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U-SYS SoftX3000 SoftSwitch System
Operation Manual - Traffic Measurement

V300R001

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Operation Manual

Volume	Traffic Measurement
Manual Version	T2-011674-20040809-C-3.06
Product Version	V300R001
BOM	31160874

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Notice

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About This Manual

Release Notes

The manual applies to U-SYS SoftX3000 SoftSwitch System V300R001.

Related Manuals

The related manuals are listed in the following table.

Manual	Content
U-SYS SoftX3000 SoftSwitch System Technical Manual-System Description	It provides an overall introduction to SoftX3000, including product features, applications and technical specifications.
U-SYS SoftX3000 SoftSwitch System Technical Manual-Architecture & Principle	It details on the hardware architecture, component interworking mechanism, and subsystems of alarm, billing, and clock in SoftX3000.
U-SYS SoftX3000 SoftSwitch System Maintenance Manual-Routine Maintenance	It guides the maintenance engineers to perform daily maintenance, monthly maintenance, and yearly maintenance tasks on equipment.
U-SYS SoftX3000 SoftSwitch System Maintenance Manual-Emergency Maintenance	It guides the maintenance engineers to perform recovery operations in the case of emergencies, such as congestion of global service, AMG, and TMG, and failure of host and BAM.
U-SYS SoftX3000 SoftSwitch System Maintenance Manual-Parts Replacment	It guides the maintenance engineers on how to replace hardware components such as boards, fan frame, LAN Switch, and hard disk.
U-SYS SoftX3000 SoftSwitch System Hardware Installation Manual	It details the installation procedure of SoftX3000 hardware components, and matters needing attention during the installation process.
U-SYS SoftX3000 SoftSwitch System Software Installation Manual	It covers the detailed procedure of installing SoftX3000 software, including BAM server, emergency workstation and client, focusing on the key points that might cause installation failure.
U-SYS SoftX3000 SoftSwitch System Operation Manual-Traffic Measurement	It guides the engineers how to perform traffic measurement operations and how to analyze traffic measurement results.
U-SYS SoftX3000 SoftSwitch System Operation Manual-Configuration Guide	It guides the engineers how to configure various data in SoftX3000, including configuration steps, preparations, database table referencing relationships, and command parameters.
U-SYS SoftX3000 SoftSwitch System Operation Manual-Configuration	It guides the engineers how to configure various data in SoftX3000, including networking example, configuration

Manual	Content
Example	script, key parameters and debugging guidance.
U-SYS SoftX3000 SoftSwitch System Operation Manual-Service Application	It covers the voice services, IP Centrex services, multi-media services, IN services and value added services supported by SoftX3000, focusing on the meaning, operations, example and points for attention of various services.
U-SYS iGateway Bill User Manual	It elaborates on the functioning principle of the iGateway Bill. Also, it teaches you on how to install, maintain, and operate the product.

Organization

The manual describes the traffic measurement operations and applications in SoftX3000 V300R001.

There are six chapters and two Appendixes in the manual.

- **Chapter 1 Overview of Traffic Measurement** introduces common concepts for traffic measurement, structure, working principles and basic functions of the traffic measurement system in SoftX3000.
- **Chapter 2 Traffic Measurement Tasks** introduces various traffic measurement tasks in SoftX3000 and the measurement units they contain.
- **Chapter 3 Traffic Measurement Operations** details the methods and procedures for various traffic measurement operations in the GUI of the traffic measurement system.
- **Chapter 4 Traffic Measurement Applications** details the main applications of the traffic measurement system, such as fault locating and traffic balancing.
- **Chapter 5 Traffic Measurement Entities** presents the meaning, measurement point and measurement formula of various traffic measurement entities in SoftX3000.
- **Chapter 6 Handling of Common Problems** presents the faults that might occur during traffic measurement and the corresponding handling methods.
- **Appendix A List of Traffic Measurement Commands** lists the MML commands for traffic measurement operations and their specific meanings.
- **Appendix B Acronyms and Abbreviations** lists the main abbreviations used in this manual and the corresponding full expressions.

Intended Readers

The manual is intended for the following readers:

- NGN network planning experts

- NGN network administrators
- NGN system engineers

Conventions

The manual uses the following conventions:

I. General conventions

Convention	Description
Arial	Normal paragraphs are in Arial.
Arial Narrow	Warnings, Cautions, Notes and Tips are in Arial Narrow.
Boldface	Headings are in **Boldface**.

II. Command conventions

Convention	Description
Boldface	The keywords of a command line are in **Boldface**.

III. GUI conventions

Convention	Description
< >	Button names are inside angle brackets. For example, click the <OK> button.
[ ]	Window names, menu items, data table and field names are inside square brackets. For example, pop up the [New User] window.
/	Multi-level menus are separated by forward slashes. For example, [File/Create/Folder].

IV. Mouse operation

Action	Description
Click	Press the left button or right button quickly (left button by default).
Double Click	Press the left button twice continuously and quickly.

V. Symbols

Eye-catching symbols are also used in the manual to highlight the points worthy of special attention during the operation. They are defined as follows:

⚠ **Caution** Means reader be extremely careful during the operation.

🕮 **Note** Means a complementary description.

Table of Contents

Chapter 1 Overview of Traffic Measurement

1.1 Basic Concepts and Terminology

1.1.1 Definition

Traffic statistics, also called “traffic measurement”, “payload measurement” or “performance measurement”, refers to various measuring activities carried out on softswitch equipment and communication networks around the switch to obtain such measurement data as running status, signaling, users and system resources. It aims to providing reliable data basis for operation management and fault location of equipment, as well as monitoring & maintenance, planning & design of networks.

1.1.2 Terms Related to Traffic Measurement Modes

I. Measurement Task

It describes a group of operations set by operator or system for a specific traffic measurement. Such descriptions cover multiple aspects, such as measurement object feature, measurement time, output entity, and output time.

II. Measurement Subtask

It refers to the tasks with the same attributes but with different measurement objects. For example, the traffic measurement task to measure the traffic of two Media Gateways (MGWs) contains two subtasks.

III. Deactivate Measurement Task

It is one of the traffic measurement operations and used to stop an ongoing traffic measurement task, hence no more result will be outputted. In this case, the task itself is not deleted and only the system resources that it occupies are released.

IV. Activate Measurement Task

It is a reverse operation of deactivating a measurement task, which resumes a suspended traffic measurement task, and SoftX3000 will continue to output the measurement result.

1.1.3 Terms Related to Traffic Measurement Operations

I. Measurement Unit

It is a specific measurement category, for example, “Fixed User Originating Traffic”, “Sort Fixed User Originating Traffic”, and “Fixed Inner Traffic”. It can be fully described

by such elements as entity, object, time and output arrangement. It gives answers to such questions as what to be measured, when the measurement will begin, how to measure it, when and where the measurement result will be outputted.

II. Measurement Task Type

It is also called “measurement subset” or “measurement unit set”. It is a collection of measurement units with certain same attributes.

For instance, the measurement unit set of “Maximum/Minimum Value Task” is composed of such measurement units as “Top Called Busy Traffic”, “Top Call Loss Traffic”, “Top Usage User Traffic”, “Top Ringed No Answer Traffic” and “Top Idle TK Circuit Traffic”.

III. Measurement Object

It is a physical or logical entity or a combination of various entities to be measured, such as destination code and MGW.

IV. Measurement Entity

It is also called “measurement item”. It is a specific parameter (for example, seizure times, answer traffic) for which data must be collected during the traffic measurement.

V. Original Entity

It is an entity already defined in SoftX3000, that is,SoftX3000 has defined the formula for collecting data for the entity such as call attempt times and seizure traffic. Contradictory to original entity, it is user-defined entity.

VI. Measurement Type

It is a specific combination of measurement entities and measurement objects, for example, trunk group traffic and number of outgoing calls.

VII. Measurement Set

It is a whole collection of measurement types that can be fulfilled by a specific traffic measurement system.

VIII. Entity Threshold

It is a preset standard for evaluating an entity, usually including two values: the upper threshold and the lower threshold. If the entity value goes beyond the upper or lower threshold value, an alarm will be given.

The upper and lower thresholds can be set as needed. If only the upper threshold of an entity is concerned, the lower threshold can be set to 0. Likewise, if only the lower threshold is concerned, the upper threshold can be set to 0.

Caution:

Not all entities have the threshold attribute. Thresholds can only be set for entities with the threshold attribute.

IX. Restriction

It refers to the conditions of screening measurement objects in a measurement unit, for example, “The calls from which originating terminals should be measured” (“originating terminals” for short), “The calls to which terminating terminals should be measured” (“terminating terminals” for short). Only the calls meeting all restrictions of a specific measurement unit can be counted into the measurement result of this measurement unit.

Generally, each measurement unit has 1~5 restrictions. Different measurement units vary in their restrictions.

For example, connection type measurement unit has restrictions on connection type, which can be national toll outgoing traffic, national toll incoming traffic, national toll tandem traffic, international toll outgoing traffic, international toll incoming traffic, international toll tandem traffic, intra-office traffic, local originating outgoing traffic, local incoming terminating traffic and local transit traffic. Whereas fixed user originating traffic measurement unit has no restrictions.

X. Object Type

It is used to describe a specific restriction. Generally, each restriction can have several optional object types, but only one object type can be selected to describe the restriction.

For example, in the restriction of “a certain user”, there are three object types:

- User external code = DN set + telephone number.
- User internal code = Fixed Calling Control Unit (FCCU)/Fixed Calling control unit and Signaling process Unit (FCSU) number + user type + user logical number.
- User port = FCCU/FCSU number + user equipment + port number.

XI. Object Value

It refers to the selected object type, for example, “user number” is an object value.

XII. Measurement Period

It is the cyclic period for a specific measurement task and can be set in day, week or month.

XIII. Measurement Time Segment

It refers to the start and end time of a measurement task in a day, for example, 9:00-10:30.

XIV. Output Period

It refers to the period of outputting the measurement result of a measurement task, for example, every 1 minute, every 10 minutes or every 15 minutes.

XV. Output Transmission Information

It is a parameter recording to which target measurement results are sent.

XVI. Output Arrangement Information

It is a parameter specifying when to output measurement results.

XVII. Traffic Measurement Report

It describes the results of the traffic measurement of a certain type, including measurement object, measurement entity value, measurement period, start and end time of a measurement task, so as to provide basis for further measurement, planning, running and management of the performances in the entire office and network.

The following is an example showing the application of these concepts, and briefly describing the way to create a traffic measurement task. Suppose it is required to measure the completion rate of incoming toll calls to the local office.

- Create a traffic measurement task to measure the completion rate of incoming toll calls. This means to specify the “measurement unit”. There are nearly 100 measurement units in SoftX3000. To facilitate search and application, these measurement units are classified into seven measurement unit sets. To locate a measurement unit, first you should know to which measurement unit set it belongs. In this example, select the measurement unit of “Office Direction Incoming Office Traffic” in the measurement unit set of “Bearer Traffic Task”.
- Once the measurement unit is created, the measurement object is thus specified. In this example, the measurement object is “Incoming Direction”. Note that one traffic measurement task must correspond to at least one measurement object. Otherwise, the traffic measurement task makes no practical sense.
- Specify the range of the measurement object. In this example, specify the number of the toll office direction that is connected to the local switch. The office direction number selected here becomes a restriction, and the measurement of the completion rate of incoming toll calls of a specific office is a subtask.
- The traffic measurement task in this example contains 28 entities to be measured, such as Answer Times, Answer Traffic, Seizure Times, Seizure ratio, Connected Times, Connected Traffic and Connection Ratio. You can select desired entities to be outputted, thus simplifying the traffic measurement report.

- Finally, specify the time information and output arrangement information.

In a word, all kinds of traffic measurement tasks can be easily created as long as you have grasped such basic concepts as measurement unit set, measurement unit, measurement object, measurement entity and measurement period.

1.2 Basic Principles

1.2.1 Working Process

As a software application system, SoftX3000's traffic measurement system is composed of Statistics process of Back Administration Module (BAM) and traffic measurement sub-modules distributed in host software of such service boards as FCCU, FCSU, Broadband Signaling Gateway Unit (BSGI), Multimedia Signaling Gateway Unit (MSGI), IP Forward Module (IFMI), and Media Resource Control Unit (MRCA).

Its logical structure is as shown in Figure 1-1.

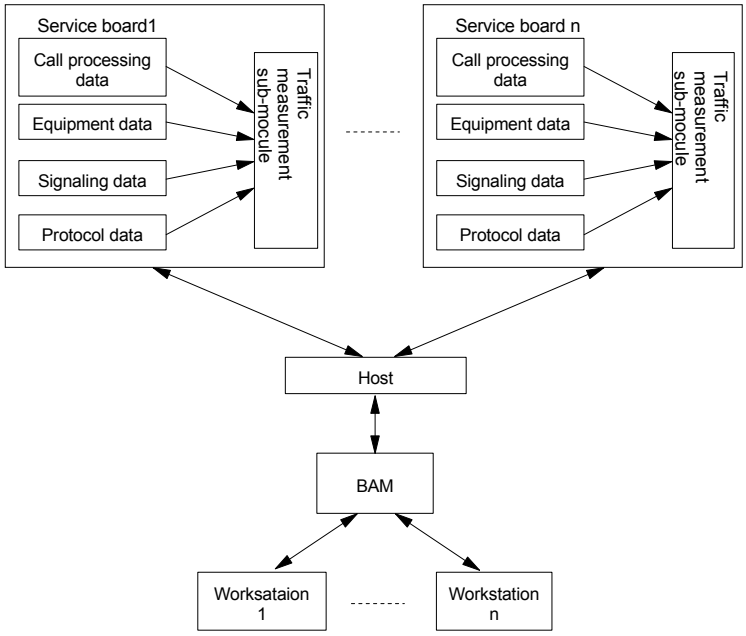


Figure 1-1 Logical structure of traffic measurement system

Note:

The workstation on which you can maintain SoftX3000 remotely through iWEB also supports traffic measurement operations, which are implemented in the same way as on ordinary workstations.

In SoftX3000, traffic measurement functions are accomplished by traffic measurement sub-modules distributed in the host software of various service boards. Figure 1-1 illustrates the working process as follows:

1) The maintenance personnel sets a traffic measurement task on the workstation first. This task is then sent through SMUI and shared resource bus to the traffic measurement sub-modules of corresponding service boards by the Statistics process of BAM.
2) Next, the traffic measurement sub-modules collect original traffic measurement data such as call processing data, equipment data, signaling data and protocol data, and return the results to BAM.
3) Subsequently, the Statistics process of BAM saves and arranges the structure of traffic measurement data.
4) Finally, the maintenance personnel can check on the workstation the traffic measurement results stored in BAM.

1.2.2 Time Properties

Time properties refer to all the information required for the setting of start time, end time and period for a specific measurement. You can set different time schedules. Time information can be classified into the levels and categories as shown in Figure 1-2 depending on different settings of start time, duration and period.

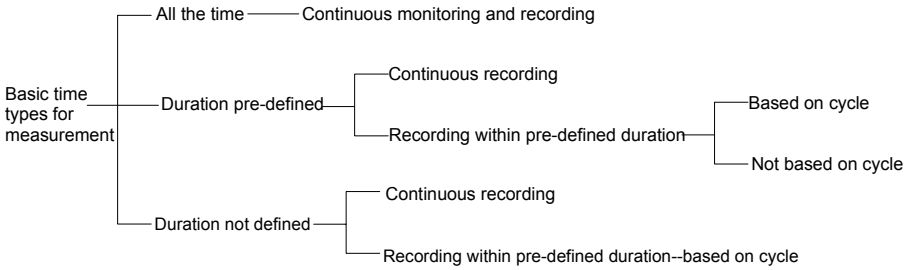


Figure 1-2 Levels and categories of time properties

Note:

Traffic measurement can be carried out with/without duration (end time) pre-defined, or continuously, or periodically, or irregularly.

Time properties include task type, time type, measurement period and measurement duration. The management of measurement time can be achieved in the following three levels: time type, measurement duration and measurement period, as shown in Figure 1-3.

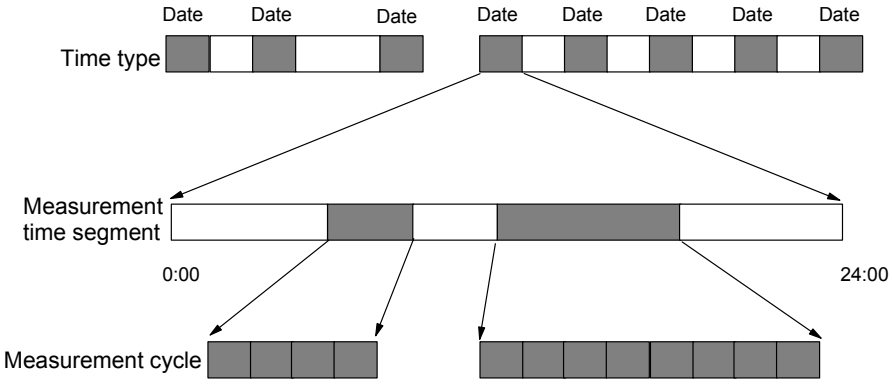


Figure 1-3 Basic time types

I. Measurement task type

Measurement tasks can be divided into permanent task, semi-permanent task and task with finite period.

1) Permanent task: It is automatically registered by the system during startup and used to measure important performance measurement entities. A report will be generated if requested by the carrier. You cannot delete this task, that is, since the equipment starts to run, the task will be carried out all the time unless it is deactivated.
2) Semi-permanent task: It is registered by operator and without end time defined. The task will be carried out all the time unless it is deleted or deactivated temporarily by the operator. For example, a permanent traffic measurement created on Oct. 1, 2003 but started to be carried out from Nov. 1, 2003 is a semi-permanent task.
3) Task with finite period: It is registered by operator and with end time defined. When the end time arrives, the measurement will stop automatically.

II. Time type

It specifies the cyclic mode of a traffic measurement task during its running duration. There are three types, namely daily measurement, weekday-dependent measurement and month-dependent measurement. Daily measurement means that the measurement is carried out everyday. Weekday-dependent measurement means that the measurement is carried out at the specified days in a week. For example, you can set to carry out the measurement on Monday, Wednesday and Friday of every week. Month-dependent measurement means that the measurement is carried out at the specified days in a month. For example, you can set to carry out the measurement on the first, fifth and thirteenth day of every month. In each cyclic mode, the measurement will be carried out in the daily time mode co-determined by measurement time segment and measurement period.

III. Measurement time segment

SoftX3000 allows you to divide each day into three time segments at maximum, but no overlap between them is allowed. Within the predefined time segments, measurement will be carried out based on the preset measurement period and will stop between the time segments. Measurement time segment and measurement period co-determine the time mode for daily running of a task.

1) The measurement starts at 00:00 and ends at 24:00 every day.
2) One to three uncontinuous time segments are set for the measurement and each time segment starts at a specified time (precise to minute). The measurement will last for several consecutive periods.

IV. Measurement period

It is also the sampling period for a measurement. Traffic measurement management system can create measurement task with period of 1-1440 minutes.

1) It is set in unit of minute and cannot exceed 24 hours.
2) It is set to 15 minutes by default.

1.2.3 State Transition

A traffic measurement task might undergo four states within its life cycle, as shown in Figure 1-4.

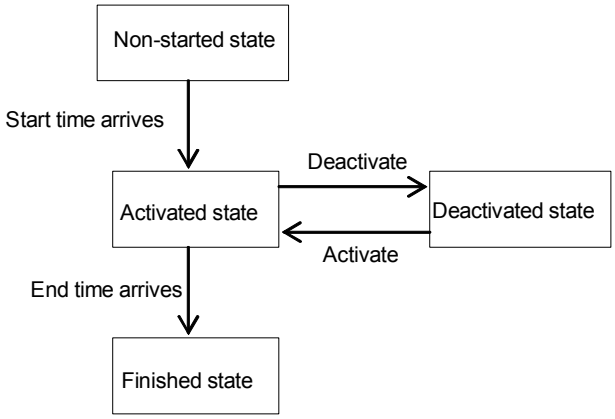


Figure 1-4 State transition diagram of a traffic measurement task

Note:

According to the definitions of different tasks:

- A permanent task will undergo activated or deactivated state.
- A semi-permanent task might undergo non-started, activated or deactivated state.
- A task with finite period might undergo any of the four states.

1) Non-started state: It means that the current time of the system is earlier than the start time of a task, that is to say, the task is not started.
2) Activated state: It means that the current time of the system is between the start time and end time of a task, that is, the task is being carried out.
3) Deactivated state: When a task is not needed for the time being, it can be deactivated and no measurement result will be outputted. In case of future need, the deactivated task can be activated again. A deactivated task cannot be modified.
4) Finished state: It means that the current time of the system is later than or equals to the end time of a task, that is to say, the task has ended.

1.3 Functional Features

1.3.1 Task Function

It includes creating/deleting a measurement task (subtask), adding/deleting the measurement objects of a measurement task, setting/deleting the entity threshold of a measurement task, modifying/activating/deactivating a measurement task, querying the information and status of a measurement task.

SoftX3000 supports a maximum of 128 measurement tasks and 512 measurement subtasks. Subtasks are allocated dynamically among the tasks. Creation of a new task will fail once there have already been 512 subtasks. Only after an existing task is deleted and the resources are released, can a new task be created. Moreover, SoftX3000 allows you to deactivate a task (subtask) that is being carried out. Once a task is deactivated, the occupied resources will be released, and no more measurement result will be outputted. That is, it enters the dormant status. However, it can be reactivated. Subtasks are extremely effective for trunk group traffic measurement. You can use a single task to measure the traffic of all trunk groups, and set to output the measurement results in the reports based on respective objects.

Once a task is created, you can add or delete its measurement objects. This feature makes it possible to add a new object or delete an existing object without deleting the created task. For example, if it is required to add one more measurement object for a task that already has several objects, you can use this function.

Moreover, you can quickly create and flexibly select the traffic measurement tasks by activating and deactivating the tasks. Normally the frequently used traffic measurement tasks can be fulfilled at one time. You can deactivate these tasks when they are not required, and activate them again when needed by just modifying the attributes such as time.

1.3.2 Exception Report

It refers to the measurement result report that is outputted when the measurement value of the entity is beyond the upper/lower threshold during the measurement. The

report prompts you of abnormal measurement values of some entities, actually reflecting some potential abnormalities in SoftX3000. You can analyze the cause of the abnormal measurement values based on the report, so as to eliminate such abnormalities accordingly.

1.3.3 Brief Report

This function determines which entities can be outputted and which cannot. It enables you to delete the unconcerned entities from the output report, thus making the report brief and concise.

1.3.4 Sampling Measurement

Some special measurement units have the function of sampling measurement, which belong to such measurement unit sets as call records or traffic distribution. They are characterized by extremely large capacity of call measuring, and generally the measurement effect can be shown through sampling measurement. Moreover, sampling measurement is advantageous in saving the system resources and improving the measurement efficiency. For example, “Destination Distribution Traffic” measures the traffic of all destination codes in the office direction. This measurement is fulfilled in a task-matching mode and consumes a lot of system resources. If many tasks of this kind are registered and no sampling processing is performed, SoftX3000 will probably be short of resources.

There are two kinds of sampling measurement, sampling ratio and sampling times. Sampling ratio refers to the measurements of a certain proportion of calls randomly sampled in the whole measurement set. For example, 30% means sampling 3 from 10 calls, or 300 from 1 000 calls for measurement. Sampling times refers to the measurements of a specific number of calls randomly sampled in the whole measurement set, beyond this number, there will be no further sampling and the measurement will end. For example, “Dispersion Duration Traffic” can be measured in either sampling ratio mode or sampling times mode; whereas “Destination Distribution Traffic” can only be measured in sampling ratio mode, and the default sampling ratio and sampling times are “100%” and “all”.

1.3.5 Measurement Report Incredible

This function marks in the result report whether the measurement result is accurate or not, so as to remind you of the credibility of the measurement activity. The incredible measurement result is caused by many factors, for instance, the system time or measurement period is modified, configuration data is set, the counter is reset, or the result is received incompletely during the measurement.

1.3.6 Screening measurement of Caller ID Display (CID) numbers

This feature allows setting of restrictions, so as to measure the CID numbers which meet specific requirements. For example, to measure the number of incoming calls and traffic of CID numbers with the prefix "654" from a specific trunk group to the local office.

1.3.7 Outputting Measurement Result in Call Record Mode

After the screening conditions are specified, the time and activities of the calls meeting the conditions in various call stages will be recorded, which is equivalent to the function of connection tracing which can be automatically recorded and screened.

1.3.8 No loss of Measurement Tasks in Case of Switchover and Reloading

This feature ensures a measurement task not to be interrupted by maintenance operations. This is important to the traffic measurement tasks with a long measurement period.

Caution:

If switchover or reloading occurs in a specific period, the measurement result in this period will be affected. For example, a traffic measurement task (Task 1) with the period of one hour and a traffic measurement task (Task 2) with the period of 24 hours are created in a certain office. If SoftX3000 is reset at 10:10, the report of Task 1 between 10:00~11:00 is marked as “result received incompletely” and the report of Task 2 on that very day is so marked too.

1.3.9 Dynamical Modification of Tasks

It includes the modification of measurement time, addition/deletion of measurement object, and modification of the threshold set in exception report. Once a task is modified, it can be carried out with the new requirements from the next measurement period.

1.3.10 Display and Storage of Measurement Results

SoftX3000 provides a traffic measurement window, where you can view the traffic measurement results conveniently. SoftX3000 also supports the printing of traffic measurement tasks and results. You can first save the detailed information about the traffic measurement tasks and results in a text file, then print out the text file. Or you can print the traffic measurement results directly through the report print function.

1.3.11 User-Defined Entity

This feature allows you to define new entities in addition to the original entities to meet various measurement demands. You can define an entity in two ways: recombination of the original entities and creation of completely new entities. Both ways are realized by designing new entity calculation formula.

Chapter 2 Traffic Measurement Tasks

2.1 Overview

You can subscribe various traffic measurement data needed to SoftX3000, which form different measurement tasks. The following traffic measurement tasks are available in SoftX3000:

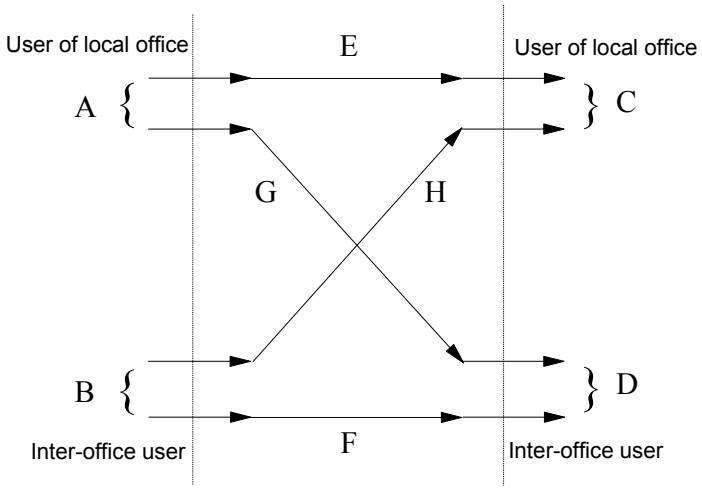
- Total Traffic of the Office Task;
- Bearer Traffic Task;
- Global Component Task;
- Signaling and Interface Task;
- Call Record Task;
- Maximum/Minimum Value Task;
- Intelligent Service Task.

2.2 Total Traffic of the Office Task

2.2.1 Functions

This task functions in measuring the main eight traffic flows (as shown in Figure 2-1) and corresponding connection types, so as to output such information as calling status of the entire office, calling QoS and network quality to facilitate traffic balancing and error-correction.

It features “global” measurement, and its measurement object is usually “all users” “all incoming or bi-directional circuits” or “all outgoing or bi-directional circuits” and so on.



A: Originating traffic
B: Incoming traffic
C: Terminating traffic
D: Outgoing traffic
E: Local traffic
F: Transit traffic
G: Originating outgoing traffic
H: Terminating incoming traffic

Figure 2-1 Schematic diagram of traffic flows

2.2.2 Measurement Units

This task contains thirteen measurement units as listed in Table 2-1.

Table 2-1 Measurement units of "Total Traffic of the Office Task"

Measurement unit	Meaning	Measurement object
FIXED_USER_ORIGINATING_TRAFFIC	It measures the basic data of calls originated by fixed users in the local office. If the called user is also a user in the local office, this measurement unit corresponds to FIXED_INNER_TRAFFIC. If the called user is an inter-office user, this measurement unit corresponds to FIXED_USER_ORIGINATING_OUTGOING_OFFICE_TRAFFIC.	All fixed users, including Ethernet Subscriber Line (ESL) users, H.323 users, Session Initiation Protocol (SIP) users and attendant console
SORT_FIXED_USER_ORIGINATING_TRAFFIC	It measures the basic data of calls originated by all fixed users of a specified type in an office.	All fixed users of a certain type, including ESL users, H.323 users, SIP users and attendant console
FIXED_INNER_TRAFFIC	It measures the basic data of calls originated by fixed users in the local office to other fixed users in the same office.	All fixed users, including ESL users, H.323 users, SIP users and attendant console
FIXED_USER_ORIGINATING_OUTGOING_OFFICE TRAFFIC	It measures the basic data of calls originated by fixed users in the local office to inter-office users.	All fixed users, including ESL users, H.323 users, SIP users and attendant console

Measurement unit	Meaning	Measurement object
INCOMING_OFFICE_TRAFFIC	It measures the basic data of calls originated by inter-office users. If the called user is a fixed user in the local office, this measurement unit corresponds to INCOMING_OFFICE_TERMINATING_TRAFFIC. If the called user is an inter-office user, this measurement unit corresponds to TRANSFER_TRAFFIC.	All incoming and bi-directional circuits
INCOMING_OFFICE_TERMINATING_TRAFFIC	It measures the basic data of calls originated by inter-office users to fixed users in the local office.	All incoming and bi-directional circuits
TRANSFER_TRAFFIC	It measures the basic data of calls originated by inter-office users to other inter-office users.	All incoming and bi-directional circuits
FIXED_TERMINATING_TRAFFIC	It measures the basic data of calls received by fixed users in the local office. If the calling user is an inter-office fixed user, this measurement unit corresponds to INCOMING_OFFICE_TERMINATING_TRAFFIC. If the calling user is a fixed user in the local office, the measurement unit corresponds to Fixed Inner Traffic.	All fixed users, including ESL users, H.323 users, SIP users and attendant console
FIXED_TERMINATING_TRAFFIC	It measures the basic data of calls received by all fixed users of a specified type in an office.	All fixed users of a certain type, including ESL users, H.323 users, SIP users and attendant console
OUTGOING_OFFICE_TRAFFIC	It measures the basic data of calls received by inter-office users. If the calling user is a fixed user in the local office, this measurement unit corresponds to FIXED_USER_ORIGINATING_OUTGOING_OFFICE TRAFFIC. If the calling user is an inter-office user, the measurement unit corresponds to TRANSFER_TRAFFIC.	All outgoing and bi-directional circuits

Measurement unit	Meaning	Measurement object
CONNECTING_TYPE_TRAFFIC	It measures the basic data of all connections of a specified type in an office.	The options are outgoing national toll, incoming national toll, transfer national toll, outgoing international toll, incoming international toll, transfer international toll, internal call, originating outgoing local call, incoming terminating local call and transfer local call. These connection types can be combined flexibly based on actual needs. For example, outgoing national toll, incoming national toll and transfer national toll can be selected for the measurement of toll connections.
FAILURE_REASON_TRAFFIC	It provides more than 100 call failure reasons.	All call failure reasons
ALL_OFFICES_SUM_TRAFFIC	It measures the basic data of all calls in the local office.	All fixed users (including ESL users, H.323 users, SIP users and attendant console)

2.3 Bearer Traffic Task

2.3.1 Functions

This task functions in measuring traffic bearer objects such as trunk, destination code, user and MGW. These objects, especially the performance entities of these object groups (for instance, trunk group, office direction, each destination code, destination and user), affect the calling performance greatly. In addition, they are the basic data necessary for network maintenance and planning.

Therefore, this task supports automatic measurement of each object group and report of measurement results at any time. Besides measurement of object groups, it also supports measurement of single objects, such as single user, single trunk circuit, single Centrex group and single Private Automatic Branch eXchange (PABX) group, in order to facilitate fault location and observation of a specified object's performance. Measurement of each single object consumes a lot of resources and it is also unnecessary, so you can select only some objects to measure.

1) Destination code refers to the number dialed by user, which can be country code, area code, softswitch office number, user number or special service number.
2) Destination refers to the number of a prefix in the called number analysis table, which is defined when you add a call prefix. Generally a destination can correspond to multiple destination codes.

Either destination code or destination can be selected as measurement object. In the former case, the dialed number is matched directly; while in the latter case, number match is carried out after analysis. Under some situations (for example, there is an outgoing prefix prior to a destination code), only destination can be selected as measurement object.

For example, destination code 201 corresponds to destination 1. Create two bearer traffic tasks on destination code 201 and destination 1 respectively. When a user dials "0201" ("0" is the outgoing prefix), because "0201" does not match with the destination code, this call cannot be measured if the destination code is selected as the measurement object. However, after number analysis, the number matches with the destination 1, so this call can be measured if the destination is selected as the measurement object.

2.3.2 Measurement Units

This task contains eighteen measurement units as listed in Table 2-2.

Table 2-2 Measurement units of "Bearer Traffic Task"

Measurement unit	Meaning	Measurement object
OFFICE_DIRECTION_INCOMING_OFFICE_TRAFFIC	It measures the traffic born by incoming circuits in each office direction and the running state of outgoing circuits. In addition, it can trace the calls from opposite office to the local office. By cooperation among multiple offices, trace of the whole process of a call can be achieved.	All incoming and bi-directional circuits in each office direction
OFFICE_DIRECTION_OUTGOING_OFFICE_TRAFFIC	It measures the traffic born by outgoing circuits in each office direction and the running state of outgoing circuits, so as to provide reference for maintenance and network management.	All outgoing and bi-directional circuits in each office direction
TKGRP_INCOMING_OFFICE_TRAFFIC	It measures the traffic born by incoming circuits of each trunk group.	Combination of any incoming or bi-directional trunk groups, or of trunk group sets
TKGRP_OUTGOING_OFFICE_TRAFFIC	It measures the traffic born by outgoing circuits of each trunk group.	Combination of any outgoing or bi-directional trunk groups, or of trunk group sets

Measurement unit	Meaning	Measurement object
DESTINATION_TRAFFIC	It measures the traffic to a certain destination, so as to provide reference data for network management and maintenance, to help maintenance personnel find the cause for low call completion ratio, to improve network management and control capability and to allocate network resources more efficiently.	One or several destinations
DESTINATION_DISTRIBUTION_TRAFFIC	It measures the distribution of traffic to a certain destination code in an office direction.	Combination of objects, consisting of two parts: (1) One or more destinations (or destination codes), or all destination codes (that is, only office direction or trunk group is taken into consideration. In this case, the measurement is similar to "OFFICE_DIRECTION_OUTGOING_OFFICE_TRAFFIC" or "TKGRP_OUTGOING_OFFICE_TRAFFIC") (2) Combination of any office directions, or trunk groups, or all outgoing trunk groups, or all objects (that is, only destination or destination code is taken in consideration. In this case, the measurement is similar to "DESTINATION_TRAFFIC") Note: (1) The above two parts are compulsory. If any part is required to be ignored, "all…" must be selected for this part (for example, all objects). (2) Only outgoing calls can be measured for this measurement unit.
SINGLE_USER_TRAFFIC	It measures the originating and terminating traffic of a single user.	One or multiple users, who can be described in the following ways: (1) User internal code = module number + user type + user logical number. User types include ESL user, SIP user and H.323 user. (2) User external code = DN set + telephone number User port = module number + user equipment + port number

Measurement unit	Meaning	Measurement object
PABXGRP_TRAFFIC	It measures the traffic of a group of users associated physically and logically, so as to obtain such information about number allocation and resource occupation.	Each PBX group
CENTREX_INTRA-GROUP_TRAFFIC	It measures the traffic between users of a certain IP Centrex group.	A certain IP Centrex group
CENTREX_EXTRA-GROUP_TRAFFIC	It measures the calls originated by out-group users to users of an IP Centrex group.	A certain IP Centrex group
CENTREX_OUTGOING_GROUP_TRAFFIC	It measures the calls (occupying trunks) originated by users of an IP Centrex group to out-group users.	A certain IP Centrex group
SUPPLEMENTARY_SERVICE_CENTREX_TRAFFIC	It measures the registration, cancellation and verification of a supplementary service or all supplementary services in an IP Centrex group.	Combination of objects, consisting of two parts: (1) Combination of any IP Centrex groups (2) Combination of any supplementary services such as abbreviated dialing, hotline service, alert service, or all supplementary services Note: The above two parts are compulsory. If supplementary service is required to be ignored, “all supplementary services” must be selected for this part.
SUPPLEMENTARY_SERVICE_TRAFFIC	It measures the registration, cancellation and verification of a supplementary service or all supplementary services of all users in an IP Centrex group.	Combination of any supplementary services such as abbreviated dialing, hotline service and alert service
ISDN_BEARER_SERVICE_TRAFFIC_MEASUREMENT	It measures the traffic of all Integrated Services Digital Network (ISDN) users for each ISDN bearer service.	Combination of any ISDN bearer services, which can be divided into local ISDN services and V5 ISDN services, including voice services, audio services, and digital services
ISDN_PRIMARY_RATE_INTERFACE_TRAFFIC_MEASUREMENT	It measures the traffic of a single primary rate interface of ISDN.	One or more ISDN primary rate interfaces (described in form of “module number + ISDN type + Primary Rate Adaptation (PRA) interface”; ISDN can be divided into local ISDN and V5 ISDN)

Measurement unit	Meaning	Measurement object
TRUNK_GROUP_OF_INTERLINK_OFFICE_INCOMING_TRAFFIC	It measures the traffic born by incoming circuits of each trunk group at the interconnection point.	Combination of any incoming or bi-directional trunk groups, or of any trunk group sets
TRUNK_GROUP_OF_INTERLINK_OFFICE_OUTGOING_TRAFFIC	It measures the traffic born by outgoing circuits of each trunk group in an interconnected office.	Combination of any outgoing or bi-directional trunk groups, or of any trunk group sets
MGW_TRAFFIC	It measures the traffic of an MGW, so as to obtain the running state of it.	Combination of any gateways

2.4 Global Component Task

2.4.1 Functions

Global components are components serving for call connection but are not associated with specific call processing procedure after call completion. Global components are shared by a lot of calls, and the quantity and performance of them directly affect the call completion ratio and other key entities, therefore, measurement of traffic and congestion times of them can provide basic information for improving Quality of Service (QoS).

2.4.2 Measurement Units

This task contains only one measurement unit as listed in Table 2-3.

Table 2-3 Measurement unit of "Global Component Task"

Measurement unit	Meaning	Measurement object
CPU_SEIZURE_RATIO_TRAFFIC	It measures the Central Processing Unit (CPU) occupation rate of each module and provides data of originating calls, terminating calls and overflow calls for calculation of Busy Hour Call Attempts (BHCA) processing capability.	Any combination of SMUI, IFMI, FCCU, FCSU, BSGI, MSGI, MRCA and CDBI (described in form of "module number")

2.5 Signaling and Interface Task

2.5.1 Functions

This task functions in measuring the traffic of various signaling and interfaces, so as to facilitate analyzing the performance of signaling and interfaces, obtaining cooperation state between inter-office signaling and user signaling as well as network status, and

providing reference data for running and maintenance of SoftX3000 and peripheral networks.

2.5.2 Measurement Units

This task contains thirty-seven measurement units as listed in Table 2-4.

Table 2-4 Measurement units of "Signaling and Interface Task"

Measurement unit	Meaning	Measurement object
H248_MGW_STATISTIC	It measures the traffic of H.248 MGW.	A H.248 MGW
H323_RAS_MESSAGE_MEASUREMENT	It measures the traffic of H.323 Registration, Admission and Status (RAS) messages.	None
H323_Q931_MESSAGE_MEASUREMENT	It measures the traffic of H.323 Q.931 messages.	None
H323_H245_MESSAGE_MEASUREMENt	It measures the traffic of H.323 H.245 messages.	None
ISDN_SIGNALING_TRAFFIC_MEASUREMENT	It measures the traffic of ISDN signaling communication channel (D channel).	D channel
MTP_SIGNALING_LINK_MEASUREMENT	It measures the traffic of Message Transfer Part (MTP) signaling link(s).	One or more MTP signaling links (described in form of "module number + link ID")
MTP_LINKSET_TRAFFIC	It measures the traffic of MTP signaling link set(s).	One or more MTP signaling link sets
MTP_DEST_SIGNALING_POINT_TRAFFIC	It measures the traffic of MTP Destination Signaling Point (DSP) (including inaccessible times and duration).	DSPs of one or more MTPs (described in form of "Network Indicator (NI) + Destination Point Code (DPC)", where NI can be international network, international standby network, national network or national standby network)
ISUP_TOTAL_MSU_TRAFFIC	It measures the traffic of Integrated Services Digital Network User Part/ISDN User Part (ISUP).	All ISUPs
ISUP_MSG_USING_TRAFFIC	It measures the traffic of an ISUP trunk group for receiving and sending a certain type of ISUP messages.	One or several types of ISUP messages (described in form of "ISUP trunk group + ISUP message type", where message types include Address Complete Message (ACM), Address No complete Message (ANM), Blocking signal (BLO))
ISUP_ABNORMITY_TRAFFIC	It measures the abnormity traffic of ISUP trunk group.	One or more ISUP trunk groups

Measurement unit	Meaning	Measurement object
ISUP_NODE_PERFORMANCE_TRAFFIC	It measures the traffic of all ISUP nodes.	All ISUPs
ISUP_NET_PERFORMANCE_TRAFFIC	It measures the number of all types of messages received by ISUP network.	Some or all Originating signaling Point Codes (OPCs)
ISUP_CIRCUIT_GRP_PERFORMANCE_TRAFFIC	It measures the traffic of ISUP circuit group, including number of received messages and status of circuit group.	One or more ISUP trunk groups
SCCP_PERFORMANCE_STATISTIC	It measures the route conversion performance of Signaling Connection Control Part (SCCP), that is, the number of routing failures due to various causes.	Signaling point index of the local office
SCCP_AVAILABILITY_STATISTIC	It measures the availability of SCCP, that is, the number and duration of SCCP failures due to various causes.	Signaling point index of local office
SCCP_UTILIZATION_STATISTIC	It measures the utilization of SCCP, that is, the number of messages received or sent by SCCP.	Signaling point index of the local office
TCAP_AVAILABILITY_STATISTIC	It measures the availability of Transaction Capabilities Application Part (TCAP), that is, the number and duration of TCAP failures due to various causes.	Global statistic
TCAP_COMPONENT_UTILIZATION_STATISTIC	It measures the utilization of various components of TCAP.	Global statistic
TCAP_MESSAGE_UTILIZATION_STATISTIC	It measures the number of messages received and sent by TCAP.	Global statistic
TCAP_TRANSACTION_SUBLAYER_PERFORMANCE_STATISTIC	It measures the performance of TCAP transaction sub-layer.	Global statistic
IUA_SIGNALING_LINK_TRAFFIC	It measures the traffic and state messages of an ISDN Q.921-User Adaptation Layer (IUA) signaling link.	A certain IUA signaling link
IUA_LINKSET_FLUX_TRAFFIC	It measures the traffic of an IUA signaling link set.	A certain IUA signaling link set
IUA_LINKSET_STATE_TRAFFIC	It measures the state traffic of an IUA signaling link set.	A certain IUA signaling link set
M2UA_LINK_TRAFFIC	It measures the traffic, congestion duration and link connection/disconnection times of a Message Transfer Part 2 (MTP2) -User Adaptation Layer (M2UA) link.	A certain M2UA link (described in form of “BSGI module number + M2UA link number”)

Measurement unit	Meaning	Measurement object
M3UA_DESTINATION_ENTITY_TRAFFIC	It measures the inaccessibility times and duration of a Message Transfer Part 3 (MTP3) -User Adaptation Layer (M3UA) destination entity.	A certain M3UA destination entity
M3UA_LINKSET_FLUX_TRAFFIC	It measures the traffic of an M3UA link set, such as total number of messages sent or received. The measurement items of an M3UA link set are the total of those of all M3UA links in one link set	A certain M3UA signaling link set
M3UA_LINKSET_STATE_TRAFFIC	It measures the state traffic of an M3UA link set, such as unavailability times and duration of the M3UA link set.	A certain M3UA signaling link set
M3UA_SIGNALING_LINK_TRAFFIC	It measures the traffic, congestion duration and link connection/disconnection times of an M3UA link.	A certain M3UA signaling link (described in form of “BSGI module number + M3UA link number”)
SERVER_MGCP_MESSAGE_STATISTIC	It measures the number of Media Gateway Control Protocol (MGCP) messages received and sent by SoftX3000.	All MGWs
MGCP_ERROR_MESSAGE_STATISTIC_FOR_SPECIFIC_MGW	It measures the types of MGCP error messages of an MGW.	An MGW
MGW_MGCP_MESSAGE_STATISTIC	It measures the number of MGCP messages received and sent by an MGW.	An MGW
MGCP_MESSAGE_TRAFFIC_IN_A_SPECIFIC_MRCA	It measures the number of MGCP messages received and sent by an MRCA.	A certain MRCA board
STUN_MESSAGE_MEASUREMENT	It measures the number of STUN messages received and sent.	None
V5UA_SIGNALING_LINK_TRAFFIC	It measures the traffic and state messages of a V5.2-User Adaptation Layer (V5UA) signaling link.	A certain V5UA signaling link
V5UA_LINKSET_FLUX_TRAFFIC	It measures the traffic of a V5UA signaling link set.	A certain V5UA signaling link set
V5UA_LINKSET_STATE_TRAFFIC	It measures the state traffic of a V5UA signaling link set.	A certain V5UA signaling link set

2.6 Call Record Task

2.6.1 Functions

This task functions in recording the details of some calls so as to reflex the performance and resource consumption of SoftX3000 in different stages of call processing and to provide reference for optimizing and evaluating SoftX3000's call processing performance. Because of enormous quantity of calls, measurement of all call attempts will cause extremely heavy load to various resources of SoftX3000. Therefore, in order to reduce the quantity of call records, the measurement can be carried out by sampling or restricting various features of calls in details.

2.6.2 Measurement Units

This task contains four measurement units as listed in Table 2-5.

Table 2-5 Measurement units of "Call Record Task"

Measurement unit	Meaning	Measurement object
COMPLETE_RATIO_TRAFFIC	It measures the call completion ratio.	All users and trunks
DISPERSION_DURATION_TRAFFIC	It measures the call processing details.	Combination of objects, consisting of five parts: (1) Some or all inlets (calling users), described by inlet user Message Identification (MID) group, inlet User Identification (UID) group and others. (2) Some or all outlets (called users), described by outlet user MID group, outlet UID group and others. (3) Some or all call attributes, including local call, local toll call, national automatic call, and international automatic call. (4) Some or all destination codes (destinations). (5) Some or all calling numbers. Note that all the above parts are mandatory. If any part is required to be ignored, "all…" must be selected for this part (for example, all call attributes).
MULTI_CONDITION_OBJECT_TRAFFIC	It measures the traffic of combination of multiple objects.	Same as above

Measurement unit	Meaning	Measurement object
SERVICE_QUALITY_TRAFFIC	It measures the quality of service provided to users by analyzing the call processing process.	Combination of objects, consisting of five parts: (1) Some or all inlets (calling users), described by inlet user MID group, inlet UID group and others. (2) Some or all outlets (called users), described by outlet user MID group, outlet UID group and others. (3) Some or all call attributes, including local call, local toll call, national automatic call, and international automatic call. (4) Some or all destination codes (destinations). (5) Some or all calling numbers. Note that all the above parts are mandatory. If any part is required to be ignored, "all…" must be selected for this part (for example, all destination numbers).

2.7 Maximum/Minimum Value Task

2.7.1 Functions

This task functions in measuring the maximum or minimum values (ten values will be outputted by default) so as to facilitate maintenance and error location and to improve call completion rate.

2.7.2 Measurement Units

This task contains five measurement units as listed in Table 2-6.

Table 2-6 Measurement units of "Maximum/Minimum Value Task"

Measurement unit	Meaning	Measurement object
TOP_CALLED_BUSY_TRAFFIC	It measures the traffic of top busy called users in a user group or in the local office, providing reference data for distributing busy traffic, enhancing call completion rate and improving QoS.	Set of threshold users: (1) Combination of any Centrex groups. (2) Users sorted by FCCU/FCSU module number. (3) Users sorted by type, that is, any combination of user types. (4) All users.
TOP_CALL_LOSS_TRAFFIC	It measures the traffic of users with highest call loss in a user group or in the local office, providing reference data for distributing busy traffic, enhancing call completion rate and improving QoS.	Set of threshold users, who can be grouped in the same way as above.

Measurement unit	Meaning	Measurement object
TOP_USAGE_USER_TRAFFIC	It measures the traffic of users who are extremely busy in a user group or in the local office, providing reference data for distributing busy traffic, enhancing call completion rate and improving QoS.	Set of threshold users, who can be grouped in the same way as above.
TOP_RINGED_NO_ANSWER_TRAFFIC	It measures the traffic of users with top ringing no answer rate in a user group or in the local office, providing reference data for distributing busy traffic, enhancing call completion rate and improving quality of service.	Set of threshold users, who can be grouped in the same way as above.
TOP_IDLE_TK_CIRCUIT_TRAFFIC	It measures the traffic of top idle trunk circuits in the local office, providing reference data for distributing busy traffic, enhancing call completion rate and improving quality of service.	Set of threshold trunk groups

2.8 Intelligent Service Task

2.8.1 Functions

This task functions in measuring Intelligent Network (IN) services, operations and resources, so as to offer reference data for effective management of IN services and proper allocation of IN resources.

2.8.2 Measurement Units

This task contains fourteen measurement units as listed in Table 2-7.

Table 2-7 Measurement units of "Intelligent Service Task"

Measurement unit	Meaning	Measurement object
INSM_OPERATION_MEASUREMENT	It measures the total number of Intelligent Network Application Protocol (INAP) operations in an office.	One or more service keys
THE_TRAFFIC_MEASUREMENT_FOR_FIN_CALL	It measures the IN call attempts and seizure information in an office.	One or more service keys
THE_TRAFFIC_MEASUREMENT_FOR_FIN_CALL_IN_QUALITY	It measures the IN call completion information in an office.	One or more service keys
IN_DIALOGUE_MEASUREMENT	It measures IN dialogues in an office.	None

Measurement unit	Meaning	Measurement object
FIN_EVENT_DP_MEASUREMENT	It measures the IN events in an office.	None
FIN_FAIL_MEASUREMENT	It measures the IN call failures in an office.	One or more service keys
IN_FAIL_MEASUREMENT	It measures the causes for IN call failures in an office.	None
FIN_OPERATION_MEASUREMENT	It measures the IN operations in an office.	None
THE_TRAFFIC_MEASUREMENT_FOR_FIN_CALL_OUT_QUALITY	It measures the IN outgoing call quality in an office.	One or more service keys
SRF_OPERATION_MEASUREMENT	It measures the number of Service Resource Function (SRF) operations.	A kind of resource used by a certain service key (described in form of “module number + service key + some SRF source”)
SRF_TRAFFIC_MEASUREMENT	It measures the SRF traffic	One or more service keys (described in form of “module number + service key”)
SRM_OPERATION_MEASUREMENT	It measures the occupation information of SRM resources.	A certain service key (described in form of “module number + service key”)
THE_MEASUREMENT_FOR_FIN_USER_INTERACTION	It measures the IN user interaction data.	One or more service keys
MRF_GLOBAL_MRF_CHANNEL_TRAFFIC	It measures the occupation rate of channels controlled by an MRCA.	MRCA module number

Chapter 3 Traffic Measurement Operations

3.1 Overview

3.1.1 Operation Procedures

You can implement traffic measurement by various task operations. Refer to the following figure for the traffic measurement procedures. The operations in broken line boxes are optional.

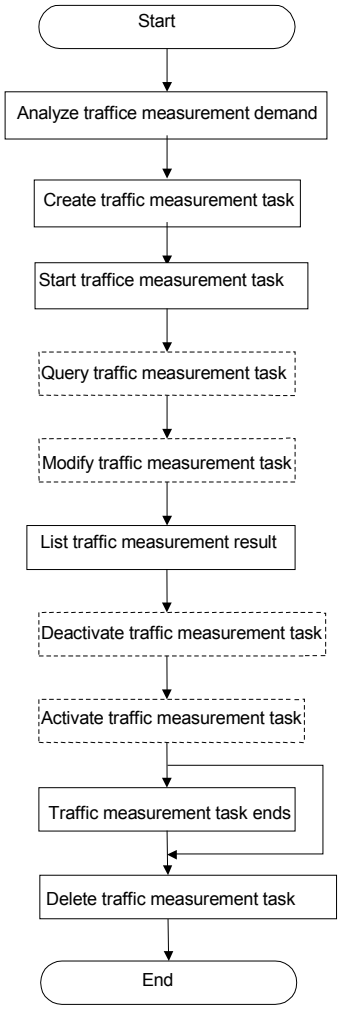


Figure 3-1 Traffic measurement procedures

Note:

Refer to Chapter 4, "Traffic Measurement Applications", of this manual for analysis of traffic measurement demands.

In the traffic measurement system, you can create, modify or delete traffic measurement tasks, list the details of a traffic measurement task, query, save and print traffic measurement result. Among these operations, the creation of a traffic measurement task is a fundamental one, for other operations are carried out on already created tasks.

3.1.2 Logging in to Traffic Measurement System

You can implement various traffic measurement operations in either Graphical User Interface (GUI) or by Man Machine Language (MML).

I. Operations in GUI

1) Click [Start/Programs/U-SYS SoftX3000 Statistics]. A dialog box for setting office direction and IP address pops up.
2) Click <Set> and input the office name and IP address. In the login window, select the name of the office to be measured, and then input the correct account and password. An interface as shown in Figure 3-2 appears.

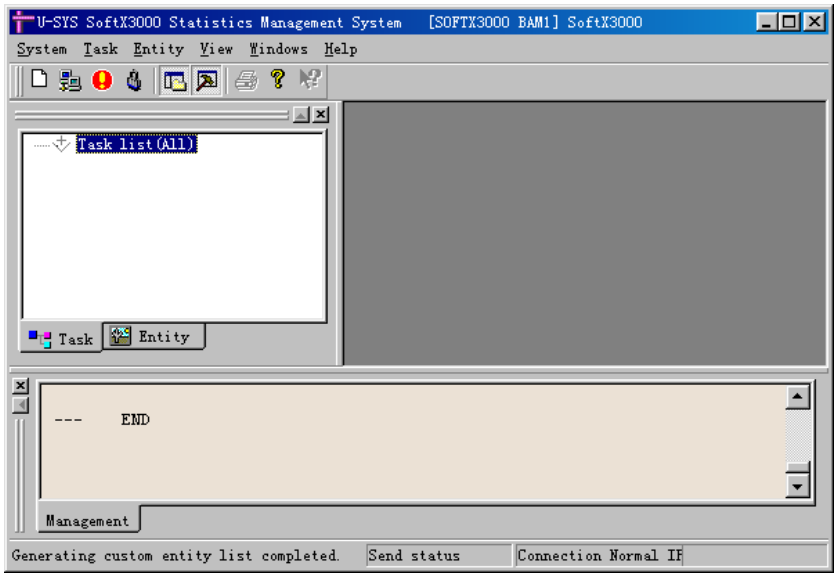


Figure 3-2 GUI of traffic measurement operation system

II. Operations by MML

In Figure 3-3, you can input MML commands at the client.

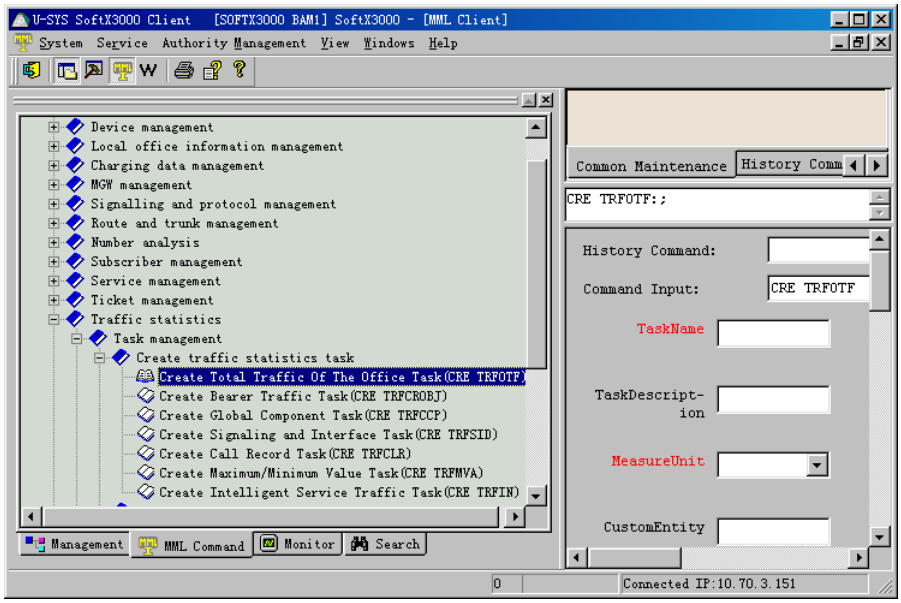


Figure 3-3 Interface for MML command input

The above two modes serve the same purpose and achieve the same result. However, GUI is clearer and easier for understanding and checking. The following section will describe various operations in GUI.

3.1.3 Points for Attention

I. System resources

Each traffic measurement task occupies some system resources. The cases that too many tasks are carried out simultaneously or too frequently will lead to resource over-consumption, so a maximum of 128 tasks can be created.

II. User authority

The traffic measurement system divides user authorities into three levels: service query, service setting and service management. The specific authorities of users of each level are listed in Table 3-1.

Table 3-1 Table of user authorities

Operations allowed	Users with service query authority	Users with service setting authority	Users with service management authority
Creating a task	Prohibited	Allowed	Allowed
Deleting a task or result	Prohibited	Allowed for the users who have created the tasks to be deleted	Allowed

Operations allowed	Users with service query authority	Users with service setting authority	Users with service management authority
Modifying task name	Prohibited	Allowed for the users who have created the tasks to be modified	Allowed
Customizing measurement indices	Prohibited	Prohibited	Allowed
Querying a task and result	Allowed	Allowed	Allowed

III. Measurement entities

For any of extremum measurement entities of a measurement object, for example, measurement of CPU occupation rate, it cannot be created in multiple measurement tasks, otherwise, the measurement result will be inaccurate.

IV. BAM time

The result output of a traffic measurement task is closely related to the time. If the BAM time is modified, it is possible that the measurement result exported within the first measurement period after the modification will be incorrect.

3.2 Creating Measurement Task

Follow the steps as listed in Figure 3-4 to create a traffic measurement task:

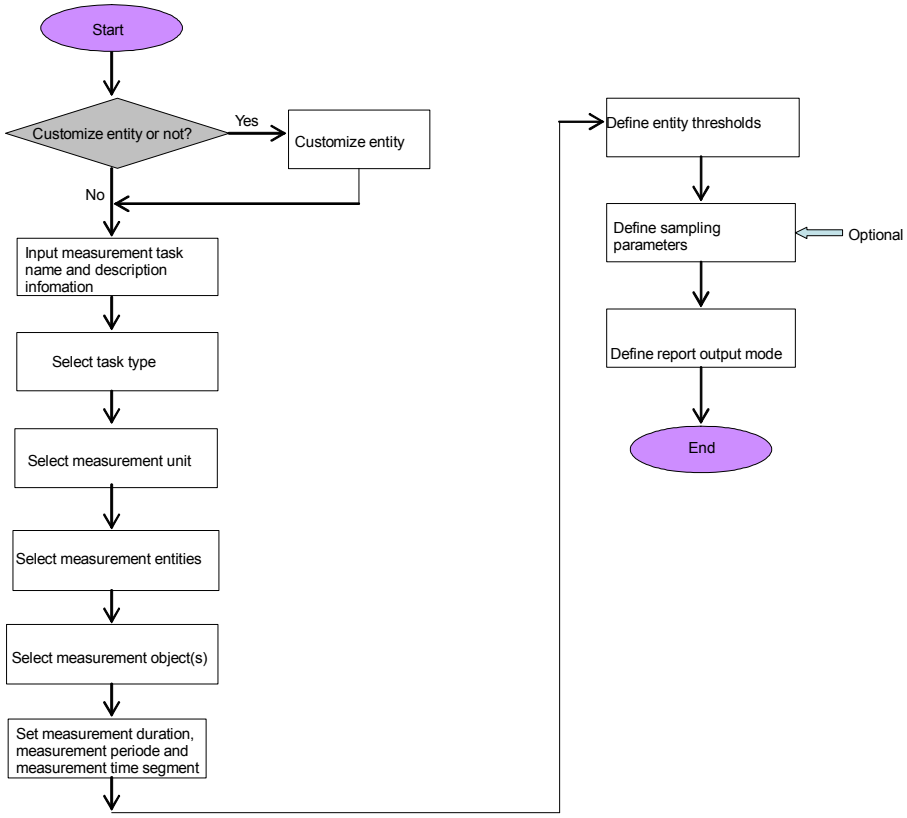


Figure 3-4 Steps for creating a traffic measurement task

Suppose it is required to create a task for measuring the traffic of IAD with the requirements below:

- Measurement entities include call attempts, seizure times, call connected times, answer times, answer traffic, seizure traffic, connect traffic and customized no answer times of IAD 0 and IAD1.
- The measurement starts from Oct. 24, 2003 and lasts for 30 days. It is carried out every five minutes between 9:00-11:00, 14:00-16:00, and 19:00-21:00 from Monday to Friday.
- When each measurement period ends, the report will be sent immediately to the current workstation, traffic measurement port and Network Management System (NMS) port.

The following sections present the detailed procedures for creating this task.

3.2.1 Customizing Entity

If the original entities of the system cannot meet the actual needs of a traffic measurement task, you can customize an entity by following the steps as illustrated in Figure 3-5.

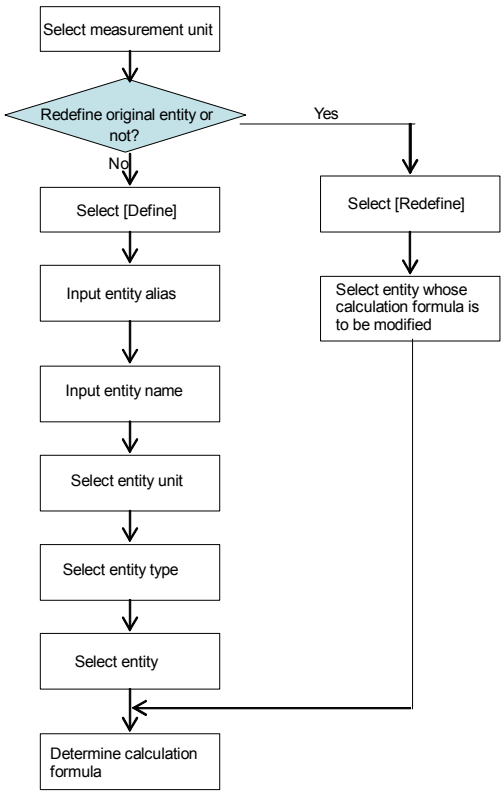


Figure 3-5 Steps for customizing an entity

I. Entering the [Set Custom Entity] interface

There are two modes for entering the interface as shown in Figure 3-6:

- Click [Entity/Set Custom Entity] in Figure 3-2.
- Click the [Entity] tab to enter an interface as shown in Figure 3-2. Right click and then click [Set Custom Entity] on the shortcut menu.

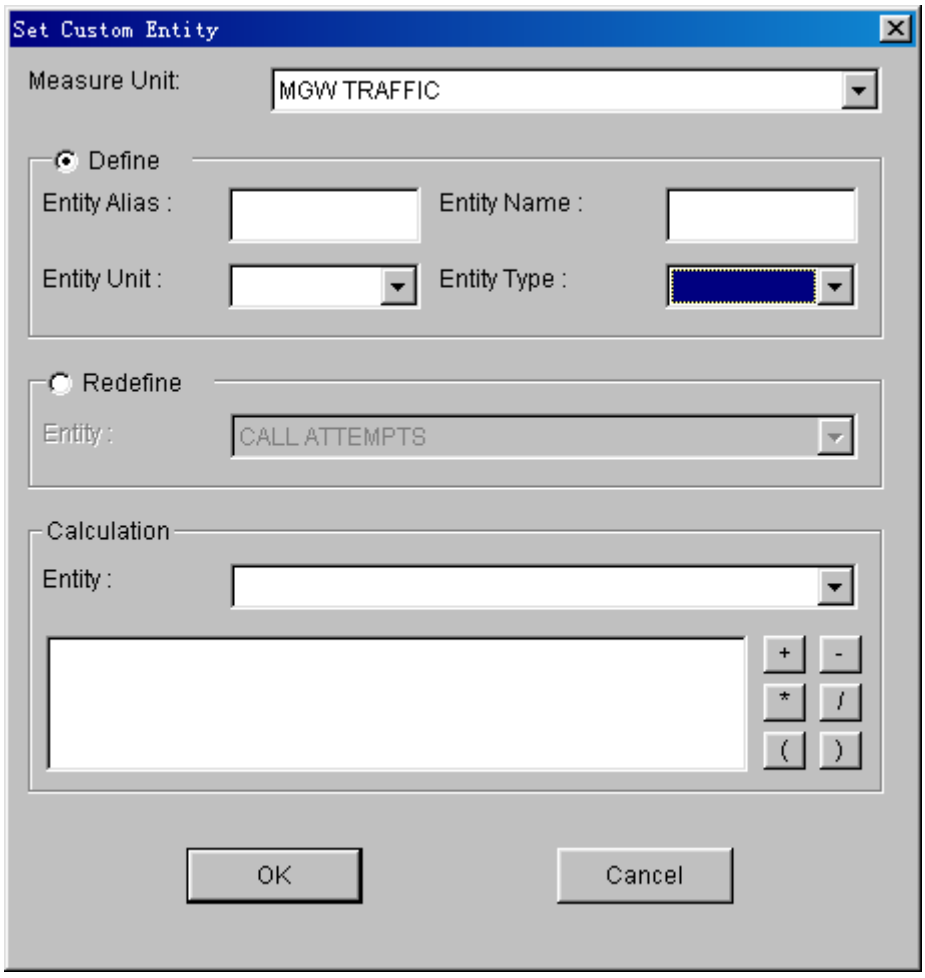


Figure 3-6 [Set Custom Entity] dialog box

II. Selecting a measurement unit based on the task

The measurement task “IAD traffic” corresponds to the measurement unit “MGW Traffic”. Therefore, select “MGW Traffic” for [Measure Unit].

III. Determining a calculation formula for an entity

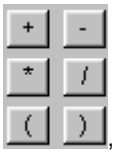
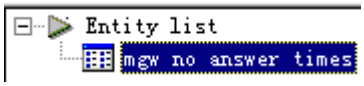
You can modify the calculation formula of an entity. Both definition of the formula of a custom entity or modification of the formula of an original entity are allowed.

- Determining a calculation formula for a custom entity

Follow the steps in Table 3-2 to define the formula.

Table 3-2 Steps for defining a calculation formula for a custom entity

Step	Operations	Parameter description
Step 1	Select [Define].	

Step	Operations	Parameter description
Step 2	(1) Input alias and name of the custom entity. (2) Select unit and type of the custom entity.	(1) The length of entity alias cannot be more than nine characters. (2) Entity unit options include Millisecond, %, Byte and No Unit. (3) Entity type options include Integer, Float, Time and BCD Code.
Step 3	Select the original measurement entity.	The measurement entity is determined by the measurement unit.
Step 4	Click a symbol among  , select another original entity, and then define the calculation formula for the custom entity, as shown in Figure 3-7.	
Step 5	Click <OK>. A prompt box indicating "Operation succeeded" pops up. The entity icon "mgw no answer times" will appear in the [Entity] tab as shown in Figure 3-2. 	In the example, the custom entity "mgw no answer times" = call connected times – answer times.

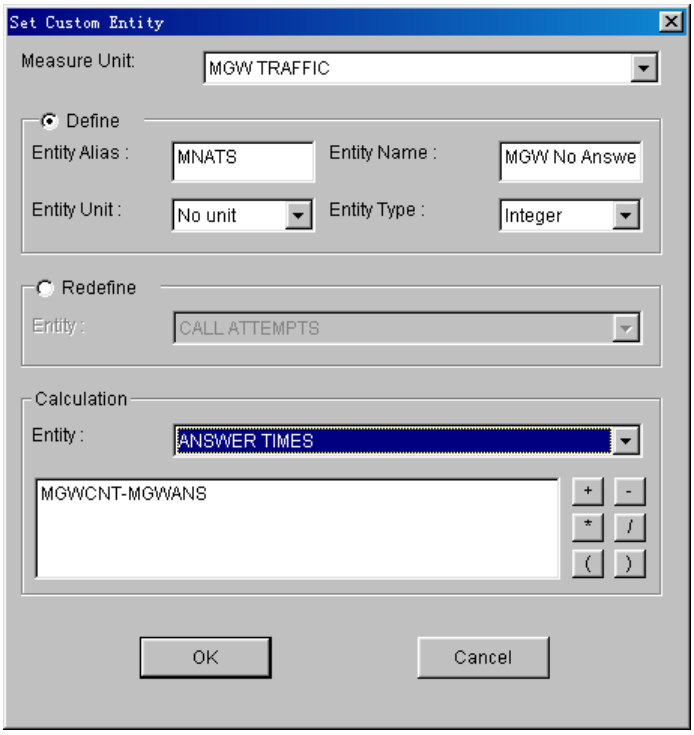


Figure 3-7 Example of defining calculation formula for the custom entity

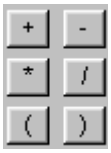
Note:

- After step 4, if it is necessary to modify the calculation formula of the custom entity, you can directly delete the formula and redefine a new one.
- If it is required to modify an already defined calculation formula, you can right click on the corresponding entity icon in the [Entity] tab as shown in Figure 3-2, and then click the [Modify Custom Entity…] menu item to modify it.

- Modifying the calculation formula of an original entity

Follow the steps in Table 3-3 to modify the formula.

Table 3-3 Steps for modifying the calculation formula of an original entity

Step	Operations	Parameter description
Step 1	Select [Redefine].	
Step 2	Select the original measurement entity.	The measurement entity is determined by the measurement unit.
Step 3	Click a symbol among  , select another original entity, and then define the calculation formula for the entity.	
Step 4	Click <OK>. A prompt box indicating "Operation succeeded" pops up.	

3.2.2 Entering Interface for Creating Task

In Figure 3-2, you can enter the task creation interface by three means.

- Right click on the "Task List (All)" icon and then click [Create Task…] on the shortcut menu.
- Click [Task/Create Task…].

An interface as shown in Figure 3-8 appears.

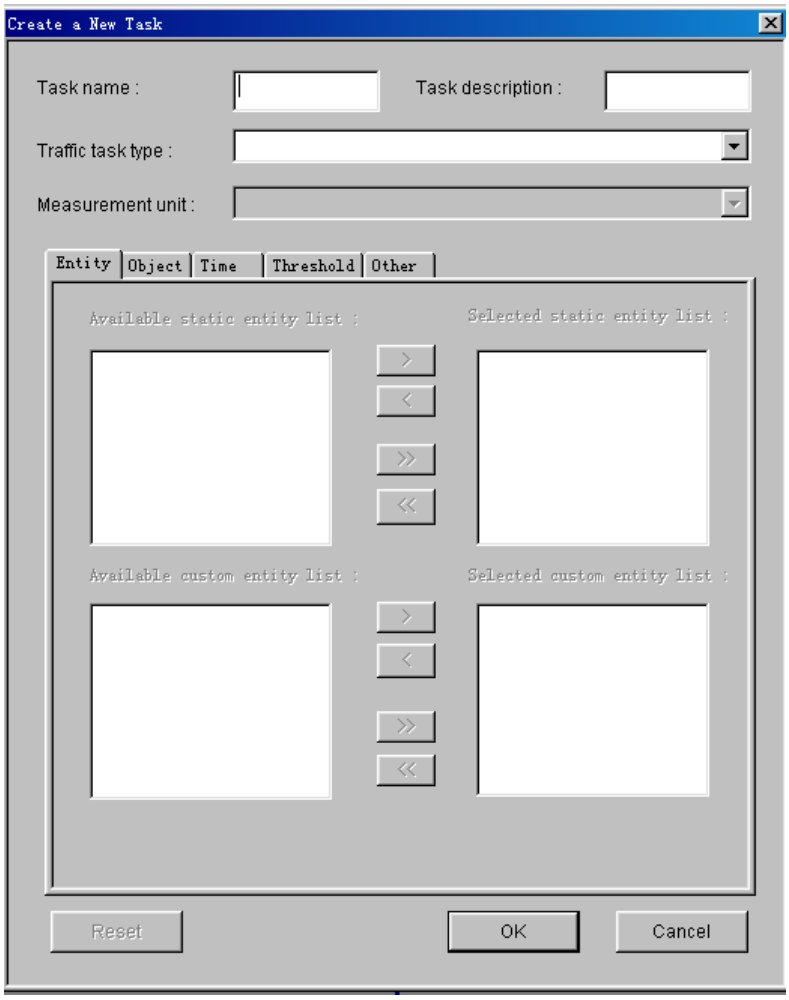


Figure 3-8 Interface for creating a new task

3.2.3 Inputting Task Name and Description

The name of a traffic measurement task should be as simple and clear as possible, but the description of it can contain the task purpose in details. The name should be a string of less than 32 characters, consisting of English letters, digits and other characters. Each Chinese character is counted as two characters, and no space between characters is allowed.

In the example, set task name to “IADAnswerRate” and task description to “IAD 1 Answer Rate”.

3.2.4 Selecting Task Type

Each measurement entity is subject to related measurement task type and measurement type. For a traffic measurement task, only measurement entities subject to the same measurement task type can be selected, that is, all measurement entities of a measurement task must belong to one or more measurement types of the same measurement task type.

The measurement task “IAD traffic” corresponds to the measurement unit “MGW Traffic” that is subject to “Bearer Traffic Task”, so select “Bear Traffic” for [Traffic Task Type] in Figure 3-8.

3.2.5 Selecting Measurement Unit

Select “MGW Traffic” for [Measurement Unit] in Figure 3-8.

3.2.6 Selecting Measurement Entities

Caution:

If it is necessary to customize an entity, refer to 3.2.1.

In Figure 3-8, select the correct traffic task type and measurement unit, and then click the [Entity] tab. The interface will be shown as in Figure 3-9.

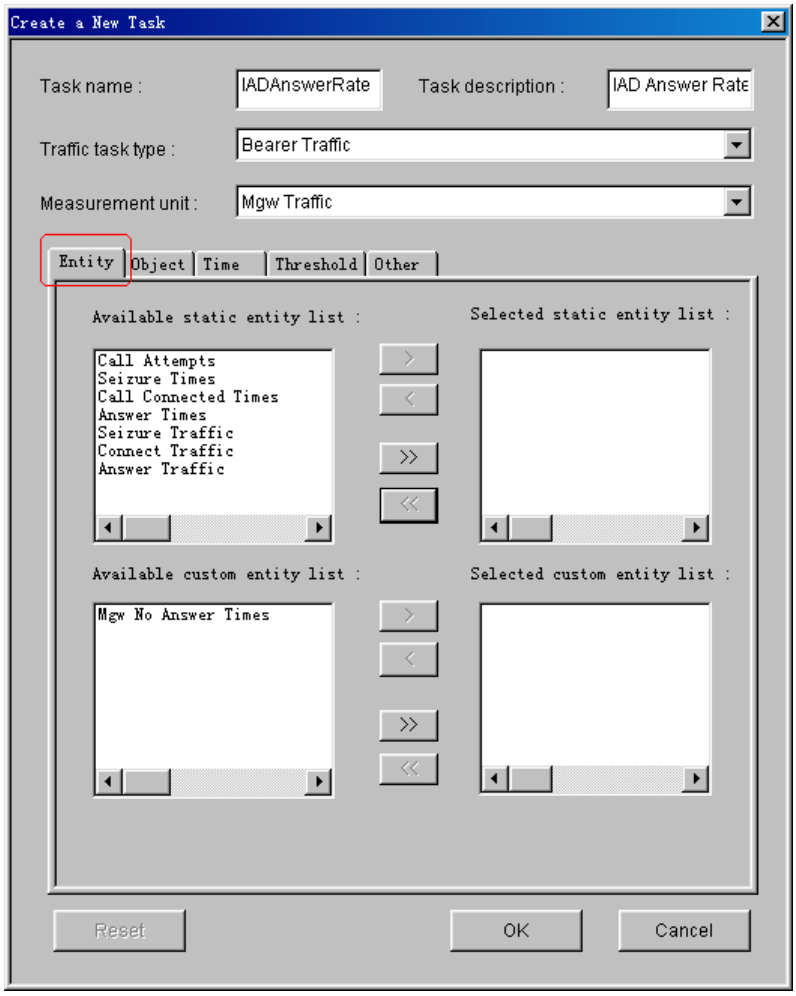


Figure 3-9 Interface for selecting measurement entities

Note:

If custom entities exist, they will be shown in the [Available custom entity list:] field. The selection of custom entities is in the same way as that of original entities.

Table 3-4explains the fields and buttons in the [Entity] tab.

Table 3-4 Meaning of fields and buttons in [Entity] tab

Field or button	Function
Available static entity list	It lists the original measurement entities defined in the system.
Selected static entity list	It lists the selected entities, indicating data should be collected for them.

Field or button	Function
>	It is used to add the measurement entities selected from the [Available static entity list:] field to the [Selected static entity list] field. ⚠ Caution: It is disabled unless you select a measurement entity from the [Available static entity list:] field.
<	It is used to delete a selected measurement entity from the [Selected static entity list] field. ⚠ Caution: It is disabled unless you select a measurement entity from the [Selected static entity list:] field.
>>	It is used to add all the measurement entities listed in the [Available static entity list:] field to the [Selected static entity list] field.
<<	It is used to delete all measurement entities in the [Selected static entity list] field.
Reset	It is disabled in creating a traffic measurement task, but enabled when you modify properties of a task.

In the example, measurement entities include call attempts, seizure times, call connected times, answer times, answer traffic, seizure traffic, connect traffic and customized no answer times. After required measurement entities are selected, the interface is as shown in Figure 3-10.

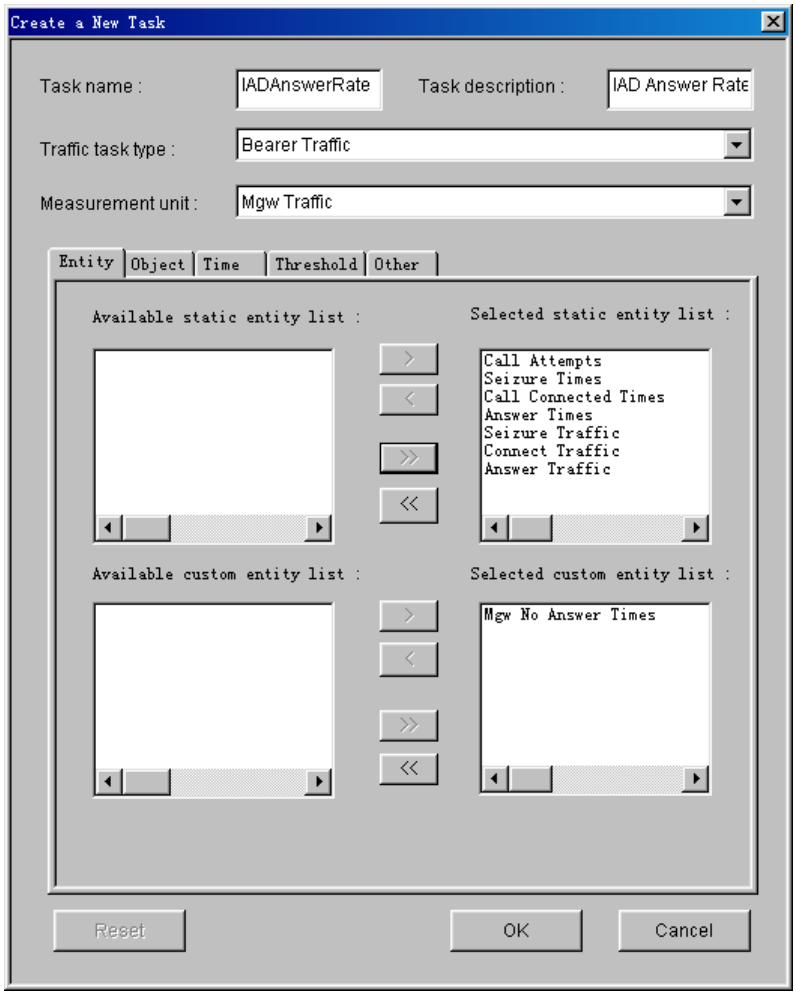


Figure 3-10 Interface showing selected measurement entities

3.2.7 Selecting Measurement Object(s)

Click the [Object] tab in Figure 3-8. An interface for selecting measurement object appears.

Select or input the desired measurement object and add it into the measurement object list.

In the example, first select “Certain MGW EID” for object type, and then input the ID (that is, iad0.ngn1.com) of IAD 1 in the [Certain MGW EID] field. MGW EID can be obtained by carrying out the **LST MGW** command. Finally, click <Add Object Instance> to add the selected measurement object into the list, as shown in Figure 3-11.

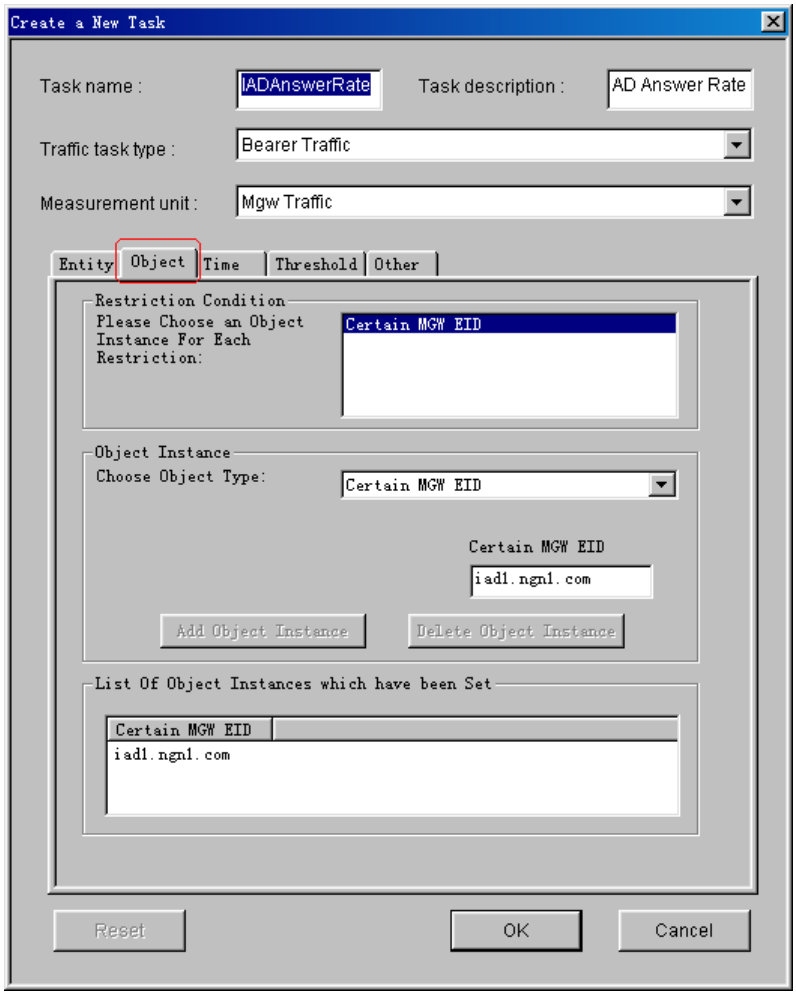


Figure 3-11 Interface for selecting measurement object

Note:

- For a traffic measurement task, multiple measurement objects can be selected, but you can only input one object when inputting the measurement entity.
- If it is necessary to add a measurement object, you can right click and then click [Add Measurement Entity Instance] on the shortcut menu to add it. Refer to 3.5 for details.

3.2.8 Setting Time Properties

Click the [Time] tab in Figure 3-8. The interface will be shown as in Figure 3-12.

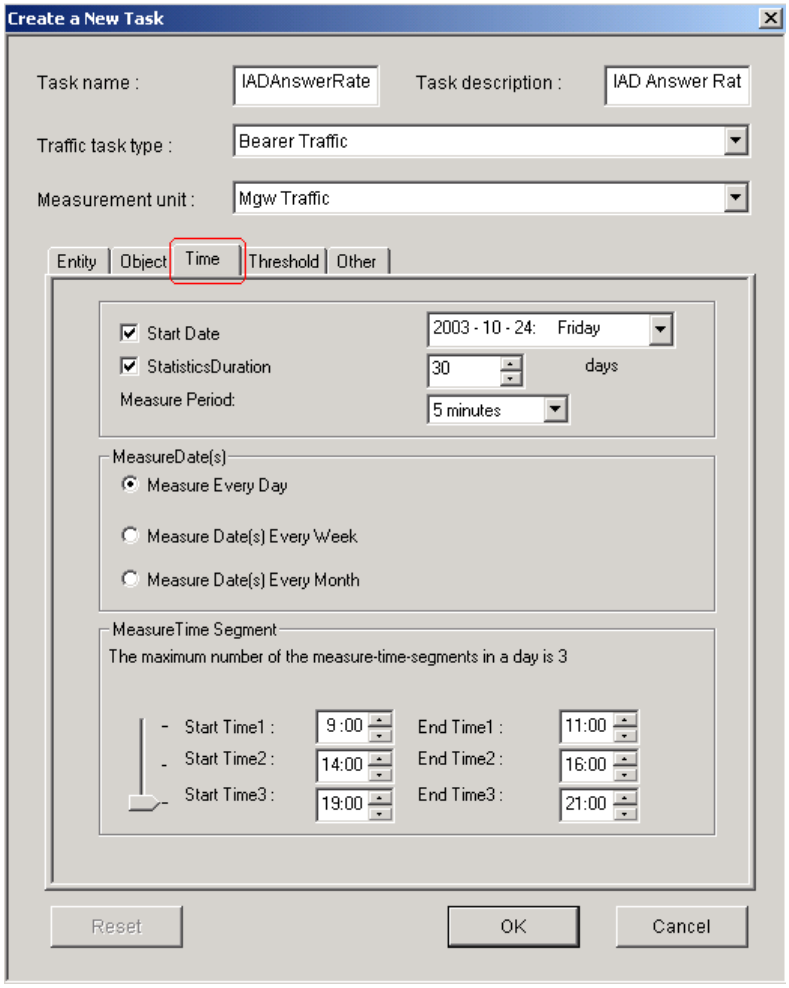
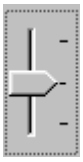


Figure 3-12 Interface for setting time properties

Table 3-5 explains the fields in the [Time] tab.

Table 3-5 Meaning of fields in [Time] tab

Field	Meaning	Value range	Remark
Start Date	It is used to specify the date when a measurement task is started.	Any valid data. It is in the format of Year-Month-Day, for example, 2003-10-23.	Current date is recommended.
Statistics Duration	It is used to specify the duration of a measurement task.	1-1024 days	Selection can be made based on need. If “StatisticsDuration” is not checked, it indicates that the traffic measurement task will be carried out permanently.

Field	Meaning	Value range	Remark
Measure Period	It is used to specify the interval for outputting a measurement result.	It can be one minute, five minutes, ten minutes, fifteen minutes, thirty minutes, one hour or one day.	By default, it is set to fifteen minutes. Generally it is recommended to set it to thirty minutes or one hour.
Measure Date(s)	It is used to specify the date(s) for measurement.	Measure Every Day: The measurement will be carried out every day. Measure Date(s) Every Week: You can select several weekdays for measurement from the list box. Measure Date(s) Every Month: You can select several days in a month for measurement from the list box.	Selection can be made based on need.
Measure Time Segment	It is used to specify the time segment(s) in a day for measurement.	1-3	Selection can be made based on need.
	It is used to set which time segment is effective.	Three positions	It can be dragged upward or downward.
Start Time1	It is used to specify the start time of the first time segment.	00:00-24:00	Set the most concerned time segment.
Start Time2	It is used to specify the start time of the second time segment.	00:00-24:00	It cannot be overlapped with the first time segment.
Start Time3	It is used to specify the start time of the third time segment.	00:00-24:00	It cannot be overlapped with the first and second time segments.

In this example, set [Start Date] to “2003-10-24”, [Statistics Duration] to “30” days, [Measure Date(s)] to “from Monday to Friday”, [Measure Time Segment] to “9:00-11:00”, “14:00-16:00”, and “19:00-21:00”, and [Measure Period] to “5” minutes.

3.2.9 Defining Entity Threshold

Click the [Threshold] tab in Figure 3-8. The interface will be shown as in Figure 3-13.

In this tab, you can define lower threshold and upper threshold for a maximum of four measurement entities. The upper and lower thresholds can be set as needed. If only

the upper threshold of an entity is concerned, the lower threshold can be set to 0. Likewise, if only the lower threshold is concerned, the upper threshold can be set to 0.

Caution:

Not all measurement entities have thresholds, but only those with threshold property can be set with thresholds. In this example, the measurement entities have no threshold.

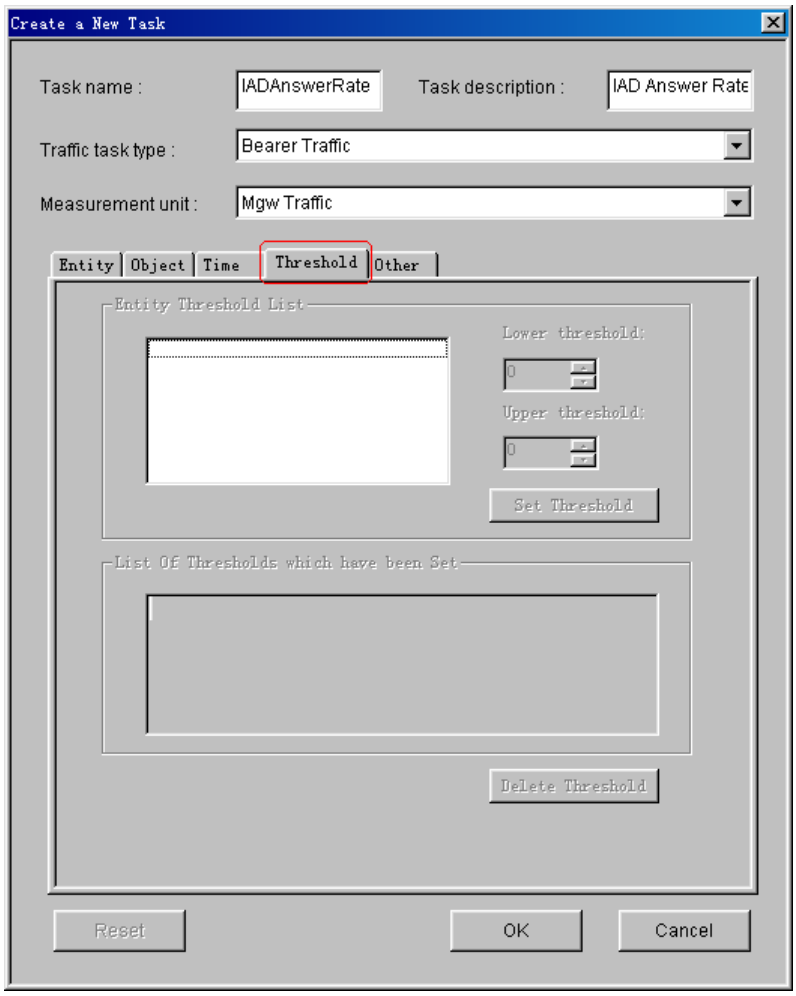


Figure 3-13 Interface for defining entity threshold

Table 3-6 explains the fields and buttons in the [Threshold] tab.

Table 3-6 Meaning of fields and buttons in [Threshold] tab

Field	Meaning
Entity Threshold List	It lists the entities which can be set with threshold.

Field	Meaning
Lower Threshold	It is used to set the lower threshold of an entity.
Upper Threshold	It is used to set the upper threshold of an entity.
Set Threshold	By clicking this button, you can make the upper and lower thresholds effective after they are set.
List of Thresholds which have been set	It lists the information of the entities whose thresholds have been set.
Delete Threshold	After selecting an entity record in the [List of Thresholds which have been set], you can click this button to delete the thresholds of this entity.

3.2.10 Defining Sampling Parameters and Report Output Mode

Click the [Other] tab in Figure 3-8. The interface will be shown as in Figure 3-14.

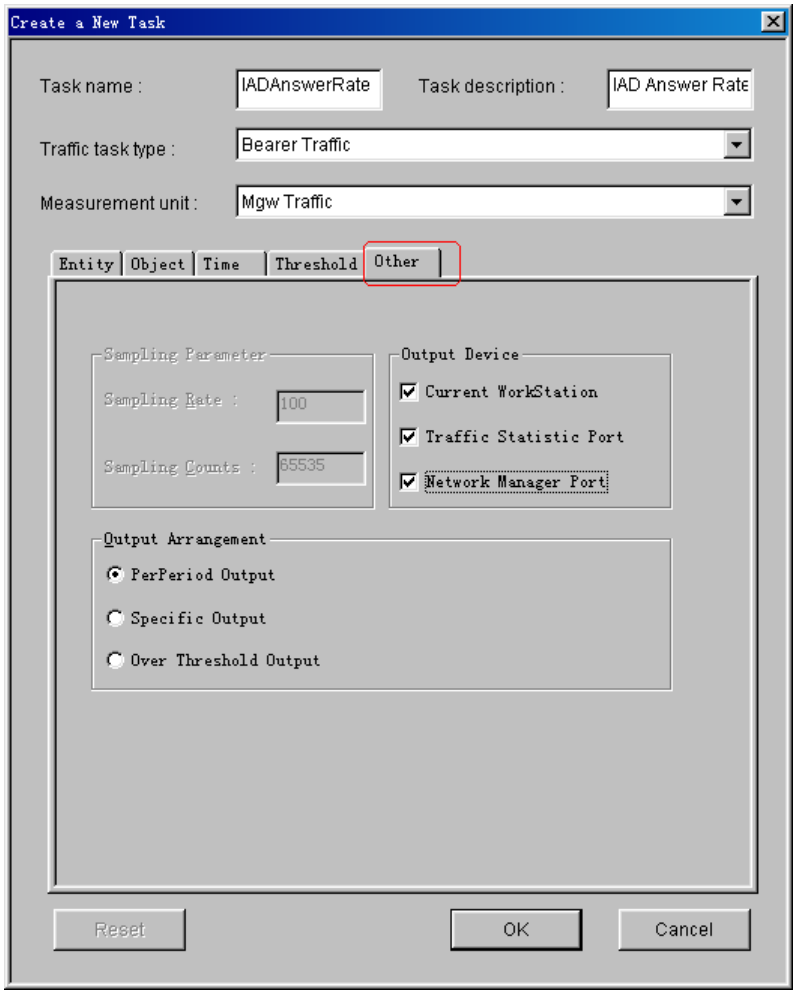


Figure 3-14 Interface for defining sampling parameters and report output mode

Table 3-7 explains the fields in the [Other] tab.

Table 3-7 Meaning of fields in [Other] tab

Field	Meaning
Sampling Parameter	Some measurement units generate two much information, so sampling measurement is necessary to keep accuracy and reduce system burden to some extent. By default, 100% is adopted for sampling rate. Note that not all measurement units have sampling parameters.
Output Device	It is used to set the destination where a measurement report will be sent. There are three options: Current Workstation Traffic Statistic Port Network Manager Port
Output Arrangement	It is used to define the time when a measurement report will be exported. There are three options: PerPeriod Output: When a measurement period ends, the report will be exported immediately. Specific Output: The report will be exported at specified time. Over Threshold Output: Only when measurement value is beyond the threshold range, will a report be exported.

In this example, when a measurement period ends, the system will immediately send the traffic measurement report to the current workstation, traffic statistic port and network manager port.

After all the parameters are set, click <OK>. If the task is created successfully, a new node will appear under the [Task List (all)] node, as shown in Figure 3-15.

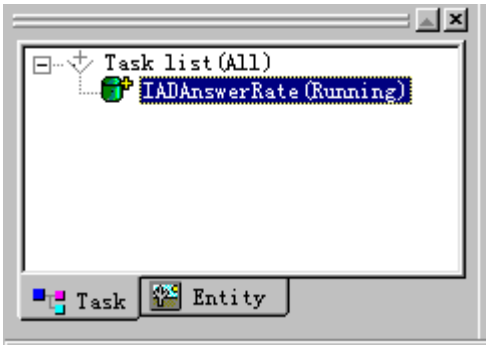


Figure 3-15 Interface showing successful creation of the task

3.2.11 Measurement Task Status

In Figure 3-15, “IADAnswerRate (Running)” indicates that this task is running currently. Table 3-8 explains various status of traffic measurement task.

Table 3-8 Meaning of various status of traffic measurement task

Status	Meaning
Running	It indicates that a traffic measurement task is running currently.
Error	It indicates that a traffic measurement task is wrongly set.
Ended	It indicates that a traffic measurement task has ended.
Deactivated	It indicates that a traffic measurement task has been deactivated.
No objected instance	It indicates that a traffic measurement task has no measurement object.
Setup	It indicates that a traffic measurement task has been created successfully, but the start time has not arrived set.
Undefined	It indicates that a traffic measurement task fails to be created in the host. When a task is deactivated, it is deleted from the host, and its status will be displayed as “Undefined”.

3.3 Querying or Dumping Measurement Task Result

3.3.1 Querying Measurement Task Result

I. Entering the interface for querying traffic measurement result

In the navigation tree as shown in Figure 3-2, select a desired task under the [Task List(All)] node, right click on it and then click [Query Task Result…] on the shortcut menu. An interface as shown in Figure 3-16 appears.

⚠ **Caution:**

When performing the [Query Task List] operation, if you select “All”, all tasks will be listed in the navigation tree. If you select “Error task”, only error tasks will be listed.

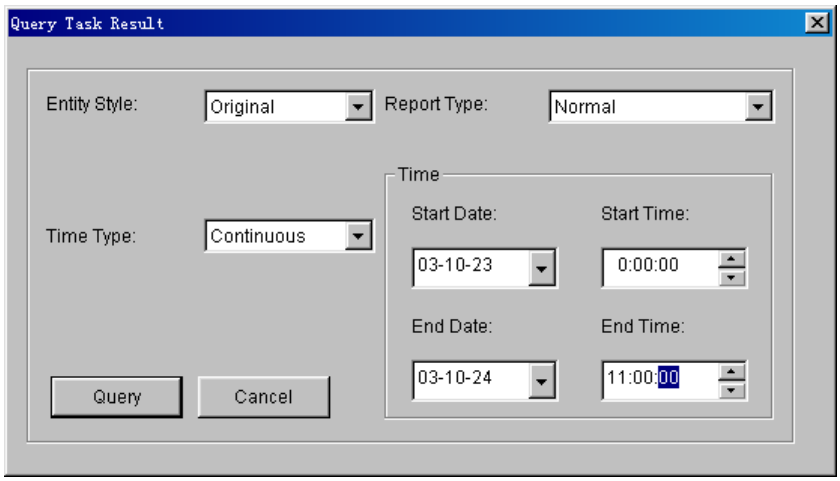


Figure 3-16 [Query Task Result] dialog box

Table 3-9 explains the fields in the above dialog box.

Table 3-9 Meaning of fields in [Query Task Result] dialog box

Field	Meaning
Entity Style	Original: Only the result of the original measurement entities will be displayed. Evolve: The result of the original measurement entities including those whose calculation formulas have been modified will be displayed. Brief: The result of the original measurement entities and custom measurement entities will be displayed. Detailed: The result of all measurement entities (including original measurement entities, original measurement entities whose calculation formulas have been modified and custom measurement entities) will be displayed.
Report Type	Normal: The default report type of the system. Sum by Period: The value of each measurement entity equals the total values of all entities of the same type within the period. Sum by Object: The value of each measurement entity equals total values of all entities of the same type for different measurement objects. Sum by Period and Object: The value of each measurement entity equals total values of all entities of the same type for different measurement objects with the measurement period. Threshold Overflow: Only the values of measurement entities that exceed the threshold range will be displayed.

Field	Meaning
Time Type	Continuous: The system will export results starting from the start time of a specific day till the end time of a specific day. For instance, set start date as 04-03-01 (March 1, 2004), end date as 04-03-03 (March 3, 2004), start time as 10:00, and end time as 15:00. Segment: The system will export results of the start time and end time everyday from the start date till the end date. For the same settings, the system will export the measurement reports of March 1,2 and 3, each day starting from 10:00 to 15:00. If neither "Continuous" nor "Segment" is selected, only the result exported when the previous period ends will be displayed.
Start Date	It is used to set the start date for a traffic measurement task.
Start Time	It is used to set the start time for a traffic measurement task.
End Date	It is used to set the end date for a traffic measurement task.
End Time	It is used to set the end time for a traffic measurement task.

II. Displaying traffic measurement result

After the settings are finished in the above dialog box, click <Query>. The traffic measurement result will be shown as follows.

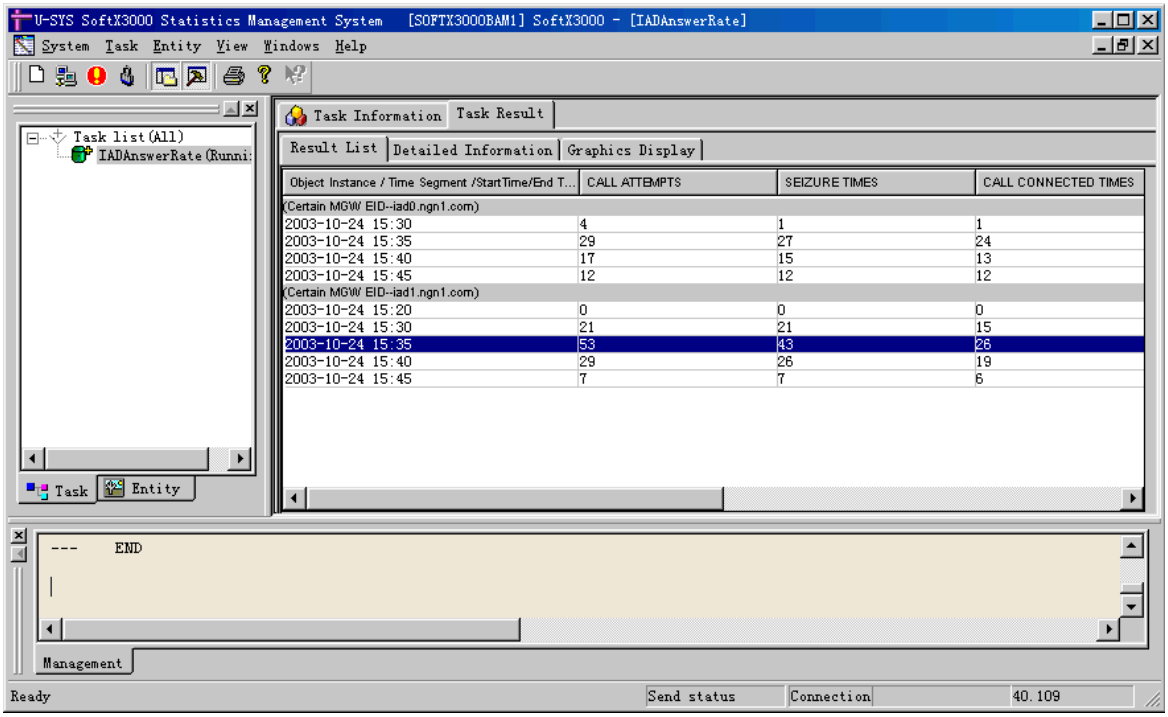


Figure 3-17 Interface showing measurement result

There are three tabs in Figure 3-17, [Result List], [Detailed Information] and [Graphics Display].

1) [Result List]

Such information as object name, measurement unit, measurement time and entity value are listed in this tab. In the example, the information of IAD 0 and IAD 1 are displayed.

Caution:

If it is required to display the values of the entities of only a specific type, you need to select an entity style in Figure 3-16.

You can carry out the following operations in this tab:

- Click the title column to arrange data by entity.
- Right click in the page and then click the corresponding items on the shortcut menu to carry out such operations as refreshing result, printing result, saving result in other format, sorting result by time and sorting result by entity, as shown in Figure 3-18.

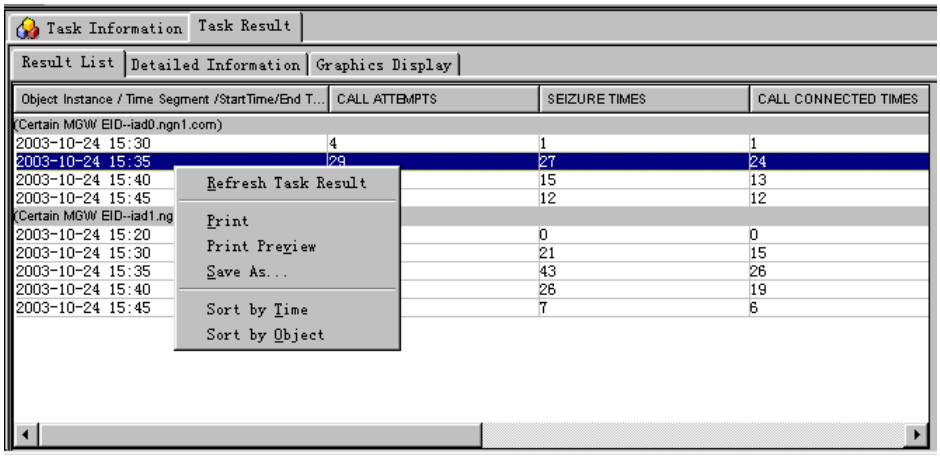


Figure 3-18 Shortcut menu in [Result List] tab

2) [Detailed Information]

The [Detailed Information] tab is as shown in Figure 3-19.

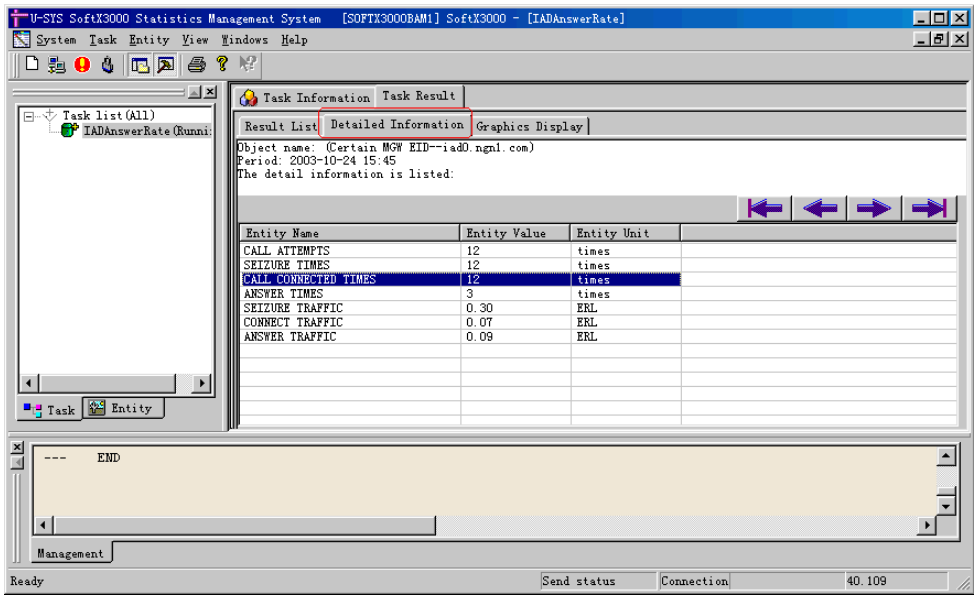


Figure 3-19 [Detailed Information] tab

In this page, the measurement result exported at then end of a measurement period for a measurement object, including entity name, entity value and entity unit.

Caution:

If it is required to show the values of the entities of a specific type only, you need to select an entity style in Figure 3-16.

By clicking  , you can browse the measurement result of different objects or exported at the end of different periods. For different objects, click  or  . For different periods, click  .

3) [Graphics Display]

As shown in Figure 3-20, the [Graphics Display] tab displays the traffic measurement result vividly in data chart.

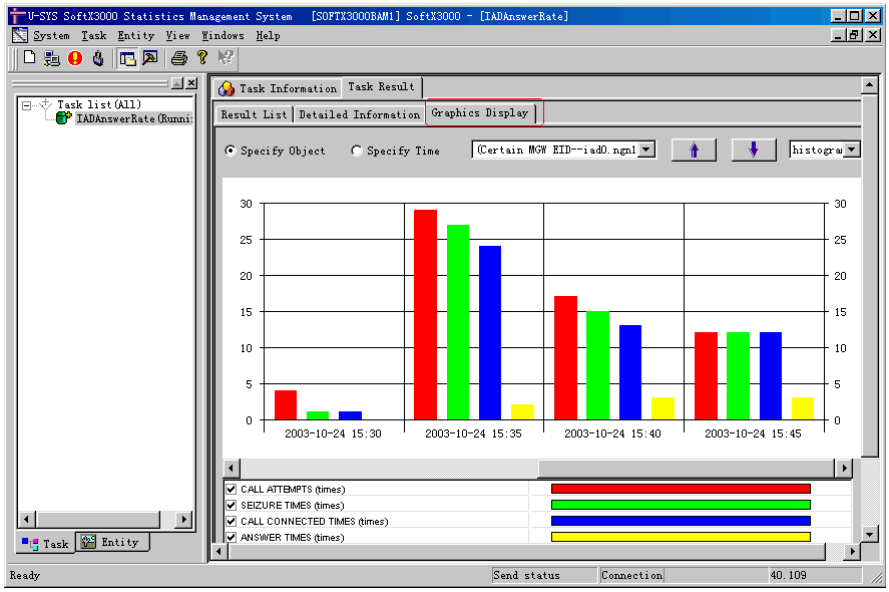
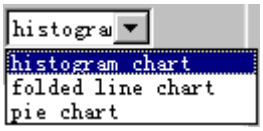


Figure 3-20 [Graphics Display] tab

Table 3-10 explains the fields and buttons in the [Graphics Display] tab.

Table 3-10 Meaning of fields and buttons in [Graphics Display] tab

Field	Meaning
Specific Object	The chart is displayed based on specific measurement object.
Specific Time	The chart is displayed based on specific measurement time.
	It is used to display the previous result chart based on specified object and time.
	It is used to display the next result chart based on specified object and time.
	There are three options for graphics display: Histogram chart Folded line chart Pie chart
	It is used to set the color for specific entity value.

3.3.2 Dumping Measurement Task Result

To dump the traffic measurement result, follow the steps below:

1) Entering the interface for result backup

There are two ways:

- Right click on the icon of the task to be deactivated, and then click [Dump Task Result] on the shortcut menu.
- Click [Dump Task Result] on the [Task] menu.

2) Set time type, date and time for backup. After confirmation, the measurement result will be dumped in a file named as RST_???.DBF in the directory D:\Stats on BAM (??? Stands for task name).

Note:

Time type options include "All", "CON" and "SEG". "CON" stands for "continuous" and "SEG" for "segment". Refer to Table 3-9 for specific meanings.

3.4 Querying Information of Measurement Task

To query information of a traffic measurement task, double click the task icon in the navigation tree and various kinds of information of the task will be shown as in Figure 3-21.

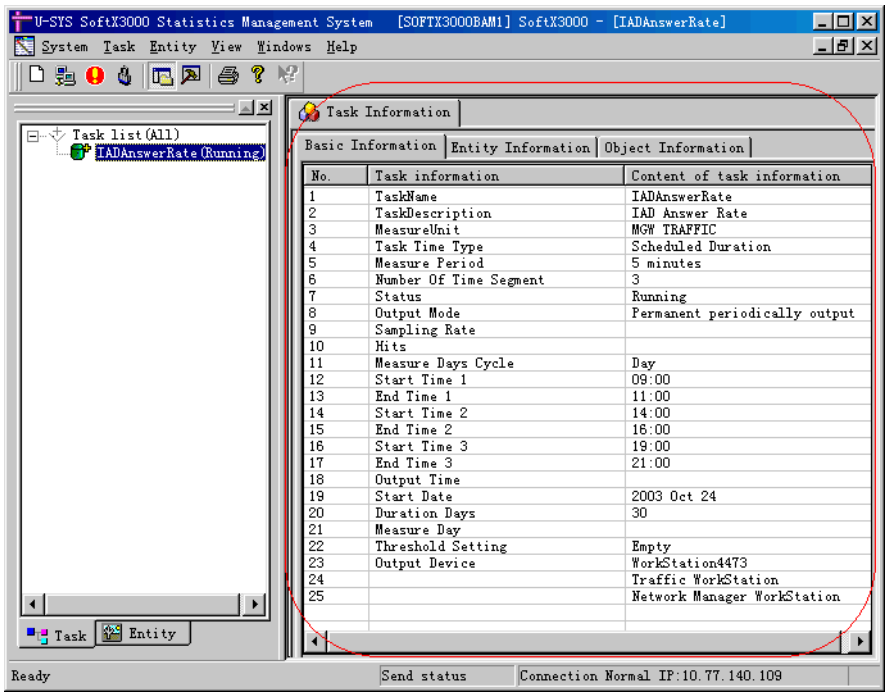


Figure 3-21 Interface showing detailed information of the task

There are three tabs in the [Task Information] page, which are described in Table 3-11.

Table 3-11 Functions of tabs in [Task Information] page

Tab name	Function
Basic Information	It lists such information as task name, task description, measurement unit, measurement period, output device, number of time segment and duration days.
Entity Information	It lists the names of original entities, custom entities, and original entities whose calculation formulas have been modified of the task.
Object Information	It lists the names of measurement objects of the task.

3.5 Modifying Configurations of Measurement Task

You can modify the configuration information of a measurement task by right clicking on a task icon in Figure 3-15 and then clicking the corresponding operation on the shortcut menu, or by clicking the corresponding menu item in the [Task] menu.

- Modifying task name;
- Modifying report output mode;
- Modifying measurement entities;
- Modifying time information;
- Modifying sampling parameters;
- Modifying measurement entity thresholds;
- Deleting measurement entity thresholds;
- Adding measurement object;
- Deleting measurement object;

Refer to the following table for operation procedures.

Table 3-12 List of operation procedures for modifying task configurations

Operation	Procedures	Remark
Modify task name	Right click on a task icon and then click [Modify Task Name] on the shortcut menu.	(1) You are prohibited to modify the task description. (2) During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
	Modify the name of the task in the dialog box that pops up.	
	Click <OK>.	
Modify task output mode	Right click on the task icon and then click [Modify Task Output Mode] on the shortcut menu.	(1) You have three options: PerPeriod Output: When a measurement period ends, the report will be exported immediately. Specific Output: The report will be exported at
	Modify the task output arrangement, that is, when to output the report.	

Operation	Procedures	Remark
	Click <OK>.	specified time. Over Threshold Output: Only when measurement value is beyond the threshold range, will a report be exported. (2) During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
Modify report output device	Right click on the task icon and then click [Modify Output Device] on the shortcut menu. Modify the output device of the task report in the dialog box that pops up. Click <OK>.	During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
Modify measurement entities	Right click on the task icon and then click [Modify Measurement Entities] on the shortcut menu. Modify the measurement entities of the task in the dialog box that pops up. Click <OK>.	During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
Modify time information	Right click on the task icon and then click [Modify Time Info] on the shortcut menu. Modify the time information of the task in the dialog box that pops up. Click <OK>.	During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
Modify sampling parameters	Right click on the task icon and then click [Modify Sampling Parameter] on the shortcut menu. Modify the sampling parameter in the dialog box that pops up. Click <OK>.	During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
Modify measurement entity thresholds	Right click on the task icon and then click [Set Task Threshold] on the shortcut menu. In the dialog box that pops up, select the entity to be modified, and then input the upper and lower thresholds. Click <Set Threshold>. Click <OK>.	For a task, you can set the thresholds for a maximum of four entities. After the setting of four entities, the button <Set Threshold> becomes grayed. If the thresholds of more than four entities need be modified, first right click on the task icon and click [Delete Task Threshold] on the shortcut menu to delete the thresholds of an entity, then click [Set Task Threshold] on the right-click shortcut menu to add the thresholds for the fifth entity. During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.

Operation	Procedures	Remark
Delete measurement entity thresholds	Right click on the task icon and then click [Delete Task Threshold] on the shortcut menu.	
	Select the entity to be deleted in the dialog box that pops up.	
	Click <Delete Threshold>.	
	In the dialog box for confirmation, click <OK>.	
Add measurement object	Right click on the task icon and then click [Add Measurement Object Instance] on the shortcut menu.	During the modification, you can restore the original setting by clicking <Reset> in the lower left corner of the dialog box.
	In the dialog box that pops up, Click <Select Object Data>. Select the measurement object to be added.	
	Click <OK>.	
Delete measurement object	Right click on the task icon and then click [Delete Measurement Object Instance] on the shortcut menu.	The last object cannot be deleted.
	Select the object to be deleted.	
	Click <Delete Object Instance>.	
	In the dialog box for confirmation, click <OK>.	

Note:

When modifying configuration information of a traffic measurement task, you can view both original measurement result and the new result after the modification in one table.

3.6 Deleting Measurement Task

You can delete a traffic measurement task by either of following ways:

- Right click on the icon of the task to be deleted, and then click [Delete Task] on the shortcut menu.
- Click [Delete Task] on the [Task] menu.

3.7 Activating/Deactivating Measurement Task

During running of a traffic measurement task, you can stop it temporarily by deactivating it, and you can reactivate it when needed. In the navigation tree, if a task is

headed with an icon , it indicates that the task is running currently. If the icon is shown, it indicates that the task has been deactivated.

I. Deactivating a task

There are two ways for this operation:

- Right click on the icon of the task to be deactivated, and then click [Deactivate Task] on the shortcut menu.
- Click [Deactivate Task] on the [Task] menu.

II. Activating a task

There are two ways for this function:

- Right click on the icon of the task to be activated, and then click [Activate Task] on the shortcut menu.
- Click [Activate Task] on the [Task] menu.

3.8 Setting Clear Time for Maximum/Minimum Value Task

To set the clear time, right click on the icon of the maximum/minimum value task in Figure 3-15 and then click [Set Clear Time] on the shortcut menu, or click [Set Clear Time] on the [Task] menu. A dialog box for setting clear time appears. Input the desired time and click <OK>.

Chapter 4 Traffic Measurement Applications

Traffic measurement is applied to measure daily services so as to provide routine data for scheming and management of the telecom network. Besides, it also helps to fulfill the analysis of call loss, the analysis of call completion rate, traffic balancing, maximum/minimum value search and call tracing.

4.1 Equipment Running Management

4.1.1 Checking Running Condition of All Equipment

Although it is impossible to judge the running condition of the equipment directly through the traffic measurement, you can find some problems in equipment by viewing the measurement result, especially equipment-related call loss reasons (flow control call loss, for example), thus facilitating error discovery and removal in time.

There are two means to achieve this purpose:

I. Adopting the measurement unit "Fixed User Originating Traffic"

1) Create a "Total Traffic of the Office Task", with the parameters set as follows:
- Select "Fixed User Originating Traffic" as the measurement unit.
- Select "System Fault Call Times" and "Flow CTRL Call Loss Times" as the measurement entities, and set other parameters based on the actual need.
- Select "All Subscriber Lines" as the measurement object.

2) After the task is accomplished, check the output report for the entity values, from which you can obtain the running condition of the equipment. For example, if the report shows that "System Fault Call Times" is a large number, it is possible that BSGI, MSGI or FCCU/FCSU has faults. If "Flow CTRL Call Loss Times" is a big value, IFMI or IP bearer network might have errors.

II. Adopting the measurement unit "Failure Reason Traffic"

1) Create a "Total Traffic of the Office Task", with the parameters set as follows:
- Select "Failure Reason Traffic" as the measurement unit.
- Select the equipment-related failure reasons such as "Unreachable Module", "Network Error", "Temporary Error", "Device Congestion" and "CPU Congestion or Overload" as the measurement entities, and set other parameters based on the actual need.

2) After the task is accomplished, check the output report for the entity values, from which you can obtain the running condition of the equipment.

4.1.2 Querying Call Loss

I. Analyzing call loss reason

The measurement unit “Failure Reason Traffic” in the "Total Traffic of the Office Task" provides the measurement result containing more than 100 kinds of call loss reasons. It helps to track down the main reason of a call loss and roughly locate the fault type.

Suppose the value of the entity “Unreachable Module” is the biggest in an output report. Since module inaccessibility is often caused by hardware problems (for example, shared resource bus fault, HSCI failure, FCCU/FCSU error), it can be concluded that hardware fault is the cause of the call loss in the first place. For another example where the entity “Dual Seizure” is a big value in the output report, as the mode of calls seizing trunk circuits is determined by the configuration data, the mismatch of the configuration data between the local and opposite offices should be the main cause of the call loss.

II. Locating call loss reason further

The “Failure Reason Traffic” measurement unit gives just the least detailed call loss information. However, more specific call loss descriptions are needed to locate the cause of a fault, for example, where the most failed calls are originated, where the most failed calls are terminated, what type the most failed calls are, and what equipment the most failed calls go through. Such information is available from “Total Traffic of the Office Task” and “Bearer Traffic Task”:

1) Measurement of the traffic flow provides information about the calls and failure causes of eight traffic flows such as outgoing, incoming, local and transit calls. The measurement involves such units as “Fixed Inner Traffic”, “Fixed User Originating Outgoing Office Traffic” and “Incoming Office Terminating Traffic”.
2) Measurement of the connection type provides information about the connections and failure causes of such connecting types as toll incoming, toll outgoing, local incoming and local outgoing calls. The measurement involves such units as “Connecting Type Traffic”.
3) Measurement of the office direction provides information about incoming calls to the local office from another office or outgoing calls to another office from the local office, and the failure causes. It can also measure the incoming or outgoing traffic of every office direction in a measurement task. The measurement involves such units as “Office Direction Incoming Office Traffic” and “Office Direction Outgoing Office Traffic”.
4) Measurement of the trunk group provides information about incoming calls from or outgoing calls to a trunk group and the failure causes. It can also measure the incoming or outgoing traffic of every office direction in a measurement task. The measurement involves such units as “TKGRP Incoming Office Traffic” and “TKGRP Outing Office Traffic”. The trunk group measurement can help locate the call loss caused by a faulty trunk.

5) Measurement of the destination provides information about calls to the destination cities (for example, Beijing, Shanghai) from the local office and the failure causes. The measurement involves such units as “Destination Translation Traffic” and “Destination Distribution Traffic”. “Destination” is the number of a prefix in the called number analysis table. For instance, use the **ADD CNACLD** or **MOD CNACLD** command to set the destination number of the prefix "010" to 0. By numbering each prefix in the called number analysis table and setting the measurement task, you can work out the information of the calls and failure causes. The destination traffic measurement helps to obtain the connection status of calls to a destination through several times of transfer so as to optimize route selection.
6) Measurement of a single user provides information about the calls of a particular user. After a call failure is located to the FCCU/FCSU, conduct statistic analysis of every user of this board to find out the one who places the most failed calls. The measurement involves the measurement unit “Single User Traffic”.
7) Measurement of the ISDN service provides information about the calls and failure causes of some ISDN services. By measuring each of ISDN services, you can find out the ISDN service that produces the most failed calls. The measurement involves the measurement unit “ISDN Bearer Service Traffic Measurement”.
8) Measurement of the ISDN interface provides information about the calls and failure causes of some ISDN interfaces. By measuring each of the ISDN interfaces, you can find out the ISDN interface to which the most failed calls occur. The measurement involves such units as “ISDN BRA Traffic Measurement” and “ISDN Primary Rate Interface Traffic Measurement”.

III. Finding out call loss reason finally

Once the main cause for call loss is located to specific users, the “Call Record Task” can be used to measure the calls of these users. In this task, the record time and sampling rate are present and every call of the user is recorded automatically, including the dialed number, time of every step in the connection, failure cause, and so on.

You can find some preliminary causes of call loss by querying the call record. For example, query "long time no answer times" to judge whether the called number is unused, or even to obtain the extract causes of call loss directly from the call record, for instance, whether the user often performs such invalid operations as "releasing before pickup", "no dial for long time" and "dialing unallocated number".

IV. Finding essential call loss reason

Generally, it’s impossible to locate essential call loss reasons directly by means of traffic measurement. However, the measurement units for signaling and interface (for example, “M3UA Signaling Link Traffic”, “M3UA Linkset Flux Traffic” and “M3UA Destination Entity Measurement”), together with some maintenance methods such as

alarm query, self-loop test and signaling analysis, can be used to locate some essential call loss reasons, especially those concerning signaling and protocol.

For example, to find out the ISUP circuit call loss reason by the following operations:

1) Set up a “Signaling and Interface Task”. Select “ISUP Abnormity Traffic” as the measurement unit, select all entities, and set the rest information as needed.
2) Query the output result and find that the output value of the “T17 receiving no Reset Circuit (RSC) acknowledgment times" is rather great. It’s found through the ISUP signaling analysis that the ISUP sends an RSC message to a circuit once every 30 seconds till it receives an acknowledgement message Release Guard Signal (RLC). If it receives no acknowledgement message after 20 attempts of sending RSC, it will start the T17 timer (10-minute timer) to send the RSC once every 10 minutes till an acknowledgement message is received. This item measures the event that no circuit reset acknowledgement is received within T17 after the delayed sending (compared to the sending of RSC once every 30 seconds).
3) Therefore, the call loss is very likely caused by the fact that the circuit fails to reset after receiving the RSC message.

4.1.3 Distributing Busy Traffic

Busy traffic refers to great number of calls or heavy traffic. Usually great number of calls only results in a higher CPU occupancy ratio without affecting the system too much. However, heavy traffic reflects the occupancy state of resources and in this case, according to the traffic Formula, considerable call losses will occur. Distributing busy traffic means to arrange the rational use of resources based on the traffic volume, thus reducing call losses. It’s obvious that the key to distributing busy traffic is to measure and monitor the use of such important resources as trunks and GWs.

Measurements that can be used to observe the global traffic or traffic of various parts are measurement of the traffic flow, measurement of the connection type, measurement of the office direction, measurement of the trunk group, measurement of the destination, measurement of the media gateway, and measurement of the user line group. These measurements provide information about use of various resources. Take prompt measures on the resources that are insufficient to carry heavy traffic to avoid serious call loss. For instance, if quite a lot of users connected to an Access Media Gateway (AMG) initiate calls at the same time and talk for a very long time, this can easily result in heavy traffic and serious call loss correspondingly. In this case, the telecom operator is recommended to purchase more equipment or upgrade the equipment.

So far, the switching capacity in many offices is quite large and it’s very rare that the global resource falls short. Therefore, it’s not quite often that the traffic measurement is needed for distributing the busy traffic. However, in some special cases such as unreasonable configuration of resources causing unbalanced traffic or heavy traffic in

holidays, the system might be short of resources. At this time, the accumulated traffic measurement information will be helpful for distributing busy traffic to ensure normal communication.

4.1.4 Balancing Traffic

It needs special attention in data configuration and routine maintenance that how the traffic load can be evenly allocated to various MGWs, cabinets, frames and trunk groups. To evenly allocate the traffic load to respective resources during data configuration is to balance the traffic in a static and predictive way. The data optimization with traffic statistics is a kind of feedback traffic balancing that is dynamic and effect-oriented.

For instance, during early data configuration, it's hard to predict the users who will have large traffic or the users within which number segments will have heavy traffic. If most of the users connected to an AMG are hotline users (on stock research report, social investigation, and so on), call loss will become more serious and call completion rate will be low. If the result of traffic measurement is used to help optimize data configuration, the traffic can be distributed more flexibly as required, thus facilitating traffic balancing.

The following measurements can be used for traffic balancing:

1) "Measurement of the MGW": provides information about the calls of an MGW. By comparing the traffic information of several MGWs, you can take corresponding traffic balancing measure. The measurement involves the measurement unit "MGW Traffic". For example, if the traffic of an MGW is too heavy, you can shift some load (users) on this MGW to other MGWs.
2) Measurement of the office direction destination traffic distribution provides information about the distribution of the traffic to each destination in each office direction, from which you can find out the unbalanced traffic part and then adjust the route selection in the called number analysis table to make the traffic to different destinations evenly distributed on trunks to the greatest extent. It involves the measurement unit "Destination Distribution Traffic".

It's evident that processing of maximum/minimum value user and traffic balancing are supplementary to each other. At the same time of taking measures on maximum/minimum value user, traffic is also being balanced, thus avoiding unreasonable allocation of resources. The maximum/minimum value user processing can boost up the call completion rate sharply in a short period of time. However, this operation demands frequent and huge maintenance work. In addition, after some time, the "maximum/minimum value user" measured everyday might not be so centralized, and the processing of them will impose a very weak effect on traffic balancing. Compared to maximum/minimum value user processing, traffic balancing can achieve reasonable usage of limited resources in a long term though it might not necessarily exert a profound influence on traffic distribution in a short time. In an office with rather

small capacity or in a time segment with heavy traffic, traffic balancing is a very effective way to enhance the call completion rate.

4.1.5 Searching Maximum/Minimum Value

The traffic measurement function can help search for the maximum/minimum value user such as a top usage user. By analyzing the call information of these maximum/minimum value users (or maximum/minimum value trunks), you can find out major factors affecting the call completion rate. Then take corresponding measures (hardware repair, supplementary service provision, voice transfer, and so on) to raise the call completion rate quickly.

I. Measurement of “top usage user”

With the measurement unit of “Top Usage User Traffic” in the "Maximum/Minimum Value Task”, you can find out the top 10 users with the heaviest traffic and their total seizure duration from 4:00 a.m. to the end of the measurement. The “total seizure duration” refers to the total duration when the user acts as a caller or a callee.

The “top usage user” refers to a user with the heaviest traffic. Heavy traffic might incur serious call loss and great impact on other services. For instance, the telephone service and fax service might affect each other if they share the common resource, and if the call traffic is heavy, the fax service shall be affected. In addition, some users accessing the Internet will occupy the system resource exclusively for a long time, thus decreasing available resources and aggravating call losses.

To solve top usage user problems, it’s advised to install more user lines, register call forwarding on busy (CFB) service and call forwarding to voice mailbox, and so on.

II. Measurement of “top called busy user”

With the measurement unit of “Top Called Busy Traffic” in the "Maximum/Minimum Value Task”, you can find out the top 10 called busy users and their total called busy times from 4:00 a.m. to the end of the measurement. The “called busy times” refers to the total times of no reply of the called party due to on-going conversation.

As "called busy" is a kind of call loss, the processing of called busy users is a quick and effective way to raise the call completion rate. To solve this problem, it’s advised to use supplementary services, install more user lines, or set the call forwarding to voice mailbox, and so on.

III. Measurement of “top ringed no answer user”

With the measurement unit of “Top Ringed No Answer Traffic” in the "Maximum/Minimum Value Task”, you can find out the top 10 ringed no answer users and their total ringed no answer times from 4:00 a.m. to the end of the measurement. The “ringed no answer times” refers to the total times of no answer from a callee.

The possible causes for ringed no answer are that the called number is an invalid number, or the callee is out for long time. This problem can be solved by viewing the configuration data, canceling the unused number, forwarding incoming calls to other number, setting voice mailbox, and so on.

Caution:

In different offices, the “ringed no answer duration” is set differently, so the following case might happen: For an incoming call, if the ringed no answer duration set at the opposite office is shorter than that set at the local office, the opposite office might judge the local office as “ringed no answer” after ringing for a while and then release the call first, while the local office will judge the opposite office as “release before pickup” because the opposite office has disconnected the line first.

IV. Measurement of “top call loss user"

With the measurement unit of “Top Call Loss Traffic” in the "Maximum/Minimum Value Task”, you can find out the top 10 call loss users and their total call loss times from 4:00 a.m. to the end of the measurement. The “call loss times” refers to the total times of calls not answered for a caller.

There are many reasons that might cause call loss, either software/hardware faults or human factors. Before processing top call loss users, you must further locate the call loss reason. In this case, use the call record task to record the call information of these top call loss users, which will serve as the basis for further analysis. If necessary, multiple offices might have to coordinate to find out the reason of the call loss.

V. Measurement of “top idle TK circuit”

With the measurement unit of “Top Idle TK Circuit Traffic” in the “Maximum/Minimum Value Task”, you can obtain the trunk circuit and group number with the least total seizure duration from 4:00 a.m. to the end of the measurement. The total duration of trunk seizure refers to the total duration when the trunk circuit is occupied. The idlest trunk measurement excludes the trunk circuits that are not installed.

The idlest trunk measurement can help improve the circuit utilization.

4.2 Troubleshooting for Equipment

The call tracing function of the maintenance console can be used to trace a user in real time and save the tracing information, which provides reference data for troubleshooting. However, there are restrictions for the call tracing function at the maintenance console, for example, the number of users traced simultaneously is limited, only specific user instead of a specified group of users can be traced, startup of

a tracing at a preset time is impossible, and tracing information cannot be filtered automatically.

The above restrictions can be overcome by the two measurement units of the “Call Record Task”, that is, “Dispersion Duration Traffic” and “Service Quality Traffic”. Thus tracing of mass calls becomes possible, measurement results are available as soon as the calls end, and calls can be filtered in real time by the filter mechanisms which are inherent in the traffic measurement, for example, inlet, outlet, destination code, call attribute, host number and failure cause. Besides, the call tracing can be performed in any predefined time or time segment through the time predefining mechanism of the traffic measurement. After filtering, the calls of heavy traffic can be further measured through sampling.

4.3 Monitoring and Maintenance for Network

4.3.1 Measuring Inner Traffic and Outgoing/Incoming Traffic of Local Office

The ratio of inner traffic to outgoing (or incoming) traffic determines the type of the hardware configuration of the local office. If most of the traffic is inner traffic, the local office should be mainly configured with AMG and Integrated Access Device (IAD). If most of the traffic is outgoing (or incoming) traffic, the local office should be mainly configured with Trunk Media Gateway (TMG).

For example, set up three "Total Traffic of the Office Tasks" for measuring respectively the inner, outgoing and incoming traffic.

Select “Fixed Inner Traffic”, ”Outgoing Office Traffic” and ”Incoming Office Traffic” as measurement units. Select ”call attempt times” and ”call connected times” for output entities, and set the rest information as needed. The percentages of the inner traffic, outgoing traffic and incoming traffic are available in the output report when the task finishes.

4.3.2 Measuring Transit Traffic in Transit Office

The transit traffic in the transit office indicates the transit information. You can obtain transit information by selecting different measurement units:

I. Selecting “Transfer Traffic” as the measurement unit

1) Set up a "Total Traffic of the Office Task". Select “Transfer Traffic” as the measurement unit, and ”All Incoming and Bi-directional Circuits” as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the transit information.

II. Selecting “Connecting Type Traffic” as the measurement unit

1) Set up a "Total Traffic of the Office Task". Select “Connecting Type Traffic” as the measurement unit. Select ”Transfer National Toll” and “Transfer International Toll” as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the transit information.

4.3.3 Measuring National Toll Traffic

Set up a "Total Traffic of the Office Task". Select “Connecting Type Traffic” as the measurement unit. Select ”Outgoing National Toll”, “Incoming National Toll” and “Transfer National Toll” as the measurement object. Set the rest information as needed. When the task finishes, check the output reports for the information of national toll calls.

4.3.4 Measuring Traffic of a User

In some special occasions, it is required to measure the traffic of a single user. There are two ways for this measurement:

I. Creating a “Bearer Traffic Task” with “Single User Traffic” as the measurement unit

1) Set up a "Bearer Traffic Task". Select “Single User Traffic” as the measurement unit. Select a user (described in multiple forms) as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the traffic information of this user.

II. Create a “Call Record Task” with “Multi Condition Object Traffic” as the measurement unit

1) Set up a "Call Record Task". Select “Multi Condition Object Traffic” as the measurement unit. Select a user (described in multiple forms) as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the traffic information of this user.

4.3.5 Measuring Each Call

The measurement can be implemented in two ways:

I. Creating a “Call Record Task” with “Dispersion Duration Traffic” as the measurement unit

1) Set up a “Call Record Task”. Select “Dispersion Duration Traffic” as the measurement unit, and the default value (all objects) for the measurement object. Set the rest information as needed.

2) When the task finishes, check the output report for the information of each call.

II. Creating a "Call Record Task" with "Service Quality Traffic" as the measurement unit

1) Set up a "Call Record Task". Select "Service Quality Traffic" as the measurement unit, and the default value (all objects) for the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the information of each call.

4.3.6 Measuring Calls to a Destination

The measurement can be implemented in four ways:

I. Creating a "Bearer Traffic Task" with "Destination Distribution Traffic" as the measurement unit

1) Set up a "Bearer Traffic Task". Select "Destination Distribution Traffic" as the measurement unit. Input a certain destination or destination Code. Select all office directions or outgoing trunk groups as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the information of the calls to the destination.

II. Creating a "Bearer Traffic Task" with "Destination Traffic" as the measurement unit

1) Set up a "Bearer Traffic Task". Select "Destination Traffic" as the measurement unit. Input a certain destination as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the information of the calls to the destination.

III. Creating a "Call Record Task" with "Multi Condition Object Traffic" as the measurement unit

1) Set up a "Call Record Task". Select "Multi Condition Object Traffic" as the measurement unit. Input a destination or destination code as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output report for the information of the calls to the destination.

IV. Creating a "Bearer Traffic Task" with "Office Direction Outgoing Office Traffic" or "TKGRP Outgoing Office Traffic" as the measurement unit

Set up a "Bearer Traffic Task" based on the specific office direction. Select "Office Direction Outgoing Office Traffic" or "TKGRP Outgoing Office Traffic" as the measurement unit.

4.3.7 Measuring Traffic of an Office Direction

The measurement can be implemented in two ways:

I. Creating two "Bearer Traffic Tasks" respectively with "Office Direction Incoming Office Traffic" and "Office Direction Outgoing Office Traffic" as the measurement unit

1) Set up two "Bearer Traffic Tasks". Select "Office Direction Incoming Office Traffic" and "Office Direction Outgoing Office Traffic" respectively as the measurement unit. Select this office direction as the measurement object. Set the rest information as needed.
2) When the tasks finish, summarize the respective output reports for the traffic information of this office direction.

II. Creating a "Call Record Task" with "Multi Condition Object Traffic" as the measurement unit

1) Set up a "Call Record Task". Select "Multi Condition Object Traffic" as the measurement unit. Select this office direction (corresponding to the incoming office direction) at the outlet, or this office direction (corresponding to the outgoing office direction) at the inlet as the measurement object. Set the rest information as required.
2) When the task finishes, check the output reports for the traffic information of this office direction.

4.3.8 Measuring Traffic of a Trunk Group

The measurement can be implemented in two ways:

I. Creating a "Bearer Traffic Task" with "TKGRP Incoming Office Traffic" and "TKGRP Outgoing Office Traffic" as the measurement unit

1) Set up two "Bearer Traffic Tasks". Select "TKGRP Incoming Office Traffic" and "TKGRP Outgoing Office Traffic" as the measurement unit respectively. Select this trunk group (or trunk group set) as the measurement object. Set the rest information as needed.
2) When the tasks finish, summarize the respective output reports for the traffic information of this trunk group.

II. Creating a "Call Record Task" with "Multi Condition Object Traffic" as the measurement unit

1) Set up a "Call Record Task". Select "Multi Condition Object Traffic" as the measurement unit. Select this trunk group (corresponding to the incoming trunk group) at the outlet, or this trunk group (corresponding to the outgoing trunk group) at the inlet as the measurement object. Set the rest information as needed.

2) When the task finishes, check the output reports for the traffic information of this trunk group.

4.3.9 Measuring Traffic of a Centrex Group

The measurement can be implemented in two ways:

I. Creating three “Bearer Traffic Tasks”

1) Set up three “Bearer Traffic Tasks”. Select “Centrex Intra-Group Traffic”, “Centex Extra-Group Traffic” and “Centrex Outgoing Group Traffic” respectively as the measurement unit. Select this Centrex group as the measurement object. Set the rest information as needed.
2) When the tasks finish, summarize the respective output reports for the traffic information of this Centrex group.

II. Creating a “Call Record Task” with “Multi Condition Object Traffic” as the measurement unit

1) Set up a “Call Record Task”. Select “Multi Condition Object Traffic” as the measurement unit. Select this Centrex group at the outlet instead of the inlet (corresponding to the extra-group traffic), or select this Centrex group at the inlet instead of the outlet (corresponding to the Centrex call trunk), or select this Centrex group at both inlet and outlet (corresponding to the intra-group traffic) as the measurement object. Set the rest information as needed.
2) When the task finishes, check the output reports for the traffic information of this Centrex group.

4.3.10 Measuring Traffic of a PBX Group

Set up a "Bearer Traffic Task". Select “PABXGRP Traffic” as the measurement unit. Select this PBX group as the measurement object. Set the rest information as needed. When the task finishes, check the output report for the traffic information of this PBX group.

4.3.11 Measuring MGW Traffic

Set up a "Bearer Traffic Task". Select “MGW Traffic” as the measurement unit. Select “MGW Equipment ID” as the measurement object. Set the rest information as needed. When the task finishes, check the output report for the traffic information of this MGW.

Chapter 5 Traffic Measurement Entities

5.1 Total Traffic of the Office Task

Entity	Description
Fixed User Originating Traffic	
Call Attempt Times	It refers to the number of calls originated by all users in the local office (such as ESL user, attendant console, H.323 user or SIP user).
Answer Times	It refers to the number of answered calls originated by all users in the local office. Note: For various supplementary services (Call Forwarding Unconditional, Call Forwarding No Reply, Call Forwarding Busy, and so on), one time is counted if only the call is answered finally.
No Dialing Times	It refers to the times of no dialing within a long time after off-hook and call abandons before dialing.
No Dialing Timeout Times	It refers to the times of hearing the busy tone due to dialing no number within a long time after off-hook.
No Dialing Abandon Times	It refers to the times of hang-ons without dialing any number after off-hook.
Incomplete Dialing Times	It refers to the times of incomplete dialing which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Invalid Address Times	If refers to the times of called number not in compliance with the existing or recognized destination number. It includes the cases of unable to determine the called number and that the called number is an invalid number.
System Fault Call Loss Times	It refers to the times of call losses caused by internal errors of SoftX3000.
Flow Control Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Seizure Traffic	It refers to the traffic during the time from local users picking up the phone to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from callee answering the calls originated by local users to the completion of the calls.
Sort Fixed User Originating Traffic	
Call Attempt Times	It refers to the number of call attempts originated by local users of a specific type.
Answer Times	It refers to the number of answered calls originated by local users of a specific type.
No Dialing Times	It refers to the times of no dialing within a long time after off-hook and call abandons before dialing.
No Dialing Timeout Times	It refers to the times of hearing the busy tone due to dialing no number within a long time after off-hook.
No Dialing Abandon Times	It refers to the times of hang-ons without dialing any number after off-hook.

Entity	Description
Incomplete Dialing Times	It refers to the times of incomplete dialing which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Invalid Address Times	If refers to the times of called number in incompliance with the existing or recognized destination number. It includes the cases of unable to determine the called number and that the called number is an invalid number.
System Fault Call Loss Times	It refers to the number of call losses caused by internal errors of SoftX3000.
Blocked By Auto Call Loss Times	It refers to the times of call losses caused by overload on the CPU.
Flow Ctrl Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Seizure Traffic	It refers to the traffic during the time from local callers of a specific type picking up the phone to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from callees answering the calls originated by local callers of a specific type to the completion of the calls.
Maintenance Traffic	It refers to the traffic of a specific type of local users as callers during the time when the user lines are in the maintenance state.
Fixed Inner Traffic	
Call Attempt Times	It refers to the number of call attempts originated by local users to other local users.
Call Connected Times	It refers to the number of ringed calls originated by local users to other local users.
Answer Times	It refers to the number of answered calls originated by local users to other local users.
Incomplete Dialing Times	It refers to the times of incomplete dialings which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Partial Dialing Abandon Times	It refers to the times of call release by callers in the course of dialing.
Partial Dialing Timeout Times	It refers to the times of forced call release by SoftX3000 due to dialing timeout.
Invalid Address Times	If refers to the times of called number in incompliance with the existing or recognized destination number. It includes the cases of unable to determine the called number and that the called number is an invalid number.
Abandon Before Ring Times	It refers to the times of forward release by callers (local users) before callees (local users) hear the ringing tone.
System Fault Call Loss Times	It refers to the number of call losses caused by internal errors of SoftX3000.
Flow Ctrl Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Called User Line Fault Times	It refers to the number of unsuccessful call attempts due to malfunction of called user (local user) lines. It includes the cases of the called user port in faulty, test or maintenance state.
Called Busy Times	It refers to the number of unsuccessful call attempts originated by local users to other local users due to called busy.

Entity	Description
Called Toll Busy Times	It refers to the number of unsuccessful call attempts originated by local users to other local users due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts originated by local users to other local users due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release by callers (local users) when the callees (local users) hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls (which are originated by local users to other local users).
Seizure Traffic	It refers to the traffic during the time from local users picking up the phone and calling other local users to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from callees (local users) answering the calls originated by other local users to the completion of the calls.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Fixed User Originating Outgoing Office Traffic	
Call Attempt Times	It refers to the number of call attempts originated by local users to inter-office users.
TK BID Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk circuits, that is, the times of selecting outgoing or bi-directional trunk circuits by software.
TK Seizure Times	It refers to the number of successful seizures of outgoing or bi-directional trunk circuits. As for the Signaling System No. 7 (SS7), it is the times of receiving the seizure ACKnowledgement (ACK) signal.
Call Connected Times	It refers to the number of ringed calls originated by local users to inter-office users.
Answer Times	It refers to the number of answered calls originated by local users to inter-office users.
Call No Answer Times	It refers to the number of ringed but unanswered calls originated by local users to inter-office users. No answer times=connected times – answer times
Incomplete Dialing Times	It refers to the times of incomplete dialing which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Partial Dialing Abandon Times	It refers to the times of call release by caller in the course of dialing.
Partial Dialing Timeout Times	It refers to the times of forced call release by SoftX3000 due to dialing timeout.
Invalid Address Times	If refers to the times of called number in incompliance with the existing or recognized destination number. It includes the cases of unable to determine the called number and that the called number is an invalid number.
Abandon Before Ring Times	It refers to the times of forward release by callers (local users) before the callees (inter-office users) hear the ringing tone.
System Fault Call Loss Times	It refers to the number of call losses caused by internal errors of SoftX3000.
Flow Ctrl Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.

Entity	Description
Last-Choice Route Overflow Times	It refers to the number of route selection failures due to all outgoing or bi-directional trunk circuits in busy state, that is, the number of failures in selecting outgoing (bi-directional) trunk circuits by software.
Called Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release by callers (local users) when the callees (inter-office users) hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls (which are originated by local users to inter-office users).
Seizure Traffic	It refers to the traffic during the time from local users picking up the phone and calling inter-office users to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from inter-office users answering the calls originated by local users to the completion of the calls.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It s the ratio of answered calls to call attempts.
Incoming Office Traffic	
Seizure Times	It refers to the times of occupying incoming or bi-directional trunk circuits by incoming calls.
Answer Times	It refers to the number of answered calls originated by inter-office users.
Incomplete Dialing Times	It refers to the times of incomplete dialings which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Invalid Address Times	If refers to the times of called number in incompliance with the existing or recognized destination number. It includes the cases of unable to determine the called number and that the called number is an invalid number.
System Fault Call Loss Times	It refers to the number of call losses caused by internal errors of SoftX3000.
Blocked by Auto Call Loss Times	It refers to the number of call losses caused by overload control.
Flow Ctrl Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Seizure Traffic	It refers to the traffic during the time from callers (inter-office users) picking up the phone to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from local users answering the calls originated by inter-office users to the completion of the calls.

Entity	Description
Maintenance Circuit Number	It is the number of the incoming or bi-directional trunk circuits in the maintenance state.
Answer Ratio	It is the ratio of answer times to seizure times.
Fixed User Incoming Office Terminating Traffic	
Seizure Times	It refers to the times of occupying incoming or bi-directional trunk circuits by incoming office terminating calls.
Call Connected Times	It refers to the number of ringed calls originated by inter-office users to local users.
Answer Times	It refers to the number of answered calls originated by inter-office users to a local users.
Incomplete Dialing Times	It refers to the times of incomplete dialing which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Invalid Address Times	If refers to the times of called number in incompliance with the existing or recognized destination number. It includes the cases of unable to determine the called number and that the called number is an invalid number.
Abandon Before Ring Times	It refers to the times of forward release by callers (inter-office users) before the callees (local users) hear the ringing tone.
System Fault Call Loss Times	It refers to the number of call losses caused by internal errors of SoftX3000.
Flow Ctrl Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Called User Line Fault Times	It refers to the number of unsuccessful call attempts due to malfunction of called user (local user) lines. It includes the cases of the called user port in faulty, test or maintenance state.
Called Busy Times	It refers to the number of unsuccessful call attempts originated by inter-office users to local users due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts originated by inter-office users to local users due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts originated by inter-office users to local users due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release by inter-office users when the callees (local users) hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls (which are originated by inter-office users to local users).
Seizure Traffic	It refers to the traffic during the time from inter-office users picking up the phone and calling local users to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from local users answering the calls originated by inter-office users to the completion of the calls.
Connected Ratio	It is the ratio of connected times to seizure times.

Entity	Description
Answer Ratio	It is the ratio of answer times to seizure times.
Transfer Traffic	
Transfer Call Seizure Times	It refers to the times of occupying incoming or bi-directional trunk circuits by transferred calls.
Outtk BID Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk circuits, that is, the times of selecting outgoing or bi-directional trunk circuits by software.
Outtk Seizure Times	It refers to the times of successful seizure of outgoing or bi-directional trunk circuits by transferred calls. As for the Signaling System No. 7 (SS7), it is the times of receiving the seizure ACKnowledgement (ACK) signal.
Call Connected Times	It refers to the number of ringed calls originated by inter-office users to other inter-office users.
Answer Times	It refers to the number of answered calls originated by inter-office users to other inter-office users.
Call No Answer Times	It refers to the number of ringed but unanswered calls originated by inter-office users to other inter-office users. No answer times=connected times – answer times
Incomplete Dialing Times	It refers to the times of incomplete dialing which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Abandon Before Ring Times	It refers to the times of forward release by callers (inter-office users) before the callees (inter-office users) hear the ringing tone.
System Fault Call Loss Times	It refers to the number of call losses caused by internal errors of SoftX3000.
Flow Ctrl Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Last-Choice Route Overflow Times	It refers to the number of route selection failures due to all outgoing or bi-directional trunk circuits in busy state, that is, the number of failures in selecting outgoing or bi-directional trunk circuits by software.
Called Busy Times	It refers to the number of unsuccessful call transfers due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful call transfers due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call transfers due to called busy in a local call.
Seizure Traffic	It refers to the traffic during the time from inter-office users picking up the phone and calling other inter-office users to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from inter-office users answering the calls originated by other inter-office users to the completion of the calls.
Connected Ratio	It is the ratio of connected times to transfer seizure times.
Answer Ratio	It is the ratio of answer times to transfer seizure times.
Fixed Terminating Traffic	
BID Times	It is the number of call attempts to local users.
Connected Times	It refers to the number of ringed calls to local users.

Entity	Description
Answer Times	It refers to the number of calls answered by local users.
Flow Control Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Dialing Vacant Times	It refers to the times of dialing vacant numbers.
Called User Line Fault Times	It refers to the number of unsuccessful call attempts due to malfunction of called user (local user) lines. It includes the cases of the called user port in faulty, test or maintenance state.
Called Busy Times	It refers to the number of unsuccessful call attempts due to called (local user) busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts due to called (local user) busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts due to called (local user) busy in a local call.
Abandon After Ring Times	It refers to the times of forward release by callers when the callees (local users) hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer from the callees (local users).
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone and calling local users to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from callees (local users) answering the calls to the completion of the calls.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Sort Fixed User Terminating Traffic	
BID Times	It refers to the number of call attempts to local users of a specific type.
Connected Times	It refers to the number of ringed calls to local users of a specific type.
Answer Times	It refers to the number of calls answered by local users of a specific type.
Flow Control Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Dialing Vacant Times	It refers to the times of calling vacant numbers of a specific type of users.
Called User Line Fault Times	It refers to the number of unsuccessful call attempts due to malfunction of called user (local users of a specific type) lines. It includes the cases of the called user port in faulty, test or maintenance state.
Called Busy Times	It refers to the number of unsuccessful call attempts due to called (local users of a specific type) busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts due to called (local users of a specific type) busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts due to called (local users of a specific type) busy in a local call.
Abandon After Ring Times	It refers to the times of forward release by callers when the callees (local users of a specific type) hear the ringing tone.

Entity	Description
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls made to local users of a specific type.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone and calling the local users of a specific type to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from local users of a specific type answering the calls to the completion of the calls.
Maintenance Traffic	It refers to the traffic of local users of a specific type as callees during the time when the user lines are in the maintenance state.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Outgoing Office Traffic	
BID Times	It refers to the times of occupying outgoing or bi-directional trunk circuits by outgoing calls.
Seizure Times	It refers to the times of successful seizure of outgoing or bi-directional trunk circuits by outgoing calls.
Call Connected Times	It refers to the number of ringed calls to inter-office users.
Answer Times	It refers to the number of calls answered by inter-office users.
No Answer Times	It refers to the number of ringed but unanswered calls to inter-office users. No answer times=connected times – answer times
Abandon Before Ring Times	It refers to the times of forward release by callers before the callees (inter-office users) hear the ringing tone.
Blocked by Auto Call Loss Times	It refers to the number of call losses caused by overload control.
Flow Control Call Loss Times	It refers to the times of call losses caused by NMS's control on heavy traffic.
Last-Choice Route Overflow Times	It refers to the number of route selection failures due to all outgoing or bi-directional trunk circuits in busy state, that is, the number of failures in selecting outgoing or bi-directional trunk circuits by software.
Called Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy in a local call.
Seizure Traffic	It refers to the traffic during the time from callers (local users) picking up the phone and calling inter-office users to the completion of the calls (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from callees (inter-office users) answering the calls to the completion of the calls.

Entity	Description
Maintenance Circuit Number	It is the number of the outgoing or bi-directional trunk circuits in the maintenance state.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Connecting Type Traffic	
Call Attempt Times	It refers to the number of call attempts which are originated by local users and whose connection type is judged to be the specified one.
OUTTK Seizure Times	It refers to the number of calls that occupy outgoing/incoming trunk circuits and whose connection type is judged to be the selected one.
Connected Times	It refers to the times of sending ringing tone to the callees after the calls have been established within the network.
Answer Times	It refers to the number of answered calls whose connection type is the selected one.
Partial Dialing Timeout Times	It refers to the times of forced release of calls by SoftX3000 due to dialing timeout, which are judged to be the specified connected type and originated by local users.
Partial Dialing Abandon Times	It refers to the times of forward release of calls of the specified connection type.
Barred Call Times	It is the times of barring calls of the specified connection type.
Abandon Before Ring Times	It refers to the times of forward release by callers before the callees hear the ringing tone.
Last-Choice Route Overflow Times	It refers to the number of route selection failures of calls of the specified connection type due to all outgoing or bi-directional trunk circuits in busy state, that is, the number of failures in selecting outgoing or bi-directional trunk circuits by software.
Signaling Error Times	It refers to the number of inter-office signaling errors and user signaling errors occurred in the calls of the specified connection type.
Called Busy Times	It refers to the number of unsuccessful calls of the specific connected type due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful calls of the specified connected type due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful calls of the specified connected type due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release of calls of the specified connection type when the callees hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls of the specified connection type.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the calls of the specified connection type (including calling failure or release during calling).
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the calls of the specified connection type.

Entity	Description
Answer Traffic	It refers to the traffic during the time from callees answering the calls of the specified connection type to the completion of the calls.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Failure Reason Traffic	
Confliction In New Service Setting	The cause code is sent when the supplementary service registered by a user conflicts with the registered service.
New Service Configuration Success	The cause code is sent when a user succeeds in registering a supplementary service.
New Service Configuration Fail	The cause code is sent when a user fails to register a supplementary service.
New Service Cancellation Success	The cause code is sent when a user succeeds in canceling a supplementary service.
New Service Cancellation Fail	The cause code is sent when a user fails to cancel a supplementary service.
New Service Verification Success	The cause code is sent when a user succeeds in verifying a registered supplementary service.
New Service Verification Fail	The cause code is sent when a user fails to verify a registered supplementary service.
New Service Application Success	The cause code is sent when a user succeeds in using a registered supplementary service.
New Service Application Fail	The cause code is sent when a user fails to use a registered supplementary service.
Probe Malicious Call Success	This reason is used when a user gets related information after employing the Malicious Call Identification service.
Probe Malicious Call Fail	This reason is used when a user fails to get related information after employing the Malicious Call Identification service.
Peer Side is Absent User	This reason is used when the connection of a call fails due to the Absent Service set by the callee.
Peer Side Set No Disturb	This reason is used when the connection of a call fails due to the Do-not-Disturb Service set by the callee.
Equipment Congestion	The cause code is sent to indicate that the switching equipment is in the heavy-traffic period.
No Dialing in Long Time	The cause code is sent when a call is released because the caller does not complete the dialing in the specified time.
No Answer in Long Time	The cause code is sent when the ringing tone is sent for a call but no one answers it within the specified period of time.
Temporary Failure	A call is released due to system performance decline caused by loss of messages, internal errors, message combination failure and so on.
Remote Test OK	The cause code is sent when the self-check to the internal telephones is successful.
No Information in Long Time	The cause code is sent when a call is released due to required message not received within the specified time.

Entity	Description
No Alerting In Long Time	The cause code is sent when the ringing tone is not received for a call within the specified time.
No Release in Long Time	The cause code is sent when the release request of a call is not received within the specified time.
In Band Signal	The cause code is sent for in-band signal.
Continuity Check Failure	A call is released when the continuity check fails.
Exceed Maximum Reattempt Times	The cause code is sent when the reattempt times exceed the threshold (Reattempts occur due to dual seizure in the call connection process).
Release Before Ring	The cause code is sent when a caller releases the call before the ringing tone is sent to the callee.
Release Before Answer	The cause code is sent when a caller releases the call before the callee answers the call after hearing the ringing tone.
Call Barring	The cause code is sent when a call is released due to prefix barring, NMS restriction or other service implementation beyond the limitation.
Operator Disconnect The Call Forcedly Success	The cause code is sent when the operator succeeds in disconnecting a call forcedly.
Operator Disconnect The Call Forcedly Fail	The cause code is sent when the operator fails to disconnect a call forcedly.
Callee is Busy in A Toll Call	The cause code is sent when a call is released due to called busy in a toll call.
Callee is Busy in A Local Call	The cause code is sent when a call is released due to called busy in a local call.
Call Reject Because of Arrearage	The cause code is sent when a call is released due to insufficient balance.
Porting Number	The cause code is sent when a call is released because of the number portability.
Telephone Console Do Not Work	The cause code is sent when the attendant console is not running normally.
New Service Record Success	The cause code is sent when the recording to the specified timeslot is successful.
Credit Card Arrearage	The cause code is sent when a call fails because of the insufficient balance in the credit card.
Call in Barring	The cause code is sent when a call is released because the callee does not have the authority of receiving incoming calls.
Call Failure	The cause code is sent when a call is released due to unknown reasons.
Dual Seizure	The cause code is sent when a call is released due to one trunk circuit seized simultaneously by an outgoing call and an incoming call from the peer end.
Invalid Directory Number	The cause code is sent when a call is released because it is impossible to locate the callee based on the dialed number or the dialed number contains the message inconsistent with the called number.
Remote Password Update Fail	The cause code is sent when a user fails to modify the password of another terminal on his/her own telephone.

Entity	Description
Remote Password Update Success	The cause code is sent when a user succeeds in modifying the password of another terminal on his/her own telephone.
Remote Register Call Forwarding Success	The cause code is sent when a user succeeds in registering the call forwarding service for another terminal on his/her own telephone.
Remote Register Call Forwarding Failure	The cause code is sent when a user fails to register the call forwarding service for another terminal on his/her own telephone.
Remote Deregister Call Forwarding Success	The cause code is sent when a user succeeds in canceling the call forwarding service for another terminal on his/her own telephone.
Remote Deregister Call Forwarding Failure	The cause code is sent when a user fails to cancel the call forwarding service for another terminal on his/her own telephone.
Callee Arrearage	The cause code is sent when a call fails due to callee arrearage.
Wrong Password	The cause code is sent when a call fails due to the input of wrong password in setting, modification or cancellation of a password or using a service that requires the input of a password.
Redirect Restricted	The cause code is sent when a transferred call is released because the number of call forwardings exceeds the threshold in one connection or the essential information of the forwarding service is missing.
Unreachable Module	The cause code is sent when a module, to which messages will be sent, is not in the normal state.
Net Management Barring	The cause code is sent when a call fails due to the implementation of NMS command.
User Queue Failure	The cause code is sent when a call cannot be queued for the call queue is full. Note: The call queue is set for the operator. When the operator is busy, a new incoming call will be queued.
Group Queue Failure	The cause code is sent when a call cannot be queued into the group call queue for it is full already. Note: The group queue is set for user group. When all the users in a group are busy, a new call will be queued in the group queue.
Timeout in Queue	The cause code is sent when a call is released because of the response timeout after the call enters the above two queues.
CPU Congestion or Overload	The cause code is sent when the CPU occupation rate exceeds the congestion threshold or overload threshold.
No CR Resource	The cause code is sent when the Connection Request (CR) resource is not sufficient for the calls received or originated at the user side (contrary to the Central Communication dataBase (CCB) at the network side).
No CCB Resource	The cause code is sent when the CCB resource is not sufficient for the calls received or originated at the network side (contrary to the CR at the user side).
Incoming Forwarded Call Restriction	The cause code is sent when a forwarded incoming office call is barred.
DN Length Extend from 7 To 8	The cause code is sent when a call is released due to number length extension.

Entity	Description
Dialing Reserved DN	The cause code is sent when a call is released because the called number is a reserved number.
No Conference Resource	The cause code is sent when the conference telephone resources (for the three-party service and telephone conference) are insufficient.
Abandon without Dialing	The cause code is sent when a user hangs on without dialing any number after listening to the dial tone.
Timeout Before Dialing	The cause code is sent when a user hears the busy tone due to dialing no number after off-hook.
Abandon with Partial Dialing	The cause code is sent when a user hangs on before the dialing times out.
Timeout in Dialing Interval	The cause code is sent in the case of inter-digit dialing timeout.
Signaling Error	The cause code is sent in the case of signaling interworking errors.
Money Not Enough in Credit Card	The cause code is sent when a call is released due to insufficient balance in prepaid card.
Call Barring Because of Black and White List	The cause code is sent when a call is barred because the caller or callee is on the Black/White list.
Unallocated DN	The cause code is sent when a call fails because the called number has not been allocated though the number format is valid.
No Route to The Selected Transit Network	The cause code is sent when the equipment receives a request for transferring a call through a specific transit network, but it cannot recognize the network due to the reason that this transit network does not exist or does not provide any service for the equipment.
No Route to The Callee	The cause code is sent when a call is released because the network the call passes through does not provide the service for the called terminal.
Send Private Tone	The cause code is sent when a call fails because the special signal tone is sent to the caller.
Dial Wrong Prefix of Long Distance Call	The cause code is sent when the called number contains a wrong prefix.
Route Unacceptable	The cause code is sent when the peer entity does not accept the channel with the new identification in the call.
Call Has Established and Delivered on The Route	The cause code is sent when a call is connected to the callee together with other similar calls in the established channel.
Normal Call Clear	It indicates that a call is being cleared because one of the users concerned requires the release.
Callee is Busy	The cause code is sent when the callee gives a busy indication.
No Response from Callee	The cause code is sent when the callee does not respond to the call within the specified time, that is, no ringing tone or connection indication is given.
No Answer from Callee	The cause code is sent when the ringing tone is sent for a call but no one answers it within the specified period of time.

Entity	Description
Call Rejected	The cause code is sent by the terminal when it does not want to receive the call, though it can. The cause code is generated by the network, indicating that a call is cleared due to the setting of the supplementary service.
Number Changed	The cause code is sent when the called number has been changed. The new called number can be included in the diagnostic field as an optional item.
No Free Circuit	The cause code is sent when a call is released due to no free circuit.
No Free EC	The cause code is sent when a call is released due to no free EC.
Clear Unselected User	It indicates that the user has not received any call.
Termination Error	This cause code indicates that a call cannot reach the destination because the interface of the terminating end does not work properly, that is, the signaling message cannot be transmitted to the callee.
Invalid DN Format	It indicates that a call cannot reach the callee because of the erroneous format or incompleteness of the called number.
Facility Rejected	The cause code is sent when the network cannot provide the performance required by the user.
Response to Status Enquiry	It indicates that a STATUS message is returned immediately after a STATUS_ENQUIRY message is received.
Normal	The cause code is used to report a normal event when there are no other applicable reasons of normal type.
No Circuit/Route Available	It indicates that there is no appropriate circuit/channel for processing the calls.
Network Error	The cause code is sent when the network cannot find the user data.
Temporary Error	The cause code is sent when a temporary fault occurs in the network, for example, an intermittent link failure.
Device Congestion	The cause code is sent to indicate that the switching equipment is in the heavy-traffic period.
Access Information Lost	The cause code is sent when the network cannot submit the access information to the callee based on such requirements as user information, low-level compatibility, high-level compatibility or sub-address indicated in the diagnosis information.
No Route or Circuit Applied Available	The cause code is sent when the interface of the other side cannot provide the circuit or channel required.
No Resource Available	The reason is used to report a resource unavailable event only when there are no other applicable reasons for resource unavailable.
No Suitable Service Quality	The cause code is sent when the requested service quality cannot be provided. The service qualities are defined in Recommendation X.213, including the handling capacity or transfer delay supported.
Facility Applied Not Preserved Before	It indicates that the network cannot provide the required supplementary service because the user has not completed the management procedures necessary for enjoying the service.
CUG Barring Call to That Out of The Group	The cause code is sent when the members of a Closed User Group (CUG) are not permitted to receive incoming calls.

Entity	Description
CUG Barring Call into The Group from Outside	The cause code is sent when a user is a member of the CUG capable of receiving incoming calls, but this user is not permitted to receive any incoming call.
Bearer Capability Do Not Permit	The cause code is sent when a user is not permitted to employ the bearer capability that has been provided by the equipment.
No Suitable Service or Option	The cause code is used to report a “no suitable service or option” event when there are no other reasons employed for it.
Bearer Capability Do Not Lay Out	The cause code is sent when the equipment does not support the required bearer capability.
Route Type Do Not Lay Out	The cause code is sent when the equipment does not support the required channel type.
Facility Applied Do Not Lay Out	The cause code is sent when the equipment does not support the required supplementary service.
Only Have Restricted Bearer Capability	The cause code is sent when the caller has applied for an unrestricted bearer service, but the equipment only supports the restricted bearer service.
Service or Option Do Not Lay Out	The cause code is used to report a service or option unimplemented event when there are no other applicable reasons employed for it.
Invalid Call Reference	The cause code is sent when the message received by the equipment contains the call reference not employed by the existing user-network interface.
Route Identified Do Not Exist	The cause code is sent when a call requests to use the inactivated channel at the interface.
Suspended Call Exist	The cause code is sent when the call ID used for trying to resume the call is different from that used for suspending the call.
Call Identification is Using	The cause code is sent when the network receives a suspension request that contains a call ID already used by a paused call (including no call ID).
No Suspended Call	The cause code is sent when the network receives a call resumption request that contains a call ID not indicating any paused call. Note: The call ID contained in the call resumption request is used to indicate the suspended call to be resumed.
The Applied Call Identity has been Cleared	The cause code is sent when the network receives a call resumption request that contains a call ID indicating a cleared call (the suspended call is cleared due to network timeout or released by opposite user).
Incompatible Terminal	The cause code is sent when the equipment has received a call setup request, but the call has incompatible low-level compatibility, high-level compatibility or other compatibility (for example, data transmission rate).
Invalid Transit Network Selection	The cause code is sent when the transit network ID received is not correct.
Invalid Message	The cause code is used to report an invalid message event only when other reasons of the invalid message type have been employed.
Mandatory IE Lost	The cause code is sent when the equipment receives a message excluding a mandatory Information Element (IE).

Entity	Description
Message Type not Exist or Not Lay Out	The cause code is sent when the equipment receives a message whose type is not recognizable because the message is not defined or is defined but the equipment sending the message has not implemented it.
Message or Call State Error	The cause code is sent when the equipment receives a message that should not have been received in the calling state, or the equipment receives a STATUS message indicating incompatible call state.
Information Element No Exist or Not Lay Out	The cause code is sent when the equipment receives a message containing an unrecognized IE, for this IE identifier is not defined or is defined but the equipment has not implemented it.
Invalid IE Content	The cause code is sent when the equipment receives an implemented IE but it does not implement the codes of one or multiple fields in the element.
Violation between Message and Call State	The cause code is sent when a message not in compliance with the call state is received.
Recovery from Time Out	The cause code is sent when a program related to the error processing program specified in Recommendation Q.931 is started due to the timer timeout.
Parameter Not Exist or Not Lay Out	The cause code is sent when the equipment receives a parameter that is not recognizable for it is not defined or is defined but the equipment has not implemented it.
Ordinary Congestion	The cause code is sent when the ordinary users cannot use the idle circuits reserved for the high-priority users.
Failure Out of Scope	The cause code is sent when a failure is caused by the reason which is out of the measurement scope of the measurement unit.
Protocol Error	This cause code reports the protocol error event.
Interwork	The cause code is sent when the network is interworking with another network that provides no reason for the network action.
All Offices Sum Traffic	
Originating Call Times	It refers to the number of call attempts.
No Dialing Times	It refers to the times of no dialing within a long time after off-hook and call abandons before dialing.
Incomplete Dialing Times	It refers to the times of incomplete dialing which might result in the inability to distinguish whether a call is a local call, an outgoing call, or an incoming call to the system. The number of incomplete calls includes that of dialing timeout and that of release during dialing.
Dialing Vacant Code Times	It refers to the times of dialing invalid numbers, which can be caused by invalid number format, unallocated number, changed number or wrong toll prefix.
Abandon After Ring Times	It refers to the times of forward release by callers when the callees hear the ringing tone.
Long Time No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer from the callees for a long time.
Opposite Office Congestion Times	It refers to the times of receiving congestion signal from the opposite office.

Entity	Description
Originating Call Barred Times	It refers to the times of barring outgoing calls due to calling restrictions and NMS restrictions.
Terminal Call Barred Times	It refers to the times of barring incoming calls.
Local Call Attempt Times	It refers to the number of call attempts from local users to other local users.
Local Answer Times	It refers to the number of answered calls originated by local users to other local users.
Local Called Busy Times	It refers to the number of unsuccessful call attempts originated by local users to other local users due to called busy.
Local Ringed No Answer Times	It refers to the number of ringed but unanswered calls originated by local users to other local users.
Local Call Traffic	It refers to the traffic during the time from local users picking up the phone and calling other local users to the completion of the calls (including calling failure or release during calling).
Originating Outgoing Office Call Attempt Times	It refers to the number of call attempts originated by local users to inter-office users.
Local Outgoing Office Call Attempt Times	It refers to the number of call attempts with connection type as outgoing local call and local tandem.
National Toll Call Attempt Times	It refers to the number of call attempts of automatic outgoing toll + semiautomatic outgoing toll + incoming toll – transferring toll.
International Toll Call Attempt Times	It refers to the number of call attempts of automatic outgoing international call + semiautomatic international call + incoming international call - international transferring call.
Originating Outgoing Office Seizure Times	It refers to the times of the outgoing/bi-directional trunk occupancy (general measurement of the outgoing calls originated by local users to inter-office users).
Originating Outgoing Office Call Connect Times	It refers to the number of connected calls originated by local users to inter-office users.
Originating Outgoing Office Answer Times	It refers to the number of answered calls originated by local users to inter-office users.
Local Originating Outgoing Office Answer Times	It refers to the number of answered calls with connection type as outgoing local call and local tandem.
National Toll Answer Times	It refers to the number of answered automatic outgoing tolls + answered semiautomatic outgoing tolls + answered incoming tolls – answered transferring tolls.
International Toll Answer Times	It refers to the number of answered automatic outgoing international calls + answered semiautomatic international calls + answered incoming international calls – answered international transferring calls.
Originating Outgoing Office Called Busy Times	It refers to the number of unsuccessful call attempts originated by local users to inter-office users due to called busy.
Originating Outgoing Office Ring No Answer Times	It refers to the number of ringed but not answered calls originated by local users to inter-office users.
Originating Outgoing Office TK Seizure Traffic	It refers to the traffic of the occupancy (outgoing traffic-tandem traffic).

Entity	Description
INTK Seizure Times	It refers to the times of seizing incoming or bi-directional trunks by incoming calls.
Incoming Office Terminal Call Times	It refers to the number of call attempts originated by inter-office users to local users.
Incoming Office Terminal Call Answer Times	It refers to the number of answered calls originated by inter-office users to local users.
Transfer Call Times	It refers to the times of occupying incoming or bi-directional trunk circuits by transferred calls.
Transfer Outtk Seizure Times	It refers to the times of seizing outgoing or bi-directional trunks by outgoing tandem calls.
Transfer Answer Times	It refers to the number of answered calls that had been transferred by the local office.
Transfer Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the calls transferred by the local office (including calling failure or release during calling).
Terminal Call Times	If refers to the number of call attempts to the local users.
Terminal Call Answer Times	It refers to the number of calls answered by local users.
Terminal Call Called Busy Times	It refers to the number of unsuccessful call attempts to local users due to called busy.
Terminal Call Ringed No Answer Times	It refers to the number of ringed but not answered calls to local users.
Terminal Call Seizure Traffic	It refers to the traffic during the time from callers picking up the phone and calling local users to the completion of the calls (including calling failure or release during calling).
Terminal Call Answer Traffic	It refers to the traffic during the time from local users answering the calls to the completion of the calls.
Outgoing Office Call Attempt Times	It refers to the number of call attempts to inter-office users, including originating outgoing calls and transfer calls.
Outgoing Office Seizure Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk by outgoing calls.
Outgoing Office Call Connected Times	It refers to the times of successfully seizing outgoing or bi-directional trunks by outgoing calls.
Outgoing Office Answer Times	It refers to the number of calls answered by inter-office users.
Outgoing Office Seizure Traffic	It refers to the traffic during the time from callers picking up the phone and calling inter-office users to the completion of the calls (including calling failure or release during calling).

5.2 Bearer Traffic Task

Entity	Description
Office Direction Incoming Office Traffic	
Seizure Times	It refers to the number of seizure attempts of incoming or bi-directional trunk circuits by incoming calls in a specific office direction.
Terminal Call Attempt Times	It refers to the number of incoming call attempts to local users in a specific office direction.
Transfer Call Attempt Times	It refers to the number of incoming calls in a specific office direction which will be transferred by the local office.
Call Connected Times	It refers to the number of ringed incoming calls in a specific office direction.
Answer Times	It refers to the number of answered incoming calls in a specific office direction.
Terminal Call Answer Times	It refers to the number of incoming calls answered by local users.
Transfer Answer Times	It refers to the number of answered calls that had been transferred by the local office.
Lost Call of Internal Congestion Times	It refers to the call loss times caused by intra-module or inter-module resource congestion, unavailable public resource, system error, hardware fault, software fault and voice channel congestion.
Congestion Duration	It refers to the duration from the start to the end of the congestion. When no resource is available, the congestion starts; it ends when the first idle equipment appears.
Called Busy	It refers to the number of unsuccessful call attempts in an incoming office direction due to called busy.
Abandon After Ring Times	It refers to the times of forward release of incoming calls in a specific office direction when the callees hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the incoming calls in a specific office direction.
Installed Circuit Number	It refers to the number of incoming or bi-directional trunk circuits installed in a specific office direction at the end of a measurement period.
Avail Circuit Number	It refers to the average number (integer) of circuits available among the incoming or bi-directional trunk circuits installed in a specific office direction within a measurement period.
Blocked Circuit Number	It refers to the average number (integer) of blocked incoming or bi-directional trunk circuits installed in a specific office direction within a measurement period.
Installed Bothway Circuit Number	It refers to the number of bi-directional trunk circuits installed in a specific office direction at the end of a measurement period.
Avail Bothway Circuit Number	It refers to the average number (integer) of circuits available among the bi-directional trunk circuits installed in a specific office direction within a measurement period.
Blocked Bi-directional Circuit Number	It refers to the average number (integer) of blocked bi-directional trunk circuits installed in a specific office direction within a measurement period.
INTK Avail Ratio	It is the ratio of available incoming circuits to installed circuits.
Connected Ratio	It is the ratio of connected times to seizure times.

Entity	Description
Answer Ratio	It is the ratio of answer times to seizure times.
Blocked Circuit Ratio	It is the ratio of blocked circuits to installed circuits.
Blocked Bi-directional Circuit Ratio	It is the ratio of blocked bi-directional circuits to installed bi-directional circuits.
Bidirection TK Seizure Traffic	It refers to the traffic during the time from incoming calls seizing bi-directional trunks to the release of the calls.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the incoming calls in a specific office direction (including calling failure or release during calling).
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the incoming calls in a specific office direction.
Answer Traffic	It refers to the traffic during the time from callees off-hook to the completion of the incoming calls in a specific office direction.
Average Seizure Duration	It is the average seizure duration from the seizure of incoming trunks to the release of them within the measurement period. It equals to the ratio of seizure traffic to call attempts.
Office Direction Outgoing Office Traffic	
BID Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk circuits by outgoing calls in a specific office direction.
Seizure Times	It refers to the number of successful seizure of outgoing or bi-directional trunk circuits by outgoing calls in a specific office direction.
Transfer Bid Times	It refers to the number of seizure attempts of outgoing trunk circuits when the local office transfers calls in a specific office direction.
Transfer Seizure Times	It refers to the number of successful seizure of outgoing trunk circuits when the local office transfers calls in a specific office direction.
Call Connected Times	It refers to the number of ringed outgoing calls in a specific office direction.
Answer Times	It refers to the number of answered outgoing calls in a specific office direction.
Overflow Times	It refers to the number of route selection failures in a specific office direction due to all outgoing or bi-directional trunk circuits in busy state.
No Direct Route	It refers to the times of indirect routing for calls between two peer offices.
No Office Commd	It refers to the number of call failures to the peer office due to no nesting code.
Dual Seizure Times	It refers to the times of dual seizure of the bi-directional circuits.
TK Retry Times	It refers to the number of call attempts after the failure of seizing outgoing trunk circuits.
Peer end Congestion Times	It refers to the times of receiving congestion signal from the peer office.
Congestion Duration	It refers to the duration from the start to the end of the congestion of outgoing (bi-directional) trunks in a specific office direction. When no resource is available, the congestion starts; it ends when the first idle equipment appears.

Entity	Description
Call Affected by Net Administrator Action Times	It is the sum of Direct Route Restrict Call Loss Times, Circuit Orient Set Call Loss Times, Circuit Temp Stop Call Loss Times, Arf And Art Times, Route Jump Times and Temp Amb Times.
Direct Route Restrict Call Loss Times	It refers to the number of call failures caused by the excess of the direct route threshold set for the called circuit groups.
Circuit Orient Set Call Loss Times	It refers to the number of call failures caused by the excess of the orient percentage set for the called circuit groups.
Circuit Temp Stop Call Loss Times	It refers to the number of call failures caused by the suspension of the called circuit groups by a certain percentage (through congestion/busy identification).
Arf and Art Times	It refers to the times of the selected alternative routes kept away from ART or the times of the overflowing ARF.
Route Jump Times	It refers to the number of calls transferred by the pre-set jump.
Temp Amb Times	It is the number of calls selecting the temporary alternative routes.
Called Busy Times	It refers to the number of unsuccessful call attempts in an outgoing office direction due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts in an outgoing office direction due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts in an outgoing office direction due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release of outgoing calls in a specific office direction when the callees hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the outgoing calls in a specific office direction.
Installed Circuit Num	It refers to the number of outgoing or bi-directional trunk circuits installed in a specific office direction at the end of a measurement period.
Avail Circuit Num	It refers to the average number (integer) of circuits available among the outgoing or bi-directional trunk circuits installed in a specific office direction within a measurement period.
Blocked Circuit Num	It refers to the average number (integer) of blocked outgoing or bi-directional trunk circuits installed in a specific office direction within a measurement period.
Installed Bothway Circuit Num	It refers to the number of bi-directional trunk circuits installed in a specific office direction at the end of a measurement period.
Avail Bothway Circuit Num	It refers to the average number (integer) of circuits available among the bi-directional trunk circuits installed in a specific office direction within a measurement period.
Blocked Bi-Directional Circuit Num	It refers to the average number (integer) of blocked bi-directional trunk circuits installed in a specific office direction within a measurement period.
Outtk Avail Ratio	It is the ratio of available outgoing circuits to installed circuits.
Seizure Ratio	It is the ratio of seizure times to call attempts.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.

Entity	Description
Blocked Circuit Ratio	It is the ratio of blocked circuits to installed circuits.
Blocked Bi-directional Circuit Ratio	It is the ratio of blocked bi-directional circuits to installed bi-directional circuits.
Bothway Circuit Seizure Traffic	It refers to the traffic during the time from outgoing calls seizing bi-directional trunks to the release of the calls.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the outgoing calls in a specific office direction (including calling failure or release during calling).
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the outgoing calls in a specific office direction.
Answer Traffic	It refers to the traffic during the time from callees off-hook to the completion of the outgoing calls in a specific office direction.
Average Seizure Duration	It is the average seizure duration from the seizure of outgoing trunks to the release of them within the measurement period. It equals to the ratio of seizure traffic to call attempts.
TKGRP Incoming Office Traffic	
Seizure Times	It refers to the number of seizure attempts of incoming or bi-directional trunk circuits.
Terminal Call Attempt Times	It refers to the number of incoming calls born on a certain trunk group.
Transfer Call Attempt Times	It refers to the number of incoming calls born on a certain trunk group which will be transferred by the local office.
Call Connected Times	It refers to the number of ringed incoming calls born on a certain trunk group.
Answer Times	It refers to the number of answered incoming calls born on a certain trunk group
Terminal Call Answer Times	It refers to the number of incoming calls answered by local users, which are born on a certain trunk group.
Transfer Answer Times	It refers to the number of answered calls that were born on a certain trunk group and had been transferred by the local office.
Lost Call Internal Congestion Times	It refers to the call loss times caused by intra-module or inter-module resource congestion, unavailable public resource, system error, hardware fault, software fault and voice channel congestion.
Congestion Duration	It refers to the duration from the start to the end of the congestion. When no resource is available, the congestion starts; it ends when the first idle equipment appears.
Called Busy Times	It refers to the number of unsuccessful incoming call attempts born on a certain trunk group due to called busy.
Abandon After Ring Times	It refers to the times of forward release of incoming calls born on a certain trunk group when the callees hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the incoming calls born on a certain trunk group.
Installed Circuit Number	It refers to the number of incoming or bi-directional trunk circuits of a certain trunk group at the end of a measurement period.

Entity	Description
Avail Circuit Num	It refers to the average number (integer) of circuits available among the incoming or bi-directional trunk circuits of a certain trunk group within a measurement period.
Blocked Circuit Number	It refers to the average number (integer) of blocked incoming or bi-directional trunk circuits of a certain trunk group within a measurement period.
Installed Bothway Circuit Number	It refers to the number of bi-directional trunk circuits of a certain trunk group at the end of a measurement period.
Avail Bothway Circuit Number	It refers to the average number (integer) of circuits available among the bi-directional trunk circuits of a certain trunk group within a measurement period.
Blocked Bi-directional Circuit Number	It refers to the average number (integer) of blocked bi-directional trunk circuits of a certain trunk group within a measurement period.
INTK Avail Ratio	It refers to the ratio of available incoming circuits to installed circuits.
Connected Ratio	It is the ratio of connected times to seizure times.
Answer Ratio	It is the ratio of answer times to seizure times.
Blocked Circuit Ratio	It is the ratio of blocked circuits to installed circuits.
Blocked Bi-directional Circuit Ratio	It is the ratio of blocked bi-directional circuits to installed bi-directional circuits.
Bidirection TK Seizure Traffic	It refers to the traffic during the time from incoming calls seizing bi-directional trunks to the release of the calls.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the incoming calls born on a certain trunk group (including calling failure or release during calling).
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the incoming calls born on a certain trunk group.
Answer Traffic	It refers to the traffic during the time from callee off-hook to the completion of the incoming calls born on a certain trunk group.
Average Seizure Duration	It is the average seizure duration from the seizure of incoming trunks to the release of them within the measurement period. It equals to the ratio of seizure traffic to call attempts.
TKGRP Outgoing Office Traffic	
BID Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk circuits by outgoing calls born on a certain trunk group.
Seizure Times	It refers to the number of successful seizures of outgoing or bi-directional trunk circuits by outgoing calls born on a certain trunk group.
Transfer Bid Times	It refers to the number of seizure attempts of outgoing trunk circuits by the calls to be transferred by a certain trunk group.
Transfer Seizure Times	It refers to the number of successful seizures of outgoing trunk circuits by the calls to be transferred by a certain trunk group.
Connected Times	It refers to the number of ringed outgoing calls born on a certain trunk group.
Answer Times	It refers to the number of answered outgoing calls born on a certain trunk group

Entity	Description
Overflow Times	It refers to the number of route selection failures due to all outgoing or bi-directional trunk circuits of a certain trunk group in busy state.
Trunk Circuit Mismatched Times	It refers to the number of failed calls due to unmatched trunk circuit type.
Bearer Capability Mismatched Times	It refers to the number of failed calls due to the mismatch between bearer capability and bearer type.
Dual Seizure Times	It refers to the times of dual seizure of the bi-directional circuits.
TK Retry Times	It refers to the number of call attempts after the failure of seizing outgoing trunk circuits.
Peer End Congestion Times	It refers to the times of receiving congestion signal from the peer office.
Congestion Duration	It refers to the duration from the start to the end of the congestion of outgoing or bi-directional trunks of a certain trunk group. When no resource is available, the congestion starts; it ends when the first idle equipment appears.
Call Affected by Net Administrator Action Times	It is the sum of Direct Route Restrict Call Loss Times, Circuit Orient Set Call Loss Times, Circuit Temp Stop Call Loss Times, Arf And Art Times, Route Jump Times and Temp Amb Times.
Direct Route Restrict Call Loss Times	It refers to the number of call failures caused by the excess of the direct route threshold set for the called circuit groups.
Circuit Orient Set Call Loss Times	It refers to the number of call failures caused by the excess of the orient percentage set for the called circuit groups.
Circuit Temp Stop Call Loss Times	It refers to the times of call losses caused by the suspension of the called circuit groups by a certain percentage (through congestion/busy identification).
Arf and Art Times	It refers to the times of the selected alternative routes kept away from ART or the times of the overflowing ARF.
Route Jump Times	It refers to the number of calls transferred by the pre-set jump.
Called Busy Times	It refers to the number of unsuccessful outgoing call attempts born on a certain trunk group due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful outgoing call attempts born on a certain trunk group due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful outgoing call attempts born on a certain trunk group due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release of outgoing calls born on a certain trunk group when the callees hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the outgoing calls born on a certain trunk group.
Installed Circuit Number	It refers to the number of outgoing or bi-directional trunk circuits of a certain trunk group at the end of a measurement period.
Avail Circuit Number	It refers to the average number (integer) of circuits available among the outgoing or bi-directional trunk circuits of a certain trunk group within a measurement period.

Entity	Description
Blocked Circuit Number	It refers to the average number (integer) of blocked outgoing or bi-directional trunk circuits of a certain trunk group within a measurement period.
Installed Bothway Circuit Number	It refers to the number of bi-directional trunk circuits of a certain trunk group at the end of a measurement period.
Avail Bothway Circuit Number	It refers to the average number (integer) of circuits available among the bi-directional trunk circuits of a certain trunk group within a measurement period.
Blocked Bi-directional Circuit Number	It refers to the average number (integer) of blocked bi-directional trunk circuits of a certain trunk group within a measurement period.
OUTTK Ratio	It refers to the ratio of available incoming circuits to installed circuits.
Seizure Ratio	It is the ratio of seizure times to call attempts.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Blocked Circuit Ratio	It is the ratio of blocked circuits to installed circuits.
Blocked Bi-directional Circuit Ratio	It is the ratio of blocked bi-directional circuits to installed bi-directional circuits.
Bothway Circuit Seizure Traffic	It refers to the traffic during the time from outgoing calls seizing bi-directional trunks to the release of the calls.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the outgoing calls born on a certain trunk group (including calling failure or release during calling).
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the outgoing calls born on a certain trunk group.
Answer Traffic	It refers to the traffic during the time from callee off-hook to the completion of the outgoing calls born on a certain trunk group.
Average Seizure Duration	It is the average seizure duration from the seizure of outgoing trunks to the release of them within the measurement period. It equals to the ratio of seizure traffic to call attempts.
Destination Traffic	
Call Attempt Times	It refers to the number of call attempts to a certain destination.
Connected Times	It refers to the number of ringed calls to a certain destination.
Answer Times	It refers to the number of answered calls to a certain destination.
Dialing Abandon Times	It refers to the times of call release by caller in the course of dialing.
Dialing Timeout Times	It refers to the times of forced call release by SoftX3000 due to dialing timeout.
Abandon Before Ring Times	It refers to the times of forward release of calls to a certain destination before the callees hear the ringing tone.
Lost Call of Local Internal Congestion Times	It refers to the call loss times caused by intra-module or inter-module resource congestion, unavailable public resource, system error, hardware fault, software fault and voice channel congestion.

Entity	Description
OUTK Seizure Times	It is the times of successful seizures of outgoing or bi-directional trunks by calls to a certain destination.
Lost Call of Circuit Grp Congestion Times	It refers to the number of call failures caused by congestion due to limited number of circuits available to a certain destination, or heavy traffic to a certain destination, or low bearer capability of the circuit group to a certain destination.
Temporary Failure Times	It refers to the times of called line failures.
Other Interoffice Signaling Error Times	It refers to the number of failed calls to a certain destination due to signaling coordination errors.
Call Affected by Net Administrator Action Times	It is the sum of Call Affected by Code Blocked Times, Call Affected by Call Gap Ctrl Times and Call Affected by Record Inform Times.
Call Affected by Code Blocked Times	It refers to the number of calls affected by the NM action of blocking the numbers.
Call Affected by Call Gap Ctrl Times	It refers to the number of calls affected by the NM action of call interval control.
Call Affected by Record Inform Times	It refers to the number of calls affected by the NM action of notifying call loss information.
TK Retry Times	It refers to the number of call attempts after the failure of seizing outgoing trunk circuits.
Peer Congestion Times	It refers to the times of receiving congestion signal from the peer office.
Address Incomplete Times	It refers to the number of failed calls to a certain destination due to incomplete called number, which can happen in such cases as dialing incomplete address, abandon during dialing and inter-digit timeout.
Dialing Vacant Code Times	It refers to the times of vacant numbers dialed among the calls to a certain destination.
Called Busy Times	It refers to the number of unsuccessful call attempts to a certain destination due to called busy.
Called Toll Busy Times	It refers to the number of unsuccessful call attempts to a certain destination due to called busy in a toll call.
Called Local Busy Times	It refers to the number of unsuccessful call attempts to a certain destination due to called busy in a local call.
Abandon After Ring Times	It refers to the times of forward release of calls to a certain destination when the callees hear the ringing tone.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls to a certain destination.
Congestion Times	It refers to the number of failed calls caused by unsuccessful route selection due to no idle resources available.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the calls to a certain destination (including calling failure or release during calling).
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the calls to a certain destination.

Entity	Description
Answer Traffic	It refers to the traffic during the time from callee off-hook to the completion of the calls to a certain destination.
Average Seizure Duration	It is the average seizure duration from the seizure of outgoing trunks to the release of them within the measurement period. It equals to the ratio of seizure traffic to call attempts.
Average Conversation Duration	It refers to the average conversation duration from callee off-hook to hang-on by one or both parties. It is the ratio of answer traffic to answer times.
Seizure Ratio	It is the ratio of outgoing trunk seizure times to call attempts.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Destination Distribution Traffic	
BID Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk circuits by calls to a specified destination in an office direction.
Seizure Times	It refers to the number of successful attempts of outgoing or bi-directional trunk circuits by calls to a specified destination in an office direction.
Connected Times	It refers to the number of ringed calls to a specified destination in an office direction.
Answer Times	It refers to the number of answered calls to a specified destination in an office direction.
Seizure Traffic	It refers to the traffic during the time from callers picking up the phone to the completion of the calls to a specified destination in an office direction (including calling failure or release during calling).
Answer Traffic	It refers to the traffic during the time from callee off-hook to the completion of the calls to a specified destination in an office direction.
Avail Circuit Number	It refers to the average number (integer) of circuits available among the outgoing or bi-directional trunk circuits installed within a measurement period.
Installed Circuit Number	It refers to the number of outgoing or bi-directional trunk circuits installed at the end of a measurement period.
Single User Traffic	
Originating Call Attempt Times	It refers to the number of calls originated by a certain user.
Terminal Call Times	It refers to the number of calls received by a certain user.
Originating Call Connected Times	It refers to the number of ringed calls originated by a certain user.
Terminal Call Connected Times	It refers to the number of ringed calls received by a certain user.
Originating Call Answer Times	It refers to the number of answered calls originated by a certain user.
Terminal Call Answer Times	It refers to the number of calls answered by a certain user.

Entity	Description
Terminal Call Called Busy Times	It refers to the number of unsuccessful call attempts to a certain user due to called busy.
Terminal Call Ringed No Answer Times	It refers to the times of releasing calls to a certain user due to ringing timeout.
Originating Call Traffic	It refers to the originating traffic of a certain user.
Terminal Call Traffic	It refers to the terminating traffic of a certain user.
PABXGRP Traffic	
Originating Call Attempt Times	It refers to the number of calls originated by the users in a PABX group.
Terminal Call Attempt Times	It refers to the number of calls received by the users in a PABX group.
Total Call Attempt Times	It is the sum of originating times + terminating times.
Originating Call Seizure Times	It refers to the number of calls that are originated by the users in a PABX group and that seizure timeslots successfully.
Terminal Call Seizure Times	It refers to the number of successful calls to the users in a PABX group.
Originating Call Connected Times	It refers to the number of ringed calls originated by the users in a PABX group.
Terminal Call Connected Times	It refers to the number of ringed calls received by the users in a PABX group.
Originating Call Answer Times	It refers to the number of answered calls originated by the users in a PABX group.
Terminal Call Answer Times	It refers to the number of calls answered by the users in a PABX group.
Terminal Call Called Busy Times	It refers to the number of unsuccessful call attempts to the users in a PABX group due to called busy.
Terminal Call Ringed No Answer Times	It refers to the times of releasing calls to he users in a PABX group due to ringing timeout.
Congestion Call Loss Times	It refers to the number of call losses caused by all users in a PABX group in busy state.
Congestion Duration	It refers to the congestion duration from the time when all users in a PABX group are in busy state to the time when the first idle user appears within a measurement period.
Open Circuit Number	It refers to the number of circuits contained in a PABX group to be measured.
Avail Circuit Number	It refers to the number of circuits in a PABX group, which are not in the error state, maintaining state or blocked.
Originating Call Traffic	It refers to the originating traffic of the users in a PABX group.
Terminal Call Traffic	It refers to the terminating traffic of the users in a PABX group.
Originating Call Answer Traffic	It refers to the traffic of answered calls originated by the users in a PABX group.
Terminal Call Answer Traffic	It refers to the traffic of calls answered by the users in a PABX group.

Entity	Description
Centrex Intra-group Traffic	
Call Attempt Times	It refers to the number of calls to intra-group users with no out-group prefix dialed or the long number dialed.
Incoming Call Answer Times	It refers to the number of answered calls originated by intra-group users to intra-group users.
Transfer Call Answer Times	It refers to the number of intra-group transferred calls.
Call Pickup Answer Times	It refers to the number of inter-group pickup calls.
Called Busy Times	It refers to the number of unsuccessful intra-group calls due to called busy.
Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the calls originated by intra-group users to intra-group users.
Internal Call Traffic	It refers to the traffic of intra-group calls.
Connected Traffic	It refers to the traffic during the time from callees hearing the ringing tone to the completion of the intra-group calls.
Answer Traffic	It refers to the traffic during the time from callee off-hook to the completion of the intra-group calls.
Centrex Extra-group Traffic	
Call Attempt Times	It refers to the number of call attempts originated by extra-group users to intra-group users.
Incoming Call Answer Times	It refers to the number of answered calls originated by extra-group users to intra-group users.
Transfer Call Answer Times	It refers to the number of calls transferred by intra-group users, which are originated by extra-group users.
Call Pickup Answer Times	It refers to the number of pickup calls answered by intra-group users, which are originated by extra-group users.
CallIn Traffic	It refers to the traffic of calls originated by extra-group users to intra-group users.
Centrex Outgoing Group Traffic	
Outgoing Group Call Times	It is number of outgoing calls made by Centrex users.
TK Seizure Times	It refers to the number of calls that seize the trunks of the local office successfully and that are originated by Centrex users to out-Centrex users.
TK Busy Times	It is the times that outgoing calls, originated by Centrex users, fail to seize the trunks of the local office due to trunks being busy.
TK Seizure Traffic	It refers to the traffic during the time from Centrex users picking up the phone and calling out-Centrex users to the completion of the calls (including calling failure or release during calling).
Supplementary Service Traffic	
NS Register OK Times	It refers to the times of successful registration of a specific supplementary service within the measurement period.

Entity	Description
NS Register Failure Times	It refers to the times of unsuccessful registration of a specific supplementary service within the measurement period.
NS Cancel OK Times	It refers to the times of successful cancellation of a specific supplementary service within the measurement period.
NS Cancel Failure Times	It refers to the times of unsuccessful cancellation of a specific supplementary service within the measurement period.
NS Test Success Times	It refers to the times of successful verification of a specific supplementary service within the measurement period.
NS Test Failure Times	It refers to the times of unsuccessful verification of a specific supplementary service within the measurement period.
NS Used Times	It refers to the times of successful implementation of a specific supplementary service within the measurement period.
NS Registed Times	It refers to the times of registration of a specific supplementary service within the measurement period, that is, it is the sum of successful registration times and unsuccessful registration times.
NS Cancel Times	It refers to the times of cancellation of a specific supplementary service within the measurement period, that is, it is the sum of successful cancellation times and unsuccessful cancellation times.
NS Test Times	It refers to the times of verification of a specific supplementary service within the measurement period, that is, it is the sum of successful verification times and unsuccessful verification times.
Supplementary Service Centrex Traffic	
NS Register OK Times	It refers to the times of successful registration of a specific supplementary service in a Centrex group within the measurement period.
NS Register Failure Times	It refers to the times of unsuccessful registration of a specific supplementary service in a Centrex group within the measurement period.
NS Cancel OK Times	It refers to the times of successful cancellation of a specific supplementary service in a Centrex group within the measurement period.
NS Cancel Failure Times	It refers to the times of unsuccessful cancellation of a specific supplementary service in a Centrex group within the measurement period.
NS Test Success Times	It refers to the times of successful verification of a specific supplementary service in a Centrex group within the measurement period.
NS Test Failure Times	It refers to the times of unsuccessful verification of a specific supplementary service in a Centrex group within the measurement period.
NS Used Times	It refers to the times of successful implementation of a specific supplementary service in a Centrex group within the measurement period.
NS Registed Times	It refers to the times of registration of a specific supplementary service in a Centrex group within the measurement period, that is, it is the sum of successful registration times and unsuccessful registration times.
NS Cancel Times	It refers to the times of cancellation of a specific supplementary service in a Centrex group within the measurement period, that is, it is the sum of successful cancellation times and unsuccessful cancellation times.

Entity	Description
NS Test Times	It refers to the times of verification of a specific supplementary service in a Centrex group within the measurement period, that is, it is the sum of successful verification times and unsuccessful verification times.
ISDN Bearer Service Traffic Measurement	
Originating Call Attempt Times	It refers to the number of call attempts for a specific bearer service employed by the ISDN users, measured at the caller side.
Terminal Call Attempt Times	It refers to the number of call attempts for a specific bearer service employed by the ISDN users, measured at the callee side.
Terminal Call Called Busy Times	It refers to the number of failed ISDN calls for a specific bearer service due to called busy.
Originating Call Connected Times	It refers to the number of connected calls for a specific bearer service employed by the ISDN users, measured at the caller side.
Terminal Call Connected Times	It refers to the number of connected calls for a specific bearer service employed by the ISDN users, measured at the callee side.
Originating Call Answer Times	It refers to the number of answered calls for a specific bearer service employed by the ISDN users, measured at the caller side.
Terminal Call Answer Times	It refers to the number of answered calls for a specific bearer service employed by the ISDN users, measured at the callee side.
Congestion Times	It refers to the number of calls failed in a specific bearer service due to the congestion (including the local congestion and the peer end congestion).
Terminal Call Ringed No Answer Times	It refers to the times of forced call release by SoftX3000 due to no answer to the ISDN calls for a specific bearer service.
Originating Call Average Conversation Duration	It is the ratio of originating call answer traffic to originating call answer times.
Terminal Call Average Conversation Duration	It is the ratio of terminating call answer traffic to terminating call answer times.
Average Wait Duration	It refers to the average waiting duration for ISDN calls with a specific bearer service from the caller hearing the ring back tone to the callee picking up the phone.
Originating Call Answer Traffic	It refers to the traffic of answered calls for a specific bearer service originated by ISDN users, measured at the caller side.
Terminal Call Answer Traffic	It refers to the traffic of calls for a specific bearer service answered by ISDN users, measured at the callee side.
ISDN Primary Rate Interface Traffic Measurement	
Originating Call Attempt Times	It refers to the number of call attempts originated from a certain ISDN_PRA interface.
Terminal Call Attempt Times	It refers to the number of calls received by a certain ISDN_PRA interface.
Originating Call Answer Times	It refers to the number of answered calls originated from a certain ISDN_PRA interface
Terminal Call Answer Times	It refers to the number of answered calls received by a certain ISDN_PRA interface

Entity	Description
Terminal Call Called Busy Times	It refers to the number of failed calls received by a certain ISDN_PRA interface due to called busy.
Originating Call Traffic	It refers to the traffic of the calls originated from a certain ISDN_PRA interface.
Terminal Call Traffic	It refers to the traffic of the calls received by a certain ISDN_PRA interface.
Trunk Group of Interlink Office Incoming Traffic	
Seizure Times	It refers to the times of successful seizure of incoming or bi-directional trunk circuits by incoming calls.
Connected Times	It refers to the number of ringed incoming calls to an interconnected office.
Answer Times	It refers to the number of answered calls to an interconnected office.
Called Busy Times	It refers to the number of unsuccessful call attempts to an interconnected office due to called busy.
Called Number Changed Times	It refers to the number of call failures caused by called number change (the cause code is contained in the CCB message sent from the peer office).
Incomplete Dialing Times	It refers to the times of dialing vacant numbers.
Address Incomplete Times	It refers to the number of failed calls to a certain destination due to incomplete called number, which can happen in such cases as dialing incomplete address, abandon during dialing and inter-digit timeout.
Equipment Congestion Times	It refers to the times of equipment congestion due to heavy traffic.
Circuit Group Congestion Times	It is the ratio of circuit group unavailability times to circuit group availability times.
Bearer Capability No Right Times	It refers to the times of no right for users to employ the bearer capability.
Bearer Capability Can Not Use Times	It refers to the times that the requested bearer capability cannot be used for the time being although the equipment can offer it.
Bearer Capability Not Realize Times	It refers to the times of inability to offer the requested bearer capability by the equipment.
Message Type Not Exist Times	It refers to times that the equipment receives a message whose type is not recognizable because the message is not defined or is defined but the equipment sending the message has not implemented it.
Overtime Time	It refers to the number of call failures caused by timer timeout (the cause code is contained in the CCB message sent from the peer office).
Flow Control Infection Times	It refers to the number of call failures caused by NMS's control on heavy traffic.
Seizure Traffic	It refers to the traffic of incoming calls to an interconnected office during the time from the seizure of incoming or bi-directional trunk circuits to the release of them.
Answer Traffic	It refers to the traffic of incoming calls to an interconnected office during the time from callee off-hook to the completion of the calls.
Trunk Group of Interlink Office Outgoing Traffic	
Call Attempt Times	It refers to the number of seizure attempts of outgoing or bi-directional trunk circuits by outgoing calls.

Entity	Description
Seizure Times	It refers to the times of successful seizure of outgoing or bi-directional trunk circuits by outgoing calls.
Connected Times	It refers to the number of ringed calls originated from an interconnected office.
Answer Times	It refers to the number of answered calls originated from an interconnected office.
Called Busy Times	It refers to the number of unsuccessful call attempts originated from an interconnected office due to called busy.
Called Number Changed Times	It refers to the number of call failures due to called number change (the cause code is contained in the REL message sent from the peer office).
Incomplete Dialing Times	It refers to the times of dialing vacant numbers.
Address Incomplete Times	It refers to the number of failed calls to a certain destination due to incomplete called number, which can happen in such cases as dialing incomplete address, abandon during dialing and inter-digit timeout.
Equipment Congestion Times	It refers to the times of equipment congestion due to heavy traffic.
Circuit Group Congestion Times	It is the ratio of circuit group unavailability times to circuit group availability times.
Bearer Capability No Right Times	It refers to the times of no right for users to employ the bearer capability.
Bearer Capability Can Not Use Times	It refers to the times that the requested bearer capability cannot be used for the time being although the equipment can offer it.
Bearer Capability Not Realize Times	It refers to the times of inability to offer the requested bearer capability by the equipment.
Message Type Not Exist Times	It refers to times that the equipment receives a message whose type is not recognizable because the message is not defined or is defined but the equipment sending the message has not implemented it.
Overtime Time	It refers to the number of call failures caused by timer timeout (the cause code is contained in the REL message sent from the peer office).
Flow Control Infection Times	It refers to the number of call failures caused by NMS's control on heavy traffic.
Seizure Traffic	It refers to the traffic of outgoing calls originated from an interconnected office during the time from the seizure of outgoing or bi-directional trunk circuits to the release of them.
Answer Traffic	It refers to the traffic of outgoing calls originated by an interconnected office during the time from callee off-hook to the completion of the calls.
MGW Traffic	
Call Attempts	It refers to the number of call attempts originated from or terminated to a certain MGW.
Seizure Times	It refers to the number of successful calls originated from or terminated to a certain MGW.
Connected Times	It refers to the number of connected calls, that is, it is the sum of answer times and no answer times.
Answer Times	It refers to the number of answered calls.

Entity	Description
Seizure Traffic	It refers to the traffic of the calls during the time from the seizure of trunk circuits to the release of them.
Connected Traffic	It refers to the traffic of the calls during the time from callee hearing ringing tone to the release of the calls.
Answer Traffic	It refers to the traffic of the calls during the time from callee off-hook to the release of the calls.

5.3 Global Component Task

Entity	Description
CPU Seizure Ratio Traffic	
Seizure Ratio	It is the ratio of calls seizing the CPU of each board.
Congestion Times	It refers to the times of CPU seizure ratio exceeding the upper threshold.
Congestion Duration	It refers to the duration of CPU congestion within a measurement period.
Overload Times	It refers to the times of CPU seizure ratio between the lower and upper thresholds of overload CPU seizure ratio.
Overload Duration	It refers to the duration of CPU overload within a measurement period.
Originating Call Attempt Times	It is the sum of outgoing calls and outgoing trunk calls.
Originating Call Overflow Times	It refers to the number of outgoing call failures due to high CPU seizure ratio.
Terminal Call Times	It is the sum of incoming calls and incoming trunk calls.
Lost Terminal Call Overflow Times	It refers to the number of failed incoming calls due to high CPU seizure ratio.

5.4 Signaling and Interface Task

Entity	Description
H.248 MGW Statistic	
Number of Messages Sent from H.248 to MGW	It refers to the number of messages sent from SoftX3000 to a H.248 MGW.
Number of Messages Received by H.248 from MGW	It refers to the number of messages received by SoftX3000 from a H.248 MGW.
Number of Message Sent in Error	It refers to the number of messages unsuccessfully sent from SoftX3000 to a H.248 MGW.

Entity	Description
Number of Message Received in Error	It refers to the number of error messages received by SoftX3000 from a H.248 MGW.
Number of Binary Messages Encoded	It refers to the number of H.248 messages encoded in binary mode by SoftX3000.
Number of Binary Messages Decoded	It refers to the number of H.248 messages decoded in binary mode by SoftX3000.
Number of Text Messages Encoded	It refers to the number of H.248 messages encoded in text mode by SoftX3000.
Number of Text Messages Decoded	It refers to the number of H.248 messages decoded in text mode by SoftX3000.
Number of Errors in Applying Security	It refers to the number of messages failed in applying security information.
Number of Errors in Verification of Security	It refers to the number of messages failed in the security verification implemented by a H.248 MGW.
Number of Errors in Encoded	It refers to the number of messages encoded unsuccessfully.
Number of Errors in Decoded	It refers to the number of messages decoded unsuccessfully.
H.323 RAS Message Measurement	
GCF Message Measurement	It refers to the measurement of GCF messages.
GRJ Message Measurement	It refers to the measurement of GRJ messages.
RCF Message Measurement	It refers to the measurement of RCF messages.
RRJ Message Measurement	It refers to the measurement of RRJ messages.
UCF Message Measurement	It refers to the measurement of UCF messages.
URJ Message Measurement	It refers to the measurement of URJ messages.
ACF Message Measurement	It refers to the measurement of ACF messages.
ARJ Message Measurement	It refers to the measurement of ARJ messages.
BCF Message Measurement	It refers to the measurement of BCF messages.
BRJ Message Measurement	It refers to the measurement of BRJ messages.
DCF Message Measurement	It refers to the measurement of DCF messages.
DRJ Message Measurement	It refers to the measurement of DRJ messages.
LCF Message Measurement	It refers to the measurement of LCF messages.
LRJ Message Measurement	It refers to the measurement of LRJ messages.
IRQ Message Measurement	It refers to the measurement of IRQ messages.
IRR Message Measurement	It refers to the measurement of IRR messages.
NonStand Message Measurement	It refers to the measurement of NonStand messages.

Entity	Description
Unknown Message Measurement	It refers to the measurement of Nnknown messages.
H.323 H.245 Message Measurement	
MSD REQ Message Measurement	It refers to the measurement of MSD REQ messages.
MSD ACK Message Measurement	It refers to the measurement of MSD ACK messages.
MSD MSD Reject Message Measurement	It refers to the measurement of MSD Reject messages.
TCS REQ Message Measurement	It refers to the measurement of TCS REQ messages.
TCS ACK Message Measurement	It refers to the measurement of TCS ACK messages.
TCS Reject Message Measurement	It refers to the measurement of TCS Reject messages.
OLC REQ Message Measurement	It refers to the measurement of OLC REQ messages.
OLC ACK Message Measurement	It refers to the measurement of OLC ACK messages.
OLC Confirm Message Measurement	It refers to the measurement of OLC Confirm messages.
OLC Reject Message Measurement	It refers to the measurement of OLC Reject messages.
CLC Message Measurement	It refers to the measurement of CLC messages.
CLC ACK Message Measurement	It refers to the measurement of CLC ACK messages.
REQ CLC Message Measurement	It refers to the measurement of REQ CLC messages.
REQ CLC ACK Message Measurement	It refers to the measurement of REQ CLC ACK messages.
REQ CLC Reject Message Measurement	It refers to the measurement of REQ CLC Reject messages.
REQ CLC Release Message Measurement	It refers to the measurement of REQ CLC Release messages.
H.323 Q.931 Message Measurement	
Connect In	It refers to the number of “connect” messages received by SoftX3000.
Connect Out	It refers to the number of “connect” messages sent by SoftX3000.
Altering In	It refers to the number of “Alerting” messages received by SoftX3000.
Altering Out	It refers to the number of “Alerting” messages sent by SoftX3000.

Entity	Description
CallProceding In	It refers to the number of “CallProceding” messages received by SoftX3000.
CallProceding Out	It refers to the number of “CallProceding” messages sent by SoftX3000.
Setup In	It refers to the number of “Setup” messages received by SoftX3000.
Setup Out	It refers to the number of “Setup” messages sent by SoftX3000.
SetupAck In	It refers to the number of “SetupAck” messages received by SoftX3000.
SetupAck Out	It refers to the number of “SetupAck” messages sent by SoftX3000.
Progress In	It refers to the number of “Progress” messages received by SoftX3000.
Progress Out	It refers to the number of “Progress” messages sent by SoftX3000.
RelCom In	It refers to the number of “RelCom” messages received by SoftX3000.
RelCom Out	It refers to the number of “RelCom” messages sent by SoftX3000.
Status In	It refers to the number of “Status” messages received by SoftX3000.
Status Out	It refers to the number of “Status” messages sent by SoftX3000.
StatusReq In	It refers to the number of “StatusReq” messages received by SoftX3000.
StatusReq Out	It refers to the number of “StatusReq” messages sent by SoftX3000.
Facility In	It refers to the number of “Facility” messages received by SoftX3000.
Facility Out	It refers to the number of “Facility” messages sent by SoftX3000.
Info In	It refers to the number of “Info” messages received by SoftX3000.
Info Out	It refers to the number of “Info” messages sent by SoftX3000.
Notify In	It refers to the number of “Notify” messages received by SoftX3000.
Notify Out	It refers to the number of “Notify” messages sent by SoftX3000.
ISDN Signaling Traffic Measurement	
Signaling Traffic	It refers to the traffic transmitted over the channel (bytes).
MTP Signaling Link Traffic	
Service Duration	It refers to the duration during which one or several signaling links are capable of transmitting or receiving messages. The standby signaling links are not considered to be in the working state. It is the accumulation of the counter by Message Transfer Part (MTP) layer 3.
Unavail Duration	It refers to the duration during which one or several signaling links are not capable of transmitting messages. It is the accumulation of the counter by the MTP layer 3.
Fault Times	It refers to the times of signaling link(s) out of service. It is the accumulation of the counter by the MTP layer 3.
Fault Duration	It refers to the unavailable duration of signaling link(s) due to signaling link error. It is the accumulation of the counter by the MTP layer 3.
Local Lin Times	It refers to the number of successful management inhibition of local signaling link(s). It is the accumulation of the counter by the MTP layer 3.

Entity	Description
Local Lin Duration	It refers to the duration during which the local signaling link(s) are in management inhibition state. It is the accumulation of the counter by the MTP layer 3.
Remote Lin Times	It refers to the number of successful management inhibition of remote signaling link(s). It is the accumulation of the counter by the MTP layer 3.
Remote Lin Duration	It refers to the duration during which the remote signaling link(s) are in management inhibition state. It is the accumulation of the counter by the MTP layer 3.
RPO Times	It refers to the times of the remote processor out of service. It is the accumulation of the counter by the MTP layer 3.
RPO Duration	It refers to the unavailable duration of signaling link(s) due to remote processor error. It is the accumulation of the counter by the MTP layer 3.
MSU Send Number	It is the number of Message Signal Units (MSU) transmitted over the signaling link(s). It is the accumulation of the counter by the MTP layer 3.
MSU Receive Number	It is the number of MSUs received through the signaling link(s). It is the accumulation of the counter by the MTP layer 3.
OCTETS Send Number	It refers to the number of the octets in Signaling Information Field (SIF) and SIO transmitted over the signaling link(s). It is the accumulation of the counter by the MTP layer 3.
OCTETS Receive Number	It refers to the number of the octets in SIF and SIO received over the signaling link(s). It is the accumulation of the counter by the MTP layer 3.
Send Seizure Ratio	The calculation formula is: Number of octets in SIF and SIO sent plus the first six bytes of message/8K/measurement period (second)*100.
Receive Seizure Ratio	The calculation formula is: Number of octets in SIF and SIO received plus the first six bytes of message/8K/measurement period (second)*100.
Congestion Times	It refers to the times of congestion of MTP signaling link(s).
Congestion Duration	It refers to the duration of congestion of MTP signaling link(s).
Discard MSU for Congestion Number	It refers to the number of MSUs discarded due to signaling link congestion. It is the accumulation of the counter by the MTP layer 3.
Receive TFP Number	It refers to the number of TFPs received.
Local Auto Switchover Times	It refers to the times of services switched to other link(s) because of the link(s) unavailable. It is the accumulation of the counter by the MTP layer 3.
MTP Linkset Traffic	
Unavail Times	It refers to the times of signaling linkset(s) unavailable, say, all signaling links in the linkset(s) are unavailable. It is the accumulation of the counter by the MTP layer 3.
Unavail Duration	It refers to the unavailable duration of all signaling links in one or several signaling linksets. It is the accumulation of the counter by the MTP layer 3.
MTP DEST Signaling Point Traffic	
Inaccessible Times	It refers to the times of failed accesses to one or several destination signaling points. It is the accumulation of the counter by the MTP layer 3.
Inaccessible Duration	It refers to the duration of one or several destination signaling points inaccessible. It is the accumulation of the counter by the MTP layer 3.

Entity	Description
ISUP Total MSU Traffic	
Number of MSG Sent	It refers to the total number of the messages sent by ISUP of SoftX3000.
Number of MSG Received	It refers to the total number of the messages sent from MTP to ISUP of SoftX3000.
ISUP MSG Using Traffic	
Number of MSG Sent	It refers to the number of certain ISUP messages sent over a certain circuit group.
Number of MSG Received	It refers to the number of certain ISUP messages received over a certain circuit group.
ISUP Abnormity Traffic	
No RSC ACK to T17 Times	It is the measurement analysis of each circuit group. The ISUP sends a ReSet Circuit (RSC) message to a circuit once every 30 seconds till it receives an acknowledgement message, RLC for example. If it receives no acknowledgement message after 20 attempts of sending RSC, it will start the T17 timer (10-minute timer) to send RSC once every 10 minutes till an acknowledgement message is received. This measurement entity measures the event that no circuit reset acknowledgement is received within T17 after the delayed sending (compared to the sending of RSC once every 30 seconds). RSC is only sent in abnormal cases, for example, loss of circuit state due to equipment memorizer fault. RSC is equivalent to the circuit state handshake signal sent from the opposite office. This measurement entity measures the times of circuit state handshake failures within a certain period of time.
No GRA to T23 Times	It is the measurement analysis of each circuit group. It refers to the number of cases that no acknowledgment message Group Reset Acknowledgement (GRA) is received within T23 (10 minutes) to respond the Group Reset message (GRS) sent by a circuit group. It reflexes the unreliable degree of the circuits in a circuit group.
No RLC to T5 Times	It is the measurement analysis of each circuit group. It refers to the number of cases that no RLC is received within T5 (10 minutes) after Release message (REL) is sent. After the attempts for 20 times, no REL will be sent, instead, RSC will be sent and T17 will be started. The failure might result from improper handling or data error at the peer end. The measurement can be used to find problems and determine the severity of the problem.
Circuits Blocked by Peer End Times	It is the measurement analysis of each circuit group. If the peer end always blocks a certain circuit within a certain period of time, it indicates that the offices connected by the circuit have some problems in handling the circuit (data or program error).
RCV No CGBA on Some Circuits Times	It is the number of the cases that there is no Circuit Group Blocked Acknowledgment (CGBA) message to some circuits. It is the measurement analysis of each circuit group. The inconsistency in processing the group messages by both ends can be concluded through this measurement.
RCV No CGUA on Some Circuits Times	It is the number of the cases that there is no Circuit Group Unblocked Acknowledgment (CGUA) message to some circuits. It is the measurement analysis of each circuit group. The inconsistency in processing the group messages by both ends can be concluded through this measurement.
Too Much CGBA on Some Circuits Times	It is the number of the cases that there are too many CGBA messages to some circuits. It is the measurement analysis of each circuit group. The inconsistency in processing the group messages by both ends can be concluded through this measurement.

Entity	Description
Too Much CGUA on Some Circuits Times	It is the number of the cases that there are too many CGUA messages to some circuits. It is the measurement analysis of each circuit group. The inconsistency in processing the group messages by both ends can be concluded through this measurement.
Receive Unexpected CGBA Times	It is the measurement analysis of each circuit group. It refers to the number of cases that the CGBA message returned by the peer end does not match the Circuit Group Blocked (CGB) message sent by the local end. It might result from the perplexing messages sent by the peer end or the circuit data difference at both sides. The instability of circuits is obtained through the statistics within a certain period. The instability of circuits can be concluded through this measurement within a certain period of time.
Receive Too Much CGUA on Some Circuits Times	It is the measurement analysis of each circuit group. It refers to the number of cases that too many CGUA messages returned by the peer end do not match the Circuit Group Unblocked (CGU) messages sent by the local end. It might result from the perplexing messages sent by the peer end or the circuit data difference at both sides. The instability of circuits is obtained through the statistics within a certain period. The instability of circuits can be concluded through this measurement within a certain period of time.
Receive Unexpected BLA Times	It is the measurement analysis of each circuit group. It refers to the number of cases that the local office sends a blocking (BLO) message to one circuit but an unexpected BLocking Acknowledgement (BLA) message is received from another circuit. It might result from the circuit data difference at both sides or the improper handling of one side.
Receive Unexpected UBA Times	It is the measurement analysis of each circuit group. It refers to the number of cases that the local office sends an unblocking (UBL) message to a blocked circuit but an unexpected UnBlocking Acknowledgement (UBA) message is received from another circuit. It might result from the circuit data difference at both sides or the improper handling of one side.
No BLA to T13 Times	It is the measurement analysis of each circuit group. It refers to the times of no BLA message is received within 10 minutes (controlled by T13) after the local office sends a BLO message. It might result from the circuit data difference at both sides or the improper handling of one side.
No UBA to T15 Times	It is the measurement analysis of each circuit group. It refers to the times of no UBA message is received within 10 minutes (controlled by T5) after the local office sends a UBL message. It might result from the circuit data difference at both sides or the improper handling of one side.
No CGBA to T19 Times	It is the measurement analysis of each circuit group. It refers to the times of no CGBA message is received within 10 minutes (controlled by T19) after the local office sends a CGB message.
No CGUA to T21 Times	It is the measurement analysis of each circuit group. It refers to the times of no CGUA message is received within 10 minutes (controlled by T21) after the local office sends a CGU message.
MSG Format Error Times	It is the measurement analysis of each circuit group. It is the times of invalid message format. A message might be discarded if its format is invalid.
Receive Unexpected MSG Times	It is the measurement analysis of each circuit group. The unexpected messages are valid recognizable messages that are only received in the wrong phase of a call. If lots of unexpected messages are received during a certain time, it indicates that signaling cooperation of both ends has some problems.

Entity	Description
Receive Unknown MSG Times	It is the measurement analysis of each circuit group. If lots of unknown messages are received during a certain time, it indicates that signaling cooperation of both ends has some problems.
ISUP Node Performance Traffic	
Incoming Call Answer Times	It refers to the number of Initial Address Message with Information (IAIs) and Initial Address Message (IAMs) received by SoftX3000.
Switch Equipment Congestion Times	It refers to the number of Switching Equipment Congestion (SEC) messages sent by SoftX3000.
No Valid Circuit Times	It refers to the number of Circuit Group Congestion (CGC) messages sent by SoftX3000.
Address Incomplete Times	It refers to the number of ADdress Incomplete (ADI) messages sent by SoftX3000.
Temporary Failure Times	It refers to the number of call release messages sent by SoftX3000 due to temporary faults.
Unallocated Code Times	It refers to the number of Unallocated-Number signal (UNN) messages sent by SoftX3000.
User Busy Times	It refers to the number of Subscriber Toll Busy (STB) messages and Subscriber Local Busy (SLB) messages sent by SoftX3000.
DPC Out of Service Times	It refers to the number of Line Out of Service (LOS) messages sent by SoftX3000.
Other Call Failure Times	It refers to the number of call failures due to other causes except those mentioned above.
ISUP Net Performance Traffic	
Outgoing Call Answer Times	It refers to the number of IAIs and IAMs sent by SoftX3000.
Receive SEC Number	It refers to the number of SEC messages received by SoftX3000.
Receive CGC Number	It refers to the number of CGC messages received by SoftX3000.
Receive ADI Number	It refers to the number of ADI messages received by SoftX3000.
Receive Temp Failure Number	It refers to the number of call release messages received by SoftX3000 due to temporary faults.
Receive UNN Number	It refers to the number of UNN messages received by SoftX3000.
Receive No Route Number	It refers to the number of call release messages received by SoftX3000 due to no route to destination.
Receive Sb Number	It refers to the number of STB messages and SLB messages received by SoftX3000.
Receive Dest Out of Service Number	It refers to the number of LOS messages received by SoftX3000.
Receive Other Failure Number	It refers to the number of other call failure causes received by SoftX3000 except those mentioned above.
ISUP Circuit GRP Performance Traffic	
Incoming Call Answer Times	It refers to the number of IAIs and IAMs received by SoftX3000.

Entity	Description
SEC Times	It refers to the number of SEC messages sent by SoftX3000.
CGC Times	It refers to the number of CGC messages sent by SoftX3000.
Congestion Times	It refers to the total times of SoftX3000 equipment congestions and circuit group congestions.
ADI Times	It refers to the number of ADI messages sent by SoftX3000.
Temp Failure Times	It refers to the number of call release messages sent by SoftX3000 due to temporary faults.
UNN Times	It refers to the number of UNN messages sent by SoftX3000.
SB Times	It refers to the number of STB messages and SLB messages sent by SoftX3000.
Destpoint Out of Service Times	It refers to the number of LOS messages sent by SoftX3000.
Other Failure Times	It refers to the number of call failures due to other causes except those mentioned above.
Outgoing Call Answer Times	It refers to the number of IAIs and IAMs sent by SoftX3000.
Receive SEC Times	It refers to the number of SEC messages received by SoftX3000.
Receive CGC Times	It refers to the number of CGC messages received by SoftX3000.
Receive ADI Times	It refers to the number of ADI messages received by SoftX3000.
Receive Temp Failure Times	It refers to the number of call release messages received by SoftX3000 due to temporary faults.
Receive UNN Times	It refers to the number of UNN messages received by SoftX3000.
Receive No Route Times	It refers to the number of call release messages received by SoftX3000 due to no route to destination.
RCV SB Times	It refers to the number of STB messages and SLB messages received by SoftX3000.
RCV Dest Point Out of Service Times	It refers to the number of LOS messages received by SoftX3000.
RCV Other Failure Times	It refers to the number of other call failure causes received by SoftX3000 except those mentioned above.
Answer No Charging Times	It refers to the number of Answer Signal, No charge (ANN) messages sent by SoftX3000.
Maintenance Group Block Times	It refers to the number of Maintenance Group Blocked (MGB) messages sent by SoftX3000.
Hardware Group Block Times	It refers to the number of Hardware Group Blocked (HGB) messages sent by SoftX3000.
Circuit Group Reset Times	It refers to the number of GRS messages sent by SoftX3000.
Circuit Reset Times	It refers to the number of RSC messages sent by SoftX3000.
Answer Times	It refers to the number Of Answer Signal, Charge (ANC) and ANN messages sent by SoftX3000.

Entity	Description
Number of MSU Sent	It refers to the total number of the messages sent by ISUP.
Number of MSU Receive	It refers to the total number of the messages received by ISUP from MTP.
Number of MSU Receive and Sent	It refers to the total number of the messages sent and received by ISUP.
Length of MSU Receive	It refers to the total number of the bytes of all the messages received by ISUP from MTP.
Length of MSU Sent	It refers to the total number of the bytes of all the messages sent by ISUP.
Length of MSU Sent and Receive	It refers to the total number of the bytes of all the messages sent and received by ISUP.
Total Call Attempt Times	It refers to the total number of IAIs and IAMs sent and received by SoftX3000.
Length of MSU Per Call	It is the total length of the messages received and sent by SoftX3000 divided by total call attempts.
Average Length of MSU	It is the total length of the messages received and sent by SoftX3000 to total number of messages received and sent.
SCCP Performance Statistic	
Route Failure: No Translation for an Address of Such Nature	It refers to the number of SCCP route failures due to invalid addressing mode contained in the messages received by SCCP.
Route Failure: No Translation for this Specific Address	It refers to the number of SCCP route failures due to inability to find the corresponding translation of a specific address.
Route Failure: Signaling Network Code Failure	It refers to the number of SCCP route failures due to unavailability of DSPs for the messages sent by SCCP.
Route Failure: Signaling Network Congestion	It refers to the number of SCCP route failures due to congestion of DSPs when SCCP is sending messages.
Route Failure: Subsystem Failure	It refers to the number of SCCP route failures due to subsystem fault when SCCP is receiving or sending messages.
Route Failure: Subsystem Congestion	It refers to the number of SCCP route failures due to subsystem congestion when SCCP is receiving or sending messages.
Route Failure: Unequipped Subsystem	It refers to the number of SCCP route failures due to unequipped subsystem when SCCP is receiving or sending messages.
Route Failure: Unknow Reason	It refers to the number of SCCP route failures caused by unknown reasons.
Route Failure: Address Syntax Error	It refers to the number of SCCP route failures due to address syntax error detected by SCCP.
SCCP Availability Statistic	
Local SCCP Unavailability: Node Failure	It refers to the times of local SCCP unavailability due to faults.
Local SCCP Unavailability: Maintenance Made Busy	It refers to the times of local SCCP unavailability due to maintenance operations.

Entity	Description
Local SCCP Unavailability: Congestion	It refers to the times of local SCCP unavailability due to network congestion.
Local SCCP Unavailability Duration: All Reasons	It refers to the duration of local SCCP unavailability due to various reasons. It is used to measure the reliability and stability of SCCP.
Local SCCP Availability: All Reasons	It refers to the times that the local SCCP changes from unavailable state to available state due to various reasons. Compared with the SCCP unavailability times, it is used to check the self-healing capability of SCCP.
SCCP Utilization Statistic	
SCCPU: UDTS Messages Sent	It refers to the number of connectionless service messages returned due to inability of SCCP to transmit such messages.
SCCPU: UDTS Messages Receive	It refers to the number of UDT messages that cannot reach the destinations among those sent by SCCP.
SCCPU: Total Messages	It refers to the total number of messages processed by SCCP.
SCCPU: Messages for Local Subsystem	It refers to the number of messages that are destined to the SCCP local subsystem.
SCCPU: Messages Need Global Title Translation	It refers to the number of messages that require the global title translation function of SCCP.
SCCPU: All The Connectionless Messages Sent	It refers to the number of connectionless service (including category 0 and category 1) messages sent by SCCP.
SCCPU: All The Connectionless Messages Receive	It refers to the number of connectionless service messages received by SCCP.
SCCPU: Messages for The Backup Subsystem	It refers to the number of messages sent by SCCP to the backup subsystem.
TCAP Availability Statistic	
TCAP Availability: Failure	It refers to the times of local TCAP unavailability due to faults.
TCAP Availability: Maintenance Made Busy	It refers to the times of local TCAP unavailability due to maintenance operations.
TCAP Availability: Congestion	It refers to the times of local TCAP unavailability due to network congestion.
TCAP Availability: Unavailability Duration	It refers to the duration of local TCAP unavailability due to various reasons. It is used to measure the reliability and stability of TCAP.
TCAP Component Utilization Statistic	
TCAP CU: Invoke Component Sent	It refers to the number of invoke components sent by the local TCAP.
TCAP CU: Invoke Component Received	It refers to the number of invoke components received by the local TCAP.
TCAP CU: Last Result Component Sent	It refers to the number of last result components sent by the local TCAP.

Entity	Description
TCAP CU: Last Result Component Received	It refers to the number of last result components received by the local TCAP.
TCAP CU: Not Last Result Component Sent	It refers to the number of not last result components sent by the local TCAP.
TCAP CU: Not Last Result Component Received	It refers to the number of not last result components received by the local TCAP.
TCAP CU: Return Error Component Sent	It refers to the number of return error components sent by the local TCAP.
TCAP CU: Return Error Component Received	It refers to the number of return error components received by the local TCAP.
TCAP CU: Reject Component Sent	It refers to the number of reject components sent by the local TCAP.
TCAP CU: Reject Component Received	It refers to the number of reject components received by the local TCAP.
TCAP Message Utilization Statistic	
TCAP SMU: Invoke Message Sent	It refers to the number of invoke messages sent by the local TCAP.
TCAP SMU: Invoke Message Received	It refers to the number of invoke messages received by the local TCAP.
TCAP SMU: Last Result Message Sent	It refers to the number of last result messages sent by the local TCAP.
TCAP SMU: Last Result Message Received	It refers to the number of last result messages received by the local TCAP.
TCAP SMU: Not Last Result Message Sent	It refers to the number of not last result messages sent by the local TCAP.
TCAP SMU: Not Last Result Message Received	It refers to the number of not last result messages received by the local TCAP.
TCAP SMU: Return Error Message Sent	It refers to the number of return error messages sent by the local TCAP.
TCAP SMU: Return Error Message Received	It refers to the number of return error messages received by the local TCAP.
TCAP SMU: Reject Message Sent	It refers to the number of reject messages sent by the local TCAP.
TCAP SMU: Reject Message Received	It refers to the number of reject messages received by the local TCAP.
TCAP Transaction Sublayer Performance Statistic	
TCAP TSL P: Message Type Unknown (P-Abort)	It refers to the number of P_ABORT messages with the cause code of unknown message type detected by TCAP.
TCAP TSL P: Incorrect Transaction Portion (P-Abort)	It refers to the number of P_ABORT messages with the cause code of incorrect transaction portion detected by TCAP.

Entity	Description
TCAP TSL P: Badly Transaction Portion (P-Abort)	It refers to the number of P_ABORT messages with the cause code of transaction portion format error detected by TCAP.
TCAP TSL P: Unrecognized TID (P-Abort)	It refers to the number of P_ABORT messages with the cause code of unrecognized transaction ID detected by TCAP.
TCAP TSL P: Resource Limitation (P-Abort)	It refers to the number of P_ABORT messages with the cause code of resource limitation detected by TCAP.
IUA Signaling Link Traffic	
Number of Control Message Sent	It refers to the number of control messages sent over a certain IUA signaling link.
Number of Control Message Received	It refers to the number of control messages received over a certain IUA signaling link.
Number of QPTM Message Sent	It refers to the number of QPTM messages sent over a certain IUA signaling link.
Number of QPTM Message Received	It refers to the number of QPTM messages received over a certain IUA signaling link.
Number of Error Message Received	It refers to the number of error messages received over a certain IUA signaling link.
Bytes of Control Message Sent	It refers to the number of the bytes of control messages sent over a certain IUA signaling link.
Bytes of Control Message Received	It refers to the number of the bytes of control messages received over a certain IUA signaling link.
Bytes of QPTM Message Sent	It refers to the number of the bytes of QPTM messages sent over a certain IUA signaling link.
Bytes of QPTM Message Received	It refers to the number of the bytes of QPTM messages received over a certain IUA signaling link.
Times of The Link Congestion	It refers to the congestion times of a certain IUA signaling link.
Congestion Duration	It refers to the congestion duration of a certain IUA signaling link.
Times of The Link Unavailable	It refers to the unavailability times of a certain IUA signaling link.
Unavail Duration	It refers to the total unavailability duration of a certain IUA signaling link.
IUA Linkset Flux Traffic	
Number of Control Message Sent	It refers to the number of control messages sent over a certain IUA signaling link set.
Number of Control Message Received	It refers to the number of control messages received over a certain IUA signaling link set.
Number of QPTM Message Sent	It refers to the number of QPTM messages sent over a certain IUA signaling link set.
Number of QPTM Message Received	It refers to the number of QPTM messages received over a certain IUA signaling link set.

Entity	Description
Number of Error Message Received	It refers to the number of error messages received over a certain IUA signaling link set.
Bytes of Control Message Sent	It refers to the number of the bytes of control messages sent over a certain IUA signaling link set.
Bytes of Control Message Received	It refers to the number of the bytes of control messages received over a certain IUA signaling link set.
Bytes of QPTM Message Sent	It refers to the number of the bytes of QPTM messages sent over a certain IUA signaling link set.
Bytes of QPTM Message Received	It refers to the number of the bytes of QPTM messages received over a certain IUA signaling link set.
IUA Linkset State Traffic	
Times of The Link Unavailable	It refers to the unavailability times of a certain IUA signaling link set.
Unavail Duration	It refers to the total unavailability duration of a certain IUA signaling link set.
M2UA Link Traffic	
Number of The Sent MAUP Message	It refers to the number of MAUP messages sent over a certain M2UA link.
Number of The Received MAUP Message	It refers to the number of MAUP messages received over a certain M2UA link.
Number of The Sent Control Message	It refers to the number of control messages sent over a certain M2UA link.
Number of The Received Control Message	It refers to the number of control messages received over a certain M2UA link.
Bytes of The Sent Message	It refers to the number of the bytes of messages sent over a certain M2UA link.
Bytes of The Received Message	It refers to the number of the bytes of messages received over a certain M2UA link.
Times of Data Retransmitting	It refers to the times of data retransmission by a certain M2UA link.
Times of The Link Unavailable	It refers to the unavailability times of a certain M2UA link.
Unavail Duration	It refers to the total unavailability duration of a certain M2UA link.
M3UA Destination Entity Traffic	
Inaccessible Times	It refers to the inaccessible times of a M3UA destination entity.
Inaccessible Duration	It refers to the inaccessible duration of a M3UA destination entity.
M3UA Linkset Flux Traffic	
Number of Message Sent	It refers to the total number of messages sent over a certain M3UA signaling link set.
Bytes of Message Sent	It refers to the total number of the bytes of messages sent over a certain M3UA signaling link set.
Number of Message Received	It refers to the total number of messages received over a certain M3UA signaling link set.

Entity	Description
Bytes of Message Received	It refers to the total number of the bytes of messages received over a certain M3UA signaling link set.
Number of Data Message Sent	It refers to the total number of data messages sent over a certain M3UA signaling link set.
Bytes of Data Message Sent	It refers to the total number of the bytes of data messages sent over a certain M3UA signaling link set.
Number of Data Message Received	It refers to the total number of data messages received over a certain M3UA signaling link set.
Bytes of Data Message Received	It refers to the total number of the bytes of data messages received over a certain M3UA signaling link set.
Number of ASPM Message Sent	It refers to the total number of ASPM messages sent over a certain M3UA signaling link set.
Bytes of ASPM Message Sent	It refers to the total number of the bytes of ASPM messages sent over a certain M3UA signaling link set.
Number of ASPM Message Received	It refers to the total number of ASPM messages received over a certain M3UA signaling link set.
Bytes of ASPM Message Received	It refers to the total number of the bytes of ASPM messages received over a certain M3UA signaling link set.
Number of SSNM Message Sent	It refers to the total number of SSNM messages sent over a certain M3UA signaling link set.
Bytes of SSNM Message Sent	It refers to the total number of the bytes of SSNM messages sent over a certain M3UA signaling link set.
Number of SSNM Message Received	It refers to the total number of SSNM messages received over a certain M3UA signaling link set.
Bytes of SSNM Message Received	It refers to the total number of the bytes of SSNM messages received over a certain M3UA signaling link set.
Number of MGMT Message Sent	It refers to the total number of MGMT messages sent over a certain M3UA signaling link set.
Bytes of MGMT Message Sent	It refers to the total number of the bytes of MGMT messages sent over a certain M3UA signaling link set.
Number of MGMT Message Received	It refers to the total number of MGMT messages received over a certain M3UA signaling link set.
Bytes of MGMT Message Received	It refers to the total number of the bytes of MGMT messages received over a certain M3UA signaling link set.
Link Disconnection Times	It refers to the disconnection times of a certain M3UA signaling link set.
M3UA Linkset State Traffic	
Unavail Times	It refers to the unavailable times of a certain M3UA signaling link set.
Unavail Duration	It refers to the unavailable duration of a certain M3UA signaling link set.

Entity	Description
M3UA Signaling Link Traffic	
Number of Message Transmitted	It refers to the total number of messages sent over a certain M3UA signaling link.
Bytes of Message Transmitted	It refers to the total number of the bytes of messages sent over a certain M3UA signaling link.
Number of Message Received	It refers to the total number of messages received over a certain M3UA signaling link.
Bytes of Message Received	It refers to the total number of the bytes of messages received over a certain M3UA signaling link.
Number of Data Message Transmitted	It refers to the total number of data messages sent over a certain M3UA signaling link.
Bytes of Data Message Transmitted	It refers to the total number of the bytes of data messages sent over a certain M3UA signaling link.
Number of Data Message Received	It refers to the total number of data messages received over a certain M3UA signaling link.
Bytes of Data Message Received	It refers to the total number of the bytes of data messages received over a certain M3UA signaling link.
Number of ASPM Message Transmitted	It refers to the total number of ASPM messages sent over a certain M3UA signaling link.
Bytes of ASPM Message Transmitted	It refers to the total number of the bytes of ASPM messages sent over a certain M3UA signaling link.
Number of ASPM Message Received	It refers to the total number of ASPM messages received over a certain M3UA signaling link.
Bytes of ASPM Message Received	It refers to the total number of the bytes of ASPM messages received over a certain M3UA signaling link.
Number of SSNM Message Transmitted	It refers to the total number of SSNM messages sent over a certain M3UA signaling link.
Bytes of SSNM Message Transmitted	It refers to the total number of the bytes of SSNM messages sent over a certain M3UA signaling link.
Number of SSNM Message Received	It refers to the total number of SSNM messages received over a certain M3UA signaling link.
Bytes of SSNM Message Received	It refers to the total number of the bytes of SSNM messages received over a certain M3UA signaling link.
Number of MGMT Message Transmitted	It refers to the total number of MGMT messages sent over a certain M3UA signaling link.
Bytes of MGMT Message Transmitted	It refers to the total number of the bytes of MGMT messages sent over a certain M3UA signaling link.
Number of MGMT Message Received	It refers to the total number of MGMT messages received over a certain M3UA signaling link.
Bytes of MGMT Message Received	It refers to the total number of the bytes of MGMT messages received over a certain M3UA signaling link.

Entity	Description
Disconnection Times	It refers to the disconnection times of a certain M3UA signaling link.
Congestion Times	It refers to the congestion times of a certain M3UA signaling link.
Congestion Duration	It refers to the total congestion duration of a certain M3UA signaling link.
Unavail Times	It refers to the unavailable times of a certain M3UA signaling link.
Unavail Duration	It refers to the unavailable duration of a certain M3UA signaling link.
Service MGCP Message Statistic	
Number of Outgoing Messages	It refers to the number of normal MGCP messages sent by SoftX3000.
Number of Incoming Messages	It refers to the number of normal MGCP messages received by SoftX3000.
Number of Incoming Sent with Error Code	It refers to the number of abnormal MGCP messages with error codes sent by SoftX3000.
Number of Outgoing Received with Error Code	It refers to the number of abnormal MGCP messages with error codes received by SoftX3000.
Number of Non-Standard Sent Commands	It refers to the number of non-standard MGCP messages sent by SoftX3000.
Number of Non-Standard Received Commands	It refers to the number of non-standard MGCP messages received by SoftX3000.
Number of Sent EPCF Commands	It refers to the number of EPCF messages sent by SoftX3000.
Number of Sent CRCX Commands	It refers to the number of CRCX messages sent by SoftX3000.
Number of Sent MDCX Commands	It refers to the number of MDCX messages sent by SoftX3000.
Number of Sent DLCX Commands	It refers to the number of DLCX messages sent by SoftX3000.
Number of Sent RQNT Commands	It refers to the number of RQNT messages sent by SoftX3000.
Number of Sent AUEP Commands	It refers to the number of AUEP messages sent by SoftX3000.
Number of Sent AUCX Commands	It refers to the number of AUCX messages sent by SoftX3000.
Number of Received DLCX Commands	It refers to the number of DLCX messages received by SoftX3000.
Number of Received NTFY Commands	It refers to the number of NTFY messages received by SoftX3000.
Number of Received RSIP Commands	It refers to the number of RSIP messages received by SoftX3000.

Entity	Description
Number of Received EPCF Successful Response	It refers to the number of EPCF successful response messages received by SoftX3000.
Number of Received EPCF Failure Response	It refers to the number of EPCF failure response messages received by SoftX3000.
Number of Received CRCX Successful Response	It refers to the number of CRCX successful response messages received by SoftX3000.
Number of Received CRCX Failure Response	It refers to the number of CRCX failure response messages received by SoftX3000.
Number of Received MDCX Successful Response	It refers to the number of MDCX successful response messages received by SoftX3000.
Number of Received MDCX Failure Response	It refers to the number of MDCX failure response messages received by SoftX3000.
Number of Received DLCX Successful Response	It refers to the number of DLCX successful response messages received by SoftX3000.
Number of Received DLCX Failure Response	It refers to the number of DLCX failure response messages received by SoftX3000.
Number of Received RQNT Successful Response	It refers to the number of RQNT successful response messages received by SoftX3000.
Number of Received RQNT Failure Response	It refers to the number of RQNT failure response messages received by SoftX3000.
Number of Received AUEP Successful Response	It refers to the number of AUEP successful response messages received by SoftX3000.
Number of Received AUEP Failure Response	It refers to the number of AUEP failure response messages received by SoftX3000.
Number of Received AUCX Successful Response	It refers to the number of AUCX successful response messages received by SoftX3000.
Number of Received AUCX Failure Response	It refers to the number of AUCX failure response messages received by SoftX3000.
Number of Sent DLCX Successful Response	It refers to the number of DLCX successful response messages sent by SoftX3000.
Number of Sent DLCX Failure Response	It refers to the number of DLCX failure response messages sent by SoftX3000.
Number of Sent NTFY Successful Response	It refers to the number of NTFY successful response messages sent by SoftX3000.
Number of Sent NTFY Failure Response	It refers to the number of NTFY failure response messages sent by SoftX3000.
Number of Sent RSIP Successful Response	It refers to the number of RSIP successful response messages sent by SoftX3000.
Number of Sent RSIP Failure Response	It refers to the number of RSIP failure response messages sent by SoftX3000.

Entity	Description
Number of Sent UDP Packages	It refers to the number of UDP packages sent by SoftX3000.
Number of Received UDP Packages	It refers to the number of UDP packages received by SoftX3000.
MGCP Error Message Statistic for Specific MGW	
Number of Message with Error Code 400	It refers to the number of messages with error code 400: The transaction could not be executed due to a transient error.
Number of Message with Error Code 401	It refers to the number of messages with error code 401: The phone is already off hook.
Number of Message with Error Code 402	It refers to the number of messages with error code 402: The phone is already on hook.
Number of Message with Error Code 403	It refers to the number of messages with error code 403: The transaction could not be executed because the endpoint does not have sufficient resources at this time.
Number of Message with Error Code 404	It refers to the number of messages with error code 404: Insufficient bandwidth at this time.
Number of Message with Error Code 500	It refers to the number of messages with error code 500: The transaction could not be executed because the endpoint is unknown.
Number of Message with Error Code 501	It refers to the number of messages with error code 501: The transaction could not be executed because the endpoint is not ready.
Number of Message with Error Code 502	It refers to the number of messages with error code 502: The transaction could not be executed because the endpoint does not have sufficient resources.
Number of Message with Error Code 510	It refers to the number of messages with error code 510: The transaction could not be executed because a protocol error was detected.
Number of Message with Error Code 511	It refers to the number of messages with error code 511: The transaction could not be executed because the command contained an unrecognized extension.
Number of Message with Error Code 512	It refers to the number of messages with error code 512: The transaction could not be executed because the gateway is not equipped to detect one of the requested events.
Number of Message with Error Code 513	It refers to the number of messages with error code 513: The transaction could not be executed because the gateway is not equipped to generate one of the requested signals.
Number of Message with Error Code 514	It refers to the number of messages with error code 514: The transaction could not be executed because the gateway cannot send the specified announcement.
Number of Message with Error Code 515	It refers to the number of messages with error code 515: The transaction refers to an incorrect connection-ID (might have been already deleted).
Number of Message with Error Code 516	It refers to the number of messages with error code 516: The transaction refers to an unknown call-ID.
Number of Message with Error Code 517	It refers to the number of messages with error code 517: Unsupported or invalid mode.
Number of Message with Error Code 518	It refers to the number of messages with error code 518: Unsupported or unknown package.

Entity	Description
Number of Message with Error Code 519	It refers to the number of messages with error code 519: Endpoint does not have a digit map.
Number of Message with Error Code 520	It refers to the number of messages with error code 520: The transaction could not be executed because the endpoint is "restarting".
Number of Message with Error Code 521	It refers to the number of messages with error code 521: Endpoint redirected to another Call Agent.
Number of Message with Error Code 522	It refers to the number of messages with error code 522: No such event or signal.
Number of Message with Error Code 523	It refers to the number of messages with error code 523: Unknown action or illegal combination of actions.
Number of Message with Error Code 524	It refers to the number of messages with error code 524: Internal inconsistency in LocalConnectionOptions.
Number of Message with Error Code 525	It refers to the number of messages with error code 525: Unknown extension in LocalConnectionOptions.
Number of Message with Error Code 526	It refers to the number of messages with error code 526: Insufficient bandwidth.
Number of Message with Error Code 527	It refers to the number of messages with error code 527: Missing RemoteConnectionDescriptor.
Number of Message with Error Code 528	It refers to the number of messages with error code 528: Incompatible protocol version.
Number of Message with Error Code 529	It refers to the number of messages with error code 529: Internal hardware failure.
Number of Message with Error Code 530	It refers to the number of messages with error code 530: CAS signaling protocol error.
Number of Message with Error Code 531	It refers to the number of messages with error code 531: Failure of a grouping of trunks (e.g. facility failure).
MGW MGCP Message Statistic	
Number of Outgoing Messages	It refers to the number of normal MGCP messages sent by SoftX3000 to a certain MGW.
Number of Incoming Messages	It refers to the number of normal MGCP messages sent by a certain MGW to SoftX3000.
Number of Incoming Sent with Error Code	It refers to the number of abnormal MGCP messages with error codes sent by SoftX3000 to a certain MGW.
Number of Outgoing Received with Error Code	It refers to the number of abnormal MGCP messages with error codes sent by a certain MGW to SoftX3000.
Number of Non-Standard Sent Commands	It refers to the number of non-standard MGCP messages sent by SoftX3000 to a certain MGW.
Number of Non-Standard Received Commands	It refers to the number of non-standard MGCP messages sent by a certain MGW to SoftX3000.

Entity	Description
Number of Sent EPCF Commands	It refers to the number of EPCF messages sent by SoftX3000 to a certain MGW.
Number of Sent CRCX Commands	It refers to the number of CRCX messages sent by SoftX3000 to a certain MGW.
Number of Sent MDCX Commands	It refers to the number of MDCX messages sent by SoftX3000 to a certain MGW.
Number of Sent DLCX Commands	It refers to the number of DLCX messages sent by SoftX3000 to a certain MGW.
Number of Sent RQNT Commands	It refers to the number of RQNT messages sent by SoftX3000 to a certain MGW.
Number of Sent AUEP Commands	It refers to the number of AUEP messages sent by SoftX3000 to a certain MGW.
Number of Sent AUCX Commands	It refers to the number of AUCX messages sent by SoftX3000 to a certain MGW.
Number of Received DLCX Commands	It refers to the number of DLCX messages sent by a certain MGW to SoftX3000.
Number of Received NTFY Commands	It refers to the number of NTFY messages sent by a certain MGW to SoftX3000.
Number of Received RSIP Commands	It refers to the number of RSIP messages sent by a certain MGW to SoftX3000.
Number of Received EPCF Successful Response	It refers to the number of EPCF successful response messages sent by a certain MGW to SoftX3000.
Number of Received EPCF Failure Response	It refers to the number of EPCF failure response messages sent by a certain MGW to SoftX3000.
Number of Received CRCX Successful Response	It refers to the number of CRCX successful response messages sent by a certain MGW to SoftX3000.
Number of Received CRCX Failure Response	It refers to the number of CRCX failure response messages sent by a certain MGW to SoftX3000.
Number of Received MDCX Successful Response	It refers to the number of MDCX successful response messages sent by a certain MGW to SoftX3000.
Number of Received MDCX Failure Response	It refers to the number of MDCX failure response messages sent by a certain MGW to SoftX3000.
Number of Received DLCX Successful Response	It refers to the number of DLCX successful response messages sent by a certain MGW to SoftX3000.
Number of Received DLCX Failure Response	It refers to the number of DLCX failure response messages sent by a certain MGW to SoftX3000.
Number of Received RQNT Successful Response	It refers to the number of RQNT successful response messages sent by a certain MGW to SoftX3000.
Number of Received RQNT Failure Response	It refers to the number of RQNT failure response messages sent by a certain MGW to SoftX3000.

Entity	Description
Number of Received AUEP Successful Response	It refers to the number of AUEP successful response messages sent by a certain MGW to SoftX3000.
Number of Received AUEP Failure Response	It refers to the number of AUEP failure response messages sent by a certain MGW to SoftX3000.
Number of Received AUCX Successful Response	It refers to the number of AUCX successful response messages sent by a certain MGW to SoftX3000.
Number of Received AUCX Failure Response	It refers to the number of AUCX failure response messages sent by a certain MGW to SoftX3000.
Number of Sent DLCX Successful Response	It refers to the number of DLCX successful response messages sent by SoftX3000 to a certain MGW.
Number of Sent DLCX Failure Response	It refers to the number of DLCX failure response messages sent by SoftX3000 to a certain MGW.
Number of Sent NTFY Successful Response	It refers to the number of NTFY successful response messages sent by SoftX3000 to a certain MGW.
Number of Sent NTFY Failure Response	It refers to the number of NTFY failure response messages sent by SoftX3000 to a certain MGW.
Number of Sent RSIP Successful Response	It refers to the number of RSIP successful response messages sent by SoftX3000 to a certain MGW.
Number of Sent RSIP Failure Response	It refers to the number of RSIP failure response messages sent by SoftX3000 to a certain MGW.
MGCP Message Traffic In A Specific MRCA	
Received RQNT Command Number	It refers to the number of RQNT commands sent by SoftX3000 to a certain MRCA board.
Received CRCX Command Number	It refers to the number of CRCX commands sent by SoftX3000 to a certain MRCA board.
Received MDCX Command Number	It refers to the number of MDCX commands sent by SoftX3000 to a certain MRCA board.
Received DLCX Command Number	It refers to the number of DLCX commands sent by SoftX3000 to a certain MRCA board.
Received AUEP Command Number	It refers to the number of AUEP commands sent by SoftX3000 to a certain MRCA board.
Received AUCX Command Number	It refers to the number of AUCX commands sent by SoftX3000 to a certain MRCA board.
Received Command Response Number	It refers to the number of command responses sent by SoftX3000 to a certain MRCA board.
Sent RSIP Command Number	It refers to the number of RSIP commands sent by a certain MRCA board to SoftX3000.
Sent NTFY Command Number	It refers to the number of NTFY commands sent by a certain MRCA board to SoftX3000.

Entity	Description
Sent DLCX Command Number	It refers to the number of DLCX commands sent by a certain MRCA board to SoftX3000.
Sent Command Response Number	It refers to the number of command responses sent by a certain MRCA board to SoftX3000.
STUN Message Measurement	
Binding Requests Times	It refers to the number of binding requests.
Binding Responses Times	It refers to the number of binding responses.
Binding Error 400_1class Times	It refers the number of the sent binding messages of error 400_1 class.
Binding Error 400_2class Times	It refers the number of the sent binding messages of error 400_2 class.
Binding Error 400_3class Times	It refers the number of the sent binding messages of error 400_3 class.
Binding Error 400_4class Times	It refers the number of the sent binding messages of error 400_4 class.
Total Binding Error 500_Class	It refers the number of the sent binding messages of error 500 class.
Total Binding Error 600_Class	It refers the number of the sent binding messages of error 600 class.
V5UA Signaling Link Traffic	
Number of The Sent Control Message	It refers to the number of control messages sent over a certain V5UA signaling link.
Number of The Received Control Message	It refers to the number of control messages received over a certain V5UA signaling link.
Number of The Sent V5PTM Message	It refers to the number of V5PTM messages sent over a certain V5UA signaling link.
Number of The Received V5PTM Message	It refers to the number of V5PTM messages received over a certain V5UA signaling link.
Number of The Received Error Message	It refers to the number of error messages received over a certain V5UA signaling link.
Bytes of The Sent Control Message	It refers to the total number of the bytes of control messages sent over a certain V5UA signaling link.
Bytes of The Received Control Message	It refers to the total number of the bytes of control messages received over a certain V5UA signaling link.
Bytes of The Sent V5PTM Message	It refers to the total number of the bytes of V5PTM messages sent over a certain V5UA signaling link.
Bytes of The Received V5PTM Message	It refers to the total number of the bytes of V5PTM messages received over a certain V5UA signaling link.
Times of The Link Congestion	It refers to the congestion times of a certain V5UA signaling link.
Congestion Duration	It refers to the congestion duration of a certain V5UA signaling link.

Entity	Description
Times of The Link Unavailable	It refers to the unavailable times of a certain V5UA signaling link.
Unavail Duration	It refers to the total unavailable duration of a certain V5UA signaling link.
V5UA Linkset Flux Traffic	
Number of The Sent Control Message	It refers to the number of control messages sent over a certain V5UA signaling link set.
Number of The Received Control Message	It refers to the number of control messages received over a certain V5UA signaling link set.
Number of The Sent V5PTM Message	It refers to the number of V5PTM messages sent over a certain V5UA signaling link set.
Number of The Received V5PTM Message	It refers to the number of V5PTM messages received over a certain V5UA signaling link set.
Number of The Received Error Message	It refers to the number of error messages received over a certain V5UA signaling link set.
Bytes of The Sent Control Message	It refers to the total number of the bytes of control messages sent over a certain V5UA signaling link set.
Bytes of The Received Control Message	It refers to the total number of the bytes of control messages received over a certain V5UA signaling link set.
Bytes of The Sent V5PTM Message	It refers to the total number of the bytes of V5PTM messages sent over a certain V5UA signaling link set.
Bytes of The Received V5PTM Message	It refers to the total number of the bytes of V5PTM messages received over a certain V5UA signaling link set.
V5UA Linkset State Traffic	
Times of The Link Unavailable	It refers to the unavailable times of a certain V5UA signaling link set.
Unavail Duration	It refers to the total unavailable duration of a certain V5UA signaling link set.

5.5 Call Record Task

Entity	Description
Dispersion Duration Traffic	
Inlet Module Number	Inlet module number
Inlet Device DID	Inlet device DID number
Inlet Trunk Group Number	Inlet trunk group number
Inlet Device BSN	User port or trunk circuit occupied by an inlet device
Inlet Trunk Group GCI	Inlet trunk group GCI number
Inlet Occupation Moment	The moment when an inlet device occupies a user port or a trunk circuit

Entity	Description
Calling Party Number 1-8 BCDs	1-8 BCDs of a calling number
Calling Party Number 9-16 BCDs	9-16 BCDs of a calling number
Calling Party Number 17-24 BCDs	17-24 BCDs of a calling number
Destination Code 1-8 BCDs	1-8 BCDs of a destination code
Destination Code 9-16 BCDs	9-16 BCDs of a destination code
Destination Code 17-24 BCDs	17-24 BCDs of a destination code
Outlet Module No.	Oultet module number
Outlet Device DID	Outlet device DID number
Outlet Trunk Group Number	Outlet trunk group number
Outlet Device BSN	User port or trunk circuit occupied by an outlet device
Outlet Trunk Group GCI	Outlet trunk group GCI number
Outlet Occupation Moment	The moment when an outlet device occupies a user port or a trunk circuit
Alert Moment	Ringing moment
Answer Moment	The moment when a call is answered and the conversation begins
Release Moment	The moment when a call is released and the conversation stops
Dialed Number 1-8 BCDs	1-8 BCDs of a dialed number
Dialed Number 9-16 BCDs	9-16 BCDs of a dialed number
Dialed Number 17-24 BCDs	17-24 BCDs of a dialed number
Service Quality Traffic	
Inlet Module Number	Inlet module number
Inlet Device DID	Inlet device DID number
Inlet Trunk Group Number	Inlet trunk group number
Inlet Device BSN	User port or trunk circuit occupied by an inlet device
Inlet Occupation Moment	The moment when an inlet device occupies a user port or a trunk circuit
Calling Party Number 1-8 BCDs	1-8 BCDs of a calling number
Calling Party Number 9-16 BCDs	9-16 BCDs of a calling number
Calling Party Number 17-24 BCDs	17-24 BCDs of a calling number
Dialed Number 1-8 BCDs	1-8 BCDs of a dialed number

Entity	Description
Dialed Number 9-16 BCDs	9-16 BCDs of a dialed number
Dialed Number 17-24 BCDs	17-24 BCDs of a dialed number
Outlet Module No.	Oultet module number
Outlet Device DID	Outlet device DID number
Outlet Trunk Group Number	Outlet trunk group number
Outlet Device BSN	User port or trunk circuit occupied by an outlet device
Failure Reason	The causes for call failures. The cause code of normal call release is sent for successful calls.
Outlet Occupation Moment	The moment when an outlet device occupies a user port or a trunk circuit
Address Complete Moment	The moment when all digits of a number are received
Answer Moment	The moment when a call is answered and the conversation begins
Call Release Moment	The moment when a call is released and the conversation stops
Call Result	Call results include answered, connected, not connected, and so on.
Complete Ratio Traffic	
Call Attempt Times	It refers to the number of calls originated by all users.
Valid Address Call Ratio	It is the ratio of the times of callers dialing the last digit enough for callee identification or of incoming trunks receiving complete address information to the total call attempts.
Connected Ratio	It is the ratio of connected calls to call attempts.
Answer Ratio	It is the ratio of answered calls to call attempts.
Multi Condition Object Traffic	
Call Attempt Times	It refers to the number of call attempts defined by a certain combination of conditions.
Seizure Times	It refers to the seizure times of the calls defined by a certain combination of conditions.
Connected Times	It refers to the times that ring back tone is heard for the calls defined by a certain combination of conditions.
Answer Times	It refers to the times that callees answer the calls defined by a certain combination of conditions.
Answer But No Billing Times	It refers to the number of ANN messages sent.
Seizure Duration	It refers to the duration from seizure of circuits by the calls defined by a certain combination of conditions to the completion of the calls.
Answer Duration	It refers to the duration from callee off-hook to the completion of the calls.
Mean Value of Seizure Time Duration	It refers to the average duration from caller off-hook to the completion of the calls (including call failure or abandon). Formula: seizure duration / seizure times

Entity	Description
Mean Value of Answer Time Duration	It refers to the average duration from callee off-hook to the completion of the calls. Formula: answer duration / answer times
Confliction in New Service Setting	The cause code is sent when the supplementary service registered by a user conflicts with the registered service.
New Service Configuration Success	The cause code is sent when a user succeeds in registering a supplementary service.
New Service Configuration Fail	The cause code is sent when a user fails to register a supplementary service.
New Service Cancellation Success	The cause code is sent when a user succeeds in canceling a supplementary service.
New Service Cancellation Fail	The cause code is sent when a user fails to cancel a supplementary service.
New Service Verification Success	The cause code is sent when a user succeeds in verifying a registered supplementary service.
New Service Verification Fail	The cause code is sent when a user fails to verify a registered supplementary service.
New Service Application Success	The cause code is sent when a user succeeds in using a registered supplementary service.
New Service Application Fail	The cause code is sent when a user fails to use a registered supplementary service.
Probe Malicious Call Success	This reason is used when a user gets related information after employing the Malicious Call Identification service.
Probe Malicious Call Fail	This reason is used when a user fails to get related information after employing the Malicious Call Identification service.
Peer Side is Absent User	This reason is used when the connection of a call fails due to the Absent Service set by the callee.
Peer Side Set No Disturb	This reason is used when the connection of a call fails due to the Do-not-Disturb Service set by the callee.
Switch Equipment Congestion	The cause code is sent to indicate that the switching equipment is in the heavy-traffic period.
No Dialing in Long Time	The cause code is sent when a call is released because the caller does not complete the dialing in the specified time.
No Answer in Long Time	The cause code is sent when the ringing tone is sent for a call but no one answers it within the specified period of time.
Temporary Failure	A call is released due to system performance decline caused by loss of messages, internal errors, message combination failure and so on.
No Information in Long Time	The cause code is sent when a call is released due to required message not received within the specified time.
No Alerting in Long Time	The cause code is sent when the ringing tone is not received for a call within the specified time.
No Release in Long Time	The cause code is sent when the release request of a call is not received within the specified time.

Entity	Description
In Band Signal	The cause code is sent for in-band signal.
Continuity Check Failure	A call is released when the continuity check fails.
Exceed Maximum Reattempt Times	The cause code is sent when the reattempt times exceed the threshold (Reattempts occur due to dual seizure in the call connection process).
Release Before Ring	The cause code is sent when a caller releases the call before the ringing tone is sent to the callee.
Release Before Answer	The cause code is sent when a caller releases the call before the callee answers the call after hearing the ringing tone.
Call Barring	The cause code is sent when a call is released due to prefix barring, NMS restriction or other service implementation beyond the limitation.
Switch Equipment Failure	The cause code is sent when a call is released due to equipment failure.
Operator Disconnect The Call Forcedly Success	The cause code is sent when the operator succeeds in disconnecting a call forcedly.
Operator Disconnect The Call Forcedly Failure	The cause code is sent when the operator fails to disconnect a call forcedly.
Callee is Busy in a Toll Call	The cause code is sent when a call is released due to called busy in a toll call.
Callee is Busy in a Local Call	The cause code is sent when a call is released due to called busy in a local call.
Call Reject Because of Arrearage	The cause code is sent when a call is released due to insufficient balance.
Porting Number	The cause code is sent when a call is released because of the number portability.
Telephone Console Does Not Work	The cause code is sent when the console does not work normally.
New Service Record Success	The cause code is sent when the recording to the specified timeslot is successful.
Credit Card Arrearage	The cause code is sent when a call fails because of the insufficient balance in the credit card.
Calling Barring	The cause code is sent when a call is released because the callee does not have the authority of receiving incoming calls.
Remote Equipment Congestion	The cause code is sent when the remote equipment is congested.
Call Failure	The cause code is sent when a call is released due to unknown reasons, for example, CFL.
Dual Seizure	The cause code is sent when a call is released due to one trunk circuit seized simultaneously by an outgoing call and an incoming call from the peer end.
Invalid Directory Number	The cause code is sent when a call is released because it is impossible to locate the callee based on the dialed number or the dialed number contains the message inconsistent with the called number.
Remote Password Update Fail	The cause code is sent when a user fails to modify the password of another terminal on his/her own telephone.

Entity	Description
Remote Password Update Success	The cause code is sent when a user succeeds in modifying the password of another terminal on his/her own telephone.
Remote Register Call Forwarding Success	The cause code is sent when a user succeeds in registering the call forwarding service for another terminal on his/her own telephone.
Remote Register Call Forwarding Failure	The cause code is sent when a user fails to register the call forwarding service for another terminal on his/her own telephone.
Remote Deregister Call Forwarding Success	The cause code is sent when a user succeeds in canceling the call forwarding service for another terminal on his/her own telephone.
Remote Deregister Call Forwarding Failure	The cause code is sent when a user fails to cancel the call forwarding service for another terminal on his/her own telephone.
Callee Arrearage	The cause code is sent when a call fails due to callee arrearage.
Wrong Password	The cause code is sent when a call fails due to the input of wrong password in setting, modification or cancellation of a password or using a service that requires the input of a password.
Redirect Restricted	The cause code is sent when a transferred call is released because the number of call forwardings exceeds the threshold in one connection or the essential information of the forwarding service is missing.
Unreachable Module	The cause code is sent when messages fail to be sent to a module due to abnormal module state.
Net Management Barring	The cause code is sent when a call fails due to the implementation of NMS command.
User Queue Failure	The cause code is sent when a call cannot be queued for the call queue is full. Note: The call queue is set for the operator. When the operator is busy, a new incoming call will be queued.
Group Queue Failure	The cause code is sent when a call cannot be queued into the group call queue for it is full already. Note: The group queue is set for user group. When all the users in a group are busy, a new call will be queued in the group queue.
Timeout in Queue	The cause code is sent when a call is released because of the response timeout after the call enters the above two queues.
CPU Congestion or Overload	The cause code is sent when the CPU occupation rate exceeds the congestion threshold or overload threshold.
No CR Resource	The cause code is sent when the CR resource is not sufficient for the calls received or originated at the user side.
No CCB Resource	The cause code is sent when the CCB resource is not sufficient for the calls received or originated at the network side.
No Conference Resource	The cause code is sent when the conference telephone resources (for the three-party service and telephone conference) are insufficient.
Adandon without Dialing	The cause code is sent when a user hangs on without dialing any number after listening to the dial tone.
Timeout Before Dialing	The cause code is sent when a user hears the busy tone due to dialing no number after off-hook.

Entity	Description
Abandon with Partial Dialing	The cause code is sent when a user hangs on before the dialing times out.
Timeout in Dialling Interval	The cause code is sent in the case of inter-digit dialing timeout.
Signalling Error	The cause code is sent in the case of No.7 Signaling interworking errors.
Money Not Enough in Credit Card	The cause code is sent when a call is released due to insufficient balance in prepaid card.
Call Barring Because of Black and White List	The cause code is sent when a call is barred because the caller or callee is on the Black/White list.
Calling Party Number Judgement Restriction	The cause code is sent when a call is barred because of number restriction set by the caller.
Unallocated DN	The cause code is sent when a call fails because the called number has not been allocated though the number format is valid.
No Route to The Selected Transit Network	The cause code is sent when the equipment receives a request for transferring a call through a specific transit network, but it cannot recognize the network due to the reason that this transit network does not exist or does not provide any service for the equipment. Whether this cause code is supported depends on the network.
No Route to The Callee	The cause code is sent when a call is released because the network the call passes through does not provide the service for the called terminal.
Send Private Tone	The cause code is sent when a call fails because the special signal tone is returned to the caller.
Error Include Long Distance	The cause code is sent when the called number contains a wrong prefix.
Route Unacceptable	The cause code is sent when the transmitting entity does not accept the channel with the new identification in the call.
Call Has Established and Delivered on The Route	The cause code is sent when a call is connected to the callee together with other similar calls in the established channel.
Normal Call Clear	It indicates that a call is being cleared because one of the users concerned requires the release.
Callee is Busy	The cause code is sent when the callee gives a busy indication.
No Response from Callee	The cause code is sent when the callee does not respond to the call within the specified time, that is, no ringing tone or connection indication is given.
No Answer from Callee	The cause code is sent when the ringing tone is sent for a call but no one answers it within the specified period of time.
Number Changed	The cause code is sent when the called number has been changed. The new called number can be included in the diagnostic field as an optional item.
Clear Unselected User	It indicates that the user has not received any call.
Termination Error	This cause code indicates that a call cannot reach the destination because the interface of the terminating end does not work properly, that is, the signaling message cannot be transmitted to the callee.
Invalid DN Format	It indicates that a call cannot reach the callee because of the erroneous format or incompleteness of the called number.

Entity	Description
Facility Rejected	The cause code is sent when the network cannot provide the performance required by the user.
Response To Status Enquiry	It indicates that a STATUS message is returned immediately after a STATUS_ENQUIRY message is received.
Normal	The cause code is used to report a normal event when there are no other applicable reasons of normal type.
No Route Available	It indicates that there is no appropriate circuit/channel for processing the call.
Network Error	The cause code is sent when the network cannot find the user data.
Temporary Error	The cause code is sent when a temporary fault occurs in the network, for example, an intermittent link failure.
Device Congestion	The cause code is sent to indicate that the switching equipment is in the heavy-traffic period.
Access Information Lost	The cause code is sent when the network cannot submit the access information to the callee based on such requirements as user information, low-level compatibility, high-level compatibility or sub-address indicated in the diagnosis information.
No Route or Circuit Applied Available	The cause code is sent when the interface of the other side cannot provide the circuit or channel required.
No Resource Available	The cause code is sent when there is no resource available.
No Suitable Service Quality	The cause code is sent when the requested service quality cannot be provided. The service qualities are defined in Recommendation X.213, including the handling capacity or transfer delay supported.
Facility Applied Not Preserved Before	It indicates that the network cannot provide the required supplementary service because the user has not completed the management procedures necessary for enjoying the service.
CUG Barring Call into The Group from Outside	The cause code is sent when the members of a CUG are not permitted to receive incoming calls.
Bearer Capability Do Not Permit	The cause code is sent when a user is not permitted to employ the bearer capability that has been provided by the equipment.
No Available Bearer Capability	The cause code is sent when there is no bearer capability available for the time being though the equipment supports it.
No Suitable Service or Option	The cause code is used to report a “no suitable service or option” event when there are no other reasons employed for it.
Bearer Capability Do Not Lay Out	The cause code is sent when the equipment does not support the required bearer capability.
Route Type Do Not Lay Out	The cause code is sent when the equipment does not support the required channel type.
Facility Applied Do Not Lay Out	The cause code is sent when the equipment does not support the required supplementary service.
Only Have Restricted Bearer Capability	The cause code is sent when the caller has applied for an unrestricted bearer service, but the equipment only supports the restricted bearer service.

Entity	Description
Service or Option Do Not Lay Out	The cause code is used to report a “service or option unimplemented” event when there are no other applicable reasons employed for it.
Invalid Call Reference	The cause code is sent when the message received by the equipment contains the call reference not employed by the existing user-network interface.
Route Identified Do Not Exist	The cause code is sent when a call requests to use the inactivated channel at the interface.
Suspended Call Exist	The cause code is sent when the call ID used for trying to resume the call is different from that used for suspending the call.
Call Identification is Using	The cause code is sent when the network receives a suspension request that contains a call ID already used by a paused call (including no call ID).
No Suspended Call	The cause code is sent when the network receives a call resumption request that contains a call ID not indicating any paused call. Note: The call ID contained in the call resumption request is used to indicate the suspended call to be resumed.
The Applied Call Identity has been Cleared	The cause code is sent when the network receives a call resumption request that contains a call ID indicating a cleared call (the suspended call is cleared due to network timeout or released by opposite user).
The Callee is Not in the CUG	The cause code is sent when a call is originated by a CUG user to a non-CUG user.
Incompatible Terminal	The cause code is sent when the equipment has received a call setup request, but the call has inapplicable low-level compatibility, high-level compatibility or other compatibility (for example, data transmission rate).
Invalid Transit Network Selection	The cause code is sent when the transit network ID received is not correct.
Invalid Message	The cause code is sent when a message is invalid.
Mandatory IE Lost	The cause code is sent when the equipment has received a message excluding a mandatory IE.
Message Type Not Exist or Not Lay Out	It refers to times that the equipment receives a message whose type is not recognizable because the message is not defined or is defined but the equipment sending the message has not implemented it.
Message or Call State Error	The cause code is sent when the equipment receives a message that should not have been received in calling state, or the equipment receives a STATUS message indicating incompatible call state.
Information Element Not Exist or Not Lay Out	The cause code is sent when the equipment receives a message containing an unrecognized IE, for this IE identifier is not defined or is defined but the equipment has not implemented it.
Invalid IE Content	The cause code is sent when the equipment receives an implemented IE but it does not implement the codes of one or multiple fields in the element.
Violation Between Message and Call State	The cause code is sent when a message not in compliance with the call state is received.
Recovery from Time Out	The cause code is sent when a program related to the error processing program specified in Recommendation Q.931 is started due to the timer timeout.

Entity	Description
Parameter Not Exist or Not Lay Out	The cause code is sent when the equipment receives a parameter that is not recognizable for it is not defined or is defined but the equipment has not implemented it.
Ordinary Congestion	The cause code is sent when the ordinary users cannot use the idle circuits reserved for the high-priority users.
Protocol Error	The cause code is sent in the case of protocol interworking errors.
Failure Out of Scope	The cause code is sent when a failure is caused by the reason which is out of the measurement scope of the measurement unit.
Interwork	The cause code is sent when the network is interworking with another network that provides no reason for the network action.

5.6 Maximum/Minimum Value Task

Entity	Description
Top Usage User Traffic	
Local DnSet1	Number initial set of the first top busy user
Outcode1	External code of the first top busy user
Seizure Duration1	Seizure duration of the first top busy user
Local DnSet2	Number initial set of the second top busy user
Outcode2	External code of the second top busy user
Seizure Duration2	Seizure duration of the second top busy user
Local DnSet3	Number initial set of the third top busy user
Outcode3	External code of the third top busy user
Seizure Duration3	Seizure duration of the third top busy user
Local DnSet4	Number initial set of the fourth top busy user
Outcode4	External code of the fourth top busy user
Seizure Duration4	Seizure duration of the fourth top busy user
Local DnSet5	Number initial set of the fifth top busy user
Outcode5	External code of the fifth top busy user
Seizure Duration5	Seizure duration of the fifth top busy user
Local DnSet6	Number initial set of the sixth top busy user
Outcode6	External code of the sixth top busy user
Seizure Duration6	Seizure duration of the sixth top busy user
Local DnSet7	Number initial set of the seventh top busy user

Entity	Description
Ooutcode7	External code of the seventh top busy user
Seizure Duration7	Seizure duration of the seventh top busy user
Local DnSet8	Number initial set of the eighth top busy user
Outcode8	External code of the eighth top busy user
Seizure Duration8	Seizure duration of the eighth top busy user
Local DnSet9	Number initial set of the ninth top busy user
Outcode9	External code of the ninth top busy user
Seizure Duration9	Seizure duration of the ninth top busy user
Local DnSet10	Number initial set of the tenth top busy user
Outcode10	External code of the tenth top busy user
Seizure Duration10	Seizure duration of the tenth top busy user
Top Called Busy Traffic	
Local DnSet1	Number initial set of the first usually busy user
Outcode1	External code of the first usually busy user
Called Busy Times1	Busy times of the first usually busy user
Local DnSet2	Number initial set of the second usually busy user
Outcode2	External code of the second usually busy user
Called Busy Times2	Busy times of the second usually busy user
Local DnSet3	Number initial set of the third usually busy user
Outcode3	External code of the third usually busy user
Called Busy Times3	Busy times of the third usually busy user
Local DnSet4	Number initial set of the fourth usually busy user
Outcode4	External code of the fourth usually busy user
Called Busy Times4	Busy times of the fourth usually busy user
Local DnSet5	Number initial set of the fifth usually busy user
Outcode5	External code of the fifth usually busy user
Called Busy Times5	Busy times of the fifth usually busy user
Local DnSet6	Number initial set of the sixth usually busy user
Outcode6	External code of the sixth usually busy user
Called Busy Times6	Busy times of the sixth usually busy user
Local DnSet7	Number initial set of the seventh usually busy user
Outcode7	External code of the seventh usually busy user

Entity	Description
Called Busy Times7	Busy times of the seventh usually busy user
Local DnSet8	Number initial set of the eighth usually busy user
Outcode8	External code of the eighth usually busy user
Called Busy Times8	Busy times of the eighth usually busy user
Local DnSet9	Number initial set of the ninth usually busy user
Outcode9	External code of the ninth usually busy user
Called Busy Times9	Busy times of the ninth usually busy user
Local DnSet10	Number initial set of the tenth usually busy user
Outcode10	External code of the tenth usually busy user
Called Busy Times10	Busy times of the tenth usually busy user
Top Ringed No Answer Traffic	
Local DnSet1	Number initial set of the first no-replay user
Outcode1	External code of the first no-reply user
No Answer Times1	No answer times of the first no-reply user
Local DnSet2	Number initial set of the second no-replay user
Outcode2	External code of the second no-reply user
No Answer Times2	No answer times of the second no-reply user
Local DnSet3	Number initial set of the third no-replay user
Outcode3	External code of the third no-reply user
No Answer Times3	No answer times of the third no-reply user
Local DnSet4	Number initial set of the fourth no-replay user
Outcode4	External code of the fourth no-reply user
No Answer Times4	No answer times of the fourth no-reply user
Local DnSet5	Number initial set of the fifth no-replay user
Outcode5	External code of the fifth no-reply user
No Answer Times5	No answer times of the fifth no-reply user
Local DnSet6	Number initial set of the sixth no-replay user
Outcode6	External code of the sixth no-reply user
No Answer Times6	No answer times of the sixth no-reply user
Local DnSet7	Number initial set of the seventh no-replay user
Outcode7	External code of the seventh no-reply user
No Answer Times7	No answer times of the seventh no-reply user

Entity	Description
Local DnSet8	Number initial set of the eighth no-replay user
Outcode8	External code of the eighth no-reply user
No Answer Times8	No answer times of the eighth no-reply user
Local DnSet9	Number initial set of the ninth no-replay user
Outcode9	External code of the ninth no-reply user
No Answer Times9	No answer times of the ninth no-reply user
Local DnSet10	Number initial set of the tenth no-replay user
Outcode10	External code of the tenth no-reply user
No Answer Times10	No answer times of the tenth no-reply user
Top Call Loss Traffic	
Local DnSet1	Number initial set of the first top call loss user
Outcode1	External code of the first top call loss user
Loss Times1	Loss times of the first top call loss user
Local DnSet2	Number initial set of the second top call loss user
Outcode2	External code of the second top call loss user
Loss Times2	Loss times of the second top call loss user
Local DnSet3	Number initial set of the third top call loss user
Outcode3	External code of the third top call loss user
Loss Times3	Loss times of the third top call loss user
Local DnSet4	Number initial set of the fourth top call loss user
Outcode4	External code of the fourth top call loss user
Loss Times4	Loss times of the fourth top call loss user
Local DnSet5	Number initial set of the fifth top call loss user
Outcode5	External code of the fifth top call loss user
Loss Times5	Loss times of the fifth top call loss user
Local DnSet6	Number initial set of the sixth top call loss user
Outcode6	External code of the sixth top call loss user
Loss Times6	Loss times of the sixth top call loss user
Local DnSet7	Number initial set of the seventh top call loss user
Outcode7	External code of the seventh top call loss user
Loss Times7	Loss times of the seventh top call loss user
Local DnSet8	Number initial set of the eighth top call loss user

Entity	Description
Outcode8	External code of the eighth top call loss user
Loss Times8	Loss times of the eighth top call loss user
Local DnSet9	Number initial set of the ninth top call loss user
Outcode9	External code of the ninth top call loss user
Loss Times9	Loss times of the ninth top call loss user
Local DnSet10	Number initial set of the tenth top call loss user
Outcode10	External code of the tenth top call loss user
Loss Times10	Loss times of the tenth top call loss user
Top Idle TK Circuit Traffic	
TKGRP NO1	Trunk group number of the first top idle trunk circuit
TKC NO1	Trunk circuit number of the first top idle trunk circuit
Seizure Duration1	Seizure duration of the first top idle trunk circuit
TKGRP NO2	Trunk group number of the second top idle trunk circuit
TKC NO2	Trunk circuit number of the second top idle trunk circuit
Seizure Duration2	Seizure duration of the second top idle trunk circuit
TKGRP NO3	Trunk group number of the third top idle trunk circuit
TKC NO3	Trunk circuit number of the third top idle trunk circuit
Seizure Duration3	Seizure duration of the third top idle trunk circuit
TKGRP NO4	Trunk group number of the fourth top idle trunk circuit
TKC NO4	Trunk circuit number of the fourth top idle trunk circuit
Seizure Duration4	Seizure duration of the fourth top idle trunk circuit
TKGRP NO5	Trunk group number of the fifth top idle trunk circuit
TKC NO5	Trunk circuit number of the fifth top idle trunk circuit
Seizure Duration5	Seizure duration of the fifth top idle trunk circuit
TKGRP NO6	Trunk group number of the sixth top idle trunk circuit
TKC NO6	Trunk circuit number of the sixth top idle trunk circuit
Seizure Duration6	Seizure duration of the sixth top idle trunk circuit
TKGRP NO7	Trunk group number of the seventh top idle trunk circuit
TKC NO7	Trunk circuit number of the seventh top idle trunk circuit
Seizure Duration7	Seizure duration of the seventh top idle trunk circuit
TKGRP NO8	Trunk group number of the eighth top idle trunk circuit
TKC NO8	Trunk circuit number of the eighth top idle trunk circuit

Entity	Description
Seizure Duration8	Seizure duration of the eighth top idle trunk circuit
TKGRP NO9	Trunk group number of the ninth top idle trunk circuit
TKC NO9	Trunk circuit number of the ninth top idle trunk circuit
Seizure Duration9	Seizure duration of the ninth top idle trunk circuit
TKGRP NO10	Trunk group number of the tenth top idle trunk circuit
TKC NO10	Trunk circuit number of the tenth top idle trunk circuit
Seizure Duration10	Seizure duration of the tenth top idle trunk circuit

5.7 Intelligent Service Task

Entity	Description
The Traffic Measurement for FIN Call	
Call Attempt Number	It refers to the number of IN call attempts. As long as the minimum number length set in the called number analysis table has been dialed, it will be counted as a call attempt regardless of whether it has been put through.
Call Seize Time	It refers to the duration from caller off-hook to the completion of calls.
Call Average Seize Time	It is the ratio of seizure duration to call attempts.
FIN Operation Measurement	
The Number of SSF Sending Operations	It refers to the number of operations sent from Service Switch Point (SSP) to Service Control Point (SCP).
The Number of SSF Receiving Operations	It refers to the number of operations sent from SCP to SSP.
The Unsuccessful Number of SSF Sending Result	It refers to the number of unsuccessful transmission of results by SSP.
The Unsuccessful Number of SSF Receiving Result	It refers to the number of unsuccessful receipt of results by SSP.
The Number of SSF Sending Reject Operations	It refers to the number of operations rejected by SSP.
The Number of SSF Receiving Reject Operations	It refers to the number of operations rejected by SCP.
IN Dialogue Measurement	
The Number of SSF Sending Dialogues	It refers to the number of dialogues originated from SSP.
The Number of SSF Receiving Dialogues	It refers to the number of dialogues originated from SCP.
The Number of SSF Sending Dialogue Abort	It refers to the number of U-ABORT dialogues sent by SSP.

Entity	Description
The Number of SSF Receiving Dialogue Abort	It refers to the number of P-ABORT and U-ABORT dialogues sent from SCP to SSP.
Total Dialogue Time	It refers to the total duration from TC-BEGIN sent or received by SSP to TC-END received or sent by SSP. For a call, the total dialogue duration is always shorter than the total seizure duration measured in IN call traffic measurement, for this value is started to be measured after the corresponding operation is received by the FEAM.
Total dialogue time (Assist)	It is the assistant value of the total dialogue time.
Total Dialogue Number	It is the total number of the dialogues sent and received by SSF.
Average Dialogue Time	It is the ratio of total dialogue duration to total dialogue times.
IN Fail Measurement	
Overload Reject Number	It refers to the number of call failures due to SSP overload.
Fail Number Before Initialdp	It refers to the number of call failures occurred before the INSM of SSP sends IDP.
Fail Number After Initialdp	It refers to the number of call failures occurred before SCP receives the IDP sent by the INSM of SSP.
The Number of SSF Receiving Reject Dialogue	It refers to the number of reject dialogues received by SSF.
SRF Operation Measurement	
Receiving Operations	Times of receive operations = Times from local module + Times from other module
Executing Operations	It refers to the number of operations carried out by the local module.
Executing Operations successfully	It refers to the number of operations successfully carried out by the local module.
Executing Operations Fail	It refers to the times of failed operations carried out by the local module.
Canceling Executing Operations	It refers to the number of operations cancelled by the local module.
INSM Release SRM Abnormally	It refers to the times of releasing operation due to INSM releasing SRM.
BCSM Release SRM Abnormally	It refers to the times of releasing operation due to BCSM releasing SRM.
SRM Operation Measurement	
INSM Applying for SRM	It is the times of applying for SRM when the INSM receives the information stream of INAP operation to connect to resource from SCP.
INSM Applying Successfully for SRM	It is the times of having successfully applied for SRM when the INSM receives the information stream of INAP operation to connect to resource from SCP.
INSM Applying Fail for SRM	It is the times of having failed to apply for SRM when the INSM receives the information stream of INAP operation to connect to resource from SCP.
INSM Releasing SRM	It is the times of having successfully applied for SRM and then released SRM after the INSM receives the information steam of INAP operation to disconnect forward connection.

Entity	Description
BCSM Applying for SRM	It is the times of BCSM applying for SRM for playing announcement during the conversation.
BCSM Applying Successfully for SRM	It is the times of BCSM having successfully applied for SRM for playing announcement during the conversation.
BCSM Applying Fail for SRM	It is the times of BCSM's failure in applying for SRM for playing announcement during the conversation.
BCSM releasing SRM	It is the times of BCSM releasing SRM after having successfully applied for it for playing announcement during the conversation.
SRF Traffic Measurement	
The Number to Apply for SRM	It refers to the total times of SRM applications by all the modules.
The Number to Execute PA	It refers to the number of PA operations.
The Number to Execute PC	It refers to the number of PC operations.
The number to Execute CA	It refers to the number of CA operations.
INSM Operation Measurement	
Activate Service Filter	It refers to the number of "activate service filter" messages sent from SCP to SSP.
Activate Service Filter Result	It refers to the number of "activate service filter result" messages sent from SSP to SCP.
Activity Test	It refers to the number of "activity test" messages sent from SCP to SSP.
Activity Test Response	It refers to the number of "activity test response" messages sent from SSP to SCP.
Applying Charge	It refers to the number of "applying charge" messages sent from SCP to SSP.
Applying Charge Report	It refers to the number of "applying charge report" messages sent from SSP to SCP.
Assist Request Instruct	It refers to the number of "assist request instruct" messages sent from SCP to SSP.
Call Gap	It refers to the number of "call gap" messages sent from SCP to SSP.
Call Information Report	It refers to the number of "call information report" messages sent from SSP to SCP.
Call Information Request	It refers to the number of "call information request" messages sent from SCP to SSP.
Cancel	It refers to the number of "cancel" messages sent from SCP to SSP.
Collect Information	It refers to the number of "collect information" messages sent from SCP to SSP.
Connect	It refers to the number of "connect" messages sent from SCP to SSP.
Connect to Resource	It refers to the number of "connect to resource" messages sent from SCP to SSP.
Continue	It refers to the number of "continue" messages sent from SCP to SSP.
Disconnect Forward Connection	It refers to the number of "disconnect forward connection" messages sent from SCP to SSP.
Establish Temporary Connection	It refers to the number of "establish temporary connection" messages sent from SCP to SSP.
Event Report BCSM	It refers to the number of "event report BCSM" messages sent from SSP to SCP.

Entity	Description
Furnish Charging Information	It refers to the number of “furnish charging information” messages sent from SCP to SSP.
Intial IP	It refers to the number of “initial IP” messages sent from SSP to SCP.
Initial Call Tempt	It refers to the number of “initial call attempt” messages sent from SCP to SSP.
Play Announcement	It refers to the number of “play announcement” messages sent from SCP to SSP.
Prompt and Collect User Information	It refers to the number of “prompt and collect user information” messages sent from SSP to SCP.
Prompt and Collect User Information Result	It refers to the number of “prompt and collect user information result” messages sent from SCP to SSP.
Release Call	It refers to the number of “release call” messages sent from SCP to SSP.
Request Report BCSM Event	It refers to the number of “request report BCSM event” messages sent from SCP to SSP.
Reset timer	It refers to the number of “reset timer” messages sent from SCP to SSP.
Send Charge Information	It refers to the number of “send charge information” messages sent from SSP to SCP.
Service Filter Response	It refers to the number of “service filter response” messages sent from SSP to SCP.
Specialized Resource Report	It refers to the number of “specialized resource report” messages sent from SSP to SCP.
Receive NULL Operation	It refers to the number of null messages sent from SCP to SSP.
Send NULL Operation	It refers to the number of null messages sent from SSP to SCP.
Receive Error	It refers to the number of “receive error” messages sent from SCP to SSP.
Send Error	It refers to the number of “send error” messages sent from SSP to SCP.
TC Abort	It refers to the number of “TC abort” messages sent from SCP to SSP.
Receive Error TC Flag	It refers to the number of “receive error TC flag” messages sent from SCP to SSP.
The Traffic Measurement for FIN Call IN Quality	
IN Caller Attempting Number	It refers to the number of “Initial DP” sent by the INSM.
IN Caller Seizing Number	It refers to the times of IN caller seizing INSM state machine.
IN Caller Connecting Number	It refers to the number of successful IN call connections. Specifically, it is the number of “RequestReportBCSMEvent” messages sent by SCP.
IN Caller Aborting Number	It refers to the number of DP10 (caller abort) messages reported by SSP.
The Number Rejected by SCP	It refers to the number of operations rejected by SCP.
The Call Gapped Number	It refers to the number of calls gapped by SSP based on the CALLGAP parameter sent by SCP.
The Call Filtered Number	It refers to the number of calls filtered by SSP based on the ASF parameter sent by SCP.

Entity	Description
The Call Rejected Number for CPU Overload	It refers to the number of calls rejected due to SSP overload.
IN Caller Seizing Time	It refers to the total duration from IN caller off-hook to the completion of the calls.
IN Caller Average Seizing Time	It refers to the average duration from IN caller off-hook to the completion of the calls.
IN Caller Seizing Traffic	It is the ratio of IN caller seizure duration to measurement period times.
Connect Ratio is Equal to IN CCN/ IN CAN	It is the ratio of connecting calls to call attempts of IN callers.
The Measurement for FIN User Interaction	
The Total Number of User Interaction	It is the total number of user interactions. One interaction refers to the dialing of access code (for example, 201), card number, password and called number. Such operations as abandon during dialing, query of balance or password modification are counted as interactions also.
The Cancelled Number by Caller	It is the times of caller hang-ups.
The Traffic Measurement for FIN Call Out Quality	
The Number of Attempting IN Call Out	It refers to the number of intelligent outgoing call attempts, that is, the number of CONNECT messages received by FDPP.
The Number of Connecting IN Call Out	It refers to the number of connected IN calls, that is, the times of callee hearing the ringing tone, including no answer times (DP6), answer times (DP7) and caller hang-up after ringing for less than one minute (DP10 is reported by BCSM instead of DP6).
The Number of Answering IN Call Out	It refers to the number of answered IN calls.
The Time of Connecting IN Call Out	It refers to the duration from callee off-hook to the completion of the calls.
Average Connection Time	It is the ratio of IN outgoing call conversation duration to IN outgoing call attempts.
The Traffic of Answering IN Call Out	It is the ratio of IN outgoing call conversation duration to measurement period.
Connect Ratio1	It is the ratio of connected IN outgoing calls to IN outgoing call attempts.
Connection Ratio2	It is the ratio of answered IN outgoing calls to IN outgoing call attempts.
Routing Selection Fail	It the measurement of DP4.
Callee Busy	It refers to the number of call failures due to called busy.
No Answer	It refers to the number of call failures due to no answer from callee.
FIN Event DP Measurement	
DP1 Number	Number of DP1s within the measurement period
DP2 Number	Number of DP2s within the measurement period
DP3 Number	Number of DP3s within the measurement period

Entity	Description
DP4 Number	Number of DP4s within the measurement period
DP5 Number	Number of DP5s within the measurement period
DP6 Number	Number of DP6s within the measurement period
DP7 Number	Number of DP7s within the measurement period
DP8 Number	Number of DP8s within the measurement period
DP9A Number	Number of DP9s within the measurement period
DP9B Number	Number of DP9Bs within the measurement period
DP10 Number	Number of DP10s within the measurement period
IN Fail Measurement	
Switching Equipment Congestion	The cause code is sent to indicate that the switching equipment is in the heavy-traffic period.
Long Time No Dialing	The cause code is sent when a call is released because the caller does not complete the dialing within the specified time.
Call Out Barring	The cause code is sent when a call is released due to prefix barring, NMS restriction or other service implementation beyond the limitation.
ST Busy	The cause code is sent when a call is released due to called busy in a toll call.
SL Busy	The cause code is sent when a call is released due to called busy in a local call.
Call In Barring	The cause code is sent when a call is released because the callee does not have the authority of receiving incoming calls.
Remote Equipment Congestion	The cause code is sent when backward signal A4 indicating remote equipment congestion is received.
Invalid Code Form	The cause code is sent when a call is released because it is impossible to locate the callee based on the dialed number or the dialed number contains the message inconsistent with the called number.
Unaloc Code	The cause code is sent when a call fails because the called number has not been allocated though the number format is valid.
No Route to Specified Internetwork	The cause code is sent when the equipment receives a request for transferring a call through a specific transit network, but it cannot recognize the network due to the reason that this transit network does not exist or does not provide any service for the equipment. Whether this cause code is supported depends on the network.
No Route to Terminal	The cause code is sent when a call is released because the network the call passes through does not provide the service for the called terminal. Whether this cause code is supported depends on the network.
Send Private Tone	The cause code is sent when a call fails because the special signal tone is sent to the caller.
Error Include Long Distance	The cause code is sent when the called number contains a wrong transit prefix.
Busy	The cause code is sent when the callee is busy.

Entity	Description
Call Rejected	The cause code is sent by the terminal when it does not want to receive the call, though it can. The cause code is generated by the network, indicating that a call is cleared due to the setting of the supplementary service.
Number Changed	The cause code is sent when the called number has been changed. The new called number can be included in the diagnostic field as an optional item. If the network does not support this function, the cause code “129” (unallocated number) will be sent.
Terminal Error	This cause code indicates that a call cannot reach the destination because the interface of the terminating end does not work properly, that is, the signaling message cannot be transmitted to the callee.
Invalid Format or Address Not Enough	It indicates that a call cannot reach the callee because of the erroneous format or incompleteness of the called number.
Facility Rejected	The cause code is sent when the network cannot provide the performance required by the user.
No Route Available	It indicates that there is no appropriate circuit/channel for processing the calls.
Network Error	The cause code is sent when the network cannot find the user data.
Error for The Time Being	The cause code is sent when a temporary fault occurs in the network.
Exchange Facility Surge	The cause code is sent to indicate that the switching equipment is in the heavy-traffic period.
No Route or Circuit Applied Available	The cause code is sent when the interface of the other side cannot provide the circuit or channel required.
No Suitable Service Quality	The cause code is sent when the requested service quality cannot be provided. The service qualities are defined in Recommendation X.213, including the handling capacity or transfer delay supported.
Facility Applied Not Preserved	It indicates that the network cannot provide the required supplementary service because the user has not completed the management procedures necessary for enjoying the service.
CUGIncoming Call Unallow	The cause code is sent when a user is a member of the CUG capable of receiving incoming calls, but this user is not permitted to receive any incoming call.
Bearer Capability Not Permit	The cause code is sent when a user is not permitted to employ the bearer capability that has been provided by the equipment.
No Bearer Capability Available This Time	The cause code is sent when there is no bearer capability available for the time being though the equipment supports it.
Bearer Capability Not Lay Out	The cause code is sent when the equipment does not support the required bearer capability.
Terminal Incompatible	The cause code is sent when the equipment has received a call setup request, but the call has incompatible low-level compatibility, high-level compatibility or other compatibility (for example, data transmission rate).
Timerout	The cause code is sent when the timer times out.

Chapter 6 Handling of Common Problems

6.1 Operation-related Problems

6.1.1 How to Select a Traffic Measurement Task

Usually, you should first determine the type of a traffic measurement task according to the attributes of the measurement object. For example, to measure the outgoing traffic of all the users of an office, obviously, the measurement objects include all the user lines, which means that the measurement is global. Therefore, select the "Total Traffic of the Office Task".

To measure…	Select…	Because…
the calls of several users with the heaviest traffic	Maximum/Minimum Value Task	the measured objects are the busiest users
the CPU occupation ratio of each board	Global Component Task	boards are global components

In some special cases, you can divide a measurement activity into several measurement tasks.

For example, to measure the traffic in a specific office direction, you can create either a bearer traffic task (with “Office Direction Incoming Office Traffic” and “Office Direction Outgoing Office Traffic” as the measurement units) or a call record task (with “Multi Condition Object Traffic” as the measurement unit). In this case, select the most appropriate task with reference to other conditions (for example, the requirements for the measurement object and output entity). If it is necessary to observe the application of a supplementary service, you need to set up a call record task because the default output entities of this task include those reflecting the application state of a supplementary service, such as “New Service Application Success” and “New Service Application Fail”.

6.1.2 How to Select a Measurement Unit

After determining the traffic measurement task, you need to select corresponding measurement units based on the measurement contents.

For example, to measure the internal traffic of all the users in an office, first determine the task type as a "total traffic of the office task", and then select “Fixed User Originating Traffic” as the measurement unit

6.1.3 How to Select a Measurement Object

In some traffic measurement tasks, measurement objects are fixed, such as the measurement object of the "Total Traffic of the Office Task". However, in most of the traffic measurement tasks, the measurement objects can be selected.

Select the measurement objects of a single composition (such as a user, user group or service) based on actual demand or your working habit.

1) Example for actual demand

In the "Supplementary Service Traffic" unit, the object types to be selected include:

- Abbreviated dialing
- Hotline service
- Wakeup service
- Do-not-disturb service

Supposing the abbreviated dialing and wakeup service are the main concern in this measurement, you should add these two object types into the object instance list.

2) Example for working habit

In the "Single User Traffic" unit, a single user is described in three modes:

- Internal code
- External code
- Port number

Select from them based on your working habit.

Note that the same description mode must be selected for the same type of objects in the same task. For example, in a specific task, "User Inner Code" and "User External Code" cannot be used at the same time, and even with the same description mode, the user type must be consistent in the description.

For the combined measurement objects, determine the elements and their description modes usually according to actual demands. If it is unnecessary to match a certain element, select "all…" for this element (such as all objects and all trunk groups). For example, in the "Multi Condition Object Traffic" unit, the measurement object is composed of five parts:

- Inlet
- Outlet
- Call attribute
- Destination code
- Calling number

Supposing the measurement purpose is to check the internal traffic from a certain module to another module, select

- "inlet user MID group" for the inlet description mode
- "outlet user MID group" for the outlet description mode

- “local” for the call attribute
- “all destination codes” for the destination code
- “all calling numbers” for the calling number

Supposing the measurement purpose is to check all the traffic from a specific calling number to a specific destination, type the calling number and destination code according to the measurement requirement and select “all…” for other elements.

6.1.4 How to Determine an Output Entity

By default, all the entities of a task will be outputted. However, in practical application, only some of the entities are concerned, and too many output entities will affect the readability of the output report. Therefore, it is necessary to determine the output entities according to actual demands.

For example, if the purpose of an incoming traffic measurement task is to check the causes of various failures in the call process, you should list these entities in the “selected entity” field:

- Incomplete Dialing Times
- Invalid Address Times
- System Fault Call Loss Times
- Blocked By Auto Call Loss Times

Besides the optional entities, you can also customize an entity for output.

6.2 Application-related Problems

6.2.1 When to Output the Traffic Measurement Results

For most of the traffic measurement tasks, the results cannot be obtained until a measurement period is completed. For example, a task for measuring the incoming traffic of a trunk group is created at 8:50 with the start time set to 9:00 and the measurement period to one hour. The first measurement report will be outputted when a complete period ends, that is, at 10:00. Note: The report is usually outputted at an integer hour. The measurement duration of this task is from 9:00 to 10:00. However, if this task is created at 9:10, the first report will be outputted at 11:00 (because from 9:10 to 10:00 is not a complete measurement period, no measurement report will be outputted for this time segment).

In addition, for a few measurement units such as Service Quality Traffic and Dispersion Duration Traffic, as one report will be outputted for each call which meets the measurement conditions, the measurement period will meaningless and the above problem will not occur.

6.2.2 How to Understand Period-Crossing Traffic Measurement

Take the measurement of the incoming traffic of a trunk group as an example. Either "TKGRP Incoming Office Traffic" of the bearer traffic task or "Multi Condition Object Traffic" of the call record task can be selected as the measurement unit. The difference between them lies in the fact that their measurement methods are essentially different.

The "TKGRP Incoming Office Traffic" measurement is based on the counter, that is, a counter is set at the related position of the service flow during the measurement, and if any corresponding event occurs, the counter will increase by one. While the "Multi Condition Object Traffic" measurement is based on messages, that is, after a conversation ends, the traffic measurement processing program of the corresponding process will send a message to the traffic measurement module to report the information about this call, such as the caller, callee and conversation duration. Usually, the results of the above two measurements are consistent, but if the measurement crosses the period, there are deviations between their measurement results.

Each traffic measurement task has a measurement period. For example, if a measurement task with the measurement period of one hour begins at 9:00, a report will be outputted at 10:00. However, the following cases might occur:

- One call begins at 8:50 and ends at 9: 05
- One call begins at 9:55 and ends at 10:10
- One call begins at 8:55 and ends at 10:05

Such cases are called period-crossing. In the following section, these three cases are analyzed with the "TKGRP Incoming Office Traffic" measurement and "Multi Condition Object Traffic" measurement as examples (suppose only one call is made during the measurement period).

1) 8: 50~9: 05

TKGRP incoming office traffic:

Report time	Number of seizure	Measurement state	Average seizure duration	Remark
9:00	1	Normal	10 minutes	
10:00	0	Normal	0	

Multi condition object traffic:

Report time	Number of seizure	Measurement state	Average seizure duration	Remark
9:00	0	Normal	0	There is no traffic entity in this measurement unit
10:00	1	Normal	15 minutes	

.

2) 9: 55~10:10

This case is similar to that of 8:50~9:05.

3) 8: 55~10:05

TKGRP incoming office traffic:

Report time	Number of seizure	Measurement state	Average seizure duration	Remark
9:00	1	Normal	5 minutes	
10:00	0	Normal	0	
11:00	0	Normal	0	

Multi condition object traffic:

Report time	Number of seizure	Measurement state	Average seizure duration	Remark
9:00	0	Normal	0	
10:00	0	Normal	0	
11:00	1	Normal	1 hour and 10 minutes	

Obviously, these measurement methods have reflected the call information from different aspects. If period-crossing calls frequently occur, the traffic measurement results might be unreasonable, for example, there is traffic but no seizure, or the average seizure duration lasts too long, even beyond the measurement period. All these problems are caused by the measurement of period-crossing calls. In some cases, you can solve these problems by extending the measurement period, but they cannot be eliminated completely, for the specific call time cannot be controlled. In addition, the traffic during the common measurement period cannot be reflected after the measurement period is extended, therefore, the office maintenance and management will be affected. Actually, it is not an error if the period-crossing call affects the measurement result; instead, it is an objective reflection which is decided by the current measurement mechanism. It also indicates that there are different measurement methods for various traffic measurement tasks, and you cannot just compare the results simply.

6.2.3 Measurement Methods for Seizure Times, Seizure Traffic and Average Seizure Duration and Their Relations

Take the TKGRP incoming office traffic measurement as an example.

Seizure times refer to the number of seizure attempts of incoming or bi-directional trunk circuits.

Seizure traffic refers to the traffic from the time when incoming/bi-directional trunk circuits are seized to the time when they are released.

Measurement period refers to the period for outputting a measurement report, which is usually set to one hour.

Average seizure duration refers to the average duration from the seizure of trunk circuits to the release of them in a measurement period, which can be calculated by the following formula:

Average seizure duration = Seizure traffic * Measurement period / Seizure times

Traffic: It is the ratio of the duration for processing calls by the equipment to the total duration. It has no unit and is expressed in Erl.

1) Measurement of seizure times

This measurement can be implemented by a counter, which indicates the number of seizures on the corresponding software flow points and accumulates the seizures. For example, if a trunk circuit is seized once, the counter will increase by one. The traffic measurement module accesses this counter twice respectively at the beginning and ending of the measurement period, and the difference between them is the seizure times in this measurement period. As the difference is to be calculated, the measurement result cannot be sent out before a complete measurement period ends in most of the traffic measurement tasks.

2) Measurement of seizure traffic

This measurement can be implemented by the scanning of the assistant seizure traffic. The assistant seizure traffic at the corresponding software flow point will be added or subtracted. That is, if a trunk circuit is seized once, “1” will be added and if a trunk circuit is released once, “1” will be subtracted from the auxiliary traffic. Obviously, this variable reflects altogether how many trunk circuits are seized within a certain time segment. The timing task of traffic measurement scans this variable every 10 seconds and accumulates it into the seizure traffic. When the measurement period ends, the seizure traffic is the product of sum of assistant seizure traffic * scanning duration (10 seconds) / total duration (measurement period).

For example, if there are total 10 trunk circuits in a trunk group, when the variable is scanned at 10, 20, 30, 40, 50 or 60 seconds in one minute, the assistant seizure traffic is respectively 2, 4, 7, 9, 5 and 1. So, the traffic is calculated as follows: (2+4+7+9+5+1)*10/60 = 4.83.

It should be noted that if the assistant seizure traffic is scanned every 10 seconds, while the calculation formula takes it for granted that the circuit is always seized during the 10 seconds, there certainly are some deviations. In addition, seizure traffic refers to the total traffic of the trunk group, so it might be greater than 1 but must be smaller than the number of total trunk circuits in the trunk group. To ensure data accuracy, the foreground usually multiples the traffic by 100 and then sends the result to the BAM,

which will then divide the traffic by 100 and show the figure with two digits of the decimal fractions being attached.

3) Measurement of average seizure duration

The formula for average seizure duration has been given above. The following case might occur during calculation: If a trunk group incoming office traffic measurement task is set up with the measurement period of one minute, and the measurement object is an incoming trunk group with 10 trunk circuits that are always seized, then what are seizure times, seizure traffic and average seizure duration? In a certain period (60 seconds, for example), as all the trunk circuits are seized, no event of trunk circuit seizure will occur, the seizure times is 0, while the assistant seizure traffic is always 10, therefore, the traffic is also (10*6) *10/60=10. The seizure duration worked out by the foreground is 10*60=600 seconds, but as number of seizures is 0, the average seizure duration is 0.

6.2.4 Some Special Cases of Traffic Measurement

Sometimes, the following cases might appear in the traffic measurement result:

- Seizure times are less than connection times and answer times.
- Connection times are less than answer times.
- There is no seizure, connections and answers but there are seizure traffic, connection traffic and answer traffic.

These problems do not mean that there is something wrong with the traffic measurement. The reason could be as follows: A call which seizes the trunk in a period might not be connected and answered until the next period, for the dialing process might cover two periods. A call connected in a period might not be answered until the next period. If the call duration exceeds one period, there might be no number of seizures, connections and answers but there are seizure, connection and answer traffic.

6.2.5 Inaccurate Traffic Measurement Caused by Modification of Trunk Group Data

The TKGRP outgoing office traffic measurement is a bearer traffic task. When creating this task, set up the measurement object according to the selected trunk group and the trunk group table index in the database and allocate the counters for the measurement. After a task is created successfully, these objects and counters will not change within a measurement period. When the next measurement period begins, the measurement object will be set up again according to the trunk group table index in the database and the counters for measurement will be reallocated.

Suppose there is a created measurement task: The measurement starts at 10:00 with the measurement period of 1 hour. If the trunk group data is modified during 10:00~11:00, for example, a trunk group is added or deleted, the trunk group table

index in the database will change accordingly, but the measurement objects and counters will not change, causing that the entire measurement result is rather random and cannot reflect the actual situation. The “Result accuracy” item in the report outputted at 11:00 will also be displayed as “Data setting”, indicating that the traffic measurement result is inaccurate. In the next measurement period (11:00~12:00), the system will set up the measurement object again according to the trunk group table index in the database and allocate counters for measurement. Therefore, the measurement result in this period will be correct and “Result accuracy” in the report outputted at 12:00 will be “Accurate”.

6.2.6 Causes for Incomplete Traffic Measurement

The BAM will work out the results which should be outputted for a traffic measurement task based on the number of measurement subtasks and modules. If the reports cannot be received completely in a specified delayed time (usually 15 minutes) after the measurement period ends, the received results will be outputted and the accuracy will be marked as “Result received incompletely”. Because part of the results is missing, the report will be inaccurate.

This problem might be caused by:

- A certain board is faulty, not activated or is congested.
- A certain board is switched or reset during the measurement period.
- A task which will generate a great deal of traffic measurement results has been registered, such as service quality traffic.
- If the BAM traffic measurement console is abnormal, the traffic measurement data cannot be received. To resolve the problem, just restart the traffic measurement console.

6.2.7 Use of the Service Quality Traffic Measurement

The service quality traffic measurement is unique because it has no measurement period. Once there is a call meeting the measurement conditions, a report will be sent to the BAM so as to output the call information in real time. If all inlets, all outlets, all call attributes, all destination codes, all successful and failed calls are selected as the combined measurement objects, a measurement result will be generated for each call, thus causing BAM overload and communication congestion. Therefore, be cautious in using this traffic measurement. If it is used, the range of measurement objects should be restricted, for example, a specific incoming trunk group is selected as the inlet, or a specific destination code is selected as the outlet. In addition, you can also set sampling times or sampling rate to reduce the output amount.

6.2.8 Precautions in Using Max/Min Value Traffic Measurement

The maximum/minimum value traffic measurement is a powerful tool for improving the call completion ratio. Pay attention to the following points when using it.

1) The measurement must begin at the reset time of max/min values (4:00 by default) and end at the report output time. For example, if a task to measure the max/min traffic of top busy called users is created with the start time of 8:00, the end time of 10:00, and the measurement period of one hour, there will be two time points at which a report will be outputted everyday, that is, 9:00 and 10:00. The report outputted at 9:00 lists the top 10 busy called users during 4:00~9:00, while the report outputted at 10:00 lists the top 10 busy called users during 4:00~10:00.
2) The reason why this measurement must begin at the reset time of max/min values is that the measurement must be performed continuously to all users of a board, so a great deal of memory overhead is needed, and the result is not obtained from the difference between the values of two counters (for ordinary measurement entities), instead, it is obtained through counter accumulation. As the max/min value traffic measurement needs continuous sorting, which causes heavy load to the system, it is better not to perform this measurement for a long time.
3) To perform the max/min value traffic measurement within a certain time segment, for example, during 9:00~10:00, you can carry out the **SET TRFTPTM** command to set the reset time of max/min values to 9:00.

6.2.9 Why “Answer Times + Failure Times < Number of Call Attempts (Seizures)”

In such measurement as “TKGRP Outgoing Office Traffic”, “TKGRP Incoming Office Traffic”, “Office Direction Outgoing Office Traffic” or “Office Direction Incoming Office Traffic”, only main causes for failures are given in failure times, that is to say, the measurement of failure times is incomplete, therefore, the sum of answer times and failure times is less than the number of call attempts. To obtain the total failure times, use the “Multi Condition Object Traffic” measurement unit which measures all the failure causes, that is, answer times + failure times = number of call attempts.

6.2.10 Traffic Measurement during Version Upgrade

Record and then delete all traffic measurement tasks before version upgrade. Reestablish them after the upgrade is completed and the boards work normally.

Appendix A List of Traffic Measurement Commands

Type	Command Function	Command
Creation of traffic measurement task	Create a “total traffic of the office task”	CRE TRFOTF
	Create a “bearer traffic task”	CRE TRFCROBJ
	Create a “global component task”	CRE TRFCCP
	Create a “signaling and interface task”	CRE TRFSID
	Create a “call record task”	CRE TRFCLR
	Create a “maximum/minimum value task”	CRE TRFMVA
	Create an “intelligent service task”	CRE TRFIN
Deletion of traffic measurement task	Delete a traffic measurement task	DEL TRFTSK
Modification of traffic measurement task	Modify name of a traffic measurement task	MOD TSKNAME
	Modify time information of a traffic measurement task	MOD TRFTM
	Modify normal output entities of a traffic measurement task	MOD TRFOENT
	Modify sampling parameters of a traffic measurement task	MOD TRFSMP
	Modify output equipment of traffic measurement results	MOD TRFOPD
	Modify output mode of traffic measurement results	MOD TRFOPM
Query of traffic measurement task	List traffic measurement task information	LST TRFINF
	List traffic measurement report	LST TRFRPT
Maintenance of traffic measurement task	Activate a traffic measurement task	ACT TRFTSK
	Deactivate a traffic measurement task	DEA TRFTSK
	Dump traffic measurement results	DMP TRFRST
	Set reset time of a max/min value traffic measurement task	SET TRFTPTM

Type	Command Function	Command
	Display reset time of a max/min value traffic measurement task	DSP TRFTPTM
Management of measurement object	Add measurement object(s) for a traffic measurement task	ADD TRFOBJ
	Delete measurement object(s) of a traffic measurement task	RMV TRFOBJ
Customization of measurement entity	Set a custom measurement entity	SET CUSTENT
	Delete a custom measurement entity	DEL CUSTENT
	List custom measurement entities	LST CUSTENT
	Modify a custom measurement entity	MOD CUSTENT
Management of threshold	Set threshold for a custom measurement entity	SET TRFTHD
	Delete threshold of a custom measurement entity	DEL TRFTHD
	List threshold of a custom measurement entity	LST TRFTHD
Management of trunk group set	Set a trunk group set	SET TKSET
	Add a trunk group set	ADD TKSET
	List trunk group set	LST TKSET

Appendix B Acronyms and Abbreviations

Abbreviation	Full Expression
A	
AMG	Access Media Gateway
B	
BAM	Back Administration Module
BHCA	Busy Hour Call Attempt
BSGI	Broadband Signaling Gateway Unit
C	
CID	Caller ID Display
F	
FCCU	Fixed Calling Control Unit
FCSU	Fixed Calling Control Unit and Signaling process Unit
H	
H.248	H.248/MECAMGO protocol
I	
IAD	Integrated Access Device
IFMI	IP Forward Module
ISUP	ISDN User Part
IUA	ISDN Q.921-User Adaptation Layer
M	
M2UA	Message Transfer Part 2 (MTP2) -User Adaptation Layer
M3UA	Message Transfer Part 3 (MTP3) -User Adaptation Layer
MGW	Media Gateway
MGCP	Media Gateway Control Protocol
MML	Man Machine Language
MRCA	Media Resource Control Unit
MSGI	Multimedia Signaling Gateway Unit
MTP	Message Transfer Part
P	
PRA	Primary Rate Adaptation

Abbreviation	Full Expression
S	
SCCP	Signaling Connection and Control Part
SCP	Service Control Point
SoftX3000	-
SSP	Service Switch Point
T	
TCAP	Transaction Capabilities Application Part
TMG	Trunk Media Gateway
U	
UDP	User Datagram Protocol
V	
V5UA	V5.2-User Adaptation Layer