User Manual

Version 3.12

connmove GmbH
Version: 3.12

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Introduction

You undoubtedly use your SAP systems to map critical business processes. And you want these processes to be available when you need them and deliver the quality you expect. From an IT perspective, this service is built on different components: infrastructure, hardware, and software. Each component has to contribute its share to making the business process available.

Microsoft System Center Operation Manager (SCOM) is a powerful tool that was developed to allow you to monitor every single component and to guarantee the availability of your services.

cmWatcher now also allows you to reliably and easily integrate your SAP monitoring with SCOM.

This document provides recommendations for the architecture, installation, and configuration of cmWatcher.

cmWatcher Blog

Visit our blog for cmWatcher. There you can obtain more information about new updates.

http://www.connmove.eu/category/knowledge

System Requirements

cmWatcher requires the following software components:

Component	cmWatcher Client	cmWatcher Server
Operating System	Windows XP or later; 32-bit or x64	Windows Server 2003 SP2 x64 Standard or later
MS SQL Server		SQL Server 2008. Standard or later
.NET Framework	4.0 Framework + Net 4.0 Client Profile English	4.0 Framework + Net 4.0 Client Profile English
librfc32.dll	librfc32.dll 32-bit or x64 – depending on the installed version Version 7200.0.91.6903 or later	librfc32.dll x64 Version 7200.0.91.6903 or later
SAP system to be integrated	-	SAP 4.6 or later
Microsoft System Center Operation Manager	-	2007 R0 or later

You can go to www.microsoft.com to download .NET Framework free of charge.

SAP customers can visit https://service.sap.com/swdc to obtain the librfc32.dll file as part of the SAP kernel.

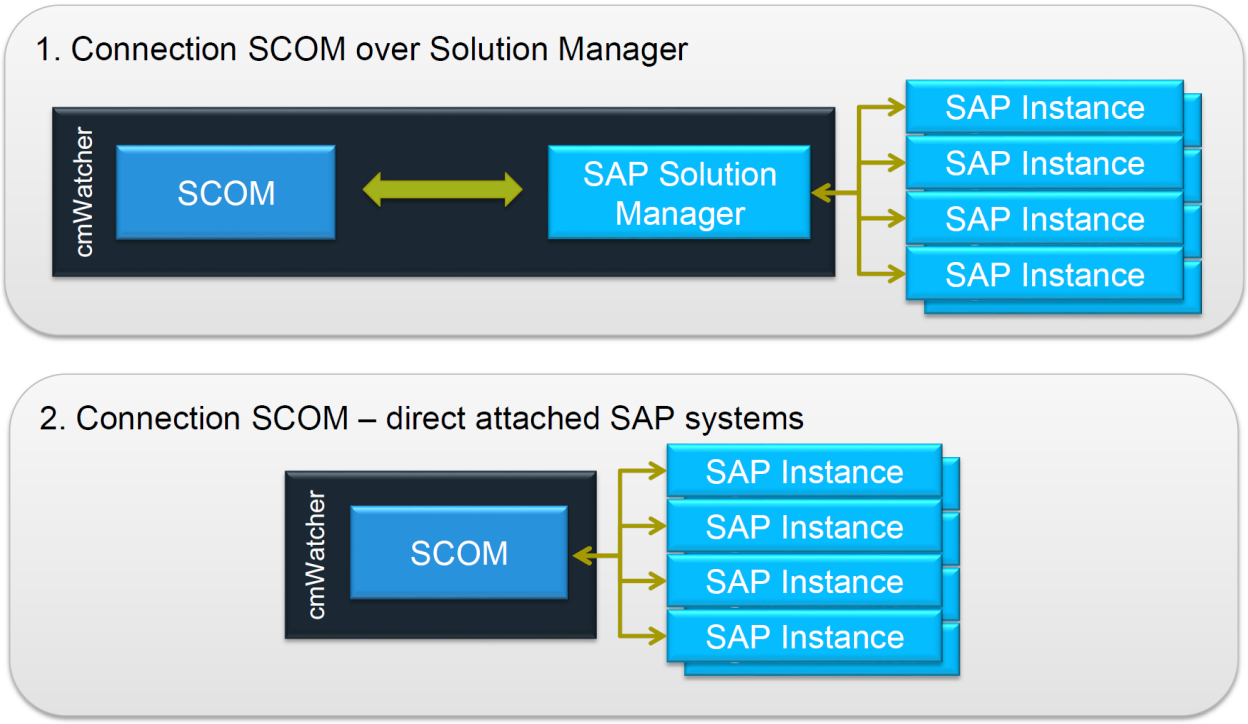
For more information on approved software components and versions, please contact connmove.

Architecture Recommendations

Integration with SAP

The integration with SAP is carried out using remote function calls (RFC). The cmWatcher service uses a predefined SAP user to log on to the SAP system and reads the monitors you have subscribed to.

The time zones of the cmWorker and the SAP server should be identical.



Integration with SCOM

The integration with SCOM is based on the SCOM SDK interface. This interface is always active on the SCOM server that hosts the Root Management Server (RMS) role.

cmWatcher supports multiple SCOM servers and will automatically connect with the server with the active RMS.

High Availability Concept

In order to ensure high availability for cmWatcher, you will need to secure the cmWorker component and the cmWatcher database.

cmWatcher can be run in a Microsoft Windows Failover Cluster. At the moment, however, this type of installation requires the approval and support of connmove or its partners.

The same applies to the integration of cmWatcher with mirrored cmWatcher SQL Server databases.

The integration with the SAP system can be configured for high availability using logon groups. This not only ensures the balancing of the load but also the automatic logon to the available application server.

Multiple SCOM servers can be defined for the SCOM integration. cmWatcher will then automatically try to establish a connection with one of the defined SCOM servers at regular intervals.

If a connection failure is detected, cmWatcher will automatically attempt to connect with the different systems.

Architecture Recommendations

- Determine your high availability requirements.
- Consider the installation of cmWatcher in a Microsoft Failover Cluster.
- Consider using a virtual machine for cmWatcher and secure it using the available high availability solutions.
- cmWatcher will require about 10% of your CPU resources. If these resources are available on the RMS, use it to install cmWatcher and take advantage of the high availability approach employed in this context.

connmove will be happy to perform an accurate sizing upon request.

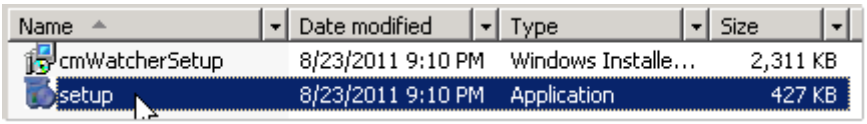
Installation

cmWorker Installation

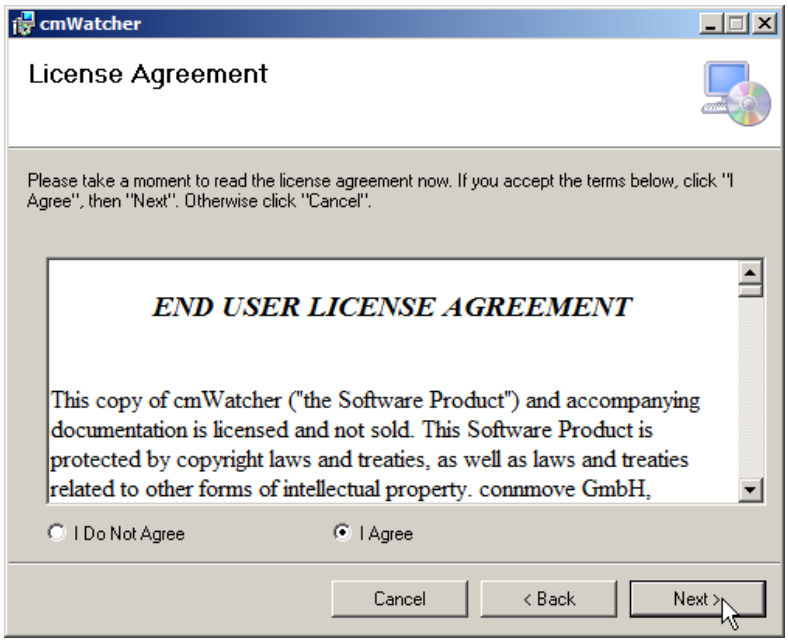
Before starting the installation, please make sure that the system requirements are met.

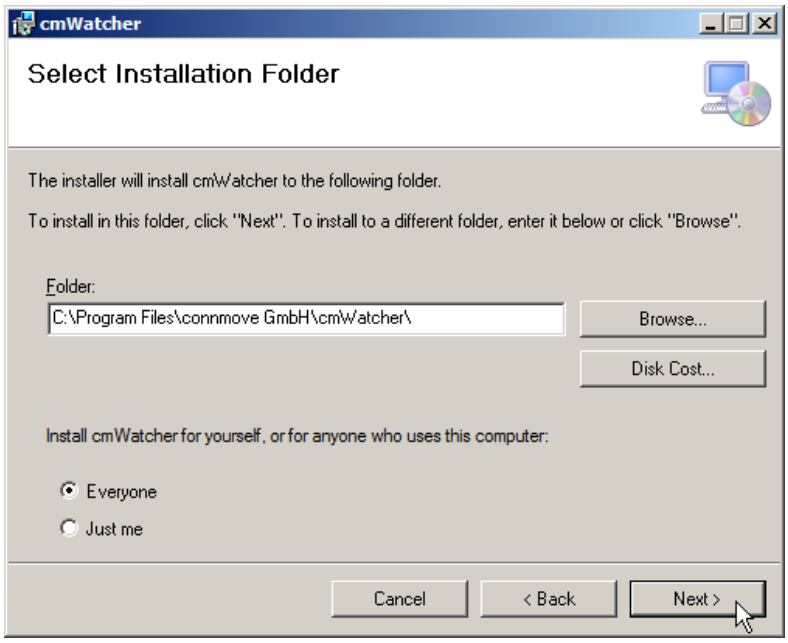
Then proceed with the installation.

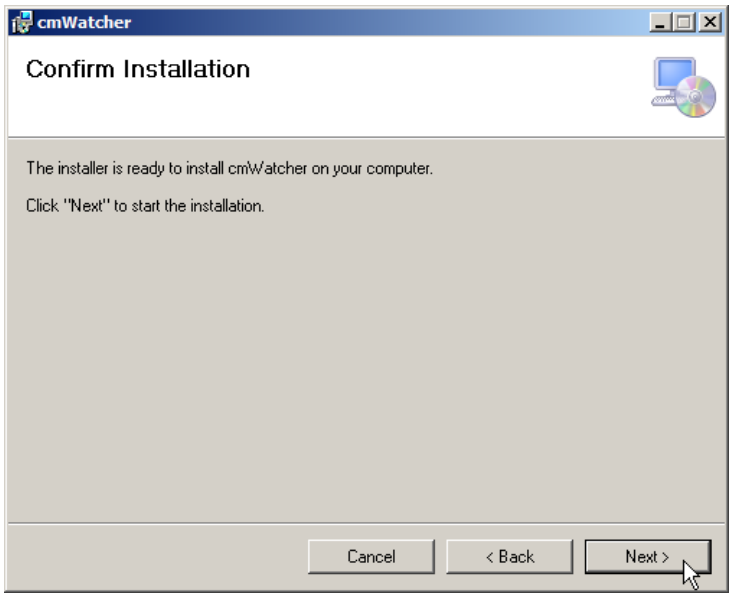
cmWatcher is delivered to you as a zip file. Unzip the file, then select and run the setup.exe file.



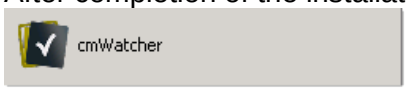
The setup wizard will guide you through the installation:


cmWatcher
License Agreement
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
END USER LICENSE AGREEMENT
This copy of cmWatcher ("the Software Product") and accompanying documentation is licensed and not sold. This Software Product is protected by copyright laws and treaties, as well as laws and treaties related to other forms of intellectual property. connmove GmbH,
I Do Not Agree
I Agree
Cancel
< Back
Next >

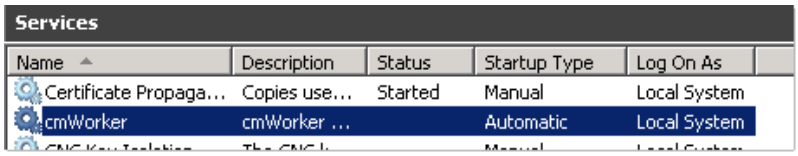

cmWatcher
Select Installation Folder
The installer will install cmWatcher to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\connmove GmbH\cmWatcher\
Browse...
Disk Cost...
Install cmWatcher for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >



After completion of the installation, a cmWatcher shortcut will be added to the Start menu.



In addition to that, a Windows Service was installed:



Post-Installation Configuration

After the installation, set the startup type to "Automatic".

Now copy the x64-bit version of the librfc32.dll into the cmWatcher directory you specified during the installation. Make sure that you use a recent version of the librfc32.dll. The cmWorker service could terminate if you use an older version. Please use version 7200.0.91.6903 or later.

cmWatcher GUI Installation

The cmWatcher GUI can be installed on any Windows system. To do so, use the "cmWatcherSetupGUI" setup.

This will install a cmWatcher GUI for x32 and x64 Windows systems.

Initial Configuration

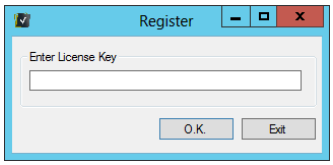
If you want users to be able to modify the "cmWatcherSettings" file without being assigned an "Administrator" authorization in Windows, you will need to adjust the role privileges for the folder

Programs\connmove GmbH\cmWatcher. This file contains the access data for the database that is used by the cmWatcher service.

You will be asked to provide a license key when you launch cmWatcher for the first time.

Both cmWatcher and cmWorker require a valid license key. Please contact your connmove representative for a demo license or a general license.

Activating the License

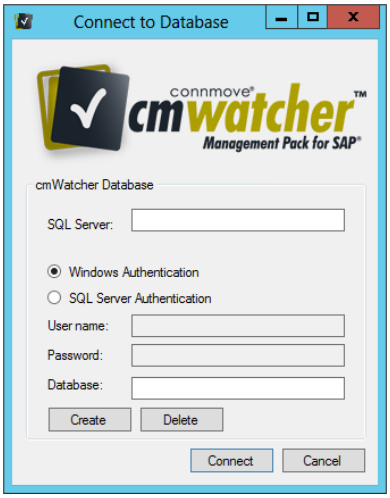


Copy the license key that was provided to you, paste it into the corresponding field and click "O.K.". The system will verify the key and start the cmWatcher application.

Creating the cmWatcher Database

cmWatcher uses an SQL Server 2008 (or later) database for its configuration management.

cmWatcher will automatically create the database and needs the corresponding rights to do so.

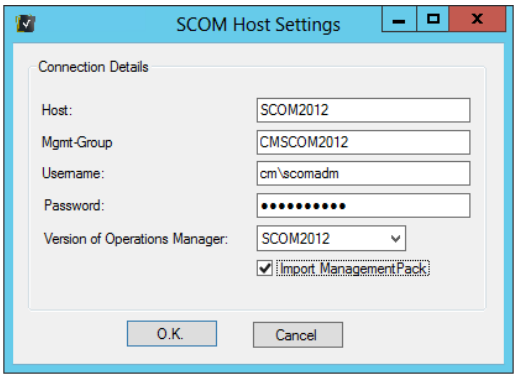


Specify the SQL Server instance and select the type of authentication.

Field / Selection	Description
Create	Database is created
Delete	Database is deleted
Connect	Connects to the database

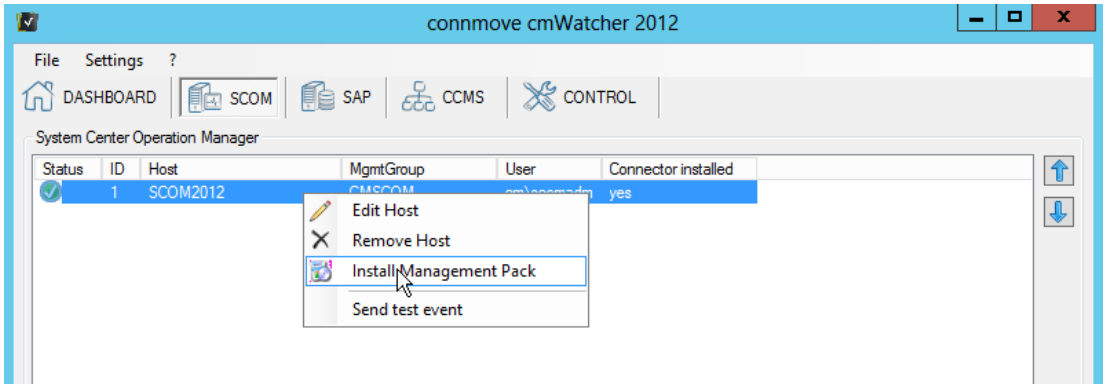
SCOM Integration

To configure the SCOM integration, go to the “SCOM” tab and click on the “Add System” button.



Field / Selection	Description	Required field
Host	SCOM Root Management Server	yes
Mgmt-Group	Management Group	yes
Username	Users with SCOM authorizations (Must be a member of the "Operations Manager Administrators" role)	yes
Password	Password	yes
Version of SCOM	Choose your SCOM Version	yes
Import Management Pack	If it is checked the Management Pack will be imported in your System.	no

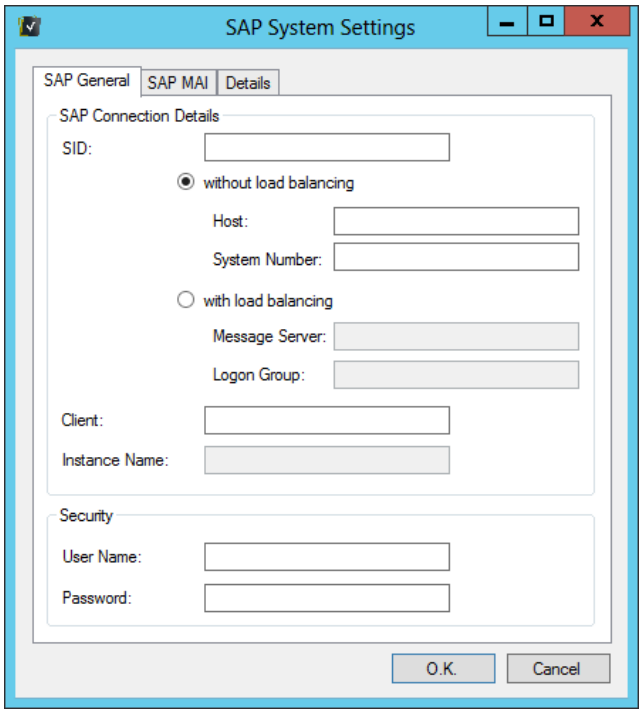
You can import the cmWatcher Management Pack using the context menu:



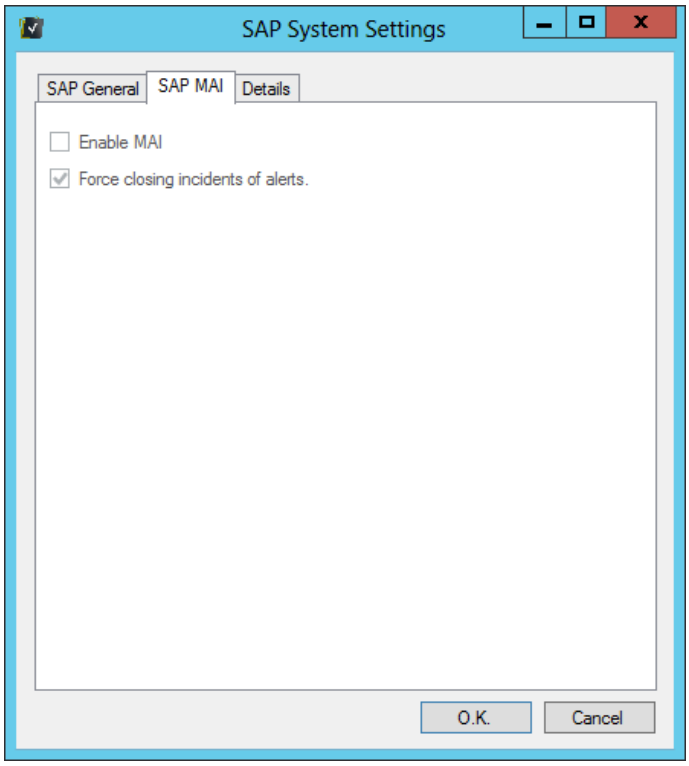
SAP Integration

In order to add an SAP system to cmWatcher, go to the “SAP” tab and click on the “Add SAP System” button.

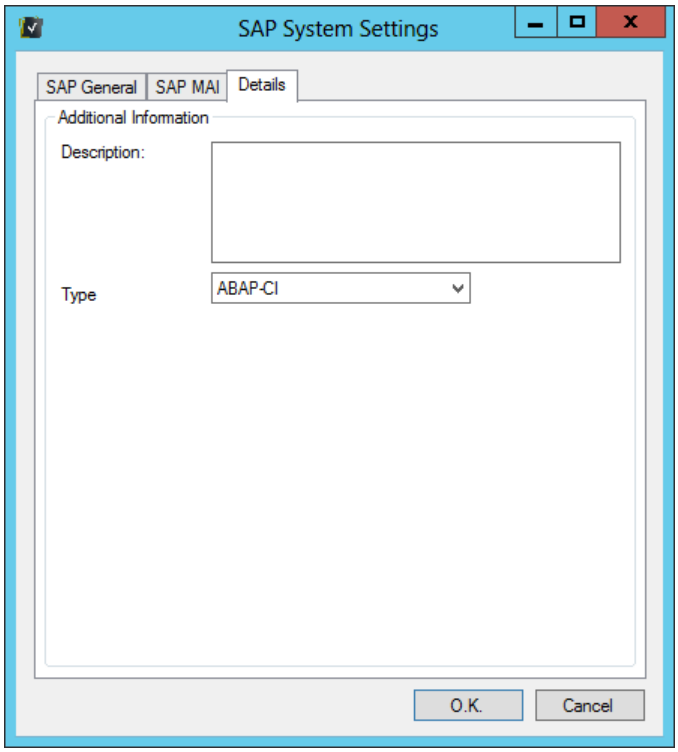
Fill in the fields and click "O.K.".



Field / Selection	Description	Required field
SID	SID	yes
Host	SAP host name	yes, without load balancing
System Number	Instance number	yes, without load balancing
Messageserver		yes, with load balancing
Logongroup		yes, with load balancing
Client	Client	yes
Username	SAP user	yes
Password	Password	yes



Field / Selection	Description	Required field
Enable MAI	Enable / disable MAI interface	yes
Force closing incidents of alerts	Alerts with open incidents can only be closed if this option is enabled.	no



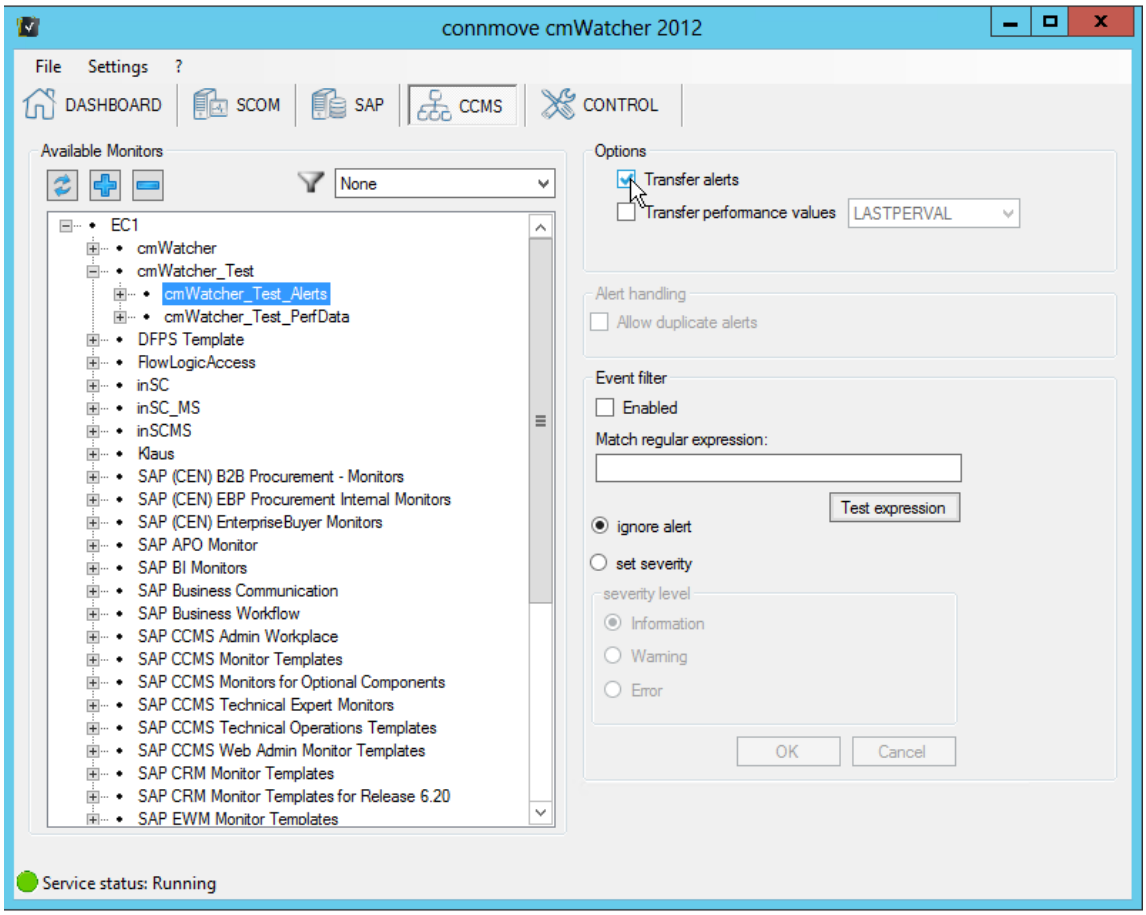
Field / Selection	Description	Required field
Description		
Type	Instance type	

Make sure that the user has the required permissions to access the CCMS. A description of the rights that the user needs can be found here.

You can now test the connection to the SAP system.

Subscribing to CCMS Monitors

Go to the “CCMS” tab.



The "Available Monitors" section on the screen displays the CCMS monitors of each SAP system in a tree structure.

The right hand side displays the different options you can choose for the selected node.

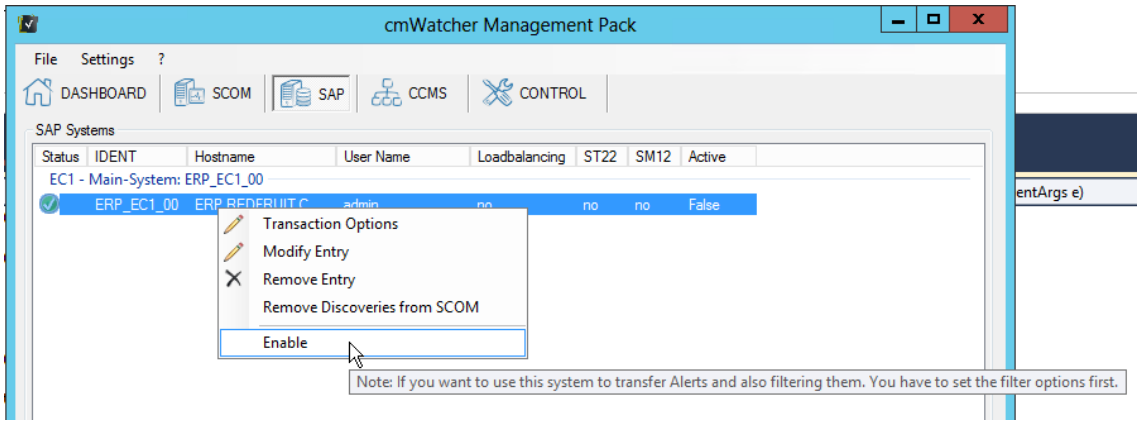
Options:

- Transfer alerts
  Available for nodes on the 3rd level
- Transfer performance values
  Available for nodes on the 3rd level

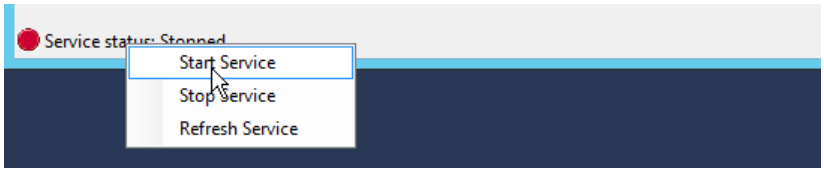
- Allow duplicate alerts
  Available for monitoring objects (leaf nodes)
- Event filters
  Available for nodes on the 1st, 2nd, and 3rd level and for monitoring objects (leaf nodes)

Select the desired monitor and choose "Transfer alerts".

Now you can enable the corresponding SAP system.



Start the cmWorker service.



This completes the initial configuration.

Administration

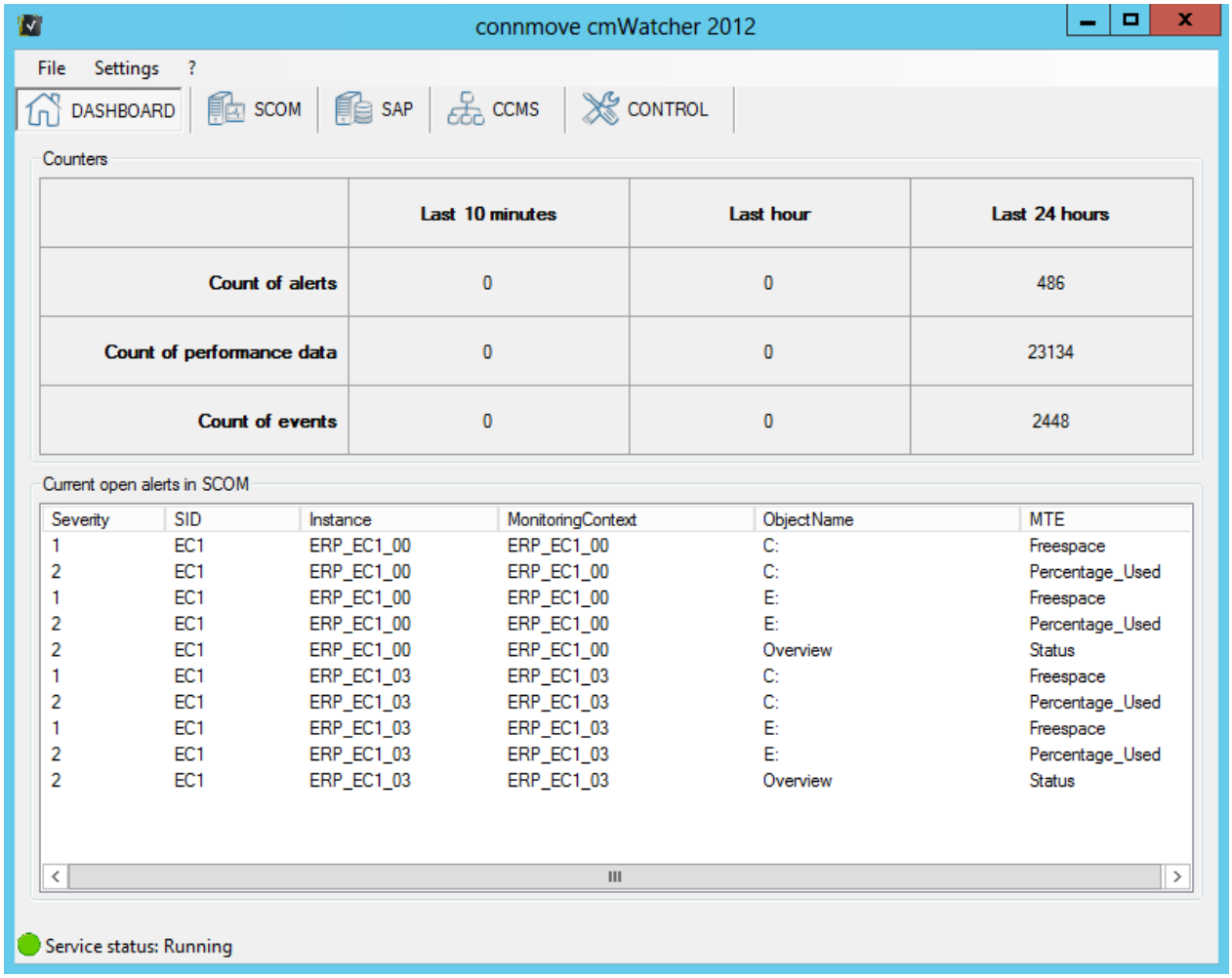
Navigating the cmWatcher GUI

The cmWatcher interface is divided into five sections:

- **Dashboard**
  Displays an overview of how many events and performance values are transferred to Operations Manager. It also displays open alerts in Operations Manager.
- **SCOM**
  List of all SCOM systems
- **SAP**
  List of all SAP systems.
- **CCMS**
  Selection of the monitors and performance attributes to be displayed in SCOM.
  Options for filtering and allowing duplicate alerts.
- **Control**
  Additional settings.

Dashboard

The dashboard is your cmWatcher entry point. It provides you with an overview of the open alerts in SCOM and features counters for the transferred data.



SCOM

A list of the created SCOM systems.

Right-click on an entry to open the context menu. It provides the following options:

- Edit Host
- Remove Host
- Install Management Pack
- Send test event

When adding multiple SCOM systems, please make sure that they belong to the same management group. You can use the arrows to the right of the list to set the priority of the systems. The system with a stable connection that is closest to the top will be used.

SAP

A list of the configured SAP systems and an overview of the functions that are active.

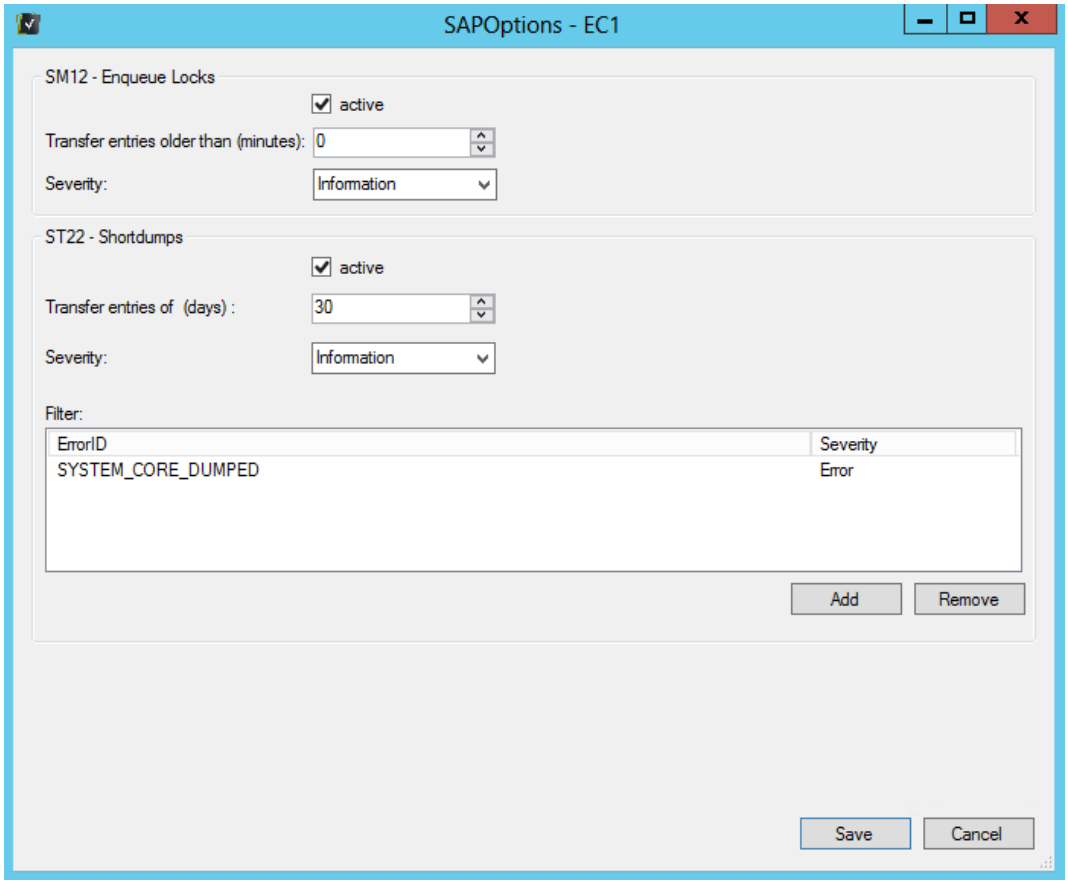
Right-click on an entry to open the context menu. It provides the following options:

- Transactions Options
- Modify Entry

- Remove Entry
- Remove Discoveries from SCOM
- Enable / Disable

TransactionsOptions

Additional functions that can be activated for an SAP system.



SM12:

Checks whether locked entries exist. An alert is created in SCOM for each locked entry.

Field / Selection	Description	Required field
active	Activation status of a function	
Transfer entries older than x minutes		
Severity		

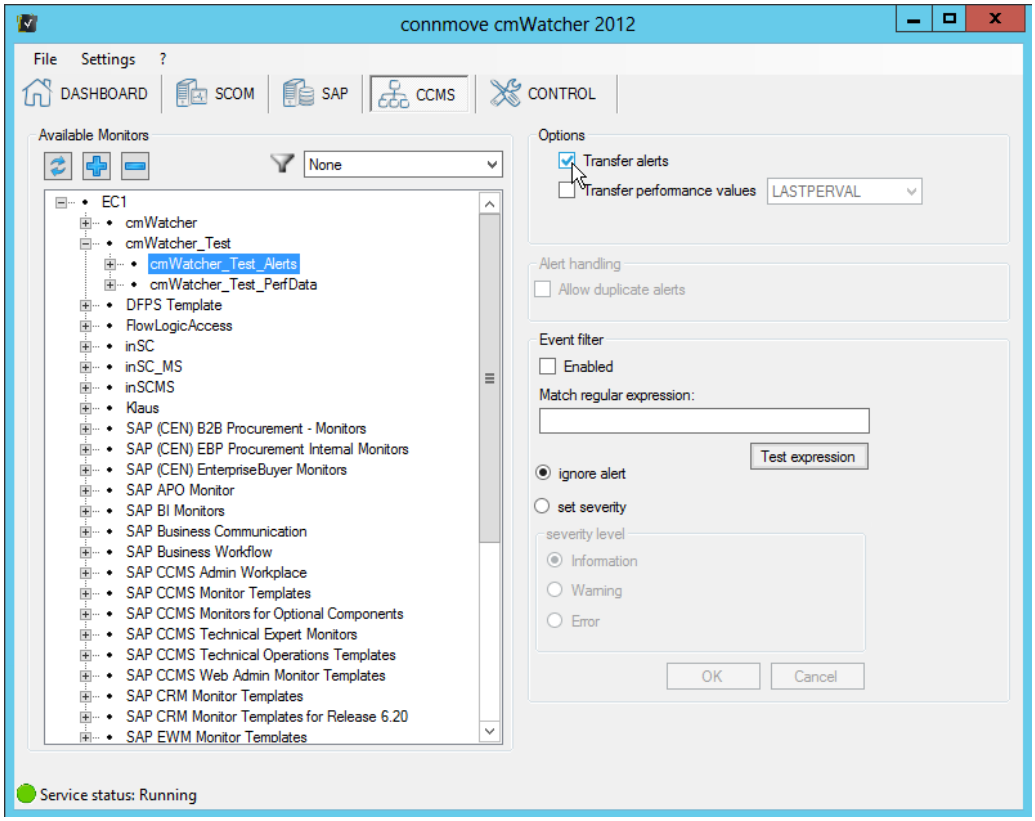
ST22:

Checks whether dumps exist. An alert is created in SCOM for each dump.

Field / Selection	Description	Required field

active	Activation status of a function
Transfer entries of last x days	
Severity	
Filter	

Monitor SAP Systems with CCMS interface



Transfer alerts / performance values

In the CCMS, you can subscribe to those monitors in SAP for which you want alerts and/or performance values to be displayed in SCOM. These options are available if you select a 3rd level node (SID->MonitorSet->**MonitorName**). If you want to transfer performance values, you can select which value you want to transfer:

- Recently reported value (LASTPERVAL, structure BAPIPACVAL)
- Average of the last minute (AVG01PVAL)
- Average of the last five minutes (AVG05PVAL)
- Average of the last fifteen minutes (AVG15PVAL)

Event filter

You can set a filter for the monitors you have subscribed to. The filters use regular expressions and are applied to the MSG field (structure: BAPIALEXT) in the SAP system. This option is available if you select a node on the 1st, 2nd, or 3rd level or for a monitoring object (leaf node)

Description of MSG: Expanded message (including the resolved parameters) for external tools[1]

Based on this selection you can now define the action to be taken.

- ignore alert
- set severity

For more information on regular expressions and their use, please go to:
http://en.wikipedia.org/wiki/Regular_expression
http://msdn.microsoft.com/en-us/library/az24scfc.aspx

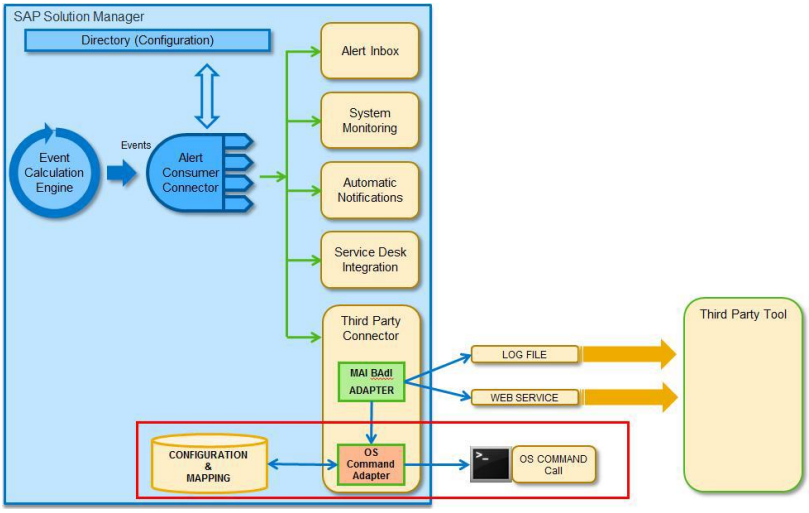
[1] XAL External Interface for Alert Management Version 1.0

Alert handling

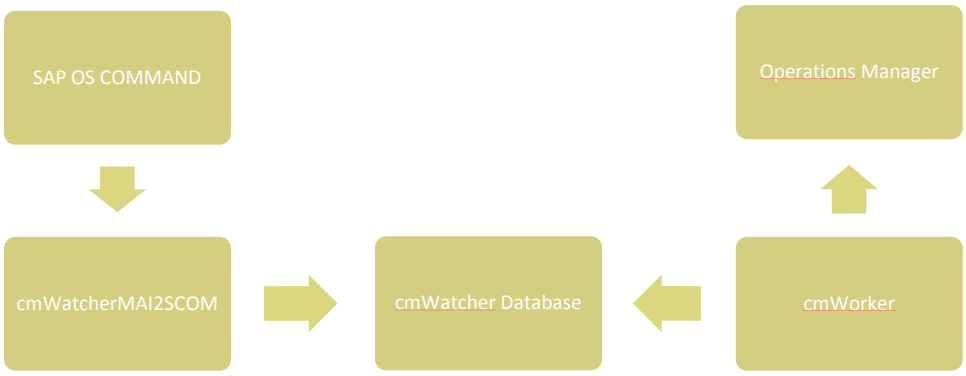
In the default configuration, only one alert per event is created in SCOM by cmWatcher. All others are transferred as events, no other alerts are created. If you want an alert to be created for each event, use this option. This option is available when you select a monitoring object (leaf node).

Monitor SAP systems with MAI (Monitoring and Alerting Infrastructure) interface

MAI (Monitoring and Alerting Infrastructure) is a new monitoring feature of SAP Solution Manager 7.0 and above. MAI supports E2E Monitoring and exists alongside the current SAP CCMS.



Solution Manager provides different interfaces for the communication with external applications. We use the OS Command Adapter for transferring the MAI alerts to cmWatcher.



If an alert appears, it triggers the SAP OS COMMAND adapter to execute our cmWatcherMAI2SCOM tool. Our tool stores the transferred alert data in the cmWatcher database. The cmWorker service reads the alerts from the database and creates the alerts in the Operations Manager.

Enable MAI 3rd party interface in SAP Solution Manager

1. Prerequisites

This configuration description applies only if your SAP system is running on a Windows server. For non Windows server see http://connmove.eu/configuration-mai-on-non-windows-servers.

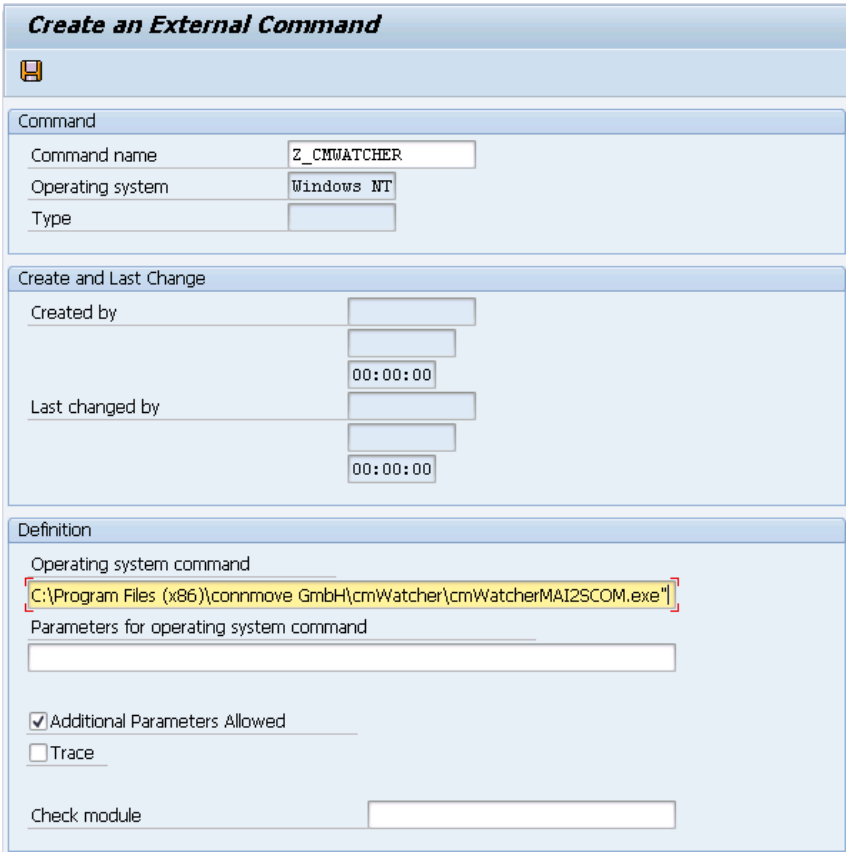
Install your cmWatcher (x86 or x64) version on the same server as your SAP Solution Manager.

If you have not yet configured the connection to the database for this installation, open the programs folder of cmWatcher and execute cmWatcherMAI2SCOM.exe.

The form for specifying the database settings will appear. Fill out the form and click *Connect*. Note that cmWatcherMAI2SCOM.exe will be executed by your SAP system as an external command. This means it will run within the user context of the OS user who is being used for the SAP instance service and the SAP work processes. If you have configured your database connection to use *Windows Authentication,* you will need to make sure that the OS user running the SAP work processes has the respective privileges.

2. Configure Solution Manager MAI interface

Log on to Solution Manager using SAPGUI, open transaction SM49 (External Operating System Commands) and create a new entry. Set the command name and the path to cmWatcherMAI2SCOM.exe. The *Additional Parameters Allowed* option must be checked.



Configure your SAP system as described in "*HOW-TO GUIDE OS Command Adapter.pdf*" (*http://wiki.scn.sap.com/wiki/download/attachments/290979852/HOW-TO%20GUIDE%20OS%20Command%20Adapter.pdf?version=1&modificationDate=1373021810000&api=v2*). Set the external command which you have just created as described in section 3.1.1.

Section 3.1.2 (OS Command Parameters) describes how to configure the parameters for:

Configuration ID	Extra key combination
MAI_OS_CMD_CONFIG	CONFIG_TYPE = PARAMETERS ; FILTER_VALUE = OS_CMD_REACT
MAI_OS_CMD_CONFIG	CONFIG_TYPE = PARAMETERS ; FILTER_VALUE = OS_CMD_REACT_CLOSE

For the configuration of the parameters we have prepared an XML file. This must be adapted to your system. Open the file CmWatcherMAIConfig_Win.xml from the program directory of cmWatcher and scroll down to the bottom. You will find an entry similar to this:

```
<AGS_SISE_GS_S_KEY_VALUE>
  <NAME>18;SID</NAME>
  <VALUE>"SID"</VALUE>
  <IS_SECURE />
</AGS_SISE_GS_S_KEY_VALUE>
```

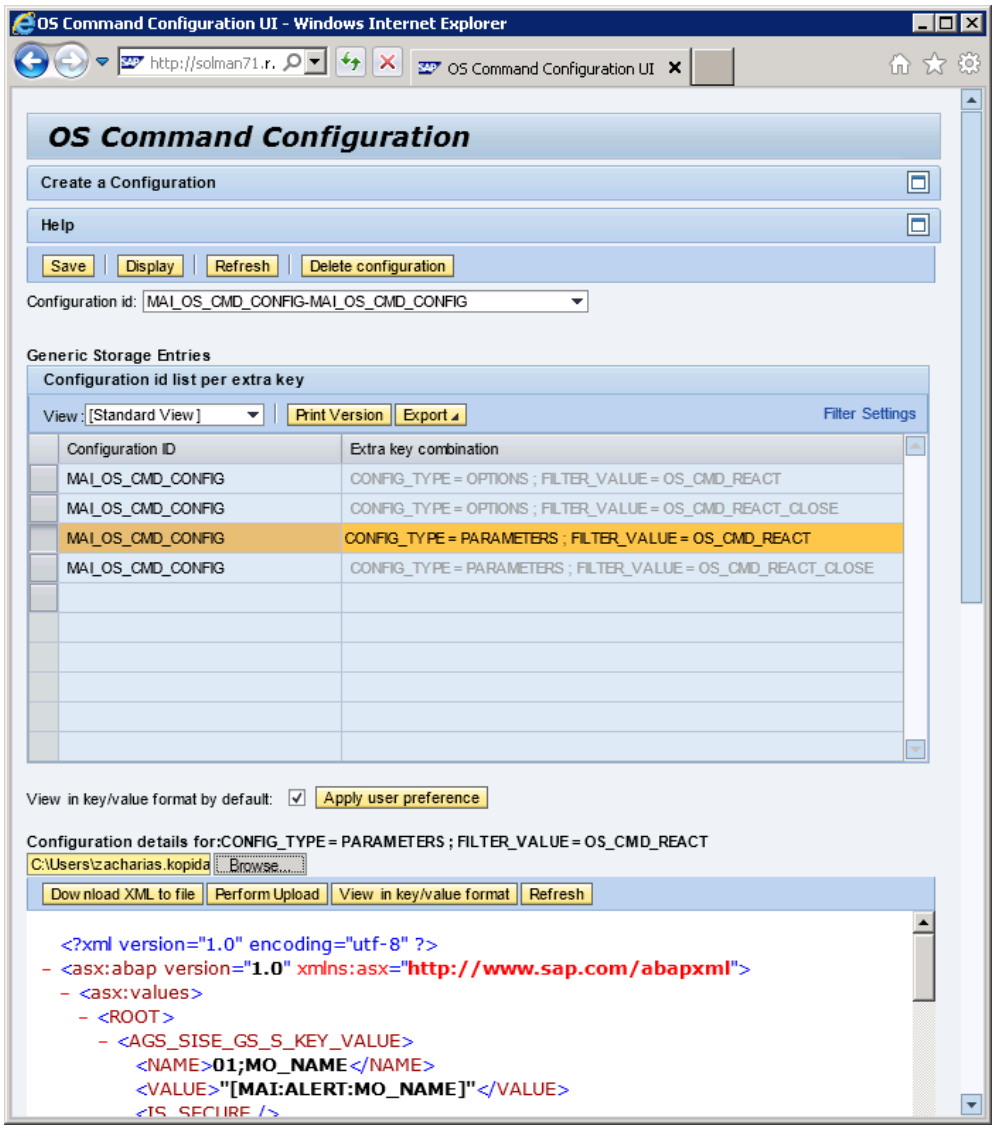
Replace SID with the system ID of your SAP Solution Manager and save the changes.

Now return to the browser as described in section 3.1.2 and select the following configuration option:

MAI_OS_CMD_CONFIG	CONFIG_TYPE = PARAMETERS ; FILTER_VALUE = OS_CMD_REACT

Under *Configuration details* click *View as XML* to open the upload dialog. Click *Browse*, select the CmWatcherMAIConfig_1.xml file and click *Perform upload*. Repeat these steps for the following configuration option:

MAI_OS_CMD_CONFIG	CONFIG_TYPE = PARAMETERS ; FILTER_VALUE = OS_CMD_REACT_CLOSE

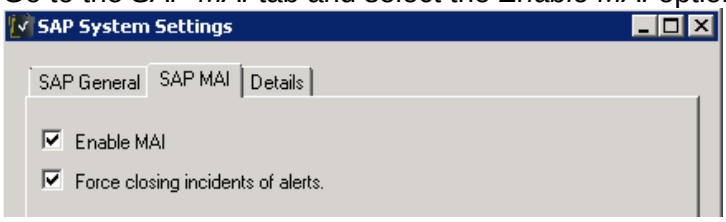


The configuration on the SAP system is now complete.

Enable MAI in cmWatcher

Open the cmWatcher GUI, go to the *SAP tab*, select the respective entry and choose *Modify Entry* to open the *SAP System Settings* dialog.

Go to the *SAP MAI* tab and select the *Enable MAI* option.

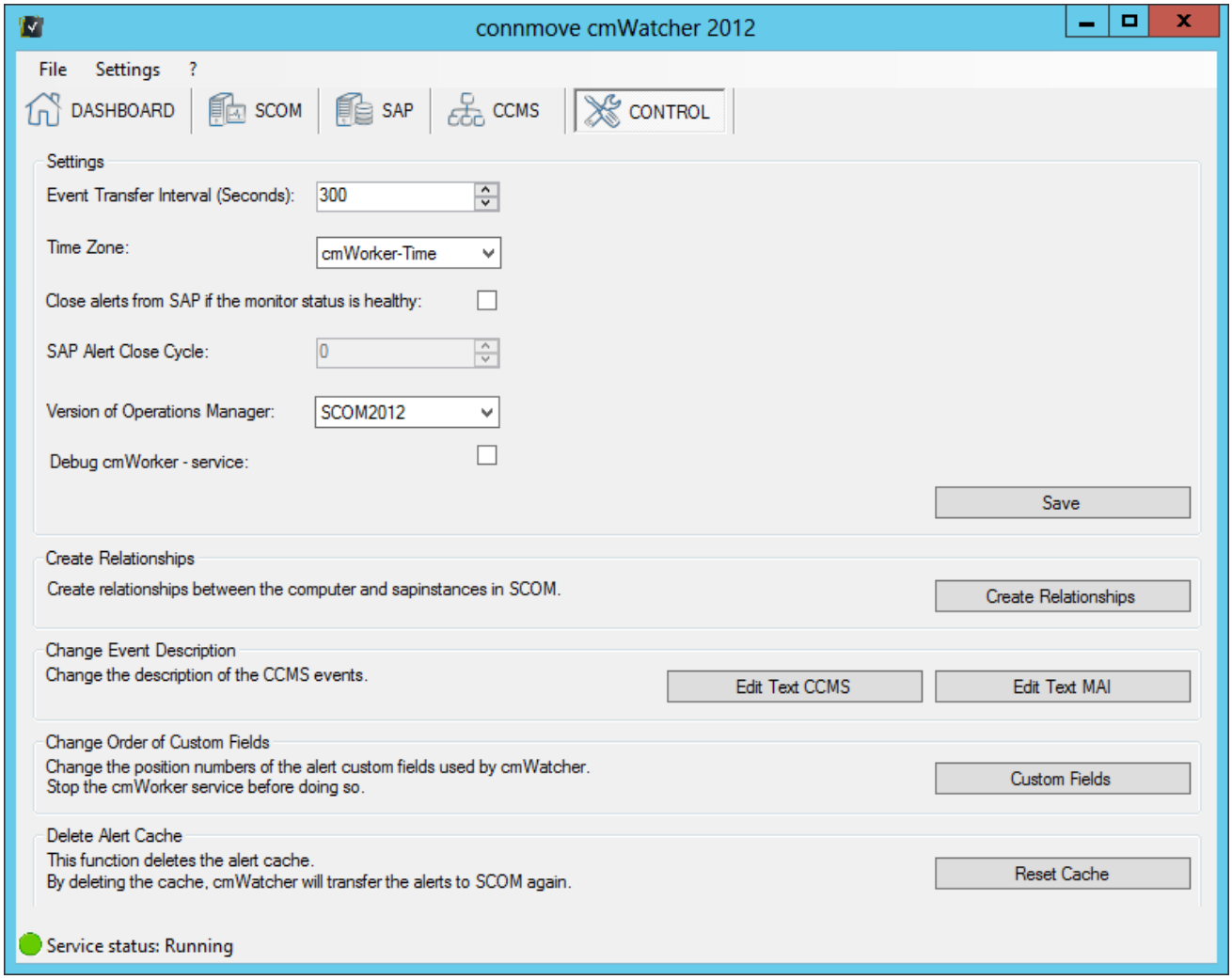


Save the changes.

The cmWorker service will check the database for MAI alerts and transfer them to the Operations Manager. If your Solution Manager shows some alerts but they are not transferred to Operations Manager, check following logs:

- SAP transaction SLG1: You can find a description in the document *How to guide: OS Command Adapter* on page 21 (*TROUBLESHOOTING*).Windows event log. This is where the cmWatcherMAI2SCOM tool writes its errors.

Control



This section contains various settings:

- **Event Transfer Interval**
  Specifies the number of seconds for the service to wait before searching for new alerts.

- **Time Zone**
  When transferring the alerts to SCOM it is possible to display the time in:
  - cmWorker
    The time when the alert was detected and transferred by cmWorker
  - SAP
    The time when the alert occurred in the SAP system

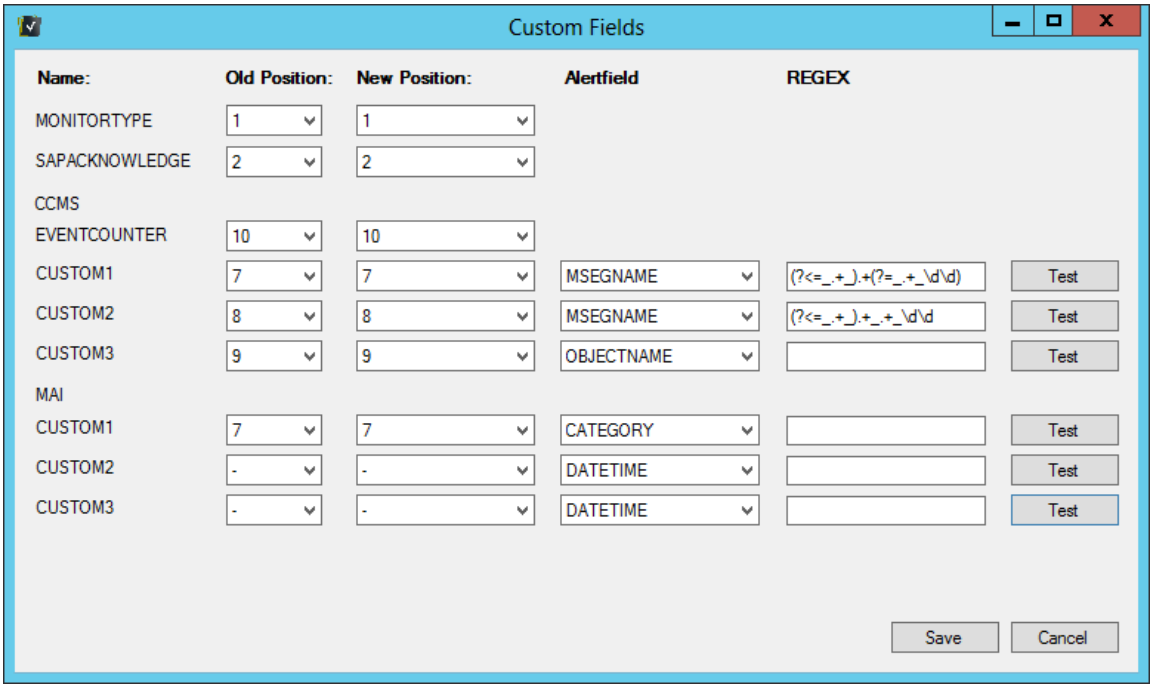
- **SAP Alert Close Cycle**
  Alerts in SAP will be automatically closed if the status of the corresponding monitor has been set to "OK" for <Number of runs> event transfer intervals.

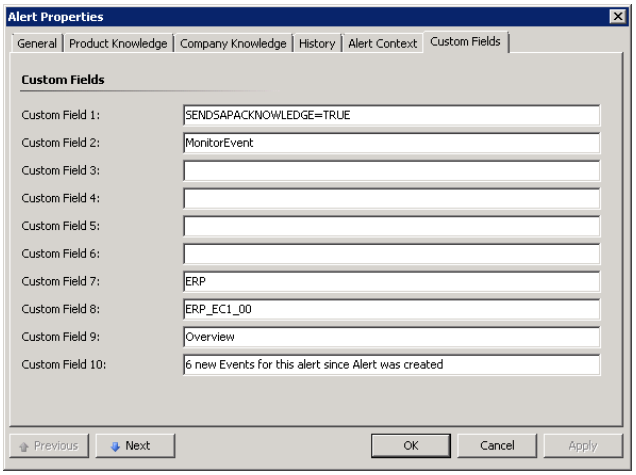
- **Create Relationships**
  Creates relationships between the computer and SAP instances in SCOM. The cmWorker service creates the relationships every 24 hours. You can also use this function to create them immediately.

- **Change Event Description**
  Changes the description of the CCMS / MAI events. Do not use '%' characters.

- **Change Order of Custom Fields**
  Adjusts the position numbers of the alert custom fields that are used by cmWatcher.

  Before you open the form to change the positions, make sure that the cmWorker service is stopped. Open the form and change the fields in the '*New Position*' column. The values of '*Old Position'* must be the same as in SCOM. The fields 'EVENTCOUNTER' and 'CUSTOM1-3' are optional and additionally include the value '-'.





Description of fields:

Field	Description
MONITORTYPE	Required by cmWatcher.
SAPACKNOWLEDGE	Required by cmWatcher.
EVENTCOUNTER	Shows how many more alerts the monitor has.

CUSTOM1-3	Adds the value of the selected alert field. Optionally, you can specify a regular expression to filter the value of the alerts.

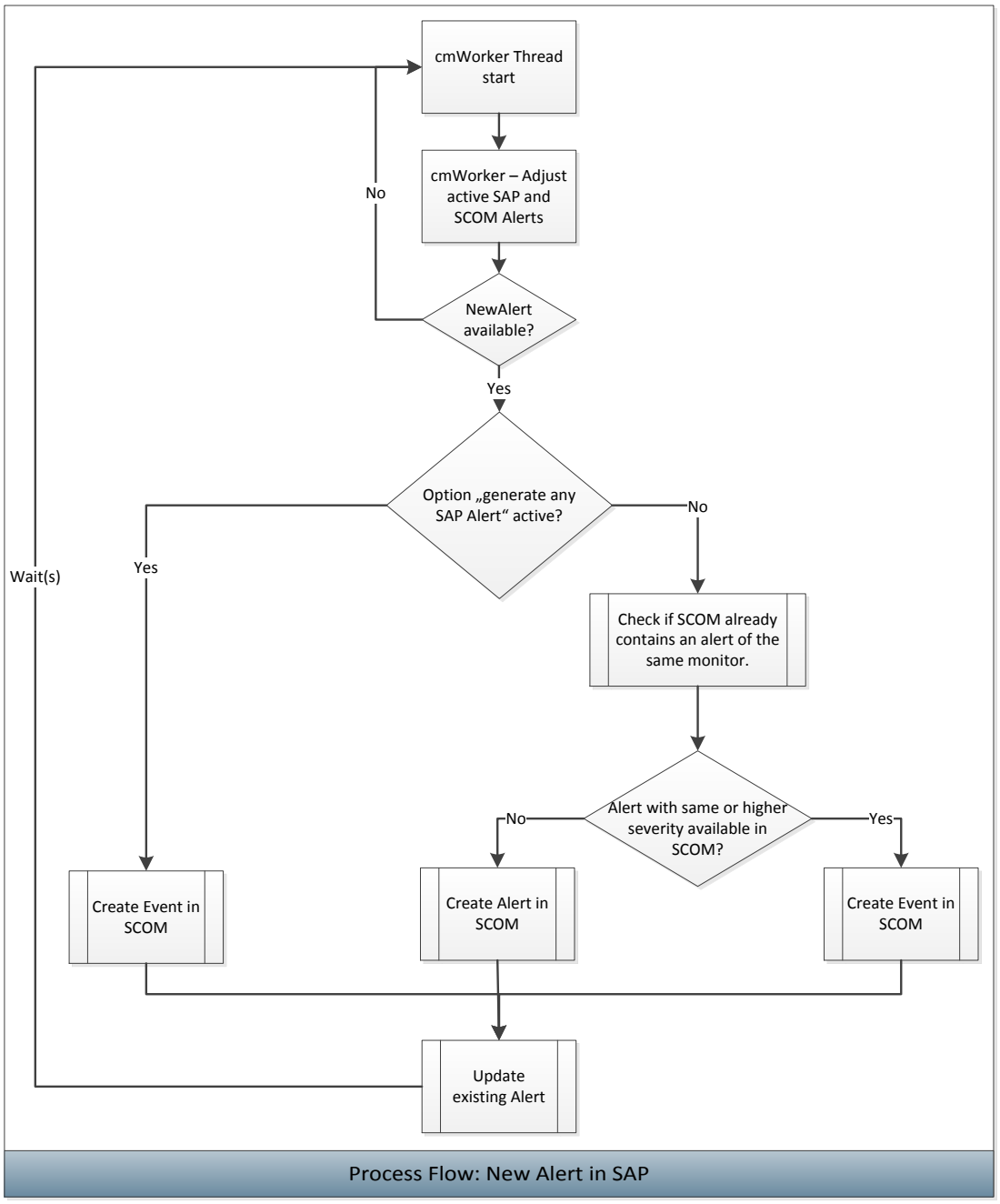
- **Delete Alert Cache**
  Deletes the alert cache from the cmWatcher database. CCMS alerts that have already been transferred to Operations Manager will be transferred again.

Appendix: Alert Handling Workflow

The following figures illustrate some of the SAP CCMS capabilities of cmWorker.

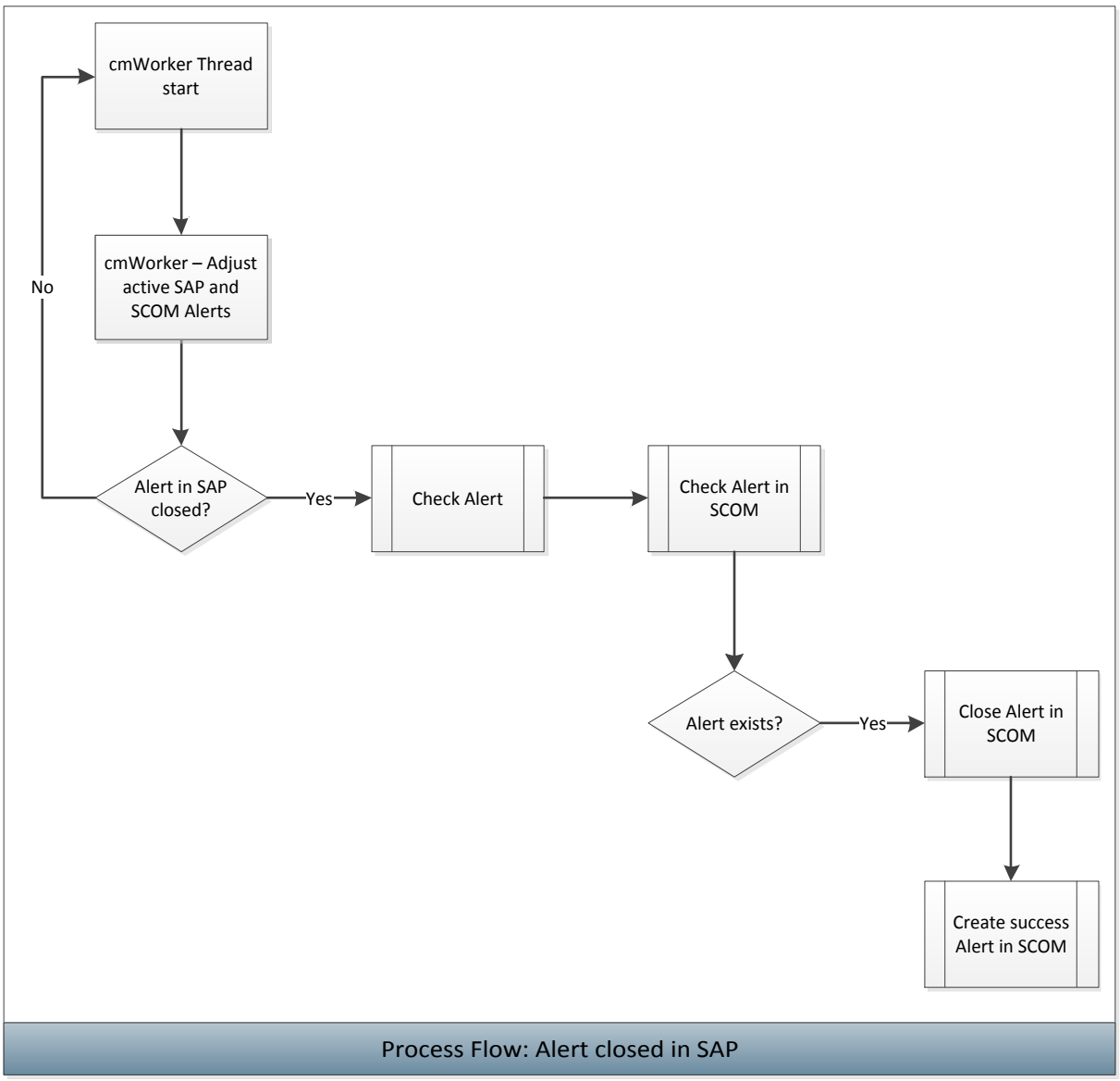
These figures provide a simplified illustration of the processes involved and do not represent the actual parallel process flow.

Workflow: New alert in the SAP system



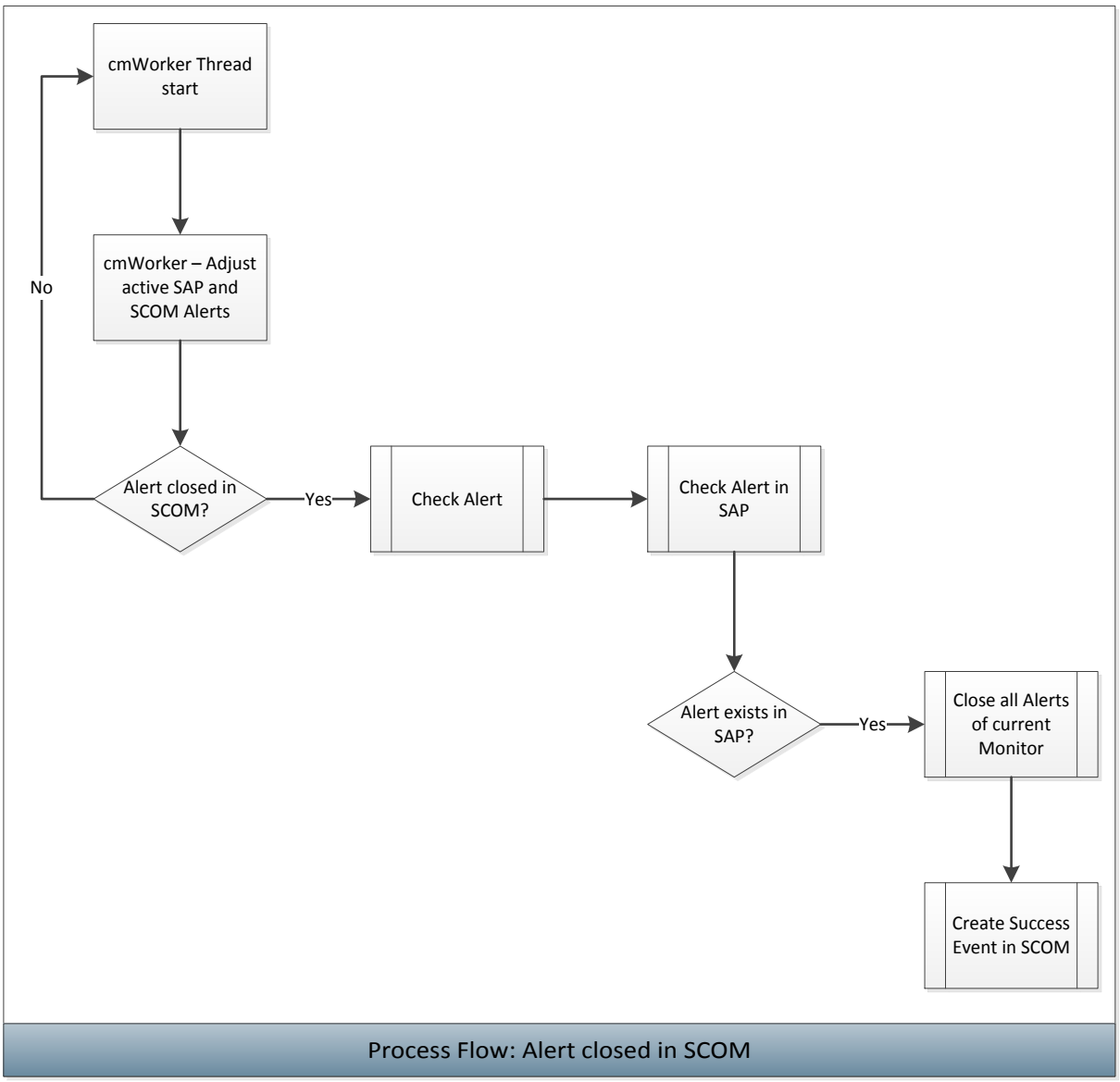
Process Flow: New Alert in SAP

Workflow: Alert in SAP is closed

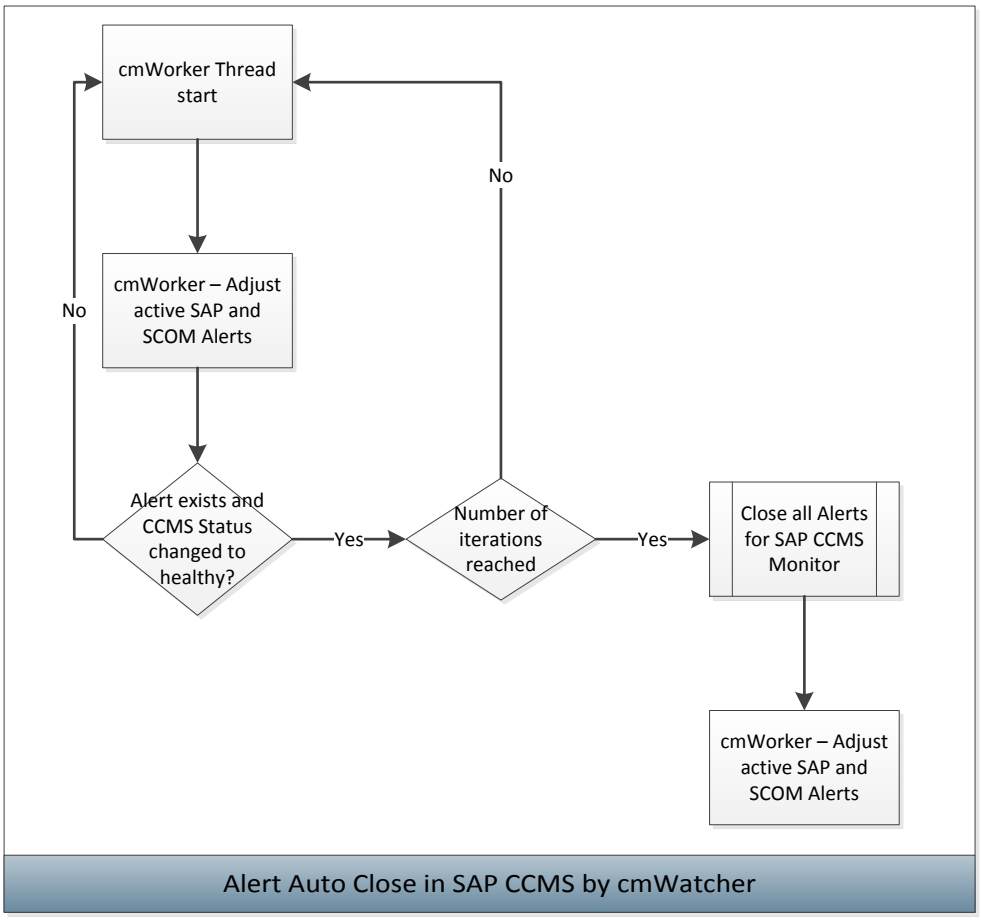


Process Flow: Alert closed in SAP

Workflow: Alert in SCOM is closed



Example: The status of the SAP monitor is changed to "OK"



Appendix: Authorization Concept

cmWatcher Database Authorization

The connection to the cmWatcher database is established either through an SQL Server user or through Windows Authentication.

Using Windows Authentication

Each cmWatcher user needs an Active Directory account when accessing the cmWatcher database through Windows Authentication. Each of these AD accounts requires ddlwriter/ddlreader rights on the cmWatcher database.

Recommendation:

Create a separate user for the cmWorker service and assign database access rights to this service. In addition to that, create a login for each AD account of a cmWatcher user in the database and assign access rights to this login as well.

Using an SQL Server User

The initial launch and configuration of cmWatcher should be carried out by a user who is authorized to create new databases. Then create the database through the cmWatcher GUI.

Once you have successfully created this database, create an SQL Server user with ddladmin rights for it.

Now specify the user in cmWatcher. From now on, this user will be used every time you access the database through the cmWatcher GUI or the cmWatcher process.

SAP roles for CCMS access

cmWatcher uses the SAP BC-XAL interface to connect to SAP systems. This interface builds on the SAP RFC interface type.

Therefore you need a valid user / password combination for any connection. Also, the user must have the necessary privileges in SAP.

Assign your user the following roles:

- S_RFC – Authorization check for RFC access
- S_XMI_LOG – Internal access authorization for XMI log

Detailed overview:

Basic requirements:

Option	**Value**
S_RFC – Authorization check for RFC access	
Activity	*
Name of RFC to be protected	SALX,SXHC,SXMI,SYST
Type of RFC object to be protected	FUGR
S_XMI_LOG – Internal access authorization for XMI log	
Access method for XMI log	*
S_XMI_PROD – Auth. for external management interfaces (XMI)	
XMI logging: company name	*(or connmove)
Product	*
Interface ID	*

ST22 Shortdumps:

Option	**Value**
S_RFC – Authorization check for RFC access	
Activity	16

Name of RFC to be protected	SDTX
Type of RFC object to be protected	FUGR
S_RFC – Authorization check for RFC access	
Activity	16
Name of RFC to be protected	RFC_READ_TABLE
Type of RFC object to be protected	FUNC
S_TABU_NAM – Table Access with Generic Standard Tools	
Activity	03
Table Name	SNAP, SNAPT
S_TABU_DIS – Table Maintenance	
Activity	03
Table Authorization Group	SC, SS

SM12 – Enqueue Locks:

Option	**Value**
S_RFC – Authorization check for RFC access	
Activity	16
Name of RFC to be protected	SENT
Type of RFC object to be protected	FUGR
S_RFC – Authorization check for RFC access	
Activity	16
Name of RFC to be protected	ENQUEUE_READ
Type of RFC object to be protected	FUNC

For more information, please refer to this SAP Help site.

Troubleshooting

Error	Solution
Unable to load DLL „librfc32.dll“	Copy the appropriate librfc32.dll file into the cmWatcher directory. Make sure to use the appropriate 32-bit or 64-bit version.

Management Pack has been updated with cmWatcher and appears in SCOM, but cmWorker service cannot find it	Install the Management Pack on SCOM again.