alertid=<xsl:value-of
select="AlertID"/>&uniqueid=<xsl:value-of
select="EventID"/>&alerttime=<xsl:value-of select="AlertTime"/>
<xsl:if test="AlertDateForReportBuilder">
- View Event Counts : <xsl:value-of
select="PortalURL"/>/ReportBuilder.aspx?dl=<xsl:value-of
select="AlertDateForReportBuilder"/>&eventid0=<xsl:value-of
select="EventID"/>
</xsl:if>
<xsl:if test="CanistersLagging or CanistersStopped">
- Notes              : This alert has been delayed due to extra time
required to process event data from the listed Slow or Silent Servers.
Event data is still recorded as occurring at the correct times
but the recording process is delayed. As a result, this will be
the only notification for this specific alert during the delayed
processing period. Please refer to the Alert Service Debug Log
and Windows Application Event Log for more details.
</xsl:if>
-----
Notification sent by Tealeaf Alert Service (<xsl:value-of
select="AlertEngineVersion"/>)
Timestamp: <xsl:value-of select="AlertEngineTimeStamp"/>
</xsl:template>

</xsl:stylesheet>

```

XML Canister alert message format

Below is attribute information for the XML generated for Canister alerts.

Attribute	Description

AlertServiceAlertMessage	Identifier for the type of message you are configuring. • Default - selects the Body formatting for all messages except Top Movers • TopMovers - selects the Body formatting for Top Movers • SubjectDefault - selects the Subject line formatting for all messages • ReportsHead - (Top Movers alerts only) selects the header of a generated report • ReportsBody - (Top Movers alerts only) selects the body of a generated report • ReportsTail - (Top Movers alerts only) selects the detail of a generated report

AlertID	Internal identifier for the alert. • This value is displayed in the tooltip in the Alerts tab.

EventID	Internal identifier for the event. • This value is displayed in the tooltip in the Events tab. See Chapter 3, "TEM Events tab," on page 45.

AlertTime	Time that alert occurred in Tealeaf system time.

Title	Subject of the alert email.

SubTitle	You can use this field to provide a subtitle for the alert.

AlertTitle	Title of the alert

EventTitle	Title of the event

AlertGroup	Group to which the alert belongs

ThresholdValue	The threshold value for the alert

LastValue	The last recorded value for the event at the time when the alert was generated

ThresholdType	The Direction value in the Configuration tab. Set to Positive or Negative.

ThresholdCategory	Category for the alert: Alert or Warning. • By default, all alerts are defined as Alert type. If the Enable Warnings check box is selected, a Warning type alert is generated when the specified thresholds are exceeded.

AlertTimeStamp

Timestamp when the alert was generated. Example: Monday, July 02, 2010 08:00.

AlertTimeStampShort

Timestamp when the alert was generated in short format. Example: 07/02/10 08:00:00.

ReportPeriod

Timestamp of the beginning of the alert Interval.

PortalURL

URL to reach the Portal login screen

AlertDateforReportBuilder

Date that is passed to the Report Builder for rendering the report

AlertEngineVersion

Build number of the version of the alert engine

AlertEngineTimeStamp

Timestamp that is generated by the alert engine on last alert evaluation run

- The alert engine evaluates active alerts every minute.

CanistersLagging

If alert information obtained from one or more individual Canisters is delayed for longer than 10 minutes, the names of those Canisters are listed here in comma-separated format.

LaggingCount

Count of lagging Canisters

CanistersStopped

If alert information from one or more individual Canisters was not available for more than 3 minutes, the names of those Canisters are listed here in comma-separated format.

StoppedCount

Count of stopped Canisters

Adding links to reports

Through the XSL, you can configure links to be added to the alert, enabling access to alert status information and a generated event count report. Below, you can review the example configuration for Canister alerts.

Note: To disable these links, comment out this code.

QUICK LINK

```
- View Alert Status : <xsl:value-of
select="PortalURL"/>/alerts.aspx?alertid=<xsl:value-of
select="AlertID"/>&uniqueid=<xsl:value-of
select="EventID"/>&alerttime=<xsl:value-of select="AlertTime"/>

<xsl:if test="AlertDateForReportBuilder">

- View Event Counts : <xsl:value-of
select="PortalURL"/>/ReportBuilder.aspx?d1=<xsl:value-of
select="AlertDateForReportBuilder"/>&eventid0=<xsl:value-of
select="EventID"/>
```

Alert service XSL for Top Mover report alerts

At the bottom of the Alert Service XSL for Canister alerts, you can review the sample configuration for the Top Mover report alert type.

Click to display default XSL.

```
<!-- XML format for Report Messaging -->
  <!-- <AlertServiceReportMessage> -->
    <!-- <Head> -->
      <!-- <Title>*** TEALEAF ALERT ***</Title> -->
      <!-- <SubTitle>WARNING DETAILS</SubTitle> -->
      <!-- <AlertTitle>Alert Name</AlertTitle> -->
      <!-- <ReportTitle>Report Name</ReportTitle> -->
      <!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
      <!-- <AlertID>1</AlertID> -->
      <!-- <EventID>1</EventID> -->
      <!-- <ReportID>1</ReportID> -->
      <!-- <PortalURL>http://localhost/portal</PortalURL> -->
      <!-- <Frequency>Hourly or Daily</Frequency> -->
      <!-- <Day>YYYY-MM-DD</Day> -->
      <!-- <Hour>0 to 23</Hour> -->
    <!-- </Head> -->
    <!-- <Body> -->
      <!-- <EventTitle>TopMover Name</EventTitle> -->
      <!-- <DimensionTitle>Dimension Name</DimensionTitle> -->
      <!-- <DimValueTitle>Value Name </DimValueTitle> -->
      <!-- <TopMoverID>1</TopMoverID> -->
      <!-- <DimensionID>1</TopMoverID> -->
      <!-- <DimValueID>1</DimValueID> -->
      <!-- <LastValue>2.0</LastValue> -->
      <!-- <LastCount>1000</LastCount> -->
      <!-- <PortalURL>http://localhost/portal</PortalURL> -->
    <!-- </Body> -->
    <!-- <Tail> -->
      <!-- <ThresholdValue>1.0</ThresholdValue> -->
      <!-- <AlertThreshold>1.0</AlertThreshold> -->
      <!-- <WarningThreshold>1.0</WarningThreshold> -->
      <!-- <ThresholdType>Positive or Negative</ThresholdType> -->
      <!-- <ThresholdCategory>Alert or Warning</ThresholdCategory> -->
      <!-- <AlertTime>0</AlertTime> -->
      <!-- <AlertTimeStamp>Monday, July 02, 2007 08:00</AlertTimeStamp> -->
    <!-- <AlertTimeStampShort>07/02/07 08:00:00</AlertTimeStampShort> -->
    <!-- <ReportPeriod>Monday, July 02, 2007 08:00</ReportPeriod> -->
    <!-- <PortalURL>http://localhost/portal</PortalURL> -->
    <!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
    <!-- <AlertEngineVersion>4.0.0.4500</AlertEngineVersion> -->
    <!-- <AlertEngineTimeStamp>Monday, July 02, 2007 08:00:00 -->
  </AlertEngineTimeStamp> -->
  <!-- <Frequency>Hourly or Daily</Frequency> -->
  <!-- <Day>YYYY-MM-DD</Day> -->
  <!-- <Hour>0 to 23</Hour> -->
  <!-- </Tail> -->
  <!-- </AlertServiceReportMessage> -->

  <xsl:template match="/">
    <xsl:apply-templates />
  </xsl:template>

  <xsl:template match="/AlertServiceReportMessage">
    <xsl:apply-templates />
  </xsl:template>

  <xsl:template match="/AlertServiceReportMessage/Head">
    -----
```



```

- <xsl:value-of select="Title"/>
- <xsl:value-of select="SubTitle"/>
-----
Alert:      <xsl:value-of select="AlertTitle"/>
<xsl:if test="not(ReportTitle='')">
Report:      <xsl:value-of select="ReportTitle"/>
</xsl:if>
</xsl:template>

<xsl:template match="/AlertServiceReportMessage/Body">
TopMover:      <xsl:value-of select="EventTitle"/>
<xsl:if test="not(DimensionTitle='')">
Dimension:      <xsl:value-of select="DimensionTitle"/>
</xsl:if>
<xsl:if test="not(DimValueTitle='')">
Dim Value:      <xsl:value-of select="DimValueTitle"/>
</xsl:if>
Last Value:      <xsl:value-of select="LastValue"/>
<xsl:choose>
<xsl:when test="not(DimValueID='0')">
View Event      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="TopMoverID"/>?dimid0=<xsl:value-of
select="DimensionID"/>?<xsl:value-of select="DimValueID"/>
</xsl:when>
<xsl:when test="not(DimensionID='0')">
View Event      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="TopMoverID"/>?dimid0=<xsl:value-of select="DimensionID"/>
</xsl:when>
<xsl:otherwise>
View Event      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?devid0=<xsl:value-of
select="TopMoverID"/>
</xsl:otherwise>
</xsl:choose>
</xsl:template>

<xsl:template match="/AlertServiceReportMessage/Tail">
Frequency:      <xsl:value-of select="Frequency"/>
Alert Threshold: <xsl:value-of select="AlertThreshold"/>
Warn Threshold: <xsl:value-of select="WarningThreshold"/>
Threshold Type: <xsl:value-of select="ThresholdType"/>
Generated At:   <xsl:value-of select="AlertTimeStamp"/>
Report Period:  <xsl:value-of select="ReportPeriod"/>
<xsl:if test="not(ReportID='')">
View Report      <xsl:value-of
select="PortalURL"/>/DeviationReports.aspx?reportid=<xsl:value-of
select="ReportID"/>
</xsl:if>
Notification sent by Tealeaf Alert Service (<xsl:value-of
select="AlertEngineVersion"/>)
Created on <xsl:value-of select="AlertEngineTimeStamp"/>
</xsl:template>

```

XML Top Mover alert message format

In addition to the configuration items for event alert messages, the following items are populated for Top Movers alerts and Top Mover report alerts.

Attribute	Description

Frequency

Type of Top Mover: Daily or Hourly

AlertThreshold

Threshold value that must be attained to generate an alert.

WarnThreshold

Threshold value that must be attained to generate a warning.

ReportID

Internal identifier for the alert, if alert is a Top Mover report alert

DimensionID

Internal identifier for the dimension, if specified

DimValueID

Internal identifier for the dimension value, if specified

ReportTitle

Name of the report title

FullName

Internal identifier for the alert

DimensionTitle

Name of dimension, if specified

DimValueTitle

Name of dimension value, if specified

TopMoverID

Internal identifier for the top mover, if specified

LastCount

Last recorded count for the dimension, if specified

FullName

Internal name of the Top Mover

Day Date stamp in YYYY-MM-DD format

Hour Hour indicator, from 0 (midnight) to 23 (11:00pm)

- This value is set to -1 for daily top movers.

External command shell invocation

Example XSL

The following example file was created by running the Alert Service program, TLAAlertSrv.exe.

It lists all the available data fields and implements an example passing two arguments to a program that might echo the command line to a log file.

The generated AlertShellCmd.xsl should be replaced with the customer's own file that controls execution of the customer application.

Click to display default XSL.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
  <xsl:output method="text" indent="no" omit-xml-declaration="yes"
    encoding="iso-8859-1"/>
```

```

<!-- XML format for Alert Messaging -->
<!-- <AlertServiceAlertMessage MessageType="Default"> -->
<!-- <AlertServiceAlertMessage MessageType="TopMovers"> -->
<!-- <AlertServiceAlertMessage MessageType="SubjectDefault"> -->
<!-- <AlertID>1</AlertID> -->
<!-- <EventID>1</EventID> -->
<!-- <AlertTime>0</AlertTime> -->
<!-- <Title>*** TEALEAF ALERT ***</Title> -->
<!-- <SubTitle>WARNING DETAILS</SubTitle> -->
<!-- <AlertTitle>Alert Name</AlertTitle> -->
<!-- <EventTitle>Event Name</EventTitle> -->
<!-- <AlertGroup>Alert Group</AlertGroup> -->
<!-- <ThresholdValue>1.0</ThresholdValue> -->
<!-- <LastValue>2.0</LastValue> -->
<!-- <ThresholdType>Positive or Negative</ThresholdType> -->
<!-- <ThresholdCategory>Alert or Warning</ThresholdCategory> -->
<!-- <AlertTimeStamp>Monday, July 02, 2007 08:00</AlertTimeStamp> -->
<!-- <AlertTimeStampShort>07/02/07 08:00:00</AlertTimeStampShort> -->
<!-- <ReportPeriod>Monday, July 02, 2007 08:00</ReportPeriod> -->
<!-- <PortalURL>http://localhost/portal</PortalURL> -->
<!-- <AlertEngineVersion>4.0.0.4500</AlertEngineVersion> -->
<!-- <AlertEngineTimeStamp>Monday, July 02, 2007 08:00:00 -->
</AlertEngineTimeStamp> -->
<!-- <CanistersLagging>george, sam, bobo</CanistersLagging> -->
<!-- <LaggingCount>3</LaggingCount> -->
<!-- <CanistersStopped>fox, hound</CanistersStopped> -->
<!-- <StoppedCount>2</StoppedCount> -->
<!-- The below are only populated for MessageType="TopMovers" -->
<!-- <Frequency>Hourly or Daily</Frequency> -->
<!-- <ReportID>1</ReportID> -->
<!-- <DimensionID>1</DimensionID> -->
<!-- <DimValueID>1</DimValueID> -->
<!-- <ReportTitle>Report Name</ReportTitle> -->
<!-- <FullName>NAMESPACE.INTERNALNAME</FullName> -->
<!-- <DimensionTitle>Dimension Name</DimensionTitle> -->
<!-- <DimValueTitle>Value Name </DimValueTitle> -->
<!-- </AlertServiceAlertMessage> -->

<!-- Note: only the Default selection is currently effective, Test is
never invoked-->
<xsl:template match="AlertServiceAlertMessage">
  <xsl:choose>
    <xsl:when test="@MessageType[.='Default']">
      <xsl:call-template name="CommandString"/>
    </xsl:when>
    <xsl:when test="@MessageType[.='TopMovers']">
      <xsl:call-template name="CommandString"/>
    </xsl:when>
    <xsl:when test="@MessageType[.='Test']">
      <xsl:call-template name="CommandString"/>
    </xsl:when>
  </xsl:choose>
</xsl:template>

<!--Main Text body. Remember, the space and new lines are taken literally!
-->
<xsl:template name="CommandString">
LogShell AlertLevel=<xsl:value-of select="ThresholdCategory"/> LogVersion=1
"Description=<xsl:value-of select="EventTitle"/>"
</xsl:template>

<!-- The following is a method to invoke a batch file rather than an
application. -->
<!-- Note that parameters of the form name=value must be written as"name=value".
-->
<!-- -->
<!-- <xsl:template name="CommandString"> -->

```

```

<!--cmd /c test.bat "AlertLevel=<xsl:value-of select="ThresholdCategory"/>
"LogVersion=1" "Description=<xsl:value-of select="EventTitle"/>" -->
<!-- </xsl:template> -->
<!-- -->
<!-- The test.bat file below will append the three name=value params to the
file -->
<!-- test.txt and then execute the LogShell program as does the non-batch
example. -->
<!-- -->
<!-- !!!The exit command is important. Without it, multiple cmd.exe's
will persist!!! -->
<!-- -->
<!-- echo %1 %2 %3 >> test.txt -->
<!-- LogShell %1 %2 %3 -->
<!-- exit -->
<!-- -->
</xsl:stylesheet>

```

Running programs

The Alert Service supports a method for running an external program to facilitate custom processing of alerts. An external program can be called on each occurrence of an alert or warning, with the same data fields that are supplied to the other forms of messaging, such as email and Event Log.

Note: The program to be started must be an .exe file.

Selection of data and formatting of the command line are defined through AlertShellCmd.xsl.

Execution method

When an alert occurs and the Shell Command check box for that alert was selected, Alert Service runs a CreateProcess() statement that causes execution of the custom program with command-line arguments obtained from AlertShellCmd.xsl and with Creation Flags consisting of the following:

CREATE_NO_WINDOW CREATE_NEW_CONSOLE NORMAL_PRIORITY_CLASS

Typically, a custom program processes the command line and then exits.

Running batch files

The Alert Service can also run Windows command-line .bat files.

- When the batch file runs, the active directory is the same one that contains the TlAlertSrv.exe that is typically <Tealeaf_install_directory>\Portal.

Note: Each exit point of a batch file must include an exit command. Otherwise, multiple instances of cmd.exe may persist.

When inserted into AlertShellCmd.xsl, the following configuration starts a batch file called test.bat. Parameters in the form of name=value must be written as "name=value".

```

<xsl:template name="CommandString">
cmd /c test.bat "AlertLevel=<xsl:value-of select="ThresholdCategory"/>"
"LogVersion=1" "Description=<xsl:value-of select="EventTitle"/>"
</xsl:template>

```

If the test.bat file is the following example, it appends the three names value parameters to the file test.txt before running the LogShell program.

```
echo %1 %2 %3 >> test.txt
LogShell %1 %2 %3
exit
```

Tealeaf resources

Tealeaf provides a broad library of resources, including web conferences\, on-demand tutorials, and report templates, for use with your Tealeaf solution. These resources span the breadth of experience in your enterprise with Tealeaf, from novice users to Tealeaf administrators and developers and best practice experts.

- See <https://community.tealeaf.com/display/res>.

The following resources are available for this topic.

The following areas are good to bookmark and to check periodically for updates.

Resource

Description

[https://community.tealeaf.com/display/res/](https://community.tealeaf.com/display/res/Create+an+Alert+for+Proactive+Awareness)

Create+an+Alert+for+Proactive+Awareness

Have Tealeaf notify you about usability issues using an Event alert.

<https://community.tealeaf.com/display/res/Home>

Home page for Tealeaf Resources area, where you can access best practices, web conferences, tutorials, classroom training information, and more. Details are below.

<https://community.tealeaf.com/display/res/Best+Practices>

Home page of Tealeaf's best practices, including web conferences, white papers, report templates, and more.

<https://community.tealeaf.com/display/res/Best+Practice+Report+Templates>

(<https://community.tealeaf.com/display/res/Report+Templates+v7>,

<https://community.tealeaf.com/display/res/Report+Templates+v8>)

Report templates available for download by Tealeaf Release.

<https://community.tealeaf.com/display/res/Best+Practice+Webinars>

Tealeaf's Best Practice Webcast Series provides a series of web conferences on how to use Tealeaf capabilities to enhance your customer's experience.

<https://community.tealeaf.com/display/res/Webinars+for+New+Users>

All available web conferences for new users

<https://community.tealeaf.com/display/res/Webinars+for+Advanced+Users>

All available web conferences for advanced users

<https://community.tealeaf.com/display/res/On-Demand+Tutorials>

Tealeaf publishes a series of online tutorials on a range of topics, from basic user search exercises to technical topics, such as privacy rules creation.

<https://community.tealeaf.com/display/kb>

The Tealeaf Knowledge Base contains a large library of articles on troubleshooting and performance topics that are related to Tealeaf.

Chapter 8. TEM Top Movers Tab

Through the Tealeaf Event Manager, you can indicate the events, dimensions, and ratios whose variations you wish to track over time. Through the Top Movers tab, you can track the metrics that are major movers on your site.

By default, you can track standard deviations for daily event changes only.

- The Top Movers tab is available if you have licensed IBM Tealeaf cxImpact.
- If you have licensed IBM Tealeaf cxView, you can elect to track events, dimensions, and ratios on an hourly or daily basis. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

Note: IBM Tealeaf cxView is a separately licensable component of the IBM Tealeaf CX system. please contact your IBM Tealeaf representative.

The data for computing standard deviations can significantly impact your storage requirements. For this reason, standard deviations must be configured for each object you wish to monitor.

- To create or edit deviations, click the Top Movers tab in the Tealeaf Event Manager.

When a mover is configured and enabled, Tealeaf continuously calculates the standard deviations for the selected data. When sufficient data has been accumulated, you can generate reports on these deviations.

- See "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.

Limitations

The following limitations apply to the use of movers.

- Movers are only calculated for counts of events, not event values. For dimensions, movers are calculated on the count of values.

Note: The creation and reporting on Hourly, dimension, and ratio movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

- To create Top Movers for dimensions, you must specify a whitelist and select values to include in deviations for the following reasons:
 - To limit data storage, you may want to limit the whitelist values to include only the most statistically significant ones. For example, from a list of 50 states, sales from only 10 of them may provide sufficient data for your mover calculations.
 - There is a system-wide limit on the number of movers that can be calculated. By limiting mover calculations to the important dimensional values, you preserve available mover calculations for important data.

Note: If a dimension does not have a whitelist and items in the list that were selected for tracking in the Top Mover, the dimension does not appear among the list of objects for which you can create a Top Mover. See Chapter 5, "TEM Dimensions Tab," on page 217.

Overview

Active	Event or Ratio	Dimension	Freq	Ratio	Modified	
✓	[CF] Fire Server Name + Hit ID		Daily		12/19/2011 18:10:24	
✓	[CF] Fire Server Name + Hit ID		Hourly		12/19/2011 18:10:24	
✓	Costly Session - Too Big		Daily		12/19/2011 18:10:24	
✓	Costly Session - Too Big		Hourly		12/19/2011 18:10:24	
✓	Costly Session - Too Long		Daily		12/19/2011 18:10:24	
✓	Costly Session - Too Long		Hourly		12/19/2011 18:10:24	
✓	Costly Session - Too Many Hits		Daily		12/19/2011 18:10:24	
✓	Costly Session - Too Many Hits		Hourly		12/19/2011 18:10:24	
✓	CUI Hit Count		Daily		12/19/2011 18:10:24	
✓	CUI Hit Count		Hourly		12/19/2011 18:10:24	
✓	cxReveal - Status Code Attribute P		Hourly		12/19/2011 18:10:24	
✓	cxReveal - Status Code Attribute P		Daily		12/19/2011 18:10:24	
✓	cxReveal Referrer Populator		Daily		12/19/2011 18:10:24	
✓	cxReveal Referrer Populator		Hourly		12/19/2011 18:10:24	
✓	cxReveal TLT SID Populator		Daily		12/19/2011 18:10:24	
✓	cxReveal TLT SID Populator		Hourly		12/19/2011 18:10:24	
✓	Fact Count		Daily		12/19/2011 18:10:24	

On the left side of the screen, you can access the available set of movers or filter the display to show only the movers of interest to you. The selection and filters that you specify are applied to the list of movers.

- See “Mover Groups panel” on page 335.

The main panel displays the list of movers for the currently configured view.

- See “Mover list.”

Above the main pane, you can select any of the following commands.

- To create a mover, click **New Mover**. See “Creating a mover” on page 338.
- To create a ratio, click **New Ratio**. See “Creating or editing a ratio” on page 340.

Note: The creation and reporting on ratio movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See “Enhancements to Top Movers for cxView” in the *IBM Tealeaf cxView User Manual*.

- To display inactive items, click the **Show Inactive** check box.
- To save changes to all objects you drafted in the Tealeaf Event Manager, click **Save Changes**. See Chapter 1, “Tealeaf Event Manager,” on page 1.
 - For more information about the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.

Mover list

In the Mover list, you can review all of the available movers for the currently selected mover group.

- To step through the list of items, press the Up or Down arrows on your keyboard.
- To scroll through the list, press the Page Up or Page Down keys on your keyboard.
- To select an item, click it or highlight using keyboard navigation.
- To edit an item (ratios only), press ENTER or double-click it.
- On the left side of the screen, you can click a mover group to display a different set of related movers. See “Mover Groups panel” on page 335.

- To sort the list by a column, click the column header. To sort the list in the reverse order, click the column header again.
- A context menu is available for selected items. To see the context menu, right-click one or more items in the list. See “Mover list context menu.”
- To select multiple items in the list, press SHIFT or CTRL and select the items.
- Items are highlighted in the list that is based on the current edit state of the item. See Chapter 3, “TEM Events tab,” on page 45.

Column

Description

Active A check mark\ appears in this column if the object is active.

Event or Ratio

The event or ratio for which the deviations are calculated

- If the deviation includes a specific dimension, the display name of the dimension is also listed in parentheses.

Dimension

The dimension for the mover

Freq The frequency of when the deviation is calculated

Ratio A check mark indicates that the mover is a ratio.

Modified

Timestamp of when the deviation was last modified

Mover list context menu

When you right-click a mover in the Mover List, the following commands are available:

Command

Description

Make Inactive

Make the selected mover inactive.

Delete Delete a mover. Before the delete is permitted, you must remove the dependencies between the event and other event-related objects.

Note: Deleting an object removes it from the server. A deleted object cannot be restored.

- You cannot delete Tealeaf system objects.

Revert Revert the changes to the mover that were not committed to the version stored on the server. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Export Item

Mark item for inclusion in the next export. Items can be exported through the **Export** tab in the Event Manager. See Chapter 9, “TEM Import-Export Tabs,” on page 351.

Mover Groups panel

In the left column of the Movers tab, you can review the mover groups that were created or provided by Tealeaf.

- In parentheses next to the mover group, you can review the total number of calculations for all movers in that group. For an individual mover, the number of calculations is 1 plus the total number of whitelist items that are flagged for tracking, if a dimension was selected.
- The maximum value indicates the total number of permitted top movers.

Filter Top Movers

All Top Movers (12)	
Daily Top Movers (11)	Max 10,000
Hourly Top Movers (1)	Max 10,000

Filtering movers

To filter the list of movers in the **Movers** panel, enter a string in the Filter Top Movers textbox and press RETURN. The filter is applied in real time to display only the matching movers.

- Leading and trailing blank spaces are not removed from the filter.

Mover groups

The following mover groups are pre-defined:

- All Movers
- Daily Movers
- Hourly Movers

Note: The creation and reporting on Hourly movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

These groups cannot be edited, and new mover groups cannot be created.

Creating a mover

To create a mover, click **New Mover**.

- Since movers are directly tied to an event, you cannot edit a mover.

Add Movers

Frequency: Daily

☐ Show All Events

- + All Events
- + Default
- + Imported Events
- Tealeaf Standard Events
 - ☒ Page Count (WorkingSet-NoDim)
 - ☒ TLT_URL
 - ☒ URL(0)
 - ☐ Request Cancelled (WorkingSet-NoDim)
 - ☐ Page Generation (WorkingSet-NoDim)
 - ☐ Page Generation Max (WorkingSet-NoDim)
 - ☐ Page Generation
 - + ☐ Page Tracking
 - + ☐ Http 400 - Bad Request
 - + ☐ Http 401 - Unauthorized
 - + ☐ Http 402 - Payment Required

☒ View by Labels

Save Draft **Cancel**

- Select the frequency of the mover from the drop-down. Hourly movers require more storage.

Note: The creation and reporting on Hourly movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

Note: You may create two movers for the same event using different frequencies.

- To save a draft of your new mover, click **Save Draft**.

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, "Tealeaf Event Manager," on page 1.

- To cancel your new mover, click **Cancel**.

To create the mover:

1. Select how frequently to calculate the mover:

- Daily
- Hourly

Note: The creation and reporting on Hourly movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

2. Select the item whose movement you want to calculate. You may select one or more events or dimensions.

Note: You cannot create movers for events that are not configured to be searchable and reportable. See Chapter 3, "TEM Events tab," on page 45.

Note: The creation and reporting on dimension movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

- To view the list by event label, click the View by Labels check box.
 - To display all active and inactive events, clear the **Filter** textbox and click the Show All Events check box.
 - To filter the list of events, start typing text in the Filter textbox.
3. You may expand event nodes to display and select the dimensions for which to calculate movers.
 - You may add multiple movers at the same time. See "Selecting a specific dimension for the Mover."
- To save your mover as a draft, click **Save Draft**
 - To cancel and quit, click **Cancel**.

Selecting a specific dimension for the Mover

Note: The creation and reporting on dimension movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

After you selected the event upon which to create your mover, you may optionally select the specific dimension of the event whose values are used in the mover calculation.

Below, you can see an example structure.

```
+ Event 1 Name
  + Report Group 1 Name
    + Dimension 1 Name
    + Dimension 2 Name
    + Dimension 3 Name
  + Report Group 2 Name
```

- + Dimension 1 Name
 - + Dimension 2 Name
- + Event 2 Name
 - + Report Group 1 Name
 - + Dimension 1 Name
 - + Dimension 2 Name

Note: If you are creating a ratio, only the dimensions that are shared between the numerator event and the denominator event are available for selection.

Note: After you select a dimension for one event, the event list is filtered and only shows other events that use the same dimension.

Auto-creation of Top Movers

Top Movers must be manually enabled for each event and dimension whose changes in values you want to track.

Optionally, you can choose to enable auto-creation and tracking of each active event and dimension.

- When enabled, Top Movers are created for all currently active events and dimensions.
 - Top Movers are auto-created only for event objects that are configured to be searchable & reportable.
- Top Movers are also created for all later created events and dimensions.
- Depending on the number of events and dimensions in your environment, auto-creation of Top Movers may have implications on data storage.
- See “Data management for Top Movers” on page 343.

Creating or editing a ratio

You can also create ratios between selected events and dimensions.

- To add a ratio, click **New Ratio**.

Note: The creation and reporting on ratio movers is an enhancement that is associated with IBM Tealeaf cxView, a separately licensable component of the IBM Tealeaf CX system. See "Enhancements to Top Movers for cxView" in the *IBM Tealeaf cxView User Manual*.

Add Ratio: a test ratio

Name:

Description:

Frequency:

☐ Show All Events

- Page Size (WorkingSet-NoDim)
- Page Size Max (WorkingSet-NoDim)
- Hit Count
- CUI Hit Count
- Session Duration (secs)
- Session Size (MB)
- Session Request KB
- Session Response MB
- Request Cancel total count for session
- Page Generation total for session
- Page Generation Max for session
- Page Network Trip total for session
- Page Network Trip Max for session
- Page Round Trip total for session
- Page Round Trip Max for session
- Page Size total for session
- Page Size Max for session
- Costly Session - Too many hits
- Costly Session - Too big
- Costly Session - Duration too long

☒ View by Labels

Ratios enable you to calculate deviations between two events or two dimensions.

- **Event ratios:** If you add an event to the numerator or the denominator, you cannot add a dimension to be the other denominator or numerator.
- **Dimension ratios:** If you want to calculate dimension deviations on a ratio, you must add a dimension to the numerator or denominator. You are then restricted to adding only events that share the previously selected dimension as the other element of the ratio. You must pick the specific fact/report group for the second element.

For example, to compute a ratio between Abandon Cart and Checkout by state, you must select the following as the denominator:

+ Checkout
 + Demographics
 + State

After you select the State dimension, you are restricted to adding to the numerator only events that contain the State dimension. In our example, you would select the following as the numerator:

+ Abandon Cart
 + Report Group
 + State

To create a ratio:

1. Enter a name for the ratio.

2. Enter a meaningful description of the ratio. You might want to include the names of the events or dimensions that are part of the ratio.
3. Select how frequently to calculate the ratio:
 - Daily
 - Hourly
4. Select the items whose ratio you want to calculate.
 - To view the list by event label, click the **View by Labels** check box.
 - To display all active and inactive events, clear the **Filter** textbox and click the **Show All Events** check box.
 - To filter the list of events, start typing text in the Filter textbox.
5. To add a numerator, select an event and click the upper |> button. The event is added as a numerator.
 - To select a dimension for the ratio, click the arrow on the right side of the numerator to display the menu.
6. To add a denominator, select an event and click the lower |> button. The event is added as a denominator.
 - To save your ratio as a draft, click **Save Draft**

Note: Saving a draft saves the item to the session cache on the server. Changes must be committed before they are applied to the incoming session data. See Chapter 1, "Tealeaf Event Manager," on page 1.

- To cancel and quit, click **Cancel**.

Portal Messages

Hourly Top Movers are being automatically created by the system as events are created and/or modified.

This message is displayed at the top of the Top Movers tab when auto-creation of hourly Top Movers was enabled. Whenever a new event or event + dimension combination is created, an hourly Top Mover is created and enabled to track changes in values for the newly created event object.

- Auto-creation of Top Movers is enabled through the Portal.
- See "Data management for Top Movers" on page 343.

Daily Top Movers are being automatically created by the system as events are created and/or modified.

This message is displayed at the top of the Top Movers tab when auto-creation of daily Top Movers was enabled. Whenever a new event or event + dimension combination is created, a daily Top Mover is created and enabled to track changes in values for the newly created event object.

- Auto-creation of Top Movers is enabled through the Portal.
- See "Data management for Top Movers" on page 343.

Reporting on Movers

For more information about reporting for movers, see "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.

Data management for Top Movers

The Top Movers feature enables you to flag the events and dimensions whose deviations you want to track over time. Instead of monitoring the values themselves, Top Movers and corresponding reports can be configured to monitor the changes in values, so that you can focus on the biggest movers and most important metrics in your Tealeaf operating environment.

In Tealeaf environments with many events and dimensions, however, it can be challenging to identify the events and dimensions whose changes are important to monitor. Through the Portal, you can enable the automatic creation and tracking of Top Movers. By monitoring the Top Movers that are most active across all of your events and dimensions, you can enable Tealeaf to alert you on what is important to monitor in your tracked web application.

At the time that this feature is enabled, a Top Movers is created for each active and reportable event and dimension in the system, and tracking for each of them is also enabled. Top Movers are created and enabled for all later created events and dimensions, too. With automatic Top Mover creation, you can automatically monitor these changes in value of any tracked event or dimension at any time.

- Top Movers are created through the Tealeaf Event Manager. For more information about creating Top Movers, see Chapter 8, “TEM Top Movers Tab,” on page 333.
- After the Top Mover data was collected and calculated, it is immediately available for reporting and can be highlighted in one of the available reports for all top movers. For more information about the Top Movers report, see “Analyzing Top Movers” in the *IBM Tealeaf Reporting Guide*.

Note: Enabling this option in an environment with many events and dimensions can affect system performance and storage. This section provides information and approaches to managing data for Top Movers.

Overview of Top Movers calculations

Top Movers are calculated by gathering a statistically significant number of values for the monitored event or dimension over time and then calculating the standard deviation for the sampled values.

Top Movers can be calculated on a daily or an hourly basis. Tracking hourly Top Movers requires more storage capacity.

Note: Tracking of hourly Top Movers is a feature of IBM Tealeaf cxView. See “Enhancements to Top Movers for cxView” in the *IBM Tealeaf cxView User Manual*.

The calculated value of the standard deviation for today is based on the values that are calculated from the configured set of prior days.

- Top Movers may be calculated based on a consecutive days or week-over-week method. The method in use is configurable.
- See “Analyzing Top Movers” in the *IBM Tealeaf Reporting Guide*.

The number of days over which the Top Mover is calculated is called the *rolling window*.

- By default, the minimum number of days to complete a valid calculation is 4, and the maximum is 16.

- The size of the rolling window may impact how quickly the Data Collector is able to complete its updates.
- It does not affect Top Mover data storage.

For more information about Top Mover calculations in general, see "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.

Updates

Depending on the type of Top Mover, calculations are updated according to the following schedule:

- Hourly Top Movers are updated 30 minutes after each hour.
- Daily Top Movers are updated at 4:30 in the morning by default.
 - The scheduling of this Data Collector run is configurable.

Note: Calculations are made based on the timestamps that are associated with the event or dimension recording. See "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.

Storage

Top Movers are stored in the following two database tables in the Reports (TL_REPORTS) database:

- TD_DEVIATION
- TD_DEVIATION_LT

Data implications

For each Top Mover, one row is written to the database for the time interval (per hour/day for hourly Top Movers or per day for daily Top Movers).

See "Data implications of auto-creating Top Movers" on page 346.

Auto-creation of Top Movers

By default, auto-creation of Top Movers is disabled for new installations or upgraded Tealeaf solutions.

Through the Portal, you can enable auto-creation of Top Movers using independent settings for daily and hourly Top Movers.

- Top Movers are not auto-created for some event objects. See "Limitations" on page 345.

Enabling

When auto-creation is enabled for one or both types of Top Movers, the following occurs:

- Top Movers for all active and reportable events and dimensions are immediately created, and tracking is enabled.

Note: For systems with many events and dimensions, the number of Top Movers that must be immediately created may be significant. The creation, subsequent calculations, and data storage requirements may significantly increase. See "Data implications of auto-creating Top Movers" on page 346.

Note: Newly created Top Movers are not displayed in the Portal in draft mode or as new objects. They simply appear after creation. See “Seeing updates in the Event Manager.”

- For events and event + dimension combinations that are provided by Tealeaf, if the event object is marked as being reportable, then a Top Mover is created for Tealeaf event objects.
- Top Movers that were previously disabled remain disabled.
- For any events and dimensions that are created after auto-creation was enabled, corresponding Top Movers are also created, and tracking is enabled.
 - Data is not back-filled after a Top Mover is auto-created.
 - When Top Movers are next calculated, the new Top Mover is included in the calculations. Data is calculated based on the data that is collected since the last Top Mover calculation.

Disabling

Using the same Portal settings, you can disable auto-creation of Top Movers. When auto-creation is disabled, the following occurs:

- All currently active Top Movers are disabled.
 - Top Movers may be re-enabled manually through the Event Manager.
- Top Movers are not created automatically for later created events or dimensions.
 - For new events and dimensions, Top Movers may be created manually through the Event Manager.
 - See Chapter 8, “TEM Top Movers Tab,” on page 333.

Note: If an event is disabled, no corresponding Top Movers are disabled. You must disable them manually.

Limitations

- Top Movers are not auto-created for events that were not defined to be Searchable & Reportable in the Event Manager. See Chapter 3, “TEM Events tab,” on page 45.
- Dimension-based Top Movers are created only when a dimension has a whitelist that is associated with it.
- Top Mover ratios must be manually created through the Event Manager. See Chapter 8, “TEM Top Movers Tab,” on page 333.

Seeing updates in the Event Manager

When a new event or dimension is created, the corresponding Top Mover is created only after the event or dimension definition was committed to the server.

- Auto-created Top Movers are created by the Tealeaf Data Service and published as changes back to the Tealeaf Event Manager.
- Newly auto-created Top Movers appear in the Top Movers tab as entries that were already saved. You do not need to resave auto-created Top Movers.

Note: Depending on when the last Data Collector run occurs, it may take up to 5 minutes for auto-created Top Movers to appear in the Event Manager. They are created and enabled, however, as soon as the Data Service receives confirmation that the corresponding events or dimensions were saved.

- If an event is deleted, the corresponding Top Mover is deleted.

Data implications of auto-creating Top Movers

Suppose your Tealeaf environment contains 1000 events and 500 whitelisted values in dimensions that are referenced by those events. The following sections provide some metrics on the impacts of auto-creating Top Movers and maintaining those Top Movers in your environment.

- Each event and each event + whitelisted dimension value requires one calculation.
 - If the same dimension is referenced in two events, the Top Mover calculations for that dimension are performed twice.
- For 1000 events, each with 500 whitelisted values, the number of calculations is 500,000.

Storage affects of auto-create

Each Top Mover calculation generates another row in the database.

- For the above data set, the number of rows that are generated per run is 500,000 new rows.

Data retention

Top Mover data is retained based on the configured setting for data retention.

- Top Mover (daily)-Days Retain - Number of days to retain daily Top Mover data
 - (365 is the default setting)
- Top Mover (hourly)-Days Retain - Number of days to retain hourly Top Mover data
 - (120 is the default setting)
 - See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Top Mover data trimming must be enabled, or data is never trimmed.

- For more information, see Data Trimming - Top Movers in "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual* settings.

Maximum storage

For our example data set:

Table 51. Storage Impacts of Auto-Create

Type	Rows per Data Collector run	Number of runs per day	Number of days	Total rows
daily	500,000	1	365	18,250,000 rows
hourly	500,000	24	120	1,440,000,000 rows

Calculation time

To estimate the time that is required to complete the calculation for the above data set of 500,000 calculations:

- By default, the number of threads that are used to complete the calculation is 4.
 - With 4 threads in use, the time that is required for each calculation is approximately 1 millisecond.

- With 1 thread in use, the time that is required for each calculation is approximately 4 milliseconds.
- For more information about configuring the number of threads, see “Performance” on page 348.
- So, calculation for the Top Movers in this environment requires approximately 500 seconds, which is 8 minutes 20 seconds.

Resource utilization goals

Note: If you auto-create hourly Top Movers for 1000 events and 500 whitelisted values, the estimated calculation time using 4 calculation threads is 8 minutes 20 seconds. These calculations are performed each hour, which means that 1/6 of the Data Collector's time is spent computing hourly Top Movers. This impact may become an issue for Data Collector to complete its other tasks.

- See “Performance” on page 348.

For hourly Top Movers, the goal is to reduce calculation time to less than 5 minutes. You must balance the number of events x the number of whitelisted dimensions against the number of threads that are used during calculation and the general CPU load at the time of calculation.

- By default, daily Top Movers are scheduled to be recalculated at 4:30 in the morning. You can schedule them to occur at any time. See “Scheduling” on page 349.

Recommended workflow

Ideally, the choice to enable auto-creation of Top Movers should be made immediately after you install or upgrade your system.

Note: If you upgraded your system, you should review your event definitions to determine if any events are no longer needed before you enable auto-creation of Top Movers.

After upgrade, the number of events and dimensions for which Top Movers are automatically created may be smaller than in the future.

Note: If you have more than 500 active events and dimensions, you should follow the workflow for large data sets. See “Recommended workflow for man events.”

Recommended workflow for man events

If your set of active and reportable events and dimensions contains many objects, you may want to follow the workflow below to monitor the effects of enabling Top Movers.

The basic approach is to manually create a set of Top Movers that should generate a representative or even a high volume of data. The effects on Data Collector performance and on Top Mover data storage should be observed for a period. If you feel confident that you have sufficient processor and data storage resources to handle the entire data set, you can enable auto-creation of Top Movers then.

- See “Monitoring Top Mover data growth over time” on page 349.

Settings to enable auto-creation

To enable auto-creation of Top Movers, complete the following steps:

1. Log in to the Portal as an administrator.
2. From the **Portal** menu, select **Tealeaf > Portal Management**.
3. In the left navigation panel, select the IBM Tealeaf CX Settings category.
4. Click **Data Collector**.
5. The following settings must be set to Enabled to auto-create daily or hourly Top Movers:
 - Top Movers - Auto-calculate Daily Top Movers - enable auto-creation of daily Top Movers.
 - Top Movers - Auto-calculate Hourly Top Movers - enable auto-creation of hourly Top Movers.
 - To disable, set the above settings to Disable.

Note: Enabling above settings immediately creates Top Movers for all active and reportable events and dimensions.

- Disabling the above settings disables all Top Movers in the system. Individual Top Movers must be re-enabled.

6. To save changes, click **Save**.

See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Updates in the Top Mover tab

When auto-creation of Top Movers is enabled, a message is displayed at the top of the Top Movers tab.

- See Chapter 8, "TEM Top Movers Tab," on page 333.

Other configuration

The following configuration options may also be useful in determining how to manage auto-creation of Top Movers.

Enabling calculation

In the Data Collector settings, the Top Movers setting must be enabled in order for Top Movers to be calculated at all.

- See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Performance

In the Data Collector settings, the Top Movers - Number of Threads used for calculations setting determines the number of threads that are used by the Data Collector to compute Top Mover calculations.

- By default, this setting is set to 4.
- You can increase the number of threads, which improves the speed of the Data Collector that is run for a set of Top Mover calculations.
- However, using more threads consumes extra system resources, which may affect system performance.
- This setting is applied to both hourly and daily Top Mover calculation runs.

See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.

Scheduling

As needed, you can configure the time of day on the 24-hour clock when daily Top Mover calculations run. Set the value for the Top Movers - Time for Daily Calculation setting in Data Collector settings.

- By default, this time is scheduled for 4:30 in the morning according to the Tealeaf system time zone.
- See "CX Settings" in the *IBM Tealeaf cxImpact Administration Manual*.
- For more information about the system time zone, see "Configuring the System Timezone" in the *IBM Tealeaf CX Configuration Manual*.

Reporting

All hourly or daily Top Movers report

Through the Options dialog of the Top Movers report, you can create a report that contains all hourly or all daily Top Movers.

- See "Analyzing Top Movers" in the *IBM Tealeaf Reporting Guide*.

Monitoring Top Mover data growth over time

In the Reports database, your DBA must monitor the growth of the following tables:

- TD_DEVIATION
- TD_DEVIATION_LT

You can also monitor the overall growth of the Reports database, although that contains quite a bit of other information.

- See "System Status" in the *IBM Tealeaf cxImpact Administration Manual*.

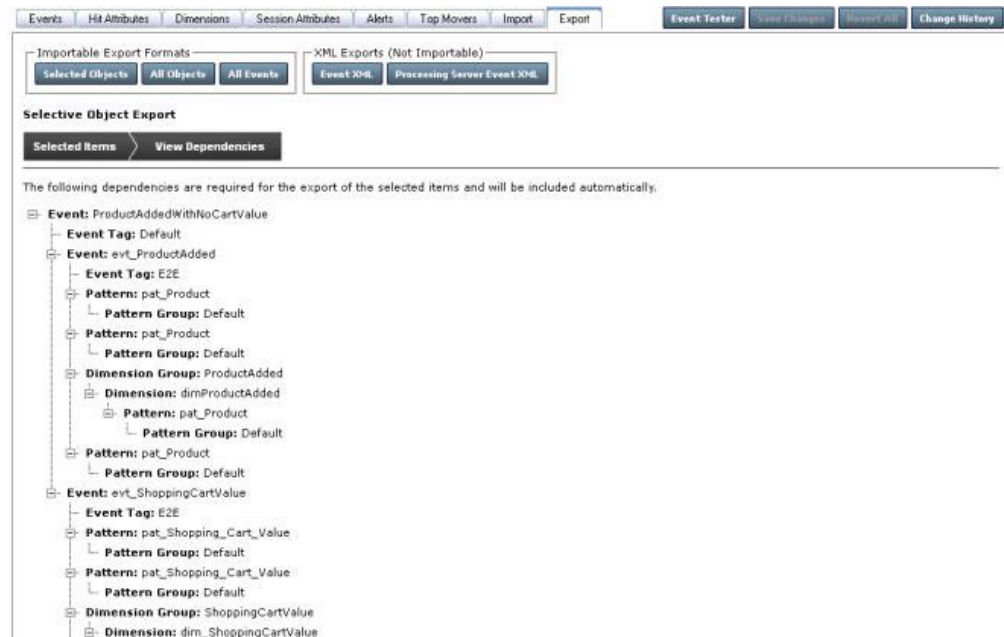
Chapter 9. TEM Import-Export Tabs

Through the Import and Export tabs, you can export a set of selected event definitions and all supporting data objects from your current system and import a set that has been exported. Import/export controls enable the easy migration of event definitions from a development environment to testing and staging environments.

- For more information on the commands common to each tab, see Chapter 1, “Tealeaf Event Manager,” on page 1.

Export tab

The Tealeaf Event Manager supports the export of event definitions and related data in different formats. Use the appropriate export command depending on your intended use.



Exported data objects

When an export of event definitions is generated, definitions for each instance of the following Event Manager objects are included in the export:

- events

Note: Event icons are not currently supported for import.

- Hit attributes
 - Step attributes. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.
- dimensions

Note: When a dimension that contains specified values is exported, only whitelisted values are included in the export. Blacklisted values and other values are dropped.

- Top Movers (stored as an attribute in the event definition)

Note: Export and import of alert definitions is not supported.

Importable formats

The following commands can be used to export event objects that you can import later into another Tealeaf system. Use these commands to migrate your event definitions between environments.

Note: Exported data objects are stored in an internal Tealeaf format (.tle), which is not readable through standard applications.

Command

Description

Selected Objects

When this command is selected, the event objects that were selected for export in each Event Manager tab are bundled for export. See “Exporting selected objects.”

All Objects

When selected, this option generates an export of all event definitions and event-related objects that are supported for export.

- For more information about the supported event objects, see “Exported data objects” on page 351.

Note: When the exported file is imported into another system, all event definitions in the destination system are overwritten.

Exporting selected objects

The selected object export method allows you to export specific events and event objects, as well as all dependent objects required to make the selected items to work. This exported set of definitions can then be imported into another system for use.

In this manner, you can develop event-related objects in a Development environment, export them, and then import them into a Testing or Production environment for use. To export selected items, complete the following steps.

Note: You must commit any unsaved changes to an object to the server to include the changes in the exported object. If the object is a new object and was not saved, it is not included in the export, and references to the object are reported as errors.

1. In each tab of the Event Manager, right-click the objects that you want to export and select **Export Item**. The item is queued in the **Export** tab for export.

Note: You do not need to select dependent items. For example, if an event references a report group that contains a set of dimensions, you do not need to select the dimensions for export. The Event Manager automatically includes all required dependent items for each selected event object.

- Alerts cannot be exported. For more information about the supported event objects, see “Exported data objects” on page 351.
- To remove an item for export, click the **Export** tab. Then, click the **X** next to the item you want to remove for export.

- To remove all items from the export list, click the **Export** tab. Then, click **Remove All**.
 - Items that are selected for export are automatically cleared if you log out of the Portal. All items must be reselected for export when you log in again.
2. When you have selected all items you want to export, click the **Export** tab.
 - To review and edit the set of objects that are selected for export, click the **Selected Items** tab.
 - To review the dependent objects of the selected objects, click the **View Dependencies** tab.
 3. To export the selected items, click **Selected Objects**.
 - To export the entire set of events and event-related objects that are supported for export, click **All Objects**.
 4. Save the generated file to your local desktop.
 5. The exported file can be imported into another system through the Import tab, as needed. See “Import tab.”

XML formats

These readable export formats can be used for debugging purposes.

Note: XML formats that you export cannot be imported into a Tealeaf system.

Command

Description

Event XML

This command exports event definitions in readable XML format. Use this command to review your event definitions through your preferred XML editor.

Note: This format cannot be reimported into a Tealeaf environment. However, if issues occur with your event definitions, provide this format to Tealeaf <http://support.tealeaf.com> when you open your support ticket.

Processing Server Event XML

This command exports the event XML that is used by the Processing Server to process event traffic. This format is slightly different from the formats above. It is compatible for use with the command-line version of the Event Tester. See Chapter 10, “Event Tester,” on page 355.

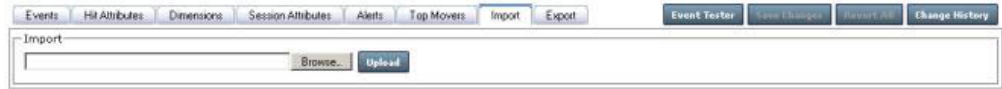
Note: This format cannot be reimported into a Tealeaf environment.

Import tab

Through the **Import** tab, you can import the contents of an exported .tle file into another system.

Note: Event objects can be imported into another system only if the two systems use an identical license key. For example, if your enterprise uses two Tealeaf licenses for monitoring separate applications, you cannot migrate event definitions between the applications.

- See “Managing Your Tealeaf License Key” in the *IBM Tealeaf cxImpact Administration Manual*.



Complete the following steps to import a set of event definitions that you exported from another system.

1. In the Import tab, click **Browse...**
2. Navigate your local system to select the .tle file that contains the exported event definitions. Click **Open**.
3. In the Import tab, click **Upload...**
4. The list of objects and their dependent objects for import is displayed.
 - To overwrite any existing objects in the target system with the definitions contained in the .tle file, click the **Overview Existing Objects** check box.

Note: The following scenarios demonstrate the importance of considering your choice for this check box:

- If you do not overwrite existing objects, imported objects may be broken after import. For example, if a session attribute in the destination system is sourced from a different event than the one referenced in the import file, then the event in the import file does not populate the session attribute.
 - If you do overwrite existing objects, then reports including scorecards and dashboards may be broken in the destination system. For example, if the event definition in the import file is different from the one in the destination system, then any report in the destination system that uses that event is now reporting a different set of data.
 - For events, you should also consider the effects of the following conflicts when choosing to overwrite or not overwrite:
 - If the value type of the imported event differs from the event in the destination system, overwriting the event may break the event conditions, which in turn breaks the event.
 - If the trigger in which the imported event fires is different, then the behavior of the event in the destination system is changed when it is overwritten.
 - If you selected to overwrite objects, labels for the events in the .tle are applied to any overwritten event, while the labels for the event in the destination system are preserved.
5. To import the selected objects, click **Import**.
 - To cancel the import, click **Cancel**.
 6. The objects are imported.

Chapter 10. Event Tester

Integrated into the Tealeaf Event Manager, the Event Tester enables you to test active events and hit attributes, even if they are saved in draft mode, against sessions that you upload to the server. This integrated tool provides a quick method for validating the event objects you define before you deploy them into the live transaction stream.

- To open the Event Tester, select **Event Tester** in the toolbar of the Tealeaf Event Manager.
- You may also load one or more sessions into the Event Tester from session lists in the Portal. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
- You may upload Tealeaf Archive (.TLA) files to the Event Tester. See "Event Tester - Select Session Tab" on page 356.

Directly from the Event Tester, you can replay uploaded sessions, so that you can compare test results with the data you see in the replay.

Overview

The Event Tester enables you to verify functionality of events and hit attributes before deployment in the capture stream and to resolve issues when these objects are failing or exhibiting unexpected behavior.

Note: Before you save events or hit attributes to the server, you should get in the habit of testing them in the Event Tester. As soon as active events are saved to the server, they are immediately applied to subsequent hits processed in the pipeline.

The Event Tester provides insight into the following data:

- **Events:** You can select specific events to test and then review the hits of the selected session where they successfully fired. As part of the displayed results data, you can review the recorded event values and any values that are recorded for dimensions that are associated with the event.
 - A common issue with event definition is that the recorded value is not the expected value. Since events can be configured to record the first or last value that is detected in the session, you can use the Event Tester to determine if you are using the appropriate value.
- **Hit Attributes:** In many cases, hit attributes are used as conditions for events, so the Event Tester can be helpful in isolating issues occurring with hit attribute definition. Through the Event Tester, you may select the specific hit attributes to verify in the test and then review the captured values for the hit attributes in the hits of the selected session.
 - Since hit attributes are evaluated on each hit of a session, the Event Tester may reveal that the attribute is firing much more frequently than expected or wanted. By narrowing the definition of the hit attribute, you can retest it against the selected session to limit the firings to the wanted hits and to the wanted number of occurrences on each hit.

Using the Event Tester

To use the Event Tester, complete the following steps.

Workflow

1. Select or load a session as test data.
 - See “Event Tester - Select Session Tab.”
2. Run the test. All active events are tested against the selected session.
 - See “Event Tester - Select Session Tab.”
3. You must select events or hit attributes or both whose results you want to view.
 - For more information about selecting events, see “Event Tester - Select Events tab” on page 359.
 - For more information about selecting hit attributes, see “Event Tester - Select Hit Attributes tab” on page 360.
4. After you selected a session and the events and/or hit attributes to test in it, the results are available for review. See “Event Tester - View Results tab” on page 361.

Note: If you are attempting to test a specific event on your web application, you may find it easiest to create the session yourself using a unique means of identifying the event. For example, you might know that a form field value is tracked as a searchable event by Tealeaf. Go to your web application, enter a value in this tracked field, and then complete the activity that triggers the event you are testing. To find the session:

- Look for it in the Active sessions page. See "Monitoring Active Sessions" in the *IBM Tealeaf cxImpact User Manual*.
- Search for it as an active session. See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.

You can then send the session to the Event tester through the session list.

Closing the Event Tester

To close the Event Tester and return to the Event Manager, click **Exit Event Tester**.

Event Tester - Select Session Tab

There are two methods of providing a session to the Event Tester:

- **From Selected Session** - When you execute a search through the Tealeaf Portal, you can send the session to the Event Tester through the session list.

Note: The sessions you've sent to the Event Tester are removed when you log out from the Portal. If you wish to retain a session for testing purposes, you should load it from the Session List into RTV and save it as a .TLA file. You can then upload that file to the server, where it is retained until someone removes it.

- Click the Send to Event Tester icon () next to the session in the session list.
- You can send multiple sessions to the Event Tester from the session list.
- By default, the internal session ID is assigned as the session name. If needed, you can rename it for easier tracking in the Event Tester.
- See "Searching Session Data" in the *IBM Tealeaf cxImpact User Manual*.
- **From TLA file** - You can save a .TLA file from RTV to your local desktop and then upload it through the Event Tester.

Note: Sessions that have been saved as .TLA files through RTV may have a different set of events and hits if merging of session fragments has been performed by RTV. To ensure consistency of results, you should verify that any auto-merging options are disabled in RTV prior to saving the .TLA file.

- Merging of session fragments is not performed in the Event Tester. Only the segment that is submitted to the Event Tester is available.
- See "RealTea Viewer - Annotation, Find and Merge" in the *IBM Tealeaf RealTea Viewer User Manual*.
- The IBM Tealeaf CX RealTea Viewer (RTV) is a separate desktop application through which you can search for and replay Tealeaf sessions. See "RealTea Viewer (RTV) User Manual" in the *IBM Tealeaf RealTea Viewer User Manual*.

Sessions that have been loaded or sent to the Event Tester are displayed in the Select Session tab.



Figure 13. Event Tester - Select Session Tab

Sessions are stored as standard Canister session data files or as Tealeaf Archive (.TLA) files.

Note: If the .TLA archive contains multiple sessions, only the first session in the archive is tested.

In the Session tab, you select or upload the session containing event and hit attribute data for your test or replay available sessions for further verification.

Run test

- To run a test against a session, click the Start Test () icon next to the session you wish to use.

Note: You cannot use merged sessions to test events. A **merged session** can be assembled from session fragments stored in a Canister through BBR or RTV.

- See "RealTea Viewer - Annotation, Find and Merge" in the *IBM Tealeaf RealTea Viewer User Manual*.
- See "BBR Options" in the *IBM Tealeaf cxImpact User Manual*.

Replay session

- To replay a session, click the Replay () icon next to the session.

Note: You can only replay sessions that you have sent to the Event Tester from the Portal. You cannot replay .TLA files, as they are not available for Browser-Based Replay. .TLA files may be downloaded and replayed through RTV.

- To replay the currently selected session, click the Replay icon at the top of the page.

Upload session

To upload a .TLA file, click **Browse....** Navigate your local computer to select a .TLA file to upload. Click **Open**. The file is uploaded and selected for testing. Uploaded files are stored in the following directory on the server:

```
<tealeaf_install_directory>\System\EventTest
```

To remove a session from the server, click the **X** next to its name. You cannot remove a session through the Event Tester if it is opened by another application, such as RTV.

You can select a different active Canister server from which to review uploaded TLA files in the drop-down at the bottom of the Select Session tab.

Download session

To download a .TLA session, click the Download () icon next to the name of the session.

Tips on selecting sessions

For Event Tester performance, when selecting sessions, you should choose an example session that contains the fewest number of pages in which the test condition is expressed.

- The number of events that fire in a test session does not affect the performance of the Event Tester. However, a high number of tested events can affect performance of the Event Manager user interface.

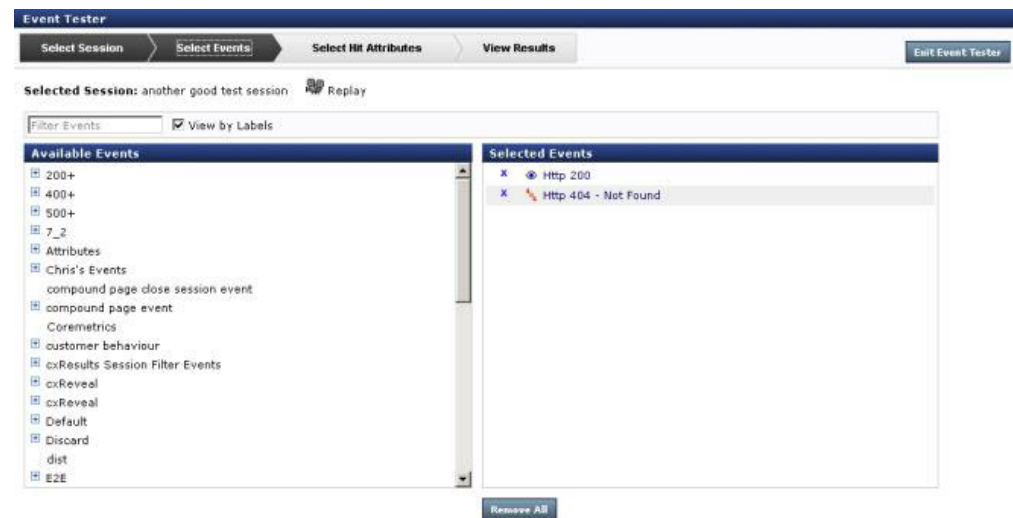
If the Event Tester encounters an Out of Memory error, this condition most likely also occurs when the events and hits attributes are used to process hits on the Processing Server. In this situation, the events and hit attributes definitions should be modified to use fewer resources. For example, a hit attribute that is defined to find the pattern `<br>` in an HTML response may cause excessive memory usage to store all occurrences of the pattern in the data. It is best to redefine it to isolate the hit attribute to the wanted instance.

Event Tester - Select Events tab

In the **Select Events** tab, you can select the events whose results you want to view in the currently selected session.

- Step-based events can be selected in this tab. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.
- When you select an event, any hit attribute that is referenced in the event is automatically selected and displayed in the Hit Attributes tab. You can modify these selections as needed in the other tab.
- If you recently created a step-based event, it may take a few minutes before it is available for selection in the Event Tester. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.

Note: Only the events that are selected in the Selected Events tab are displayed in the View Results tab.



By default, the set of currently active events is sorted for display by event label.

- To display all events by alphabetical order of display name, clear the View by Labels check box.
- To filter the list of events, enter a string in the Filter Events textbox. The filter is applied in real time to display only the matching events.
- To review more information about the event, mouse over the event name.
- To add an event to the results, click it. It is added to the Selected Events pane.
- To add all events for a specific Label, click the label name in the Available Events pane. The label remains displayed in selection panel.
- To remove an event, click the X icon for the event in the Selected Events pane. The event is removed.
- To clear the list of events that were added to the test, click **Remove All**.

Next steps

- "Event Tester - Select Hit Attributes tab" on page 360
- "Event Tester - View Results tab" on page 361

Event Tester - Select Hit Attributes tab

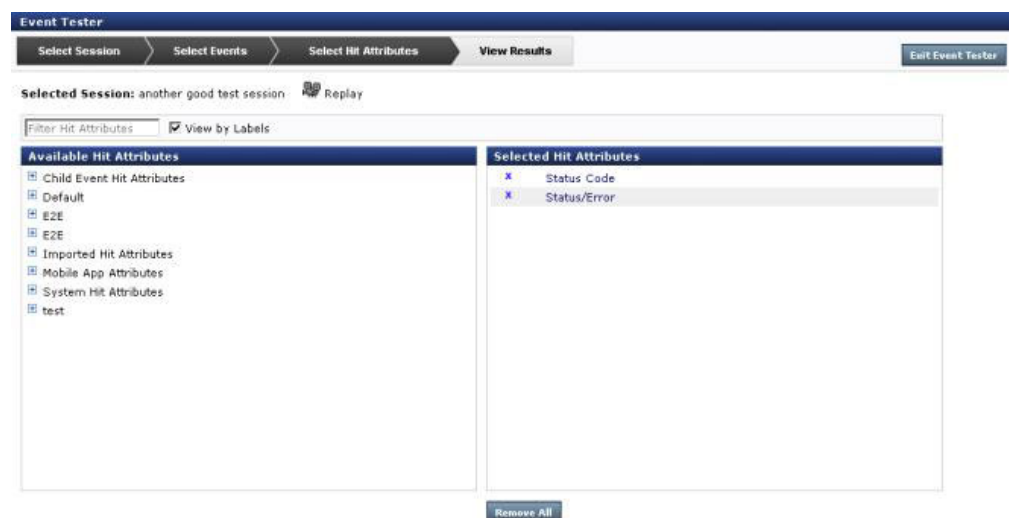
In the **Select Hit Attributes** tab, you can select the hit attributes to test in the currently selected session. The hit attributes used as conditions or values by the previously selected events are automatically selected.

- If you recently created a step-based event, it may take a few minutes before it is available for selection in the Event Tester. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.
- You may select objects of both types to appear in the results.

Note: Only the hit attributes selected in the Selected Hit Attributes tab are displayed in the View Results tab.

Note: If you create hit attributes from the request buffer, note that the [HitType] section and [TLFID_*] sections (where * is the identifier for the fact) are generated by the event engine and cannot be detected in live sessions.

As a result, any events using these hit attributes do not fire in the Windows pipeline and are therefore not available for searching. They do fire, however, when they are evaluated in the Event Tester on sessions that were already passed through the Canister.



By default, the set of currently active hit attributes is sorted for display by label.

- To display all hit attributes by alphabetical order of display name, clear the View by Labels check box.
- To filter the list of hit attributes, enter a string in the Filter Hit Attributes textbox. The filter is applied in real time to display only the matching hit attributes.
- To review more information about the hit attribute, mouse over the hit attribute name.
- To add a hit attribute to the results, click it. It is added to the Selected Hit Attributes pane.
- To add all hit attributes for a specific Label, click the label name in the Available Hit Attributes pane.
- To remove a hit attribute, click the X icon for the hit attribute in the Selected Hit Attributes pane. The hit attribute is removed.

- To clear the list of events that were added to the test, click **Remove All**.

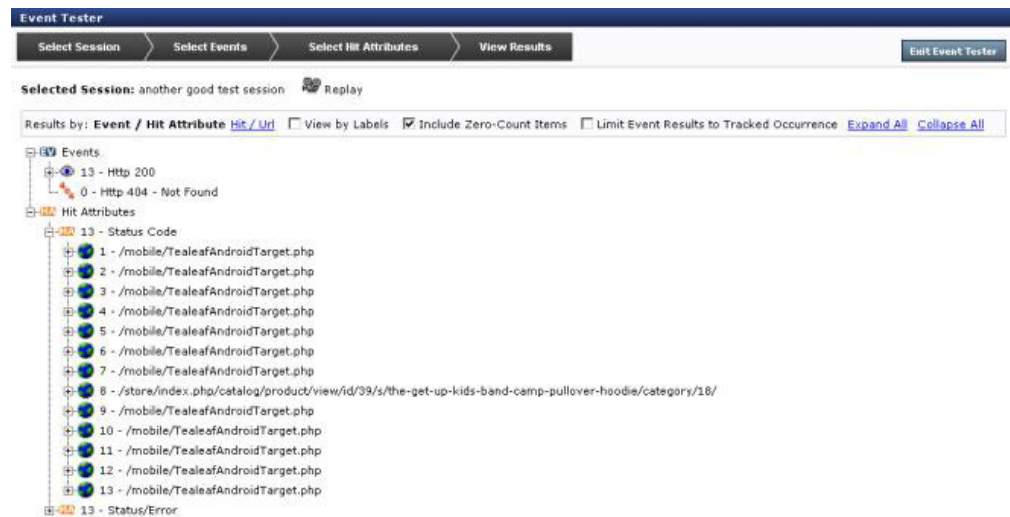
Next steps

- “Event Tester - View Results tab”

Event Tester - View Results tab

In the View Results tab, you can view the results of your configured test and filter the display that is based on the available options.

- Results are displayed in alphabetical order by name.
- Results for step attributes and events are also displayed. See “Step-Based Eventing” in the *IBM Tealeaf Event Manager Manual*.



You can view the results that are based on the following options:

- **Event/Hit Attribute** - Results are displayed by the event or hit attribute name. Hit and URL information is available when you expand a specific event or hit attribute. See “Event/Hit results” on page 362.
 - By default, results in Event/Hit Attribute order are displayed sorted by the event or hit attribute label for the included objects.
 - To group events and hit attributes according to their labels, select the View by Labels check box.
 - This option is not available when displaying by Hit/URL.
- **Hit/URL** - Results are displayed by the hit number and URL of the hit on which events or hit attributes occurred. Event and hit attribute information is available when you expand a specific hit/URL node. See “Hit/URL Results” on page 362.
- By default, the Event Tester displays all events and hit attributes that were selected for inclusion and that occurred in the session. To hide objects that registered zero counts in the session, clear the Include Zero-Count Items check box.
- By default, the Event Tester displays only the occurrences for which values are recorded. To expand the display to all occurrences of events that occurred in the session, clear the Limit Event Results to Tracked Occurrence check box. See “Limit results to Tracked Occurrences” on page 363.
- To expand the display tree to show all nodes, click **Expand All**. To collapse the display tree, click **Collapse All**.

- If an entry in the results is too long to display, you may move the mouse over the item to display the full result string in the tooltip.

Notes on Events

Note: Numeric values in the Event Tester are displayed as the strings were recorded by the Canister. Display formatting, including localized decimal and currency indicators, is not applied.

Note: When a session discard event is detected in the Canister, the session is marked for discarding, and no subsequent events in the session are evaluated. In the Event Tester, however, sessions are not discarded, so events that occur in a session after a session discard event are reported in the Event Tester.

Event/Hit results

When you display the results by Event/Hit Attribute, the following general structure is applied:

- Following assumes you are viewing by label.
 - + Events
 - + CountOfOccurrences - EventLabel1
 - + CountOfOccurrences - Event1
 - + HitNumber1 - URL1
 - + ReportGroupName (if defined)
 - + Dimension1Name
 - + Value: Dimension1Value
 - + Dimension2Name (if defined)
 - + Value: Dimension2Value
 - + ReportGroup2Name
 - + HitNumber2 - URL2
 - + CountOfOccurrences - Event2
 - + CountOfOccurrences - EventLabel2
 - + Hit Attributes
 - + CountOfOccurrences - HitAttributeLabel1
 - + CountOfOccurrences - HitAttribute1
 - + HitNumber1 - URL1
 - + Match Count: NumberOfMatchesInHit
 - + Match Value 1: MatchValueForMatch1
 - + Match Value 2: MatchValueForMatch2 (if present)
 - + HitNumber2 - URL2
 - + CountOfOccurrences - HitAttribute2
 - + CountOfOccurrences - HitAttributeLabel2

Hit/URL Results

When you display the results by Hit/URL Attribute, the following general structure is applied:

Note: These results are not displayed by page. For example, in BBR you can display session data by page. In the Event Tester, the results are displayed by the hit on which they occurred, which may be different.

- + EventCount1 - HitAttributeCount1 HitNumber1 - URL1
 - + Events
 - + EventDisplayName1
 - + ReportGroupName (if defined)
 - + Dimension1Name
 - + Value: Dimension1Value
 - + Dimension2Name (if defined)
 - + Value: Dimension2Value
 - + ReportGroup2Name
 - + EventDisplayName2

```

+ Hit Attributes
  + HitAttribute1
    + Match Count: NumberOfMatchesInHit
    + Match Value 1: MatchValueForMatch1
    + Match Value 2: MatchValueForMatch2 (if present)
  + HitAttribute2
+ EventCount2 - HitAttributeCount2 HitNumber2 - URL2

```

Limit results to Tracked Occurrences

An event can fire multiple times in a session. In the event definition, you can use the Tracked Event Occurrence setting to define the occurrences that can be reported in Portal reports or can be referenced as building block events.

- The occurrences for an event are configured by the Track setting in the Event Summary for the event definition. See Chapter 3, “TEM Events tab,” on page 45.

When the Limit Results to Tracked Occurrences is selected, only the recorded instances of the events included in the test are displayed in the View Results tab.

Next steps

Depending on the results, you may want to do one of the following:

- Retest with a different session. “Event Tester - Select Session Tab” on page 356
- Change events that are displayed in the test. The test does not need to be rerun. “Event Tester - Select Events tab” on page 359.
- Change hit attributes that are displayed in the test. The test does not need to be rerun. “Event Tester - Select Hit Attributes tab” on page 360
- Modify event or hit attribute definitions:
 - Chapter 3, “TEM Events tab,” on page 45
 - Chapter 4, “TEM Hit Attributes tab,” on page 201

Logging

Tealeaf administrators may download Event Tester logs through the Portal.

1. In the **Portal** menu, select **Tealeaf > Portal Management**.
2. In the left panel, click the **Logs** category.
3. Click **Tealeaf Logs and Configuration Files**.
4. Select the **Canister Application Servers** check box.
5. Make other selections and configuration choices as needed.
6. Click **Download**.
7. The Canister files, including the Event Tester log files, are downloaded to the location you specify.
 - See “Portal Logs” in the *IBM Tealeaf cxImpact Administration Manual*.

Tealeaf resources

Tealeaf provides a broad library of resources, including web conferences, on-demand tutorials, and report templates, for use with your Tealeaf solution. These resources span the breadth of experience in your enterprise with Tealeaf, from novice users to Tealeaf administrators and developers and best practice experts.

- See <https://community.tealeaf.com/display/res>.

The following resources are available for this topic.

Resource

Description

https://community.tealeaf.com/display/res/Basic+Eventing

A brief overview of the Tealeaf event model and processing pipeline precedes an in-depth demonstration of building events in version 7.x. The two events that are built are based on a message that is displayed to the customer and on a URL; compound events are previewed.

https://community.tealeaf.com/display/res/Capture+a+Value+with+an+Event

Capture numeric values, such as a shopping cart total, or text values, such as promotion codes or login name, by creating a Hit Attribute and an Event.

https://community.tealeaf.com/display/res/Test+an+Event

Navigate the Event Manager, and test an Event to verify it is working properly.

https://community.tealeaf.com/display/res/Business+Impact+Analysis

An overview of performing business impact analysis in Tealeaf, what Tealeaf modules are required, and a suggested methodology.

https://community.tealeaf.com/display/res/Custom+Experience+KPIs

Introduction to Tealeaf KPIs and reporting capabilities, including a demonstration on creating and viewing a Tealeaf KPI scorecard.

https://community.tealeaf.com/display/res/Investigating+Differences+in+Conversion+Rates

Investigating+Differences+in+Conversion+Rates

How to investigate changes in conversion rates by using process scorecards and dashboards to discover a change, gain insight by completing qualitative analysis, and quantify the impact to determine steps to resolve the issue.

https://community.tealeaf.com/display/res/Pinpoint+Struggle+with+Business+Process+Scorecards

Pinpoint+Struggle+with+Business+Process+Scorecards

Identify checkout struggle with a Business Process Scorecard. Build a new process scorecard that is based on your findings, and add it to an existing dashboard.

https://community.tealeaf.com/display/res/Understanding+Bot+Traffic

An overview of the benefits of analyzing Bot Traffic and methodology for tracking bots in Tealeaf.

The following areas are good to bookmark and to check periodically for updates.

Resource

Description

https://community.tealeaf.com/display/res/Home

Home page for Tealeaf Resources area, where you can access best practices, web conferences, tutorials, classroom training information, and more. Details are below.

https://community.tealeaf.com/display/res/Best+Practices

Home page of Tealeaf's best practices, including web conferences, white papers, report templates, and more.

https://community.tealeaf.com/display/res/Best+Practice+Report+Templates

https://community.tealeaf.com/display/res/Report+Templates+v7,

<https://community.tealeaf.com/display/res/Report+Templates+v8>

Report templates available for download by Tealeaf Release.

<https://community.tealeaf.com/display/res/Best+Practice+Webinars>

Tealeaf's Best Practice Webcast Series provides a series of web conferences on how to use Tealeaf capabilities to enhance your customer's experience.

<https://community.tealeaf.com/display/res/Webinars+for+New+Users>

All available web conferences for new users

<https://community.tealeaf.com/display/res/Webinars+for+Advanced+Users>

All available web conferences for advanced users

<https://community.tealeaf.com/display/res/On-Demand+Tutorials>

Tealeaf publishes a series of online tutorials on a range of topics, from basic user search exercises to technical topics, such as privacy rules creation.

<https://community.tealeaf.com/display/kb>

The Tealeaf Knowledge Base contains a large library of articles on troubleshooting and performance topics that are related to Tealeaf.

Chapter 11. Advanced Mode for Events

Note: If you make JavaScript changes to an event in Advanced Mode, you can no longer edit the event in Basic Mode. You must continue to edit it in Advanced Mode.

- To return to the Event Wizard mode, click **Basic Mode**. See Chapter 3, “TEM Events tab,” on page 45.

In Advanced Mode, you can review and modify the actual JavaScript function that is called to process the event.

Note: Advanced Mode is considered a developer-only feature.

Functions

In Advanced Mode, JavaScript functions can be entered directly into the text editing pane.

1. Tealeaf provides a set of JavaScript functions that apply to Tealeaf-specific data objects. See “EES reference - object definitions” on page 397.
2. In addition to the Tealeaf functions, you may apply any standard ECMAScript functions to your JavaScript. For more information on the ECMAScript reference, see http://www.ecma-international.org/publications/files/ECMA-ST-ARCH/ECMA-262,_3rd_edition,_December_1999.pdf.

Creating a New Report Group for the Current Event

In Advanced mode, you may specify a new report group for the current event in the Current Events & Report Groups panel.

Property

Description

Name The name of the report group

Description

A user-friendly description of the report group

Value Type

The type of value stored: Numeric or Text. The type applies to the value of the event and not the value of the dimensions. This setting is shared by all dimensions in the report group.

Report Group

The report group to which the instance is assigned. To select a report group, click **Select...**

Tracked Occurrence

The occurrence of the instance to track for reporting purposes: First per Session, Last per Session, or Every Occurrence. This setting is shared by all dimensions in the report group.

Search The occurrence in the session to index for search purposes: None, First, Last, or All. This setting is shared by all dimensions in the report group.

Report The occurrence in the session to store in the report database: None, First, Last, or All. This setting is shared by all dimensions in the report group.

Flag Every Occurrence in Replay

The occurrence of the event to flag during the replay of sessions. This setting is shared by all dimensions in the report group.

- This option is enabled only if the Search setting is set to All.
- This option appears as a check box in Basic Mode of the Tealeaf Event Manager. See Chapter 3, “TEM Events tab,” on page 45.
- For more information about RTV, see “RealTea Viewer (RTV) User Manual” in the *IBM Tealeaf RealTea Viewer User Manual*.

Send to Event Bus

To send this event & report group instance to the Tealeaf Event Bus for use by other systems, click the check box.

- See “Tealeaf Event Bus” in the *IBM Tealeaf cxConnect for Data Analysis Administration Manual*.

Other commands

- To validate the JavaScript that is displayed in the current pane, click **Validate Javascript**. Any errors are reported. See “Validating JavaScript.”
- To process the event using a non-ISO 9001 encoding method, select the wanted encoding from the drop-down.

Note: It is a recommended practice to create, test, and verify the method under the default encoding before creating copies of the event for use with other encoding methods. For more information about copying events, see Chapter 3, “TEM Events tab,” on page 45.

- To save a draft of the event, click **Save Draft**.

Note: Saving a draft does not save the item to the server. Event changes must be committed before they are applied to the incoming session data. See Chapter 1, “Tealeaf Event Manager,” on page 1.

Note: To prevent corrupting event definitions, the JavaScript in all Tealeaf events is validated before you can save it. Correct or comment out any validation errors before resaving. See “Validating JavaScript.”

- To return to Basic mode:
 - If Advanced Mode is disabled and you cannot edit the JavaScript, click **Done**.
 - If Advanced Mode is enabled, click **Basic Mode**.
- To return to Basic mode without saving changes that are made in the JavaScript editor, click **Cancel**.

Validating JavaScript

When you choose to validate the JavaScript you entered in the editing pane, Tealeaf performs some basic yet essential checks of the syntax of your script.

1. References to TL objects specified in the \$F, \$P, \$S, and \$H collections are checked to see if they are valid references.
2. The JavaScript is passed to the Event Tester for evaluation. The Event Tester contains extra JavaScript validation techniques.

Note: Validation cannot catch problems inside a conditional block that does not run during the evaluation.

3. Semicolons are optional in JavaScript. These are not validated.
4. JavaScript is checked for circular dependencies (EventA depends on EventA).

Note: JavaScript validation does not check for cross-object circular dependencies (for example, EventA depends on EventB, which depends on EventA).

JavaScript tutorial

For a tutorial on how to manipulate Event Manager objects in Advanced mode, see “Tealeaf EES tutorial.”

External calls

Calls to external JavaScript code are not supported.

References

- For more information about Tealeaf's JavaScript implementation, see Chapter 12, “EventEngineScripting reference,” on page 395.
- For more information about the V8 JavaScript implementation from Google, see <http://code.google.com/apis/v8/embed.html>.

Tealeaf EES tutorial

This section provides a tutorial on how to edit events in Advanced mode in the Tealeaf Event Manager, which enables editing access to the JavaScript in which events and event-related objects are created.

Note: Advanced mode is considered an administrator-level function. Novice users or users who are not familiar with JavaScript coding should not edit events in Advanced mode.

For most event objects, creating and editing them in Basic mode is sufficient; the user interface enables configuration of all object properties necessary to define the object and to apply it to the session data stream.

- For more information about Basic mode, see Chapter 1, “Tealeaf Event Manager,” on page 1.

For some types of configuration, however, Tealeaf users must manipulate the JavaScript in which the event object is defined. For example, if you are using regular expressions in the evaluation of hit attributes, they must be defined through Advanced mode. After these objects were changed in Advanced mode, they must be edited in Advanced mode only thereafter.

Note: After you create or edit objects in Advanced mode, they cannot be edited in Basic mode afterward.

If you recently upgraded your Tealeaf solution to Release 8 or higher, some event-related objects may be accessible and editable through Advanced mode only. For more information about these objects, see “Preparing to Upgrade to Release 8.x” in the *IBM Tealeaf CX Upgrade Manual*.

- For more information about the Advanced mode interface, see Chapter 11, “Advanced Mode for Events,” on page 367.

Overview

Referencing event values

When an event fires and writes a value, those values are written into facts. A *fact* is a combination of an event and the reports groups on the event. These values are recorded in the request of a session.

In JavaScript, when you reference an event in another event, you are actually referencing the written facts from that event and not the event directly.

- For an overview of event object terminology, see "Tealeaf Data Model" in the *IBM Tealeaf Reporting Guide*.

Below, you can see an example of a recorded fact (TLFID=75), its value (TLFactValue=954.8) and dimension values. Dimension values are recorded in plain text (TLDim1=/store/defaultpage) for review in the request data by Tealeaf users and as hashed values (TLDimHash1=C6F8B06175B0630687EB80DF913A30CE), which are required for searching for complete values if the length of the value is greater than 32 characters.

```
[TLFID_75]
Searchable=True
TLFID=75
TLFactValue=954.8
TLDimHash1=C6F8B06175B0630687EB80DF913A30CE
TLDimHash2=7954797EAEBD4BD8B816EA63AF1CE05A
TLDimHash3=7954797EAEBD4BD8B816EA63AF1CE05A
TLDimHash4=7954797EAEBD4BD8B816EA63AF1CE05A
TLDim1=/store/defaultpage
TLDim2=TLT$NULL
TLDim3=TLT$NULL
TLDim4=TLT$NULL
```

In the example above, one dimension group to which the event is assigned is not listed. Each event is automatically assigned the No Dimension Report Group. So, if Event A has Report Groups 1, 2, and 3 associated with it, there are actually four facts for that event: 1-3, and the No Dimension Report Group, which is hidden on the event as Report Group 0.

- Report groups are associated with the event in the Report Groups step.

Object Type Identifiers

In Advanced mode, objects may be referenced in the following manner:

```
$F.setFact("NS.F_E__ADVANCED_MODE_EVENT__634286306745774758", factCount);
```

In the above, the \$F indicates that you are referencing the fact object type and using the setFact method.

- The other items are parameters that are passed to the method; they are discussed later.

There are several type identifiers available in Advanced mode:

Identifier	Description
E	Event
P	Custom Hit Attributes. Custom hit attributes used to be called Patterns

- H System Hit Attributes
- S Session Attributes, both system and custom
- F Facts that are a combination of Event and Report Group

Syntax for Events

Essentially, the default syntax for event code that is generated from the Event Manager GUI is an IF/THEN statement.

- The Condition step in the Basic mode for the event defines the IF statement. The Value and Report Groups steps are the THEN statement.
- There is no strict requirement that code is constructed in an IF/THEN statement.

Basic Mode example

Below is an event that checks to see if the session is not a BOT and counts every time that it fires with no added report groups:

The first screenshot shows the 'Condition' step. The event is named 'Advanced Mode Event'. The 'Evaluate on' dropdown is set to 'Every Hit'. The 'Active' checkbox is checked. The 'Display in Portal' checkbox is checked. The 'Icon' dropdown is set to 'Icon List'. The 'Condition' tab is selected, and the 'Session Attributes' list is shown. The 'All of the following conditions must be met' dropdown is selected. The 'Session Attribute' dropdown is set to 'Bot (T/F)' and the 'Is false' dropdown is selected.

The second screenshot shows the 'Value' step. The 'Value to Record' dropdown is set to 'Count Only'. The 'Tracked Event Occurrence' dropdown is set to 'First per Session'. The 'Searchable & Reportable' checkbox is checked. The 'Flag Every Occurrence in Replay' checkbox is checked.

The third screenshot shows the 'Report' step. The 'Report Groups' list is shown. The 'Filter' dropdown is set to 'No Report Group(s)'. The 'Add Report Group' button is visible.

In the above, the Condition step tests to see if the session attribute Is BOT is set to false.

The Value and Report Groups steps identify the values to record and the report groups that are associated with the event.

- Since the Report Group step was not defined report groups, the event is associated with the No Dimension Report Group. The More Options step provides multiple options for choosing where to send the event data and session properties to update as a result of the event that was fired.

Advanced Mode JavaScript example

In Advanced mode, this event looks like the following:

```
// Generated by Tealeaf Event Manager
// NOTE: Do not change event name
function NS$E__ADVANCED_MODE_EVENT__634339708610416368()
{
  if (!$$.IsBot)
  {
    // Set fact for Report Group: No Dimension Report Group
    $F.setFact("NS.F_E__ADVANCED_MODE_EVENT__634336419284199494", "TLT$NULL");
  }
}
```

Examine the components:

```
function NS$E__ADVANCED_MODE_EVENT__634339708610416368()
```

- This statement defines the event as a function.
- NS\$E__ADVANCED_MODE_EVENT__634339708610416368 is the full name of the event.
 - NS is the namespace, which is a unique identifier for each Tealeaf customer. This value cannot be changed within the Tealeaf solution.
 - \$ is a function name delimiter between the namespace and the internal function name.
 - E signifies that the function implements an event.
 - ADVANCED_MODE_EVENT is the user-selected name of the event.
 - After the event was created, this name does not change even if the name is changed in the GUI.
 - 634339708610416368 is a string that is added to the object name to guarantee uniqueness.
 - It is based on the created time epoch and other factors. This string value is used to enable multiple events that have the same name in the GUI.
 - Underscores (_) are used to separate individual words in the name.
 - Double underscores (__) are used to separate the parts of the internal name.

```
if (!$$.IsBot)
```

- This string is the condition definition.
 - \$\$ is the type of object that is used in the condition. In this case, it is a session attribute.
 - IsBot is the name of the session attribute. In this case, it is a system session attribute and not a custom session attribute, although that information is not indicated in the string.
 - ! is the NOT operator that is applied to the session attribute IsBot.
- ```
$F.setFact("NS.F_E__ADVANCED_MODE_EVENT__634336419284199494", "TLT$NULL");
```
- This string writes the value of the event.
  - \$F is the fact collection object. Write the value into the Fact for this event.
  - setFact is the method in the fact collection object that is used to set the value of the fact specified.
  - "NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634336419284199494" is the name of the fact to which the value is written.
    - NS is the namespace, which is a unique for the customer.
    - F\_E is the type of the object to which method is writing. In this case, it is the Fact for Event.
    - ADVANCED\_MODE\_EVENT\_\_634339708610416368 is the internal name of the object.
  - "TLT\$NULL" is the value to record. In this case, the dimension constant value for null values is recorded.

- Within the Event Manager, you can define a standard value that is recorded for a dimension when a null value is detected. In the JavaScript, this value is referenced using TLT\$NULL.

## Examining event behavior

Based on the event definition, the following behaviors are occurring. For the event:

If this session is not a Bot

Then

Get the last count of the how many times this event fired and  
increment that value by 1

Update the count with that incremented value

## Report group syntax

Now add a report group to the event. In Basic mode, adding the report group URL/Host/App/Server looks like the following:



- You can see an example of the recorded data for this report group at the beginning of this section. See “Referencing event values” on page 370.

In Advanced mode, the event now looks like the following:

```
// Generated by Tealeaf Event Manager
// NOTE: Do not change event name
function NS$E__ADVANCED_MODE_EVENT__634339708610416368()
{
 if (!$$.IsBot)
 {
 // Set fact for Report Group: No Dimension Report Group
 $F.setFact
 ("NS.F_E__ADVANCED_MODE_EVENT__634339708610416368", "TLT$NULL");
 // Set fact for Report Group: URL/Host/App/Server
 $F.setFact
 ("NS.F_E__ADVANCED_MODE_EVENT__634339708610416368_FACT1", "TLT$NULL");
 }
}
```

The only change is the addition of the new setFact call. This call adds a report group to the event.

There is one major difference in how this fact is specified versus the "default" fact. That is the fact suffix at the end of the fact name (FACT1):

NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634286306745774758\_FACT1

## Fact Suffix

The default fact does not have a suffix at all. Any report groups that are added to the event are assigned a fact suffix, including an index number.

The fact number suffix represents the order in which the report group was added to the event. It is not necessarily the order that the existing report groups are



displayed in Basic mode of the event. For example, if you add Report Group A to Event X, it is assigned to Fact1. But if you remove Report Group A and add Report Group B, then Report Group B is assigned Fact2 even though there is only one explicitly added report group remaining on Event X. If you readd Report Group A, then that added fact is still Fact1, even though it is displayed as the second report group on Event X in Basic mode.

The other thing to notice is that the same value (in this case count in session) gets written into both facts by default. Through Advanced mode, it is theoretically possible for a different value to be written into each fact. However, writing a different value in each fact is not recommended and may produce anomalies in reporting. The best practice is to create a separate event for each recorded value.

## Current Event Facts

In the Current Event Facts header in the left column of the Event Manager in Advanced mode, there are 2 facts. One is the name of the event, and the other is the name of the event and the name of the added report group. See below:

The screenshot shows a fact configuration window with the following details:

- Name:** Advanced Mode Event - URL/Host/App/Server
- Internal Name:** NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634339708610416368\_FACT1
- Description:** - URL/Host/App/Server
- Report Group:** TL.DG\_URL\_HOST\_APP\_SERVER
- Tracked Occurrence:** First
- Search:** First
- Report:** First
- Send to Event Bus:** No
- Flag in Replay:** All
- Updated:** Feb-25-2011 16:31:56

Below the configuration window, a list of facts is shown. The first fact is 'Advanced Mode Event - URL/Host/App/Server' with an internal name of 'NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634339708610416368\_FACT1'. The second fact is 'Advanced Mode Event - URL/Host/App/Server' with an internal name of 'NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634339708610416368\_FACT2'.

To find out the fact number, move your mouse over the fact. The internal name of the fact, which is the value that is used in JavaScript, is displayed.

The screenshot shows a fact configuration window with the following details:

- Name:** Advanced Mode Event - URL/Host/App/Server
- Internal Name:** NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634339708610416368\_FACT1
- Description:** - URL/Host/App/Server
- Report Group:** TL.DG\_URL\_HOST\_APP\_SERVER
- Tracked Occurrence:** First
- Search:** First
- Report:** First
- Send to Event Bus:** No
- Flag in Replay:** All
- Updated:** Feb-25-2011 16:31:56

Below the configuration window, a list of facts is shown. The first fact is 'Advanced Mode Event - URL/Host/App/Server' with an internal name of 'NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634339708610416368\_FACT1'. The second fact is 'Advanced Mode Event - URL/Host/App/Server' with an internal name of 'NS.F\_E\_\_ADVANCED\_MODE\_EVENT\_\_634339708610416368\_FACT2'.

## Adding multiple conditions

It is common for customers to want to know the count of real visitor sessions. While this event was filtered out the sessions that are reported as bots, some sessions may be so short as to not be interesting. In this example, we define the



arbitrary limit of 5 hits in the session as the baseline for determining if the session is interesting and from a real visitor to the web application.

The conditions for this event would be:

The screenshot shows the 'Condition' tab in a configuration tool. On the left, a list of attributes includes 'Hit Attributes', 'Session Attributes', and a 'Filter' section with '<New Session Attribute>', 'Bot (T/F)', 'Browser OS', and 'Browser Type'. On the right, the configuration area is titled 'All of the following conditions must be met'. It contains two conditions: 'Session Attribute' with 'Bot (T/F)' set to 'Is false', and another 'Session Attribute' with 'Hit Count Running Total' set to 'Equals' and the value '5'. An 'Add Condition' button is at the bottom.

In the Basic mode definition, the All of the following conditions must be met value was selected from the drop-down. This selection defines a logical AND.

**Note:** Since the event is configured to fire on each hit, the new session attribute (Hit Count Running Total) is compared to the fixed value 5. If the condition is defined to be greater than our equal to 5, then the event fires for all remaining hits of the session as soon as the fifth hit was detected.

## And conditions in Advanced mode

The Advanced mode for the conditions now looks like the following:

```
if (!$.IsBot) && $.NumberOfHits == 5)
```

The && is a JavaScript operator for a logical AND. Both conditions must be true for the Value and Report steps to run.

## Or conditions in Advanced mode

If we only want it to be either like the following (any instead of all):

The screenshot shows the 'Condition' tab in the configuration tool. The configuration area is titled 'Any of the following conditions must be met'. It contains the same two conditions as the previous screenshot: 'Session Attribute' with 'Bot (T/F)' set to 'Is false', and another 'Session Attribute' with 'Hit Count Running Total' set to 'Equals' and the value '5'. An 'Add Condition' button is at the bottom.

The Advanced mode for the condition now looks like this:

```
if (!$.IsBot) || $.NumberOfHits == 5)
```

The || is a JavaScript operator for a logical OR. Either condition must be true for the Value and Report steps to run.

## Recording counts from last hit

Now record the number of hits in the session. For this event, we change the conditions to be the following:

- Change the drop-down to perform a logical AND (All conditions must be met). Essentially fire only on the last hit and it is not a Bot and if the hit count is greater than 5.
- The Last Hit trigger ensures that this event fires once only.
- Since this event is now configured to fire only on the last hit of the session, the condition to test hit count must be changed to greater than or equal to 5 hits, instead of equals 5 hits. Else, it fires only when the Hit Count Running Total is five hits exactly.

The screenshot shows the 'Value' tab of the Tealeaf Event Manager. The 'Value to Record' section is visible, showing 'Value: Numeric' and 'Hit Number in Session'.

For the value, write the hit number for the last hit as a numeric value for the event.

The screenshot shows the 'Value' tab of the Tealeaf Event Manager. The 'Value to Record' section is visible, showing 'Value: Numeric' and 'Hit Number in Session'.

For simplicity's sake, remove the report group that was added second, just leaving the default fact. The Advanced mode for this event looks like this:

This event writes the current value of the hit attribute Hit Number in Session whose internal name is \$H.HitNumber. You could use other values, such as the session attribute Hit Count Running Total. However, the hit attribute was chosen to show other objects that are used as values.

## Reference specific occurrences of events or hit attributes

### Events

By default, when you reference an event from another event you are referencing the value from most recent previous occurrence of the event.

For example, this Advanced mode event fires if the value of the referenced event equals 10:

The screenshot shows the 'Event' tab of the Tealeaf Event Manager. The 'Referenced Event' section is visible, showing 'Numeric Value' and 'Equals' with the value '10'.

The code for the condition looks like the following.

```
If
$F.getLastFact("NS.F_E__REFERENCED_EVENT__634291458413861581").NumericValue
== 10)
```

In Advanced mode, the method is getLastFact. This method gathers the most recent occurrence. If you want to specify another occurrence, the syntax is the following:

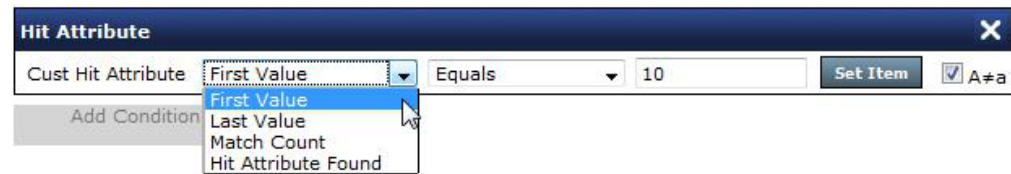
```
$F.getFact("<FACT>", <OCCURRENCE>)
```

For example, if you want the Advanced mode Event to fire on the third occurrence in the session of when the referenced event = 10, then the condition is the following:

```
If $F.getFact("NS.F_E_REFERENCED_EVENT__634291458413861581",
3).NumericValue == 10)
```

## Hit attributes

The Event Manager GUI allows you to specify whether to use the first or last match of the hit attribute on a hit in the condition.



```
if ($P["NS.P__CUST_HIT_ATTRIBUTE__634291466155274364"].firstValue() ==
"10")
```

In the above condition, the hit attribute object (\$P) named P\_\_CUST\_HIT\_ATTRIBUTE\_\_634291466155274364 for the customer namespace NS is configured to test whether the first value is set to the literal value 10.

If you want to specify a specific match on a hit, the syntax is:

```
$P["<CUST HIT ATTRIBUTE">].valueAt(<OCCURRENCE>).
```

To get the value the third occurrence of the hit attribute on the page, the condition would be:

```
if ($P["NS.P__CUST_HIT_ATTRIBUTE__634291466155274364"].valueAt(3) == "10")
```

**Note:** Retrieving a specific instance of a hit attribute on a page is not supported in Basic mode.

It may be common that you do not know which occurrence of a pattern on a hit contains the wanted value. If you want to check to see if any of the pattern occurrences have the wanted value, you can use a FOR loop:

```
for (var i = 0; i < $P["<CUST HIT ATTRIBUTE">].matchCount(); i++)
{
 var p = $P["<CUST HIT ATTRIBUTE">].valueAt(i);
 if (p == "<DESIRED VALUE>")
 {
 $F.setFact("<FACT>", p);
 }
}
```

Examining the code:

```
for (var i = 0; i < $P["<CUST HIT ATTRIBUTE">].matchCount(); i++)
```

- Determine how many times the pattern occurs on a hit, then runs the for loop that many times, using i as the counter.  
var p = \$P["<CUST HIT ATTRIBUTE">].valueAt(i);
- Get the value of the pattern at occurrence i and assign it to variable p.

- ```
if (p == "<DESIRED VALUE>")
```
- If the value of p equals the wanted value then:


```
$F.setFact("<FACT>", p);
```
 - Write the value of p as the value of the fact.

In this code, the for loop continues even after a match is found, until all occurrences of the pattern on the hit were evaluated. Since no wanted value is found again, no other fact is written. If it does find the wanted value again, it writes the wanted value, but you still get that same value. You can choose to insert the `break;` command to exit after the value was found.

Extracting values from inconsistent patterns using regular expressions

Sometimes, you are looking for patterns on a hit that are not consistent. For example, an error message could be formatted like the following:

```
<error id="35">Coupon Code is Invalid<\error>
```

The `id="35"` part is variable, since it represents the actual message itself. If you only want to retrieve the text part (Coupon Code is Invalid), you can't use a Basic Mode hit attribute, since the hit attribute requires strictly consistent patterns to match. You must use a hit attribute to return a much larger string of text and then extract the wanted portions to be the value.

So, first make a hit attribute that matches the consistent parts of the pattern:

This configuration returns `35">Coupon Code is Invalid` as the value. However, The wanted value may be just the `Coupon Code is Invalid` message.

To limit the pattern to only match for the message, you must apply a regular expression to the pattern to extract the wanted text. Below is the modified JavaScript:

```
function NS$E__ERROR_IN_RESPONSE_WITH_REGEXP__634290902173496582()
{
  if ($P["NS.P__ERROR_IN_RESPONSE__634290901401436582"].patternFound())
  {
    $P["NS.P__ERROR_IN_RESPONSE__634290901401436582"].lastValue().
      match('.*?>(.*?)$ ');

    $F.setFact
      ("NS.F_E__ERROR_IN_RESPONSE_WITH_REGEXP__634290902173496582", RegExp.$1);
  }
}
```

The regular expression is defined in the following snippet:

```
$P["NS.P__ERROR_IN_RESPONSE__634290901401436582"].lastValue().
  match('.*?>(.*?)$ ');
```

- The `match('.*?">(.*?)$')` part runs the regular expression on value that is returned by the last match of hit attribute `NS.P__ERROR_IN_RESPONSE__634290901401436582` on the hit.
 - If you wanted to run the RegEx on the first value, replace `lastValue()` with `firstValue()`.
 - Since the starting value is `35">Coupon Code is Invalid` and we want `{{Coupon Code is Invalid,}}`, we want to match on the part after `35">`. That is what the `.*?">` part of the regex code does. The `(.*?)$` is the part that is extracted.
- ```
$F.setFact("NS.F__ERROR_IN_RESPONSE_WITH_REGEX__634290902173496582",
 RegExp.$1);
```
- For the fact value, this snippet defines a `setFact` except for the modifier: `RegExp.$1`, which takes the first extracted value of the regular expression operation.
    - Regular expressions can theoretically extract multiple values. To use the second extracted value, insert `RegExp.$2`. To use the third value, insert `RegExp.$3`.
  - `RegExp` is a global variable on an event. You do not have to declare it or set it. It is set automatically.

The basic syntax is as follows:

```
function <EVENT>()
{
 if <CONDITION>
 {
 <OBJECT>.match('<REGULAR EXPRESSION>');

 $F.setFact("<FACT>", RegExp.$<EXTRACTED VALUE#>);
 }
}
```

The `RegExp` variable gets its values from the nearest previous match function. Suppose the code looks like the following:

```
<OBJECT 1>.match('<REGULAR EXPRESSION 1>');
$F.setFact("<FACT>", RegExp.$1);
<OBJECT 2>.match('<REGULAR EXPRESSION 2>');
$F.setFact("<FACT>", RegExp.$1);
```

The second `RegExp.$1` reference uses the first match from the second regular expression for object 2, instead of the match from the regular expression for object 1.

## General regex reference

The following is a useful regular expression reference for regex use in the Event Manager. <http://regexlib.com/CheatSheet.aspx>

---

## JavaScript for common Basic Mode objects

In the following section, the object name is referred to as `<Object>Name`. For example, `<NS>.F_E__<OBJECT>__<CREATED TIME>` is referred to as `<FACT>`.

## Conditions

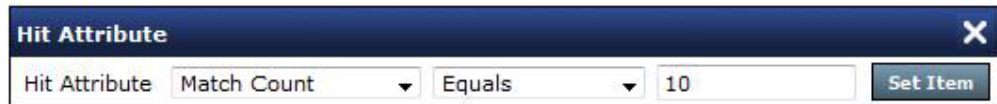
### Hit attribute found



The dialog box is titled "Hit Attribute" with a close button (X) in the top right corner. It contains three fields: "Hit Attribute" (text input), "Hit Attribute Found" (dropdown menu), and "Is true" (dropdown menu).

JavaScript:

### Hit attribute count in hit equals



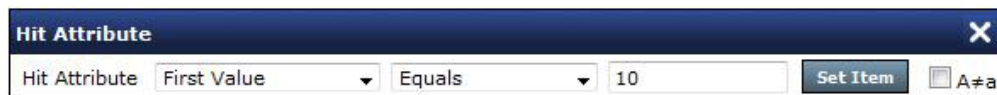
The dialog box is titled "Hit Attribute" with a close button (X) in the top right corner. It contains four fields: "Hit Attribute" (text input), "Match Count" (dropdown menu), "Equals" (dropdown menu), and "10" (text input). There is a "Set Item" button on the right.

JavaScript:

```
if ($P["<CUST HIT ATTRIBUTE>"].matchCount() == <VALUE>)
```

### Hit attribute value equals

**Note:** If you do not specify case sensitivity, all the values are set to uppercase. Matches are tested as case-insensitive matches.



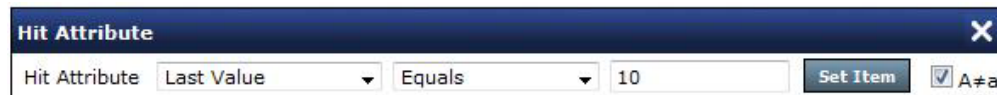
The dialog box is titled "Hit Attribute" with a close button (X) in the top right corner. It contains four fields: "Hit Attribute" (text input), "First Value" (dropdown menu), "Equals" (dropdown menu), and "10" (text input). There is a "Set Item" button and a checkbox labeled "A#a" on the right.

JavaScript:

```
if ($P["<CUST HIT ATTRIBUTE>"].firstValue().toUpperCase() == "<VALUE>")
```

### Hit attribute value equals (case sensitive)

Since this condition is case-sensitive, the values are not set to uppercase.

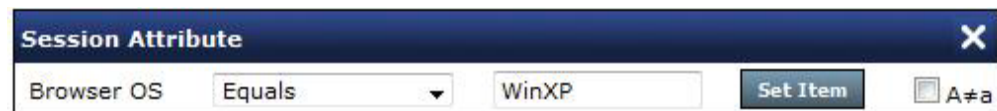


The dialog box is titled "Hit Attribute" with a close button (X) in the top right corner. It contains four fields: "Hit Attribute" (text input), "Last Value" (dropdown menu), "Equals" (dropdown menu), and "10" (text input). There is a "Set Item" button and a checked checkbox labeled "A#a" on the right.

JavaScript:

```
if ($P["<CUST HIT ATTRIBUTE>"].firstValue() <OPERATOR> "<VALUE>")
```

### Session attribute value equals



The dialog box is titled "Session Attribute" with a close button (X) in the top right corner. It contains three fields: "Browser OS" (text input), "Equals" (dropdown menu), and "WinXP" (text input). There is a "Set Item" button and a checkbox labeled "A#a" on the right.

There are two types of session attributes:

- System
- Custom

**System session attributes:** System session attributes are referenced by name.

- There is no namespace that is associated with any session attribute.

JavaScript:

```
if ($$.<SESSION ATTRIBUTE> == "<VALUE>")
```

#### Example - changing the Canister safety limits:

In Release 7.2 and earlier, the Canister safety limits were controlled by three settings for the Canister. These settings defined limits for:

- Maximum number of hits in a session
- Maximum total bytes in a session
- Maximum total time in seconds in a session

In Release 8.0 and later, these limits are managed through Canister Safety Limits [BB], a Tealeaf Standard Event that accesses three Tealeaf session attributes.

- See “Canister Safety Limits [BB] event” on page 91.

Through Advanced Mode in the Event Manager, you can edit the JavaScript definition of the Canister Safety Limits event. Below is the default definition.

```
// Canister Safety Limits [BB]
function PALISE_SAFETY_LIMITS()
{
 //Default: 2048 Hits
 if ($$.NumberOfHits > 2048)
 TLCloseSession.CloseForSafetyHits();

 //Default: 5242880 Bytes (5MB)
 if (($$.TotalREQBytes + $$.TotalRSPBytes) > 5242880)
 TLCloseSession.CloseForSafetySize();

 //Default: 3600 Seconds (60 minutes)
 if ($$.TotalTime > 3600)
 TLCloseSession.CloseForSafetyTime();
}
```

1. Edit the event for the canister safety limits.

**Note:** You should verify the other settings in the event before switching to Advanced Mode. After you switch to Advanced Mode, returning to Basic Mode removes all JavaScript changes you made during the current edit.

2. When you finished editing the basic properties of the event, click **Advanced Mode**.
3. In the table below, you can review the canister safety limits, which are session attribute variables that are maintained by the Tealeaf Canister. If any of these values are exceeded, then the active session is automatically closed by the Canister and written to disk. Subsequent hits that are collected by the Canister for the same visitor session are assigned to a new Tealeaf session identifier.

Table 52. Example - Changing the Canister safety limits

| JavaScript Variable                    | Default Value | Description                                                                                             |
|----------------------------------------|---------------|---------------------------------------------------------------------------------------------------------|
| \$\$.NumberOfHits                      | 2048          | Maximum number of hits that are allowed in a single session.                                            |
| \$\$.NumberOfHits + \$\$.TotalRSPBytes | 5242880       | Total number of bytes allowed in all requests and responses of a single session. Default value is 5 MB. |
| \$\$.TotalTime                         | 3600          | Maximum time in seconds allowed in a single session. Default value is 1 hour.                           |



4. To change the values, enter a new value where you see the default value in the JavaScript.
5. When you changed all values as needed, click **Save Draft**.
6. The JavaScript is validated for you before saving.
7. After you have saved your session, you should test it in the Event Tester, where you can load a session that exceeds one of your defined limits. See Chapter 10, "Event Tester," on page 355.
8. After you tested the event, save it to the server.
9. The new canister safety limits are applied to all subsequent sessions.

**Note:** This event references a set of session attributes that are also sources for the following Tealeaf building block events:

- Costly Session - Too Long
- Costly Session - Too Many Hits
- Costly Session - Too Big

After you modified the Canister Safety Limit event, the above events continue to fire and cannot be disabled, which may cause confusion for some users. However, you can clear the Display in Portal option for these events to limit user interaction with them. You might also consider changing the description to include NOT\_USED or similar, as well as adding them to a special event label.

**Custom session attributes:** Custom session attributes are referenced by the order in which they were created in the Event Manager. For example, CustomVar22 was created after CustomVar21.

- You can locate the internal identifier by mousing over the session attribute in the Session Attributes tab. See Chapter 6, "TEM Session Attributes tab," on page 287.
- There is no namespace that is associated with any session attribute.

JavaScript:

```
if ($$.CUSTOMVAR<#> == "<VALUE>").
```

### Event exists on hit

Although the Basic mode looks for the event, in Advanced mode, you are actually looking to see if the fact for the event exists.

| Event <span style="float: right;">X</span> |                 |           |
|--------------------------------------------|-----------------|-----------|
| Another Event                              | Exists on Hit ▼ | Is true ▼ |

JavaScript:

```
if ($F.getLastFact("<FACT>").HitNumber == $H.HitNumber)
```

### Event exists in session

| Event <span style="float: right;">X</span> |                     |           |
|--------------------------------------------|---------------------|-----------|
| Another Event                              | Exists in Session ▼ | Is true ▼ |

JavaScript:

```
if ($F.factCount("<FACT>") > 0)
```



## Event count in session equals

| Event         |                  |        |    |                                         |
|---------------|------------------|--------|----|-----------------------------------------|
| Another Event | Count in Session | Equals | 10 | <input type="button" value="Set Item"/> |

JavaScript:

```
if ($F.factCount("<FACT>") <OPERATOR> <VALUE>)
```

## Latest Event occurrence timestamp equals

| Event         |           |        |    |                                         |
|---------------|-----------|--------|----|-----------------------------------------|
| Another Event | Timestamp | Equals | 10 | <input type="button" value="Set Item"/> |

JavaScript:

```
if ($F.getLastFact("<FACT>").HitTimeEpoch <OPERATOR> <VALUE>)
```

## Latest Event occurrence hit number equals

| Event         |            |        |    |                                         |
|---------------|------------|--------|----|-----------------------------------------|
| Another Event | Hit Number | Equals | 10 | <input type="button" value="Set Item"/> |

JavaScript:

```
if ($F.getLastFact("<FACT>").HitNumber == <VALUE>)
```

## Latest Event occurrence value (numeric) equals

| Event         |               |        |    |                                         |
|---------------|---------------|--------|----|-----------------------------------------|
| Another Event | Numeric Value | Equals | 10 | <input type="button" value="Set Item"/> |

JavaScript:

```
if ($F.getLastFact("<FACT>").NumericValue == <VALUE>)
```

## Latest Event occurrence specified dimension value does not include

| Event         |                           |                |       |                                                                      |
|---------------|---------------------------|----------------|-------|----------------------------------------------------------------------|
| Another Event | Another Event Dim 1 Value | Does not equal | Hello | <input type="button" value="Set Item"/> <input type="checkbox"/> A#a |

JavaScript:

```
if
($F.getLastFact("<FACT>_FACT<#>").DIM<#>.toUpperCase().indexOf("<VALUE>")
<0)
```

The Fact number (Fact1) is the order that the report group was added to the event. It is not the order that the report group is listed in the event. For example, if you add report group A to an event, it is Fact1. If you add report group B, it is Fact2. If you remove report group A, report group is still listed as Fact2, even though it is the only report group that is listed on the event. If you readd report group A, that is still Fact1, even though report group B is ordered first in the display.

The dimension number (Dim1) is the order that the dimension is listed in the report group. Since you cannot remove a dimension from a report group, the dimension is always the same as the displayed order.

You do not have to specify the fact number for the default no-dimension report group. Nor do you have to specify a dimension number in this case, since there are no dimensions.

### Latest Event occurrence specified dimension value is empty

| Event         |                           |          |
|---------------|---------------------------|----------|
| Another Event | Another Event Dim 1 Value | Is empty |

JavaScript:

```
if (((tmpDim = $F.getLastFact("<FACT>_FACT<#>").Dim<#>) == "TLT$EMPTY" ||
tmpDim == "TLT$NULL"))
```

### Latest Event occurrence specified dimension value is not empty

| Event         |                           |              |
|---------------|---------------------------|--------------|
| Another Event | Another Event Dim 1 Value | Is not empty |

JavaScript:

```
if (((tmpDim = $F.getLastFact("<FACT>_FACT<#>").Dim<#>) != "TLT$EMPTY" &&
tmpDim != "TLT$NULL"))
```

### Events occur in sequence

The individual conditions are evaluated and passed to the Event Engine to evaluate the sequence. The value set is the value of the variable seq.

- If the sequence is true, the value of seq is the distance in hits, including 0 (which means they all occurred on the same hit).
- If the sequence is not true, the value of seq is set as -1.

| Events occur in the following sequence |                   |         |
|----------------------------------------|-------------------|---------|
| Event                                  |                   |         |
| Event 1                                | Exists in Session | Is true |
| Event                                  |                   |         |
| Event 2                                | Exists in Session | Is true |
| Event                                  |                   |         |
| Event N                                | Exists in Session | Is true |

JavaScript:

The syntax of the LoadEventCond function follows this pattern:

```
LoadEventCond('<FACT>', <FUNCTION>, <OPERATOR>, <CASE SENSITIVE?>)
```

<FACT> includes the full event name. See “Distance between Events in seconds with Event being a specific value, value equals first distance” on page 386.

## Distance and sequence Event operators

The available operators are:

- eExists
- eNotExists
- eEquals
- eNotEqual
- eLessThan
- eLessThanOrEqualTo
- eGreaterThan
- eGreaterThanOrEqualTo

The following operators apply to text value events only:

- eContains
- eContainsNot
- eEmpty
- eNotEmpty

## Distance between Events in seconds, value equals first distance

The value is the same units as the condition. For example, if the condition is in seconds, the distance is in seconds. Although only the condition is shown here, the value of the event must be mentioned because the final value is referenced in the event condition.

|                                                                      |                     |           |    |    |    |
|----------------------------------------------------------------------|---------------------|-----------|----|----|----|
| Distance between events is between the following number of seconds ▼ |                     |           | 10 | to | 50 |
| <b>Event</b> ↓ ×                                                     |                     |           |    |    |    |
| Event 1                                                              | Exists in Session ▼ | Is true ▼ |    |    |    |
| <b>Event</b> ↑ ×                                                     |                     |           |    |    |    |
| Event 2                                                              | Exists in Session ▼ | Is true ▼ |    |    |    |

JavaScript:

The syntax of the EvaluateDistanceEvent function follows this pattern:

```
EvaluateDistanceEvent ('<CONVERT TO SECONDS?>', $.NumberOfHits, <LOWER BOUND>, <UPPER BOUND>, <VALUE INSTANCE>)
```

The distance is first calculated in hits (\$.NumberOfHits), and then the seconds is derived from that value (the true parameter is to convert the value to seconds).

In the next example where the distance is in hits, that parameter is set to false, and the distance is not converted to seconds. The Value Instance is the first, last, minimum, or maximum.

## Distance between Events in Seconds, Value Is In a Range

Distance between events is between the following number of hits 10 to 50

| Event   |                   |         |
|---------|-------------------|---------|
| Event 1 | Exists in Session | Is true |

| Event   |                   |         |
|---------|-------------------|---------|
| Event 2 | Exists in Session | Is true |

## Distance between Events in seconds with Event being a specific value, value equals first distance

Distance between events is between the following number of hits 0 to 0

| Event   |               |           |
|---------|---------------|-----------|
| Event 1 | Numeric Value | Equals 10 |

| Event   |                   |         |
|---------|-------------------|---------|
| Event 2 | Exists in Session | Is true |

JavaScript:

## Event values

In the Value step, you can configure the values that are recorded when the event fires.

**Note:** The instance of the event value is determined by the Track setting and the Value Type setting, both of which are available in the Event Summary at the top of the Event Manager.

### Value to Record:

Value: Count Only

Tracked Event Occurrence: First per Session

Searchable & Reportable: ☒

Flag Every Occurrence  
in Replay: ☒

#### More Options

Send to Event Bus: ☐

Session Attribute: [Select...](#)

Update Session Timeout: ☐ minutes

Additional Actions: None

## Current Event count

You may track the counts for the current event, as well as counts for different events. For current events:

**Value to Record:**

Value:  Text Event **x**

Other Event latest text value

**Value to Record:**

Value:  Text Event **x**

Other Event count

**Value to Record:**

Value:  Another Event **x**

JavaScript:

Other Event latest occurrence time

**Value to Record:**

Value:  Another Event **x**

Other Event latest occurrence hit

**Value to Record:**

Value:  Another Event **x**

Other Event latest numeric value

**Value to Record:**

Value:  Numeric Event **x**

Hit Attribute last match on hit value

**Value to Record:**

Value:  Hit Attribute **x**

## Hit Attribute first match on hit value

### Value to Record:

Value:  Hit Attribute **x**

JavaScript:

## Distance Event first match value

**Note:** The condition is also displayed to show how the distance value is calculated.

### Value to Record:

Value:

JavaScript:

## Distance Event last match value

### Value to Record:

Value:

JavaScript:

## Distance Event min match value

### Value to Record:

Value:

JavaScript:

## Distance Event max match value

### Value to Record:

Value:

JavaScript:

## More Options step

In the More Options step, you can configure more options that include delivery to other systems and changes to session properties.

## Set session timeout

Update Session Timeout: ☒ 10 minutes

## More actions

### Close Session

Additional Actions: Close Session ▼

JavaScript:

### Clone Session

Additional Actions: Clone and Close Session ▼

JavaScript:

### Discard Session

Additional Actions: Discard Session ▼

JavaScript:

The time is entered in minutes in the GUI, and converted into seconds for Advanced mode. So, 10 minutes would be set as 600 in the Session Timeout setting.

**Note:** In Advanced Mode, the `TLDiscardSession()` function call discards the session. However, you must manually configure to send the session to the Event Bus through the More Options step. For more information, Chapter 11, “Advanced Mode for Events,” on page 367.

## Rounding event values to a fixed number of digits

In some cases, you may need to round off the digits after a decimal point to a fixed number of digits. For example, values that are submitted as U.S currency may require rounding to two decimal places for display purposes.

The following example is more esoteric. By default, the Event Engine is configured to record data under the assumption that the decimal point is identified by the period (109.02). However, in some locales, the decimal point is identified by a comma (109,02).

The Event Engine in the Canister attempts to identify the proper decimal point to use for recording purposes that are based on a configuration setting. However, for some values, it may be ambiguous. For example, values between 1,000 or 999,999 could represent decimal values or not.



- In Canister configuration, you can identify the decimal point character, which is used to partially resolve these ambiguous values. See "Configuring the CX Canister" in the *IBM Tealeaf CX Configuration Manual*.

However, some report data may contain many of these ambiguous numeric strings.

When the comma decimal point (,) is configured for numeric value extraction, the conversion of calculated fact value may not be correct.

- For example, the Activity reports generate many ambiguous strings. See "Activity Reports" in the *IBM Tealeaf Reporting Guide*.

If incorrect values are encountered, the event that records the value can be corrected to convert the number to make an unambiguous value by rounding it off to four digits.

1. Open the event in the Event Manager.
  - See Chapter 3, "TEM Events tab," on page 45.
2. Edit the JavaScript for the event to change the number to a decimal precision of less than or greater than three digits.
3. In the following example, the Page Generation event (TL\$PageGen()) is modified to generate four digits of data after the decimal:
  - Original version:
 

```
function TL$PageGen()
{
 var pageGen = $H.GenTime/1000;
 var f = $F.getFact("TL.PageGenFact");
 if (f != null)
 pageGen += f.NumericValue;
 $F.setFact("TL.PageGenFact", pageGen);
}
```
  - Modified version:
 

```
function TL$PageGen()
{
 var pageGen = $H.GenTime/1000;
 var f = $F.getFact("TL.PageGenFact");
 if (f != null)
 pageGen += f.NumericValue;
 $F.setFact("TL.PageGenFact", pageGen.toFixed(4));
}
```
4. Save the event.
5. If you have access to a session containing values detected by the event, you can test the event in the Event Tester. See Chapter 10, "Event Tester," on page 355.
6. Commit your changes to the server.

The JavaScript number converts to a period decimal string format only. For a calculated number like 1.000, the Event Engine treats the period as a grouping separator and converts it to the value 1000. By making the decimal precision to four digits, 1.0000, the event engine can resolve that the period is actually a decimal point.

The `pageGen.toFixed(4)` includes the number of decimal places to which the value is rounded.



## Setting Report Groups

In this example, the value of the event is the fact count for the session.

### With Report Group(s):

| URL/Host/App/Server |             |
|---------------------|-------------|
| Dimensions:         | URL         |
|                     | Host        |
|                     | Application |
|                     | Server      |

Even though only one fact was specified, remember that you are actually setting two facts. The first fact is the default No Dimension Report Group fact.

The second fact is the added report group. By default, the Event Manager sets the value of all facts to be the value that is set in the Value step. However, it is possible to set different values for different facts.

To make a new fact in Advanced mode, click **New Current Event Fact** in the left column.

| Add Fact: (new fact)                        |                                                  |
|---------------------------------------------|--------------------------------------------------|
| Name                                        | <input type="text"/>                             |
| Description                                 | <input type="text"/>                             |
| Value Type                                  | Numeric                                          |
| Report Group                                | No Dimension Report Group <span>Select...</span> |
| Tracked Occurrence                          | First per Session                                |
| Search                                      | First                                            |
| Report                                      | First                                            |
| Flag Every Occurrence in Replay:            | <input type="checkbox"/>                         |
| Send to Event Bus                           | <input type="checkbox"/>                         |
| <span>Save Draft</span> <span>Cancel</span> |                                                  |

The Fact Editor is opened:

The Value Type, Tracked Occurrence, Search, and Report settings are shared across all facts. If you change one of these values in a fact, it is automatically changed in all facts for this event.

## External calls

Calls to external JavaScript code are not supported.

## Best practices for Tealeaf EventEngineScripting

This section provides some examples and recommended practices for creating Javascript-based objects in the Tealeaf Event Manager. These practices and the related examples are included to help to organize code and to simplify debugging.

### Creating regular expression patterns

In this example, we are trying to create a regular expression pattern in JavaScript to look for the last value in the response, matching on the fourth match group.

Here is one implementation:

```
// the pattern used to extract the amount (found in match group 4 ($4)
var pattern = "COMP\\x3B(.?)\\x3A(.?)\\x3B(.?)\\x3B(.?)($|\\)";

// The weba.s.products hit attribute is the pattern found in the response.
// We want the last one in the response.
// the amount is found in the fourth match group of the last match.
// var $amt = /$pattern/.exec
// ($P["APP.P__H_WEBA_S_PRODUCTS__HA__634261087410339197"].lastValue()).$4;
```

In the above example, two methods are called in a single line: `.exec()` and `lastValue()`. However, if the `exec()` method cannot find a match, it returns a null value, which generates a runtime error. Determining the source of this error is not straightforward.

To simplify debugging issues, Tealeaf recommends breaking up the above JavaScript into multiple variable assignments, as in the following example:

```
//Define the regular expression
var pattern = "COMP\\x3B(.*)\\x3A(.*)\\x3B(.*)\\x3B(.*)($|\\)";

//Define the search buffer
var $search_buffer =
$P["APP.P__H_WEBA_S_PRODUCTS__HA__634261087410339197"].lastValue();

//Construct the RegEx object (If the pattern is invalid, this statement fails)
var $regex = new RegExp(pattern);

//Returns [FullMatch, Group1, Group2, Group3, Group4]
var $match = $regex.exec($search_buffer);

//Check to see if the match was successful and ensure that the match group is
//available
if($match && $match.length > 4) {
 var $amt = $match[4];
}
```

The above code separates the regular expression checks into simpler declarations, which isolate the regex definition, pattern definition, regex compilation, and regex execution. Using simpler declarations:

1. Simplifies automated and manual JavaScript validation
2. Simplifies debugging issues

The performance impacts of writing looser JavaScript are minimal.



---

## Chapter 12. EventEngineScripting reference

The Tealeaf JavaScript Event Engine is a Javascript-based language running in the Google V8 JavaScript Engine with extensions specific to the Tealeaf data model. Google V8 - <http://code.google.com/p/v8/> ECMAScript (ECMA-262, third addition) - <http://www.ecma-international.org/publications/standards/Ecma-262.htm>

**Note:** ECMAScript is not JavaScript we are used to in the browser. Most notably, the DOM (Document Object Model) is really an extension to EMCAScript for HTML. For the Tealeaf data model, we made similar extensions to the language to work with the HTTP data accessed by the event engine.

### EES reference

- “EES reference - attribute reference” on page 402
- “EES reference - object definitions” on page 397
- “EES reference - Tealeaf event reference” on page 438

### Page contents

---

## Tealeaf Object Model (TOM)

There are six Tealeaf specific objects in the Tealeaf Object Model (TOM). Four of the objects have a global variable that is assigned during the processing of a hit and session, which is denoted by the \$ character and a single letter.

- TLSession (\$S) - session object
- TLHit (\$H) - hit object
- TLFactColl (\$F) - fact collection for session
- TLPatternColl (\$P) - pattern collection for current hit
- TLPattern - pattern object in \$P collection
- TLFact - fact object in \$F collection

### Event object internal identifiers

The TLFact and TLPattern objects are references by an identifier in the following form:

`Namespace.InternalName`

Each customer has a unique assigned namespace that is included in your license file.

- Objects within the Tealeaf namespace are identified as TL.\*. Typically, these objects are read-only.

In advanced mode, these event object identifiers are inserted in the JavaScript code. Otherwise, the namespace identifier is invisible to the user.

---

## Examples

The following examples are all in JavaScript and assume the object definitions (namely fact and pattern) exist in the database.

**Note:** This sample code is syntactically correct but may not work in a production system.

**Note:** For all the examples below, the namespace is NS1. This value identifies the namespace that is associated with the customer and is consistent for all user-defined objects that are created by Tealeaf users within your enterprise. Your namespace value cannot be changed.

## Counting a session

**Trigger:** SessionStart  
`$F.setFact("NS1.F_SESSION_START",0);`

## Counting a Status Code 404 hit

**Trigger:** Page  
`if ($H.StatusCode == 404)  
{  
 $F.setFact("NS1.F_HTTP_404",0);  
}`

## Store current value of shopping cart

**Trigger:** Page  
`if ($P["NS1.CART_TOTAL"].lastValue() != '')  
{  
 $F.setFact("NS1.F_CART_TOTAL", $P["NS1.CART_TOTAL"].lastValue());  
}`

## Record shopping cart value if abandoned session

**Trigger:** SessionEnd  
`if ($F.factCount("NS1.ABANDONMENT") > 0)  
{  
 $F.setFact("NS1.F_CART_TOTAL_ABANDONMENT",  
 $F.getLastFact(["NS1.F_CART_TOTAL"]).NumericValue);  
}`

## Record search term in a fact (session temporary variable)

**Trigger:** Page  
`if ($P["NS1.SEARCH_TERM"].lastValue() != '')  
{  
 $F.setFact("NS1.F_TMP_SEARCH_TERM", $P["NS1.SEARCH_TERM"].lastValue());  
}`

## Record the number of searches in a session

**Trigger:** SessionEnd  
`$F.setFact("NS1.F_SEARCHES_BY_USER", $F.factCount("NS1.F_TMP_SEARCH_TERM"));`

## Immediate match

Start pattern has data, and End pattern is blank. \$P returns true for `patternFound()`. The `{{matchCount()}}` reflects the number of times the start pattern is found and the Start pattern string for the matching pattern text.

## Change session timeout

By default, each session is configured to timeout based on a predefined value in the Canister.

- See "Configuring the CX Canister" in the *IBM Tealeaf CX Configuration Manual*.

You can override this setting by changing the timeout for individual sessions.

**Trigger:** All except Session End

In the example below, the timeout for the current session is reset to be 1800 seconds (30 minutes).

- SessionTimeout is an Int value. See "EES reference - object definitions."
- ```
$$SessionTimeOut = 1800;
```

Discard session

Based on evaluation, you may choose to discard sessions that are not of use and should therefore not be stored.

- When a session is discarded, it is retained in the Short-Term Canister as long as the session is active and is then discarded before it is written to the Long-Term Canister.

Trigger: Any

Note: In Advanced Mode, the `TLDiscardSession()` function call discards the session. However, you must manually configure to send the session to the Event Bus through the More Options step. For more information, Chapter 11, "Advanced Mode for Events," on page 367.

```
$$DiscardSession = true;
```

EES reference - object definitions

Page contents

TLEnv Object (\$E)

The \$E object contains information about the Processing Server environment.

Note: This object is only available in Advanced mode.

Property

Description

ServerName

Name of the Processing Server

IP

IP address of the Processing Server

Version

Version of the Event Engine on the Processing Server

TLSession Object (\$\$)

Table 53. TLSession Object (\$\$)

Property Name	Type	Description
ID	Long	Session ID in Canister
TLTSID	String(32)	TLTSID hash value that is used for sessioning

Table 53. *TLSession Object (\$\$) (continued)*

Property Name	Type	Description
TTLUID	String(32)	TLTUID cookie value
TLTVID	String(32)	Visitor ID
IP	String(32)	Client IP address (first hit of session)
DomainName	String(256)	Domain name (HTTP_HOST)
UserAgent	String(256)	User agent
BrowserOS	String(256)	Browser OS
Browser Version	String(256)	Browser Version
BrowserType	String(256)	Browser Type (BROWSER, BOT, Other)
IsBot	Boolean	Bot traffic (True/False)
StartTime Epoch	Int	Session Start time (microseconds)
LastHit Epoch	Int	Last hit of Session (microseconds)
EventCount	Int	Event count for session
PageCount	Int	Page count for session
Licensed PageCount	Int	Licensed page count for session
ImgCount	Int	Image count for session
CUICount	Int	Count of UISDK hits, as detected from the visitor's browser This session attribute requires UI Capture. See "UI Capture FAQ" in the <i>IBM Tealeaf UI Capture for Ajax FAQ</i>.
OtherCount	Int	Non-Page/Image count for session
NumberOf Hits	Int	Running count of the number of hits in the session
First PageURL	String(256)	First URL of session
LastPageURL	String(256)	Last hit of session URL
TotalTime	Long	Length of session (microseconds)
TotalREQ Bytes	Int	Total Request bytes in session
TotalRSP Bytes	Int	Total Response bytes in session
Referrer	String(256)	Referrer for session
Referrer Domain	String(256)	Referrer domain for session
Interesting	Boolean	Keep session for archive
Expiration Time	Int	Epoch to expire session (seconds)

Table 53. *TLSession Object (\$S)* (continued)

Property Name	Type	Description
Session CloseReason	Int	Reason why session was closed. See "SessionCloseReason."
Session TimeOut	Int	Session timeout (Seconds)

SessionCloseReason

SessionCloseReason indicates the reason why the session was closed.

Set this property to one of the following values, which closes the session:

Table 54. *Session Close Reason*

Value	Description	JS Reference
1	Close session because of too many hits. The Canister limits each session to a predefined maximum number of hits. See "Configuring the CX Canister" in the <i>IBM Tealeaf CX Configuration Manual</i>.	eSafetyHits
2	Close session because of an excessive size. The Canister limits each session to a predefined maximum size. See "Configuring the CX Canister" in the <i>IBM Tealeaf CX Configuration Manual</i>.	eSafetySize
3	Close session because of excessive time. The Canister limits each session to a predefined session timeout. See "Configuring the CX Canister" in the <i>IBM Tealeaf CX Configuration Manual</i>.	eSafetyTime
4	Close session by event.	eSessionCloseEvent
5	Close session by Canister event.	eSessionCloseCopyAttribEvent

When the SessionCloseReason property is set, the Canister opens a new session to contain the subsequent hit with the same sessionizing key.

- Except for eSessionCloseEvent, the Canister transfers the session attributes to the follow-on session, if it still exists in the Short-Term Canister when the new session is created.

TLHit Object (\$H)

Table 55. *TLHit Object (\$H)*

Property Name	Type	Description
TLTHID	String(32)	TLTHID unique hash for hit

Table 55. TLHit Object (\$H) (continued)

Property Name	Type	Description
URL	String(256)	URL for hit (no query string)
HitNumber	Int	Sequence number in session
QueryString	String(256)	Query string for page
StatusCode	Int	HTTP Status Code
HitDuration	Int	Duration of hit in microseconds
ReqSize	Int	Request size in bytes
RspSize	Int	Response size in bytes
Content Encoding	String(256)	Content encoding
HitTime Epoch	Int	Hit time (microseconds)
Referrer	String(256)	Hit referrer
HitType	Int	Hit type from [iamie] section
RoundTrip	Int	Round Trip (microseconds)
NetworkTrip	Int	Network Trip (microseconds)
GenTime	Int	Web server generation (microseconds)
Req Cancelled	Bool	True if req canceled
Req Discarded	Bool	True if req discarded
Request TimeEx	Int	Request Time stamp (microseconds)
Request Start TimeEx	Int	Request Start Time stamp (microseconds)
Response TimeEx	Int	Response Time stamp (microseconds)
Response AckTimeEx	Int	Response ACK time stamp (microseconds)
TLapi Arrival TimeEx	Int	TL API Arrive Time (microseconds)
ConnSpeed	Int	Connection Speed (bit / sec)
ConnType	String	Connection Type
isCUI	Boolean	Set to true if the hit is a client user interface event. This hit attribute requires UI Capture. See "UI Capture FAQ" in the <i>IBM Tealeaf UI Capture for Ajax FAQ</i>.

TLFactColl Object (\$F)

Table 56. *TLFactColl Object (\$F)*

Method Name	Return Value	Description
getFact(n, p)	TLFact Object	Get a fact with a name N at position P in the list The P value is a zero-based counter of the instance number in the list. If you want the second instance of the fact, for example, use 1.
getFirst Fact(n)	TLFact Object	Get first occurrence of fact with name N
getLast Fact(n)	TLFact Object	Get last occurrence of fact with name N
setFact(n, val)	Void	Set fact with name N and value VAL
factCount (n)	Integer	Get count of occurrences of fact with name N. This value is updated whenever a fact is added to the fact collection.

TLPatternColl Object (\$P)

Table 57. *TLPatternColl Object (\$P)*

Method Name	Return Value	Description
\$P ['<name>']	TLPattern	Get hit attribute object by name

TLFact Object

Table 58. *TLFact Object*

Property Name	Type	Default	Description
ID	String(256)	UNKNOWN	ID (string value)
EventID	Int	-1	Event ID
Value	String(32)	""	Text Found
Numeric Value	Double	0	Numeric value of fact
Dim Group	String(256)	""	Group ID
Hit Number	Long	-1	Hit Number in sessions
HitTime Epoch	Long	-1	Hit Time in Epoch
Dim1	String(256)	""	Text for dimension
Dim2	String(256)	""	Text for dimension

Table 58. *TLFact Object (continued)*

Property Name	Type	Default	Description
Dim3	String(256)	""	Text for dimension
Dim4	String(256)	""	Text for dimension

Null fact

When an undefined fact record is accessed from EventEngineScripting JavaScript, a Null fact is returned. The values that are returned in the null fact are listed as the default values in the preceding table. See “TLFact Object” on page 401.

TLPattern Object

Table 59. *TLPattern Object*

Method Name	Return Value	Default	Description
valueAt(x)	String	""	Return the Nth pattern that is found in buffer
firstValue()	String	""	Return first pattern that is found in buffer
lastValue()	String	""	Return last pattern that is found in buffer
matchCount()	Integer	0	Return number of matches for pattern in buffer
patternFound()	Boolean	false	True - pattern(s) found in buffer

Null hit attribute

When an undefined hit attribute is accessed from EventEngineScripting JavaScript, a null hit attribute is returned. The values that are returned in the null hit attribute are listed as the default values in the preceding table. See “TLPattern Object.”

EES reference

- “EES reference - attribute reference”
- EES Reference - Object Definitions
- “EES reference - Tealeaf event reference” on page 438

EES reference - attribute reference

As sessions are captured and evaluated in the Short Term Canister, Tealeaf maintains a series of attributes for individual hits in the session and the overall session.

- A *hit attribute* is a numerical or text value pertaining to an individual hit. A hit attribute value may be extracted from the request or response or calculated based on a defined pattern.

- A *step attribute* is a hit attribute that is applied to step-based data. It can be referenced and behaves exactly like a hit attribute. See "Step-Based Eventing" in the *IBM Tealeaf Event Manager Manual*.
- See "Hit attribute reference" on page 408.
- A *session attribute* is an attribute that applies to the entire session. In the Short Term Canister, session attributes are initialized when the first hit of a new session enters the STC and can be updated during the session. These values can be extracted from session data or calculated.

Note: Write access to user-defined session attributes is permitted only through the defined action of an event.

- See "Session attribute reference" on page 404.

These references are available for use in the Tealeaf Event Manager. In particular, you may use them as conditions in event definitions.

Note: For information about an individual attribute, move the mouse over the attribute in the Condition step in the Tealeaf Event Manager.

- See Chapter 3, "TEM Events tab," on page 45.

This section contains reference information about hit attributes and session attributes. In the tables below, you can review the hit attributes and session attributes available for use.

- Attribute reference information includes the JavaScript for each attribute to reference in Advanced Mode. See Chapter 11, "Advanced Mode for Events," on page 367.

Legend

Field Description

Namespace

The namespace that contains the attribute. All Tealeaf system session attributes and hit attributes are assigned to the TL namespace.

Internal Name

The internal name for the attribute. This value is used when referencing the attribute through JavaScript.

JavaScript Variable

The variable name in JavaScript for the attribute.

Type The programmatic type of attribute: boolean, string, int.

Display Name

The name of the attribute as it appears in the Tealeaf Event Manager in the Portal.

Source Type

The type of source for the attribute.

Name of Source

The specific source of the attribute.

Description

The user-friendly description for the attribute, which appears in the Tealeaf Event Manager in the Portal.

Timestamp attributes may be listed in either or both of the following methods:

1. Epoch values: These values are in UNIX time, which is defined as the number of seconds elapsed since midnight UTC of January 1, 1970.
2. (microseconds): The number of elapsed microseconds. To calculate the number of seconds, divide this value by 1,000,000.

For more information about timestamps, see "Performance Measurement" in the *IBM Tealeaf Passive Capture Application Manual*.

- For more information about timestamp reporting, see "Analyzing Performance" in the *IBM Tealeaf Reporting Guide*.

Session attribute reference

Session attributes are available at any time during the session. These values are running totals. For example, if the session is 20 hits, the value of Length of session in time on hit #10 is the length of session for hits 1-10.

- Session attributes can be included in any event trigger. However, they only represent the final statistics for the session when they are evaluated in the End of Session trigger.
- In EventEngineScripting, references to session attributes begin with \$S.*.

Table 60. Session Attribute Reference

Name space	Internal Name	JavaScript Variable	Type	Display Name	Source Type	Name of Source	Description
TL	S_BROWSER_OS	BrowserOS	string	Browser OS	PATTERN	TL.TLT_BROWSER_PLATFORM	Visitor operating system. Example: WinXP
TL	S_BROWSER_TYPE	Browser Type	string	Browser Type	PATTERN	TL.TLT_BROWSER	Visitor browser type. Example: IE
TL	S_BROWSER_VERSION	Browser Version	string	Browser Version	PATTERN	TL.TLT_BROWSER_VERSION	Visitor browser type and version. Example: IE7.0
TL	S_CUI_COUNT	CUICount	int	CUI Hit Count Running Total	CALCULATED_SOURCE		Running count of CUI hits
TL	S_DISCARD_SESSION	Discard Session	boolean	Discard Session Flag	CALCULATED_SOURCE		Discard session event triggered? (T/F)
TL	S_DOMAIN_NAME	Domain Name	string	Domain Name of Server	PATTERN	TL.HTTP_HOST	Domain name of Tealeaf server
TL	S_EXPIRATION_TIME	Expiration Time	int	Expiration Time Epoch for Session (sec)	CALCULATED_SOURCE		Time in seconds between the last hit of session and session timeout value
TL	S_FIRST_PAGE_URL	FirstPage URL	string	First Page of Session URL	PATTERN	TL.TLT_URL	
TL	S_HIT_COUNT	Number Of ,Hits	int	Hit Count Running Total	CALCULATED_SOURCE		Running count of hits
TL	S_ID	ID	int64	Session ID in Canister	CALCULATED_SOURCE		ID of session in Tealeaf canister where it is stored
TL	S_IMG_COUNT	ImgCount	int	Image Count Running Total	CALCULATED_SOURCE		
TL	S_INTERESTING	Interesting	boolean	Interesting Flag	CALCULATED_SOURCE		Is interesting session? (Always true)
TL	S_IP	IP	ansistring	Client IP address	PATTERN	TL.REMOTE_ADDR	Visitor IP address

Table 60. Session Attribute Reference (continued)

Name space	Internal Name	JavaScript Variable	Type	Display Name	Source Type	Name of Source	Description
TL	S_IS_BOT	IsBot	boolean	Bot (T/F)	CALCULATED_SOURCE		Is bot? (T/F)
TL	S_LAST_HIT_TIME_EPOCH	LastHit Epoch	int	Last Hit Req Time Epoch (?sec)	PATTERN	TL.RESPONSE_TIME_EX	
TL	S_LAST_PAGE_URL	LastPage URL	string	Last Page of Session URL	PATTERN	TL.TLT_URL	
TL	S_LICENSED_PAGE_COUNT	Licensed PageCount	int	Licensed Page Count Running Total	CALCULATED_SOURCE		Running count of licensed pages
TL	S_OTHER_COUNT	Other Count	int	Other Hit Type Running Total	CALCULATED_SOURCE		
TL	S_PAGE_COUNT	PageCount	int	Page Count Running Total	CALCULATED_SOURCE		Running count of pages
TL	S_REFERRER	Referrer	string	Referrer for Session	PATTERN	TL.HTTP_REFERRER	
TL	S_REFERRER_DOMAIN	Referrer Domain	string	Referrer Domain for Session	PATTERN	TL.REFERRER_DOMAIN	Domain of session referrer
TL	S_REQ_CANCELLED_HIT_COUNT	Req Cancelled HitCount	int	Request Canceled Running Total	CALCULATED_SOURCE		Running count of request canceled hits
TL	S_START_TIME_EPOCH	StartTime Epoch	int	First Hit Req Time Epoch (?sec)	PATTERN	TL.REQUEST_TIME_EX	Time epoch in microseconds when server receives the first request in session
TL	S_TIME_OUT	Session TimeOut	int	Session Timeout Value (sec)	CALCULATED_SOURCE		Session timeout value in seconds
TL	S_TLTSID	TLTSID	string	Session GUID	PATTERN	TL.TLTSID	
TL	S_TLTUID	TLTUID	string	User GUID	PATTERN	TL.TLTUID	
TL	S_TLTVID	TLTVID	string	Visitor GUID	PATTERN	TL.TLTVID	
TL	S_TOTAL_REQ_BYTES	TotalREQ Bytes	int	Req Size Running Total (bytes)	CALCULATED_SOURCE		Running total of Req sizes

Table 60. Session Attribute Reference (continued)

Name space	Internal Name	JavaScript Variable	Type	Display Name	Source Type	Name of Source	Description
TL	S_TOTAL_RSP_BYTES	TotalRSP Bytes	int	Rsp Size Running Total (bytes)	CALCULATED_SOURCE		Running total of Rsp sizes
TL	S_TOTAL_TIME	TotalTime	int64	Session Length Running Time (sec)	CALCULATED_SOURCE		
TL	S_TRAFFIC_TYPE	TrafficType	string	Browser Traffic Type	PATTERN	TL.TLT_TRAFFIC_TYPE	User agent traffic type. Examples: browser, mobile, bot
TL	S_USER_AGENT	UserAgent	string	User Agent of Client	PATTERN	TL.USERAGENT	

Hit attribute reference

This section lists the hit attributes provided by Tealeaf. Hit attributes only pertain to the current hit.

- Hit attributes are only available in the following triggers: First Hit, Last Hit, Every Hit.
- To retain specific hit attribute values across multiple hits and event triggers, you must store the hit attribute value in a session attribute, which is available through the session object and is stored with the session data.
- In EventEngineScripting, references to hit attributes begin with \$H.*. Regarding creating event objects in Advanced mode, pattern objects differ from hit attributes.
- Hit attributes gather data from other data sources within the Canister for the current hit.
- Like user-defined hit attributes, pattern objects use start and end tags to identify data in the request or response.
- In Basic Mode in the Event Manager, these object types are indistinguishable when listed in the Hit Attributes tab. See Chapter 4, “TEM Hit Attributes tab,” on page 201.

Table 61. Hit Attribute Reference

Name space	Internal Name	JavaScript Variable	Type	Display Name	Source Type	Name of Source	Description
TL	H_CONN_SPEED	Conn Speed	int	Connection Speed	PATTERN	TL.CONN_SPEED	Connection speed in bytes/second
TL	H_CONN_TYPE	ConnType	ansistring	Connection Type	PATTERN	TL.CONN_TYPE	Connection speed category. Example: T1
TL	H_CONTENT_ENCODING	Content Encoding	string	Content Encoding	PATTERN	TL.RESPONSE_TYPE	Content encoding format of response. Example: text/html; charset =ISO-8859-1
TL	H_GEN_TIME	GenTime	int	Hit Generation Time (sec)	PATTERN	TL.WS_GENERATION	Time in microseconds between server receiving request and starting to send response. Formula: (Rsp Start Time Epoch - Req Time Epoch)
TL	H_IS_CUI	IsCUI	boolean	Client UI Hit (T/F)	CALCULATED_SOURCE		Client user-interface hit (T/F). Requires Tealeaf UI Capture.
TL	H_NETWORK_TRIP	Network Trip	int	Network Time (sec)	PATTERN	TL.NT_TOTAL	Time in microseconds between server starting to send response and client acknowledges response. Formula: (Rsp ACK Time Epoch - Rsp Start Time Epoch)
TL	H_NUMBER	Hit Number	int	Hit Number in Session	CALCULATED_SOURCE		Hit number in session

Table 61. Hit Attribute Reference (continued)

Name space	Internal Name	JavaScript Variable	Type	Display Name	Source Type	Name of Source	Description
TL	H_PERFORMANCE_RENDER_TIME	Performance Render Time	int64	Performance Render Time (ms)	CALCULATED_SOURCE		Time in milliseconds it took the page to complete rendering. This does not include the page load time. Requires Tealeaf UI Capture.
TL	H_QUERY_STRING	Query String	string	Query String for Request	PATTERN	TL.QUERY_STRING	
TL	H_REFERRER	Referrer	string	Hit Referrer	PATTERN	TL.HTTP_REFERRER	Referrer value for hit
TL	H_REQ_CANCELLED	Req Cancelled	bool	Req Cancelled	PATTERN	TL.REQ_CANCELLED	
TL	H_REQ_DISCARDED	Req Discarded	bool	Req Discarded	PATTERN	TL.REQ_DISCARDED	
TL	H_REQ_SIZE	ReqSize	int	Req Size (bytes)	PATTERN	TL.REQUEST_SIZE	Size in bytes of request data + request header
TL	H_REQ_TIME_EX	Request TimeEx	int	Req Time Epoch (?sec)	PATTERN	TL.REQUEST_TIME_EX	Time epoch in microseconds when server receives request
TL	H_ROUND_TRIP	RoundTrip	int	Round Trip Time (?sec)	PATTERN	TL.RT_TOTAL	Time in microseconds between server receiving request and client acknowledging response. Formula: (Rsp ACK Time Epoch - Req Time Epoch)
TL	H_RSP_ACK_TIME_EX	Response AckTime Ex	int	Rsp Ack Time Epoch (?sec)	PATTERN	TL.RESPONSE_ACK_TIME_EX	Time epoch in microseconds when client acknowledges response

Table 61. Hit Attribute Reference (continued)

Name space	Internal Name	JavaScript Variable	Type	Display Name	Source Type	Name of Source	Description
TL	H_RSP_SIZE	RspSize	int	Rsp Size (bytes)	PATTERN	TL.RESPONSE_SIZE	Size in bytes of response data + response header
TL	H_RSP_START_TIME_EX	Response StartTimeEx	int	Rsp Start Time Epoch (?sec)	PATTERN	TL.RESPONSE_START_TIME_EX	Time epoch in microseconds when server starts sending response
TL	H_RSP_TIME_EX	Response TimeEx	int	Rsp End or Hit Time Epoch (?sec)	PATTERN	TL.RESPONSE_TIME_EX	Time epoch in microseconds when server ends sending response
TL	H_STATUS_CODE	Status Code	int	Status Code	PATTERN	TL.STATUS_CODE	Status code of response. Example: 200
TL	H_TLAPI_ARRIVAL_TIME_EX	TLapi Arrival TimeEx	int64	TL API Arrival Time Epoch (?sec)	PATTERN	TL.TLAPI_ARRIVAL_TIME_EX	Time epoch in micro- seconds of hit arrival, as reported by the Tealeaf API
TL	H_TLTHID	TLTHID	ansistring	Hit GUID	PATTERN	TL.TLTHID	
TL	H_TYPE	HitType	int	Hit Type	PATTERN	TL.CAPTURE_TYPE	Hit and Capture Type
TL	H_URL	URL	string	URL	PATTERN	TL.URL	URL of hit, without normalization, as reported in the browser

Pattern objects reference

Pattern objects are pre-defined objects that are provided by Tealeaf that can be used to detect patterns in the request and response data. These objects are available for use in the Hit Attributes tab.

- Concerning creating event objects in Advanced mode, pattern objects differ from hit attributes.
 - Hit attributes gather data from other data sources within the Canister for the current hit.
 - Like user-defined hit attributes, pattern objects use start and end tags to identify data in the request or response.
 - In Basic Mode in the Event Manager, these object types are indistinguishable when listed in the Hit Attributes tab. See Chapter 4, “TEM Hit Attributes tab,” on page 201.
- To retain specific pattern object values across multiple hits and event triggers, you must store the data in a session attribute, which is available through the session object and is stored with the session data. See Chapter 6, “TEM Session Attributes tab,” on page 287.
- In EventEngineScripting, references to hit attributes begin with \$H.*.

Table 62. Pattern Objects Reference

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	CAPTURE_SOURCE	0	Request	True	False	UTF8	Text	\r\nCapture Source=	\r\n	Capture source. Host name of Tealeaf PCA
TL	CAPTURE_VERSION	0	Request	True	False	UTF8	Text	\r\nCapture Version=	\r\n	Version of Tealeaf Capture.
TL	HTTP_ACCEPT_LANGUAGE	0	Request	True	False	UTF8	Text	\r\nHTTP_ACCEPT_LANGUAGE=	\r\n	Accept language. Visitor language preference. Example: en-us
TL	HTTP_CONNECTION	0	Request	True	False	UTF8	Text	\r\nHTTP_CONNECTION=	\r\n	HTTP connection. Example: keep-alive
TL	HTTP_HOST	0	Request	True	False	UTF8	Text	\r\nHTTP_HOST=	\r\n	Host name.
TL	HTTP_X_TEALEAF	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF=	\r\n	CUI hit type as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_ALERT_COUNT	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_ALERT_COUNT=	\r\n	CUI alert count of client user interface alerts. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_BROWSER_RESOLUTION	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_BROWSER_RESOLUTION=	\r\n	CUI browser resolution as reported from client user interface. Requires Tealeaf UI Capture.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	HTTP_X_TEALEAF_DEVICE	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_DEVICE=		Mobile hit. Requires Tealeaf Mobile Capture SDK.
TL	HTTP_X_TEALEAF_PAGE_CUI_BYTES	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_PAGE_CUI_BYTES=	\r\n	CUI event message size in characters of client user interface events, as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_PAGE_CUI_EVENTS	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_PAGE_CUI_EVENTS =	\r\n	CUI event count of client user interface events, as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_PAGE_DWELL	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_PAGE_DWELL=	\r\n	CUI hit dwell time in milli- seconds, as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_PAGE_IMG_FAIL	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_PAGE_IMG_FAIL=	\r\n	CUI hit mage failure count of broken images on hit, as reported from client user interface. Requires Tealeaf UI Capture.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	HTTP_X_TEALEAF_PAGE_RENDER	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_PAGE_RENDER=	\r\n	CUI hit render time in milliseconds, as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_PAGE_URL	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_PAGE_URL=	\r\n	CUI hit URL as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTP_X_TEALEAF_TYPE	0	Request	True	False	UTF8	Text	\r\nHTTP_X_TEALEAF_TYPE=	\r\n	CUI hit type as reported from client user interface. Requires Tealeaf UI Capture.
TL	HTTPS	0	Request	True	False	UTF8	Text	\r\nHTTPS=	\r\n	SSL used. SSL in use? (On or Off)
TL	LOCAL_ADDR	0	Request	True	False	UTF8	Text	\r\nLOCAL_ADDR=	\r\n	Server IP address (LOCAL_ADDR)
CUST	LOGIN_ID_TEMPLATE_PATTERN	0	Request	True	False	UTF8	Text	\r\nloginid=	\r\n	Login ID.
TL	REFERRER_DOMAIN	0	Request	True	False	UTF8	Text	\r\nREFERRER_DOMAIN=	\r\n	Referrer domain for hit.
TL	REMOTE_ADDR	0	Request	True	False	UTF8	Text	\r\nREMOTE_ADDR=	\r\n	Client IP address. Visitor IP address (REMOTE_ADDR).

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	REQ_BUFFER_ENCODING	0	Request	True	False	UTF8	Text	\r\nREQ_BUFFER_ENCODING=	\r\n	Req buffer encoding
TL	REQ_BUFFER_ORIG_ENCODING	0	Request	True	False	UTF8	Text	\r\nREQ_BUFFER_ORIG_ENCODING=	\r\n	Req buffer encoding (original). Encoding of original request before any transformation. Example: UTF-8
TL	REQ_CANCELLED	0	Request	True	False	UTF8	Text	\r\nReqCancelled=	\r\n	Request canceled type. Request canceled? (False/Client/Server)
TL	REQ_DATA_SIZE	0	Request	True	False	UTF8	Numeric	\r\nRequestDataSize=	\r\n	Request data size (bytes).
TL	REQ_HEADER_SIZE	0	Request	True	False	UTF8	Numeric	\r\nRequestHeaderSize=	\r\n	Request header size (bytes).
TL	REQUEST_METHOD	0	Request	True	False	UTF8	Text	\r\nREQUEST_METHOD=	\r\n	Request method. Example: POST
TL	REQUEST_TIME_EX	0	Request	True	False	UTF8	Text	\r\nRequestTimeEx=	\r\n	Request timestamp. Time when server receives request
TL	RESPONSE_ACK_TIME_EX	0	Request	True	False	UTF8	Text	\r\nResponseAckTimeEx=	\r\n	Response acknowledge timestamp. Time when client acknowledges response.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	RESPONSE_START_TIME_EX	0	Request	True	False	UTF8	Text	\r\nResponse Start TimeEx=	\r\n	Response start timestamp. Time when server starts sending response.
TL	RESPONSE_TIME_EX	0	Request	True	False	UTF8	Text	\r\nResponse TimeEx=	\r\n	Response end timestamp. Time when server ends sending response.
TL	RSP_BODY_ENCODING	0	Request	True	False	UTF8	Text	\r\nRESP_BODY_ENCODING=	\r\n	Response body encoding. Example: iso-8859-1.
TL	RSP_DATA_SIZE	0	Request	True	False	UTF8	Numeric	\r\nResponse DataSize=	\r\n	Response data size in bytes.
TL	RSP_HEADER_SIZE	0	Request	True	False	UTF8	Numeric	\r\nResponse HeaderSize=	\r\n	Response header size in bytes.
TL	SERVER_PROTOCOL	0	Request	True	False	UTF8	Text	\r\nSERVER_PROTOCOL=	\r\n	Server protocol that is used by Tealeaf server. Example: HTTP/1.1.
TL	STEP_CLIENT_ENV_LIB_VERSION		Request	True	True	UTF8		.sessions[0].clientEnvironment.webEnvironment.libVersion		Step, client environment library version
TL	STEP_CLIENT_ENV_OS_VERSION		Request	True	True	UTF8		.clientEnvironment.osVersion		Step, client environment OS version

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_CLIENT_ENV_PAGE		Request	True	True	UTF8		.sessions [0].client Environment. webEnvironment. page		Step, client environment page
TL	STEP_CLIENT_ENV_SCREEN_ORIENTATION		Request	True	True	UTF8		.sessions [0].client Environment. webEnvironment. screen. orientation		Step, client environment screen orientation
TL	STEP_CLIENT_ENV_SCREEN_ORIENTATION_MODE		Request	True	True	UTF8		.sessions [0].client Environment. webEnvironment. screen. orientationMode		Step, client environment screen orientation mode in degrees
TL	STEP_CLIENT_STATE_EVENT		Request	True	True	UTF8		.sessions [0].message .client State.event		Step, ClientState event
TL	STEP_CLIENT_STATE_PAGE_HEIGHT		Request	True	True	UTF8		.sessions [0].message .client State. pageHeight		Step, ClientState page height
TL	STEP_CLIENT_STATE_PAGE_WIDTH		Request	True	True	UTF8		.sessions [0].message .client State. pageWidth		Step, ClientState page width

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_CLIENT_STATE_VIEW_TIME		Request	True	True	UTF8		.sessions [0].message .client State. viewTime		Step, ClientState view time in milliseconds
TL	STEP_CLIENT_STATE_VIEW_PORT_HEIGHT		Request	True	True	UTF8		.sessions [0].message .client State. viewPort Height		Step, ClientState viewport height
TL	STEP_CLIENT_STATE_VIEW_PORT_WIDTH		Request	True	True	UTF8		.sessions [0].message .client State. viewPort Width		Step, ClientState viewport width
TL	STEP_CLIENT_STATE_VIEW_PORT_X		Request	True	True	UTF8		.sessions [0].message .client State. viewPortX		Step, ClientState viewport X with (0,0) being the upper left corner
TL	STEP_CLIENT_STATE_VIEWPORT_Y		Request	True	True	UTF8		.sessions [0].message .client State. viewPortY		Step, ClientState viewport Y with (0,0) being the upper left corner
TL	STEP_CONN_DESC		Request	True	True	UTF8		.sessions [0].message .connec tion. descri ption		Step, connection description

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_CONN_INIT_TIME		Request	True	True	UTF8		.sessions [0].message .connection. initTime		Step, connection init time in millisecond
TL	STEP_CONN_LOAD_TIME		Request	True	True	UTF8		.sessions [0].message .connection. loadTime		Step, connection load time in milliseconds
TL	STEP_CONN_RSP_DATA_SIZE		Request	True	True	UTF8		.sessions [0].message .connection. response DataSize		Step, connection response data size
TL	STEP_CONN_RSP_SIZE		Request	True	True	UTF8		.sessions [0].message .connection. response Time		Step, connection response time
TL	STEP_CONN_STATUS_CODE		Request	True	True	UTF8		.sessions [0].message .connection. status Code		Step, connection status code
TL	STEP_CONN_URL		Request	True	True	UTF8		.sessions [0].message .connection. url		Step, connection URL
TL	STEP_EVENT_TYPE		Request	True	True	UTF8		.sessions [0].message .event.type		Step, event type

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_FOCUS_OFFSET		Request	True	True	UTF8		.sessions[0].message.focus InOffset		Step, focus offset. Time in milliseconds that object got focus from start of session
TL	STEP_MESSAGE_COUNT		Request	True	True	UTF8		.sessions[0].message.count		Step, message count. Running count of step messages per session. For UISDK, a session can be from page load, not the start of the user session.
TL	STEP_MESSAGE_FROM_WEB		Request	True	True	UTF8		.sessions[0].message.fromWeb		Step, message from web. Returns true or false
TL	STEP_MESSAGE_TYPE		Request	True	True	UTF8		.sessions[0].message.type		Step, message type. Internal categorization of message type.
TL	STEP_OFFSET		Request	True	True	UTF8		.sessions[0].message.offset		Step, offset. Time in ms from the start of the 'session'. For UISDK, a session can be from page load, not the start of the user session.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_PERF_CONNECT_END		Request	True	True	UTF8		.sessions [0].message .performance. timing. connectEnd		Step - Performance Connect End. Time immediately after the user agent finishes establishing the connection to the server to retrieve the current document
TL	STEP_PERF_CONNECT_START		Request	True	True	UTF8		.sessions [0].message .performance. timing. connect Start		Step, performance connect start time immediately before the user agent sets the current document readiness to "complete"
TL	STEP_PERF_DOM_COMPLETE		Request	True	True	UTF8		.sessions [0].message .performance. timing. domComplete		Step, performance dom complete
TL	STEP_PERF_DOM_CONTENT_LOADED_EVENT_END		Request	True	True	UTF8		.sessions [0].message .performance. timing. domContentLoaded EventEnd		Step, performance dom content loaded event end. Time immediately before the user agent sets the current document readiness to "complete".

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_PERF_DOM_FETCH_START		Request	True	True	UTF8		.sessions [0].message .performance. timing. fetchStart		Step, performance fetch start. Time immediately before the user agent starts checking any relevant application caches.
TL	STEP_PERF_DOM_INTERACTIVE		Request	True	True	UTF8		.sessions [0].message .performance. timing.dom Interactive		Step, performance dom interactive. Time immediately before the user agent sets the current document readiness to "interactive".
TL	STEP_PERF_DOM_LOAD_EVENT_END		Request	True	True	UTF8		.sessions [0].message .performance. timing. loadEvent End		Step, performance load Event end. Time when the load event of the current document is completed.
TL	STEP_PERF_DOM_LOAD_EVENT_START		Request	True	True	UTF8		.sessions [0].message .performance. timing. loadEvent Start		Step, performance load Event start. Time immediately before the load event of the current document is fired.
TL	STEP_PERF_DOM_LOADED_EVENT_START		Request	True	True	UTF8		.sessions [0].message .performance. timing.dom Content Loaded EventStart		Step, performance dom loaded vent start. Time immediately before the user agent fires the DOMContentLoaded event at the Document.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_PERF_DOM_LOADING		Request	True	True	UTF8		.sessions [0].message .performance.timing .domLoading		Step, performance dom loading. Time immediately before the user agent sets the current document readiness to "loading".
TL	STEP_PERF_DOM_LOOKUP_END		Request	True	True	UTF8		.sessions [0].message .performance.timing .domain LookupEnd		Step, performance dom lookup end. Time immediately after the user agent finishes the domain name lookup for the current document
TL	STEP_PERF_DOM_LOOKUP_START		Request	True	True	UTF8		.sessions [0].message .performance.timing .domain LookupStart		Step, performance dom lookup start. Number of redirects from initial request to current hitTime immediately before the user agent starts the domain name lookup for the current document.
TL	STEP_PERF_NAV_REDIRECT_COUNT		Request	True	True	UTF8		.sessions [0].message .performance.navigation .redirect Count		Step, performance navigation redirect count. Number of redirects from initial request to current hit.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_PERF_NAV_START		Request	True	True	UTF8		.sessions [0].message .performance.timing .navigationStart		Step, performance navigation start. Time immediately after the user agent finishes prompting to unload the previous document.
TL	STEP_PERF_NAV_TYPE		Request	True	True	UTF8		.sessions [0].message .performance.navigation.type		Step, performance navigation type.
TL	STEP_PERF_REDIRECT_END		Request	True	True	UTF8		.sessions [0].message .performance.timing.redirectEnd		Step, performance redirect end. Time immediately after receiving the last byte of the response of the last redirect.
TL	STEP_PERF_REDIRECT_START		Request	True	True	UTF8		.sessions [0].message .performance.timing.redirectStart		Step, performance redirect start. Starting time of the fetch that initiates the redirect.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_PERF_RESPONSE_END		Request	True	True	UTF8		.sessions [0].message .performance.timing .response End		Step, performance response end. Time immediately after the user agent receives the last byte of the current document or immediately before the transport connection is closed, whichever comes first.
TL	STEP_PERF_RESPONSE_START		Request	True	True	UTF8		.sessions [0].message .performance.timing .response Start		Step, performance response start. Time immediately after the user agent receives the first byte of the response from the server, or from relevant application caches or from local resources.
TL	STEP_PERF_SECURE_CONN_START		Request	True	True	UTF8		.sessions [0].message .performance.timing .secureConnection Start		Step, performance secure connection start. Time immediately before the user agent starts the handshake process to secure the current connection.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_PERF_UNLOAD_EVENT_END		Request	True	True	UTF8		.sessions [0].message .performance.timing .unload EventEnd		Step, performance unload event end. Time immediately after the user agent finishes the unload event of the previous document.
TL	STEP_PERF_UNLOAD_EVENT_START		Request	True	True	UTF8		.sessions [0].message .performance.timing. unloadEvent Start		Step, performance unload event start. Time immediately before the user agent starts the unload event of the previous document.
TL	STEP_RENDER_TIME		Request	True	True	UTF8		.sessions [0].message .performance.timing .renderTime		Step, render time
TL	STEP_SCREEN_VIEW_NAME		Request	True	True	UTF8		.sessions [0].message .screen view.name		Step, screenview name
TL	STEP_SCREEN_VIEW_OFFSET		Request	True	True	UTF8		.sessions [0].message .screen viewOffset		Step, screenview offset. Time that is offset in ms from the last ScreenView load. If there is no ScreenView load for a page load, ScreenView offset is the epoch in ms.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_SCREEN_VIEW_REFERRING_SCREENVIEW		Request	True	True	UTF8		.sessions [0].message .screen view. referrer		Step, screenview referring screenview for the current screenview.
TL	STEP_SCREEN_VIEW_RENDER_TIME		Request	True	True	UTF8		.sessions [0].message .screen view. renderTime		Step, screenview render time in milliseconds.
TL	STEP_SCREEN_VIEW_TYPE		Request	True	True	UTF8		.sessions [0].message .screen view.type		Step, screenview type. Indicates whether a screenview was loaded or unloaded.
TL	STEP_SCREEN_VIEW_URL		Request	True	True	UTF8		.sessions [0].message .screen view.url		Step, screenview URL
TL	STEP_SDK_VERSION		Request	True	True	UTF8		.message Version		Step, SDK version
TL	STEP_SERIAL_NUMBER		Request	True	True	UTF8		.serial Number		Step, serial number. Running count of SDK sessions in the user session. With a UI SDK, a session can equal page load.

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_SESSION_START_TIME		Request	True	True	UTF8		.sessions[0].start Time		Step, session start time. Epoch in ms for start of this 'session'. For UISDK, a session can be from page load, not the start of the user session.
TLName of Screenview	STEP_TARGET_CURRENT_LABEL		Request	True	True	UTF8		.sessions[0].message.target. currState. label		Step, target current label
TL	STEP_TARGET_CURRENT_TEXT		Request	True	True	UTF8		.sessions[0].message.target. currState. text		Step, target current text
TL	STEP_TARGET_CURRENT_VALUE		Request	True	True	UTF8		.sessions[0].message.target. currState. value		Step, target current value
TL	STEP_TARGET_DWELL_TIME		Request	True	True	UTF8		.sessions[0].message.target. dwell		Step, target dwell time
TL	STEP_TARGET_HEIGHT		Request	True	True	UTF8		.sessions[0].message.target. position. height		Step, target height
TL	STEP_TARGET_ID		Request	True	True	UTF8		.sessions[0].message.target.id		Step, target ID

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_TARGET_ID_TYPE		Request	True	True	UTF8		.sessions [0].message .target. idType		Step, target ID type
TL	STEP_TARGET_NAME		Request	True	True	UTF8		.sessions [0].message .target. .name		Step, target name
TL	STEP_TARGET_PREV_LABEL		Request	True	True	UTF8		.sessions [0].message .target. prevState. label		Step, target prev label
TL	STEP_TARGET_PREV_TEXT		Request	True	True	UTF8		.sessions [0].message .target. prevState. .text		Step, target prev text
TL	STEP_TARGET_PREV_VALUE		Request	True	True	UTF8		.sessions [0].message .target. prevState. .value		Step - Target Previous Value
TL	STEP_TARGET_RELATIVE_XY		Request	True	True	UTF8		.sessions [0].message .target. position .relXY		Step, target relative XY
TL	STEP_TARGET_SUBTYPE		Request	True	True	UTF8		.sessions [0].message .target. subType		Step, target subtype
TL	STEP_TARGET_TL_TYPE		Request	True	True	UTF8		.sessions [0].message .target. tlType		Step, target TL type

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	STEP_TARGET_TYPE		Request	True	True	UTF8		.sessions [0].message .target .type		Step, target type
TL	STEP_TARGET_VISIT_COUNT		Request	True	True	UTF8		.sessions [0].message .target .visted Count		Step, target visit count
TL	STEP_TARGET_WIDTH		Request	True	True	UTF8		.sessions [0].message .target. position .width		Step, target width
TL	STEP_TIME_ZONE_OFFSET		Request	True	True	UTF8		.sessions [0].time zoneOffset		Step, timezone offset in minutes from GMT.
TL	STEP_TL_EVENT_TYPE		Request	True	True	UTF8		.sessions [0].message .event .tlEvent		Step, TL event type
TL	STREAMING_HIT	0	Request	True	False	UTF8	Text	\r\n Streaming Hit=	\r\n	Streaming hit. Hit is a stream hit? (T/F)
TL	STREAMING_HIT_TYPE	0	Request	True	False	UTF8	Text	\r\n Streaming HitType=	\r\n	Streaming hit type. Type of streaming hit
TL	TEALEAF_MOBILE_DEVICE_TYPE	0	Request	False	True			\r\nHTTP_ X_TEALEAF_ =Device (	)	Mobile device type. Requires Tealeaf Mobile Capture SDK.
TL	TLAPI_ARRIVAL_TIME_EX	0	Request	True	False	UTF8	Text	\r\nTLapi Arrival TimeEx=	\r\n	TL API arrival timestamp

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	TLT_APPLICATION_NAME	0	Request	True	False	UTF8	Text	\r\nTLT_APPLICATION_NAME=	\r\n	App name (normalized)
TL	TLT_BROWSER	0	Request	True	False	UTF8	Text	\r\nTLT_BROWSER=	\r\n	Browser type. Example: IE.
TL	TLT_BROWSER_PLATFORM	0	Request	True	False	UTF8	Text	\r\nTLT_BROWSER_PLATFORM=	\r\n	Browser OS. Example: WinXP.
TL	TLT_BROWSER_VERSION	0	Request	True	False	UTF8	Text	\r\nTLT_BROWSER_VERSION=	\r\n	Browser type and version. Example: IE7.0.
TL	TLT_CUI_APPLICATION_NAME	0	Request	True	False	UTF8	Text	\r\nTLT_CUI_APPLICATION_NAME=	\r\n	CUI application name Example: IE7.0.
TL	TLT_CUI_URL	0	Request	True	False	UTF8	Text	\r\nTLT_CUI_URL=	\r\n	CUI URL as reported from client user interface. Requires Tealeaf UI Capture.
TL	TLT_HOST_NAME	0	Request	True	False	UTF8	Text	\r\nTLT_HOST_NAME=	\r\n	Host name (normalized)
TL	TLT_SERVER	0	Request	True	False	UTF8	Text	\r\nTLT_SERVER=	\r\n	Server (normalized)
TL	TLT_TRAFFIC_TYPE	0	Request	True	False	UTF8	Text	\r\nTLT_TRAFFIC_TYPE=	\r\n	Traffic type. Example: Bot
TL	TLT_URL	0	Request	True	False	UTF8	Text	\r\nTLT_URL=	\r\n	URL (normalized) for hit without arguments.
TL	TLTSID	0	Request	True	False	UTF8	Text	\r\nTLTSID=	\r\n	Session GUID

Table 62. Pattern Objects Reference (continued)

Name space	Internal Name	Identifier	Http Type	Case Sensitive?	Match All?	Encoding	Data Type	Start Tag	End Tag	Description
TL	TLTUID	0	Request	True	False	UTF8	Text	\r\n TLTUID=	\r\n	User GUID
TL	TLTVID	0	Request	True	False	UTF8	Text	\r\n TLTVID=	\r\n	Visitor GUID
TL	TRANSFER_ENCODING	0	Request	True	False	UTF8	Text	\r\n TRANSFER_ENCODING=	\r\n	Transfer encoding. Example: chunked
TL	USERAGENT	0	Request	True	False	UTF8	Text	\r\nHTTP_USER_AGENT=	\r\n	User Agent

Dimension reference

This section lists the dimensions that are provided by Tealeaf. These dimensions are created from building block events or are generated based on extended user agent parsing.

- Dimensions store data at the time of event execution for events, hit attributes, and session attributes. These dimensions use source data objects that are provided by Tealeaf.

Note: Some additional configuration may be required.

- The URL (Normalized), Host, Application, and Server dimensions are contained in the URL/Host/App/Server report group.
- The other dimensions are not associated with any report group by default.

Note: To record values, a dimension must be associated with at least one report group.

- In Basic Mode in the Event Manager, these object types are listed in the Dimensions tab. For more information, see Chapter 5, "TEM Dimensions Tab," on page 217.
- For more information, see "Extended user agent parsing" in the *IBM Tealeaf CX Configuration Manual*.

Table 63. Dimension Reference

Name space	Internal Name	Type	Display Name	Source Type	Name of Source	Description
TL	DIM_CONN_TYPE	string	Connection Type	EVENT (building block)	TL.E_REPORT_WS_CONNECTION_TYPE	Type of connection (Dialup, DSL, ISDN, T1)
TL	DIM_TLT_CONTENT_TYPE	string	Content Type	EVENT (building block)	TL.E_REPORT_WS_CONTENT_TYPE	Type of content: PAGE or not set
TL	DIM_MOBILE_DEVICE	string	Mobile Device	EVENT	TL.E_MOBILE_DEVICE_TYPE	Identifier of mobile device that is used in session (for example, "ios")
TL	DIM_REQ_CANCEL	string	Request Cancelled	EVENT (building block)	TL.E_REPORT_WS_PAGE_REQ_CANCEL	Was the request canceled (T/F)?

Table 63. Dimension Reference (continued)

Name space	Internal Name	Type	Display Name	Source Type	Name of Source	Description
TL	DIM_STEP_SCREENVIEW	string	Step - ScreenView	EVENT (building block)	TL.E_STEP_SCREENVIEW	Records the latest ScreenView for each ScreenView LOAD message Note: This dimension applies only to IBM Tealeaf cxOverstat. For more information, see "cxOverstat User Manual" in the <i>IBM Tealeaf cxOverstat User Manual</i> .
TL	DIM_STEP_SCREENVIEW_URL	string	Step - ScreenView URL	EVENT (building block)	TL.E_SCREENVIEW_URL	Records the latest URL for each ScreenView LOAD message Note: This dimension applies only to IBM Tealeaf cxOverstat. For more information, see "cxOverstat User Manual" in the <i>IBM Tealeaf cxOverstat User Manual</i> .

Table 63. Dimension Reference (continued)

Name space	Internal Name	Type	Display Name	Source Type	Name of Source	Description
TL	DIM_STEP_TARGET_ID	string	Step - Target ID	EVENT (building block)	TL.E_USABILITY_TARGET_ID	ID of object being acted on Note: This dimension applies only to IBM Tealeaf cxOverstat. For more information, see "cxOverstat User Manual" in the <i>IBM Tealeaf cxOverstat User Manual</i> .
TL	DIM_STEP_FOCAL_SLICE_Y	string	Step - Usability Focal Slice Y	EVENT (building block)	TL.E_STEP_USABILITY_FOCAL_SLICE_Y	Records the Y focal slice Note: This dimension applies only to IBM Tealeaf cxOverstat. For more information, see "cxOverstat User Manual" in the <i>IBM Tealeaf cxOverstat User Manual</i> .

Table 63. Dimension Reference (continued)

Name space	Internal Name	Type	Display Name	Source Type	Name of Source	Description
TL	DIM_STEP_VIEW_PORT_HEIGHT	string	Step - Usability View Port Height	EVENT (building block)	TL.E_USABILITY_ATTENTION_VIEWPORT_HEIGHT	Records the View Port Height of the browser Note: This dimension applies only to IBM Tealeaf cxOverstat. For more information, see "cxOverstat User Manual" in the <i>IBM Tealeaf cxOverstat User Manual</i> .
TL	DIM_TLT_APP	string	Application	PATTERN	TL.TLT_APPLICATION_NAME	Application name (for example, "store")
TL	DIM_TLT_HOST	string	Host name	PATTERN	TL.TLT_HOST_NAME	Host name (for example, "www.tealeaf.com")
TL	DIM_TLT_SERVER	string	Server	PATTERN	TL.TLT_SERVER	Server IP address (for example, "255.255.255.255")

Table 63. Dimension Reference (continued)

Name space	Internal Name	Type	Display Name	Source Type	Name of Source	Description
TL	DIM_STEP_TARGET_RELATIVE_XY	string	Step - Target Relative XY	PATTERN	TL.STEP_TARGET_RELATIVE_XY	Records the relative position of action that is based on object being acted on Note: This dimension applies only to IBM Tealeaf cxOverstat. For more information, see "cxOverstat User Manual" in the <i>IBM Tealeaf cxOverstat User Manual</i> .
TL	DIM_TLT_TRAFFIC_TYPE	string	Traffic Type	PATTERN	TL.TLT_TRAFFIC_TYPE	Type of traffic (for example, "MOBILE")
TL	DIM_TLT_URL	string	URL (Normalized)	PATTERN	TL.TLT_URL	URL normalized by extended user agent parsing (for example, "/default page.asp")

EES reference - Tealeaf event reference

This section contains Tealeaf event reference information.

Tealeaf standard event reference

This section contains reference information about the standard set of events that are provided by Tealeaf.

Note: These events cannot be modified directly. To modify an event, copy the event and edit the copied version.

Note: Events with dependencies on the TL\$E_REPORT_SESSION_FACT_COUNT fact are not evaluated after this event. The TL\$E_REPORT_SESSION_FACT_COUNT is configured

to always runs as the last event in the session. All events dependent on this fact retrieve indeterminate results because the event does not fire during any evaluation period accessible by events.

Costly Session - Too Many Hits

Display Name
Costly Session - Too Many Hits

Internal Name
E_REPORT_SESSION_COSTLY_TOO_MANY_HITS

Advanced Mode only
False

Description
Counts sessions with too many hits

ImageSrc
SessionTooMany.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
SessionEnd

JavaScript: (Advanced Mode only)

Costly Session - Too Big [BB]

Display Name
Costly Session - Too Big [BB]

Internal Name
E_REPORT_WS_SESSION_COSTLY_TOO_BIG

Advanced Mode only
True

Description
Counts sessions that are too big

ImageSrc
default.gif

DisplayInPortal
false

DisplayInSessionList
false

Trigger
SessionEnd

JavaScript: (Advanced Mode only)

```
// Costly Session - Too Big [BB]
function %%NameSpace%%$%%InternalName%%()
{ if (($$.TotalREQBytes + $$.TotalRSPBytes) > 5242880)
  { $F.setFact("%%NameSpace%%.%%Fact1%%", 'TLT$NULL');
  }
}
```

Costly Session - Too Big

Display Name

Costly Session - Too Big

Internal Name

E_REPORT_SESSION_COSTLY_TOO_BIG

Advanced Mode only

False

Description

Counts sessions that are too big

ImageSrc

SessionTooBig.gif

DisplayInPortal

true

DisplayInSessionList

true

Trigger

SessionEnd

JavaScript: (Advanced Mode only)

Costly Session - Too Long

Display Name

Costly Session - Too Long

Internal Name

E_REPORT_SESSION_COSTLY_DURATION_TOO_LONG

Advanced Mode only

False

Description

Counts sessions that last too many seconds

ImageSrc

SessionTooLong.gif

DisplayInPortal

true

DisplayInSessionList

true

Trigger

SessionEnd

JavaScript: (Advanced Mode only)

Http 400 - Bad Request

Display Name
Http 400 - Bad Request

Internal Name
E_REPORT_HIT_HTTP_400

Advanced Mode only
False

Description

ImageSrc
HTTP400.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Http 401 - Unauthorized

Display Name
Http 401 - Unauthorized

Internal Name
E_REPORT_HIT_HTTP_401

Advanced Mode only
False

Description

ImageSrc
HTTP401.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Http 402 - Payment Required

Display Name
Http 402 - Payment Required

Internal Name
E_REPORT_HIT_HTTP_402

Advanced Mode only
False

Description**ImageSrc**

HTTP402.gif

DisplayInPortal

true

DisplayInSessionList

true

Trigger

PageStart

JavaScript: (Advanced Mode only)**Http 403 - Forbidden****Display Name**

Http 403 - Forbidden

Internal Name

E_REPORT_HIT_HTTP_403

Advanced Mode only

False

Description**ImageSrc**

HTTP403.gif

DisplayInPortal

true

DisplayInSessionList

true

Trigger

PageStart

JavaScript: (Advanced Mode only)**Http 404 - Not Found****Display Name**

Http 404 - Not Found

Internal Name

E_REPORT_HIT_HTTP_404

Advanced Mode only

False

Description**ImageSrc**

HTTP404.gif

DisplayInPortal

true

DisplayInSessionList

true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Http 405 - Method Not Allowed

Display Name
Http 405 - Method Not Allowed

Internal Name
E_REPORT_HIT_HTTP_405

Advanced Mode only
False

Description

ImageSrc
HTTP405.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Http 500 - Internal Server Error

Display Name
Http 500 - Internal Server Error

Internal Name
E_REPORT_HIT_HTTP_500

Advanced Mode only
False

Description

ImageSrc
HTTP500.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Large Hit Size

Display Name
Large Hit Size

Internal Name
E_REPORT_HIT_LARGE_PAGE_SIZE

Advanced Mode only
False

Description
Counts hits that are large

ImageSrc
bigpage.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Long Hit Generation Time

Display Name
Long Hit Generation Time

Internal Name
E_REPORT_HIT_LONG_PAGE_GEN

Advanced Mode only
False

Description
Counts hits that take a long time to generate

ImageSrc
longpage.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageStart

JavaScript: (Advanced Mode only)

Long Gen Time and Large Hit Size

Display Name
Long Gen Time and Large Hit Size

Internal Name
E_REPORT_HIT_LONG_PAGE_GEN_AND_LARGE_PAGE_SIZE

Advanced Mode only
False

Description
Counts hits that are both large and take a long time to generate

ImageSrc
bigpage.gif

DisplayInPortal
true

DisplayInSessionList
true

Trigger
PageEnd

JavaScript: (Advanced Mode only)

Content type [BB-NoDim]

Display Name
Content Type [BB-NoDim]

Internal Name
E_REPORT_WS_CONTENT_TYPE

Advanced Mode only
True

Description

ImageSrc
default.gif

DisplayInPortal
false

Trigger
PageStart

JavaScript: (Advanced Mode only)

```
// Content Type [BB-NoDim]
function %%NameSpace%%$%%InternalName%%()
{ var contentType = "UNKNOWN";
  if (($H.ContentEncoding.startsWith('text/') ||
    ($H.ContentEncoding.startsWith('application/'))
    { contentType = 'PAGE'; }
    $F.setFact("%%NameSpace%%.%%Fact1%%", contentType);
}
```

Connection type [BB-NoDim]

Display Name
Connection Type [BB-NoDim]

Internal Name
E_REPORT_WS_CONNECTION_TYPE

Advanced Mode only
False

Description
Value = Connection Type (Hit Attribute)

ImageSrc
default.gif

DisplayInPortal

false

Trigger

PageStart

JavaScript: (Advanced Mode only)

Req Cancelled [BB-NoDim]

Display Name

Req Cancelled [BB-NoDim]

Internal Name

E_REPORT_WS_PAGE_REQ_CANCEL

Advanced Mode only

True

Description

Returns True or False for each hit

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageStart

JavaScript: (Advanced Mode only)

```
// Req Cancelled [BB-NoDim]
function %%NameSpace%%$%%InternalName%%()
{ var rc = $P['TL.REQ_CANCELLED'].firstValue().toLowerCase();
  if (rc == 'false') rc = '';
  else if ((rc == 'true') || (rc == 'client')) rc = 'Client';
  else if (rc == 'server') rc = 'Server';
  if (rc != '') { $F.setFact("%%NameSpace%%.%%Fact1%%", rc);
  } }
}
```

Mobile Device

Display Name

Mobile Device

Internal Name

E_MOBILE_DEVICE_TYPE

Advanced Mode only

False

Description

The hit is from a mobile device.

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageStart

JavaScript: (Advanced Mode only)

```
// Mobile Device type
function %%NameSpace%%$%%InternalName%%()
{ if ($P["TL.TEALAF_MOBILE_DEVICE_TYPE"].patternFound()) {
  // Set fact for Report Group: No Dimension Report Group
  $F.setFact("%%NameSpace%%.%%Fact1%%",
    $P["TL.TEALAF_MOBILE_DEVICE_TYPE"].firstValue());
} }
```

Step - ScreenView URL [BB]

Display Name

Step - ScreenView URL [BB]

Internal Name

E_STEP_SCREENVIEW_URL

Advanced Mode only

False

Description

Latest URL from ScreenView LOAD message

DisplayInPortal

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

Step - ScreenView [BB]

Display Name

Step - ScreenView [BB]

Internal Name

E_STEP_SCREENVIEW

Advanced Mode only

False

Description

Latest ScreenView from ScreenView LOAD message

DisplayInPortal

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

Step - Usability Target ID + Type [BB]

Display Name

Step - Usability Target ID + Type [BB]

Internal Name

E_STEP_USABILITY_TARGET_ID

Advanced Mode only

True

Description

Combines Target ID and ID Type into a single string

DisplayInPortal

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

```
// Step - Usability Attention Map Viewport Height [BB]
function %%NameSpace%%$%%InternalName%%()
{ if ($P["TL.STEP_TARGET_ID"].patternFound() &&
    $P["TL.STEP_TARGET_ID_TYPE"].patternFound()) { var idAndType =
    $P["TL.STEP_TARGET_ID"].firstValue() + "|" +
    $P["TL.STEP_TARGET_ID_TYPE"].firstValue();
    // Set fact for Report Group: No Dimension Report Group
    $F.setFact("%%NameSpace%%.%%Fact1%%", idAndType);
  }
}
```

Step - Usability Click**Display Name**

Step - Usability Click

Internal Name

E_STEP_USABILITY_CLICK

Advanced Mode only

False

Description

Click Event for Usability data

DisplayInPortal

true

DisplayInSessionList

false

Trigger

StepStart

JavaScript: (Advanced Mode only)**Step - Usability Attention Map Viewport Height [BB]****Display Name**

Step - Usability Attention Map Viewport Height [BB]

Internal Name

E_STEP_USABILITY_ATTENTION_VIEWPORT_HEIGHT

Advanced Mode only

True

Description

Normalized Viewport height (min of Viewport or Page height)

DisplayInPortal

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

```
// Step - Usability Attention Map Viewport Height [BB]
function roundToIncrement(input, increment) { var inc = increment * 1.0;
  return Math.round(input / inc) * inc;
}
function %%NameSpace%%$%%InternalName%%()
{ if ($P["TL.STEP_CLIENTSTATE_EVENT"].firstValue().toUpperCase() ==
  "ATTENTION" &&
  $P["TL.STEP_CLIENTSTATE_VIEWPORT_HEIGHT"].patternFound())
{ var pageHeight =
  parseInt($P["TL.STEP_CLIENTSTATE_PAGE_HEIGHT"].firstValue());
  var viewportHeight =
  parseInt($P["TL.STEP_CLIENTSTATE_VIEWPORT_HEIGHT"].firstValue());
  var roundIncrement = 50;
  viewportHeight = Math.min(viewportHeight, pageHeight);
  viewportHeight = roundToIncrement(viewportHeight, roundIncrement);
  // Set fact for Report Group: No Dimension Report Group
  $F.setFact("%%NameSpace%%.%%Fact1%%", viewportHeight);
}
}
```

Step - Usability Focal Slice Y [BB]**Display Name**

Step - Usability Focal Slice Y [BB]

Internal Name

E_STEP_USABILITY_FOCAL_SLICE_Y

Advanced Mode only

True

Description

Focal Slice BB event for Usability data

DisplayInPortal

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

```
// Step - Usability Focal Y Slice [BB]
function %%NameSpace%%$%%InternalName%%()
{ if ($P["TL.STEP_CLIENTSTATE_EVENT"].firstValue().toUpperCase() ==
  "ATTENTION")
{ var pageHeight =
  parseInt($P["TL.STEP_CLIENTSTATE_PAGE_HEIGHT"].firstValue());
  var viewportHeight = $F.getLastFact("TL.F_E_STEP_USABILITY_ATTENTION_
  VIEWPORT_HEIGHT_DG_NONE").
  NumericValue;

  var viewportOffsetY =
  parseInt($P["TL.STEP_CLIENTSTATE_VIEWPORT_Y"].firstValue());
  var focalY = (viewportHeight/2) + viewportOffsetY;
  var sliceY = Math.floor(focalY / 10);
  var sliceY = Math.min(sliceY, 1000);
  //Cap slices at 1000 // Set fact for Report Group: No Dimension Report
  //Group
  $F.setFact("%%NameSpace%%.%%Fact1%%", sliceY);
}
}
```

Step - Usability Attention Map Y View Time

Display Name

Step - Usability Attention Map Y View Time

Internal Name

E_STEP_USABILITY_ATTENTION_Y_VIEW_TIME

Advanced Mode only

False

Description

Attention View Time (Y) Event for Usability data

DisplayInPortal

true

DisplayInSessionList

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

Step - Usability Form Field Visit

Display Name

Step - Usability Form Field Visit

Internal Name

E_STEP_USABILITY_FORM_FIELD_VISIT

Advanced Mode only

False

Description

Field Visits + Dwell time for Event for Usability data

DisplayInPortal

true

DisplayInSessionList

false

Trigger

StepStart

JavaScript: (Advanced Mode only)

Tealeaf activity event reference

These events are used to capture data for display in the activity reports provided by Tealeaf.

- The Activity Reports reports are available in all installations through the Report Builder. For more information, see "Reports Provided by Tealeaf" in the *IBM Tealeaf Reporting Guide*.
- For more information about these reports, see "Tealeaf Report Builder" in the *IBM Tealeaf Reporting Guide*.

Page Count [BB]

Display Name

Page Count [BB]

Internal Name

E_REPORT_WS_PAGE_COUNT

Advanced Mode only

True

Description

Total licensed page count (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Page Count [BB]
function %%NameSpace%%$%%InternalName%%()
{ $F.setFact("%%NameSpace%%.%%Fact1%%", $S.LicensedPageCount);
  $F.setFact("%%NameSpace%%.%%Fact2%%", $S.LicensedPageCount);
}
```

Hit Generation Time Running Total (ms) [BB]

Display Name

Hit Generation Time Running Total (ms) [BB]

Internal Name

E_REPORT_WS_PAGE_GEN

Advanced Mode only

True

Description

Running total of hit generation time

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Generation Time Running Total (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var pageGen = $H.GenTime/1000;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) pageGen += f.NumericValue;
  $F.setFact("%%NameSpace%%.%%Fact1%%", pageGen.toFixed(4));
}
```

Hit Generation Time Running Max (ms) [BB]

Display Name

Hit Generation Time Running Max (ms) [BB]

Internal Name

E_REPORT_WS_PAGE_GEN_MAX

Advanced Mode only

True

Description

Running maximum hit generation time

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Generation Time Running Max (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{
  var pageGen = $H.GenTime/1000;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) { if (pageGen < f.NumericValue) pageGen = f.NumericValue; }
  $F.setFact("%%NameSpace%%.%%Fact1%%", pageGen.toFixed(4));
}
```

Hit Generation Time (ms) [BB]

Display Name

Hit Generation Time (ms) [BB]

Internal Name

E_REPORT_PAGE_GEN

Advanced Mode only

True

Description

Time in seconds to generate hit

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Generation Time (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{
  var genTime = $H.GenTime/1000;
  genTime = genTime.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", genTime);
  $F.setFact("%%NameSpace%%.%%Fact2%%", genTime);
}
```

Hit Network Trip Time (ms) [BB]

Display Name

Hit Network Trip Time (ms) [BB]

Internal Name

E_REPORT_WS_PAGE_NET_TRIP

Advanced Mode only

True

Description

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Network Trip Time (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var netTrip = $H.NetworkTrip/1000;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) netTrip += f.NumericValue;
  $F.setFact("%%NameSpace%%.%%Fact1%%", netTrip.toFixed(4));
}
```

Hit Network Trip Time Running Max (ms) [BB]

Display Name

Hit Network Trip Time Running Max (ms) [BB]

Internal Name

E_REPORT_WS_PAGE_NET_TRIP_MAX

Advanced Mode only

True

Description

Running maximum hit network trip time

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Network Trip Time Running Max (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var netTrip = $H.NetworkTrip/1000;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) { if (netTrip < f.NumericValue) netTrip = f.NumericValue;
  } $F.setFact("%%NameSpace%%.%%Fact1%%", netTrip.toFixed(4));
}
```

Hit Round Trip Time (ms) [BB]

Display Name
Hit Round Trip Time (ms) [BB]

Internal Name
E_REPORT_WS_PAGE_ROUND_TRIP

Advanced Mode only
True

Description

ImageSrc
default.gif

DisplayInPortal
false

Trigger
PageEnd

JavaScript (Advanced Mode only)

```
// Hit Round Trip Time (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var roundTrip = $H.RoundTrip/1000;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) roundTrip += f.NumericValue;
  $F.setFact("%%NameSpace%%.%%Fact1%%", roundTrip.toFixed(4));
}
```

Hit Round Trip Time Running Max (ms) [BB]

Display Name
Hit Round Trip Time Running Max (ms) [BB]

Internal Name
E_REPORT_WS_PAGE_ROUND_TRIP_MAX

Advanced Mode only
True

Description
Running maximum hit round trip time

ImageSrc
default.gif

DisplayInPortal
false

Trigger
PageEnd

JavaScript (Advanced Mode only)

```
// Hit Round Trip Time Running Max (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var roundTrip = $H.RoundTrip/1000;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) { if (roundTrip < f.NumericValue) roundTrip =
    f.NumericValue;
  } $F.setFact("%%NameSpace%%.%%Fact1%%", roundTrip.toFixed(4));
}
```


Hit Size Running Total (bytes) [BB]

Display Name

Hit Size Running Total (bytes) [BB]

Internal Name

E_REPORT_WS_PAGE_SIZE

Advanced Mode only

True

Description

Running total of hit size in bytes

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Size Running Total (bytes) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var pageSize = $H.RspSize;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) pageSize += f.NumericValue;
  $F.setFact("%%NameSpace%%.%%Fact1%%", pageSize);
}
```

Hit Size Running Max (bytes) [BB]

Display Name

Hit Size Running Max (bytes) [BB]

Internal Name

E_REPORT_WS_PAGE_SIZE_MAX

Advanced Mode only

True

Description

Running maximum hit size in bytes

ImageSrc

default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Hit Size Running Max (bytes) [BB]
function %%NameSpace%%$%%InternalName%%() { var pageSize = $H.RspSize;
  var f = $F.getFact("%%NameSpace%%.%%Fact1%%");
  if (f != null) { if (pageSize < f.NumericValue) pageSize = f.NumericValue;
  } $F.setFact("%%NameSpace%%.%%Fact1%%", pageSize);
}
```

Session Count

Display Name
Session Count

Internal Name
E_REPORT_SESSION_COUNT

Advanced Mode only
False

Description
Increments count at the end of session

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Page Count

Display Name
Page Count

Internal Name
E_REPORT_PAGE_COUNT

Advanced Mode only
False

Description
Total licensed page count (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Hit Count

Display Name
Hit Count

Internal Name
E_REPORT_HIT_COUNT

Advanced Mode only
False

Description
Total count of hits (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

One Hit Session Count

Display Name
One Hit Session Count

Internal Name
E_REPORT_ONE_HIT_SESSION_COUNT

Advanced Mode only
False

Description
Counts sessions that contain 1 hit

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

CUI Hit Count

Display Name
CUI Hit Count

Internal Name
E_REPORT_CUI_HIT_COUNT

Advanced Mode only
False

Description
Total count of CUI hits (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Session Length (sec)

Display Name
Session Length (sec)

Internal Name
E_REPORT_SESSION_SECS

Advanced Mode only
False

Description
Total length of the session in seconds (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Session Size (MB) [BB]

Display Name
Session Size (MB) [BB]

Internal Name
E_REPORT_WS_SESSION_MB

Advanced Mode only
True

Description
Total of all Rsp and Req sizes (end of session)

ImageSrc
default.gif

DisplayInPortal
false

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Session Size (MB) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var totalSize = (($$.TotalREQBytes + $$.TotalRSPBytes)/1048576);
  totalSize = totalSize.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", totalSize);
}
```

Session Size (MB)

Display Name
Session Size (MB)

Internal Name
E_REPORT_SESSION_MB

Advanced Mode only

False

Description

Total of all Rsp and Req sizes (end of session)

ImageSrc

default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)**Req Size for Session (MB) [BB]****Display Name**

Req Size for Session (MB) [BB]

Internal Name

E_REPORT_WS_SESSION_REQ_TOTAL

Advanced Mode only

True

Description

Total of Req sizes in MB (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Req Size for Session (MB) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var reqSize = $.TotalREQBytes/1048576;
  reqSize = reqSize.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", reqSize);
}
```

Req Size for Session (MB)**Display Name**

Req Size for Session (MB)

Internal Name

E_REPORT_SESSION_REQ_TOTAL

Advanced Mode only

False

Description

Total of Req sizes in MB (end of session)

ImageSrc

default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Rsp Size Total (MB) [BB]

Display Name
Rsp Size Total (MB) [BB]

Internal Name
E_REPORT_WS_SESSION_RSP_TOTAL

Advanced Mode only
True

Description
Total of Rsp sizes in MB (end of session)

ImageSrc
default.gif

DisplayInPortal
false

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Rsp Size Total (MB) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var rspSize = $.TotalRSPBytes/1048576;
  rspSize = rspSize.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", rspSize);
}
```

Rsp Size Total (MB)

Display Name
Rsp Size Total (MB)

Internal Name
E_REPORT_SESSION_RSP_TOTAL

Advanced Mode only
False

Description
Total of Rsp sizes in MB (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Req Cancel Count

Display Name

Req Cancel Count

Internal Name

E_REPORT_SESSION_REQ_CANCEL

Advanced Mode only

False

Description

Total count of canceled requests (end of session)

ImageSrc

default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)

Hit Generation Time Total (ms) [BB]

Display Name

Hit Generation Time Total (ms) [BB]

Internal Name

E_REPORT_WS_SESSION_PAGE_GEN

Advanced Mode only

True

Description

Total hit generation time (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Generation Time Total (ms) [BB]
function %Namespace%%InternalName%()
{
    var pageGen = 0;
    var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_GEN");
    if (f != null) { pageGen = f.NumericValue;
    }
    pageGen = pageGen.toFixed(4);
    $F.setFact("%Namespace%.Fact1%", pageGen);
}
```

Hit Generation Time Total (ms)

Display Name

Hit Generation Time Total (ms)

Internal Name
E_REPORT_SESSION_PAGE_GEN

Advanced Mode only
False

Description
Total hit generation time (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Hit Generation Max for Session (ms) [BB]

Display Name
Hit Generation Max for Session (ms) [BB]

Internal Name
E_REPORT_WS_SESSION_PAGE_GEN_MAX

Advanced Mode only
True

Description
Maximum hit generation time (end of session)

ImageSrc
default.gif

DisplayInPortal
false

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Generation Max for Session (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{
  var pageGenMax = 0;
  var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_GEN_MAX");
  if (f != null) { pageGenMax = f.NumericValue;
  }
  pageGenMax = pageGenMax.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", pageGenMax);
}
```

Hit Generation Max for Session (ms)

Display Name
Hit Generation Max for Session (ms)

Internal Name
E_REPORT_SESSION_PAGE_GEN_MAX

Advanced Mode only
False

Description
Maximum hit generation time (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Hit Network Trip Time Total (ms) [BB]

Display Name
Hit Network Trip Time Total (ms) [BB]

Internal Name
E_REPORT_WS_SESSION_PAGE_NET_TRIP

Advanced Mode only
True

Description
Total hit network trip time (end of session)

ImageSrc
default.gif

DisplayInPortal
false

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Network Trip Time Total (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var netTrip = 0;
  var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_NET_TRIP_DG_NONE");
  if (f != null) { netTrip = f.NumericValue;
  } netTrip = netTrip.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", netTrip);
}
```

Hit Network Trip Time Total (ms)

Display Name
Hit Network Trip Time Total (ms)

Internal Name
E_REPORT_SESSION_PAGE_NET_TRIP

Advanced Mode only
False

Description
Total hit network trip time (end of session)

ImageSrc
default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)

Hit Network Trip Time Max (ms) [BB]

Display Name

Hit Network Trip Time Max (ms) [BB]

Internal Name

E_REPORT_WS_SESSION_PAGE_NET_TRIP_MAX

Advanced Mode only

True

Description

Maximum hit network trip time (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Network Trip Time Max (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var netTrip = 0;
  var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_NET_TRIP_MAX_DG_NONE");
  if (f != null) { netTrip = f.NumericValue;
  } netTrip = netTrip.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", netTrip);
}
```

Hit Network Trip Time Max (ms)

Display Name

Hit Network Trip Time Max (ms)

Internal Name

E_REPORT_SESSION_PAGE_NET_TRIP_MAX

Advanced Mode only

False

Description

Maximum hit network trip time (end of session)

ImageSrc

default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)

Hit Round Trip Time Total (ms) [BB]

Display Name

Hit Round Trip Time Total (ms) [BB]

Internal Name

E_REPORT_WS_SESSION_PAGE_ROUND_TRIP

Advanced Mode only

True

Description

Total hit round-trip time (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Round Trip Time Total (ms) [BB]
function %%NameSpace%%$%%InternalName%%()
{
    var roundTrip = 0;
    var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_ROUND_TRIP_DG_NONE");
    if (f != null) { roundTrip = f.NumericValue;
    } roundTrip = roundTrip.toFixed(4);
    $F.setFact("%%NameSpace%%.%%Fact1%%", roundTrip);
}
```

Hit Round Trip Time Total (ms)

Display Name

Hit Round Trip Time Total (ms)

Internal Name

E_REPORT_SESSION_PAGE_ROUND_TRIP

Advanced Mode only

False

Description

Total hit round-trip time (end of session)

ImageSrc

default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)

Hit Round Trip Time Max (ms) [BB]

Display Name

Hit Round Trip Time Max (ms) [BB]

Internal Name

E_REPORT_WS_SESSION_PAGE_ROUND_TRIP_MAX

Advanced Mode only

True

Description

Maximum hit round-trip time (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Round Trip Time Max (ms) [BB]
function %%NameSpace%%InternalName%%() { var roundTrip = 0;
  var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_ROUND_TRIP_MAX_DG_NONE");
  if (f != null) { roundTrip = f.NumericValue;
  } roundTrip = roundTrip.toFixed(4);
  $F.setFact("%%NameSpace%%.Fact1%", roundTrip);
}
```

Hit Round Trip Time Max (ms)

Display Name

Hit Round Trip Time Max (ms)

Internal Name

E_REPORT_SESSION_PAGE_ROUND_TRIP_MAX

Advanced Mode only

False

Description

Maximum hit round-trip time (end of session)

ImageSrc

default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)

Hit Size Total (MB) [BB]

Display Name

Hit Size Total (MB) [BB]

Internal Name

E_REPORT_WS_SESSION_PAGE_SIZE

Advanced Mode only

True

Description

Total hit size in MB (end of session)

ImageSrc

default.gif

DisplayInPortal

false

Trigger

SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Size Total (MB) [BB]
function %%NameSpace%%$%%InternalName%%()
{
  var pageSize = 0;
  var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_SIZE_DG_NONE");
  if (f != null) { pageSize = f.NumericValue;
  } if (pageSize > 0) { pageSize = pageSize / 1048576;
  } pageSize = pageSize.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", pageSize);
}
```

Hit Size Total (MB)**Display Name**

Hit Size Total (MB)

Internal Name

E_REPORT_SESSION_PAGE_SIZE

Advanced Mode only

False

Description

Total hit size in MB (end of session)

ImageSrc

default.gif

DisplayInPortal

true

Trigger

SessionEnd

JavaScript (Advanced Mode only)**Hit Size Max (bytes) [BB]****Display Name**

Hit Size Max (bytes) [BB]

Internal Name

E_REPORT_WS_SESSION_PAGE_SIZE_MAX

Advanced Mode only

True

Description

Maximum hit size in bytes (end of session)

ImageSrc
default.gif

DisplayInPortal
false

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Hit Size Max (bytes) [BB]
function %%NameSpace%%$%%InternalName%%()
{ var pageSize = 0;
  var f = $F.getFact("TL.F_E_REPORT_WS_PAGE_SIZE_MAX_DG_NONE");
  if (f != null) { pageSize = f.NumericValue;
  } pageSize = pageSize.toFixed(4);
  $F.setFact("%%NameSpace%%.%%Fact1%%", pageSize);
}
```

Hit Size Max (bytes)

Display Name
Hit Size Max (bytes)

Internal Name
E_REPORT_SESSION_PAGE_SIZE_MAX

Advanced Mode only
False

Description
Maximum hit size in bytes (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

Fact Count [BB]

Display Name
Fact Count [BB]

Internal Name
E_REPORT_WS_SESSION_FACT_COUNT

Advanced Mode only
True

Description
Total count of written facts (end of session)

ImageSrc
default.gif

DisplayInPortal
false

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Fact Count [BB]
function %%NameSpace%%$%%InternalName%%()
{ var fCount = 0;
  for(var f in $F)
  { if(typeof($F[f]) == 'undefined') fCount += $F.factCount(f);
  }
  $F.setFact("%%NameSpace%%.%%Fact1%%", fCount);
}
```

Fact count

Display Name
Fact Count

Internal Name
E_REPORT_SESSION_FACT_COUNT

Advanced Mode only
False

Description
Total count of written facts (end of session)

ImageSrc
default.gif

DisplayInPortal
true

Trigger
SessionEnd

JavaScript (Advanced Mode only)

```
// Fact Count
function %%NameSpace%%$%%InternalName%%()
{ var fCount = 0;
  for(var f in $F) { if(typeof($F[f]) == 'undefined') fCount +=
    $F.factCount(f);
  }
  $F.setFact("%%NameSpace%%.%%Fact1%%", fCount);
  $F.setFact("%%NameSpace%%.%%Fact2%%", fCount);
}
```

Canister safety limits [BB]

Display Name
Canister Safety Limits [BB]

Internal Name
E_SAFETY_LIMITS

Advanced Mode only
True

Description
Closes session if too long, too large, or has too many hits

ImageSrc
default.gif

DisplayInPortal

false

Trigger

PageEnd

JavaScript (Advanced Mode only)

```
// Canister Safety Limits [BB]
function %%NameSpace%%$%%InternalName%%()
{
    //Default: 2048 Hits if ($$.NumberOfHits > 2048)
    TLCloseSession.CloseForSafetyHits();
    //Default: 5242880 Bytes (5MB)
    if (($$.TotalREQBytes + $$.TotalRSPBytes) > 5242880)
        TLCloseSession.CloseForSafetySize();
    //Default: 3600 Seconds (60 Minutes)
    if ($$.TotalTime> 3600) TLCloseSession.CloseForSafetyTime();
}
```

Chapter 13. Event administration

The section provides an overview of how events are initially installed and stored in the database and later updated based on changes in the Tealeaf Event Manager.

Event storage

When the Tealeaf system is initially installed, the provided set of event definitions are loaded and stored in the TL_SYSTEM database. Subsequent additions or changes to the event definitions are managed through a series of interconnected tables in the database.

- In addition to the event data, the TL_SYSTEM database contains dimensional data that you configure and enable for capture and storage. See Chapter 5, “TEM Dimensions Tab,” on page 217.

The Tealeaf Event Manager queries through the Tealeaf Search Server for this data. Search Server interacts with the database through the Tealeaf Data Service.

- Search Server provides event definitions to individual Canisters for runtime evaluation.
- See "Configuring the Search Server" in the *IBM Tealeaf CX Configuration Manual*.
- The Tealeaf Data Service is typically hosted on the Portal Server. See "Configuring the Tealeaf Data Service" in the *IBM Tealeaf CX Configuration Manual*.

Enabling Tealeaf Event Manager access

Tealeaf provides the Event Admin group in IBM Tealeaf cxImpact to enable access. Adding any user to this group enables that user to access the Tealeaf Event Manager.

Note: Access to the Tealeaf Event Manager is considered an administration-level privilege.

Specifically, access to the Tealeaf Event Manager is determined by the menu profile for the user. If the user is a member of a group that has access to the **Configure > Event Manager** menu option, the user can access the Tealeaf Event Manager and perform all actions in it.

- If a user belongs to any group that has access to a specific menu item, the user can access the menu item, regardless of the evaluation of the other groups' menu profiles.
- See "CX User Administration" in the *IBM Tealeaf cxImpact Administration Manual*.

Loading event definitions

Canister loading of event definitions

Each Tealeaf Canister queries its Search Server for the event definitions. Search Server retrieves them through the Data Service from the database.

The Canister compares the checksum of the event definitions with the checksum of its last load. If a difference is detected, the event definitions changed. The old definitions are saved to a .bak file, and the new event definitions overwrite the old file.

The Canister then compiles the event definition XML for use. If the event definitions fail to compile, a validation error is generated and the previous set of validated event definitions is used. See “Compile failure errors.”

Upon successful compile, all Canister processes are signaled to reload the event definitions.

- See “Event loading errors” on page 473.

Validation check

When each Canister is initialized, the current event definitions are accessed, validated, and loaded.

Validation checks include the following:

- Basic XML formatting
- Event-specific structuring
- Hit and session attribute definitions and their corresponding patterns

Attribute definition errors

If the above check fails, the following message appears in the eventlog. The most likely scenario is that the event definitions were not loaded properly during installation. The Canister does not start processing until the error is addressed with an event definition update:

Event log error message:
Sessionization patterns not valid in event file:
C:\TeaLeaf\System\eventdefs.xml

Circular dependency errors

The validation check scans for circular dependencies in the event definitions. A circular dependency occurs when the output of one event is also its eventual input. The event engine checks for circular dependencies throughout the event hierarchy tree.

If one is detected, then the following message is inserted into the system event log:
"Circular dependency detected in event file ..."

See Chapter 3, “TEM Events tab,” on page 45.

Compile failure errors

If the event XML fails to compile, the following error message is inserted into the system event log.

- When compile error occurs, the most recent known-good set of event definitions is used.

"Error: Failed to compile event definitions in file ... Using existing event definitions."

Runtime errors

During the evaluation of events, if errors occur at run time, the following error message is inserted into the system event log.

- When runtime error occurs, the most recent known-good set of event definitions is used.

"Error: Runtime errors detect for event definitions file ... Using existing event definitions."

Event loading errors

If an error is detected during the loading process, the following message is returned:

Error: http://<servername>:<port>/eventdefinitions?<options>
returned with status code = <status code> - <error message text>.

Where:

- <servername> - server name of the Search Server
- <port> - port number for Search Server. This value is typically 19000.
- <options> - Any query parameters that are associated with the Search Server request.
- <status code> - HTTP status code that is returned by the Tealeaf Data Service to Search Server.
- <error message text> - error message text that is returned by the status code.

Managing event icons

In numerous places in the Portal, including the Tealeaf Event Manager, icons can be used to signify a specific event. These icons can appear in session lists.

Event icon storage

Event icons are stored on the Portal Server.

When the Portal requires event icons for display purposes, such as in session lists or the Event Manager, the event icons that are stored locally on the server are displayed.

When RTV requests a session from a Canister, it also requests objects such as event definitions and icons.

- The request is processed by the Search Server on the Canister.
- If that Canister is not also the Portal Server, as in an all-in-one deployment, the Canister redirects the request to the Portal Server, where they are stored. These objects are returned through the Canister Search Server and, in the case of event icons, which are forwarded as part of the session data returned to RTV.
 - The Portal Server recognized by each Canister is configured as part of the Canister configuration. See "Configuring the CX Canister" in the *IBM Tealeaf CX Configuration Manual*.

Editing event icons

In the event definition, you select the icon to display for instances of the event. See Chapter 3, "TEM Events tab," on page 45.

- Through the Event Manager, you can upload and edit or create event icons. See Chapter 3, "TEM Events tab," on page 45.

Logging for the Tealeaf Event Manager

System logging

Logs for the Tealeaf Event Manager are written to the Tealeaf Data Service logs. These logs can be retrieved through the Tealeaf Portal.

1. Log in to the Tealeaf Portal as an administrator.
2. Select **Tealeaf > Portal Management**.
3. Click **Logs**.
4. Click the **Data Service** link.
5. In the displayed logs, search for the string: event.
 - See "Portal Logs" in the *IBM Tealeaf cxImpact Administration Manual*.

Audit logging

Through the Portal, you can also enable audit logging, which tracks changes that are made through the Event Manager to the data created in it.

- These audit logs are reported in the Tealeaf Status report. See "Tealeaf Status Report" in the *IBM Tealeaf cxImpact Administration Manual*.
1. Log in to the Tealeaf Portal as an administrator.
 2. Select **Tealeaf > Portal Management**.
 3. Click **Logs**.
 4. Click the **Tealeaf Status Audit Log** link.
 5. Under the Event Manager node, you may select the user events to audit in the logs.
 - To select all Event Manager-related events, click the check box next to Event Manager.
 - See "Portal Logs" in the *IBM Tealeaf cxImpact Administration Manual*.

Chapter 14. IBM Tealeaf documentation and help

IBM Tealeaf provides documentation and help for users, developers, and administrators.

Viewing product documentation

All IBM Tealeaf product documentation is available at the following website:

<https://tealeaf.support.ibmcloud.com/>

Use the information in the following table to view the product documentation for IBM Tealeaf:

Table 64. Getting help

To view...	Do this...
Product documentation	On the IBM Tealeaf portal, go to ? > Product Documentation .
Help for a page on the IBM Tealeaf Portal	On the IBM Tealeaf portal, go to ? > Help for This Page .
Help for IBM Tealeaf CX PCA	On the IBM Tealeaf CX PCA web interface, select Guide to access the <i>IBM Tealeaf CX PCA Manual</i> .

Available documents for IBM Tealeaf products

Use the following table to view a list of available documents for all IBM Tealeaf products:

Table 65. Available documentation for IBM Tealeaf products

IBM Tealeaf products	Available documents
IBM Tealeaf CX	• <i>IBM Tealeaf Customer Experience Overview Guide</i> • <i>IBM Tealeaf CX Client Framework Data Integration Guide</i> • <i>IBM Tealeaf CX Configuration Manual</i> • <i>IBM Tealeaf CX Cookie Injector Manual</i> • <i>IBM Tealeaf CX Databases Guide</i> • <i>IBM Tealeaf CX Event Manager Manual</i> • <i>IBM Tealeaf CX Glossary</i> • <i>IBM Tealeaf CX Installation Manual</i> • <i>IBM Tealeaf CX PCA Manual</i> • <i>IBM Tealeaf CX PCA Release Notes</i>

Table 65. Available documentation for IBM Tealeaf products (continued)

IBM Tealeaf products	Available documents
IBM Tealeaf CX	• <i>IBM Tealeaf CX RealTime Viewer Client Side Capture Manual</i> • <i>IBM Tealeaf CX RealTime Viewer User Manual</i> • <i>IBM Tealeaf CX Release Notes</i> • <i>IBM Tealeaf CX Release Upgrade Manual</i> • <i>IBM Tealeaf CX Support Troubleshooting FAQ</i> • <i>IBM Tealeaf CX Troubleshooting Guide</i> • <i>IBM Tealeaf CX UI Capture j2 Guide</i> • <i>IBM Tealeaf CX UI Capture j2 Release Notes</i>
IBM Tealeaf cxImpact	• <i>IBM Tealeaf cxImpact Administration Manual</i> • <i>IBM Tealeaf cxImpact User Manual</i> • <i>IBM Tealeaf cxImpact Reporting Guide</i>
IBM Tealeaf cxConnect	• <i>IBM Tealeaf cxConnect for Data Analysis Administration Manual</i> • <i>IBM Tealeaf cxConnect for Voice of Customer Administration Manual</i> • <i>IBM Tealeaf cxConnect for Web Analytics Administration Manual</i>
IBM Tealeaf cxOverstat	<i>IBM Tealeaf cxOverstat User Manual</i>
IBM Tealeaf cxReveal	• <i>IBM Tealeaf cxReveal Administration Manual</i> • <i>IBM Tealeaf cxReveal API Guide</i> • <i>IBM Tealeaf cxReveal User Manual</i>
IBM Tealeaf cxVerify	<i>IBM Tealeaf cxVerify Administration Manual</i>
IBM Tealeaf cxView	<i>IBM Tealeaf cxView User Manual</i>
IBM Tealeaf CX Mobile	• <i>IBM Tealeaf CX Mobile Android Logging Framework Guide</i> • <i>IBM Tealeaf Android Logging Framework Release Notes</i> • <i>IBM Tealeaf CX Mobile Administration Manual</i> • <i>IBM Tealeaf CX Mobile User Manual</i> • <i>IBM Tealeaf CX Mobile iOS Logging Framework Guide</i> • <i>IBM Tealeaf iOS Logging Framework Release Notes</i>

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan, Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Bay Area Lab
1001 E Hillside Boulevard
Foster City, California 94404
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample

programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com)[®] are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml.

Privacy Policy Considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. A cookie is a piece of data that a web site can send to your browser, which may then be stored on your computer as a tag that identifies your computer. In many cases, no personal information is collected by these cookies. If a Software Offering you are using enables you to collect personal information through cookies and similar technologies, we inform you about the specifics below.

Depending upon the configurations deployed, this Software Offering may use session and persistent cookies that collect each user's user name, and other personal information for purposes of session management, enhanced user usability, or other usage tracking or functional purposes. These cookies can be disabled, but disabling them will also eliminate the functionality they enable.

Various jurisdictions regulate the collection of personal information through cookies and similar technologies. If the configurations deployed for this Software Offering provide you as customer the ability to collect personal information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for providing notice and consent where appropriate.

IBM requires that Clients (1) provide a clear and conspicuous link to Customer's website terms of use (e.g. privacy policy) which includes a link to IBM's and Client's data collection and use practices, (2) notify that cookies and clear gifs/web beacons are being placed on the visitor's computer by IBM on the Client's behalf along with an explanation of the purpose of such technology, and (3) to the extent required by law, obtain consent from website visitors prior to the placement of cookies and clear gifs/web beacons placed by Client or IBM on Client's behalf on website visitor's devices

For more information about the use of various technologies, including cookies, for these purposes, See IBM's Online Privacy Statement at: <http://www.ibm.com/privacy/details/us/en> section entitled "Cookies, Web Beacons and Other Technologies."



Printed in USA