IBM Enterprise Content Management System Monitor
Version 5.2

Installation Guide

GC27-4907-04

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Before using this information and the product it supports, read the information in "Notices" at the end of this document.

This edition applies to version 5, release 2, modification 0 of IBM Enterprise Content Management System Monitor (product number 5724R91) and to all subsequent releases and modifications until otherwise indicated in new editions.

Table of Contents

Preface

About this document

Who should read this guide?

The target audience for this guide are those who install or maintain ECM SM environments.

Every effort has been made to provide you with complete installation instructions. If information becomes available after the creation of the installation media from which you accessed this guide, we will provide an updated version of the guide on the IBM/FileNet Customer Service and Support web site (http://www.ibm.com/support). As a general rule, you should refer to the IBM web site to obtain the current version of this guide.

This guide provides instructions for installing and/or upgrading IBM Enterprise Content Management System Monitor, and identifies the IBM/FileNet and 3rd Party products that are certified for the current release. Be aware that each release of IBM Enterprise Content Management System Monitor may have multiple Interim Fixes, or Fix Packs available for installation, each with potentially different dependencies and installation requirements. Therefore, before you attempt to install or upgrade IBM Enterprise Content Management System Monitor, review the list of releases and their associated dependencies on the IBM Support web site (http://www.ibm.com/support).

Before you start

Users of the guide should have knowledge about Unix and/or Microsoft Windows® operating system, web servers, database systems and middleware platforms. The configuration of managed systems (clients) requires advanced knowledge of all IBM ECM systems that should be monitored.

If you lack the requisite skill sets it is strongly recommended to have IBM Lab Services or a certified ValueNet Partner in order to install this product.

Where you find this guide

You can find this documentation on the ECM SM installation media in the following folder:

UNIX: `<Mount point>/INSTALL/docs`

Windows: `<Drive letter>:\INSTALL\docs`

Feedback on documentation

Send your comments by e-mail to comments@us.ibm.com. Be sure to include the name of the product, the version number of the product, and the name and part number of the book (if applicable). If you are commenting on specific text, include the location of the text (for example, a chapter and section title, a table number, a page number, or a help topic title).

ECM SM identification of Servers and Agents

Agent ID - the unique identifier for Servers and Agents

While ECM SM Server used the IP address and full qualified IP name to identify agents this no longer identifies an agent, because changed domain names and IP addresses can occur. In addition to the above scenario ECM SM supports multi-agent installation on a single server. To be able to identify the correct agent it was necessary to add a unique identifier.

Since version 4.5 the Agent Postfix exists. The Agent Postfix allows users to add an identifier in the case more than one agent need to be installed. This identifier was only added to the Windows Service Name and the UNIX/Linux Daemon control scripts to be able to start an specific instance of the agent. With the multi-agent support the enhanced server required an unique identifier for each agent, to so called 'Agent ID'.

The new 'Agent ID' is build from 2 parts, the hostname and the Postfix the user specifies during agent installation, combined with an underscore: <lower case hostname>_<lower case postfix>, example: The Agent ID for server 'MyServer1' with Postfix 'Serv1_DB' will be 'myserver1_Servdb', since all underscores and blanks will be removed.

Starting with version 5.2.0 the Agent ID will be used within the ECM SM CALA Agent Installer, the Task Execution Manager and the Monitoring Manager. In the case no Postfix is specified (older agents from version 4.5x and 5.1x) the default postfix 'agent' will be used.

Note: Version 4.5 and 5.1 didn't allow multi-agent installation connected to one ECM SM server, the agents had to use different servers.

ECM SM Server functionality

Distributed Installation of ECM SM Server components

This chapter describes the distributed installation and configuration of ECM SM Server components, describes customer scenarios where the distributed installation adds significant additional value.

Distributed Server installation scenarios

There are two major scenarios for the distributed Server component scenario:

- High availability
- Scaling (Performance)

Server components

The following server components are available

- Database initialization
  Required once in a ECM SM to generate the database tables and content
- CALA_REX Server
  Used to install and control agents, communication to the Java WebStart tools
- GUI Server
  At least one GUI Server or one GUI EAR package deployed on a WebSphere Application Server is required in a ECM SM environment. Several GUI Server components can be active at one time. The GUI Server serves the GUI, in non-WAS based ECM SM environment the GUI Server additionally servers all Download functionality and internal links of the product.
- Event Server
  The Event Server component is used to processes Events, generates Reports and forwards Events to other systems (email, SNMP forwarding, etc). With this release only one Event Server can be active at a time, but more than one Event Server can be installed for High Availability purposes.
- Download Server
  Only available in distributed environments without a GUI Server on the Primary Server or in the case of WAS based environments.
- Embedded CALA_REX Agent
  Since this release the ECM SM server installer can install an embedded CALA_REX agent with the server installation. Together with an installed CALA Monitoring agent on the embedded CALA_REX Agent (Agent name <lower case hostname>_srvagnt) the installed Server components can be monitored and controlled. It is strongly recommended to install the embedded CALA_REX Agent to the server, since otherwise the new 'ServerPomponentStatus' monitor that monitors and controls the server components cannot be used.

Three different ECM SM Server installation types

Starting with version 5.2.0 ECM SM supports three different ECM SM installation types.

Complete installation of the ECM SM Server

The installation type 'Complete installation' is similar to the installation of previous releases. All required server components will be installed.

Note: Only one 'Complete Server' or 'Primary Server' installation can be part of a ECM SM environment.

	Jetty based installation	IBM WAS based installation	Function
Database initialization	✓	✓	Provides the database initialization and content
CALA_REX Server	✓	✓	Used to install and control agents, communication to the Java WebStart tools
Download Server	-	✓	Background Download Service for JRE packages (CALA_REX Upgrade task and download links provided through GUI Service), UNIX-like shell archive (Windows agent installation only) and CALA_REX Installer Images (access provided through GUI Service)
GUI Server	✓	-	Serves the GUI, Background Download Service for JRE packages (CALA_REX Upgrade task and download links provided through GUI Service), UNIX-like shell archive (Windows agent installation only) and CALA_REX Installer Images (access provided through GUI Service)
Event Server	✓	-	Processes and forwards events, provides Reporting functionality
WAS EAR Package GUI Server	-	✓	Serves the GUI

	Jetty based installation	IBM WAS based installation	Function
WAS EAR Package Event Server	-	✓	Processes and forwards events, provides Reporting functionality
Optional CALA_REX Agent	✓	✓	Used as control agent for all above listed services (except WAS based services)

The optional CALA_REX Agent is required on all installed servers in the case the new 'Server Component Monitor' is planned to monitor the installed ECM SM server components.

Note: Upgrading from 5.1.0 to the current release is similar to a Complete installation, since the previous release only contained the full installation functionality. Once a 5.1.0 ECM SM server is upgraded to 5.2.0 as many 'Secondary Server installations' as required can be connected to the upgraded server, which is in fact a 'Complete Installation'.

Primary Server installation of ECM SM Server

The installation type 'Primary Server installation' contains the minimum required components to implement a ECM SM environment.

Note: Only one 'Complete Server' or 'Primary Server' installation can be part of a ECM SM environment.

	Jetty based installation	IBM WAS based installation	Function
Database initialization	✓	✓	Provides the database initialization and content
CALA_REX Server	✓	✓	Used to install and control agents, communication to the Java WebStart tools
Download Server	✓ Optional, can be replaced by GUI Server or the WAS EAR Package GUI Server	✓	Background Download Service for JRE packages (CALA_REX Upgrade task and download links provided through GUI Service) and CALA_REX Installer Images (access provided through GUI Service)
GUI Server	✓ Optional, can be replaced by Download Server (default)	-	Serves the GUI
WAS EAR Package GUI Server	-	✓ Optional, can be replaced by Download Server (default)	Serves the GUI

	Jetty based installation	IBM WAS based installation	Function
Optional CALA_REX Agent	✓	✓	Used as control agent for all above listed services (except WAS based services)

The optional CALA_REX Agent is required on all installed servers in the case the new 'Server Component Monitor' is planned to monitor the installed ECM SM server components.

Secondary Server installation of ECM SM Server component

The installation type 'Secondary Server installation' contains the components that can be installed more than one time in a ECM SM environment.

Note: As many 'Secondary Servers installations' as required can be added to a 'Complete Server' or 'Primary Server' installation.

During the 'Secondary Server installation' the installation process requires access (network communication to the CALA_REX server component) of the 'Primary Server / Complete Server Installation'.

The 'Secondary Server installation' can be done on a different platform than the 'Primary Server / Complete Server installation' (mixed OS support).

	Jetty based installation	IBM WAS based installation	Function
GUI Server	✓ Optional	-	Serves the GUI
Event Server	✓ Optional	-	Processes and forwards events, provides Reporting functionality
WAS EAR Package GUI Server	-	✓ Optional	Serves the GUI
WAS EAR Package Event Server	-	✓ Optional	Processes and forwards events, provides Reporting functionality
Optional CALA_REX Agent	✓	✓	Used as control agent for all above listed services (except WAS based services)

The optional CALA_REX Agent is required on all installed servers in the case the new 'Server Component Monitor' is planned to monitor the installed ECM SM server components.

ECM SM Agent functionality

ECM SM Agent functionality

ECM SM contains 2 agents: the 'ECM SM CALA_REX agent' and the 'ECM SM CALA Agent'. Both agents exist on ECM SM Servers (managing servers) and managed systems (FileNet, Database, Web Application Servers or other servers).

ECM SM CALA_REX Agent

- The ECM SM CALA_REX Agent (Windows service or UNIX daemon) is used for the communication between the ECM SM Server and the clients. The installation of the ECM SM CALA agent (described below) is realized with the ECM SM CALA_REX Agent, too. The communication between the graphical tools like ECM SM Monitoring Manager or the ECM SM Task Execution Manager is handled by the ECM SM CALA_REX agent, too.

ECM SM CALA Agent

- The ECM SM CALA Agent (known as CALA or Cenit Advanced Logfile Adapter) is the monitoring component of ECM SM. The ECM SM CALA agent (Windows service or UNIX daemon) checks thresholds (configured with the graphical tools like ECM SM Monitoring Manager) and analyzes logfiles and Windows Eventlogs for errors.

Installation Requirements and Server Preparation

IBM Collocation Support Information

The ECM SM Server cannot be collocated on servers running IBM FileNet, IBM Content Manager OnDemand or IBM CM8 software or any other IBM ECM software, that will be monitored by an ECM SM Agent.

Requirements of all Server platforms

ECM SM server hardware requirements

ECM SM server components require the following minimum system configuration:

- 2 Core/CPU hardware platforms (recommended 4 Core/CPU)
- 2 GByte RAM (4 GByte recommended). If running a WebSphere-based installation this value can be higher
- see system os specified section for disk space requirements

Static IP address for ECM SM server

The ECM SM server must have a static IP address. It is not possible to use a machine that has a DHCP address only.

For network performance reasons, the server and all clients should be added to the DNS.

Web Application Server

During installation of the ECM SM server component the user can decide to use either the embedded Jetty Web Application Server shipped with the product or a pre-installed IBM WebSphere Application Server.

Embedded Jetty Web Application Server

If the Embedded Jetty Web Application Server is selected during installation there is no need to install or configure any additional Web Server component before or after the ECM SM server installation.

IBM WebSphere Application server

If IBM WebSphere Application Server is selected during installation this requires an installed and configured IBM WebSphere Application server environment. See Hardware and Software Guide for details about supported IBM WAS versions.

IBM WebSphere Application server requirements

If ECM SM should be installed based on IBM WebSphere Application Server the following installation and configuration steps are required:

Software requirements:

- IBM WebSphere Server (see the Hardware and Software Guide of ECM SM for details about the supported/required versions)

The following section describes the installation steps of a IBM WebSphere based ECM SM server installation:

- IBM WebSphere Server Base installation (see WAS documentation)
- IBM WebSphere Server Fixpack installation with IBM UpdateInstaller for WebSphere (see WAS documentation)
- IBM WebSphere Software Development Kit update with IBM UpdateInstaller for WebSphere (see documentation)
- Import of the existing WAS installation into the IBM Installation Managers
- Installation of the ECM SM (InstallAnywhere installation, see later chapter)
- Create a new WAS profile (from default profile 'aries') or edit an existing profile by using the IBM WebSphere Profile Management Tool.
- Deploy the two ECM SM ear packages (applications) in the adjusted profile.
- Create or adjust the WAS datasource, custom properties according to the Database settings of the ECM SM installation.

  user
  <db-user>

  password
  <db-password>
- Extend the JVM custom properties of the WAS server as documented in JVM Properties for an IBM WebSphere Based Installation.
- Restart the WAS profile.
- Starting of the two ECM SM WAS applications

Perl 5

ECM SM expects Perl 5 to be installed on the client and server systems.

For Microsoft Windows systems, Perl 5 is included in the ECM SM server and client installation packages.

On Linux and Unix systems, Perl 5 should be installed using the system depend package management system.

Java JRE

ECM SM requires a Java runtime environment (JRE) greater than or equal to 7 to be installed in the ECM SM server. ECM SM server and client installation packages contain a bundled Java JRE version 7 package. This JRE is automatically installed in the directory `jre` in both the ECM SM server and the client installation directory. Previous versions of the ECM SM CALA_REX client can be upgraded using the appropriate CALA_REX upgrade task. See Migration Tasks guide for further details.

Database

ECM SM supports the following database management systems as ECM SM database. Check the latest ECM SM Hardware and Software requirements guide for supported databases and JDBC driver and versions.

- IBM DB2
- Microsoft SQL Server
- Oracle
- PostGreSQL (only supported for Demo and testing purposes)

ECM SM uses one technical user for installation and runtime connection to the database. The user name can be adjusted during installation.

JDBC Driver

The ECM SM CALA_REX and ECM SM CALA server agents are using JDBC to connect to the database. Therefor a jdbc driver has to be present on the ECM SM server system.

Database system

Database installation requirements

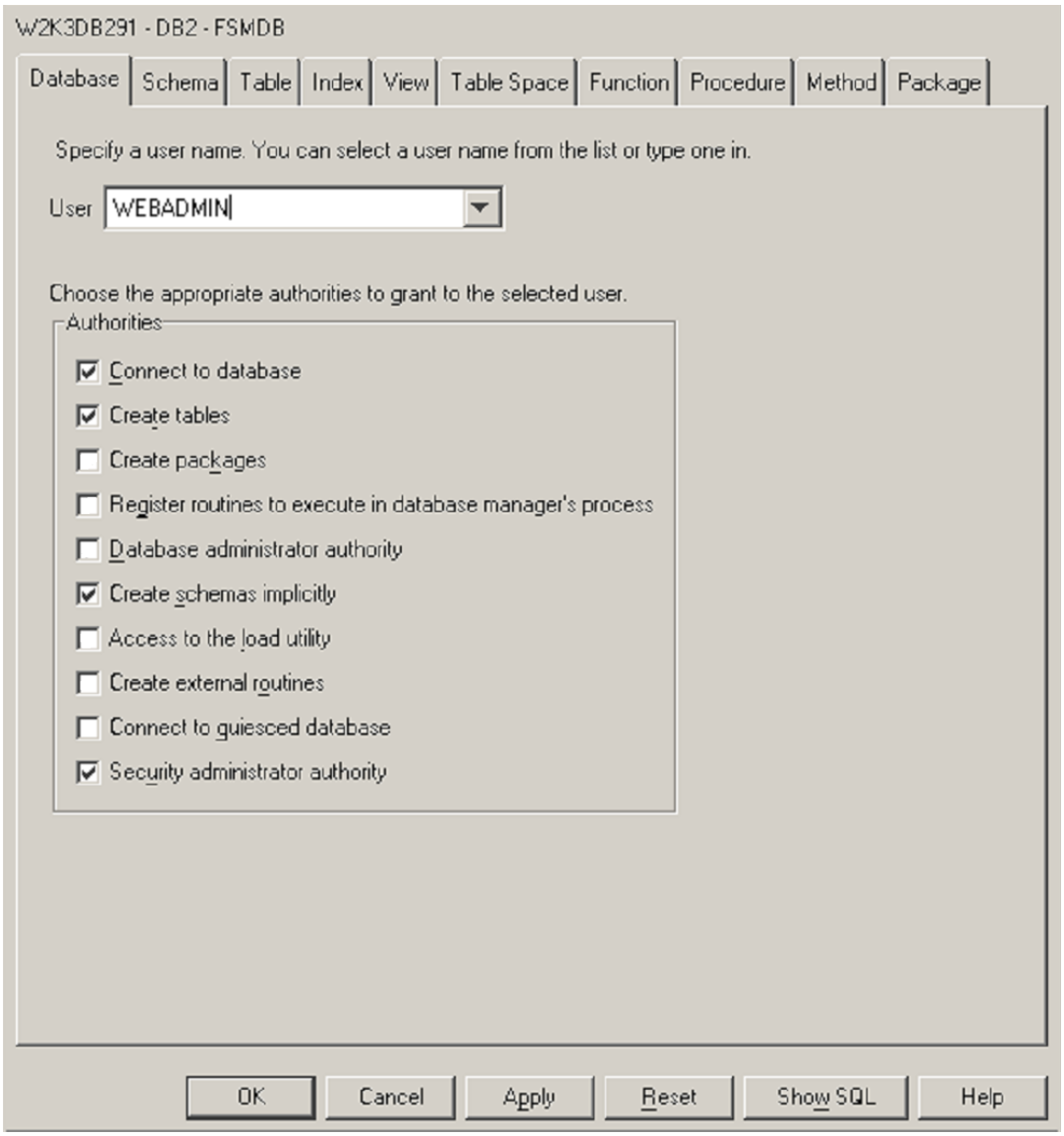
Database

ECM SM supports local and remote database access. The access is based on JDBC. This no longer requires the database vendor specific Database client tools installed on the ECM SM server. Only the supported database JDBC driver needs to be installed on the ECM SM server. See ECM SM Hardware and software guide for detailed information about supported database systems and JDBC drivers.

IBM DB2

General installation parameters

- Create a ECM SM database (use codeset UTF-8 and database Page size 32k). Smaller Page size settings are not supported and cause installation errors.
- Create the ECM SM technical DB user on your operating system (select a name, e.g. webadmin).
- Create the ECM SM technical DB user on your previously created ECM SM database with at least the rights "Connect to database", "Create tables" and "Create schema implicitly".



IBM DB2: Example to create user WEBADMIN.

Oracle

General installation parameters

Use the Oracle database configuration assistant (dbca) to create the ECM SM database.

- Create a ECM SM database. Use character set AL32UTF8 and minimum database Block size of 8192 (parameter db_block_size). Smaller Block size settings are not supported and cause runtime errors.
  Select 'Shared Server mode' for the ECM SM database.

Set or create the following parameters for the ECM SM database: shared_servers = 10 and max_shared_servers = 20 (in the case these parameters are configured with smaller values or do not exist). In the case these parameters are already assigned with bigger values leave them unchanged.

- Create the ECM SM technical DB user on your previously created ECM SM database with the following roles: "CONNECT" and "RESOURCE".

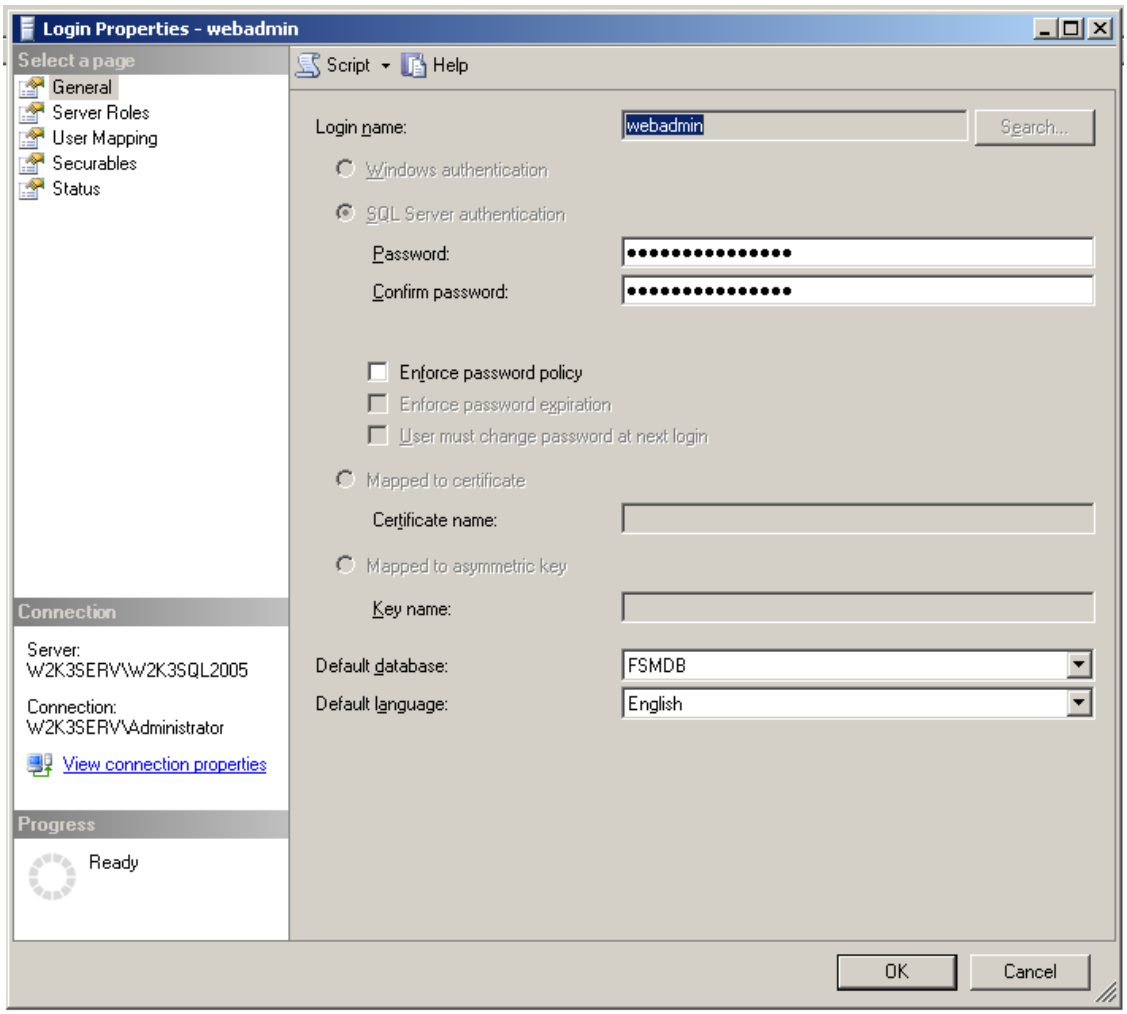
MS SQL Server

General installation parameters

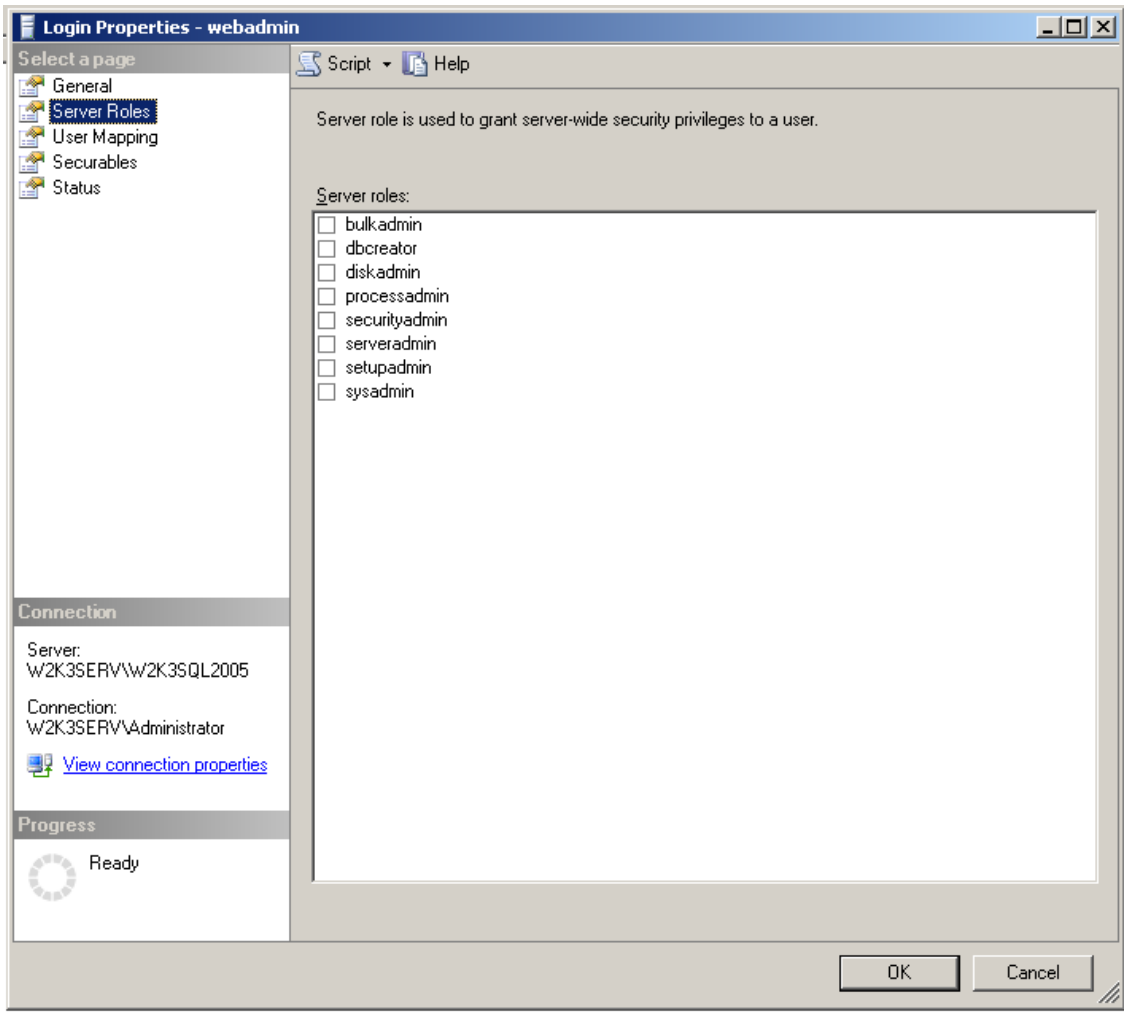
The MS SQL Server must be configured for **SQL Server Authentication**, **Mixed Mode Authentication** or **Windows Authentication** (only for Windows-based ECM SM Servers). To change the authentication mode from **Windows Authentication mode** to **SQL Server and Windows Authentication mode**, see MS SQL Server documentation.

- Create a database to use with ECM SM Server. Assign the **Latin1_General_CI_AS** collation to the database.
- Create a database user. Assign the just created ECM SM Server database as **Default database** and assign the **db_datareader**, **db_datawriter**, **db_owner** and **public** roles within the database role membership.

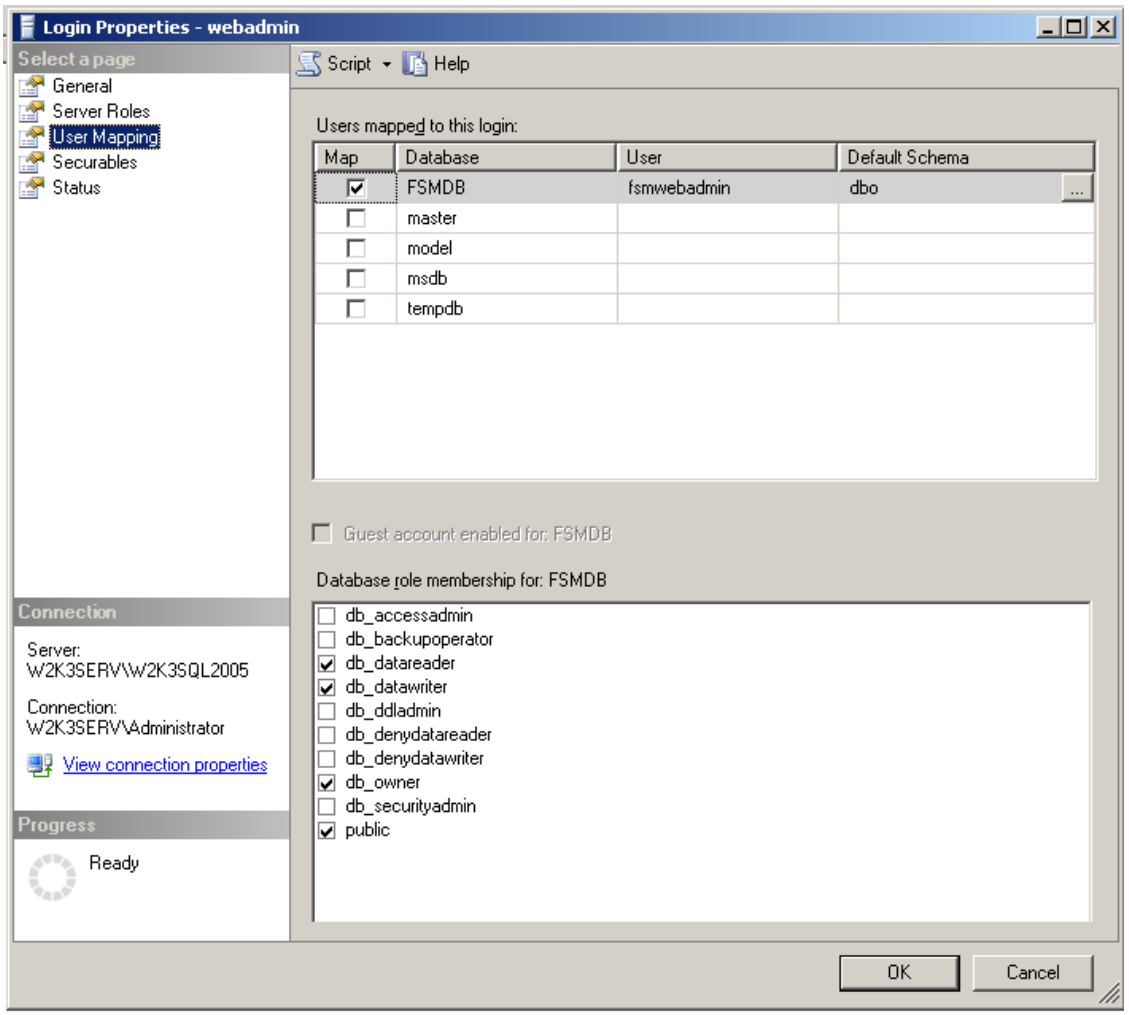
NOTE Make sure, the database schema, that you will use, is the **Default Schema** of your specified database user, which will be used to connect to your ECM SM Server database and for database initialization and import, otherwise database initialization for instance will fail.



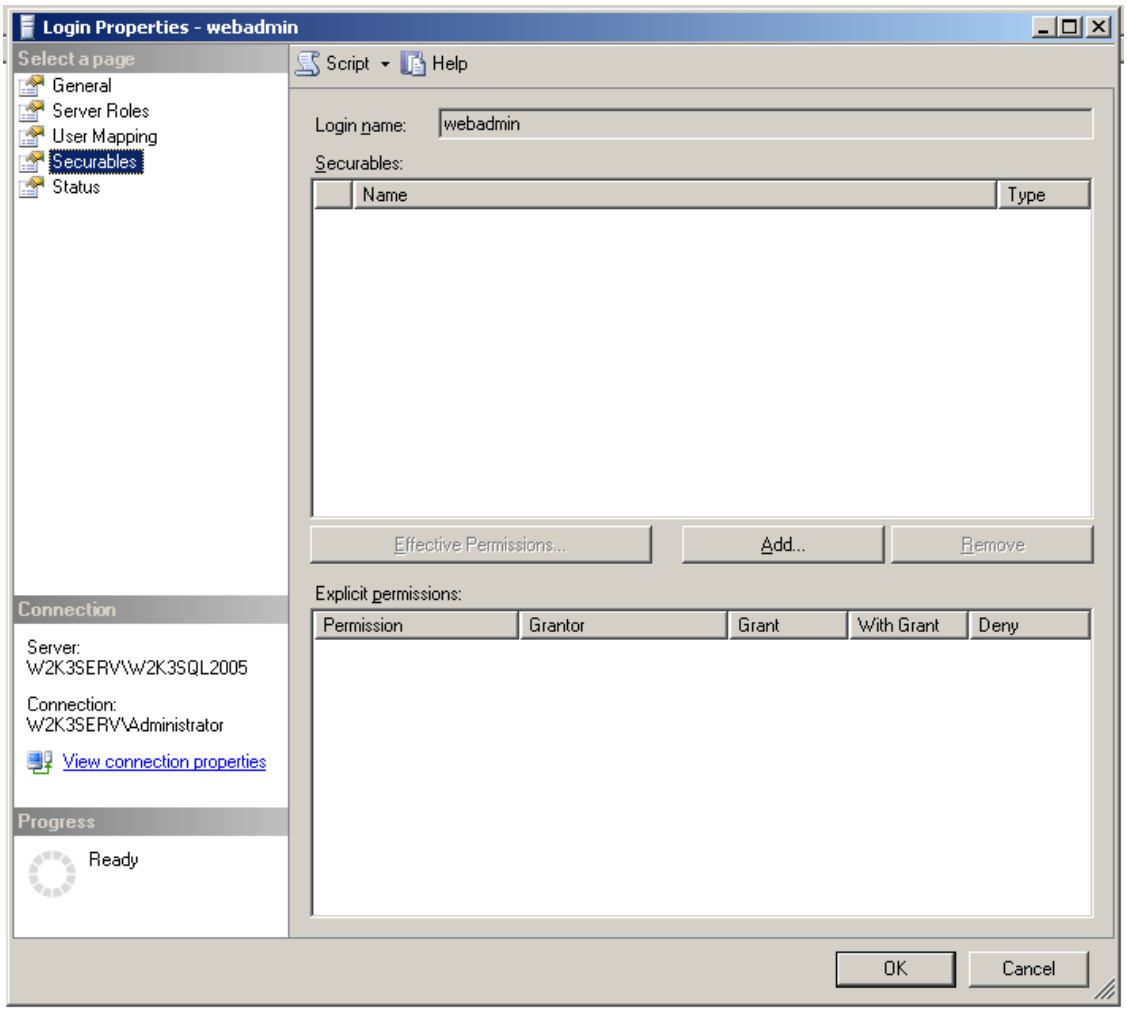
Example: MS SQL Server configured as remote database using SQL Server authentication (General Properties)



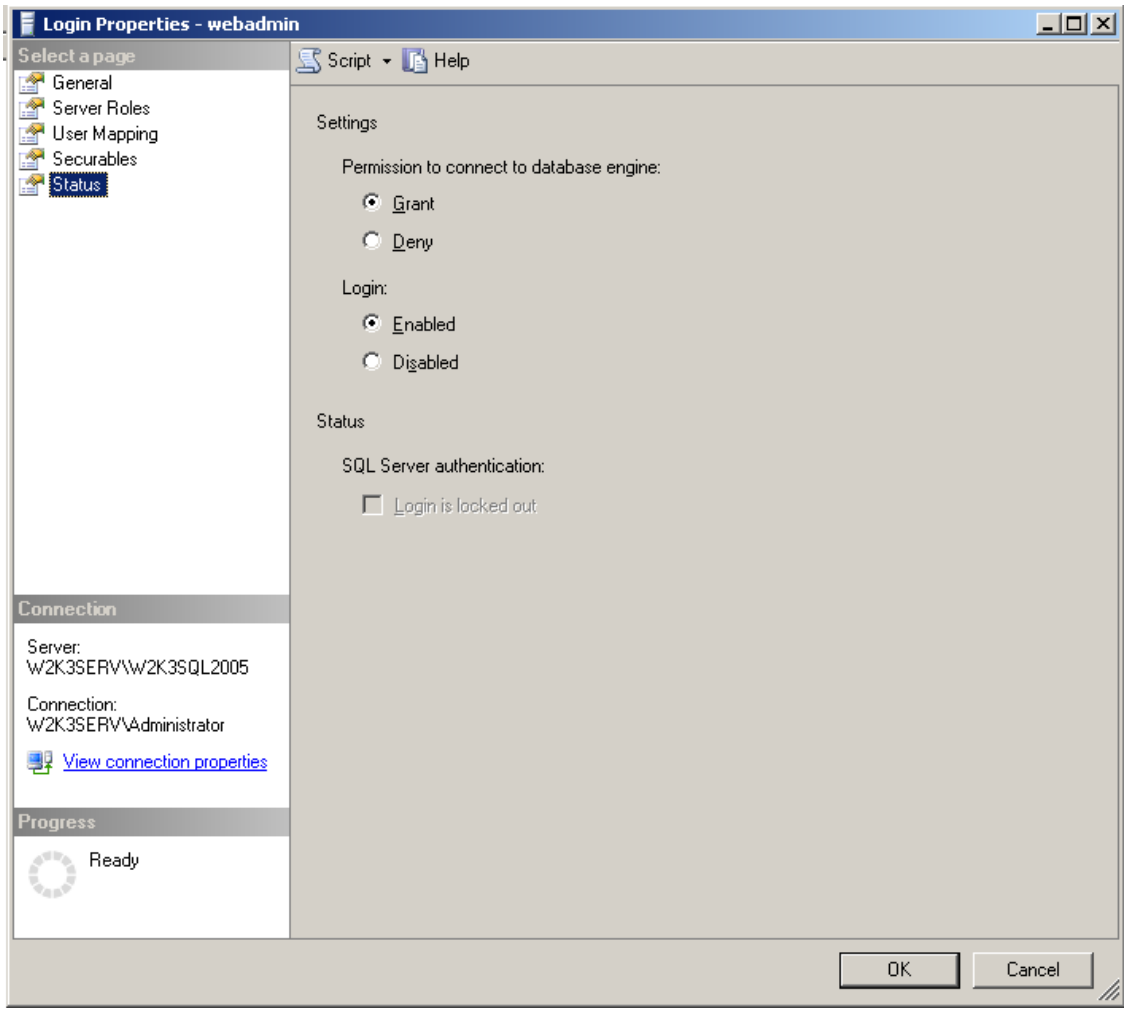
Example: MS SQL Server configured as remote database using SQL Server authentication (Server Roles Properties)



Example: MS SQL Server configured as remote database using SQL Server authentication (User Mapping Properties)



Example: MS SQL Server configured as remote database using SQL Server authentication (Securables Properties)



Example: MS SQL Server configured as remote database using SQL Server authentication (Status Properties)

JDBC driver

- It is recommended to download the JDBC driver from the website of the database vendor.

AIX

Required Perl version ECM SM server

ECM SM server requires the following software to be installed on the server system:

- perl 5 required but NOT installed during ECM SM server install

Creating filesystems

Please use **smitty** to create the following AIX filesystems for ECM SM server installation:

Filesystem mount point	Filesystem minimum size (in GB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: /tmp)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is `/opt/IBM/ECMSM`	10.0

If the system temporary filesystem (/tmp) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the UNIX environment variable IATEMPDIR to a directory that has enough free space, which then is used as extraction directory instead of /tmp.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Manual adjustments

OS adjustments

Adjust system parameter ncargs

If the value of the system parameter ncargs is too low, some monitors may show the error message "arg list too long".

To avoid this message, you should increase the value of ncargs to at least 16.

To check for the current value, enter the following command:

```
lsattr -EH -l sys0 | grep ncargs
```

or use the AIX smit(ty) tool (run 'smitty system' and then select 'Change show characteristocs of a operating system'.

The value should be 16 or higher. To change the setting of ncargs, enter the following command.

```
chdev -l sys0 -a ncargs=<value>
```

This change takes affect immediately and is preserved over boot.

Adjust system parameter maxuproc

If the value of the system parameter maxuproc (maximum allowed processes per user) is too low, processes like monitors, tasks or shell binaries cannot be executed and may hang.

To avoid this error, you should increase the value of maxuproc to at least 1024.

To check for the current value, enter the following command:

```
lsattr -EH -l sys0 | grep maxuproc
```

or use the AIX smit(ty) tool (run 'smitty system' and then select 'Change show characteristics of a operating system'.

The value should be 1024 or higher. To change the setting of maxuproc, enter the following command.

```
chdev -l sys0 -a maxuproc=<value>
```

This change takes affect immediately and is preserved over boot.

HP-UX

Required Perl and gawk versions ECM SM server

ECM SM server requires the following software to be installed on the server system:

- perl 5 (required but NOT installed during ECM SM server install
- gawk . Please check chapter Requirements of all Server platforms for HP-UX for additional information.

Creating filesystems

Please use **sam** to create the following HP-UX filesystems for ECM SM server installation:

Filesystem mount point	Filesystem minimum size (in GB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: /tmp)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is `/opt/IBM/ECMSM`	10.0

If the system temporary filesystem (/tmp) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the UNIX environment variable IATEMPDIR to a directory that has enough free space, which then is used as extraction directory instead of /tmp.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Installing required Software packages

The software mentioned below is delivered with HP-UX 11 Application Software CDs, or must be downloaded from the HP web site.

NOTE gawk and the required libraries from the is *only required* if you do not have an awk installed, that can handle more than 3000 bytes per input line.

- gawk (3.1.5) or newer
- libiconv (1.10 or newer) [needed by gawk]

- gettext (0.14.5 or newer) [needed by gawk]

gawk and libraries

Due to limitations of the HP-UX awk tool it is necessary to install gawk, libiconv and gettext fro the HP Web site.

There you will find HP-UX depot files for gawk, libiconv and gettext. Copy or download these files to a directory, where you have write access, and uncompress them with gzip (gunzip); e.g.:

```
cp *.depot.gz /tmp ; cd /tmp ; gunzip *.depot.gz
```

Now you can install the software with the HP-UX **swinstall** command, entering the following command at the command line (`/tmp/` is only an example path):

swinstall –s `/tmp/<package>.depot` *****

The **swinstall** command needs the absolute path to the unzipped depot file.

NOTE If you are unfamiliar with the **swinstall** command, read its manual page or ask your HP-UX system administrator for assistance.

After the successful installation of gawk, you must create a symbolic link into `/usr/bin/` named `nawk`, pointing to the `gawk` executable. Assuming the gawk tool is installed at `/usr/local/bin/gawk` enter the following:

ln –sf `/usr/local/bin/gawk /usr/bin/nawk`

Control the success by entering the following at the command line:

which `nawk`

The response from the system should be:

```
/usr/bin/nawk
#
```

Manual adjustments

Required environment variables

Make sure that the environment variable `HOME` is set to a valid directory that contains a file named `.rnd`. This file is required during creation of the CALA_REX server SSL certificates and is overwritten during creation of the certificate. The initial file can be any file that is sufficiently large (e.g. a binary).

Redhat Linux

Required Perl version ECM SM server

ECM SM server requires the following software to be installed on the server system:

- perl 5 (required but NOT installed during ECM SM server install

Software installation using 'Normal' Redhat mode

For RHEL 32 and for 64 bit based installations you have to install the following *32 bit* package:

- compat-libstdc++-33.i686

For RHEL 32 bit based installations you have to install the following *32 bit* packages:

- the **file** command
- the **perl** interpreter

For RHEL 64 bit based installations you have to install the *64 bit* package containing the following components:

- the **file** command
- the **perl** interpreter

Also, if the error message "Graphical installers are not supported by the vm" is given while the installer tries to start, the following *32 bit* libraries must be installed:

- libXdmcp.i686
- libXext.i686
- libXrender.i686
- libXft.i686
- libXi.i686
- libXt.i686
- libXtst.i686
- libgcc.i686

Redhat Enterprise Linux 7.0 and newer additionally requires the following package:

- libstdc++.i686

These libraries can be installed by the yum package manager from the commandline; e.g.:

```
# yum install libgcc.i686
```

Creating filesystems

Please use **cfdisk** or **fdisk**, and **mkfs** to create the following filesystems for ECM SM server installation:

Filesystem mount point	Filesystem minimum size (in GB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: /tmp)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is **`/opt/IBM/ECMSM`**	10.0

If the system temporary filesystem (/tmp) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the environment variable IATEMPDIR to a directory that has enough free space, which then is used as extraction directory instead of /tmp.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Solaris

Solaris (all versions)

Required Perl version ECM SM server

ECM SM server requires the following software to be installed on the server system:

- perl 5 (required but NOT installed during ECM SM server install

Solaris 9

Creating filesystems

Please use **smc** (Solaris Management Console, if Solaris Volume Management is used) or **vea** (if the Veritas Volume Manager is installed) to create the following filesystems for ECM SM server installation:

NOTE It is not required but recommended to create these filesystems.

Filesystem mount point	Filesystem minimum size (in GB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: /tmp)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is **`/opt/IBM/ECMSM`**	10.0

If the system temporary filesystem (/tmp) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the UNIX environment variable IATEMPDIR to a directory that has enough free space, which then is used as extraction directory instead of /tmp.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Installing Solaris patches

Because Solaris 9 does not contain some required libraries and tools the system needs to be updated with the latest Solaris 9 recommended patches (check http://www.sun.com for more details).

Install the Solaris 9 cluster patch (download the latest cluster patch from http://www.sun.com)

NOTE You need to install the Solaris 9 recommended patches in Single user mode (init state *S*).

Log on to the system in single user mode and change into the patch directory, where the cluster patch is extracted.

Execute

./install_cluster

and follow the instructions. After this installation step you need to reboot the system (normal init state)

Installing required Software packages

Perl

Use the following command to check for perl:

pkginfo | grep - perl

The system should print out the following information:

```
system    SUNWopl5m         Perl 5.005_03 Referensystem    SUNWopl5p         Perl
 5.005_03 (POD Dosystem    SUNWopl5u         Perl 5.005_03system    SUNWpl5m
    Perl 5.6.1 Referencesystem    SUNWpl5p          Perl 5.6.1 (POD Documsystem
 SUNWpl5u          Perl 5.6.1 (core)system    SUNWpl5v          Perl 5.6.1 (non-core)
Referensystem    SUNWopl5p         Perl 5.005_03
(POD Dosystem    SUNWopl5u
Perl 5.005_03system    SUNWpl5m          Perl
5.6.1 Referencesystem    SUNWpl5p          Perl 5.6.1
(POD Documsystem    SUNWpl5u          Perl
5.6.1 (core)system    SUNWpl5v          Perl 5.6.1
```

Install missing Perl packages from Solaris 9 Operating System CD 1.

Mount Solaris 9 Operating System CD 1, change into the `Solaris_9/Product` directory and install all missing file packages with the following command

pkgadd -d $PWD SUNWpl5u SUNWpl5v SUNWopl5u SUNWpl5p

Solaris 10

Creating filesystems

Please use **smc** (Solaris Management Console, if Solaris Volume Management is used) or **vea** (if the Veritas Volume Manager is installed) to create the following filesystems for ECM SM server installation:

NOTE It is not required but recommended to create these filesystems.

Filesystem mount point	Filesystem minimum size (in GB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: /tmp)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is **`/opt/IBM/ECMSM`**	10.0

If the system temporary filesystem (/tmp) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the UNIX environment variable IATEMPDIR to a directory that has enough free space, which then is used as extraction directory instead of /tmp.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Installing Solaris patches

Because Solaris 10 does not contain some required libraries and tools the system needs to be updated with the latest Solaris 10 recommended patches (check http://www.sun.com for more details).

Install the Solaris 10 cluster patch (download the latest cluster patch from http://www.sun.com)

NOTE You may need to install the Solaris 10 recommended patches in Single user mode (init state *s*).

Log on to the system in single user mode and change into the patch directory, where the cluster patch is extracted.

Execute

./install_cluster

and follow the instructions. After this installation step you need to reboot the system (normal init state)

Installing required Software packages

Perl

Use the following command to check for perl:

pkginfo | grep - `perl`

The system should print out the following information:

```
GNOME2      SUNWperl-xml-parser              XML::Parser PERL moduleGNOME2
 SUNWperl-xml-parser-devel-share  XML::Parser PERL module developer files - platform
 independent files, /usr/sharesystem      SUNWperl584core                  Perl
 5.8.4 (core)system      SUNWperl584man                   Perl 5.8.4 Reference Manual
 Pagessystem      SUNWperl584usr                  Perl 5.8.4 (non-core)
PERL moduleGNOME2      SUNWperl-xml-parser-devel-share  XML::Parser PERL module developer
 files - platform independent files,
 /usr/sharesystem      SUNWperl584core                  Perl
 5.8.4 (core)system      SUNWperl584man                   Perl 5.8.4 Reference
 Manual Pagessystem      SUNWperl584usr                   Perl
```

Install missing Perl packages from Solaris 10 Operating System CD.

Mount Solaris 10 Operating System CD and install all missing Perl file packages with the following command

Manual adjustments

OS adjustments

Verify that OS kernel parameters are configured correctly. In some cases the following parameters need to be specified or adjusted in /etc/system file. Note: Do not decrease the values, if the parameters are specified with higher values.

```
set rlim_fd_max=4096
set rlim_fd_cur=1024
```

Note: /etc/system changes require system reboot.

SuSE Linux

Required Perl version ECM SM server

ECM SM server requires the following software to be installed on the server system:

- perl 5 (required but NOT installed during ECM SM server install

Software installation

It is recommended to use SuSE Linux Enterprise Server Version 10 (SLES 10) or 11 (SLES 11).

For SLES 32 or 64 bit based installations you have to install these packages/modules:

- the **file** command
- the **perl** interpreter
- libstdc++33-32bit

Also, if the error message "Graphical installers are not supported by the vm" is given while the installer tries to start, the following *32 bit* libraries must be installed:

- libXdmcp.so
- libXext.so
- libXrender.so
- libXft.so
- libXi.so
- libXt.so
- libXtst.so
- libgcc.so

These libraries can be installed by the zypper package manager from the commandline or yast2; e.g.:

```
# zypper install libstdc++33-32bit
```

Creating filesystems

Please use **yast** to create the following filesystems for ECM SM server installation:

Filesystem mount point	Filesystem minimum size (in MB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: /tmp)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is **`/opt/IBM/ECMSM`**	10.0

If the system temporary filesystem (/tmp) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the environment variable IATEMPDIR to a directory that has enough free space, which then is used as extraction directory instead of /tmp.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Windows

Required Perl version ECM SM server

ECM SM server requires the following software to be installed on the server system:

- perl 5 (automatically installed during ECM SM server installation)
- shell (installed during ECM SM server installation)

Creating filesystems

Please use the **disk management** tool to create the following filesystems for ECM SM server installation:

Filesystem mount point	Filesystem minimum size (in GB)
Filesystem containing Installer images	5.0
Temporary extraction directory (default: %TEMP%)	up to 3x the size of the installer image
<path to your ECM SM server installation directory>, default location is `C:\Program Files\IBM\ECMSM`	10.0

If the system temporary filesystem (%TEMP%) is not big enough to hold the temporarily extracted InstallAnywhere installer files it is possible to set the environment variable TMP to a directory that has enough free space, which then is used as extraction directory instead of %TEMP%.

The required database filesystem size depends on the database vendor, number of client and events handled by the ECM SM server.

Preliminary Considerations

Enhanced security - FIPS 140-2 compliant password encryption

Why must ECM SM store passwords?

Some ECM SM components, especially monitors, need access to services that are protected via credentials. E.g. a database monitor must log-in at the database to check if it is available.

Therefore the credentials (user and password) need to be stored in the configuration files. Although the credentials are stored encrypted, it is recommended to use a technical user with limited permissions for monitoring.

Improper chracters within passwords

The special characters double quotes (“), Dollar sign ($), semi colon (;), hash (#) and grave accent (`) are not supported within passwords.

FIPS-140-2 compliant password encryption

ECM SM uses a FIPS-140-2 compliant encryption when storing passwords. There are three keys that are needed to encrypt sensitive data. All of these keys are also needed to decrypt the data.

username or filename
The first key is the username or filename the password is associated with.

keyfile
There is a key file in each ECM SM agent and server installation which contains the second key that is used for encryption. The key within this file is created at installation time and is specific to the ECM SM installation. The keyfile is stored in the `.keys` subdirectory of the server or agent installation. It is recommended to protect this directory using the operating system specific methods to avoid other users than the user running the agent having access to the keyfile.

The keyfile for an agent is generated by the server and stored on the agent by 'Accepting' an agent in the 'Connected Agents' view.

the agent id
The key within the keyfile is encrypted with the agent id of the ECM SM.

ECM SM uses a AES-128 algorithm twice with different keys (username/filename and keyfile content) to encrypt passwords.

Migration of configuration files from ECM SM prior 5.2

Prior versions of ECM SM used an other mechanism for password encryption. Passwords from older version can still be decrypted by the current version of ECM SM. So all monitors and tasks will still work. Once the configuration is changed, passwords are stored using the new algorithm described above. This requires an upgraded agent, use the task 'Upgrade CALA_REX Agent' to upgrade an old ECM SM agent.

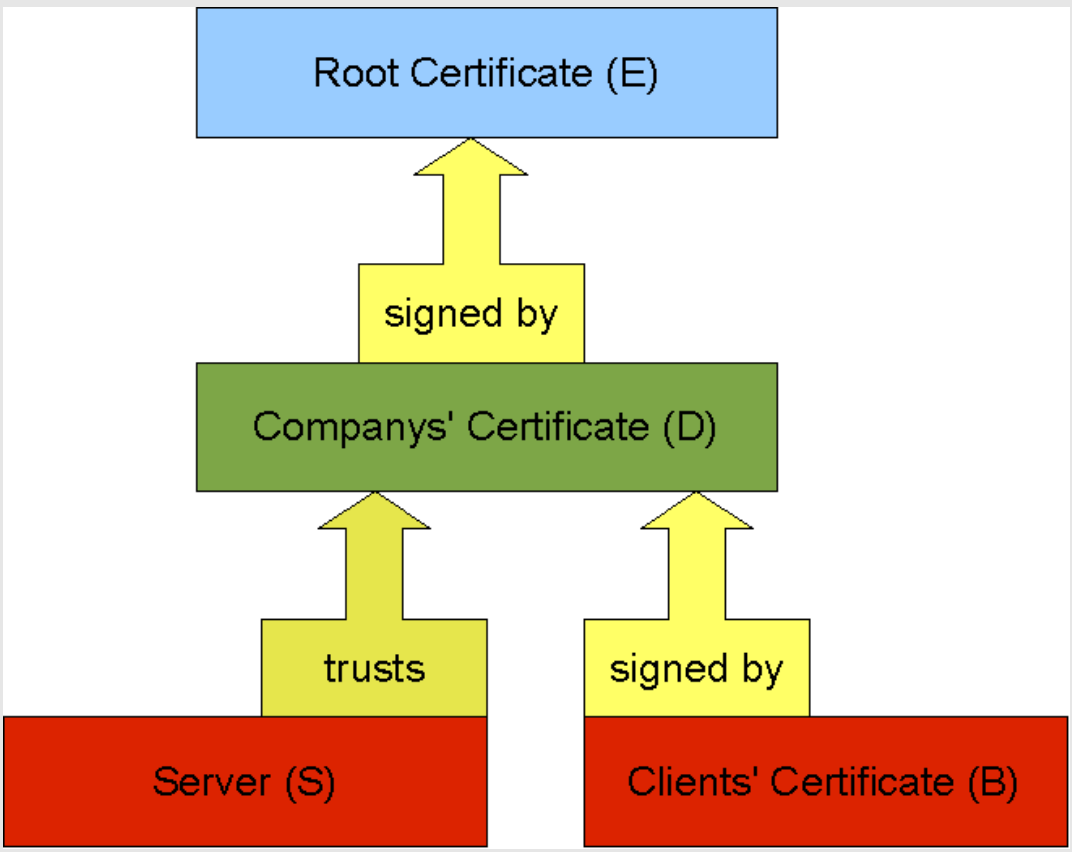
SSL authentication in CALA_REX

Basics - How SSL authentication works

Overview

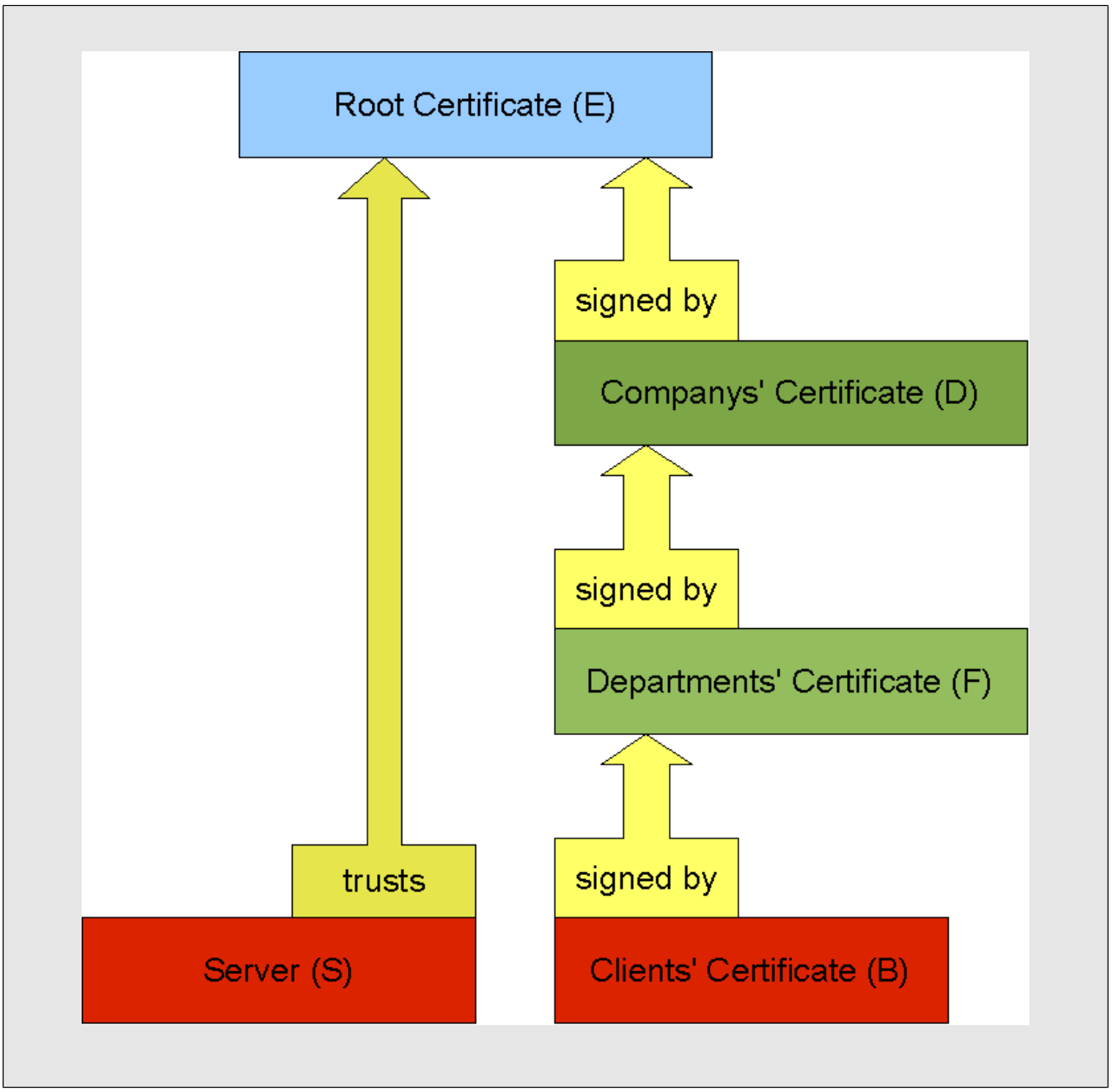
SSL authentication uses certificates and certificate chains. Each certificate must be signed by another certificate except of so called root certificates, which is self-certified.

The authenticity of an certificate can be verified by following the certificate chain up to one certificate which is known to be trustworthy.

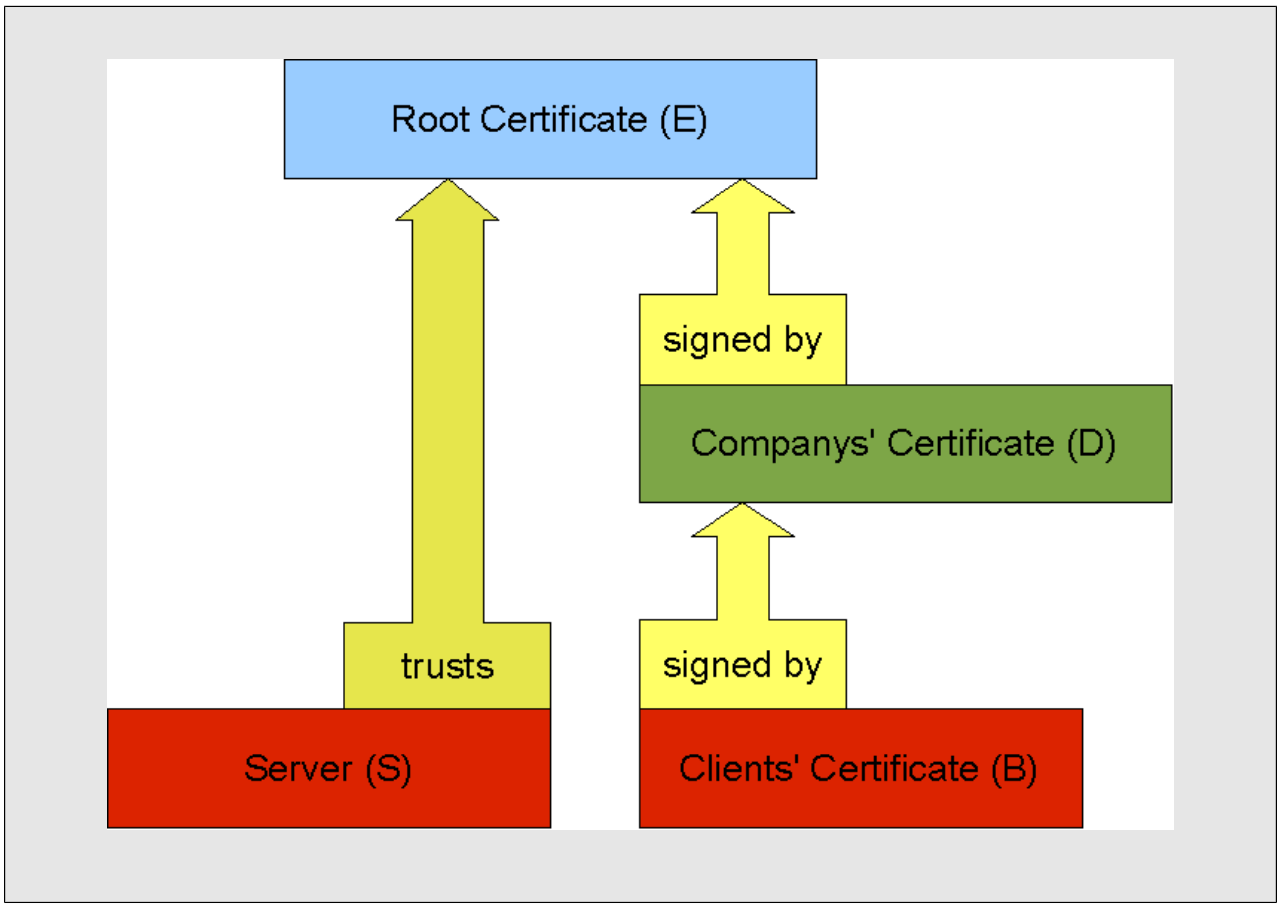


A client connects to a server and sends its certificate *(B)* which has been signed with *(D)* which has been signed with *(E)*. Since the server nows, that (*E)* is trustworthy, it can verify the authenticity of *(B)*.

A simple certificate chain for authenticating a client



Another example for certificate chains when authentication clients



Another certificate chain example with a longer certificate chain

For a further control, the applications should also do some additional checks after the validity of the certificates has been approved. It could for example check if the ip address or hostname of the client is the same as specified in the certificate. This avoids clients from connecting with a certificate copied from another client.

Certificate files

While installation, the following files are created in the keys subdirectory of the ECM SM server installation directory.

- `root_cert.pem`: the certificate of the root ca
- `root_cert.srl`: the serial number file of the root ca
- `root_key.pem`: the private key for the root certificate
- `serverca_cert.pem`: the server ca certificate
- `serverca_cert.srl`: the serial number file for the server ca
- `serverca_key.pem`: the private key for the server ca certificate

- **trusted_cas.pem**: the certificates of trusted cas (includes **root_cert.pem** and **serverca_cert.pem**)
- **cala_rex_srv_cert.pem**: the certificate used by CALA_REX server
- **cala_rex_srv_priv.pem**: the private key of the CALA_REX server certificate file

NOTE The files starting with **root_** should be moved to a safe place after successful installation. They are useful, if the server ca certificate is compromised.

See Creating an SSL certificate for the agent for a description for creating SSL certificates for clients.

The default passwords for the private keys

This table shows the default passwords for the private keys as they are created while installation of CALA_REX server and client.

root_key.pem	*cAlarEXr00TCaPAssw0Rd*
serverca_key.pem	*cAlarEXSerV3rCaPAssw0Rd*
cala_rex_srv_priv.pem	*cAlarEXseRverPAssw0Rd*
cala_rex_cli_priv.pem	*cAlarEXcL1entPAssw0Rd*

Integrating CALA_REX into an existing public key infrastructure

For integrating ECM SM into an existing public key infrastructure, the following files must be created:

- **trusted_cas.pem**: the certificates of trusted certificate authorities in PEM format
- **cala_rex_srv_cert.pem**: the certificate used by CALA_REX server in PEM format
- **cala_rex_srv_priv.pem**: the private key of the CALA_REX server certificate file in PEM format

The files need to be copied to the **keys** subdirectory of the ECM SM installation directory. If done so before the installation of CALA_REX server software, the files are detected while installation and are not replaced.

Certificate requirements

Custom generated certificates need to have some fields set to specified values when used with CALA_REX. See the sections below for a description of this fields. Certificates and certificate chain files used with CALA_REX need to be stored in the PEM format.

CALA_REX server

- the *commonName* field must contain the servers' hostname
- for each network interface CALA_REX server listens on, a *subjectAltName* entry must be present
- for each hostname alias of the ECM SM server, a *subjectAltName* entry must be present
- the *extendedKeyUsage* field must contain the entry for server authentication (OID 1.3.6.1.5.5.7.3.1)

CALA_REX client

- the *commonName* field must contain the clients' hostname
- the network interface which is used to connect to CALA_REX server, a *subjectAltName* entry must be present
- for each hostname alias of the ECM SM client, a *subjectAltName* entry must be present
- the *extendedKeyUsage* field must contain the entry for client authentication (OID 1.3.6.1.5.5.7.3.2)

Configuration details for CALA_REX clients and servers

Default configuration

To make the user's life as easy as possible, the default configuration should work the following way:

- the default names for certificate files are:
  - $**CENIT_ROOT/keys/trusted_cas.pem** (ECM SM client and server)
  - **$CENIT_ROOT/keys/cala_rex_srv.pem** (ECM SM server only)
  - **$CENIT_ROOT/keys/cala_rex_cli.pem** (ECM SM client only)
- if the necessary certificate files are found, CALA_REX automatically switches to authenticated mode
- using the default configuration, the server accepts both authenticated and anonymous client and application connections
- The certificates created by the webconsole have a well defined format. The default configuration verifies the certificate using fields from this format, further configuration is only needed, when a customer uses self created certificates.

new configuration parameters for CALA_REX clients and servers

name	description	default value
hostdb.col.ciphers	The database column to receive the cipher algorithms used on the client connection (CALA_REX server only)	*CSM_CIPHERS*
hostdb.col.cert	The database column to receive the client's certification data (CALA_REX server only)	*CSM_CERT*
ssl.allowanoncnx	Specifies for which connection types anonymous connections are allowed. One of the values: *none*, *application*, *client*, *client_and_application* (CALA_REX server only)	*client_and_application*
ssl.trustcert.file	The file containing a trusted certificate	**$CENIT_ROOT/keys/trusted_↵ cas.pem**
ssl.trustcert.dir	A directory containing trusted certificates	*NULL*
ssl.cipherlist	The list of ciphers to use (see OpenSSL documentation)	**ALL:!LOW:!EXP:!MD5:@STRENGTH**
ssl.verifydepth	The maximum length of the verify chain.	*3*
ssl.certificate	The certificate to be sent to the connection peer	**$CENIT_↵ ROOT/keys/cala_↵ rex_srv_↵ cert.pem** (srv) **$CENIT_↵ ROOT/keys/cala_↵ rex_cli_↵ cert.pem** (cli)
ssl.keystore	The keystore containing the private key	**$CENIT_↵ ROOT/keys/cala_↵ rex_srv_↵ priv.pem** (srv) **$CENIT_↵ ROOT/keys/cala_↵ rex_cli_↵ priv.pem** (cli)

name	description	default value
ssl.keystore.password	The (pwdcrypt encrypted) password for the keystore.	*11201e1900242a0b1733041d00*↵*31330b0116422a1600* (srv) *11201e1900242a1b3e50171606*↵*31330b0116422a1600* (cli)

Integrating ECM SM into an existing authentication system

The user management of ECM SM can be configured to used existing directory services for user authentication.

The currently supported directory services are:

- IBM Tivoli Directory Server
- Microsoft Active Directory Service
- Sun Java Directory Server
- Novell eDirectory Server
- the ECM SM native authentication service

See section Configuring LDAP authentication in the chapter Installing ECM SM Server.

The default roles used by ECM SM

The roles listed below are preconfigured afterECM SM installation. These roles may be modified or additional roles may be added afterwards.

fsm_user
User role for ECM SM WebConsole. Allow basic access to the web server (login, logout), see hosts and events.

fsm_operator
Operator role for ECM SM WebConsole. Additional right to acknowledge events and to see *Current CALA_REX Hosts*.

fsm_admin
Administrator for ECM SM WebConsole monitoring. Execute any CALA_REX action, close events, delete monitors and manage hosts.

fsm_useradmin
Administrator for ECM SM WebConsole monitoring and web server administration. Additional right to manage user (create, change and delete).

Installing ECM SM Server

Installation Prerequisites

Ensure all prerequisites listed in chapter Installation Requirements and Server Preparation are fulfilled.

Server Installation process

Starting the installer

During ECM SM server installation the following components will be installed and configured:

- JDBC parameters and the JDBC database connection to the database will be checked
- ECM SM Web Console will be installed and services will be created (unless WebSphere based installation is selected).
- ECM SM WebSphere application archives will be created (if WebSphere based installation is selected).
- All agent install and configuration files including the agents and platform specific JRE archives
- Database tables will be created and data will be imported (unless DDL-creation only is specified)
- ECM SM CALA_REX Server agent will be installed, configured and started

Note: for full ECM SM server installation you'd need the following three InstallAnywhere install Images:

ECM SM server install image
This platform specific installer image contains all server-related components.

ECM SM All JRE's archives
This package contains JRE archives for all platforms. These archives are required for using ECM SM Admin GUI tools and to update existing ECM SM CALA_REX 4.0x agents.

Note: There is a Windows-based JRE-archives InstallAnywhere install image and an All-UNIX InstallAnywhere install image available.

This installation image can automatically be installed as sub-package of the ECM SM server install image. If installed separately on UNIX systems this image requires manual extension of the system variable PATH to a Java JRE version 7 binary, which is required during installation. Note: Add the Java JRE installation directory $CENIT_ROOT/jre/bin provided by the server installer to the path variable.

ECM SM CALA_REX All agents images
This installation image contains CALA_REX agent InstallAnywhere images for all platforms. This Image is required, if any kind of agent (managed systems) is to be installed.

Note: There is a Windows-based CALA_REX InstallAnywhere install image and an All-UNIX InstallAnywhere install image available.

This installation image can automatically be installed as sub-package of the ECM SM server install image. If installed separately on UNIX systems this image requires manual extension of the system variable PATH to a Java JRE version 7 binary, which is required during installation. Note: Add the Java JRE installation directory $CENIT_ROOT/jre/bin provided by the server installer to the path variable.

If you do not have enough temporary space at /tmp (UNIX/Linux) you can specify the variable `IATEMPDIR`, that should point to a filesystem with enough space to extract the installAnywhere archive.

If you do not have enough temporary space at `%TMP%` and `%TEMP%` (Windows) you have to set the variable `TEMP` and `TMP`. The variables must point to a local partition with enough space to extract the installAnywhere archive. The directory cannot be located on a file share, it must be on a local disc.

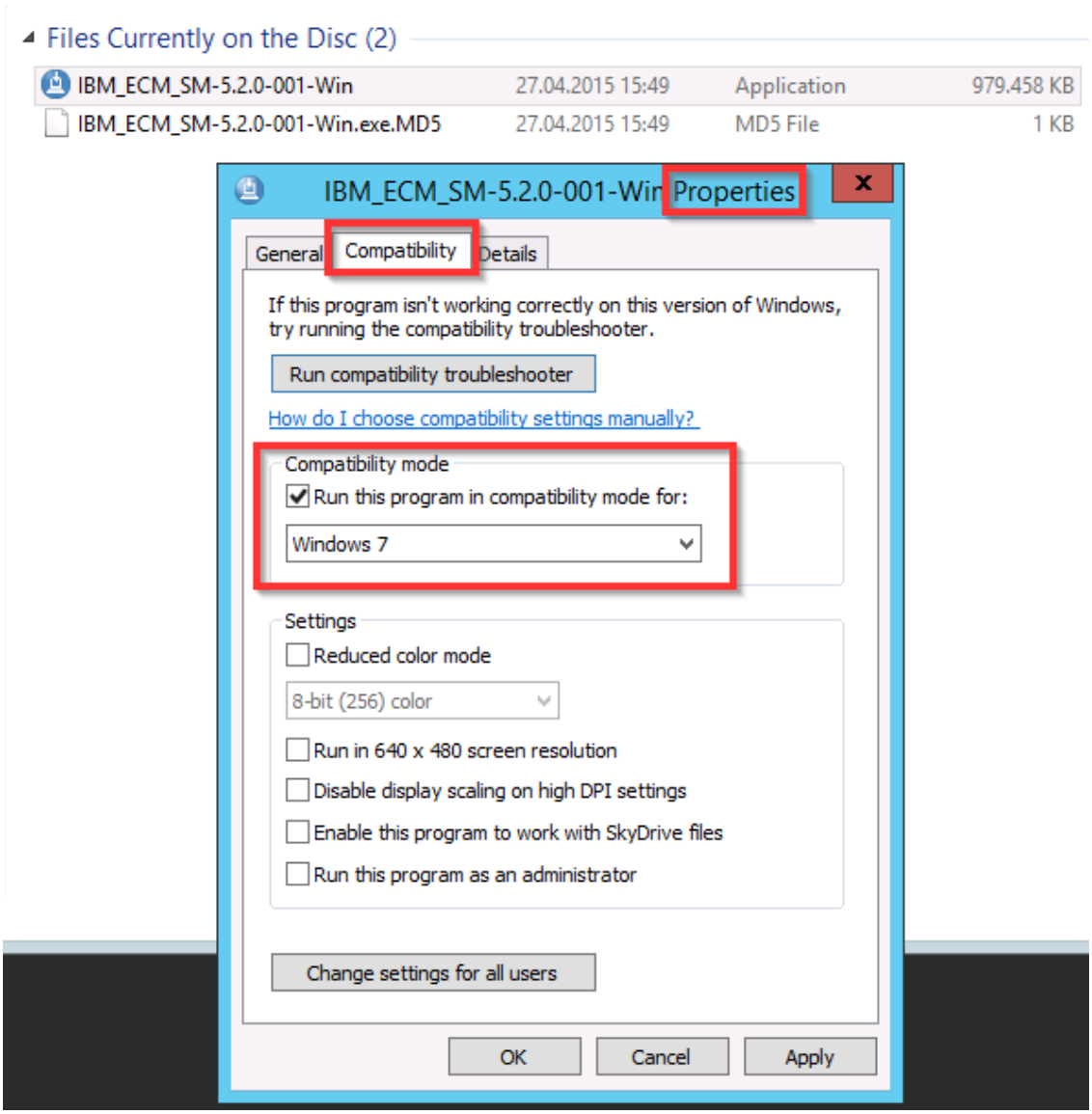
Starting the InstallAnywhere install image on UNIX:

```
./IBM_ECM_SM_SERVER.bin
```

Starting the InstallAnywhere install image on Windows:

```
./IBM_ECM_SM_SERVER.exe
```

NOTE If using Windows 2012 as operating system, set the compatibility mode to "Windows 7" in the properties of the file "IBM_ECM_SM_SERVER.exe".



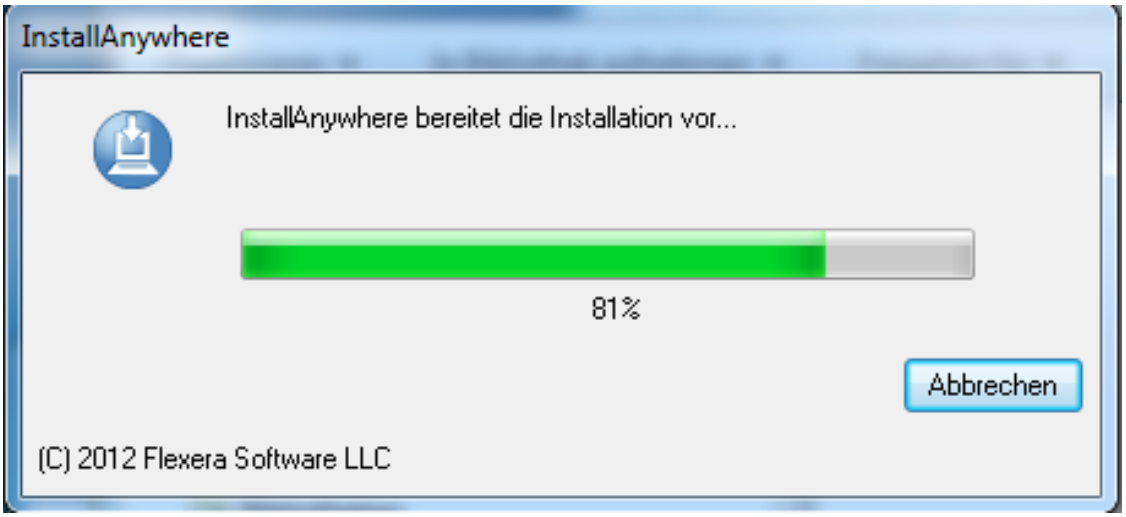
Changing the Compatibility Mode for the InstallAnywhere install image on Windows:

InstallAnywhere options:

-D NOADDITIONALSPACE=true

Normally the installer including sub-images requires a lot of free space in the installation directory. If you'd want to overwrite an existing installation (same or previous version) than you can force the installer to just check for the minimum free space in the installation directory. Set the variable NOADDITIONALSPACE to true.

After starting the InstallAnywhere install image the Intro panel is displayed.

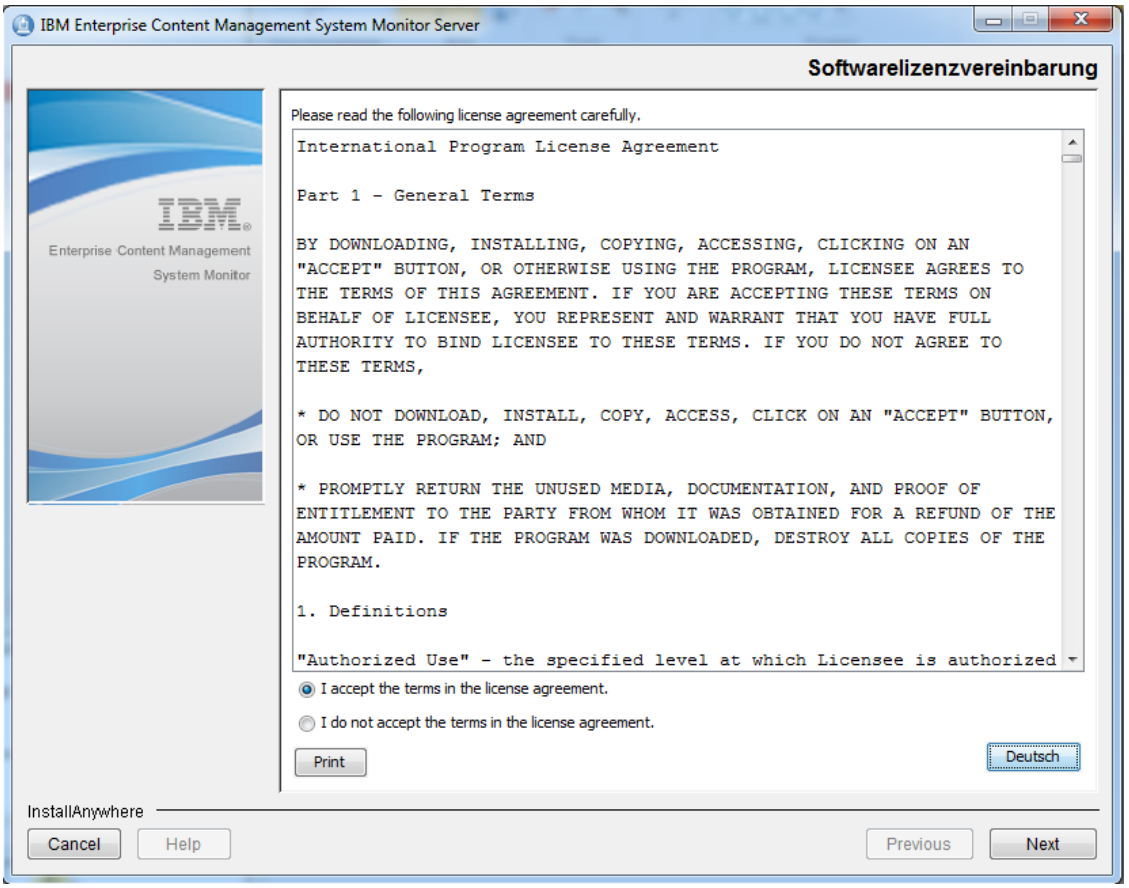


ECM SM Installation: Intro panel

The ECM SM splash image is displayed short term afterwards.

ECM SM Installation: ECM SM Splash screen

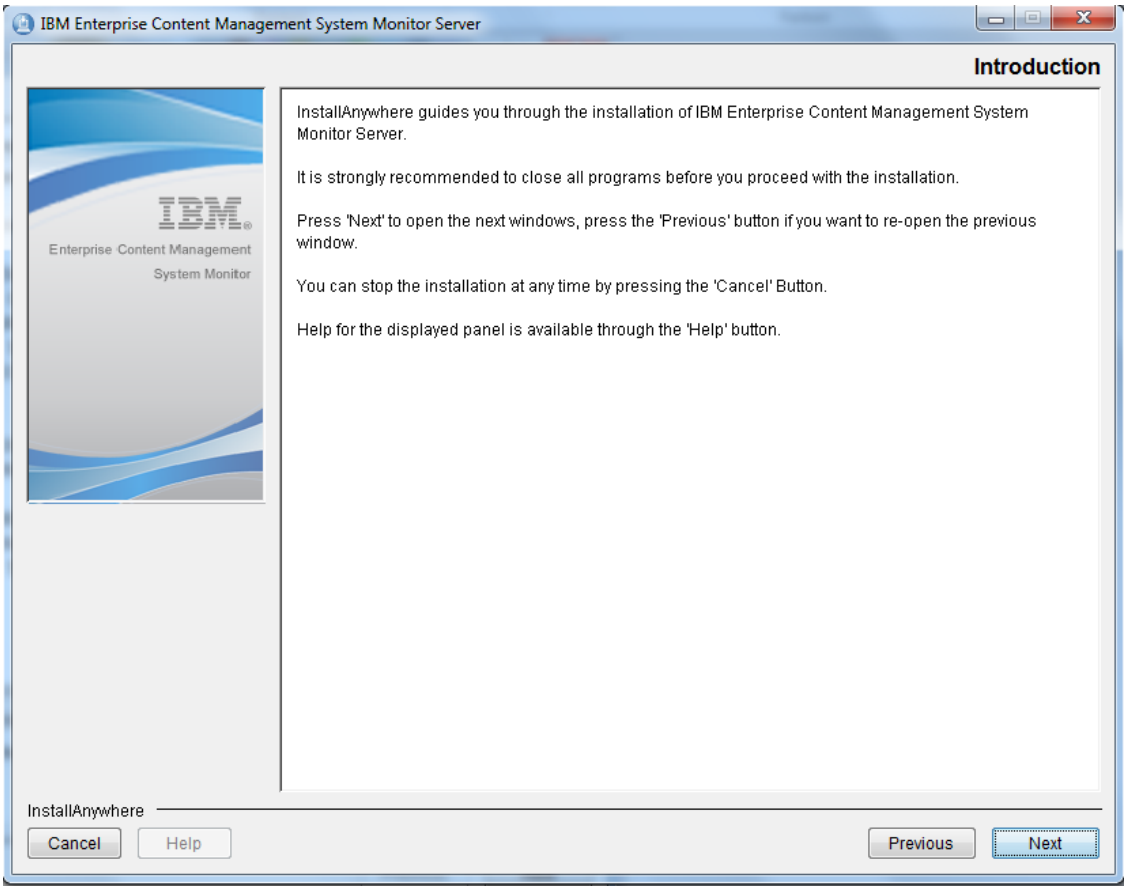
You'd need to confirm the ECM SM license agreement to proceed with the installation.



ECM SM Installation: ECM SM license agreement

Carefully read the license agreement and select **I accept …** and press **Next** to continue or press **I do not accept …** or **cancel** to exit the installation.

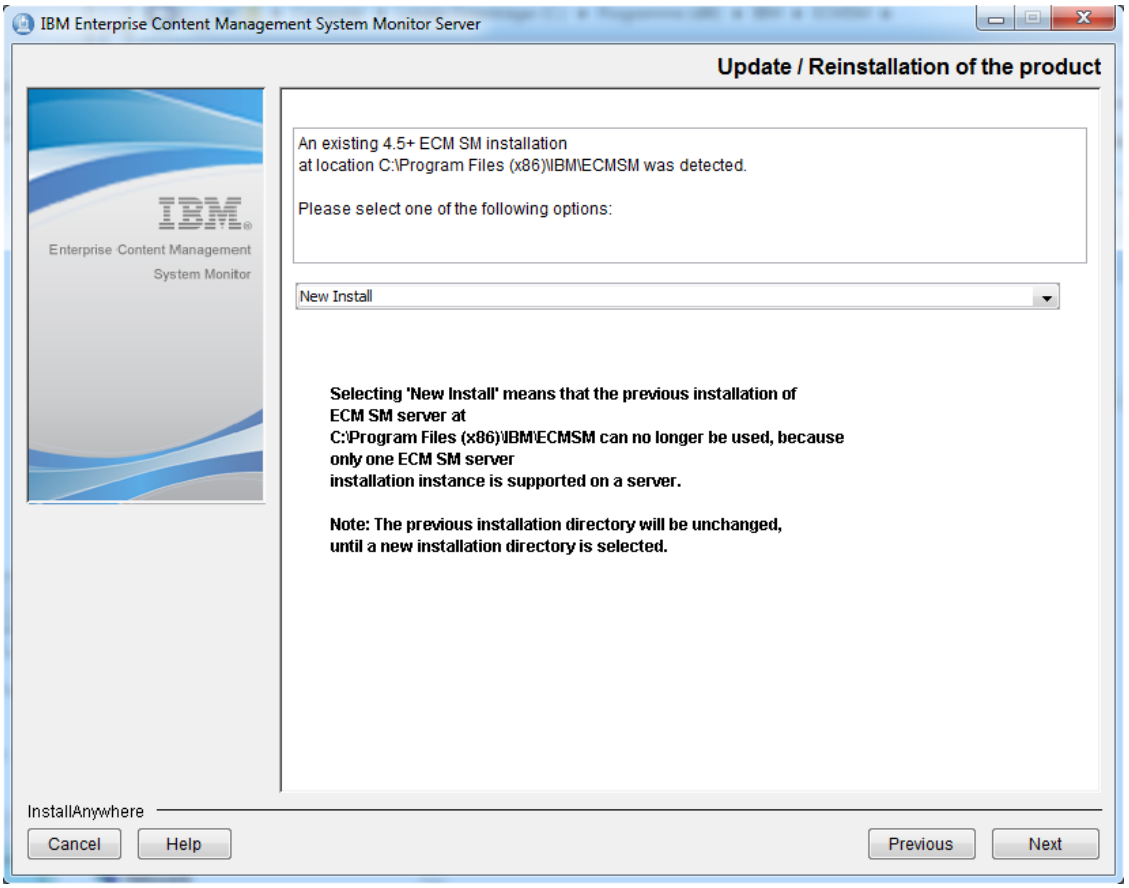
A short introduction text is displayed on the next panel. Press the 'Next' button to proceed.



ECM SM Installation: Introduction screen

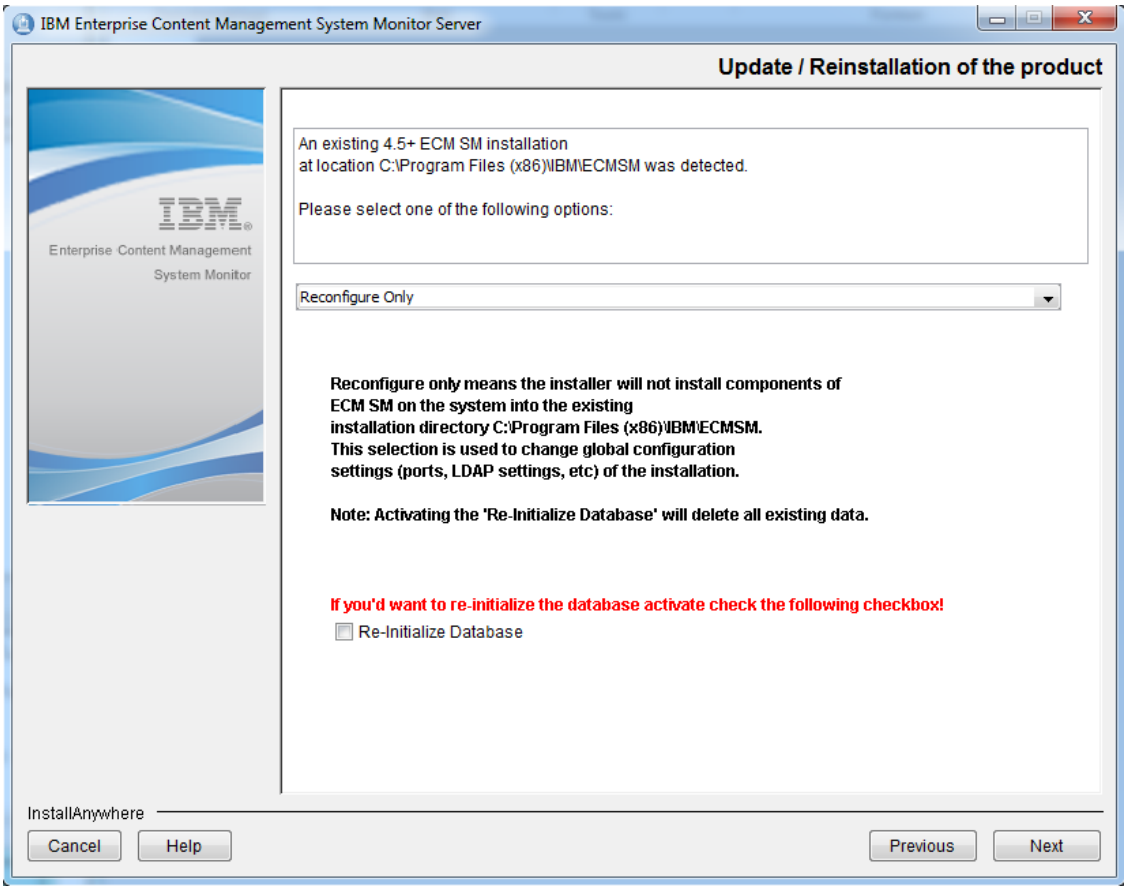
Detecting previous installations

The installer detects previously installed ECM SM server components.



ECM SM Installation: Installation type screen - New Install

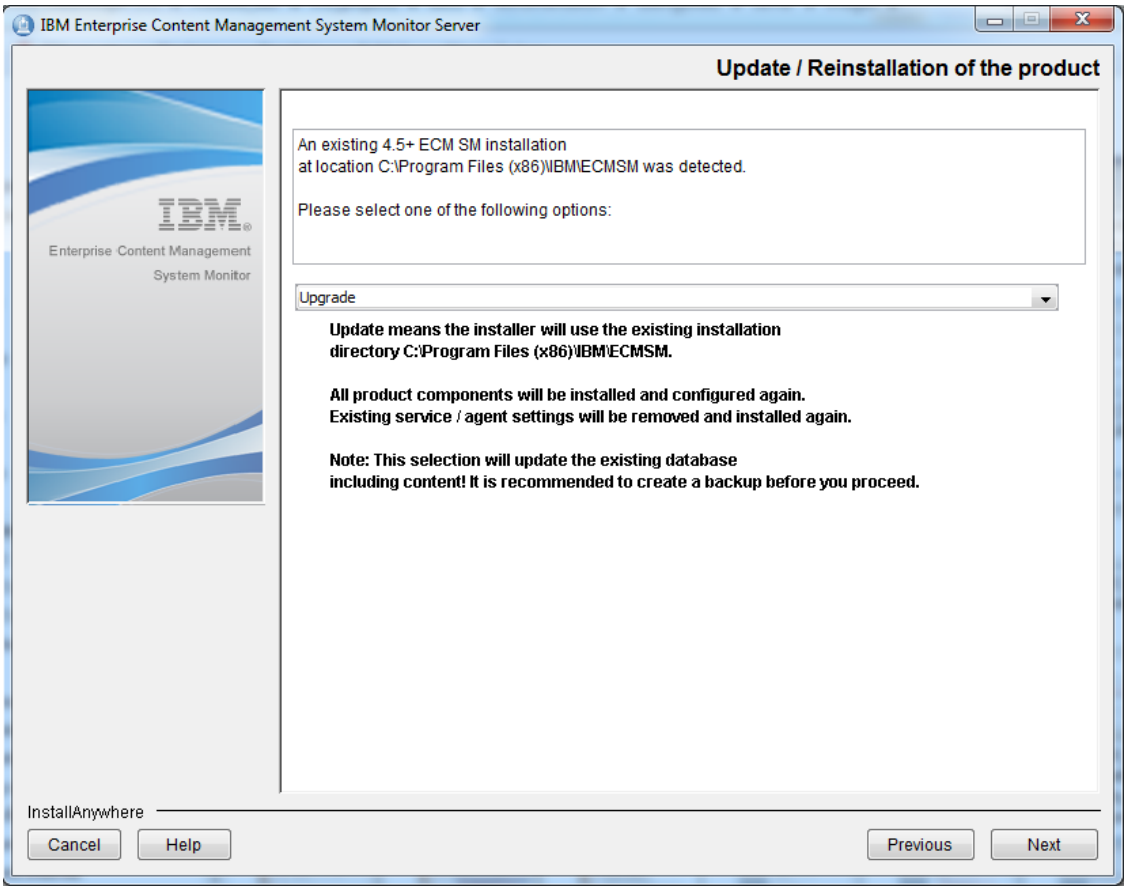
If this is not an initial installation of the software on this system you can select the installation type.



ECM SM Installation: Installation type screen - Reconfigure Only

In the case the system detects an previous installation the installation type 'Reconfigure Only' can be selected.

Note: Only check the 'Re-Initialize database', if you want to clear the complete database.

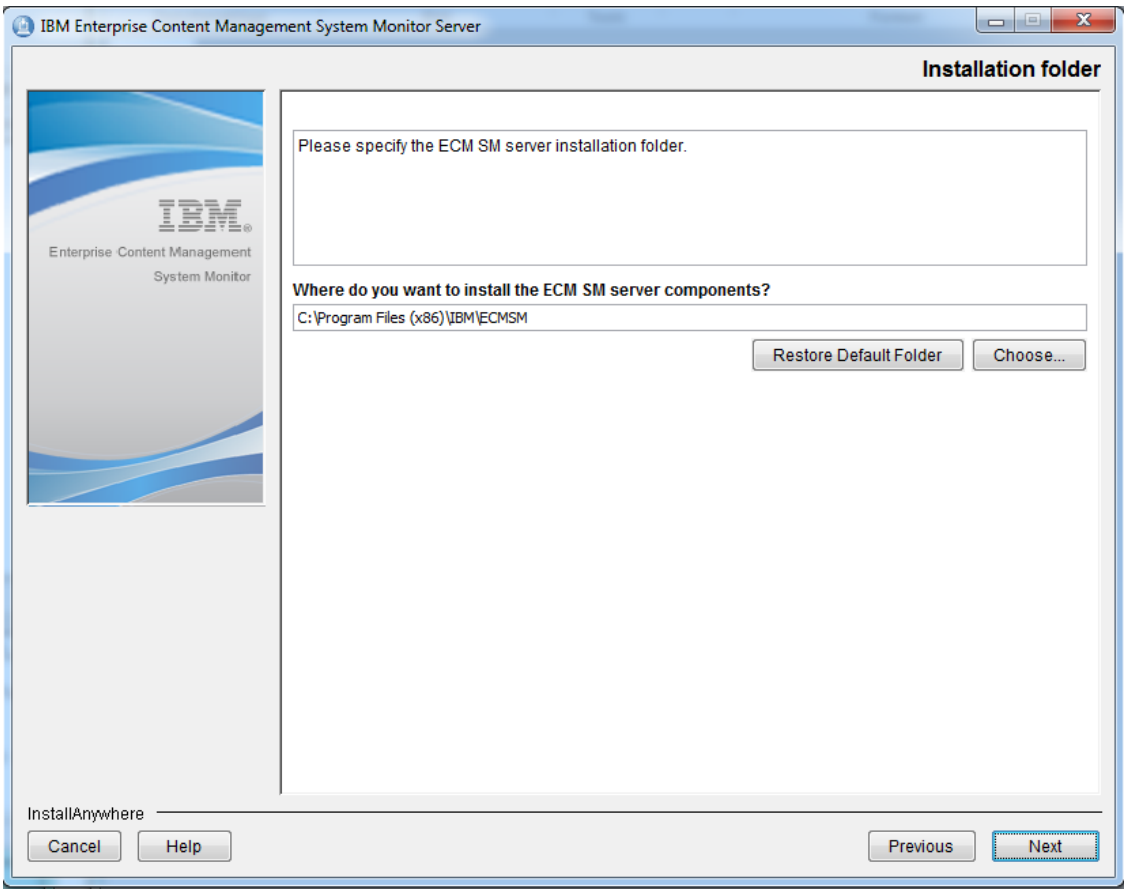


ECM SM Installation: Installation type screen - Upgrade

If you want to upgrade an existing installation select the installation type 'Upgrade'.

Configuration Options

Setting the installation directory

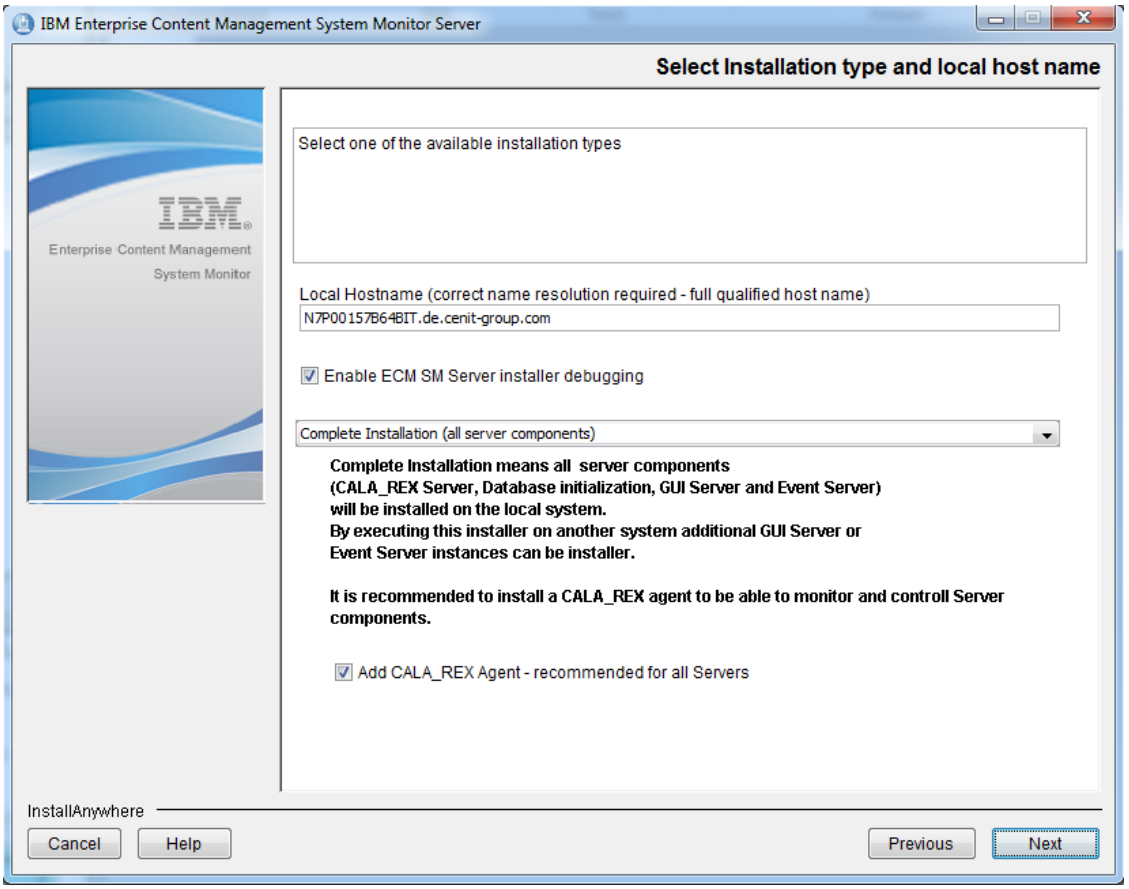


ECM SM Installation: Specify the installation folder

Select **Choose...** to adjust the installation location of the ECM SM software and click the **Next** button.

NOTE Press **Restore Default Folder** to reset the selected installation folder.

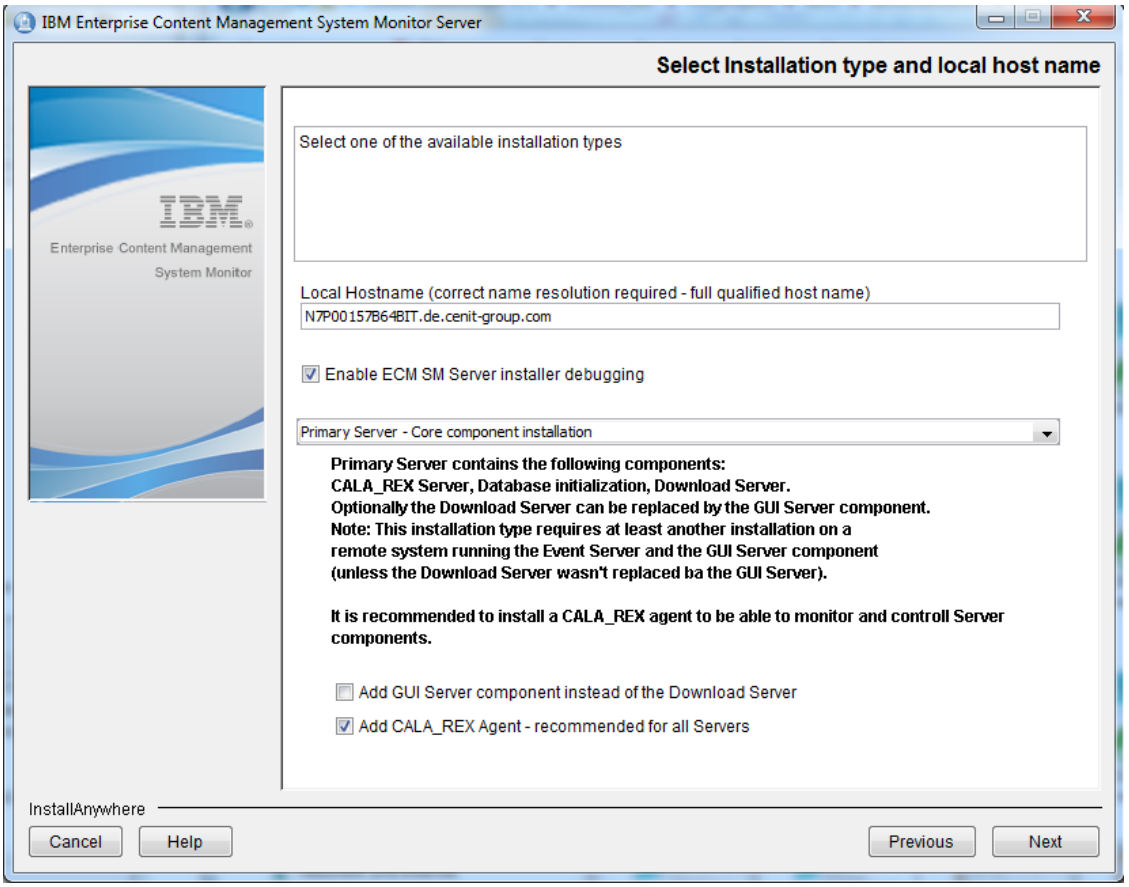
Selecting the Server installation type



ECM SM Installation: Specify the Server installation type (Complete installation)

Adjust the detected full qualified hostname, in the case the detected network settings aren't correct. Enable of disable the checkbox 'Enable ECM SM server installer debugging' in the case you expect issues or you need additional installation information.

Select *Complete installation* in the case you want to install all ECM SM Server components. All components are: Database initialization, CALA_REX server, Event Server and GUI Server. A ECM SM CALA_REX Agent can optionally be installed on the server by activating the corresponding checkbox.

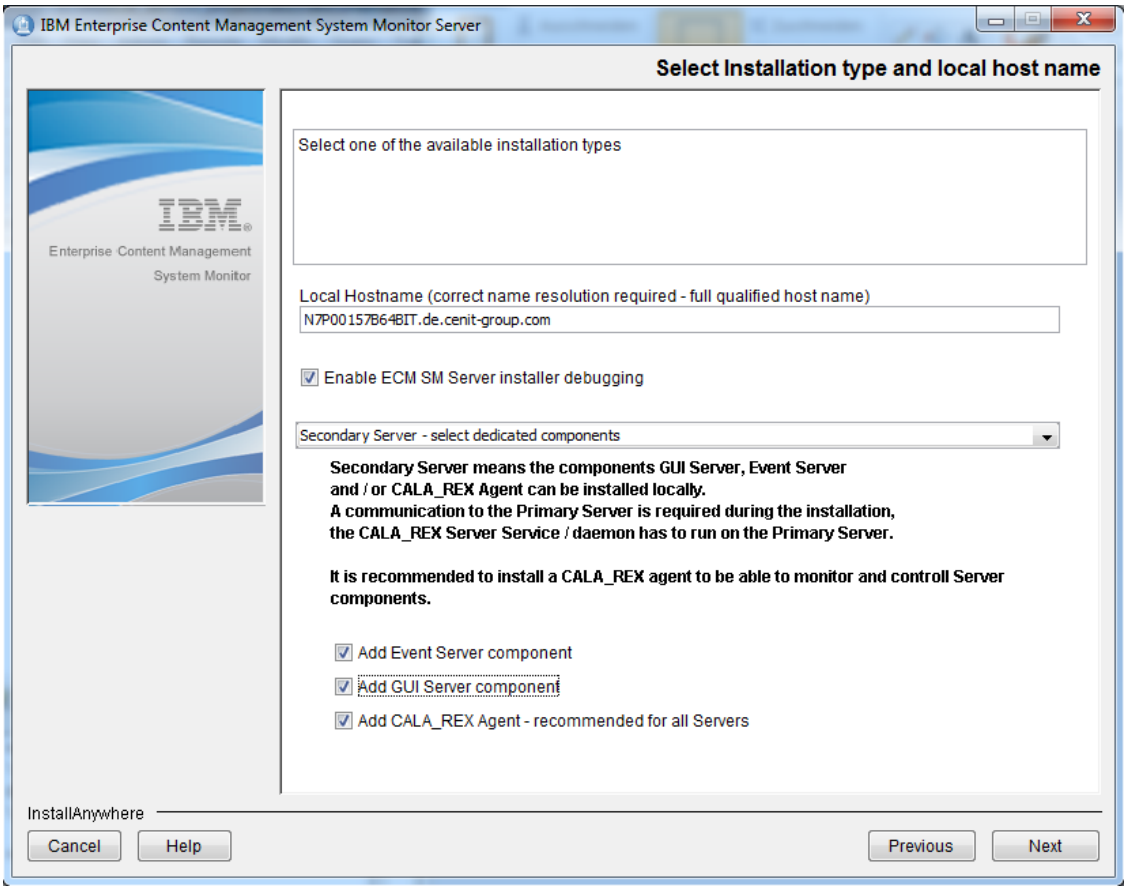


ECM SM Installation: Specify the Server installation type (Primary Server installation)

Adjust the detected full qualified hostname, in the case the detected network settings aren't correct. Enable of disable the checkbox 'Enable ECM SM server installer debugging' in the case you expect issues or you need additional installation information.

Select *Primary Server - core component installation* in the case you want to install only the core ECM SM Server component. Minimum core components are: Database initialization, CALA_REX server, Download Server or optionally instead of the Download Server a GUI Server.

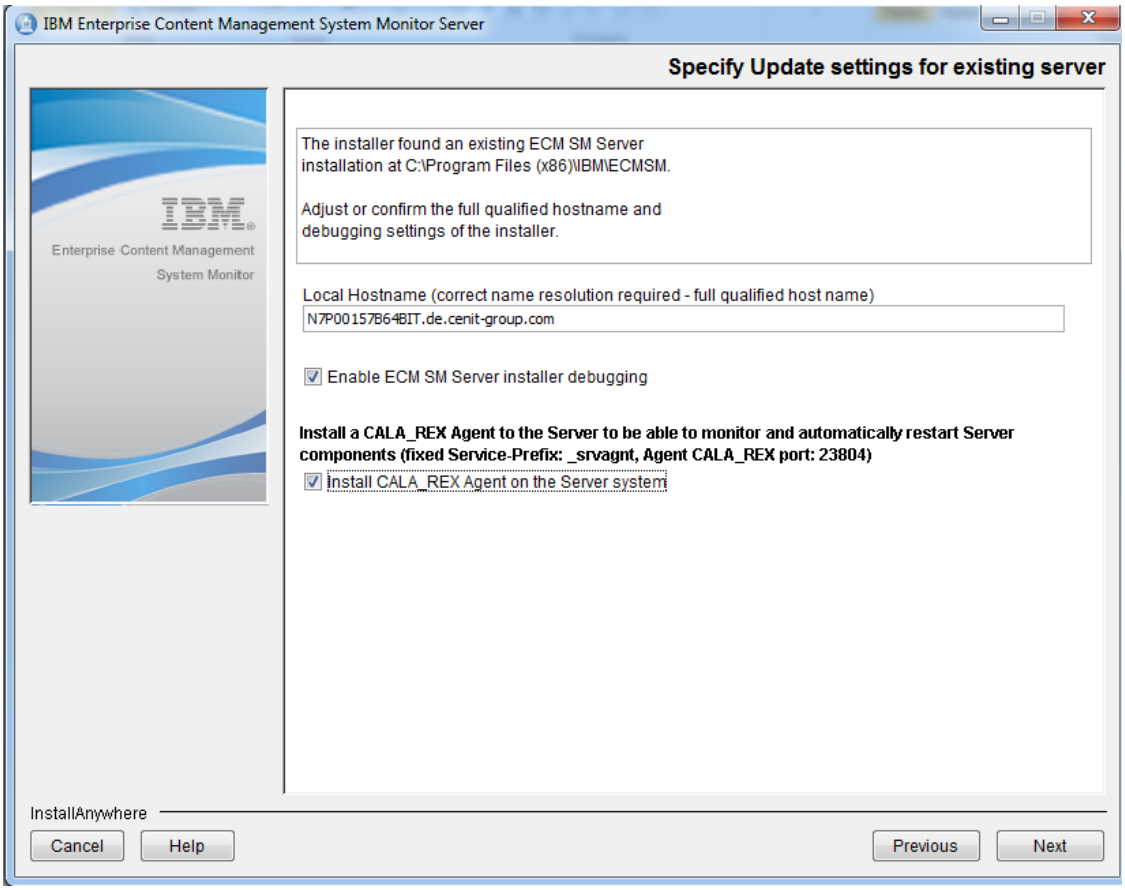
NOTE The Primary Server is a subset of the Complete installation, without an additional GUI Server and Event Server installation as Secondary Server installation the ECM SM System architecture is not complete. A ECM SM CALA_REX Agent can optionally be installed on the server by activating the corresponding checkbox.



ECM SM Installation: Specify the Server installation type (Primary Server installation)

Adjust the detected full qualified hostname, in the case the detected network settings aren't correct. Enable of disable the checkbox 'Enable ECM SM server installer debugging' in the case you expect issues or you need additional installation information.

Select *Secondary Server - select dedicated components* in the case you want to install ECM SM an Event Server and / or GUI Server component. A ECM SM CALA_REX Agent can optionally be installed on the server by activating the corresponding checkbox.

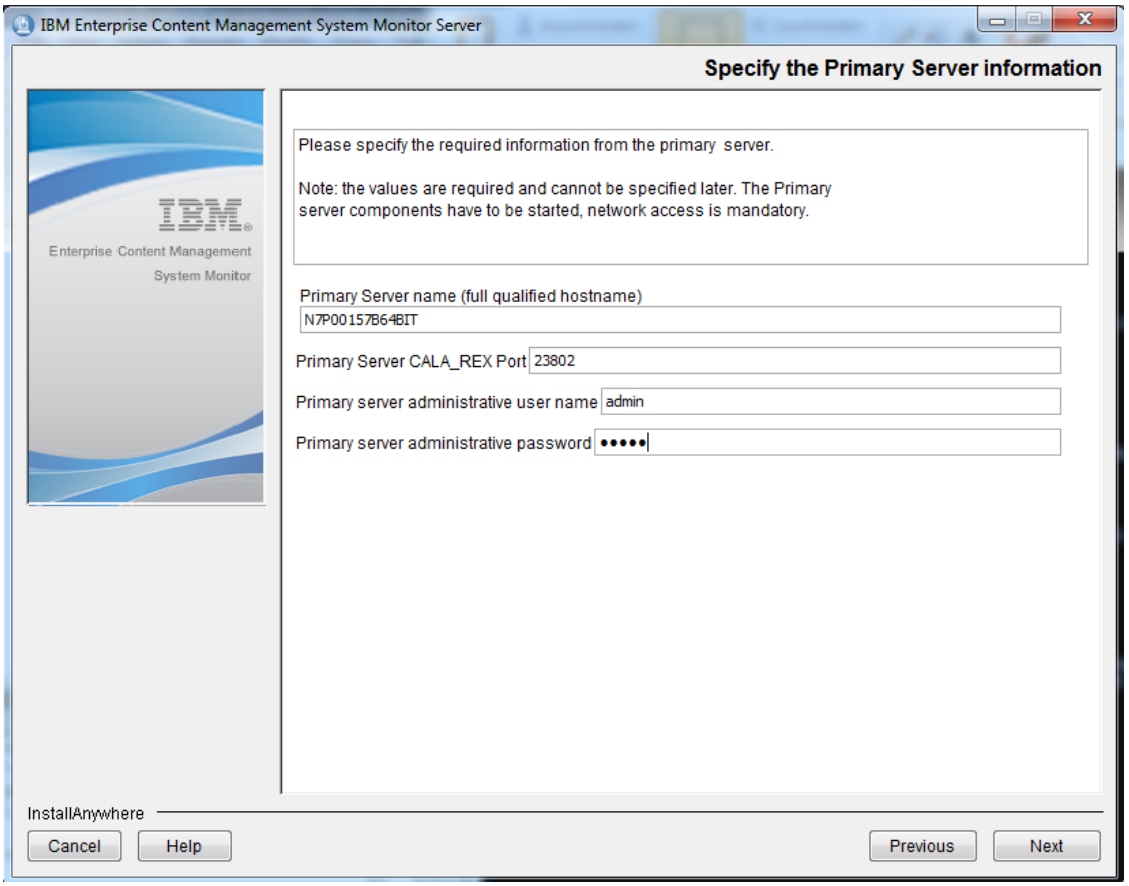


ECM SM Installation: Specify Update settings for existing server (5.1 Upgrade installation)

Adjust the detected full qualified hostname, in the case the detected network settings aren't correct. Enable of disable the checkbox 'Enable ECM SM server installer debugging' in the case you expect issues or you need additional installation information.

A ECM SM CALA_REX Agent can optionally be installed on the server by activating the corresponding checkbox.

Setting the installation directory

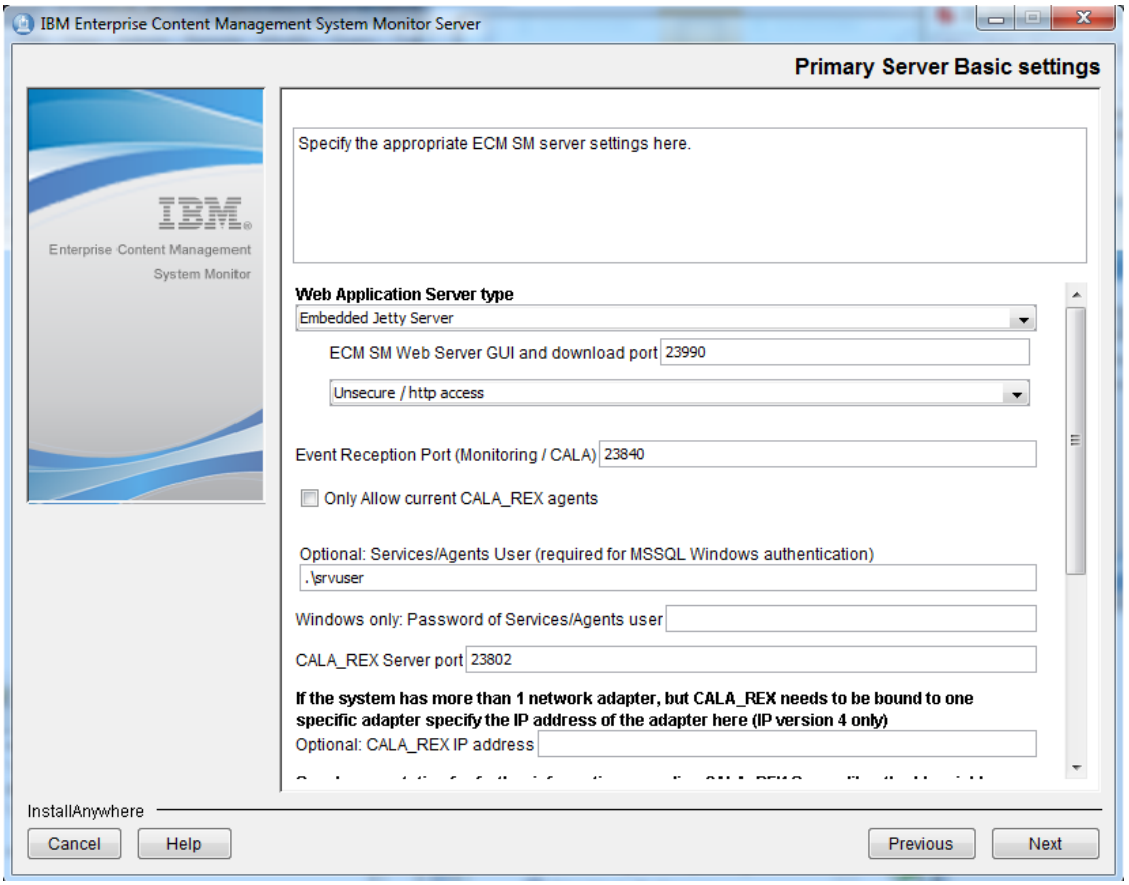


ECM SM Installation: Specify the Primary Server settings for a Secondary Server installation

In the case a Secondary Server installation the installation process need CALA_REX communication to the Primary Server. Therefore specify the full qualified Primary Server name and the Primary Server CALA_REX port (Default value 23802). In addition the administrative user account and password has to be specified to download required files (settings information, JDBC driver files, etc) from the Primary Server. Once you specified the parameters click the **Next** button. The download will proceed. In the case of an error a error panel will be displayed and the installer will go back to the Settings panel. Correct the settings in this case and / or verify the network communication and check whether CALA_REX Server is activated on the Primary Server.

Configuring basic ECM SM parameters

The next four panels show the *Basic ECM SM Server Settings*. The first screen shot shows the basic parameters, if the *Embedded Jetty Server* is selected as web application server to be used.



ECM SM Installation: Basic Settings for Unsecured / HTTP-based Jetty Web Server

Embedded Jetty Server

The embedded *Jetty Web Application Server* will be used as *GUI* and *Event Server* web application server.

IBM WebSphere

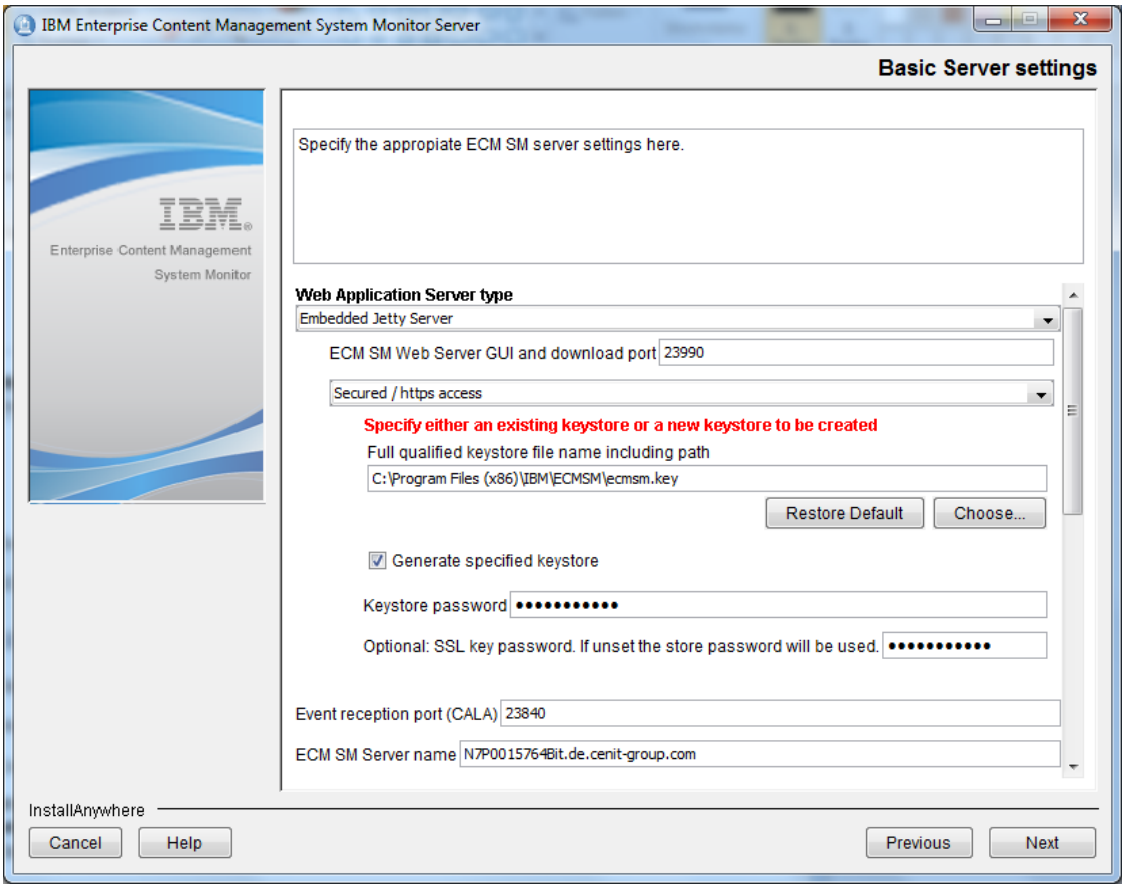
An existing *IBM WebSphere Application Server* will be used as *GUI* and *Event Server* web application server.

NOTE The license for the IBM WebSphere Application Server needs to be purchased separately. See *Hardware and Software Requirements Guide* for information about supported IBM WAS versions.

If **Embedded Jetty Server** with *Unsecure / HTTP access* is selected, the GUI port must be specified.

ECM SM Web Server GUI and Download Port

Default value is 23990, any unused port can be chosen.



ECM SM Installation: Basic parameters for secured / HTTPS-based Jetty Web Server

If *Jetty Web Application Server* with *Secured / HTTPS access* is selected, the following additional parameters need to be specified:

ECM SM Web Server GUI and Download Port

Default value is 23990, any free port can be chosen.

Full Qualified Keystore File Name

Specify the full qualified file name of the keystore file.

Generate Specified Keystore

Check the checkbox in the case, the installer shall create a temporary script, that contains the commando to generate the keystore file.

Keystore Password

Required: Specify the password of the keystore.

Optional: SSL Key Password

The SSL key password of the Jetty application. If unset, the keystore password will be used.

Event Reception Port (Monitoring / CALA)

This port is used to receive events from agents (managed systems). The default value of the ECM SM server monitoring port (CALA Port) is 23840

Checkbox: Enable or disable Allow only current CALA_REX Agents

Check this, if only the newest version of the CALA_REX Agent should be allowed to connect to the server. Don't enable this checkbo ig you plan to connect old agents.

NOTE This option isn't available during upgrade installation.

ECM SM Server Name

This parameter contains the full qualified IP name of the ECM SM server

Checkbox: Enable or disable ECM SM Installation Debugging

Check this, if you encountered issues installing *ECM SM Server* for detailed information / logging.

NOTE Checking this checkbox does not enable debugging of the application itself.

Optional: Services / Agents User

If this parameter is specified, the services / agents will be installed via this user account. Otherwise the service / daemon will be started as `Local System` (Windows) or `root` (UNIX / Linux). For Windows domain accounts use either <*domain-name*>\<*user-name*> or <*user-name*>@<*domain-name*>.

NOTE On Windows systems the installing user as well as the service user need to be member of the Administrators and Users groups (or have corresponding permissions) and must also have the `Log on as a service` permission.

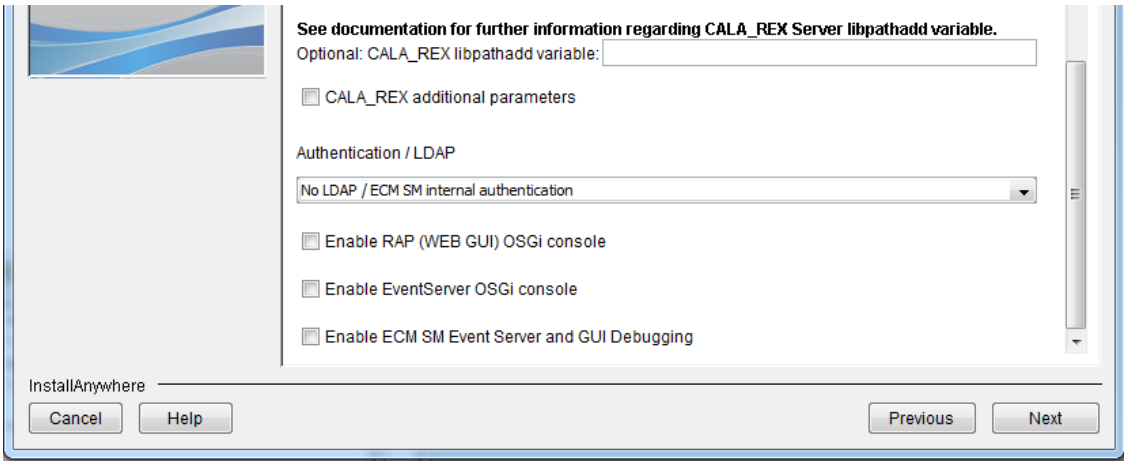
IMPORTANT MS SQL Server *Windows Authentication* requires this parameter to be set.

Windows Only: Password of the Services User

On *Windows*-based systems the password is required, if a *Services / Agents User* is specified.

CALA_REX Server Port

This parameter defines the server-side port of the agent that is responsible for agent installation, task execution and other action taken on agents.



ECM SM Installation: Basic Server Settings (All Web Application Servers)

Optional: CALA_REX IP Address

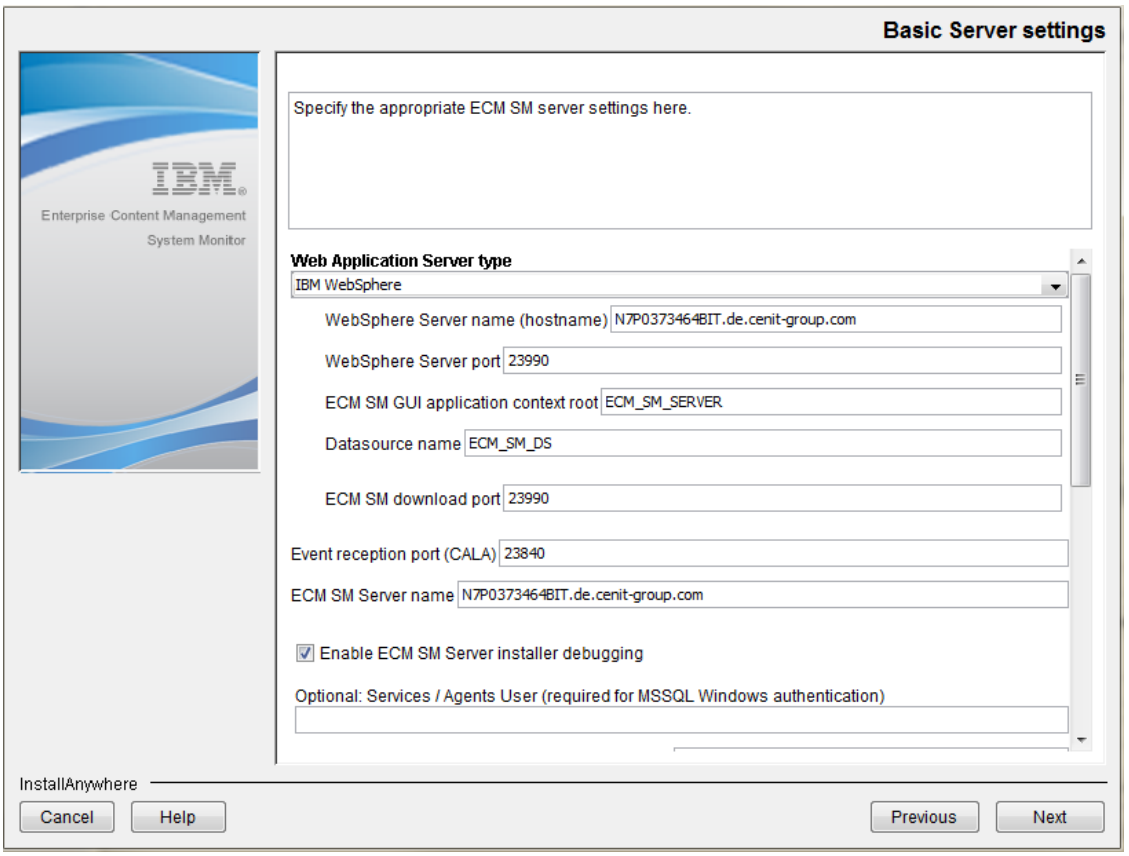
If specified, the CALA_REX agent is bound to this IP address only. Specify a value here, if a *multi-IP address system* should be bound to one specific IP address only.

NOTE Use `0.0.0.0`, if the CALA_REX service shall bind to all network devices.

Checkbox: CALA_REX Additional Parameters

If checked, you can specify another CALA_REX relevant property and its value.

The next *Basic Server Settings* screen shot shows the required parameters, if *IBM WebSphere Application Server* is selected as web application server.



ECM SM Installation: IBM WebSphere AS Parameters

WebSphere Server Name (Hostname)

Specify the IP or hostname of the IBM WebSphere Application Server, on which the ECM SM enterprise applications will be deployed.

WebSphere Port

The default value is 9080. Verify the port settings via your *WAS Administrator*.

ECM SM GUI Application Context Root

Default value of the context root is ECM_SM_SERVER. This is the name of the ECM SM GUI enterprise application within *WebSphere Application Server*.

WebSphere Datasource Name

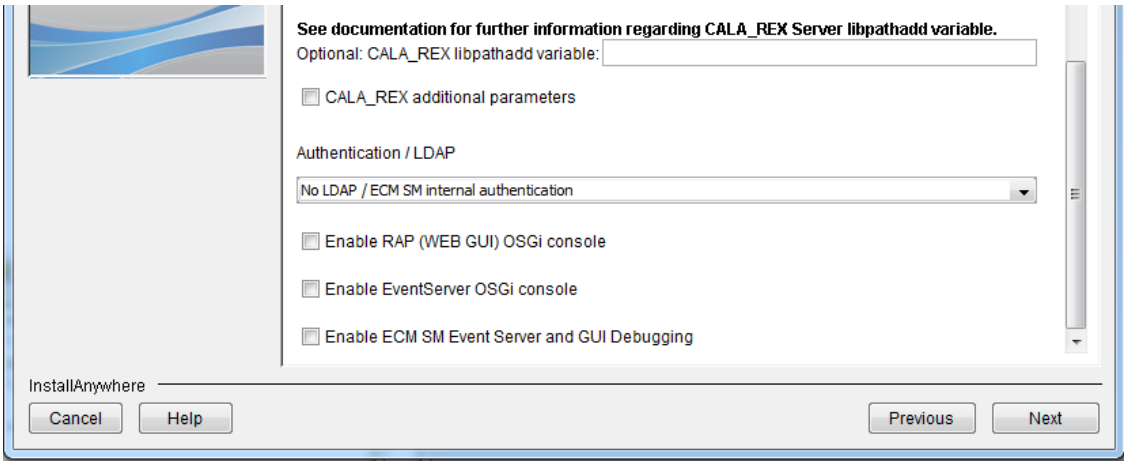
A data source with this name needs to be defined within *IBM WebSphere Application Server* for the database connection. The creation of a data source is described in the Creation of a datasource on IBM WebSphere chapter.

NOTE All data source settings should match the database settings specified later.

ECM SM Download Port

The JRE archives and CALA_REX agent installer packages, located on the *ECM SM Server*, are downloaded from this port. This is a minimized Embedded *Jetty Web Application Server* running on the *ECM SM Server.*

The third Basic Server settings screen shot shows the lower part of the scroll area. It contains the LDAP authentication type parameter and two parameters for debugging and advanced server settings.



ECM SM Installation: Basic server settings lower screen area

Enable RAP (Web GUI) OSGi Console

Check this box, if you want to enable ECM SM RAP (Web GUI) service/agent OSGi console. For further information about OSGi consoles see the related chapter.

Enable Server OSGi Console

Check this box, if you want to enable ECM SM Server service/agent OSGi console. For further information about OSGi consoles see the related chapter.

Enable ECM SM Event Server and GUI Debugging

Enabling this will slow down the performance of the *ECM SM Event Server* and *GUI component*. This parameter should only be activated for debugging purposes. If you have this option enabled, check whether the debug ports for Java remote debugging are set correctly for the Event Server and GUI debugging on the **Advanced Server Settings** panel. You may use the default debug port values.

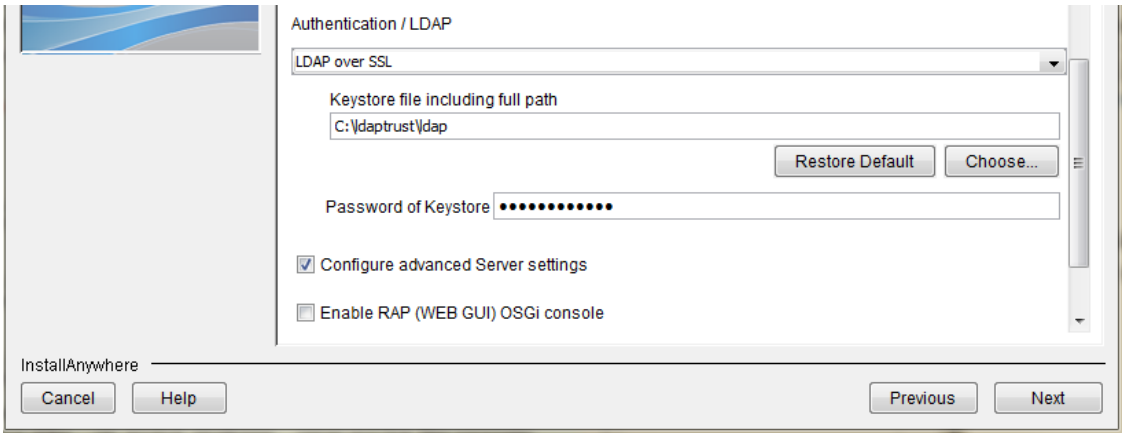
Furthermore, the enabled option will activate trace files for the Event Server and GUI component, i.e. the `$CENIT_ROOT/<component_name: gui or eventserver>/cfg/logging.conf` file will be adjusted automatically during the installation process to enable tracing.

NOTE This feature takes effect without defining any additional ports.

```
0001 # Adjustment of logging.conf trace file entry depending on selected ↵
     or deselected installer option:
0002 de.cenit.eb.sm.finca.helper.loghandler.TraceFileHandler.level = OFF
0003 # Trace files are deactivated (default value - unchecked "Enable ↵
     Event Server and GUI Debugging" checkbox)
0004 de.cenit.eb.sm.finca.helper.loghandler.TraceFileHandler.level = FINE
0005 # Trace files are activated (checked "Enable Event Server and GUI ↵
     Debugging" checkbox)
```

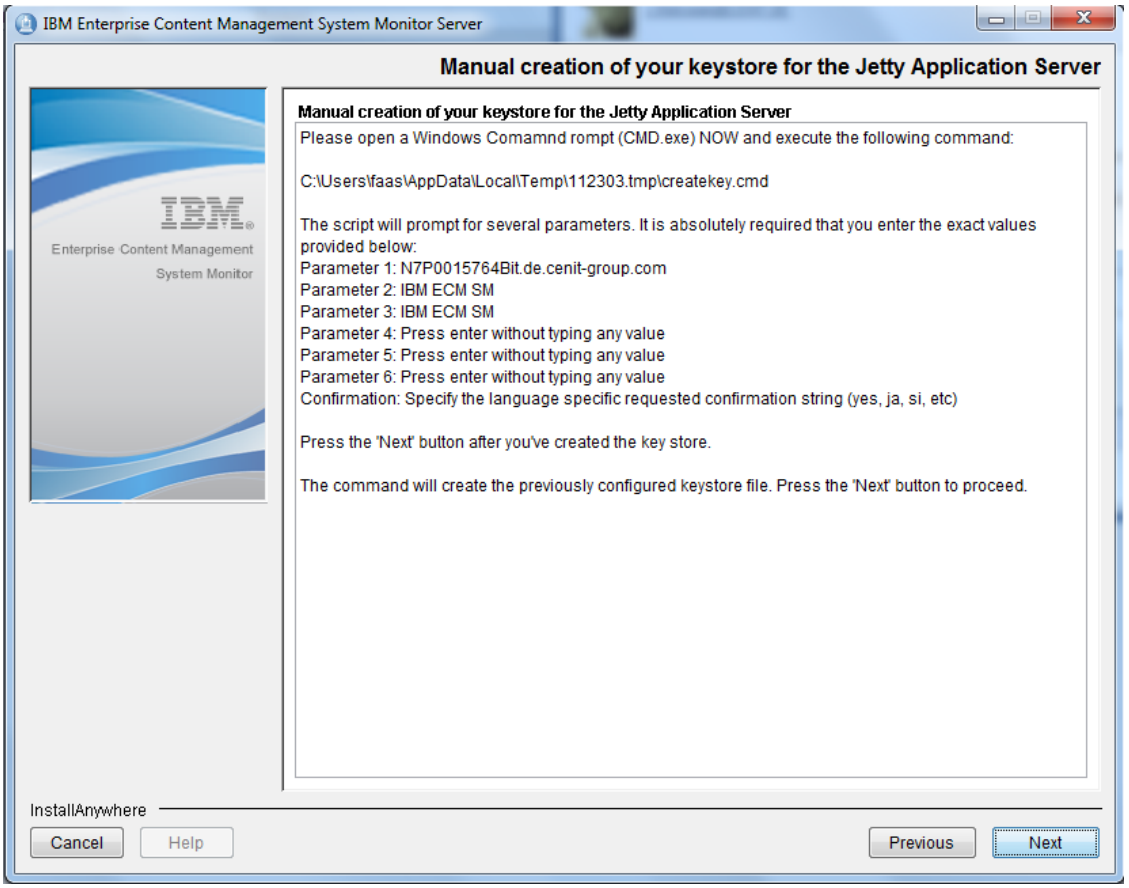
To disable tracing, set the value of the variable above back to `OFF` after you finished debugging.

In case, secure **LDAP over SSL** is selected from the drop-down list box under **Authentication / LDAP**, additional *Basic Server Settings* are displayed (further LDAP parameters) beneath.



ECM SM Installation: LDAPS Keystore parameters

In case, you selected the secure Jetty-based implementation and checked the **Generate specified keystore** checkbox, the following panel will be displayed:



ECM SM Installation: Jetty keystore generation instructions (Windows)

A similar panel will be opened for UNIX/Linux-based systems with instructions about the creation of the keystore. Do not proceed without successful manual execution of the displayed command.

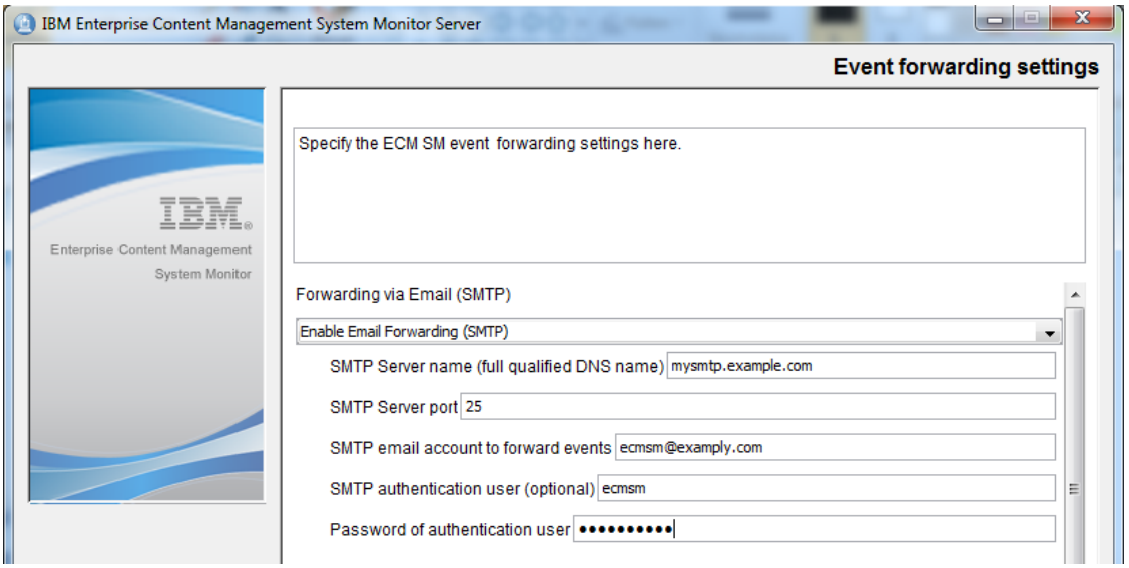
Configuring event forwarding

The next four screen shots show the ECM SM event forwarding functionality.

Detailed event forwarding setup like Recipients, etc is done in the ECM SM Event Console after setup.

Event forwarding as E-Mail

The first event forwarding settings screen shows the required SMTP (email) forwarding parameters.



ECM SM Installation: SMTP (eMail) Event forwarding

The following SMTP parameters are required for email forwarding.

SMTP full qualified IP Server name
Specify the name of the email server

SMTP Server port (default: 25)
Specify the port of the SMTP server to be used

SMTP email address to be used
Specify the email-address to be used, e.g. myaccount@domain.com

SMTP Authentication method
Select on of the supported authentication methods (LOGIN, PLAIN, DIGEST-MD5, NTLM or SASL) or 'Disable SMTP authentication'. If authentication is enabled the following two parameters (SMTP user and password) are required.

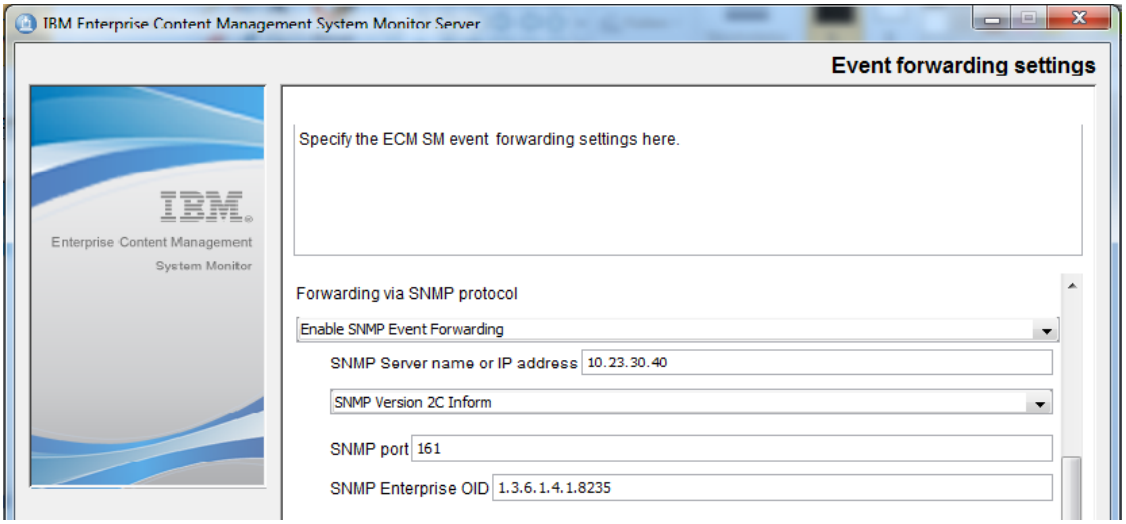
SMTP Authentication user
If Email authentication is required use this email account to authenticate emails

Password of the SMTP authentication user
Use this password to authenticate the user.

NOTE The password will be displayed shadowed.

Event forwarding via SNMP

The second Event forwarding settings screen shows SNMP (Simple Network Management Protocol) parameters.



ECM SM Installation: SNMP Event forwarding

The following SNMP parameters are required for SNMP-Trap forwarding.

SNMP manager full qualified IP name
Specify the name of the SNMP manager to be used for SNMP forwarding.

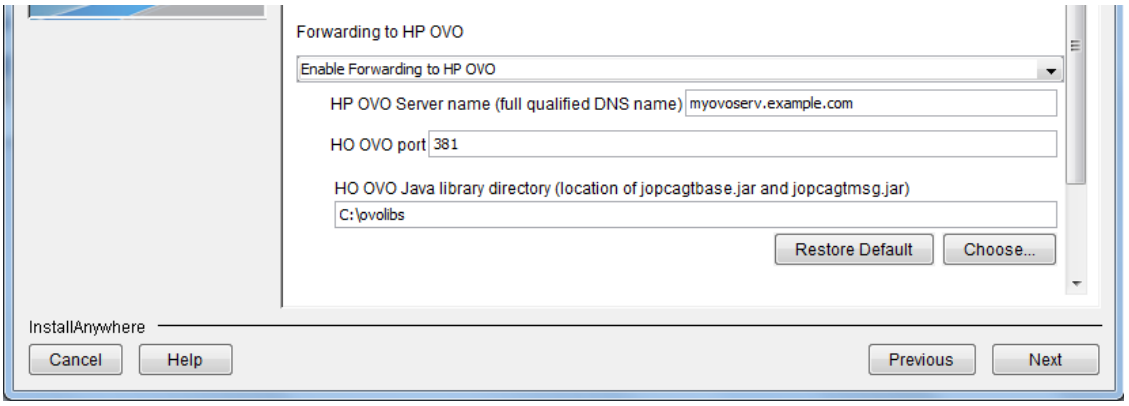
SNMP type
Select one of the following SNMP types from the list: SNMP v1, SNMPv2 or SNMPv2 Inform Contact your SNMP Manager administrator for further information about SNMP versions

SNMP manager port (default: 162)
Specify the required SNMP port of the server

SNMP OID (default: 1.3.6.1.4.1.8235)
You may want to adjust the SNMP OID. If you change the OID you'd need to adjust the prepared SNMP MIB and trap definition files shipped with the product

Event forwarding to HP Operations (HP OVO)

The third Event forwarding settings screen shows HP Operations (HP OVO) settings.



ECM SM Installation: HP OVO Event Forwarding

Event forwarding to HP Operations (HP OVO Forwarding) depends on the following parameters.

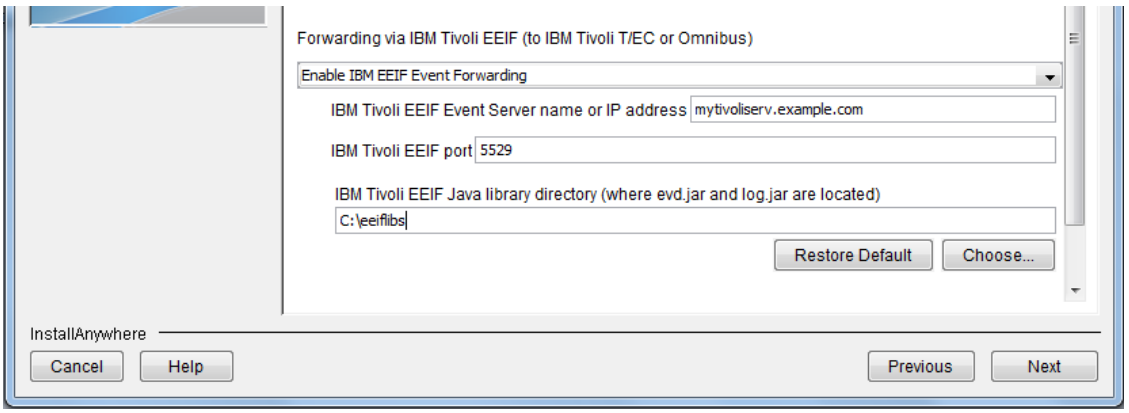
HP OVO server name
Full qualified name of the HP OVO server

HP OVO port (default: 381)
Specify the HP OVO server port

HP OVO Java Library directory
Specify the directory where the HP OVO Java libraries jopcagtbase.jar and jopcagtmsg.jar are located

Event forwarding to IBM Tivoli Enterprise Console or Omnibus

The next Event forwarding settings screen shows the required parameters for IBM EEIF Event forwarding to IBM Tivoli Enterprise Console or Omnibus.



ECM SM Installation: IBM EEIF Event forwarding

Event forwarding to IBM Tivoli Enterprise Console or Omnibus depends on the following parameters.

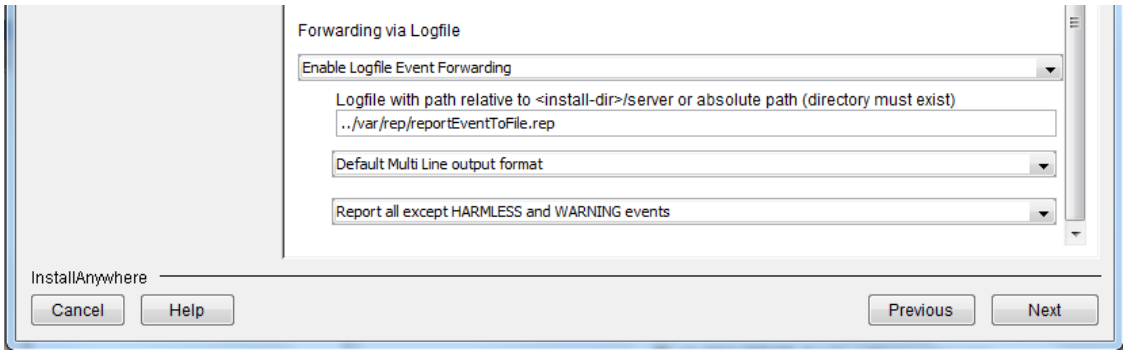
IBM EEIF server name
Full qualified name of the Tivoli Enterprise Console or Omnibus server

IBM EEIF server port (default: 5529)
Specify the port of the EEIF-based IBM Event server

IBM EEIF Java Library directory
Specify the directory where the IBM EEIF Java libraries evd.jar and log.jar are located

Event forwarding via Log file

The last Event forwarding settings screen shows the required parameters for log file based event integration.



ECM SM Installation: Log file Event forwarding

Event forwarding via log file depends on the following parameters.

Log file name
Log file including relative path to `$CENIT_ROOT/eventserver` or absolute path to the file.

> **NOTE** The directory must exist.

Type of template format file
Specify the template format file type. Select either 'Default Multi Line output format' or 'Default Single Line output format' or 'Custom Event forwarding template file'

Custom Event forwarding template file
In the case the type 'Custom Event forwarding template file is selected specify the custom template file including the path.

Custom Event forwarding selection

Select whether all events are forwarded (Report all events) or all events except HARMLESS (Report all except HARMLESS events) or all events except HARMLESS and WARNING events (Report all except HARMLESS and WARNING events) are stored in the log file.

Configuring LDAP authentication

If LDAP authentication is activated the user has to decide which LDAP type to use.

Background

The settings for the LDAP authentication are all based on the same principles regardless of the concrete LDAP server used. These principles are described here to give a better understanding about the input parameters described in the following sub-sections.

NOTE In the following the placeholders *{0}* and *{1}* will be replaced with the username and the password during runtime. So you should not enter these values directly in your configuration, but use the shown placeholders.

Server Name and Port

These parameters are necessary to establish a network connection to the LDAP server. They are the normal hostname of the machine, the LDAP server is running at, plus the port used by the LDAP server.

Group (Provider) URL

It is the LDAP search pattern (aka filter) used to get those elements from the LDAP tree, that do contain groups.

These elements can be groups itself or users. That depends on the LDAP implementation. On some systems the user elements hold the information to which groups a user belongs to and on some systems the group elements store the users as members of the group.

To get the groups from these elements, the Group Attribute is used.

Group Attribute

That is the attribute of the elements selected by the Group URL (see above) to get the concrete groups defined in the LDAP system.

E.g. in case the users contain the groups, the filter can be *memberOf*. In case the elements are groups, the filer can be something like *(&(objectClass=groupOfUniqueNames)(uniqueMember=uid={0},*))*.

Group Query

That LDAP filter pattern selects a distinctive element, normally a user, to retrieve the groups the element belongs to.

Group Name Pattern

The LDAP filter to get a distinctive group entry from the LDAP tree. It should at least contain the name of the group. The name is later selected by the Group Name Index.

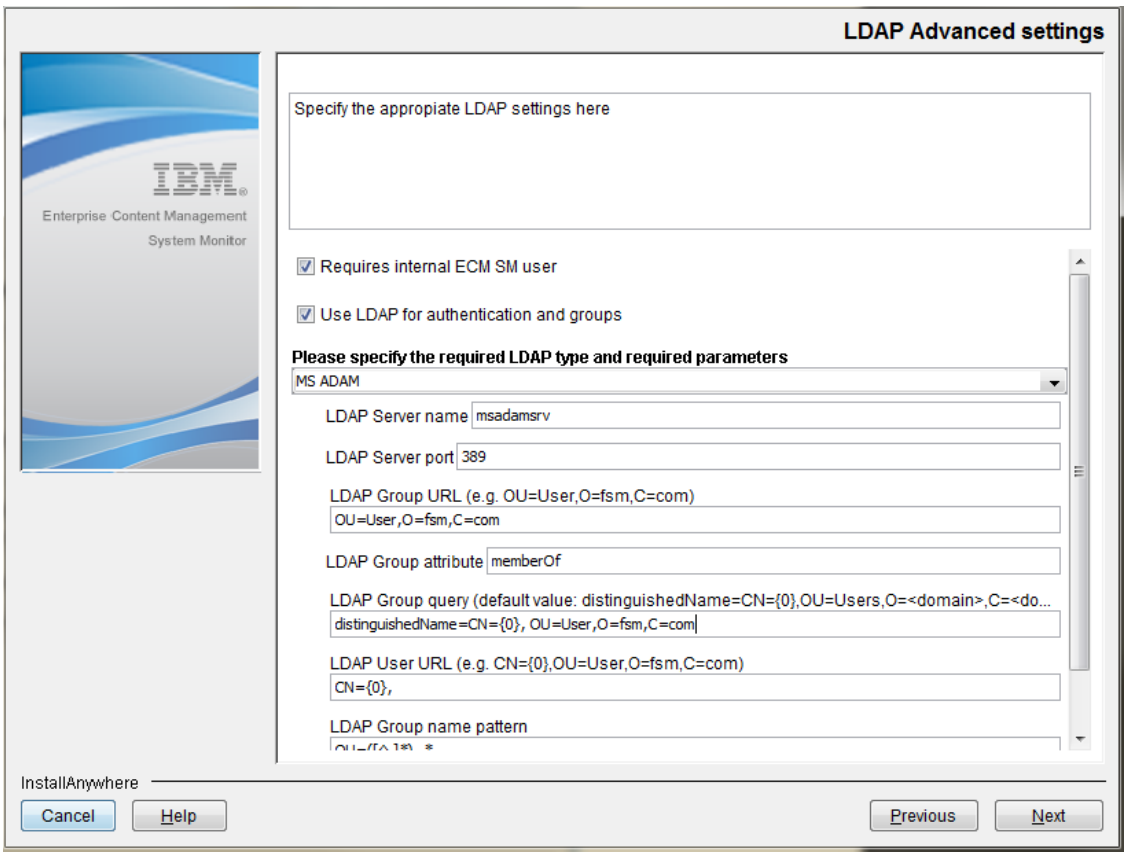
Group Name Index

This is the index of the group's name in the list of values returned by the Group Name Pattern. The counting starts by 1 (*one*).

User URL

This is the LDAP filter to retrieve a distinctive user from the LDAP tree.

Configuring connection to MS AD LDS



ECM SM Installation: MS AD LDS LDAP settings

If the checkbox 'Requires internal ECM SM user' is selected an internal ECM SM user is required for external authentication. Otherwise the user is created automatically.

If the checkbox 'Use LDAP for authentication and groups' is selected, the external LDAP system is used to authenticate the user and to transmit its group memberships to ECM SM. Inside ECM SM the user will be member of the intersecting set of LDAP and ECM SM groups. If unchecked, the external LDAP system is used for authentication only, group memberships are solely managed using the ECM SM user management.

The following parameters are required for MS AD LDS based LDAP server authentication.

Server Name
Specify the full qualified MS AD LDS LDAP server name

Server Port
Specify the MS AD LDS LDAP server port (default unsecure port: 389, secured: 636)

Group URL
Specify the Group URL pattern to search for groups

Example: *OU=User,O=fsm,C=com*

NOTE Do NOT add *CN={0}* to this parameter

Group Attribute
Specify the attribute of an entry in the LDAP database that contains group information.

Default: *memberOf*

Group Query
Adjust the Group filter if required.

Default value is *distinguishedName=CN={0},OU=Users,O=<domain>,C=<domain-suffix>*

If the MS AD LDS server is configured to use the LDAP displayName instead of the distinguishedName please use the following value without any extension: *displayName={0}*

User URL
Specify the User URL pattern to search for users

Example: *CN={0},OU=User,O=FSM,C=COM*

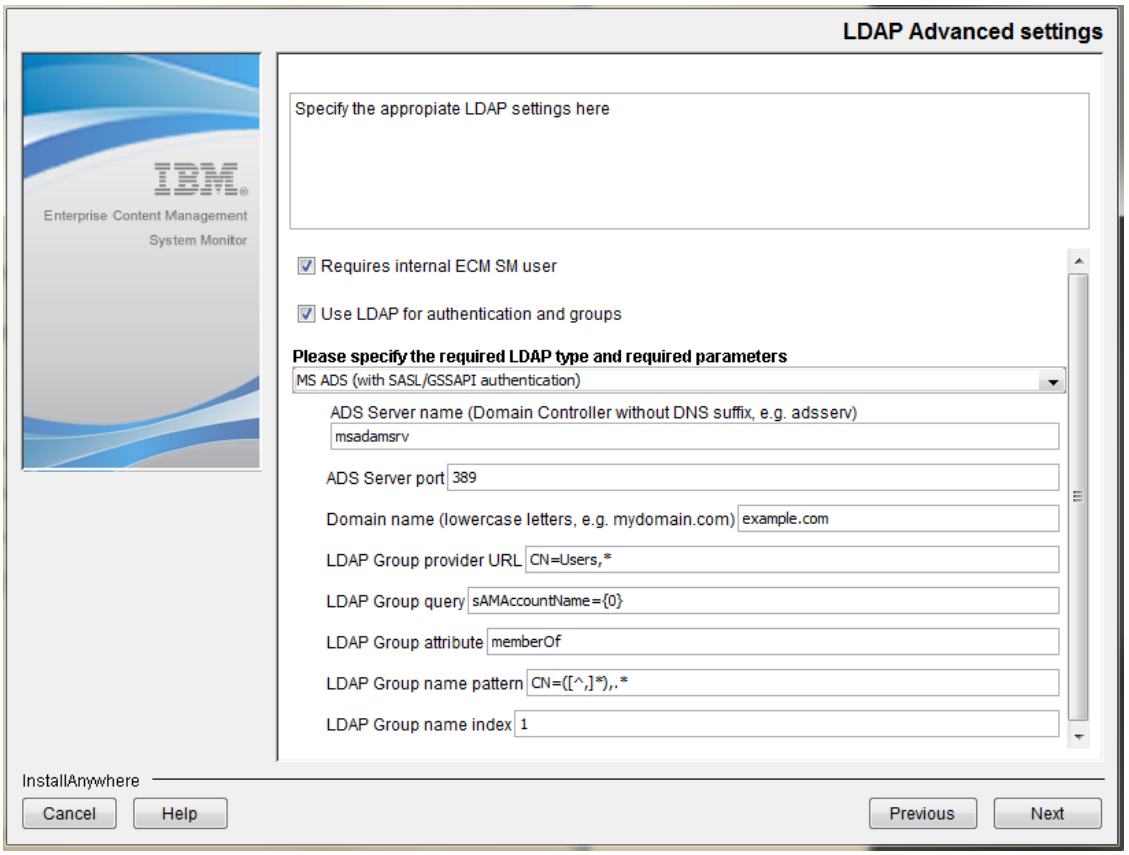
Group Name Pattern
Adjust the Group name pattern settings, if required

Default: *CN=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

Configuring connection to a MS Active Directory Server



ECM SM Installation: MS Active Directory settings

The following parameters are required for MS ADS based LDAP server authentication. Be aware ECM SM supports two different authentication methods for MS ADS.

- MS ADS (with SASL/GSSAPI authentication)
- MS ADS (with simple authentication method)

Depending on your MS ADS server settings the appropriate authentication method should be selected.

NOTE Selecting the wrong method requires manual adjustment after the installation process.

The following MS ADS parameters apply to both MS ADS authentication types:

Server Name
Specify the MS ADS server name without DNS suffix (for instance adsserv1).

Server Port
Specify the MS ADS server port (default port: 389).

Domain Name
Specify the ADS Domain name in lowercase letter.

Group Provider URL
Specify the Group provider URL pattern to search for groups.

Group Query
Adjust the Group filter if required.

Default: *sAMAccountName={0}*

Group Attribute
Specify the attribute of an entry that contains group information.

Default: *memberOf*

Group Name Pattern
Adjust the Group name pattern settings, if required.

Default: *CN=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

LDAP Security principal (non GSSAPI-authentication only)
Default value. *{0}* or *{0}@<domain-name>*

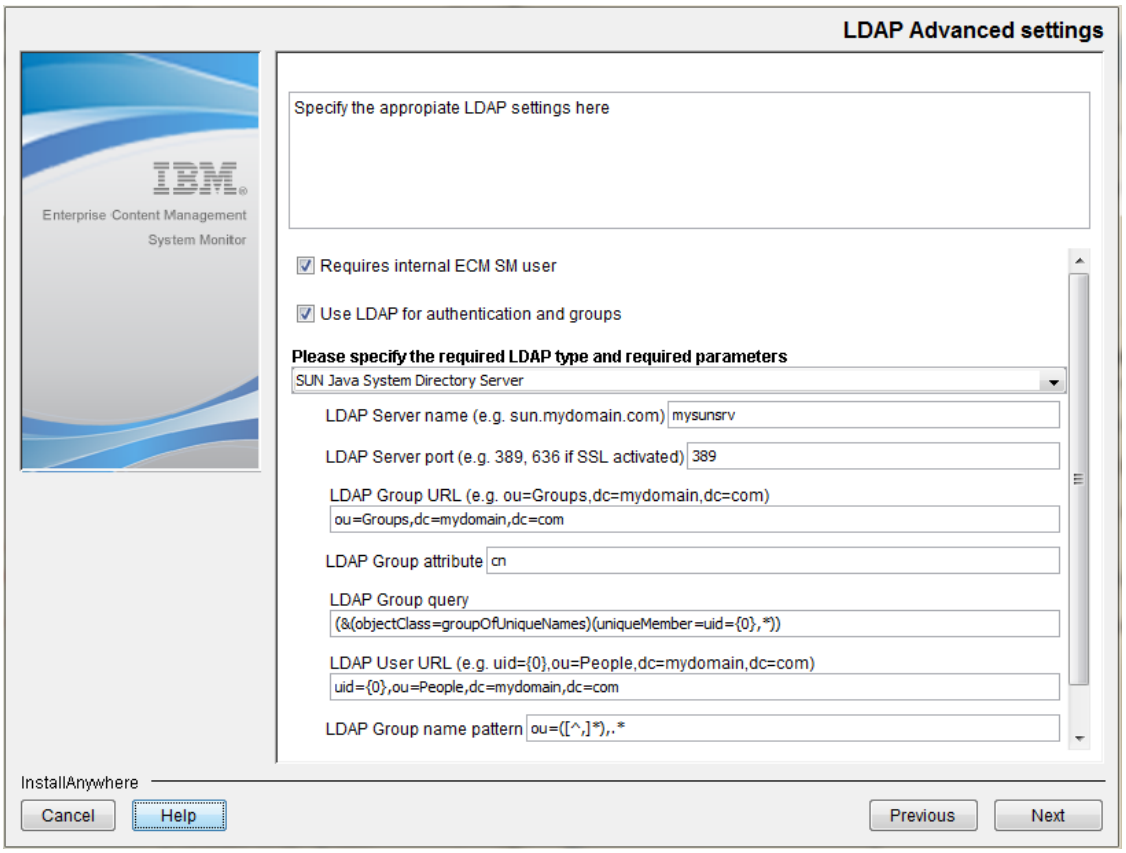
Use *{0}@<domain-name>* in the case the ADS server requires 'Bind with Credentials', otherwise use *{0}*

The domain name can be obtained from the **Active Directory Users and Computers** dialog which is started via **Start Administrative Tools Active Directory Users and Computers** .

Obtaining the domain name from the Active Directory configuration

Configuring connection to a SUN Java Directory Server

The required SUN Java Directory Server settings are displayed in the following screen shot.



ECM SM Installation: SUN Directory Server settings

The following parameters are required for SUN Java System Directory Server authentication.

Server Name
Specify the full qualified SUN Directory server name.

Server Port
Specify the SUN Directory LDAP server port (default: 389)

Group URL
Specify the Group URL pattern to search for groups.

Group Attribute
Specify the attribute of an entry that contains group information.

Default: *cn*

Group Query
Adjust the Group filter if required.

Default: *(&(objectClass=groupOfUniqueNames)(uniqueMember=uid={0},*))*

User URL

Specify the User URL pattern to search for users.

Group Name Pattern

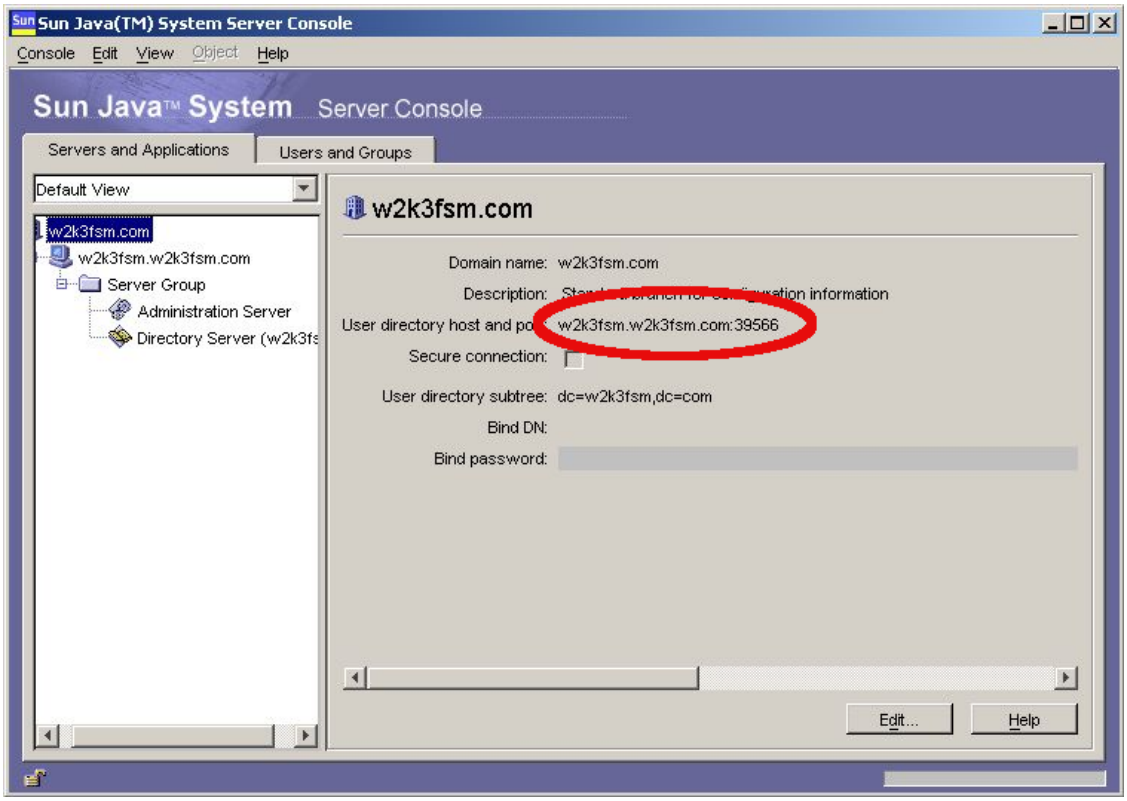
Adjust the Group name pattern settings, if required.

Default: *ou=([^,]*),.**

Group Name Index

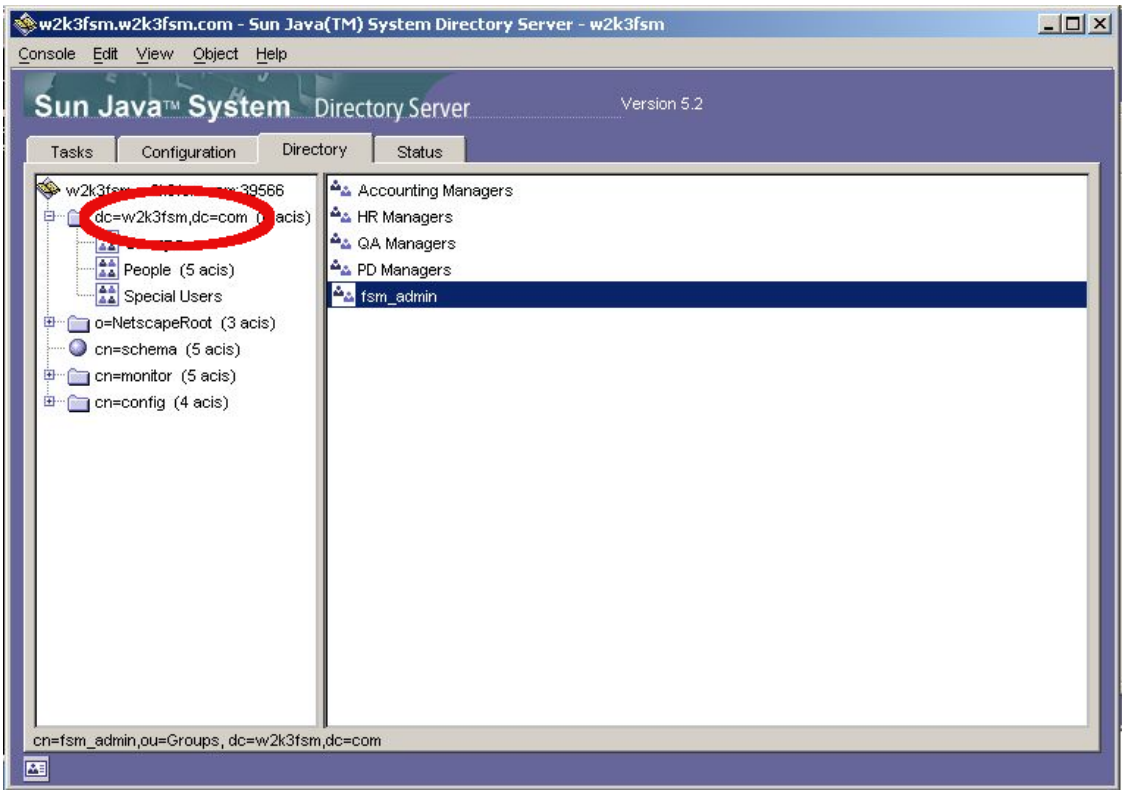
Specify the Group name index that contains group information.

Default: *1*



Obtaining the LDAP server name and port from the Sun Java System Server Console

Find *LDAP Server* name (e.g. *w2k3fsm.w2k3fsm.com*) and *LDAP Server port* (e.g. *39566*) in the **Server Console**.

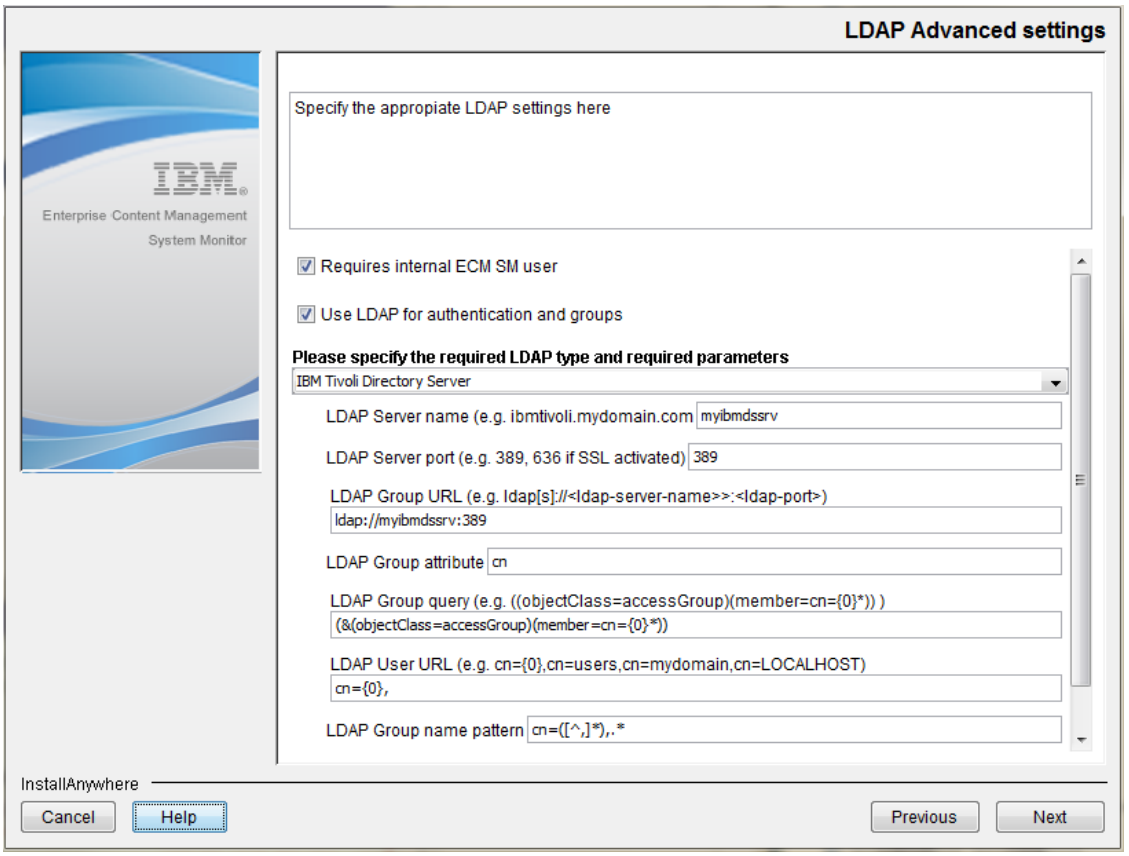


Obtaining the LDAP user URL from the SGun Java System Directory Server Console

Find information regarding the LDAP tree needed to specify *LDAP User URL* (e.g.`uid={0},ou=People,dc=fsmdomain,dc=com`) and *LDAP Group URL* (e.g. `ou=Groups,dc=fsmdomain,dc=com`) in the **Directory Server Directory** tab.

Configuring connection to IBM Tivoli Directory Server

If IBM Tivoli Directory server based authentication is planned the following parameters need to be specified.



ECM SM Installation: IBM Tivoli Directory Server LDAP settings

The following parameters are required for IBM Tivoli Directory Server authentication.

Server Name
Specify the full qualified IBM Tivoli Directory server name.

Server Port
Specify the IBM Tivoli Directory LDAP server port (default: 389)

Group URL
Specify the Group URL pattern to search for groups.

Ex.: *ldap[s]://<ldap-server-name>>:<ldap-port>*

Group Attribute
Specify the Group attribute that contains group information.

Default: *cn*

Group Query
Adjust the Group filter if required.

Default: *(&(objectClass=accessGroup)(member=cn={0}*))*

User URL
Specify the User URL pattern to search for users.

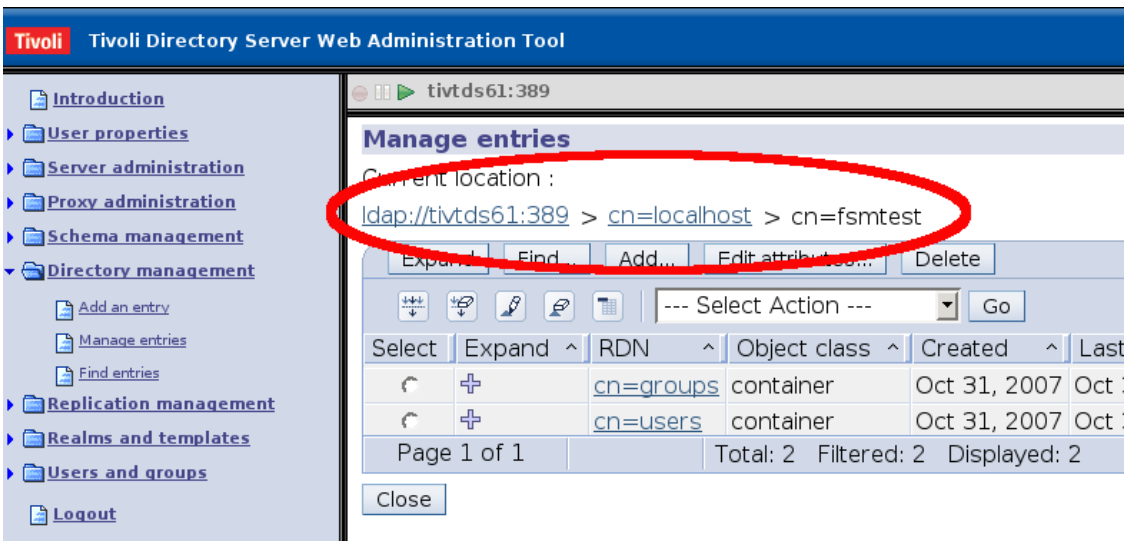
Group Name Pattern
Adjust the Group name pattern settings, if required.

Default: *cn=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

To obtain the required data start the **Tivoli Directory Server Web Administration Tool** and select the *Directory management* folder.

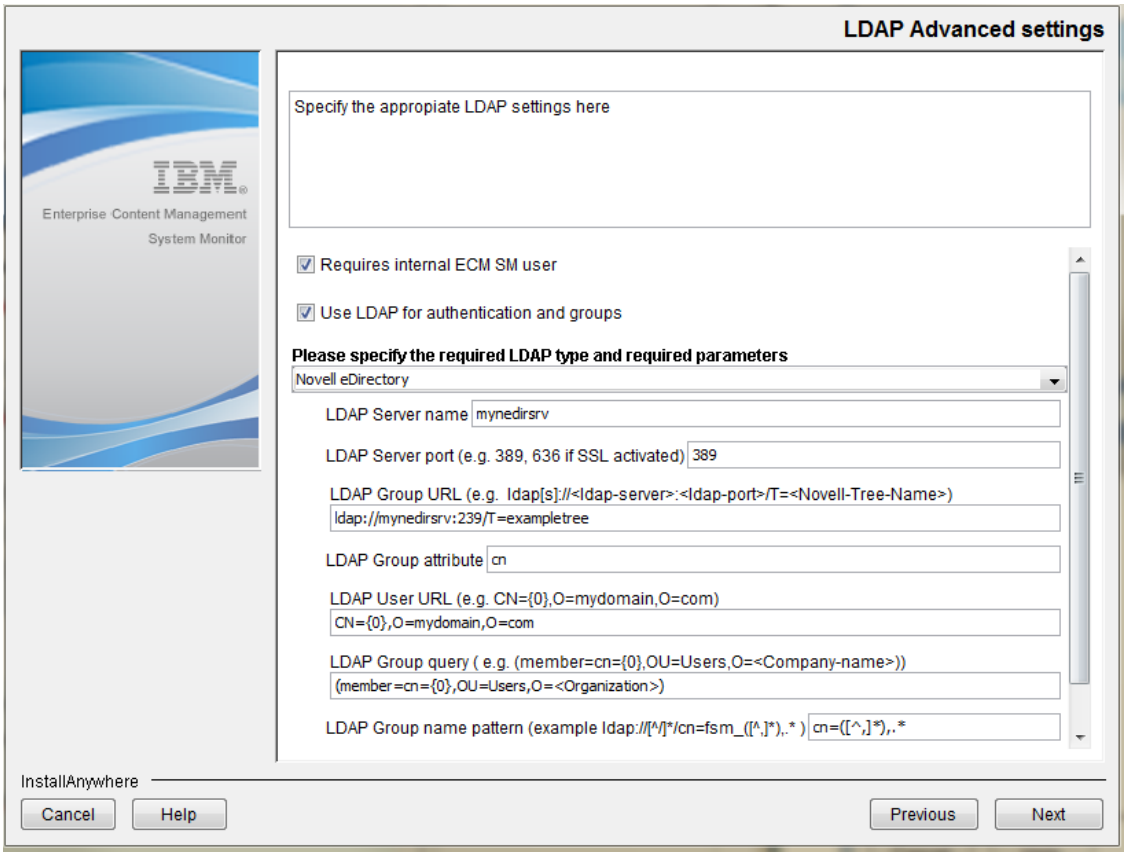


Obtaining LDAP configuration data from the Tivoli Directory Server Web Administration Tool

- Find *LDAP Server name* (e.g. *tivtds61*) and *LDAP Server port* (e.g. *389*) in the first part of the LDAP URL.
- *LDAP User URL* is the LDAP URL to the user entries, *{0}* is replaced with the login name. (example: cn={0},cn=users,cn=fsmtest,cn=localhost)
- LDAP Group URL is the LDAP URL to get the groups (example: *cn=groups,cn=fsmtest,cn*=localhost).

Configuring connection to Novell eDirectory

Novell eDirectory LDAP authentication requires the following settings:



ECM SM Installation: Novell eDirectory LDAP settings

The following parameters are required for Novell eDirectory LDAP server authentication.

Server Name
Specify the full qualified Novell eDirectory server name.

Server Port
Specify the Novell eDirectory LDAP server port (default: 389).

Group URL
Specify the Group URL pattern to search for groups.

Ex.: *ldap[s]://<ldap-server-name>:<ldap-port>*↵
/T=<Novell-Tree-Name>

Group Attribute
Specify the attribute of an entry that contains group information.

Default: none (unset)

User URL
Specify the User URL pattern to search for users

Default: *CN={0},O=mydomain,O=com*

Group Query
Adjust the Group filter if required.

Group Name Pattern
Adjust the Group name pattern settings, if required

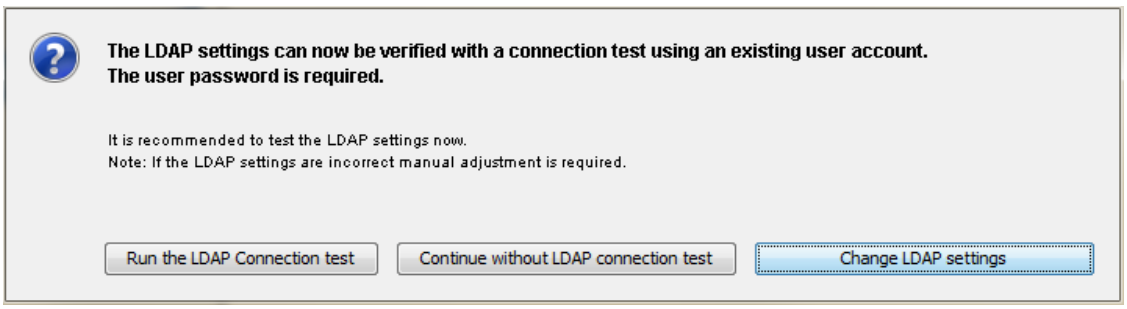
Default: *cn=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

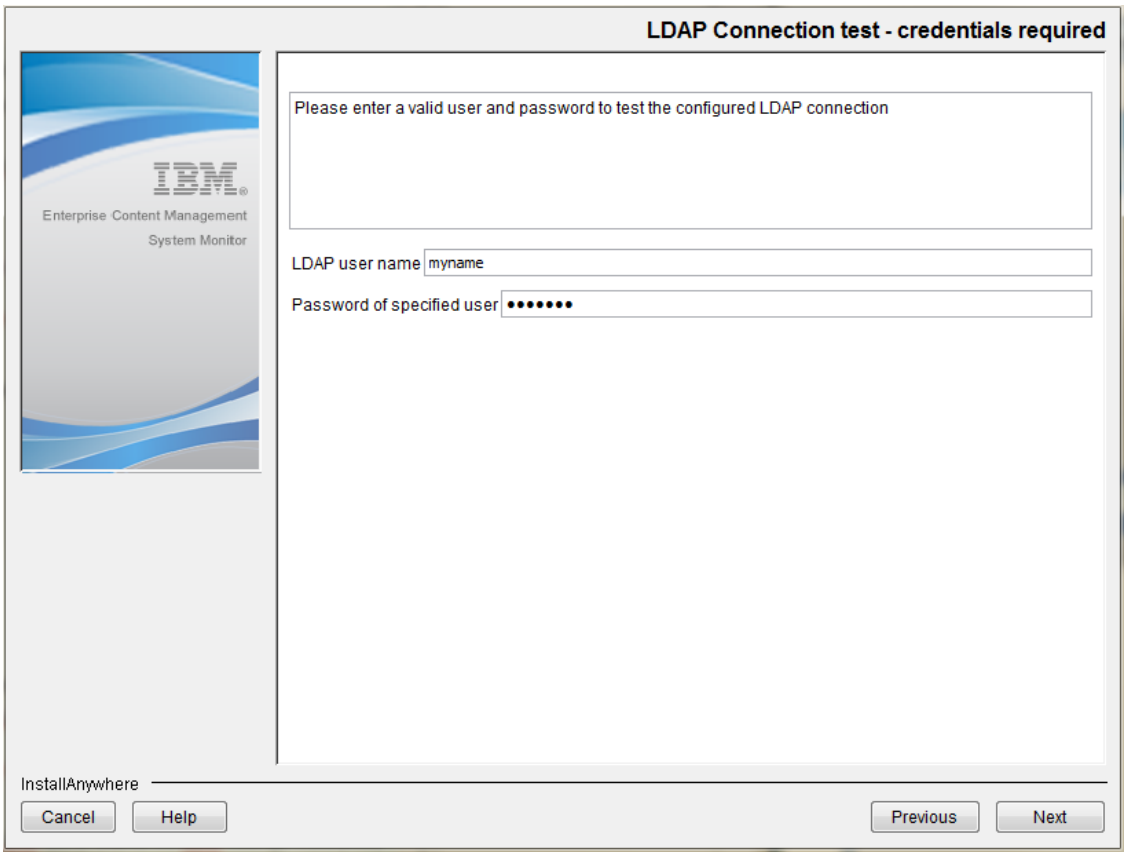
Running the LDAP connection test

If LDAP-based authentication is configured the following message panel is displayed next:



ECM SM Installation: LDAP Connection Test

You can decide whether to test the LDAP connection, proceed without LDAP test or chance the LDAP settings. If you press the 'Run the LDAP Connection test' button a panel that requests credential will open.

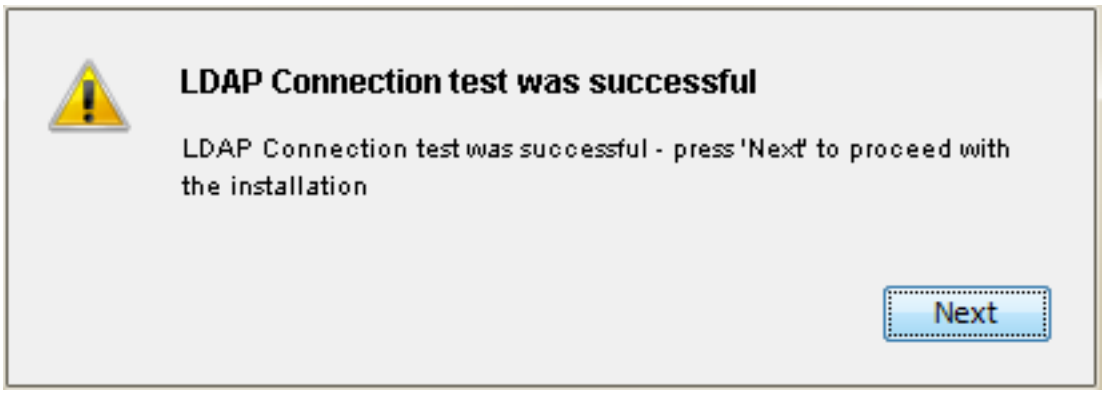


ECM SM Installation: LDAP User and Password

Enter appropriate values for user and password and press 'Next' to process with the LDAP Connection test. If the specified parameters or the user credentials were incorrect the following message will rise:

ECM SM Installation: LDAP Connection Test failed

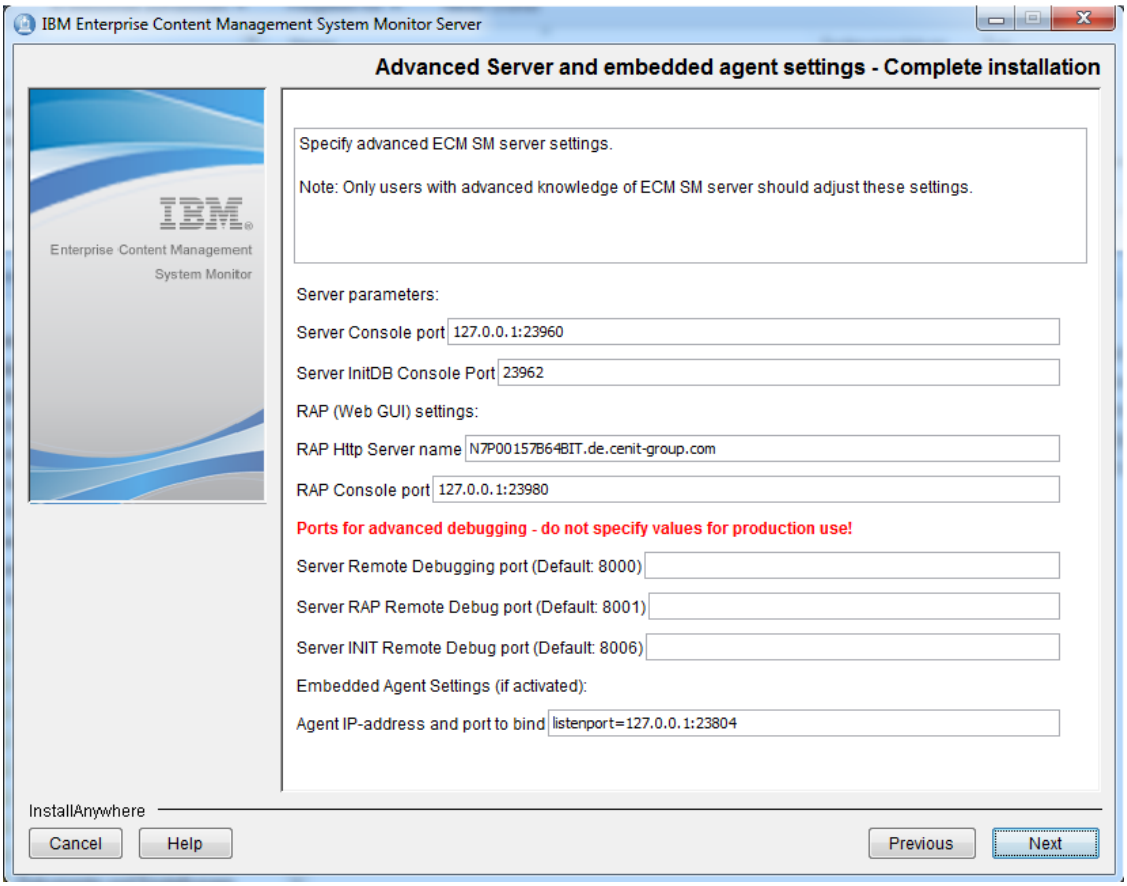
Press the 'Adjust LDAP settings' button to change the LDAP settings and retry the LDAP connection test. Once the connection test was successful the following message is displayed:



ECM SM Installation: LDAP Connection Test successful

Configuring Advanced Server and embedded Agent settings

This panel shows advanced Server settings (debugging ports) as well as the RAP UI server name. In addition to can adjust the Agent IP address and port to bind the optional embedded Agent to.



ECM SM Installation: Advanced Server Settings

Server Console port (default: 23960)
Port of the OSGi console of the event server. Allows access to the OSGi console of the event server. Only used for maintenance. For normal production it is not necessary to access the OSGi console directly.

Server InitDB Console port (default: 23962)
Port of the OSGi console of the database initialization process. Allows access to the OSGi console of the database initialization process of the installer. Only used for maintenance. After the application is installed, the database initializer is offline, so the console cannot be accessed.

RAP http Server name
Full qualified IP name or address of the ECM SM RAP (Remote Application Platform), formally known as (Rich Ajax Platform) Web server. This parameter is not displayed if you run a Primary Server installation.

RAP Console port (default: 23980)
Default console port of the RAP (Remote Application Platform) Web server

Server Remote Debug port (default: unset, otherwise 8000)
Port used for development or maintenance. It allows remote debugging access via JDWP (Java Debug Wire Protocol) to the event server. For that, the parts to be debugged must be build with debug information included. In production this is not the case

Server RAP Remote Debug port (default: unset, otherwise 8001)
Port used for development or maintenance. It allows remote debugging access via JDWP (Java Debug Wire Protocol) to the RAP GUI server. For that, the parts to be debugged must be build with debug information included. In production this is not the case

Server INIT Remote Debug port (default: unset, otherwise 8006)
Port used for development or maintenance. It allows remote debugging access via JDWP (Java Debug Wire Protocol) to the database initialization process. For that, the parts to be debugged must be build with debug information included. In production this is not the case and after the installation has finished the process is not running at all

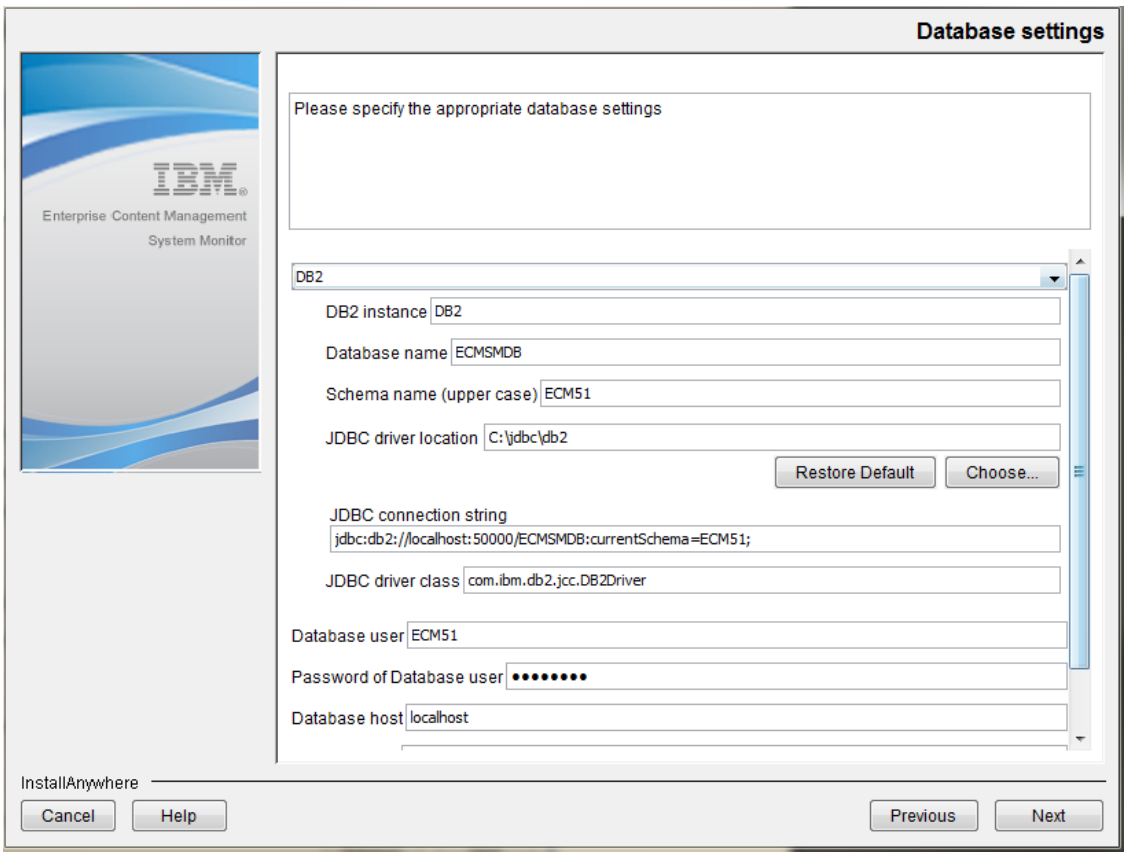
The last parameter of the panel allows adjusting IP address and port of the embedded Agent to bind to.

Embedded Agent IP address and port to bind (default: listenport:127.0.0.1:23804)
In the case more than one agent should be installed locally on the ECM SM Server the following parameter may requires adjustment. Do not use the same port by more than one agent.

Configuring Database Settings

The next panel is used to configure the database settings used by the *ECM SM Server* system.

Configuring a Connection to an IBM DB2 Database



ECM SM Installation: IBM DB2 Settings - First Part

This screen shot shows the required *IBM DB2* parameters.

IBM DB2 Database Instance
Specify the *IBM DB2* instance name.

Database Name
Specify the *IBM DB2* database name for use with the *ECM SM Server* system.

NOTE This database must exist before you start the installation.

Schema Name
You can specify an *IBM DB2* schema name here. If unset, the default schema name is used.

NOTE When you define a value for this parameter, that differs from the default schema, you must also extend the JDBC connection string by the `currentSchema` parameter, which is required in this case (see below).

JDBC Driver Path

Specify the location of the *IBM DB2* JDBC driver files.

NOTE This parameter is not displayed during Secondary Server installation.

JDBC Connection String

Replace the connection string template with the values of your system. The default string is:

```
jdbc:db2://<server-name>:<port>/<database-name>[:
currentSchema=<schemaName>;]
```

NOTE Parts enclosed in [] square brackets are optional. Parts enclosed in <> angle brackets mark place holders, that have to be replaced by the respective values of your system.

Depending on the *IBM DB2* installation settings and user rights, the following parameter needs to be added to the connection string in case the *ECM SM Server* installation failed: `[deferPrepares=false;]`. Perform a server re-installation with the enhanced settings in this case.

JDBC Driver Class (Default: com.ibm.db2.jcc.DB2Driver)

Only adjust this, if you want to use a non-default *IBM DB2* JDBC driver.

Database user

Specify the technical database user, that is to connect to the *IBM DB2* database.

Password of the Database User

Specify the password of the database user.

Database Host Name

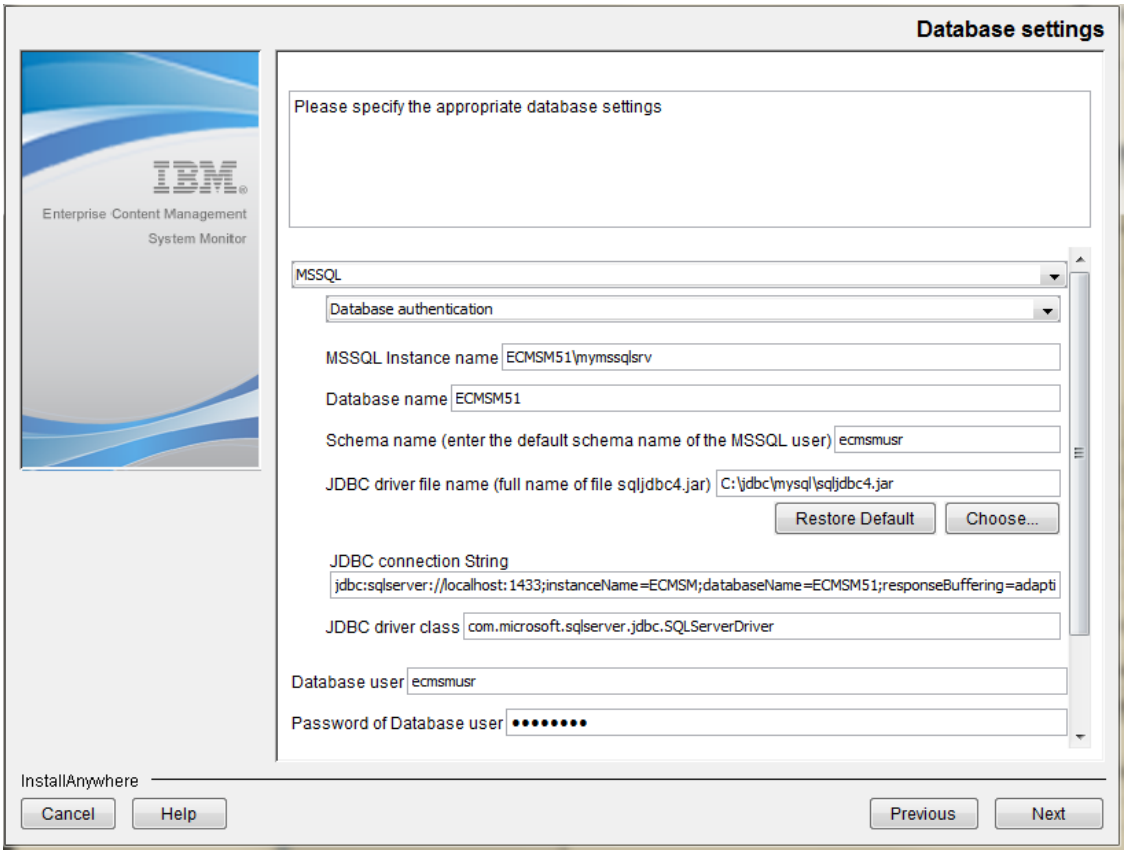
Specify the full qualified host name or IP address of the *IBM DB2* database server.

Database Port (Default value of the first instance: 50000)

Specify the port of the ECM SM *IBM DB2* database.

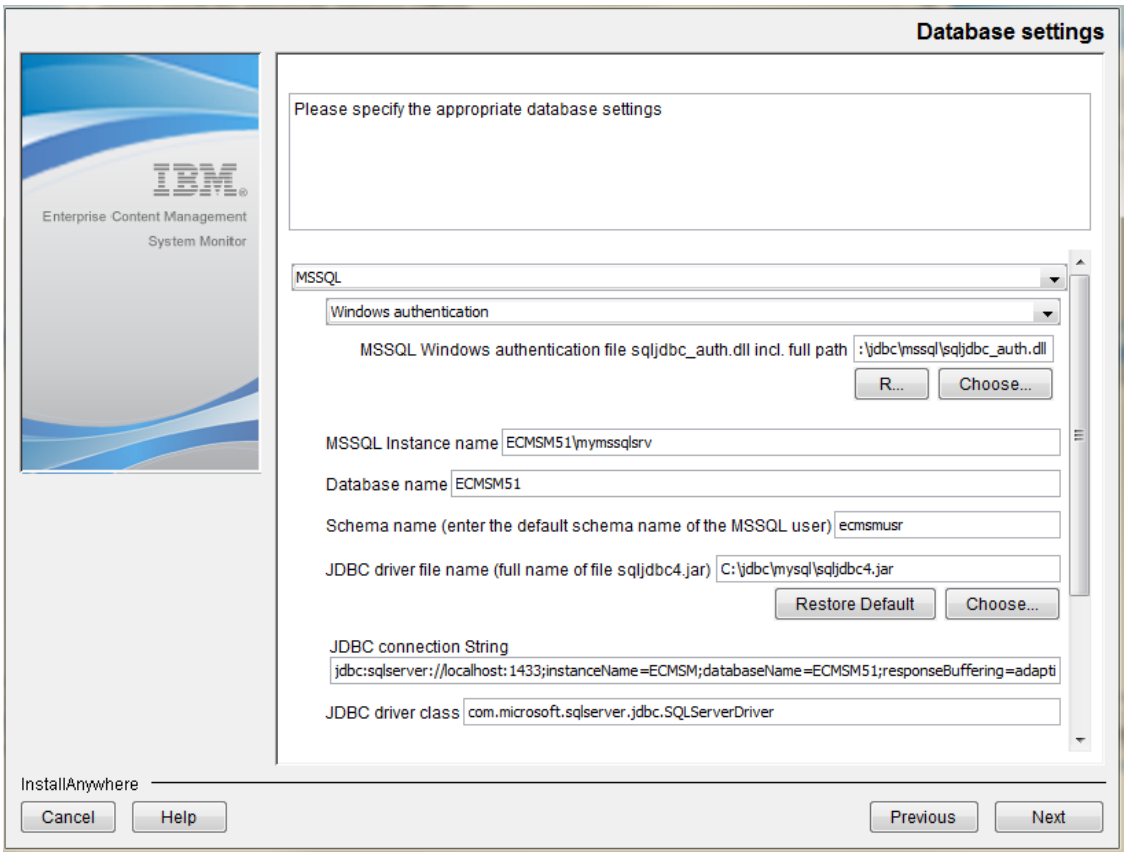
Configuring a Connection to an MS SQL Server Database

The following screen shot shows all parameters required, if MS SQL Server with database authentication (*SQL Server Authentication*) is selected as ECM SM database vendor.



ECM SM Installation: MS SQL Server parameter settings using SQL Server Authentication

The following screen shot shows all parameters required, if MS SQL Server with Windows authentication is selected as ECM SM database vendor.



ECM SM Installation: MS SQL Server parameter settings using Windows Authentication

The first parameter block describes the supported *MS SQL Server* database user authentication methods.

Database authentication (SQL Server Authentication)

The technical user, that connects to the database, requires database authentication only.

Windows authentication (Integrated Authentication)

This authentication method requires access to an integrated authentication Windows DLL file. You should specify the full path to the sqljdbc_auth.dll MS SQL Server Windows authentication file (32 bit version).

WARNING This parameter is not displayed during Secondary Server installation.

NOTE *Windows Authentication* does not work on UNIX-based servers using *MS SQL Server* as database. UNIX/Linux servers can only connect to an MS SQL Server database by using the database authentication method (*SQL Server Authentication*).

Important note Activating *Windows Authentication* requires the specification of the Windows service account and password on the **Basic Server settings** panel of the installer. Please go back to this panel and verify the mentioned parameters before you proceed.

WARNING When configuring a JDBC connection to your *MS SQL Server* database using the *Windows Authentication* method, make sure that the *Windows* user, by which you run the *ECM SM Server* installation program, is identical to the specified *Windows* user you want to use for database connection via *Windows Authentication*. If the mentioned *Windows* users are not identical, the database connection test will fail.

NOTE In case you use the *Windows Authentication* method to connect to your MS SQL Server database, and only in this case, *you must add* the integratedSecurity=true string to your *JDBC connection string* (see below).

Database Instance

Specify the SQL Server instance name. Leave this parameter empty, if you use the default SQL Server instance.

Database Name

Specify the SQL Server database name for use with the *ECM SM Server* system.

NOTE This database must exist before you start the installation.

Schema Name

Specify the SQL Server default schema name of the SQL Server database user. Do not leave this parameter unset.

NOTE The installer does not create the schema specified in this field. The schema must exist and must be defined as default schema for the database user. Check user settings in the SQL Server Management Console. See also the MS SQL Server chapter.

JDBC Driver File

Specify the full file name of the SQL Server JDBC driver file.

NOTE This parameter is not displayed during Secondary Server installation.

JDBC Connection String

Replace the connection string template with your system's values.

The default string using SQL authentication is:

```
jdbc:sqlserver://<server-name>:<port>;instanceName=<instance-
name>;databaseName=<DBname>; responseBuffering=adaptive
```

The default string using Windows authentication is:

```
jdbc:sqlserver://<server-name>:<port>;instanceName=<instance-
name>;databaseName=<DBname>;
responseBuffering=adaptive;integratedSecurity=true
```

NOTE Parts enclosed in [] square brackets are optional. Parts enclosed in <> angle brackets mark place holders, that have to be replaced by the respective values of your system.

JDBC Driver Class (Default: com.microsoft.sqlserver.jdbc.SQLServerDriver)
Only adjust this, if you want to use a non-default *MS SQL Server* driver.

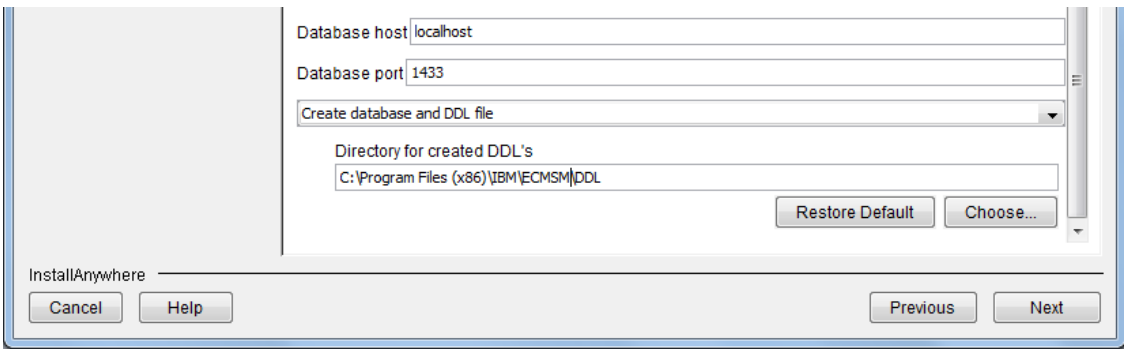
Database User
Specify the technical database user, that is to connect to the *MS SQL Server* database.

Password of the Database User
Specify the database user's password.

Database Host Name
Specify the full qualified host name or IP address of the *MS SQL Server* database host.

Database Port (Default value of the first instance: 1433)
Specify the port of the *ECM SM MS SQL Server* database.

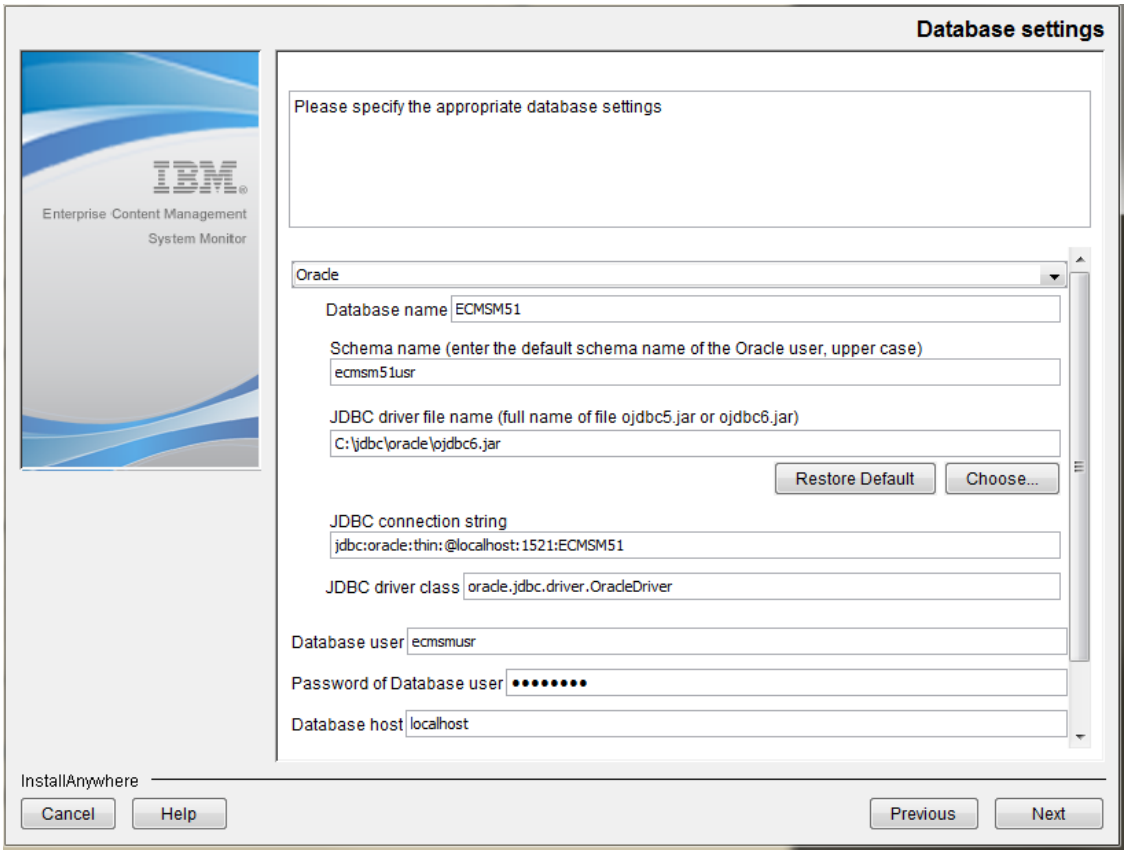
The following screen shot shows all additional parameters available for the *MS SQL Server*-based *ECM SM Server* installation.



ECM SM Installation: More MS SQL Server parameters

Configuring a Connection to an Oracle Database

The following screen shot shows all parameters required, if Oracle is selected as ECM SM database vendor. The provided examples show standard Oracle database settings as well as Oracle RAC based settings.



ECM SM Installation: Oracle parameter settings

This screen shot shows the required Oracle parameters.

ORACLE_SID or Oracle Service Name

Specify the *Oracle* SID (ORACLE_SID) or the Oracle Serviec Name *ECM SM*. Note: In the case an Oracle Service name based configuration is used the leading / is required. This parameter applies to Oracle standard and Oracle RAC configuration.

Database Name

Specify the *Oracle* database name for use with *ECM SM*. This parameter applies to Oracle standard and Oracle RAC configuration.

NOTE This database must exist before you start the installation.

Schema Name

Specify the *Oracle* default schema name of the *Oracle* user. Do not leave this parameter unset. This parameter applies to Oracle standard and Oracle RAC configuration.

JDBC Driver File

Specify the full path to the *Oracle* JDBC driver file. This parameter applies to Oracle standard and Oracle RAC configuration. Note: This parameter is not displayed during Secondary Server installation.

NOTE This parameter is not displayed during Secondary Server installation.

JDBC Connection String (Oracle standard configuration)

Replace the connection string template with the values of your system. The default string for an *Oracle SID*-based configuration is:

```
jdbc:oracle:thin:@<server-name>:<port>:<database-name>
```

The default string for an *Oracle Service Name*-based configuration is:

```
jdbc:oracle:thin:@<server-name>:<port>/<service-name>
```

NOTE Parts enclosed in <> angle brackets mark place holders, that have to be replaced by the respective values of your system.

JDBC Connection String (Oracle RAC configuration)

The following examples can vary for your *Oracle RAC*-based configuration, contact your Oracle administrator for details. Configuration example 1:

```
jdbc:oracle:thin:@<oracle-scan-server-name>:<port>/<service-name>
```

Configuration example 2:

```
jdbc:oracle:thin:@(DESCRIPTION=(LOAD_BALANCE=on) (ADDRESS=(PROTOCOL=TCP)
(HOST=<Ora-server-name-1>)    (PORT=<port>))    (ADDRESS=(PROTOCOL=TCP)
(HOST=<Ora-server-name-2>)    (PORT=<port>))    (CONNECT_DATA=(SERVICE_
NAME=<service-name>)))
```

Note: Parts enclosed in <> angle brackets mark place holders, that have to be replaced by the respective values of your system.

JDBC Driver Class (Default: oracle.jdbc.driver.OracleDriver)

Only adjust this, if you want to use a non-default *Oracle* driver. This parameter applies to Oracle standard and Oracle RAC configuration.

Database User

Specify the technical database user, that is to connect to the *Oracle* database. This parameter applies to Oracle standard and Oracle RAC configuration.

Password of the Database User

Specify the password of the database user. This parameter applies to Oracle standard and Oracle RAC configuration.

Database Host Name

Specify the full qualified host name or IP address of the *Oracle* database server.

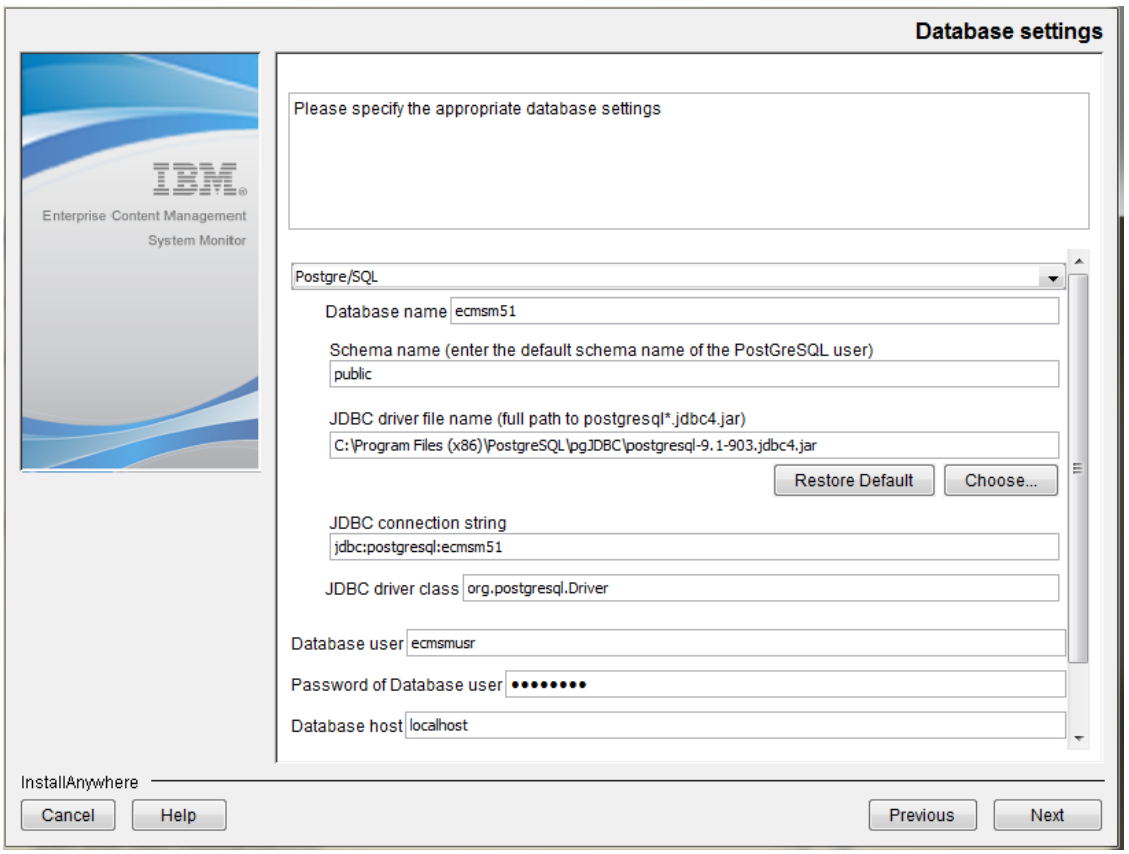
In the case of an *Oracle RAC* configuration the IP name or IP address of the Oracle SCAN server should be specified here.

Database Port (Default value: 1521)

Specify the port of the *ECM SM Oracle* database. This parameter applies to Oracle standard and Oracle RAC configuration.

Configuring a Connection to a PostGreSQL Database

NOTE *PostGreSQL*-based *ECM SM Server* installation is only supported for demo and testing environments.



ECM SM Installation: PostGreSQL parameter settings

This screen shot shows the required PostGreSQL parameters.

Database Name
Specify the *PostGreSQL* database name for use with *ECM SM Server*.

NOTE This database must exist before you start the installation.

Schema Name
Specify the *PostGreSQL* default schema name of the *PostGreSQL* user. Don't leave this parameter unset.

JDBC Driver File
Specify the full path to the *PostGreSQL* JDBC driver file (a JDBC *type 4* driver has to be used).

NOTE This parameter is not displayed during Secondary Server installation.

JDBC Connection String
Replace the *PostGreSQL* connection string template with the values of your system. The default string is:

```
jdbc:postgresql:<database-name>
```

NOTE Parts enclosed in <> angle brackets mark place holders, that have to be replaced by the respective values of your system.

JDBC Driver Class (Default: org.postgresql.Driver)
Only adjust this, if you want to use a non-default *PostGreSQL* driver.

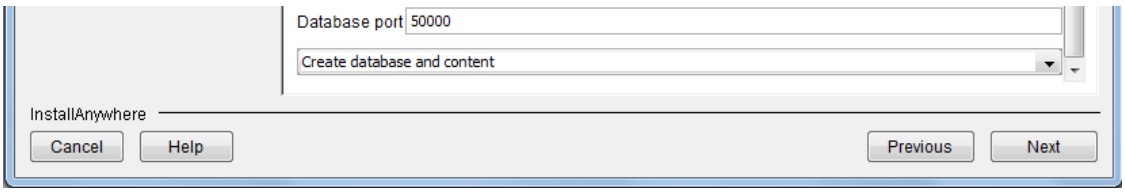
Database User
Specify the technical database user, that is to connect to the *PostGreSQL* database.

Password of the Database User
Specify the password of the database user.

Database Host Name
Specify the full qualified host name or IP address of the *PostGreSQL* database host.

Database Port (Default value: 5432)
Specify the port of the *ECM SM PostGreSQL* database.

Configuring the Creation of DDL Files (Optional)



ECM SM Installation: Database Settings and DDL file selection

At the bottom of the *Database settings* installer panel, the user can make his choice between three options of how the database creation is to be dealt with by the subsequent installation process. The **Create database and content** option is selected by default.

The overview of all available options is as follows:

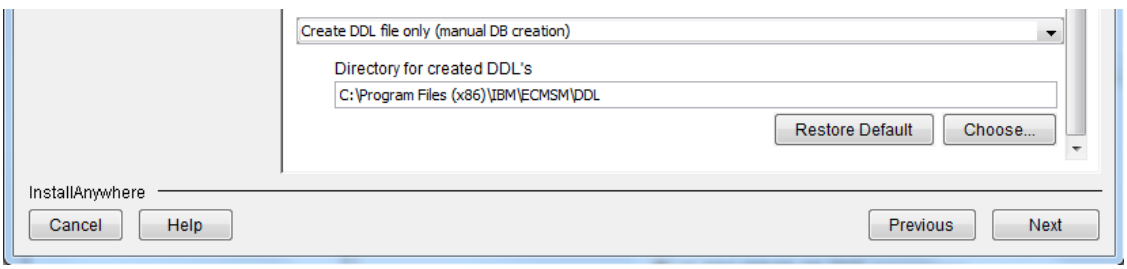
Create database and content
The database is created with all required content.

Create database and DDL files
The database is created with all required content, and database description (DDL) files are created additionally.

Create DDL files only (manual DB creation)
Only the DDL files are generated and stored in the specified folder location, that are required for creating the database later on manually. The user has to build the database and content by means of the DDL files during the installation process.

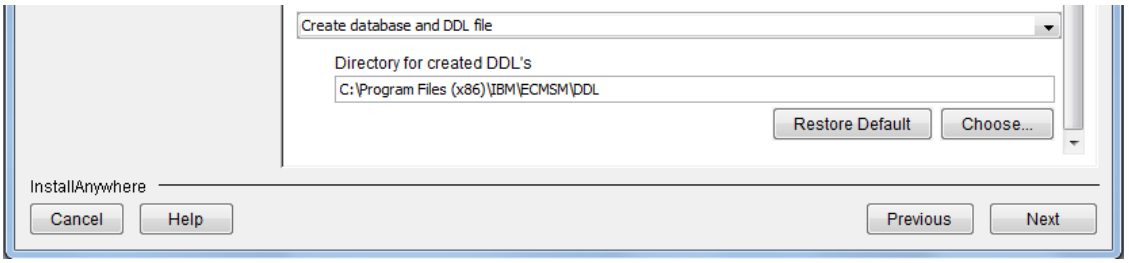
NOTE The installation process stops at a later point and waits until the user has built the database from the generated DDL files.

The following screen shot shows the folder selection, in case **Create DDL files only (manual DB creation)** is selected.



ECM SM Server Installation: Selection of DDL Folder Location (Create DDL files only)

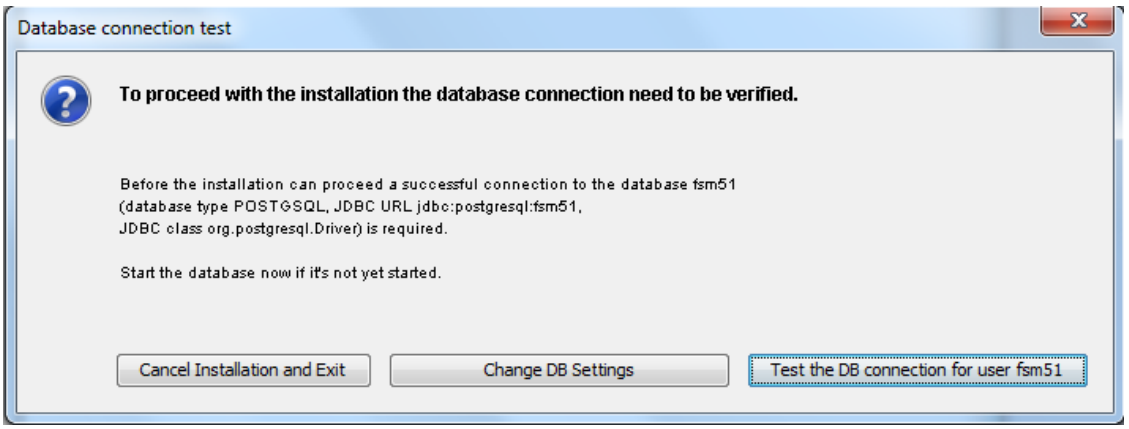
The next screen shot shows the folder selection, in case **Create database and DDL files** is selected.



ECM SM Server Installation: Selection of DDL Folder Location (Create database and DDL files)

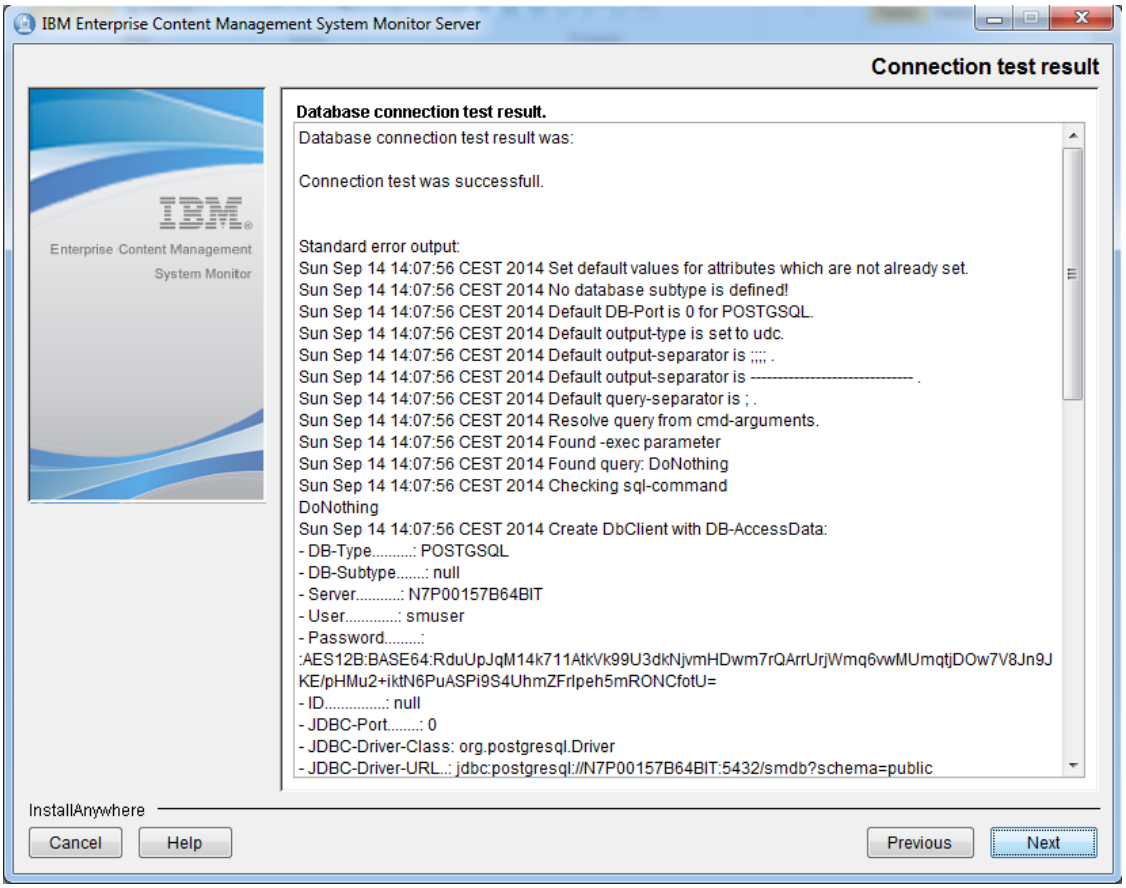
Running the Database Connection Test

To proceed with the *ECM SM Server* installation, the database connection test has to be successful. Press the **Test the DB connection for user xxxxx** button to verify, whether a database connection can successfully be established.



ECM SM Server Installation: Database Connection Test Message

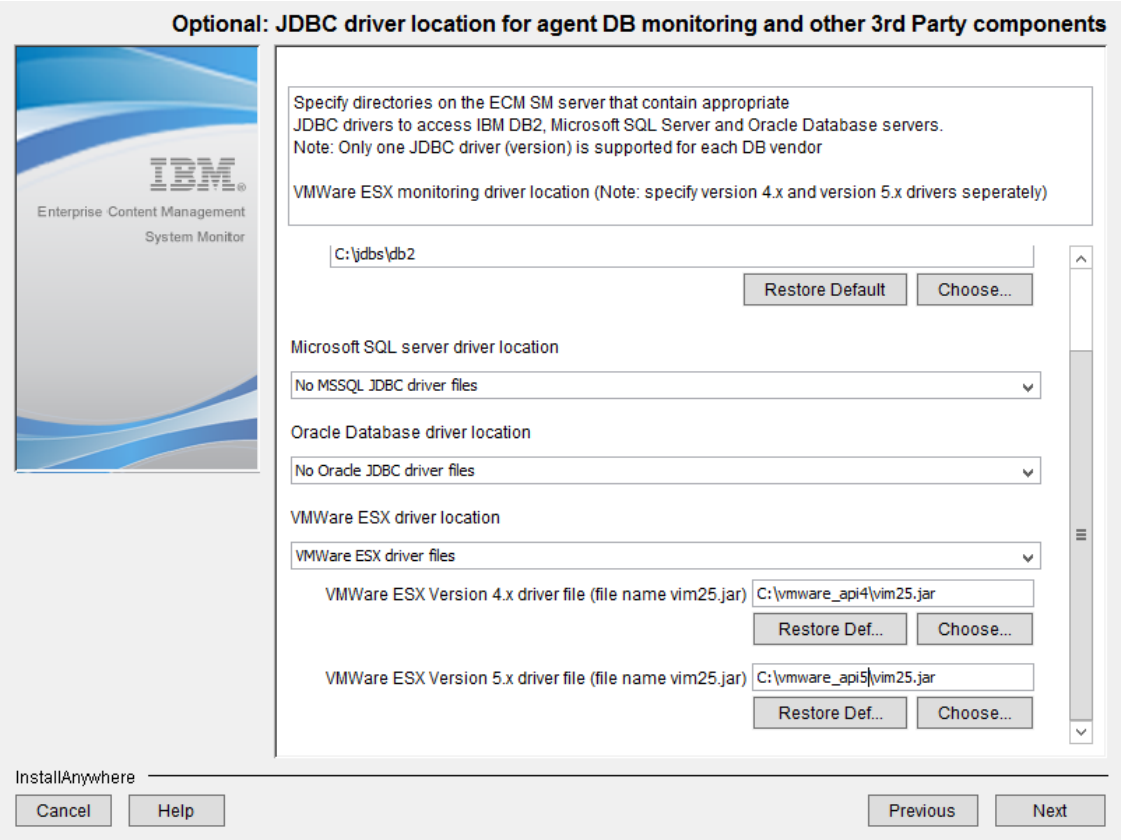
If you enabled installer debugging (**Enable installer debugging** checkbox on the **Basic server settings** panel) you will receive detailed connection test output. In case, the connection test was unsuccessful, pressing the **Next** or **Previous** button will open the **Database settings** panel again to allow changing the incorrect database settings.



ECM SM Installation: Database Connection Test Result

Optional: JDBC Driver Location for Database Monitoring and other 3rd Party Components

This screen shot shows the optional parameters to prepare the ECM SM server for later database monitoring of managed systems (agents) and for VMware ESX monitoring.



ECM SM Installation: JDBC Driver Location for Database Monitoring and other 3rd Party Components

If you have selected to activate the IBM DB2 driver location, the following parameter will be displayed:

IBM DB2 driver location for remote DB monitoring
Specify the full qualified path to the DB2 driver files.

If you have selected to activate the Microsoft SQL Server driver location, these parameters will be displayed:

Microsoft SQL Server driver location
Specify the full qualified path to the Microsoft SQL Server driver file.

In addition, you may want to specify the MS SQL Server Windows authentication DLL file for using the Microsoft SQL Server Windows authentication. Specify the full qualified file name including full path.

If you have selected to activate the Oracle Database driver location, these parameters will be displayed:

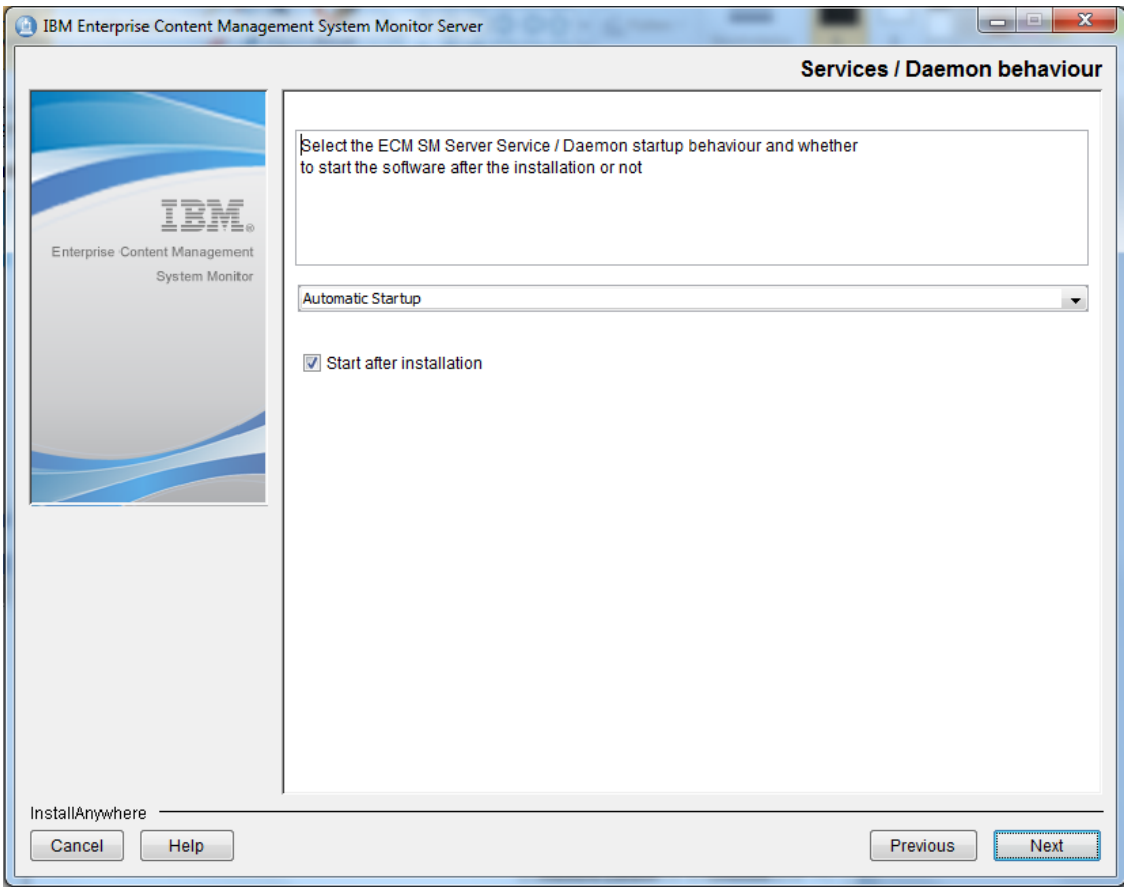
Oracle JDBC driver location
Specify the full qualified path to the Oracle Database driver file.

If you have selected to activate the VMware ESX Monitoring, these parameters will be displayed:

VMware ESX driver location
Specify the full qualified filename including full path to the `vim25.jar` VMware ESX driver file. There is an input field for API version 4.1 and 5.x.

Daemon Settings

The next panel shows the Service / Daemon startup settings. You might want to change the default settings (automatic startup) to manual startup.



ECM SM Installation: service / Daemon startup settings

Automatic Startup
All ECM SM services / daemons installed on the system will be configured for automatic startup.

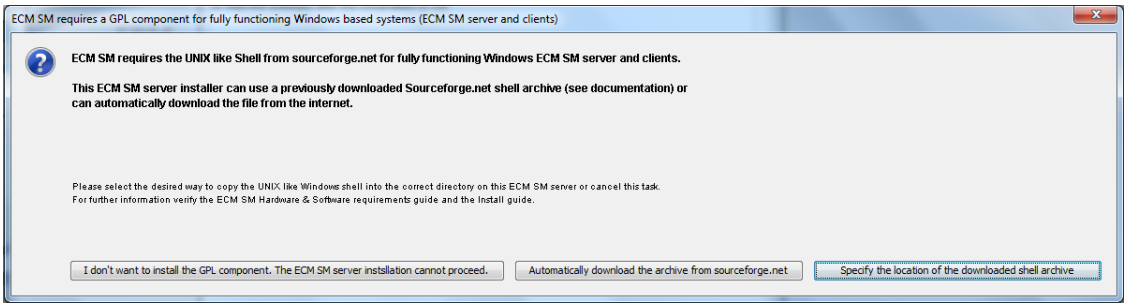
Manual Startup
All ECM SM services / daemons installed on the system will be configured for manual startup. This may be useful in High Availability environment, if services are started by dedicated HA tools.

If you selected the checkbox 'Start after installation' the ECM SM services will be started after the installation finished.

NOTE If you selected IBM WebSphere based installation then manual WAS deployments are necessary at the end of the installation.

Downloading Open Source components

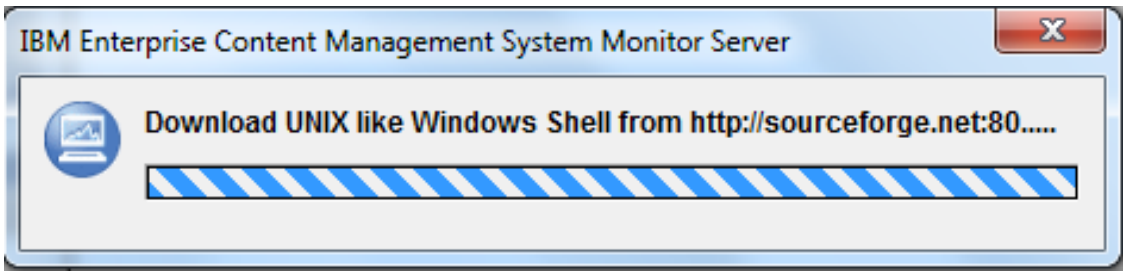
For full functioning ECM SM Windows based servers and agents an OpenSource component needs to be downloaded from sourceforge.net.



ECM SM Installation: GPL Windows Shell Download message box

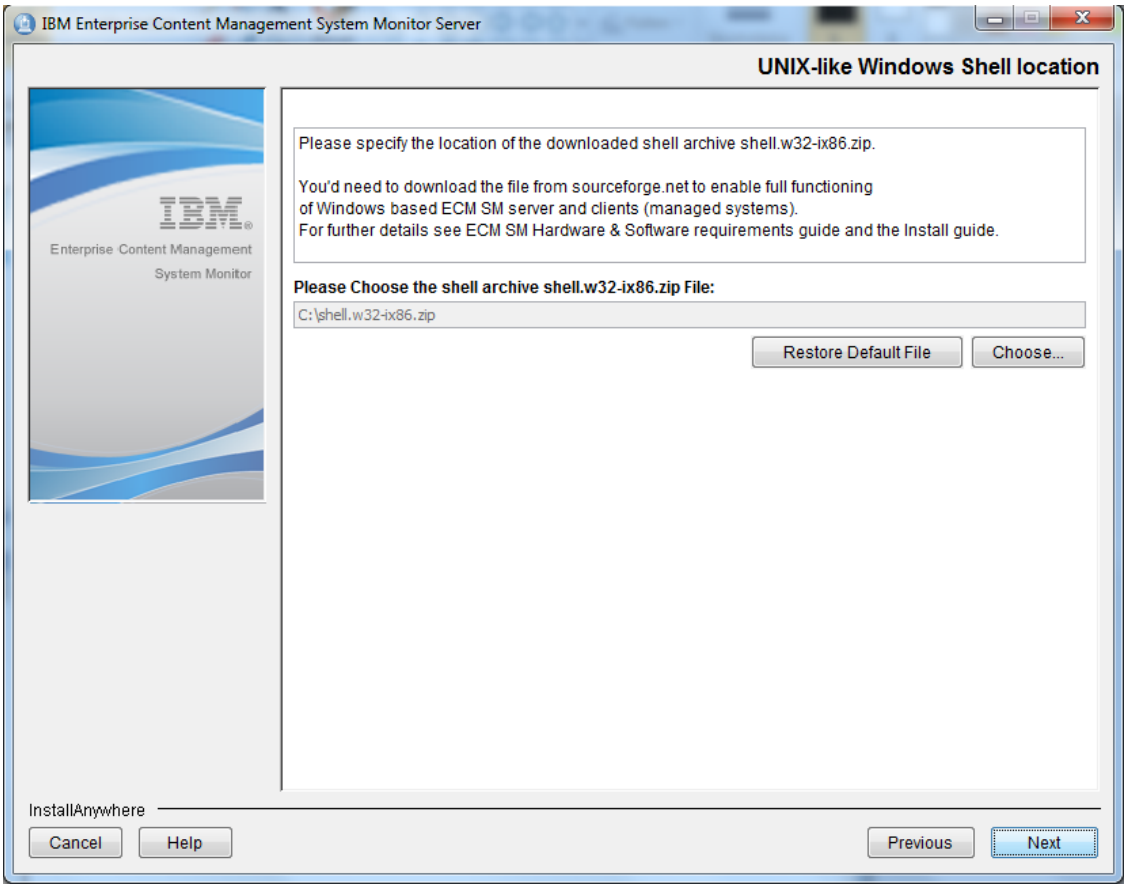
The required 3rd Party download can be done manually or automatically by the installer. Select the appropriate button. If you don't want to install the OpenSource/GPL requirement please contact your Sales representative for further details.

If you selected the 'Automatic download' button the following progress bar will be displayed.



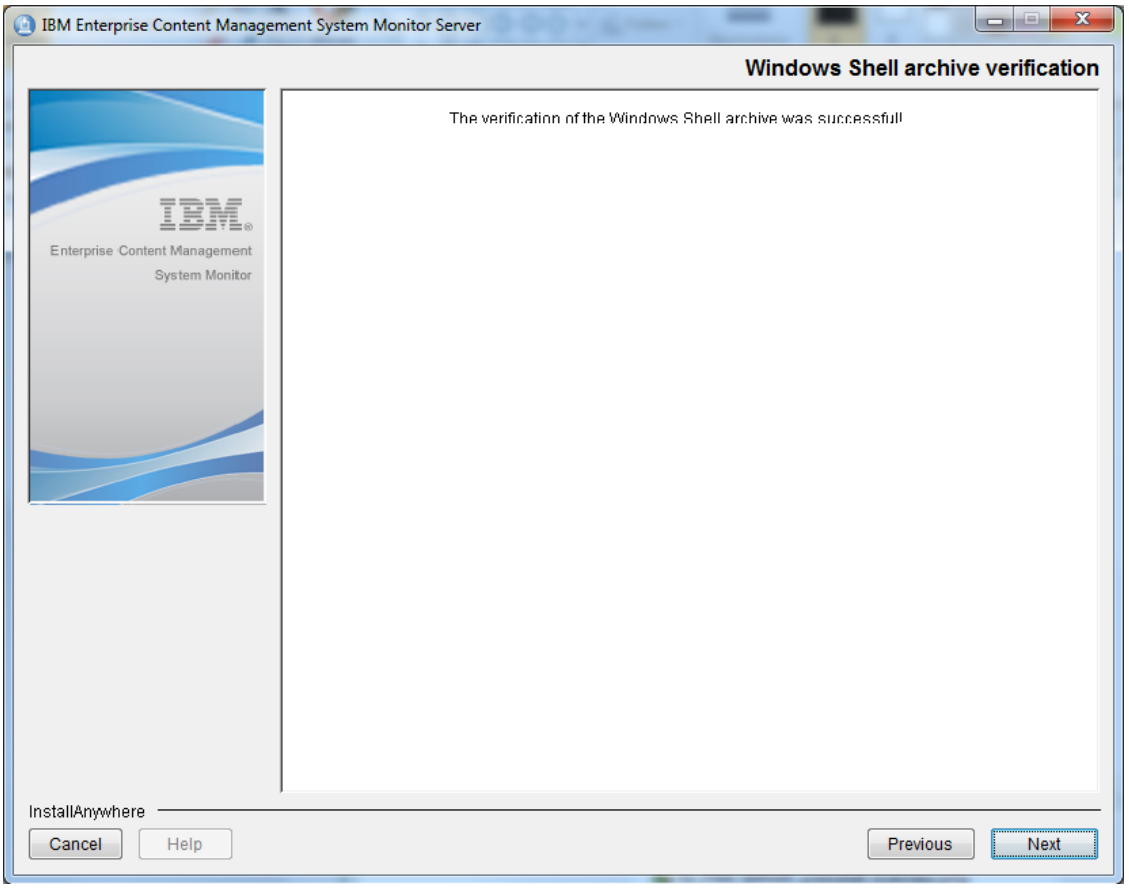
ECM SM Installation: Shell sourceforge.net download bar

If you've already manually downloaded the UNIX-Like Shell archive from sourceforge.net you can specify the file location with the file browser.



ECM SM Installation: Shell location file browser

Specify the location of the UNIX-like Windows shell zip-archive you've downloaded from sourceforge.net. The complete path including the file itself has to be given.



ECM SM Installation: Shell archive verification result

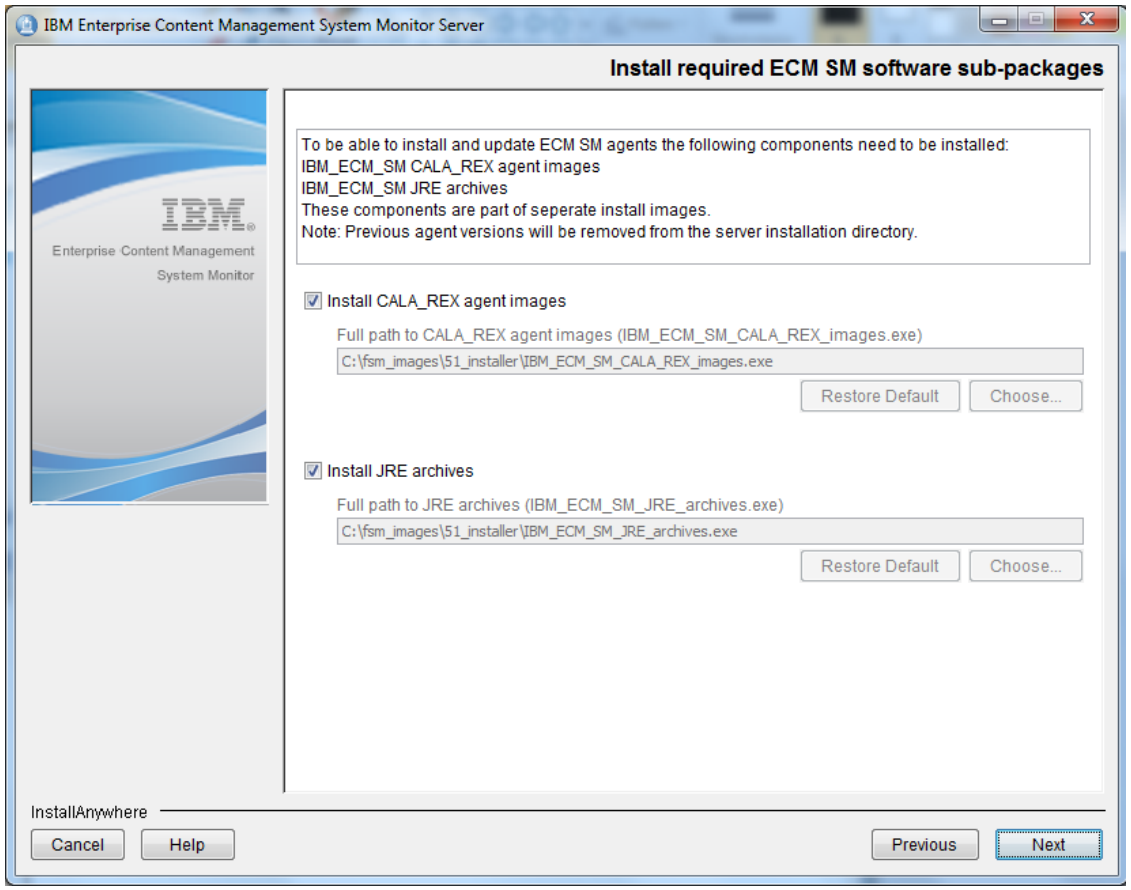
This screen shot displays the result of the content verification of the specified or downloaded shell archive. In the case of an incomplete archive or of missing files an error screen is displayed. The installation process will continue with the previously displayed selection panel.

NOTE The GPL-licensed UNIX-like Windows shell is required for Windows based ECM SM servers as well as for full functioning Windows agents.

Completing the installation

Subpackage location

The location of the ECM SM JRE and CALA_REX InstallAnywhere install images has to be defined next.



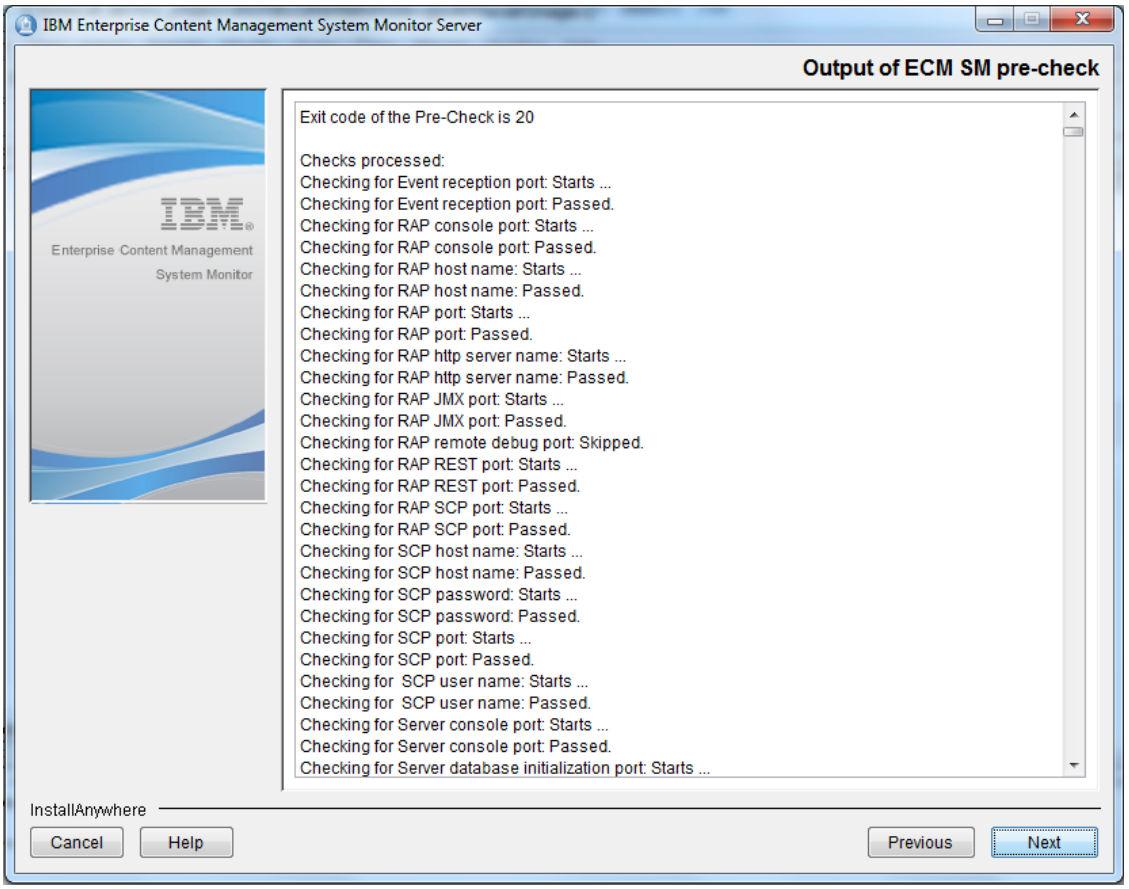
ECM SM Installation: JRE and CALA_REX agent subpackage location

As mentioned above the complete ECM SM server installation process requires the separate JRE and the ECM SM CALA_REX agent install images. The installer automatically tries to find the required InstallAnywhere Images in the source directory where the Server image is installed from. If the Install images are located somewhere else or if they are renamed please specify them within this panel.

Parameter Check

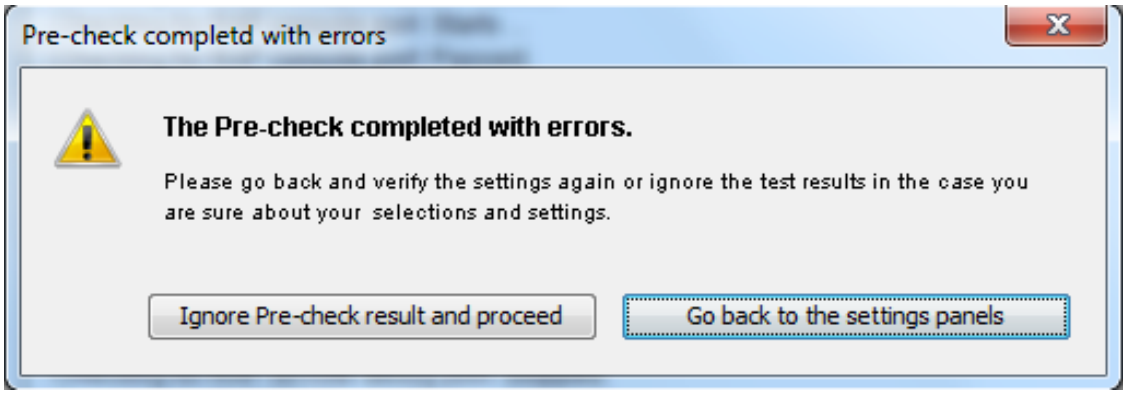
Before you can start the installation the installer runs a parameter check and displays the results, in the shown screenshot a pre-check error 20.

Important notice: the pre-check stops on the first detected issue. You may have to re-run the parameter check several times until the parameter check returns with exit code 0 (all tests passed).



ECM SM Installation: Installer Pre-check results

In the case of an error (exit code not 0) the following message will be displayed in addition to the display panel:

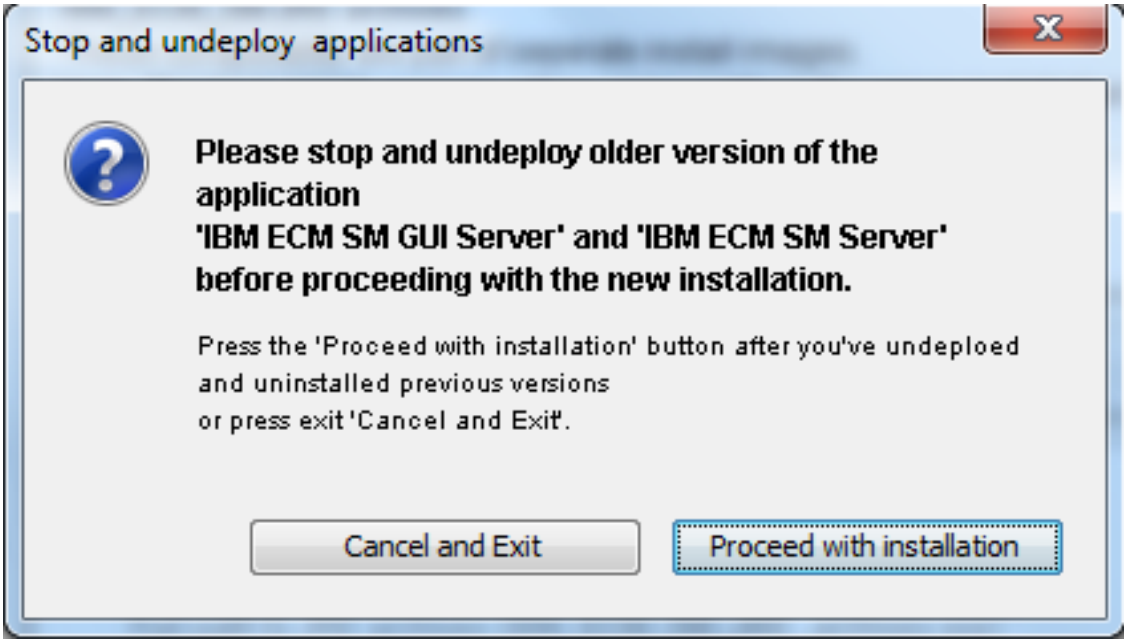


ECM SM Installation: Installer Pre-check error message

In the case of an detected error you may need to adjust settings. Press the appropriate button or proceed ignoring the pre-check errors.

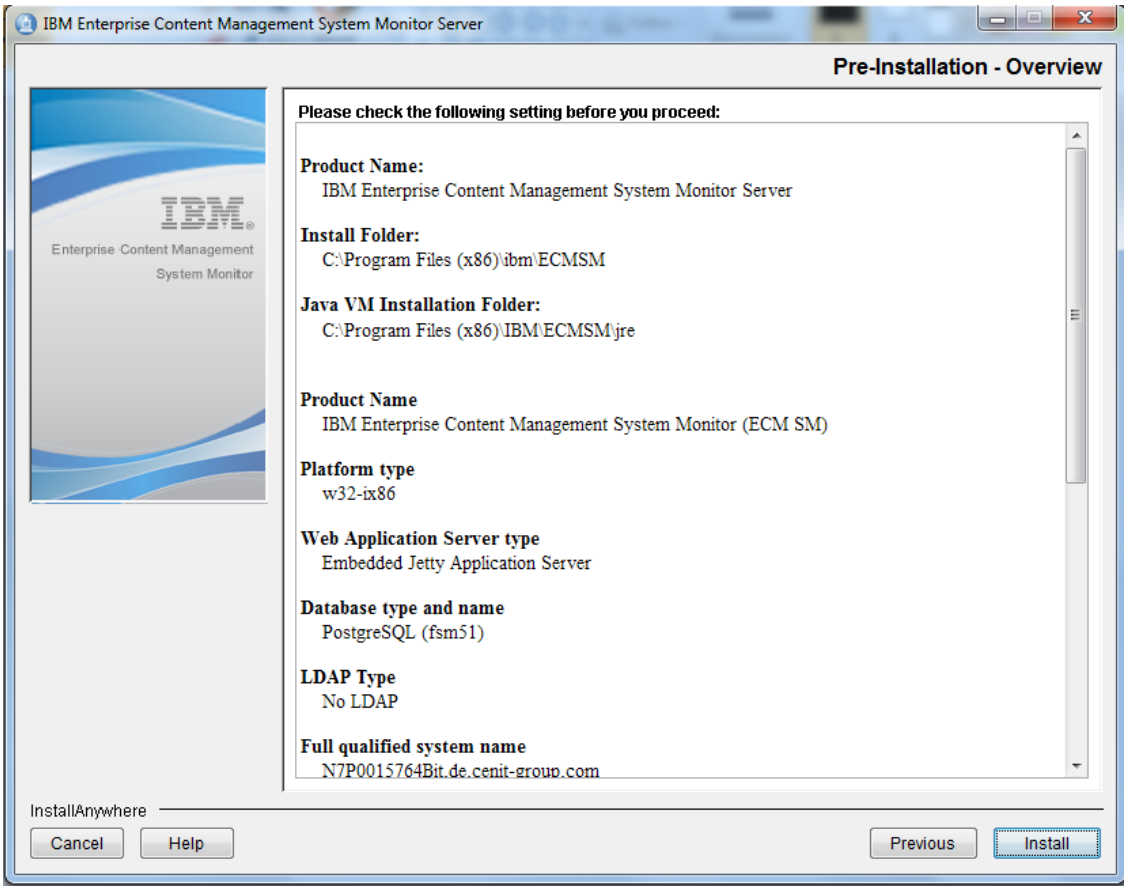
Note: Ignoring the pre-check errors may result in a failed installation.

If you have not selected the embedded Jetty Application Server, you must stop and undeploy any previous version of the application. This message box reminds you to stop and undeploy the application before you proceed.



ECM SM Installation: WAS message box

All required parameters are specified now. Review the displayed parameters and press the 'Install' button, if no changes are required.

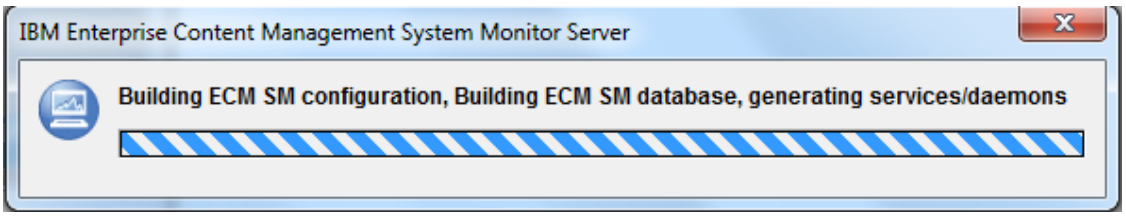


ECM SM Installation: Pre-installation overview panel

The installation has started. Depending on the installation parameters different packages are installed now.

ECM SM Installation: Installation packages are being installed

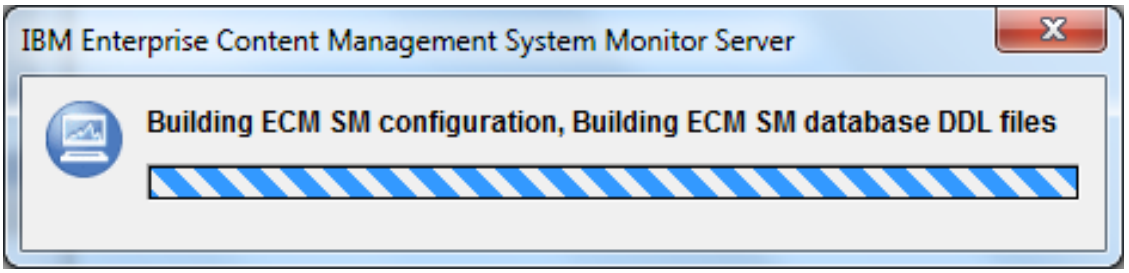
After the package installation step is finished, the new ECM SM configuration, database environment as well as the required services are being installed.



ECM SM Installation: ECM SM configuration progress bar

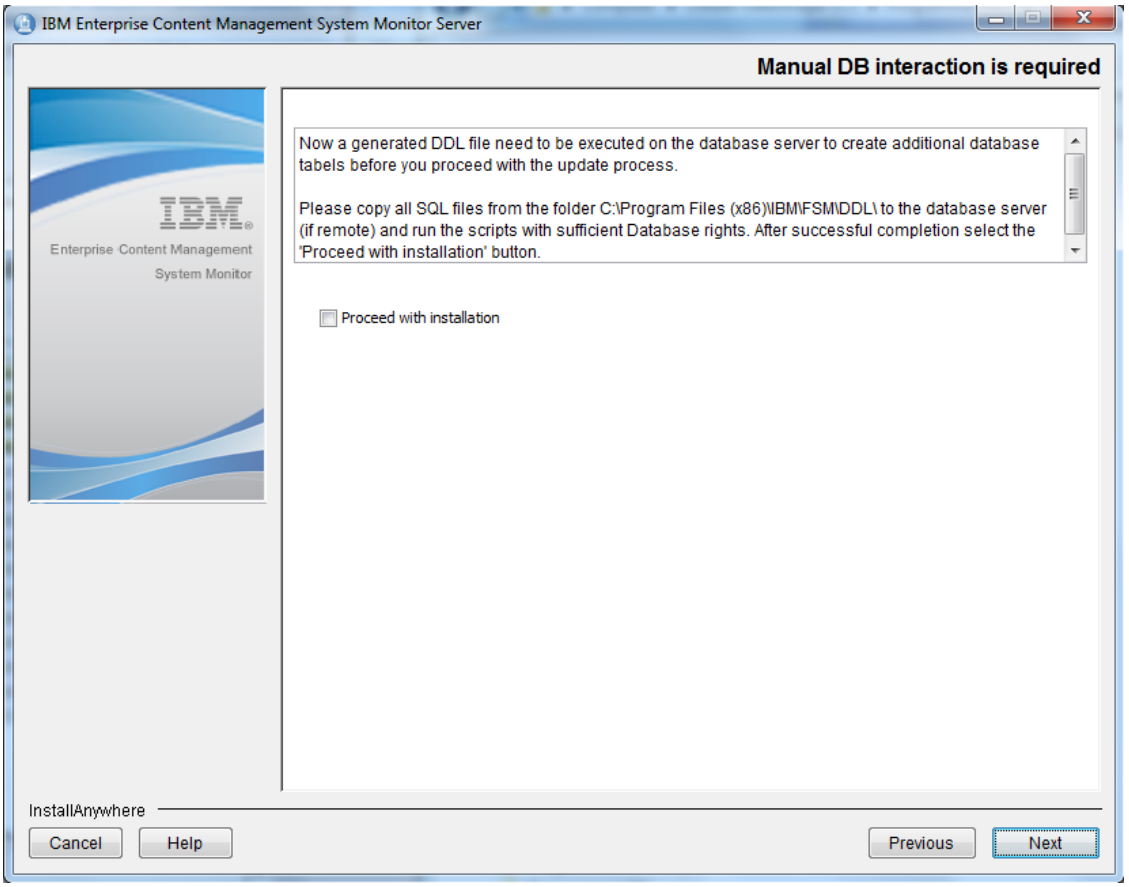
Installing DDL files

If 'Create DDL files only' was specified at the Database settings panel then the following progress bar is displayed:



ECM SM Installation: DDL-only ECM SM configuration progress bar (first part)

After finishing the first installation and configuration steps the installer shows the following panel:



ECM SM Installation: Manual database interaction required

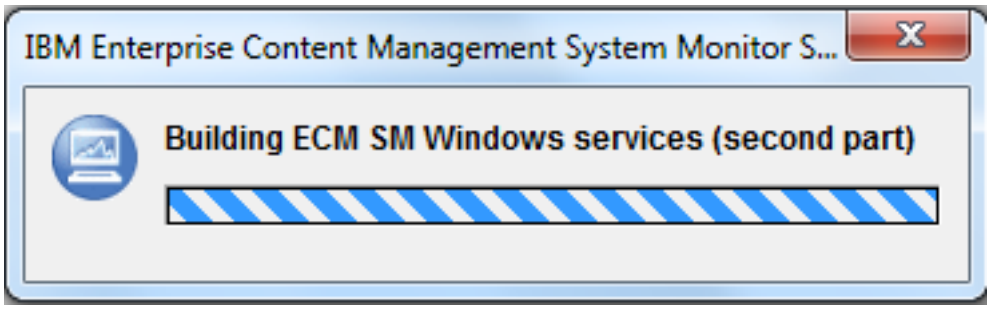
The created Database description files need to be executed by a database administrator. After successful manual creation of the ECM SM database tables select the 'Process with installation' checkbox and press the 'Next' button.

Note: the installation will fail, if the manual database creation wasn't successful and complete.

There are two DDL files like `<db_name>.sql` and `<db_name>_monitoring.sql`. First execute the `<db_name>.sql` and after that `<db_name>_monitoring.sql` script.

NOTE The # is used as command separator for IBM DB2. For Microsoft MSSQL `GO` is used and for Oracle `/`.
Tell your IBM DB2 to use # as command separator or change it in the created files `<db_name>.sql` and `<db_name>_monitoring.sql`. Using a semi-colon is not possible in all cases because they are used in stored procedures.
For IBM DB2 the DB2 Control Center (DB2CC) and the IBM Data Studio offer a input field to define the separator.
Do not forget to commit the database action taken, depending on your db tool, via SQL action.

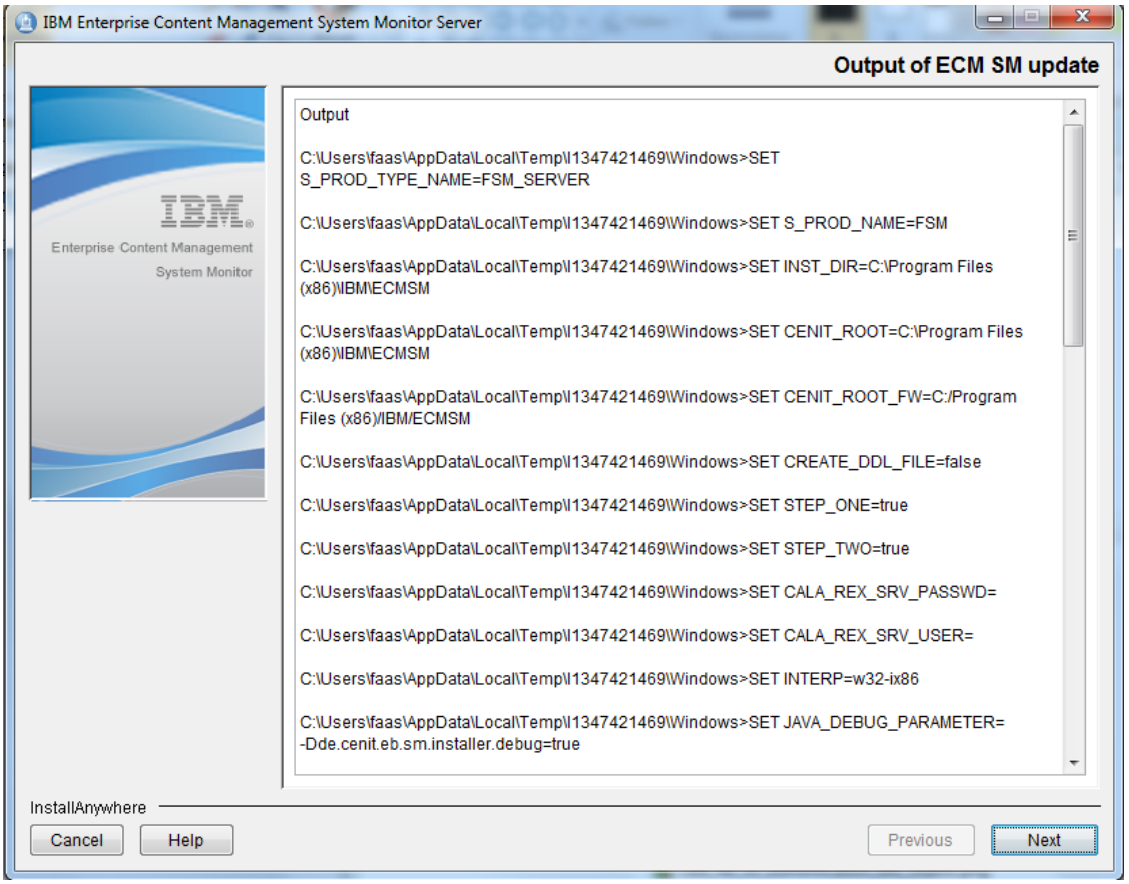
After pressing the 'Next' button the installer shows the following progress bar:



ECM SM Installation: DDL-only ECM SM configuration progress bar (second part)

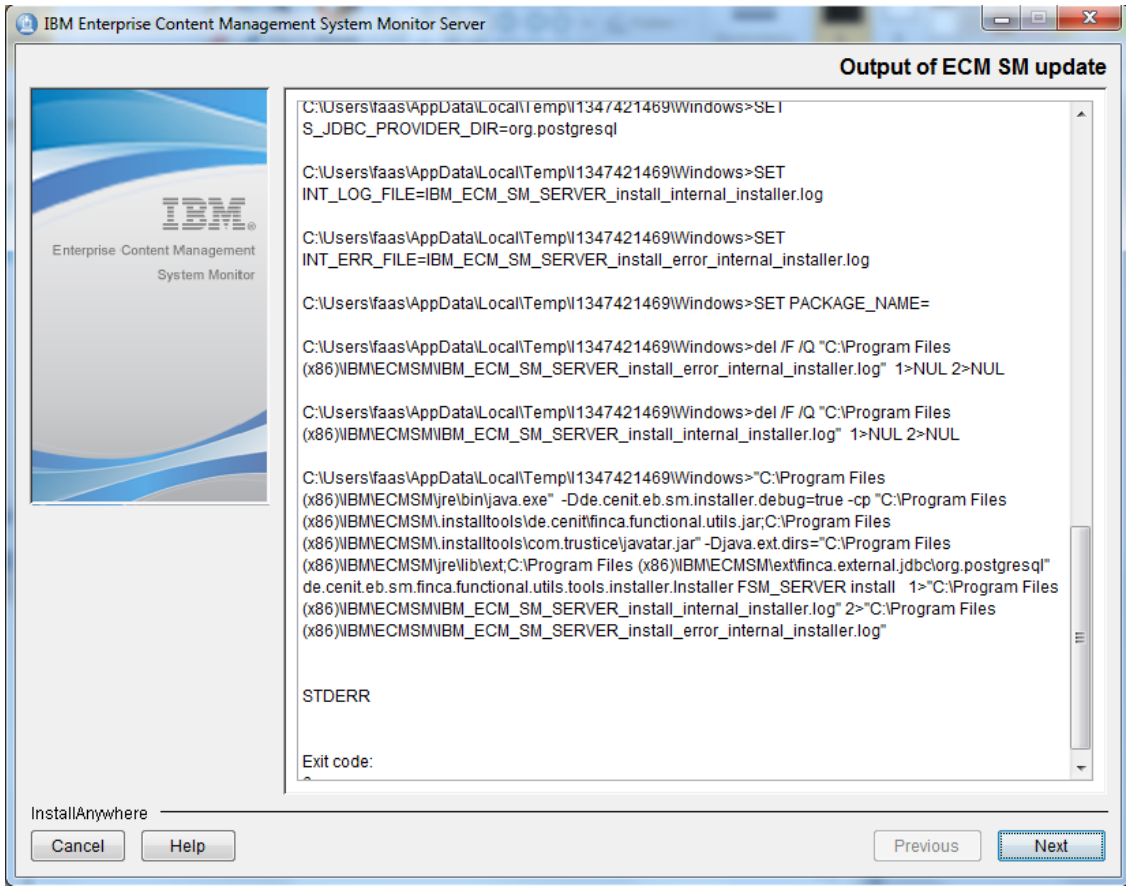
Installation Status

At the end of the configuration step the installation status is displayed. If Installer debugging was enabled then the complete Installation process output is displayed in the scroll area.



ECM SM Installation: Detailed installation output

At the end of the scroll area you will find the Exit code of the installation process.

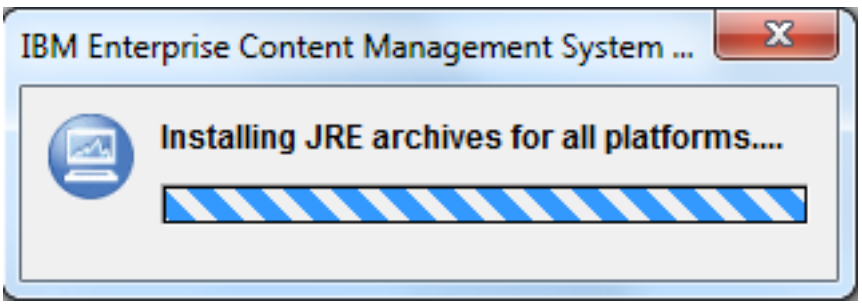


ECM SM Installation: Exit code of the installation process

Installing JRE

Pressing the next button will start the installation of the previously selected JRE subpackage.

Note: No additional installations panels show up.



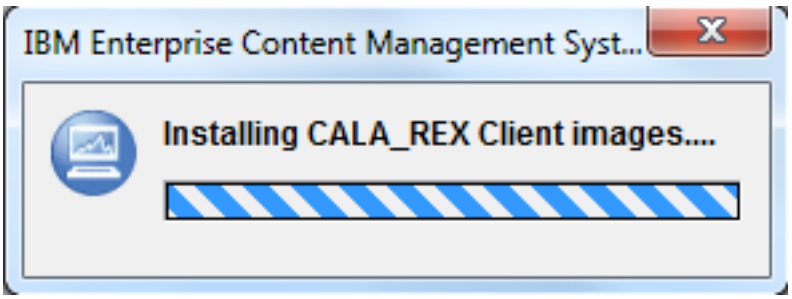
ECM SM Installation: JRE Installation progress bar

CALA_REX agent installation

Installing CALA_REX

Afterwards the CALA_REX agent images InstallAnywhere installer started.

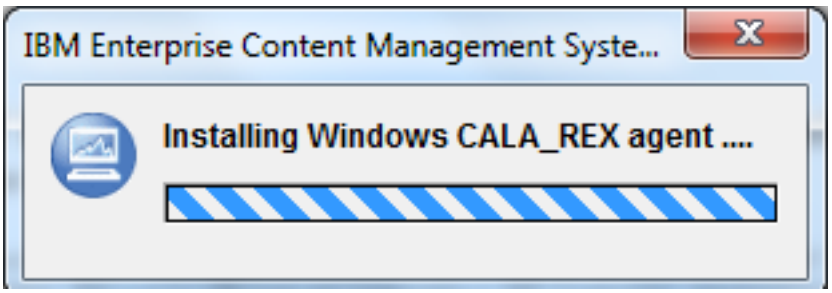
Note: No additional installation panels show up.



ECM SM Installation: CALA_REX agent images Installation progress bar

Embedded agent installation

In the case the installation of the embedded CALA_REX agent was activated the following installation progress bar will be displayed:

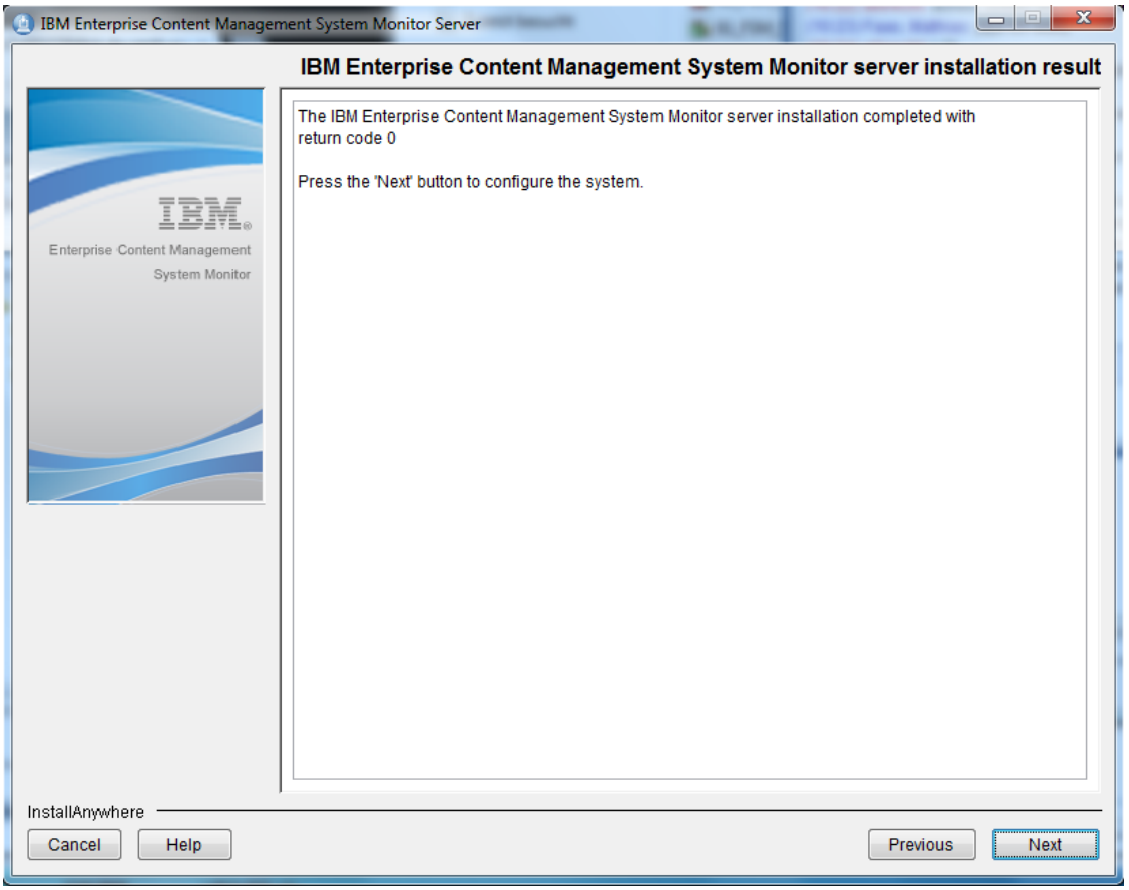


Embedded CALA_REX agent installation progress bar

If the Installer debugging is enabled the agent installation result screen will be displayed afterwards.

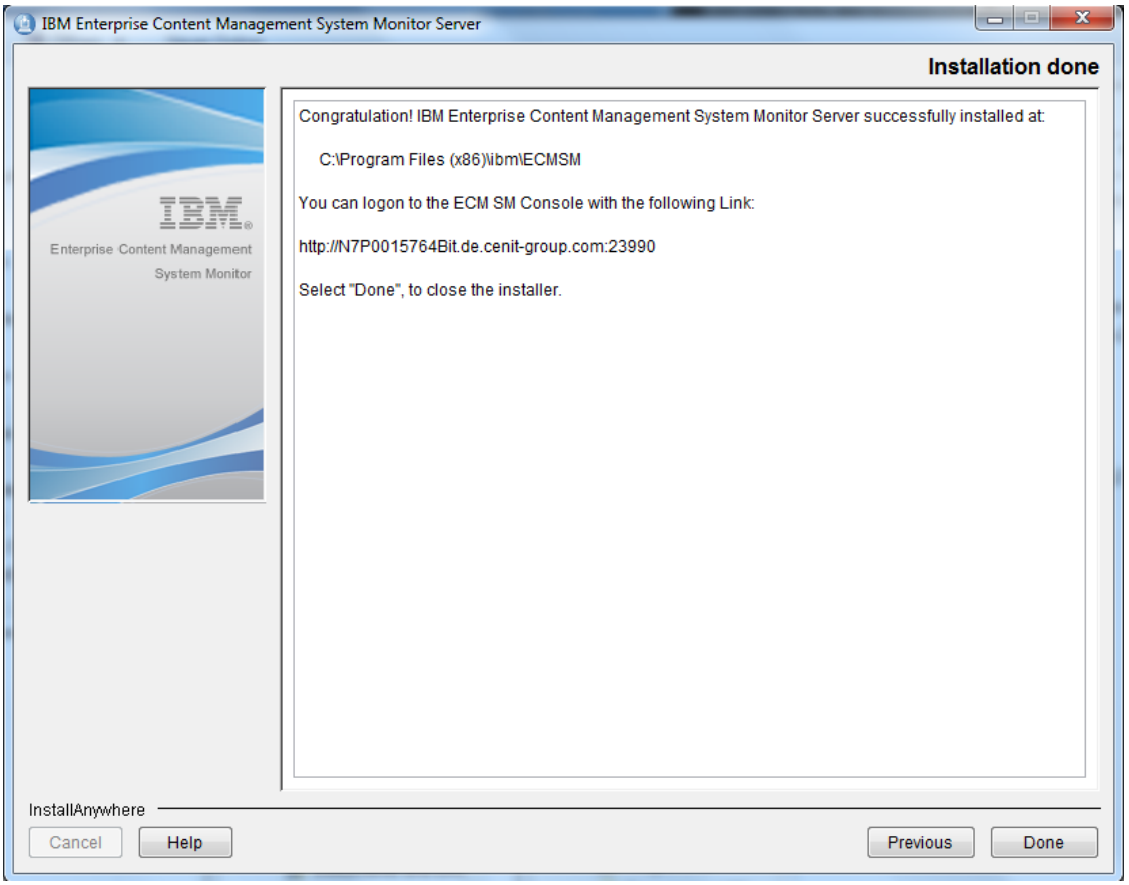
Final steps

After the sub-packages are installed successfully the 'Installation Complete' panel is displayed with the over-all Exit code.



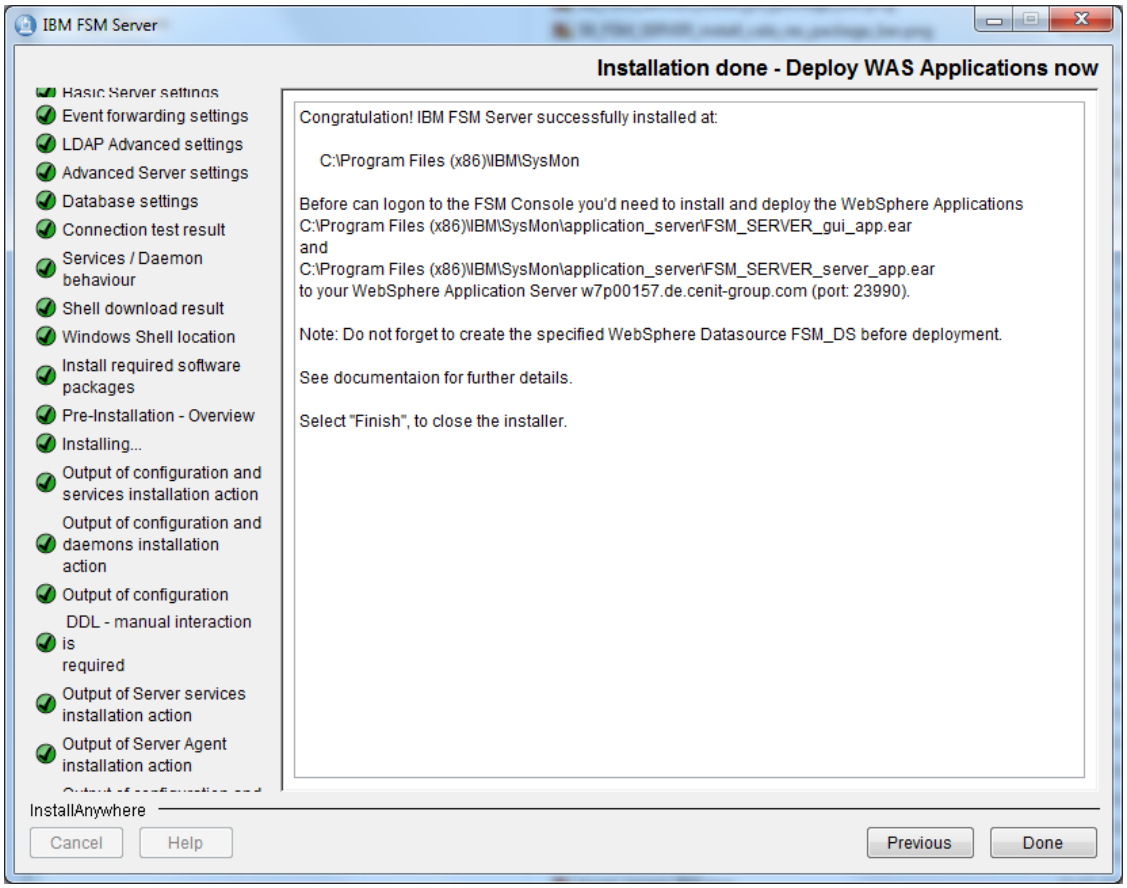
ECM SM Installation: Installation completed panel

If the installation finished with Exit code '0' then the next panel shows up.



ECM SM Installation: Installation successful panel

In the case the installation was based on WebSphere a successful installation is completed with the following panel. You'd need to deploy (install) and start the two displayed ear-files (Web Applications) to your WebSphere Server The deployment of the ECM_SM on IBM WebSphere. Before you start the WebSphere Application don't forget to define the Application Specific Data source and define the JVM custom properties as described in the JVM Properties for an IBM WebSphere Based Installation.

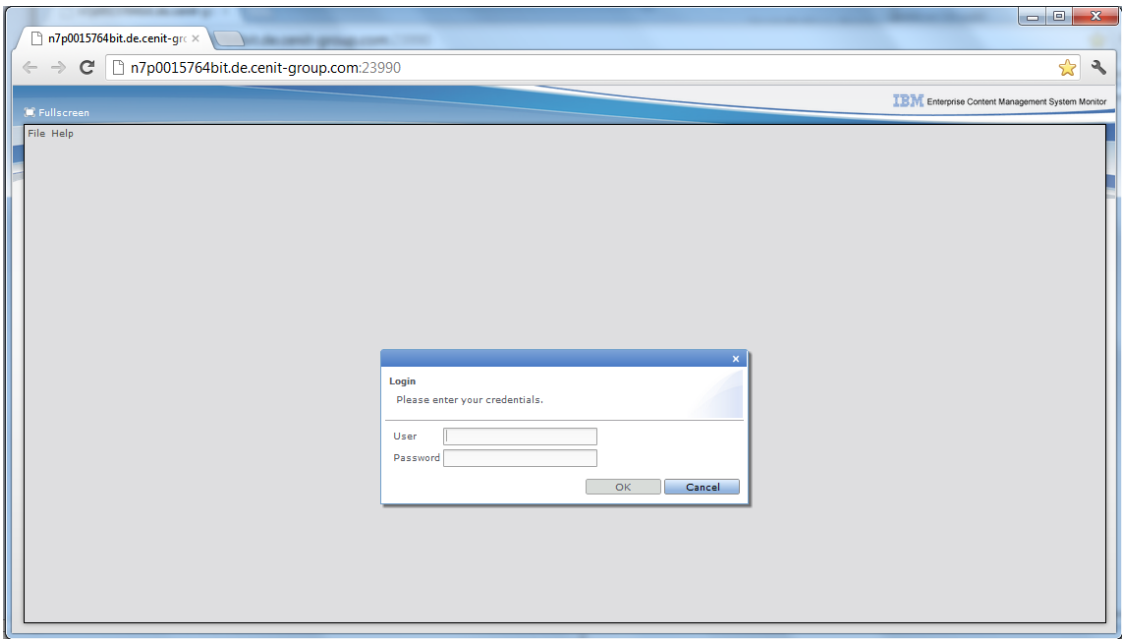


ECM SM Installation: WAS-based successful installation panel

In the case of an exit code '0' the installer will automatically start the ECM SM Web Application in your default browser.

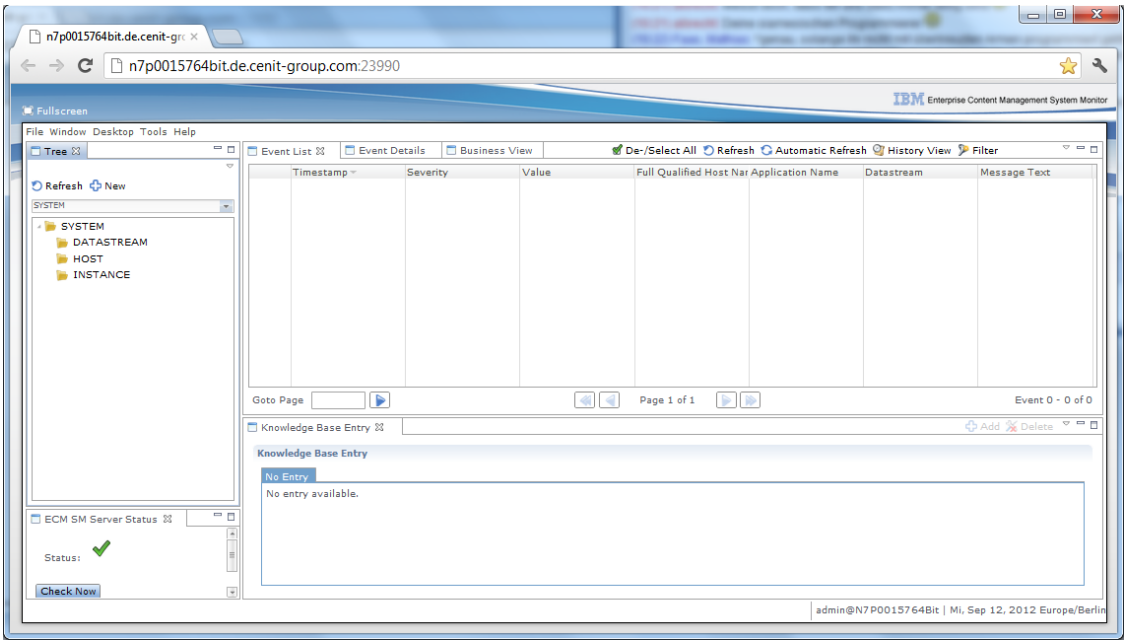
Note: The Default browser will only be started, if the ECM SM application is installed based on the Embedded Jetty Application Server.

The first login



ECM SM Installation: ECM SM Login Screen

After login with the ECM SM admin user (startup-password is 'admin') you'll see a similar ECM SM Event Console. Process with the ECM SM Users guide for further information about the ECM SM Web Console handling.



ECM SM Installation: ECM SM event Console

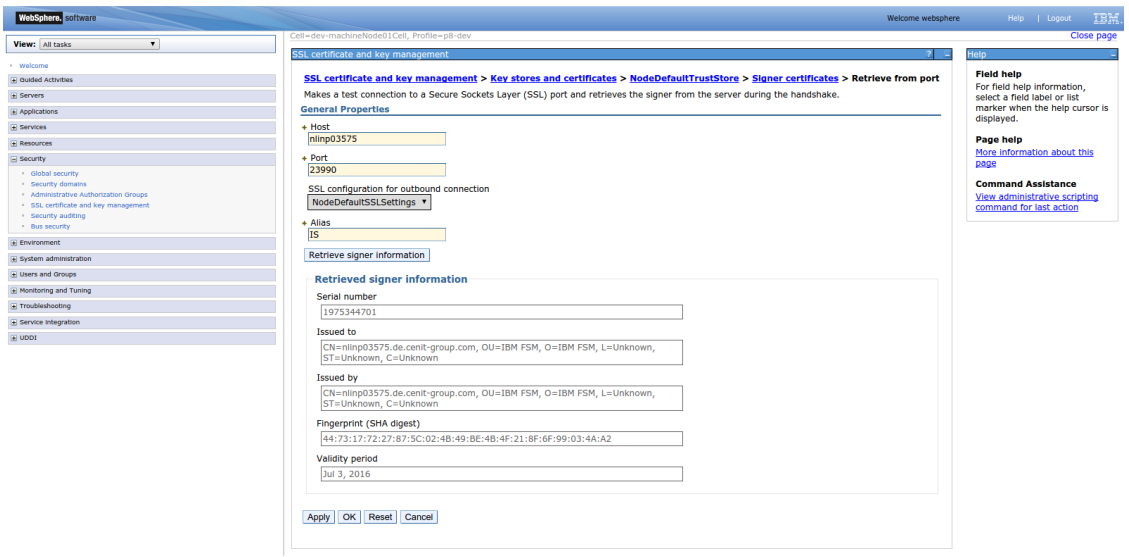
Installation and configuration of the ICN integration (ECM SM plug-in)

This section describes the configuration steps to deploy the ICN integration ECM SM plug-in.

HTTPS-enabled ECM SM GUI server

In order to connect to an HTTPS-enabled ECM SM GUI server, the underlying WebSphere instance needs the servers signer information added to its TrustStore. To do so, log in to the WebSphere Console (https://websphere:9043/ibm/console) and navigate to 'Security', 'SSL certificate and key management', 'Key stores and certificates', 'TrustStore', 'Signer certificates' , 'Retrieve from port'.

Enter the hostname and port of each ECM SM GUI server you want to connect to including the one you want to load the plug-in from.



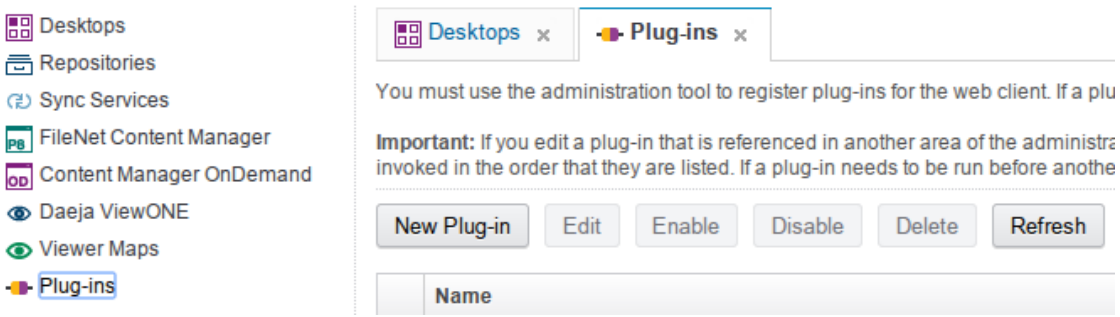
ECM SM Installation: IBM Content Navigator ECM SM plug-in - Import server certificate in WebSphere.

Installation and configuration of the ICN integration (ECM SM plug-in)

This chapter describes the installation and configuration of the IBM Content Navigator (ICN) plug-in for IBM ECM SM. The plug-in enables users to view the overall status of their managed IBM ECM environment without opening the IBM ECM SM UI.

Please use the following description to install the ECM SM plug-in.

Login to the **IBM Content Navigator (ICN)** UI as administrative user. Click on the maintenance (gear) icon on the left side and select 'Plug-ins'. Press the **New** button to install the new ECM SM plug-in.



ECM SM Installation: IBM Content Navigator Plug-in administration

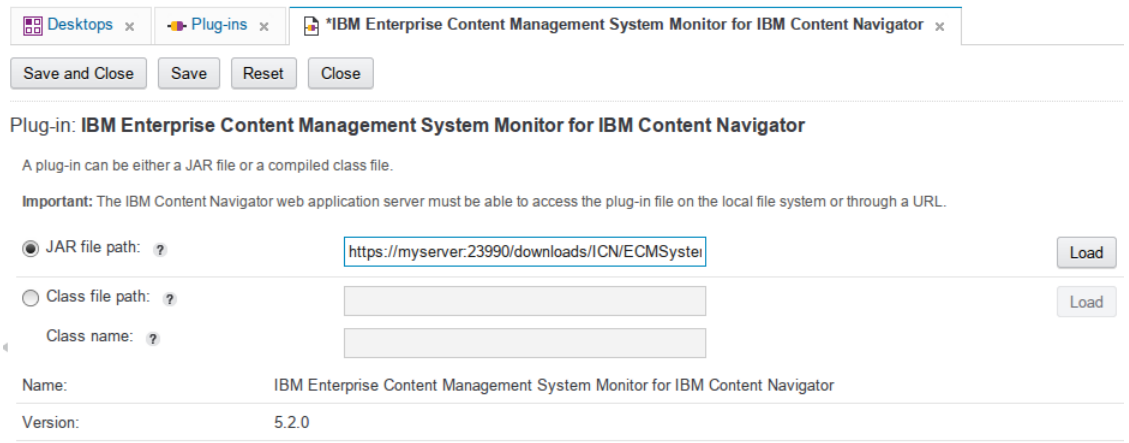
Type the following URL into the text box and press the **Load** button to load the plug-in. The URL depends on the ICN version, the system name and the type of the server: http[s]://<ECM SM servername>:<GUI-or-Downloadserver-port>/downloads/ICN/ECMSystemMonitorPlugin[-2.0.2].jar. If you want to use the plug-in with ICN 2.0.2 please add the '-2.0.2' suffix to the URL. The recommended ICN version is 2.0.3.

Example URL for ICN 2.0.3 and HTTPS:

https://myserver:23990/downloads/ICN/ECMSystemMonitorPlugin.jar

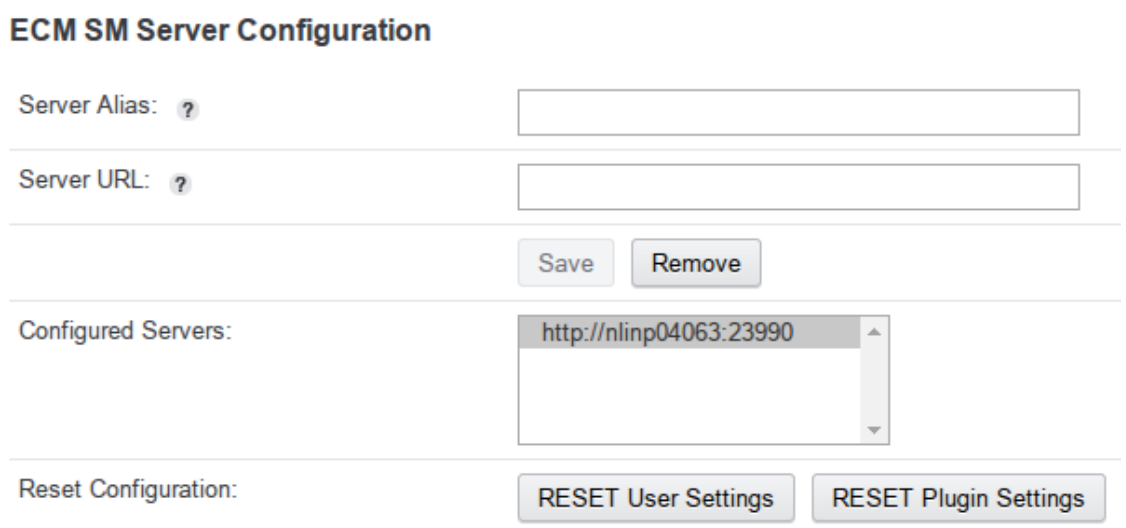
Example URL for ICN 2.0.2 and HTTP:

http://myserver:23990/downloads/ICN/ECMSystemMonitorPlugin-2.0.2.jar



ECM SM Installation: IBM Content Navigator Plug-in - adding a new plug-in

After pressing the **Load** button the systems loads the plug-in. The version, the description and the required parameters of the plug-in will be displayed below.

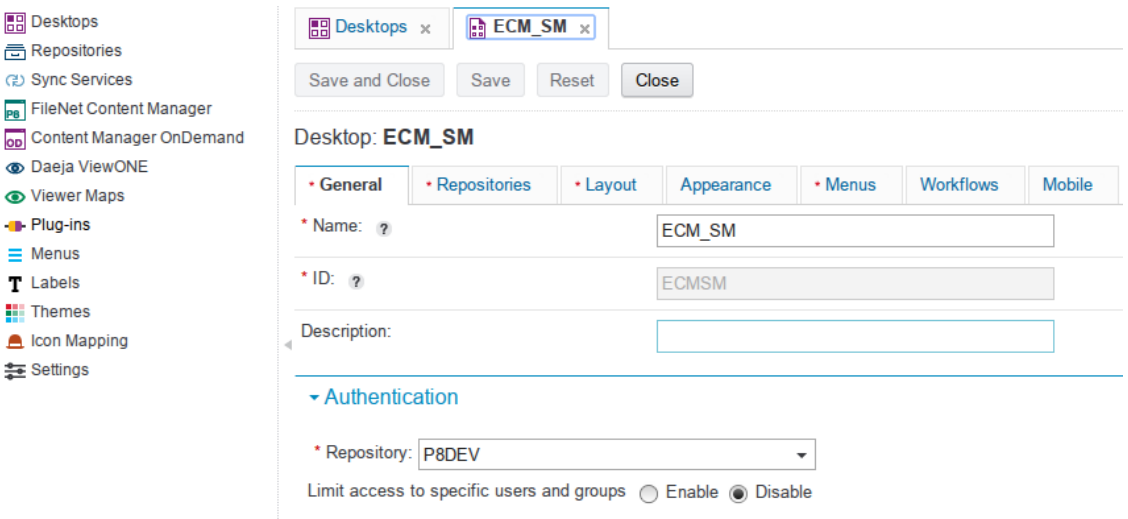


ECM SM Installation: IBM Content Navigator Plug-in - speficy plug-in settings.

Please make sure to press the **Save** button before proceeding with the server configuration.Specify the ECM SM server URL and an alias for each entry. The format looks like: http(s)://<ECM SM servername>:<GUI-port>, example: https://myserver:23990

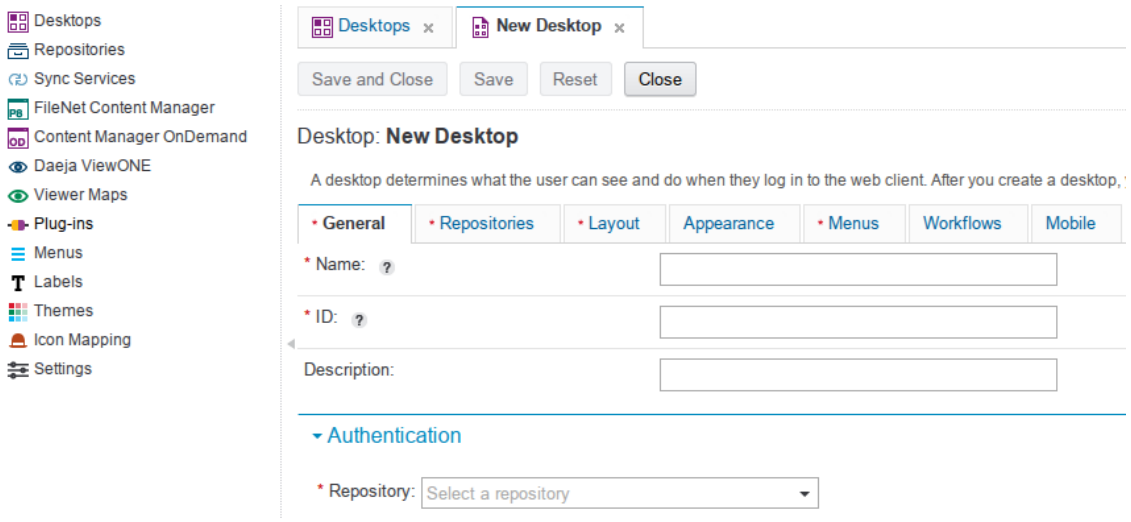
Press the **Save** button below the URL input field to store the new server in the ICN configuration. The configured servers are global for all ICN users. The ECM SM user-specific credentials are stored later separately for each ICN user.

Press the **Close** button to finish the plug-in configuration. Next, select **Desktop** from the sidebar and select either an existing desktop or create a new desktop.



ECM SM Installation: IBM Content Navigator ECM SM plug-in - editing an existing desktop

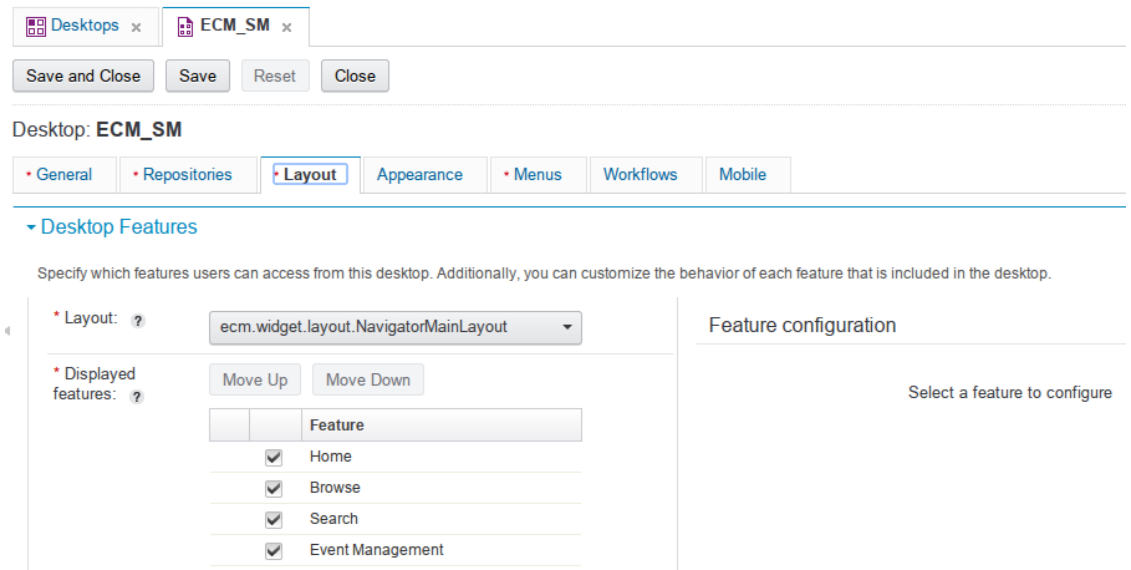
If you plan to create a new desktop the desktop name will be used later to login to the ICN. Add the ECM SM plug-in to the ICN desktop you selected or created and store the new / updated desktop.



ECM SM Installation: IBM Content Navigator ECM SM plug-in - Create a new desktop (1 of 2)

Specify the desktop name and the desktop ID in the **General** tab.

NOTE The desktop ID will later be used within the desktop URL. The selection of a Content Repository in the **Repositories** tab is recommended. Access to the desktop can be limited in the Authentication section of the General tab. Please check the IBM Content Navigator documentation for details.



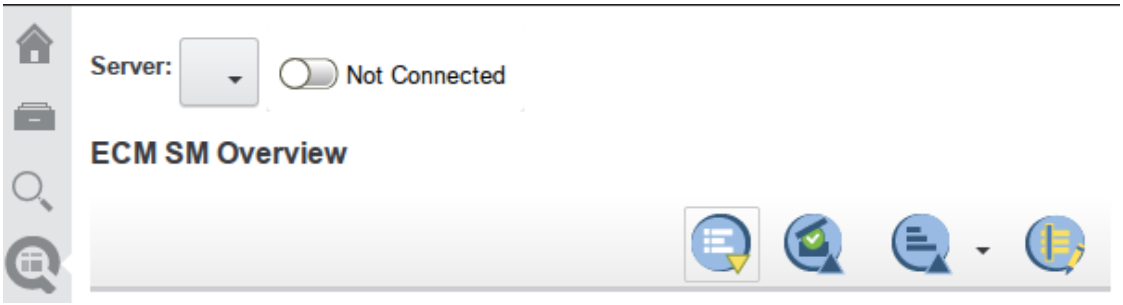
ECM SM Installation: IBM Content Navigator ECM SM plug-in - Create a new desktop (2 of 2)

Select the **Layout** tab and tick the **Event Management** feature. Press**Save** to add the plug-in's feature to the sidebar of the configured desktop.

The IBM Content Navigator ECM SM plug-in can now be used.

Open the browser and type in the URL of the new ICN desktop containing the ECM SM plug-in with the following URL: http(s)://<hostname-hosting-ICN>:<port>/navigator/?desktop=<ECM SM ICN-Desktop ID>, example: http://myicnserver:9081/navigator/?desktop=ECMSM

In the sidebar select the **Event Management** feature and choose one of the previously configured ECM SM servers from the server dropdown list. Enter your ECM SM credentials and press the **Connect** button to load the configured Custom Trees of the selected ECM SM server.

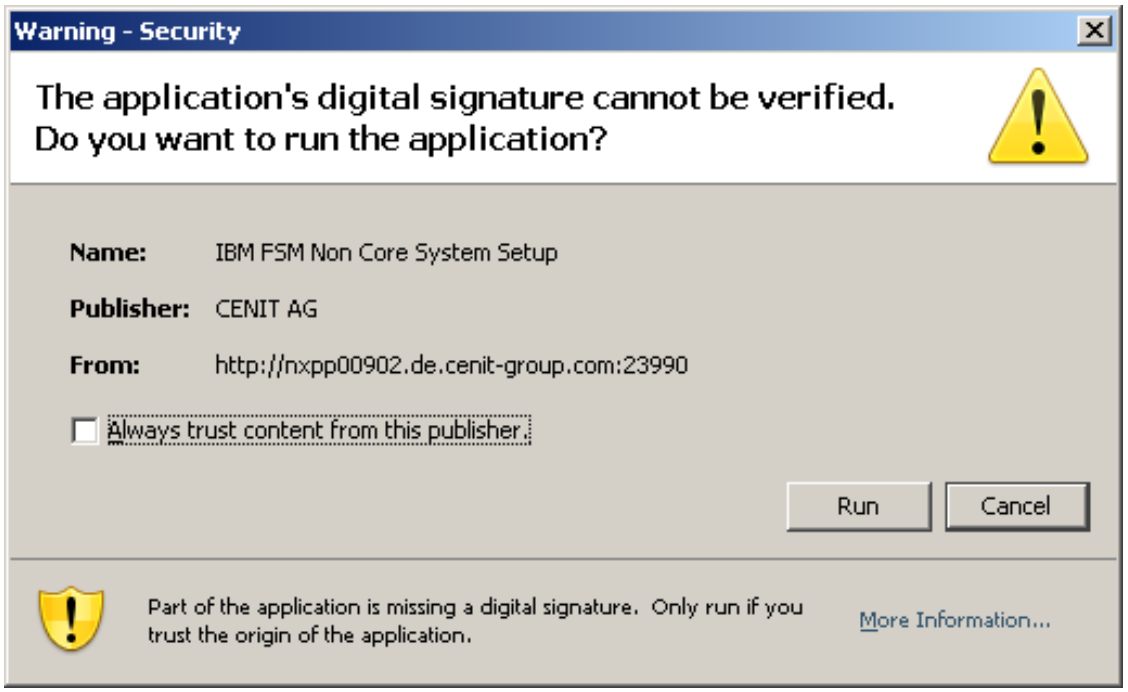


ECM SM Installation: IBM Content Navigator ECM SM plug-in - Overview

Activating monitoring for the ECM SM server

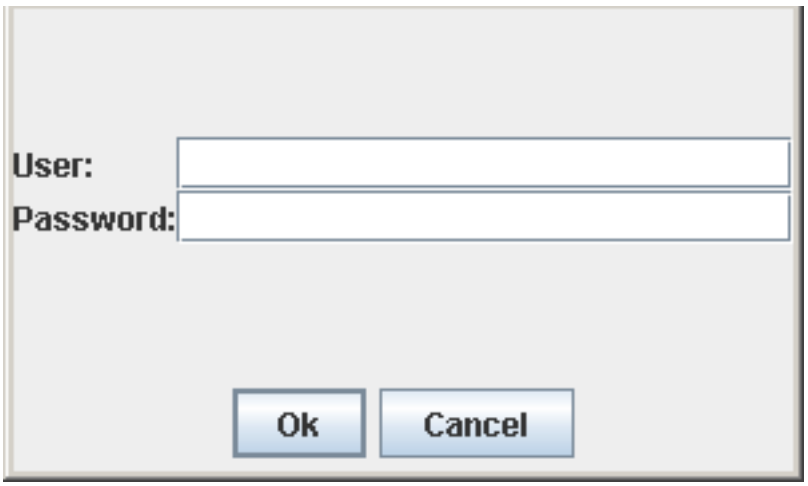
After installing the ECM SM server, monitoring for the server must be activated to receive events in the console.

- Login to the console as described in section The first login
- Choose **Tools** ***ECM SM Base agents and non Core ECM Agent Installer*** from the menu
- Depending on your browser settings, a warning similar to the following may be shown. Select **Run** to start the installer.



Browser security warning

- A login window will be opened. Log in with the same credentials you used for the console login.



Installer Login

- The installer opens. Select **Remote machine** in the **Install Method** section on the right, then select the ECM SM server in the **Hostname** combobox. Press the **Install and configure** button to start the installation.

Installer Window

- After the installation has finished, events from the ECM SM server will arrive in the console.

How to update expired ECM SM server certificates

ECM SM server installations generate several certificates for the communication between server, managed systems and the Web Console at installation time. If the ECM SM server was updated several times it may happen that the certificates expire (after 2 years). If the communication between the ECM SM server and the managed systems use the server certificate be aware that all agents require new certificates that apply to the updated server certificate, too.

To generate new certificates the following steps are required.

Delete existing certificates

Delete the ECM SM server certificate files <ECM SM-install-directory>/keys/*.pem on the ECM SM server.

Update the Server with the latest Fixpack

Install the latest ECM SM Fixpack. It will create new server certificates.

Optional: Generate new certificates for agents.

If the agent communication is based on the server certificates generate new agent certificates, too. See chapter 'Creating an SSL certificate for the agent' in the Installation Guide for further information.

CALA_REX and Task execution logging on the Server and Agents

Since version 5.2.0 the logfiles for tasks and monitors will be logged to $CENIT_ROOT/cala/temp. Create the ".plusdebug" debugging directory in this directory. The CALA_REX logfile (cala_rex logging) will be written to $CENIT_ROOT/cala_rex/logs when configured using the "Configure Debug Settings" task.

Troubleshooting

If the login fails you should verify all log files in the **$CENIT_ROOT** directory (for InstallAnywhere and internal log files) and in the **$CENIT_ROOT/var/log** directory.

Event forwarding to an ESM System via Logfile

ECM SM supports the generation of report (log) files. Besides SNMP trap based event forwarding this is the most common way to forward events from one event management system to another. ECM SM server supports the generation of free formatted report / logfiles that can be parsed by other systems.

Please refer to section Event forwarding via Log file for detailed information on how to activate and configure this functionality. Additional information about the filesink component that writes to report (log) files can be found in the ECM SM Users Guide, chapter 'Webconsole - Serverconf Console' in the section 'The Server Configuration Console', sub-section 'The Rules Engine Plug-Ins'. A description of possible place-holders in logfile names can be found in the ECM SM Users Guide, chapter Webconsole - Serverconf Console in the section 'The Event Mapping View', sub-section 'ReplacementHandlers'.

Note: This is the common way to forward ECM SM events to IBM Tivoli Monitoring Version 6 and to IBM Tivoli Enterprise Console.

Event integration to an ESM System via SNMP

ECM SM servers support forwarding of ECM SM events as SNMP traps to any SNMP Manager.

This is the easiest and most common way to forward ECM SM events into an existing Enterprise System Management environment.

The system supports the following SNMP versions:

- SNMP V1
- SNMP V2C
- SNMP V2C inform

The SNMP forwarding mechanism needs to be configured during ECM SM Server installation.

ECM SM SNMPv1 traps and variable settings

The following SNMPv1 traps of enterprise *1.3.6.1.4.1.8235.0* (enterprise CENIT) are generated by ECM SM:

Name	Trap number	Severity
cenitGeneric	0	Warning
cenitHarmlessLogfile	101	Normal
cenitWarningLogfile	102	Warning
cenitMinorLogfile	103	Minor
cenitCriticalLogfile	104	Major
cenitFatalLogfile	105	Critical
cenitHarmlessMonitoring	201	Normal
cenitWarningMonitoring	202	Warning
cenitMinorMonitoring	203	Minor
cenitCriticalMonitoring	204	Major
cenitFatalMonitoring	205	Critical

Each ECM SM SNMPv1 trap contains the following SNMP variables

Name	OID	Type	Note
Event	1.3.6.1.4.1.8235.1.1.1.1	STRING	Error Id, Event Class or Monitor name
Source	1.3.6.1.4.1.8235.1.1.1.2	STRING	Logfile name or Monitor cmdline parameters
Message	1.3.6.1.4.1.8235.1.1.1.3	STRING	Logfile Message text or monitor result
Timestamp	1.3.6.1.4.1.8235.1.1.1.4	STRING	Timestamp of event

Name	OID	Type	Note
Original Error Text	1.3.6.1.4.1.8235.1.1.1.5	STRING	Original error text from logfile or Monitor debug output
Error cause	1.3.6.1.4.1.8235.1.1.1.6	STRING	Error cause or empty
Corrective Action	1.3.6.1.4.1.8235.1.1.1.7	STRING	Corrective action or empty
Repeat count	1.3.6.1.4.1.8235.1.1.1.8	NUMERIC	Number of identical events
Hostname	1.3.6.1.4.1.8235.1.1.1.9	STRING	Hostname, where the events was detected

ECM SM SNMPv2c or SNMPv2c Inform traps and variable settings

The following SNMPv2c traps of enterprise 1.3.6.1.4.1.8235.2.0 (enterprise cenitNotifications) are generated by ECM SM:

Name	Trap number	Severity
cenitGeneric	0	Warning
cenitHarmlessLogfile	101	Normal
cenitWarningLogfile	102	Warning
cenitMinorLogfile	103	Minor
cenitCriticalLogfile	104	Major
cenitFatalLogfile	105	Critical
cenitHarmlessMonitoring	201	Normal
cenitWarningMonitoring	202	Warning
cenitMinorMonitoring	203	Minor
cenitCriticalMonitoring	204	Major
cenitFatalMonitoring	205	Critical

Each ECM SM SNMPv2 trap contains the following SNMP variables

Name	OID	Type	Note
snmpTrapEnterprise	1.3.6.1.6.3.1.1.4.3.0	OBJID	Enterprise of the received v2 trap (cenit)
Agent Timestamp	1.3.6.1.2.1.1.3.0	TIMETICKS	Timestamp of the CALA SNMP Agent
snmpTrapOID	1.3.6.1.6.3.1.1.4.1.0	OBJID	SNMP Trap OID of the received trap
Trap OID	1.3.6.1.4.1.8235.0	OBJID	Trap OID of this event
Event	1.3.6.1.4.1.8235.1.1.1.1	STRING	Error Id, Event Class or Monitor name
Source	1.3.6.1.4.1.8235.1.1.1.2	STRING	Logfile name or Monitor command line parameters
Message	1.3.6.1.4.1.8235.1.1.1.3	STRING	Logfile Message text or monitor result
Timestamp	1.3.6.1.4.1.8235.1.1.1.4	STRING	Timestamp of event
Original Error Text	1.3.6.1.4.1.8235.1.1.1.5	STRING	Original error text from logfile or Monitor debug output
Error cause	1.3.6.1.4.1.8235.1.1.1.6	STRING	Error cause or empty

Name	OID	Type	Note
Corrective Action	1.3.6.1.4.1.8235.1.1.1.7	STRING	Corrective action or empty
Repeat count	1.3.6.1.4.1.8235.1.1.1.8	NUMERIC	Number of identical events

Prepared MIB files

If you plan to forward SNMP messages to an SNMP Manager you need to import the appropriate MIB files into your SNMP Manager.

You will find prepared MIB files on the installation media in the directory **<INSTALL_MEDIUM_DIR>/MISC/SNMP**.

SNMP Version	MIB Filename
cenit_snmp_v1.mib	SNMPv1
cenit_snmp_v2.mib	SNMPv2c and SNMPv2c inform

Please consult the SNMP Managers user guide for further information.

NOTE You can import both files into your SNMP Manager.

Prepared trap definition files

SNMP Managers (IBM Tivoli NetView, HP OpenView, Enterasys Networks NetSight Element Manager, e.g.) need trap definition files to handle SNMP traps correctly.

You will find trap definition files for different SNMP Managers <Installation-directory>/MISC/SNMP directory on the ECM SM server.

Filename	Function
cenit_trapd_IBM_NV_UNIX.conf	ECM SM SNMPv1 and SNMPv2 trapd.conf extensions for IBM NetView for UNIX Version 7 and newer
cenit_trapd_IBM_NV_Windows.conf	ECM SM SNMPv1 trapd.conf extensions for IBM NetView for Windows and IBM NetView for UNIX prior Version 7
cenit_trapd_HPOV_and_NEM.conf	ECM SM SNMPv1 and SNMPv2 trapd.conf extensions for HP Openview Node Manager and Enterasys Networks NetSight Element Manager
cenit.trapdef	Enterasys Networks NetSight Element Manager trap definition file for ECM SM SNMPv1 traps (enterprise cenit)
cenitNotifications.trapdef	Enterasys Networks NetSight Element Manager trap definition file for ECM SM SNMPv2 traps (enterprise cenitNotifications)

If you want to forward ECM SM SNMP traps to another SNMP Manager you may need to change one of the prepared trap definition files.

Please consult your SNMP Manager‘s user guide for further information about trap definition settings.

Event forwarding to HP OpenView Operations (OVO)

ECM SM supports forwarding of ECM SM events to HP OpenView Operations (OVO). On ECM SM server a HP OpenView Operations Agent has to be installed to forward events to HP OpenView Operations. Events from ECM SM managed systems (clients) are forwarded by the ECM SM server communication via HP OpenView Agent to the HP Open View Server.

IMPORTANT There are different types of HP OpenView Agents available. ECM SM message forwarding is only supported with the https-Agents (HP OpenView OVO 8.x HTTPS Agent for Windows, HP-UX and Solaris). Refer to the HP OpenView documentation about details on how to install and configure the required HP OpenView Agent from the HP OpenView Server on the ECM SM server. There is no need to install any HP OVO agent or software on ECM SM managed systems (clients).
The ECM SM forwarding component uses the same mechanism as the HP OpenView command "opcmsg". If there are any issues with the transaction of ECM SM messages to the OVO system (for example the sent events are not received by the server), it is recommended to check the HP OpenView documentation about "how to send messages via opcmsg". If "opcmsg" works correctly from the ECM SM server then the ECM SM component will work correctly, too.

Please refer to the ECM SM Release Notes regarding supported OVO agent version and required OVO patches.

Customizing the ECM SM Web Console

Changing Fonts and Colors

ECM SM is based on the Eclipse Rich Ajax Platform. HTML properties can be configured via a cascading style sheet definition file. Find the file at **<installation path>/ext/finca.gui.style/theme/fsm/fsm.css.**

For details refer to the RAP Theming documentation located at http://wiki.eclipse.org/RAP_Theming.

Note that the ECM SM gui service must be restarted in order to make use of a changed style sheet.

Icon Sets

A user can choose between multiple icon sets (see **Window Views *User Preferences* Presentation Icon-set**). ECM SM provides two icon sets by default: *ECM SM45* and *ECM SM40*.

To add a own icon set, the following steps are necessary:

- Copy the directory structure from **<installation path>/gui/icons/ECM SM45** to **<installation path>/gui/icons/<name of your icon set>.**
- Adjust icons to your needs.
- Load the file **<installation path>/eventserver/cfg/finca-cfg.xml** into an editor, search for the lines

```
0001 <property name="de.cenit.eb.sm.finca.functional.usermgmt.icondir" ↵
     type="listbox">
0002    <listitem name="ECM SM40"/>
0003    <listitem name="ECM SM45"/>
0004 </property>
```

and create an entry for the new icon set

```
0001 <property name="de.cenit.eb.sm.finca.functional.usermgmt.icondir" ↵
     type="listbox">
0002    <listitem name="ECM SM40"/>
0003    <listitem name="ECM SM45"/>
0004    <listitem name="name of your icon set"/>
0005 </property>
```

Note that the ECM SM gui service must be restarted in order to make use the new icon set.

How to Configure and Use the UnifiedDatabaseClient (UDC)

General

The UnifiedDatabaseClient (UDC) is a command line tool to execute SQL queries on several RDBMS and display the result in a uniform database independent way.

Requirements

To use the UnifiedDatabaseClient, you need the JDBC driver of your RDBMS. Download the driver from the homepage of the database vendor. Please refer to chapter *Databases* in the *ECM SM Hardware & Software Requirements* guide for details.

UDC requires Java 7 or higher.

Usage

Parameters for the UDC are read from command line arguments. The following parameters are supported:

Configuration file property	Command line switch	Description/Allowed values/Defaults
udc.database.type	`-d <type>`	Database type. Optional. Default *DB2*. Valid values: *DB2*, *MSSQL* , *ORACLE*, *MYSQL*, *DERBY*.
udc.database.type.subtype	`-d <type>:<subtype>`	Database version depending on the database type; e.g. *9.1* for database type *ORACLE* or *2000* for database type *MSSQL*. Optional. The default is database type dependent.
udc.database.server.id	`-s <database server>`	Hostname or IP address of the database server to connect to. Optional. Default is *localhost*.
udc.database.user.id	`-u <database user id>`	The ID of the database user, who is connected to the database and executes SQL statements. Non optional. No default. Empty string is not allowed.
udc.database.user.pwd	`-p <database user password>`	The password (pwdcrypt coded) of the database user, who is connected to the database and executes SQL statements. Non optional. No default. Empty string is allowed.
udc.database.db.id	`-db <database id>`	ID of the database to connect to. This can be a database specific formated string. Non optional. No default. E.g. to allow the specification of database instances for MS SQL Server or table spaces for Oracle.
udc.database.jdbc.port	`-jp <jdbc port>`	Port used for the JDBC connection. Optional. The default is JDBC driver/database type dependent (*50000* for IBM DB2).
udc.database.jdbc.driver.class	`-jc <jdbc driver class>`	The JDBC driver class. Optional. The default is JDBC driver/database type dependent. Optional. Default is RDBMS specific.
udc.database.jdbc.driver.url	`-ju <jdbc driver url>`	The JDBC driver URL. Optional. The default is JDBC driver/database type dependent. Default is RDBMS specific. If not defined, the values will be taken from the -d, -s, -jp and -db parameters.
udc.output.type	`-o <output type>`	The output should be in the specified format. Optional. The default is *udc*. Valid values: *csv*, *xml*, *html*, *udc*.
udc.output.separator	`-outsep <output separator>`	Separator for output. Used for *csv*, *udc* and if none of the above listed output types is defined. Optional. Default is *;;;;*

Configuration file property	Command line switch	Description/Allowed values/Defaults
udc.output.resultseparator	`-resultsep <output result separator>`	Separator between results of SQL statements in the output. Used for *csv*, *udc* and if none of the above listed output types is defined. Optional. Default is `----------`
udc.query.separator	`-querysep <query separator>`	Separator for multiple queries to be executed. Optional. Default is *;*
udc.action.commit	`-nc`	The client will not commit any data changing SQL statement, if the database is not configured as autocommit. Optional. The default is to commit the changes.
udc.action.testconnection	`-t`	The client will only test the JDBC connection and not execute any SQL statement Any SQL statement given on the command line will be ignored. In case the connection could be established and closed successfully, *0* (zero) is returned. In all other cases *1* (one) or higher is returned.
-	`-exec`	Query to be executed. Surrounded by double quotes (e.g. "SELECT * FROM...").
-	`-execfile`	Read queries (one ore more) to be executed from given filename.
-	`-debug`	Print debug information to stderr. Optional. Default is to use no debug output.
udc.action.time	`-calc`	Three additional time spans (in milliseconds) are calculated and displayed on the command line: The time span, it took to connect to the database (login time span), the time span, it took to execute SQL statements (execution time span) and the complete time (adding up login and execution time spans in milliseconds).

Some optional parameters will be set by the UDC on runtime depending on the provided parameters.

For the JDBC Driver URL the parameters -d, -s, -jp and -db are used.

The JDBC Driver Class will be set using the -d parameter for the database type and subtype. In some cases the Driver Class and Driver URL are different for different subtypes of the database. If the default value doesn't match your affords, provide it as an command line argument.

The following examples are UDC calls from the command line for some different RDBMS. The minimal needed parameters are given, all other are default for the database type. For other subtypes the needed parameters may differ. For these examples the Java binary is in the path variable.

MySQL

java -Djava.ext.dirs=/opt/jdbc/mysql/:/opt/IBM/ECMSM/tools/de.cenit/ -cp . -jar /opt/IBM/ECMSM/tools/de.cenit/universalDatabaseClient.jar -exec "SELECT * FROM MYTABLE" -d MYSQL -s myserver -u myuser -p <encrypted password> -db /MYDB

Defaults

- DB-Subtype: 5.0
- JDBC Driver Class: com.mysql.jdbc.Driver
- JDBC Port: 3306
- JDBC Driver URL: jdbc:mysql://<database server>:<jdbc port><database id>

Specials

- The parameter "`?tinyInt1isBit=false`" is used for the connection to the database to show tinyint fields as number, not as boolean values.

IBM DB2

java -Djava.ext.dirs=/opt/jdbc/db2/:/opt/IBM/ECMSM/tools/de.cenit/ -cp . -jar /opt/IBM/ECMSM/tools/de.cenit/unifiedDatabaseClient.jar -exec "SELECT * FROM MYTABLE" -d DB2 -s myserver -u myuser -p <encrypted password> -db /MYDB

Defaults

- DB-Subtype: 9.5
- JDBC Driver Class: com.ibm.db2.jcc.DB2Driver
- JDBC Port: 50000
- JDBC Driver URL: jdbc:db2://<database server>:<jdbc port><database id>

Oracle

java -Djava.ext.dirs=/opt/jdbc/oracle/:/opt/IBM/ECMSM/tools/de.cenit/ -cp . -jar /opt/IBM/ECMSM/tools/de.cenit/unifiedDatabaseClient.jar -exec "SELECT * FROM MYTABLE" -d ORACLE -s myserver -u myuser -p <encrypted password> -db :MYDB

Defaults

- DB-Subtype: 10g
- JDBC Driver Class: oracle.jdbc.driver.OracleDriver
- JDBC Port: 1521
- JDBC Driver URL: jdbc:oracel:thin:@<database server>:<jdbc port><database id>

Specials

- If you want to connect as sysdba or sysoper use "user as sysdba" or "user as sysoper" for the -u parameter (double quotes are needed around these value).
- You have to use the ORACLE_SID for connecting to an remote Oracle database, not the SQL-Net-name.

MSSQL

java -Djava.ext.dirs=/opt/jdbc/mssql/:/opt/IBM/ECMSM/tools/de.cenit/ -cp . -jar /opt/IBM/ECMSM/tools/de.cenit/unifiedDatabaseClient.jar -exec "SELECT * FROM MYTABLE" -d MSSQL -s myserver -u myuser -p <encrypted password> -db ;instanceName=MYINSTANCE

Defaults

- DB-Subtype: 2005
- JDBC Driver Class: com.microsoft.sqlserver.jdbc.SQLServerDriver
- JDBC Port: 1433
- JDBC Driver URL: jdbc:sqlserver://<database server>:<jdbc port><database id>

Windows authentication over JDBC driver

UDC requires the JDBC driver file **`sqljdbc4.jar`** from the Microsoft JDBC Driver for SQL Server version 4.0 package. Other Microsoft JDBC Driver for SQL Server versions and files are not supported.

Make sure that the directory contains only the JDBC driver file **`sqljdbc4.jar`** and remove the file **`sqljdbc.jar`**.

If you plan to use Windows Authentication for the MSSQL database connection, the file **`sqljdbc_auth.dll`** from the Microsoft JDBC Driver for SQL Server version 4.0 package is required, too. Make sure that the 32-bit version of the DLL is copied to the same directory as the JDBC driver file **`sqljdbc4.jar`**. The DLL is initially located in *<installation directory>\sqljdbc_<version>\<language>\auth\x86*.

Specials

- You can use -db instanceName=<instance>;databaseName=<databasename> for defining the database.
- To connect to an SSL secured SQL server, you can specify the required parameters with the -db parameter as well, e.g. -db instanceName=LOCAL;databaseName=mydb;encrypt=true;trustServerCertificate=true. See http://msdn.microsoft.com/en-us/library/bb879935%28v=sql.105%29 for a list of possible parameters and more details.

Output

The UDC supports different output types. Default is the UDC format.

You could change the output type using the *-o <output type>* commandline switch. If you define an invalid value the UDC will use the default format.

UDC

```
java -Djava.ext.dirs=/opt/jdbc/mysql:/home/[redacted]/development/workspace/
bin/java/libs/de.cenit/ -cp . -jar unifiedDatabaseClient.jar -exec "SELECT
 * FROM CALA.CSM_AREA LIMIT 0,5" -d mysql -u webadmin -p 0000060f13000d0f0
0 -db /CALA
CSM_AREANAME;;;;CSM_AREA;;;;
Apache;;;;apache;;;;
CALA Check;;;;cala_check;;;;
Filesystem;;;;filesystem;;;;
Sendmail;;;;sendmail;;;;
System;;;;system;;;;

------------------------------
```

Default output for UDC.

xml

```
java -Djava.ext.dirs=/opt/jdbc/mysql:/home/[redacted]/development/workspace/
bin/java/libs/de.cenit/ -cp . -jar unifiedDatabaseClient.jar -exec "SELECT
 * FROM CALA.CSM_AREA LIMIT 0,5" -d mysql -u webadmin -p 0000060f13000d0f0
0 -db /CALA -o xml
<?xml version="1.0" encoding="UTF-8"?>
<DbResultSet>
<ResultRow number="0">
<cell name="CSM_AREANAME">Apache</cell>
<cell name="CSM_AREA">apache</cell>
</ResultRow>
<ResultRow number="1">
<cell name="CSM_AREANAME">CALA Check</cell>
<cell name="CSM_AREA">cala_check</cell>
</ResultRow>
<ResultRow number="2">
<cell name="CSM_AREANAME">Filesystem</cell>
<cell name="CSM_AREA">filesystem</cell>
</ResultRow>
<ResultRow number="3">
<cell name="CSM_AREANAME">Sendmail</cell>
<cell name="CSM_AREA">sendmail</cell>
</ResultRow>
<ResultRow number="4">
<cell name="CSM_AREANAME">System</cell>
<cell name="CSM_AREA">system</cell>
</ResultRow>
</DbResultSet>
```

XML output for UDC.

html

```
java -Djava.ext.dirs=/opt/jdbc/mysql:/home/[redacted]/development/workspace/
bin/java/libs/de.cenit/ -cp . -jar unifiedDatabaseClient.jar -exec "SELECT
 * FROM CALA.CSM_AREA LIMIT 0,5" -d mysql -u webadmin -p 0000060f13000d0f0
0 -db /CALA -o html
<table>
<thead>
<tr><th>CSM_AREANAME</th><th>CSM_AREA</th></tr>
</thead>
<tbody>
<tr><td>Apache</td><td>apache</td></tr>
<tr><td>CALA Check</td><td>cala_check</td></tr>
<tr><td>Filesystem</td><td>filesystem</td></tr>
<tr><td>Sendmail</td><td>sendmail</td></tr>
<tr><td>System</td><td>system</td></tr>
</tbody>
</table>
```

HTML output for UDC.

csv

```
java -Djava.ext.dirs=/opt/jdbc/mysql:/home/[redacted]/development/workspace/
bin/java/libs/de.cenit/ -cp . -jar unifiedDatabaseClient.jar -exec "SELECT
 * FROM CALA.CSM_AREA LIMIT 0,5" -d mysql -u webadmin -p 0000060f13000d0f0
0 -db /CALA -o csv
"CSM_AREANAME";;;;"CSM_AREA";;;;
"Apache";;;;"apache";;;;
"CALA Check";;;;"cala_check";;;;
"Filesystem";;;;"filesystem";;;;
"Sendmail";;;;"sendmail";;;;
"System";;;;"system";;;;
```

CSV output for UDC.

Agent Installation Requirements

AIX

ECM SM agent platforms

ECM SM agents require the following software to be installed on the agent system:

- perl 5 or higher (required but NOT installed during ECM SM agent installation)
- Alternate shell like the bash shell (recommended): Due to limitations of the AIX sh and ksh shells monitoring and task execution can fail. To prevent these errors it is recommended to install the bash-shell to each agent before the monitoring agent is installed (if not yet installed). The bash-shell can be installed from the IBM AIX Toolbox CD.
  Within the ECM SM agent installer use the **Set configuration variables** configuration window, item **Custom Shell binary**, to specify the full qualified name of the bash (for instance **`/usr/local/bin/bash`**) to be used for all ECM SM agent components like the agent installer, monitors and tasks. A link to the specified binary is created in the directory **`<ECM SM-install-dir>/fsmsh`**.
- gawk (recommended): Due to limitations of the AIX awk and nawk (which is a copy of awk) monitoring and task execution (for instance IBM WebSphere monitors and tasks) can fail. To prevent these errors it is recommended to install gawk to each agent before the monitoring agent is installed (if not yet installed). gawk can be installed from the IBM AIX Toolbox CD.
  Within the ECM SM agent installer use the **Set configuration variables** configuration window, item **Custom AWK binary**, to specify the full qualified name of gawk (for instance **`/usr/local/bin/gawk`**) to be used for all ECM SM agent components like the agent installer, monitors and tasks. A link to the specified binary is created in the directory **`<ECM SM-install-dir>/fsmsh`**.

You must add the path to the perl binary to the CALA_REX configuration manually if perl is not found in the standard path .

Adjust system parameter ncargs

If the value of the system parameter ncargs is too low, some monitors may show the error message "arg list too long".

To avoid this message, you should increase the value of ncargs.

To check for the current value, enter the following command:

```
lsattr -EH -l sys0 | grep ncargs
```

The value should be 16 or 32. To change the setting of ncargs, enter the following command.

```
chdev -l sys0 -a ncargs=<value>
```

This change takes affect immediately and is preserved over boot.

Adjust system parameter maxuproc

If the value of the system parameter maxuproc (maximum allowed processes per user) is too low, processes like monitors, tasks or shell binaries cannot be executed and may hang.

To avoid this error, you should increase the value of maxuproc to at least 1024.

To check for the current value, enter the following command:

```
lsattr -EH -l sys0 | grep maxuproc
```

or use the AIX smit(ty) tool (run 'smitty system' and then select 'Change show characteristics of a operating system'.

The value should be 1024 or higher. To change the setting of maxuproc, enter the following command.

```
chdev -l sys0 -a maxuproc=<value>
```

This change takes affect immediately and is preserved over boot.

Installing CALA_REX or CALA without root permissions

If CALA_REX or CALA is installed by a user without root permissions, make sure that the following preconditions are met:

- the directory **`/etc/cenit`** must exist
- the user needs full access (read/write) to this directory
- if the root directory of the CALA installation (normally **`/opt/IBM/ECMSM/cala`** already exists, the user needs full access (read/write) to this directory

HP-UX

ECM SM agent platforms

ECM SM agents require the following software to be installed on the agent system:

- perl 5 or higher (required but NOT installed during ECM SM agent installation)
- gawk (recommended): Due to limitations of the HP-UX awk binary agent installation, monitoring and task execution can fail. To prevent these errors it is recommended to install gawk to each agent before the monitoring agent is installed (if not yet installed). The gawk or nawk for HP-UX is not provided by HP and therefore need to be downloaded from the Internet. Note: gawk might require the components 'gettext' and 'libiconv'.
  Within the ECM SM agent installer use the **Set configuration variables** configuration window, item **Custom AWK binary**, to specify the full qualified name of gawk (for instance **`/usr/local/bin/gawk`**) to be used for all ECM SM agent components like the agent installer, monitors and tasks. A link to the specified binary is created in the directory **`<ECM SM-install-dir>/fsmsh`**.

You must add the path to the perl binary to the CALA_REX configuration manually if perl is not found in the standard path .

Installing CALA_REX or CALA without root permissions

If CALA_REX or CALA is installed by a user without root permissions, make sure that the following preconditions are met:

- the directory **`/etc/cenit`** must exist
- the user needs full access (read/write) to this directory
- if the root directory of the CALA installation (normally **`/opt/IBM/ECMSM/cala`** already exists, the user needs full access (read/write) to this directory

Redhat Linux

ECM SM agent platforms

Note: Installation might fail, if Redhat Data Protection is enabled. Please consult Redhat documentation for further details.

ECM SM agents require the following software to be installed on the agent system:

- perl 5 or higher (required but NOT installed during ECM SM agent installation)
- compat-libstdc++-33.i686

You must add the path to the perl binary to the CALA_REX configuration manually if perl is not found in the standard path .

Installing CALA_REX or CALA without root permissions

If CALA_REX or CALA is installed by a user without root permissions, make sure that the following preconditions are met:

- the directory `/etc/cenit` must exist
- the user needs full access (read/write) to this directory
- if the root directory of the CALA installation (normally `/opt/IBM/ECMSM/cala` already exists, the user needs full access (read/write) to this directory

Solaris

ECM SM agent platforms

ECM SM agents require the following software to be installed on the agent system:

- perl 5 or higher (required but NOT installed during ECM SM agent installation)
- Alternate shell like the bash shell (recommended): Due to limitations of some SUN shells sh and ksh monitoring and task execution can fail. To prevent these errors it is recommended to install the bash-shell to each agent before the monitoring agent is installed (if not yet installed). The bash-shell can be installed from the SUN Companion CD. Note: The bash shell might require additional prerequisite components to be installed.
  Within the ECM SM agent installer use the **Set configuration variables** configuration window, item **Custom Shell binary**, to specify the full qualified name of the bash (for instance **`/usr/local/bin/bash`**) to be used for all ECM SM agent components like the agent installer, monitors and tasks. A link to the specified binary is created in the directory **`<ECM SM-install-dir>/fsmsh`**.
- gawk (recommended): Due to limitations of the SUN Solaris / SunOS awk and nawk monitoring and task execution (for instance IBM WebSphere monitors and tasks) can fail. To prevent these errors it is recommended to install gawk to each Solaris / SunOS agent before the monitoring agent is installed (if not yet installed). gawk can be installed from the Solaris Companion CD or the Internet.
  Within the ECM SM agent installer use the **Set configuration variables** configuration window, item **Custom AWK binary**, to specify the full qualified name of gawk (for instance **`/usr/local/bin/gawk`**) to be used for all ECM SM agent components like the agent installer, monitors and tasks. A link to the specified binary is created in the directory **`<ECM SM-install-dir>/fsmsh`**.

You must add the path to the perl binary to the CALA_REX configuration manually if perl is not found in the standard path .

Required file `/usr/lib/charset.alias`

ECM SM Agents version 5.2.0 support nationalized data analyzation, which includes multi byte character support. This functionality is realized based on the iconv Library.

The required system configuration file **`/usr/lib/charset.alias`** is not installed out of the box in some Solaris versions (e.g. Solaris 8). As a result the monitoring component of the ECM SM agent does not work on these systems with missing configuration file. To fix this problem, just copy this file from another Solaris machine where this file exists, or create it manually (see An example charset.alias file for an example **`charset.alias`** file).

NOTE On Solaris 9 this file is part of the Solaris package *`SUNWgnome-base-libs`*, which is installed on every Solaris 9 systems by default.

Manual OS adjustments

Verify that OS kernel parameters are configured correctly. In some cases the following parameters need to be specified or adjusted in /etc/system file. Note: Do not decrease the values, if the parameters are specified with higher values.

```
set rlim_fd_max=4096
set rlim_fd_cur=1024
```

Note: /etc/system changes require system reboot.

Installing CALA_REX or CALA without root permissions

If CALA_REX or CALA is installed by a user without root permissions, make sure that the following preconditions are met:

- the directory **`/etc/cenit`** must exist
- the user needs full access (read/write) to this directory
- if the root directory of the CALA installation (normally **`/opt/IBM/ECMSM/cala`** already exists, the user needs full access (read/write) to this directory

SuSE Linux

ECM SM agent platforms

ECM SM agent require the following software to be installed on the agent system:

- perl 5 or higher (required but NOT installed during ECM SM agent installation)
- libstdc++33-32bit

You must add the path to the perl binary to the CALA_REX configuration manually if perl is not found in the standard path .

Installing CALA_REX or CALA without root permissions

If CALA_REX or CALA is installed by a user without root permissions, make sure that the following preconditions are met:

- the directory `/etc/cenit` must exist
- the user needs full access (read/write) to this directory
- if the root directory of the CALA installation (normally `/opt/IBM/ECMSM/cala` already exists, the user needs full access (read/write) to this directory

Windows

ECM SM agent platforms

ECM SM agents require the following software to be installed on the agent system:

- perl 5 or higher (automatically installed during ECM SM agent installation)
- UNIX Like Windows shell (installed during ECM SM agent installation), unless Limited Agent version is used.

A perl implementation is included on the installation media in subdirectory TOOLS/w32-ix86/shell. It is automatically installed during installation of ECM SM server and agents.

Note: Full functioning Windows based ECM SM server and agents require a UNIX-like Windows shell, which is licensed under GPL. The shell can be downloaded manually from sourceforge.net or automatically during ECM SM server and agents installation. You can run a ECM SM Limited Windows agent version without having the GPL component installed. The ECM SM server requires the UNIX-like shell for Windows systems.

WMI requirements

The service user account has to be a member of the "Performance Monitor Users" (in German: "Systemmonitorbenutzer") group to be able to access WMI counters. In addition to the group membership, the service user needs the permission "Enable Account" in the WMI Control Security settings. By default, the group "Everyone" has permissions "Execute Methods", "Provider Write" and "Enable Account". If that's the case the service account inherits the permission through that group. To access WMI from remote the "Remote Enable" permission is required.

For more detailed information how to configure WMI permissions refer to the Microsoft documentation:

Windows Server 2003, Windows Server 2003 R2, Windows Server 2003 with SP1, Windows Server 2003 with SP2

Windows 7, Windows 8, Windows Server 2008 R2, Windows Server 2012

Configuring and installing ECM SM clients

CALA_REX Installation

The communication between the ECM SM server and agents is based on the CALA_REX (CALA remote execution) server and agent service. This service is used and needed to install and configure monitoring and logfile management components.

Since version 5.2.0 ECM SM supports multiple CALA_REX agents on one system. The ECM SM UI components identify the agents by its hostname, the so called 'Service / Agent ID Postfix'. In the case more than one agent will be installed on the system the 'Service / Agent ID Postfix' has to be unique and each agent has to use its own communication port (default value: 23804). Use a short string as the parameter 'Agent ID Service Postfix' `#,{};$_` or white spaces (blanks, tabs) maximum 8 characters on AIX) that adds information about the agent.

Location of CALA_REX agent images

The CALA_REX agent install images can be downloaded from the ECM SM Web Console. Open the ECM SM Web Console in your browser, navigate to the 'Client Administration' Console or open the view 'GUI Tools and downloads' directly. Select the platform specific ECM SM CALA_REX agent install image and either execute the installer image directly or download the image to the local system.

List of CALA_REX agent install images:

`WINDOWS_IBM_ECM_SM_CALA_REX_AGENT.exe` (InstallAnywhere image for MS Windows)
`AIX_IBM_ECM_SM_CALA_REX_AGENT.bin` InstallAnywhere image for IBM AIX)
`Solaris-SPARC_IBM_ECM_SM_CALA_REX_AGENT.bin` (InstallAnywhere image for Solaris 9 and 10 - SPARC base
`Solaris-Intel_IBM_ECM_SM_CALA_REX_AGENT.bin` (InstallAnywhere image for Solaris 10 - Intel based)
`HP-UX-Itanium_IBM_ECM_SM_CALA_REX_AGENT.bin` (InstallAnywhere image for HP-UX 11 - Itanium based)
`Linux-Intel_IBM_ECM_SM_CALA_REX_AGENT.bin` (InstallAnywhere image for Linux on Intel platform)
`Linux-PPC_IBM_ECM_SM_CALA_REX_AGENT.bin` (InstallAnywhere image for Linux on PowerPC platform)
`Linux-s390_IBM_ECM_SM_CALA_REX_AGENT.bin` (InstallAnywhere image for zLinux on s390)

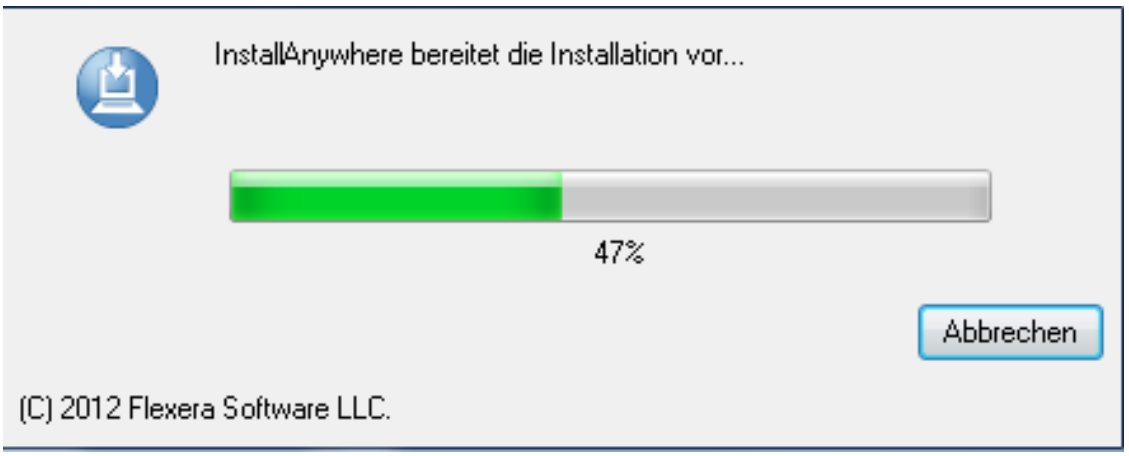
Installing the CALA_REX agent

Go to the download page and click on the platform specific link in the *CALA_REX agents* section. Save the InstallAnywhere install-image on the machine where the CALA_REX agent is to be installed.

Double-click the binary that has just been downloaded to start the CALA_REX agent installation process. InstallAnywhere will guide you through the installation process.

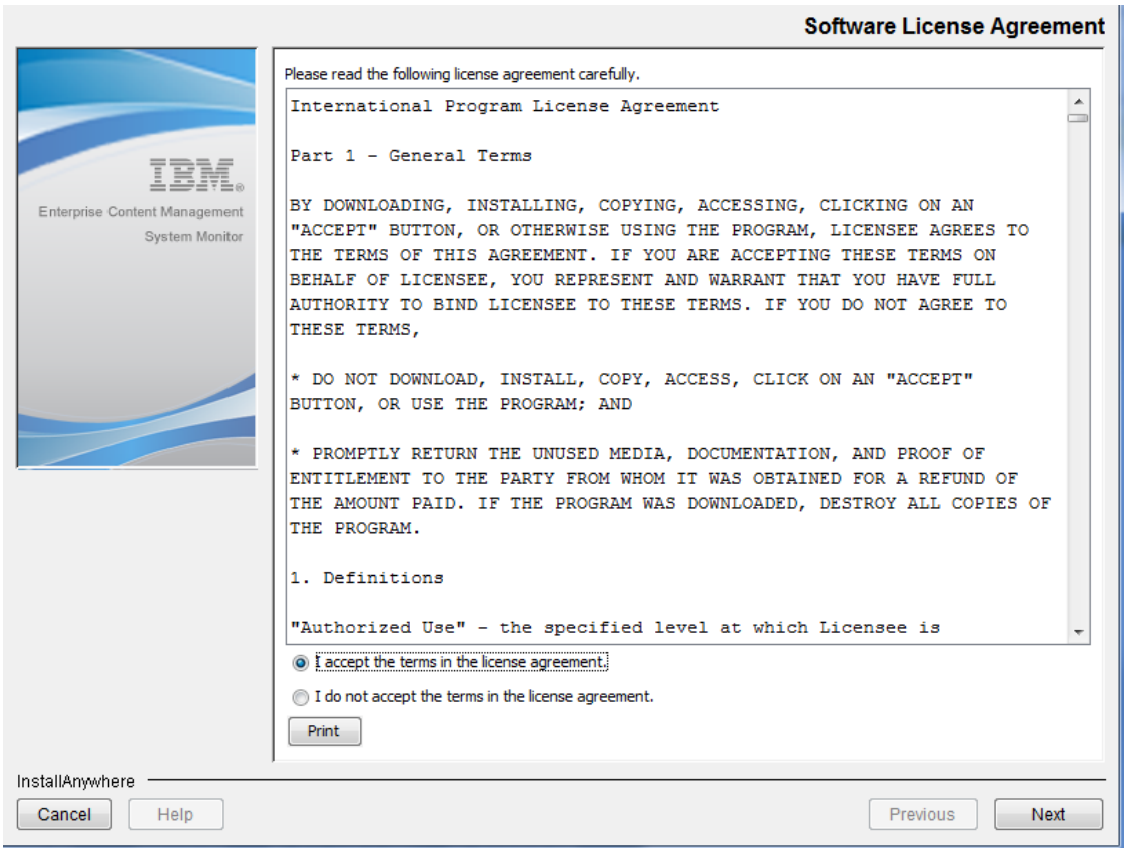
NOTE On UNIX and Linux systems you might have to add execution rights (x-flag) to the installer image before you can run the installation process.

IMPORTANT On the Intel based Solaris platform you must start the installer with bash and not with the standard sh shell of the system. This is due to some limitations of the InstallAnywhere scripts of the self-extracting installer archives.



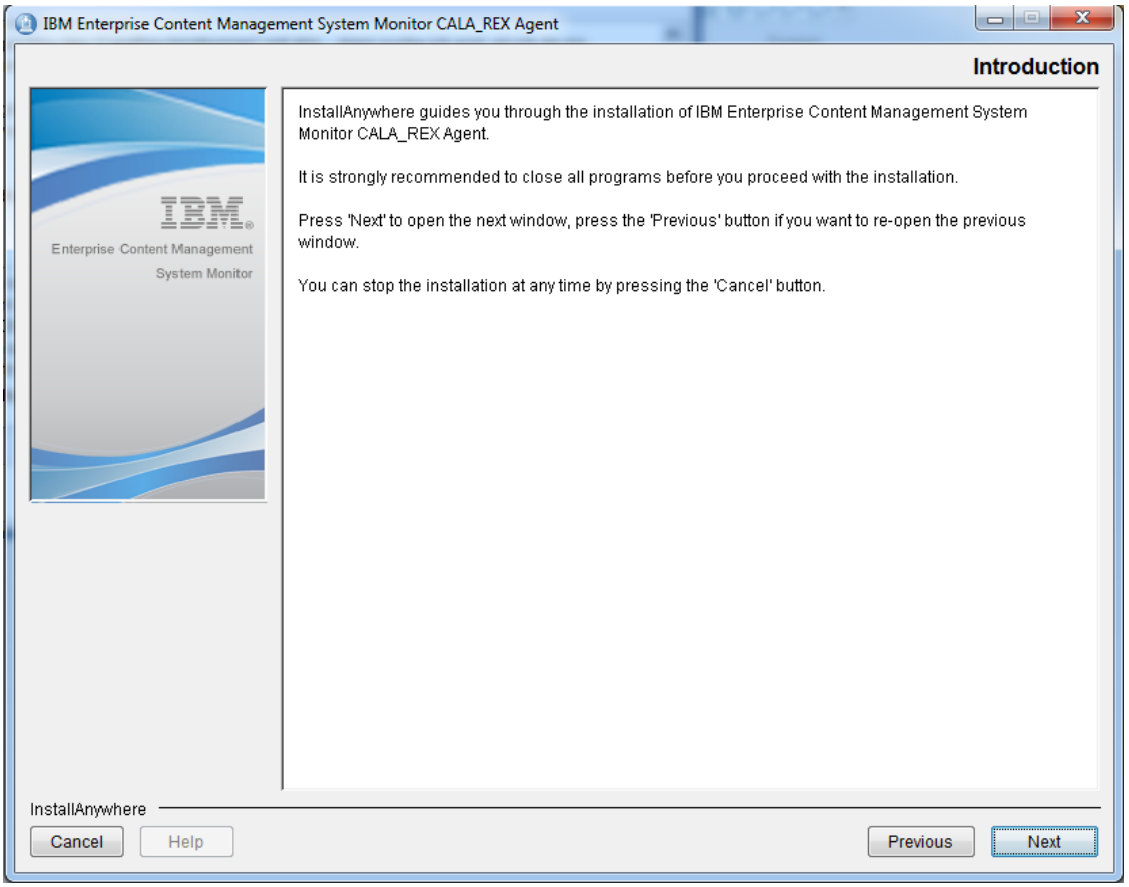
CALA_REX Installation: Intro screen.

Press on the **Next** button to start the installation process.



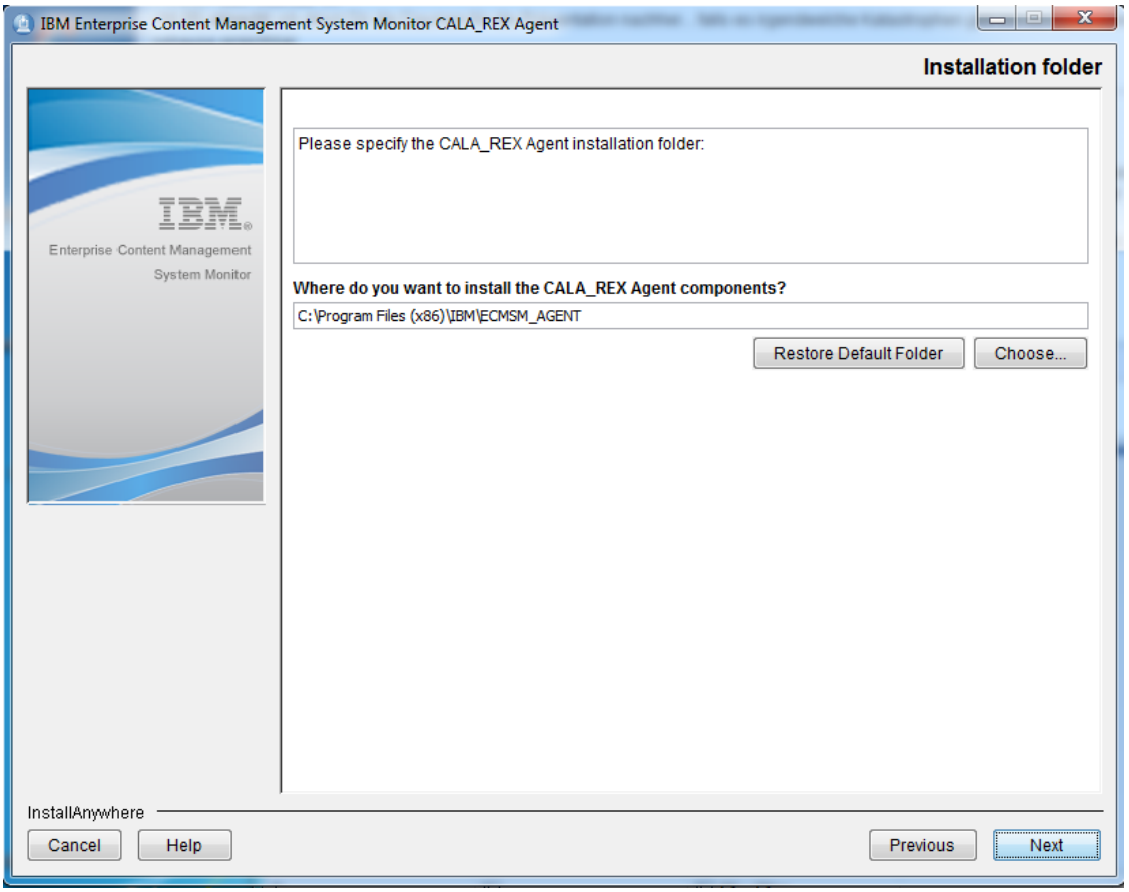
CALA_REX Installation: License information.

Carefully read the license agreement and select **I accept ...** and press **Next** to continue or press **I do not accept ...** or **cancel** to exit the installation.



CALA_REX Installation: Installation introduction.

Select **Choose...** to adjust the installation location of the CALA_REX agent software and click the **Next** button. Note: Press **Restore Default Folder** to reset the selected installation folder.



CALA_REX Installation: Installation folder.

Press the **Next** button to continue.

CALA_REX Installation: Installation settings.

Specify the agent settings for the CALA_REX installation.

Agent settings:

ECM SM CALA_REX IP name

Specify or adjust the IP name of the CALA_REX agent.

Additional CALA_REX parameters

Specify the parameters with the following format: *variablename=value*, separate parameter-pairs with semicolons. Example: *debugfile=logs/cala_rex_cli.log;*↵ *debuglevel=0*.

Note: If you plan to install more than one CALA_REX agent on the system you need to add a *listenport=127.0.0.1:<adjusted-port-value>,* Example: *listenport=127.0.0.1:23804*. The default port number is 23804. Additionally you need to add an Service instance in this case, otherwise the agent cannot be detected correctly.

Agent ID Service Postfix

Required. Enter a postfix for the Service/Agent ID. If no postfix is given, the default value 'agent' will be used. The Agent-ID will be used to identify the agent-name within the Agent Installer, the

Monitoring Manager and the Task Execution Manager. The hostname 'MyServer1' with Agent-ID 'ECM-Server1' will be displayed as 'myserver1_ecm-server1'.

NOTE: Blanks, special characters and '_' aren't supported

The Agent ID Daemon Postfix have to be unique on each system in the case more than one agent will be installed per system, since it will be added to the Windows Service name cala_rex_cli.

Example: 'ECM-Server1' will generate a Windows Service called 'cala_rex_cliecm-server1'. The corresponding service for the Monitoring Agent (CALA) will be 'cala_srv_ecm-server1'.

On UNIX/Linux systems the Agent-ID will be used to generate the System startup/shutdown scripts (AIX: /etc/inittab entry)

Note: If you enter a postfix you must adjust the configuration of the CALA_REX services monitor as well.

NOTE Note: The agent ID postfix for AIX should not be longer than 8 characters.
The postfix should not contain any of the following characters `#,{};` `$_` or white spaces (blanks, tabs).

Agent Description

Required. Specify a short descriptive text. This text will be visible in the result of a list-clients request executed on the CALA_REX server (current CALA_REX view).

User

Optional. Specify the user under which the CALA_REX agent will be running. If you do not specify a user, the CALA_REX agent will be running under the Local System account.

CAUTION If the desired user account is an LDAP / ADS domain user, specify the user account with domain format, for instance MYDOMAIN/myuser.

NOTE On Windows systems the installing user as well as the service user need to be a member of the Administrators and Users groups (or have corresponding permissions) and must also have the permission *`Log on as a service`*.
The automatic startup of the installed service will fail at the moment although it was selected in the installation process. This is because of technical limitations regarding the update of the access rights for the installed service by the installer. *So after the installation it is necessary to manually fix the permissions for the installed service. To do this, open the service manager and re-enter the correct credentials for the service or add the user permission* `Log on as a service` *to the specified Windows service account.*

NOTE Please keep in mind that all Image Services and Process Engine related monitors (IS, PE Mini-IS, PE-Core, PPM, PE-Memory and PE-

Cache) require that the CALA_REX and the CALA Windows service run under a service account that follow the Images Services or P8 PE group requirements. Please verify the Image Services or Process Engine service account requirements documented in the IBM FileNet Image Services and Process Engine installation guides.

Password

Windows only. Specify the password for the user given above. If no user is specified this parameter is ignored

Optional: CALA_REX adapter IP address to bound to.

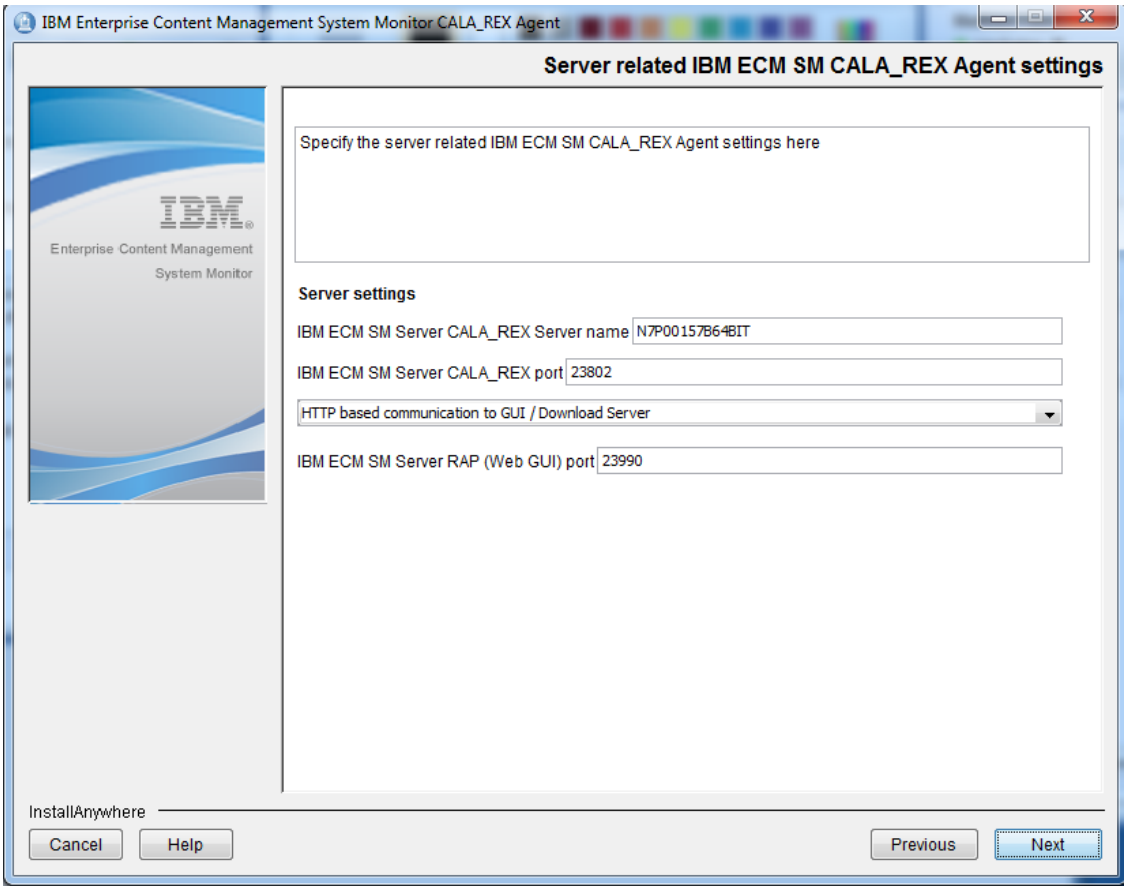
Specify the IP address (IP version 4) of the network adapter to be used. This parameter is only required, if more than one network card is installed in the system.

Optional: CALA_REX libpathadd parameter

Specify optional CALA_REX libpathadd setting. See parameter section for detailed information.

Enable or disable CALA_REX installer debugging

Enable or disable CALA_REX installer debugging. If enabled an additional output and output panel is displayed.



CALA_REX Installation: Server related Agent settings.

Specify the ECM SM server related agent settings for the CALA_REX installation.

Server settings:

ECM SM Server IP name
Required. Specify the IP name or address of the CALA_REX server.

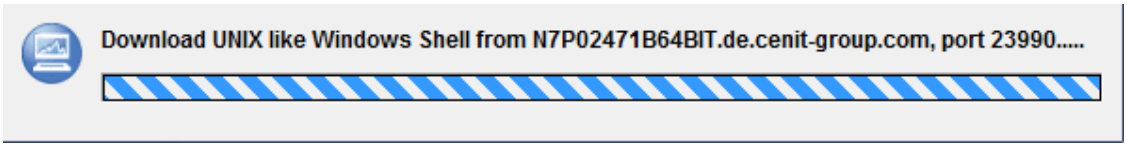
ECM SM CALA_REX server port
Required. Specify the port of the CALA_REX server. Default value is 23802.

ECM SM Web / Download Server protocol type (http or https)
Required. Specify the ECM SM Web / Download protocol type (http or https). Default value is http.

ECM SM Web / Download server port
Required. Specify the port of the ECM SM Web / Download server. Default value is 23990.

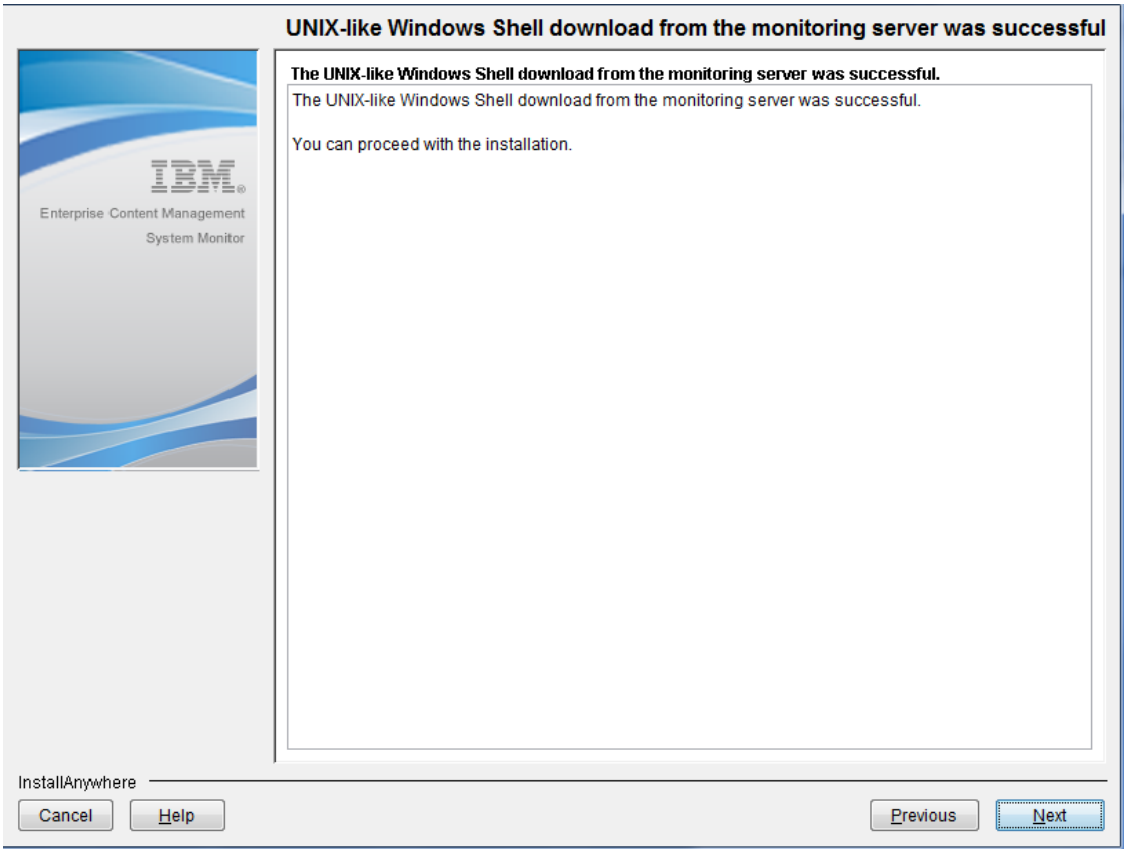
Press the **Next** button to continue with the Windows specific settings.

The next few panels only apply to Windows based installations. The CALA_REX automatically tries to download the UNIX-Like Windows-shell archive from the monitoring server. During the download action a similar following progress bar will be displayed.



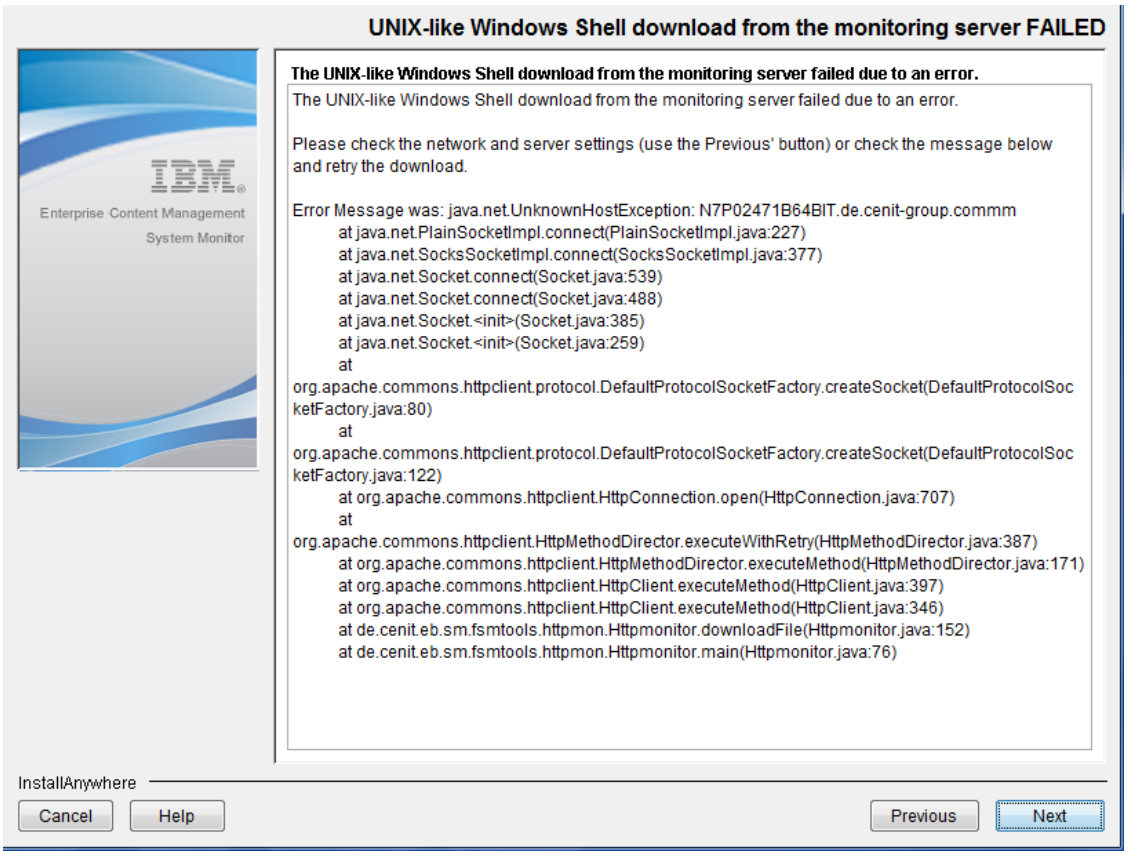
CALA_REX Installation (Windows only): Shell download bar from Monitoring server

If the download from the server was successful a message window will be displayed.



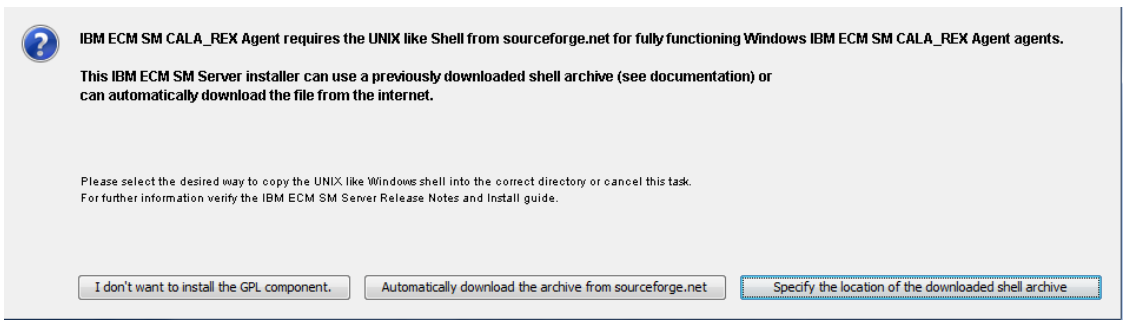
CALA_REX Installation (Windows only): Shell download successful from Monitoring server

If the download action failed and installer debugging is active the following panel will be displayed:



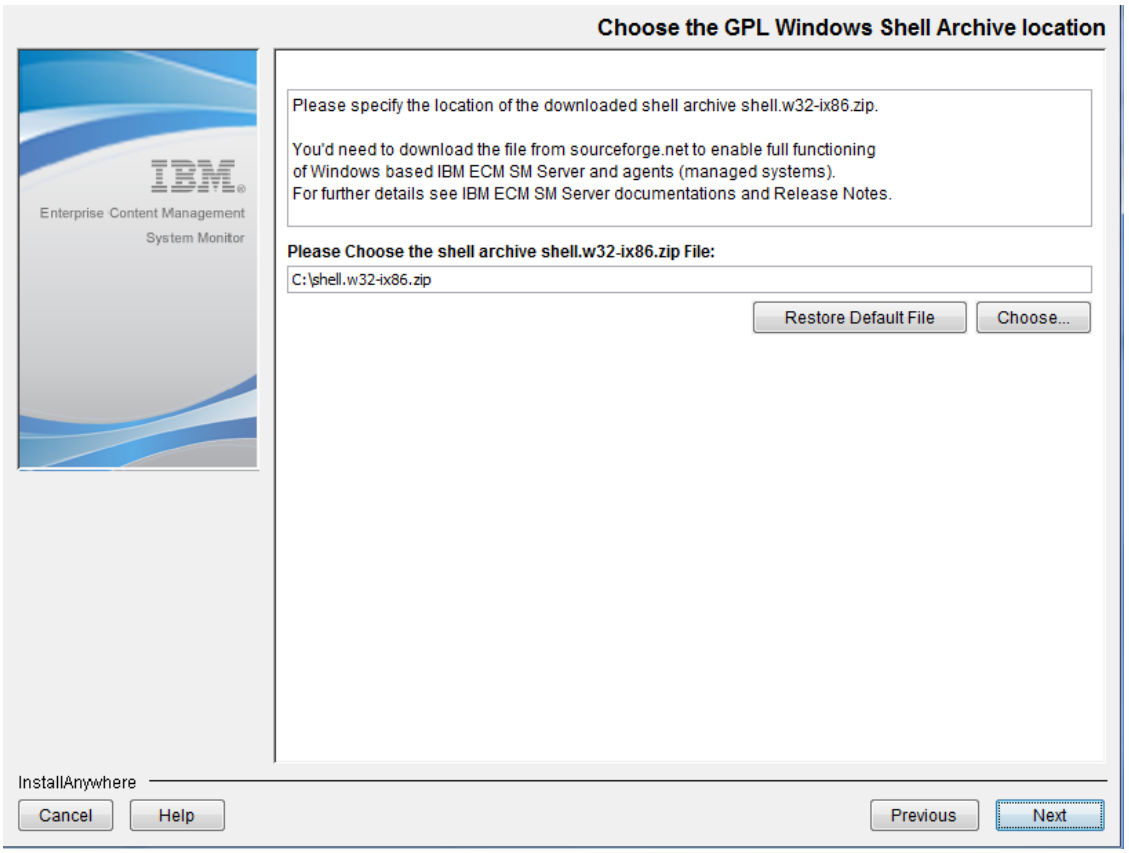
CALA_REX Installation (Windows only): Shell download error from Monitoring server

Pressing the 'next' button will display a message window with several options:



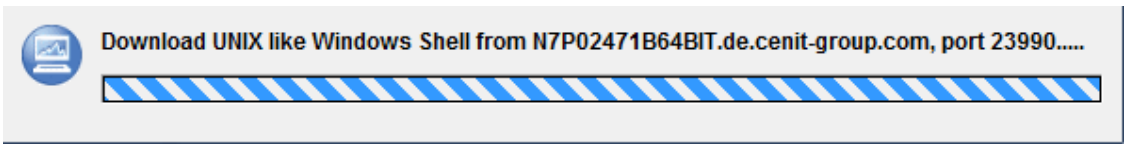
CALA_REX Installation (Windows only): Message bar for UNIX-like shell download selection

If you press the **Specify the location of the downloaded shell archive** button then the file-browser panel will be displayed.



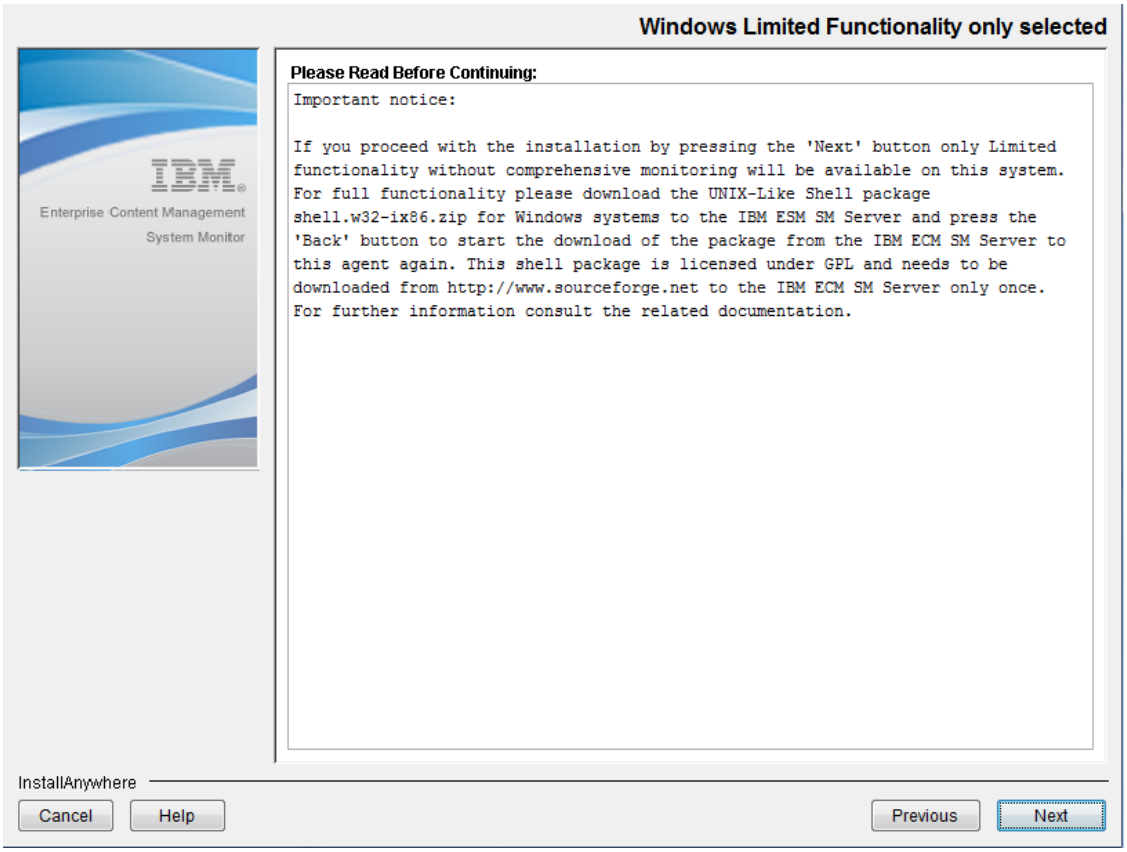
CALA_REX Installation (Windows only): Shell download bar from Monitoring server

If you press the **Automatically download the archive from sourceforge.net** button then the download progress bar will be displayed.



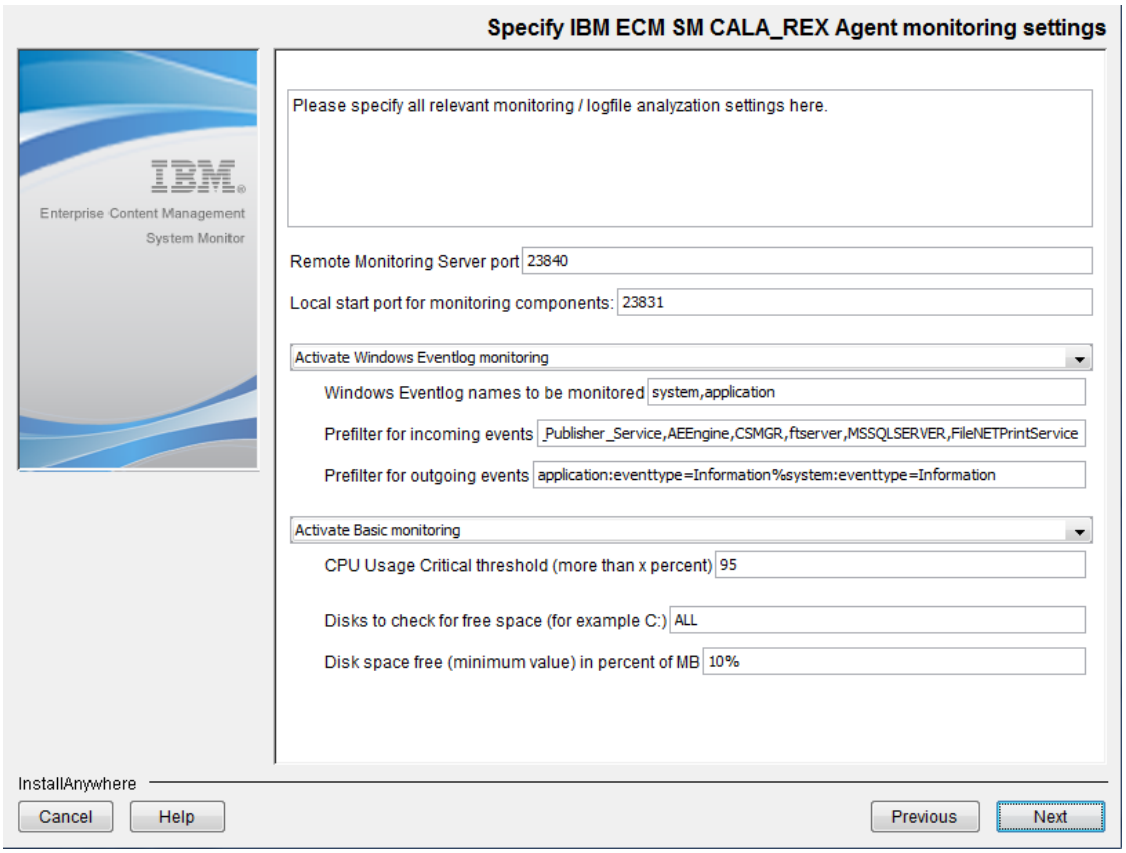
CALA_REX Installation (Windows only): Shell sourceforge.net download bar

If you press the **I don't want to install the GPL component** button or the downloads weren't successful the following message panel will be displayed.



CALA_REX Installation (Windows only): Only Limited Windows agent available

In the case you proceed with the **Next** button then the Limited agent monitoring and Windows Eventlog settings panel will show up.



CALA_REX Installation (Windows only): Limited Windows agent parameter settings

Remote Monitoring Server port

Normally the specified default value (23840) should not be changed. If the server-port was adjusted during server installation then this value should be changed, too.

Local start port for monitoring components

If more than one instance of the ECM SM monitoring agent is installed on the system then adjust this value. In this case it's useful to increase the value for each agent instance by 100

Activate or deactivate Eventlog monitoring

If activated then the following 3 parameters have to be specified

Eventlog names

system,application are the default. You can add more existing eventlog names

Incoming event filter settings

This parameters defines which Eventlogs are processed (read). The default value processes a list of event logs, where the source column fit to IBM, VWServices, ...

Outgoing Event filter settings

This parameter defined which Eventlogs are filtered out. The default settings (application:eventtype=Information%system:eventtype=Information) suppresses event log entries of eventtype 'Information'

CPU Usage Critical threshold

Above this threshold (default: 90%) the CPU usage monitor alerts an error

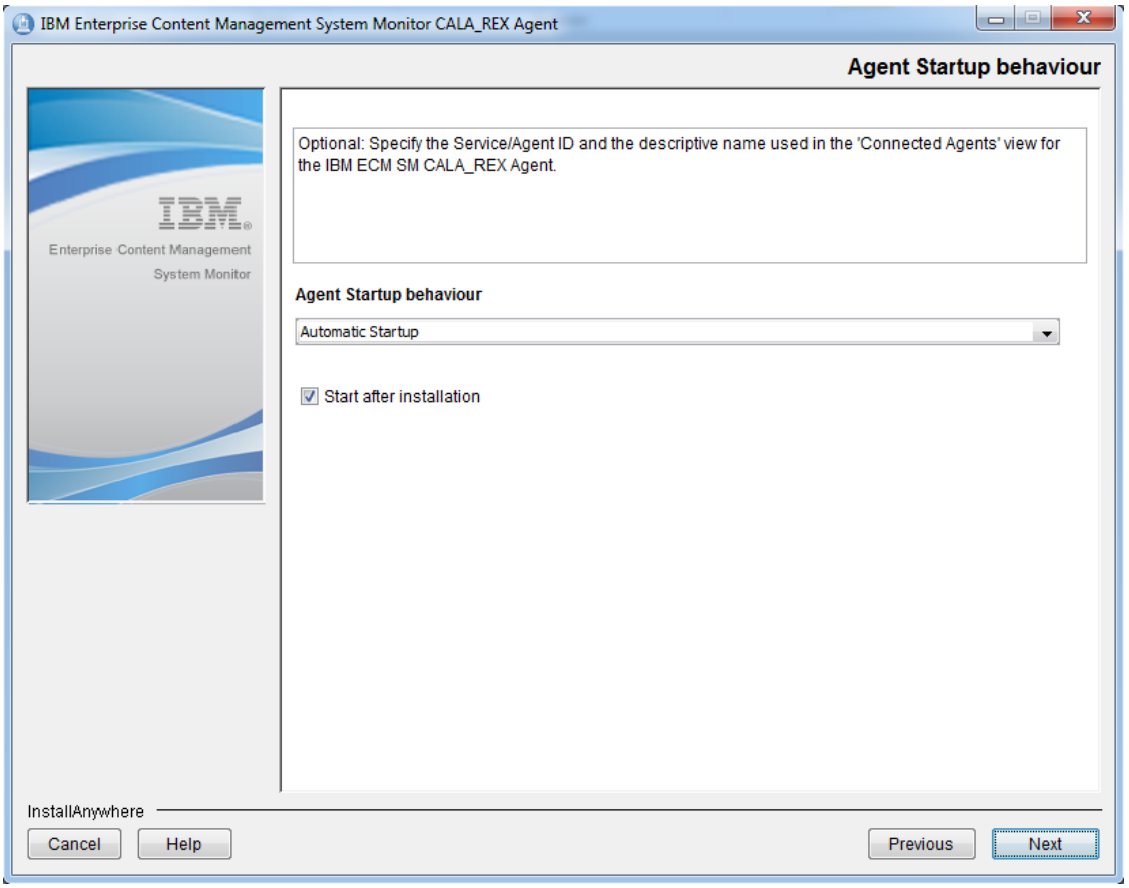
Disks to check for free space

The listed disks (C:,D:) or ALL (default value) are checked for free space

Disk space free (minimum value) in percent of MB

A minimum of x% (default: 10) need to be free, otherwise the system alerts an error

Press the **Next** button to continue with the Agent Startup behaviour panel.



CALA_REX Installation: Agent instance and name settings.

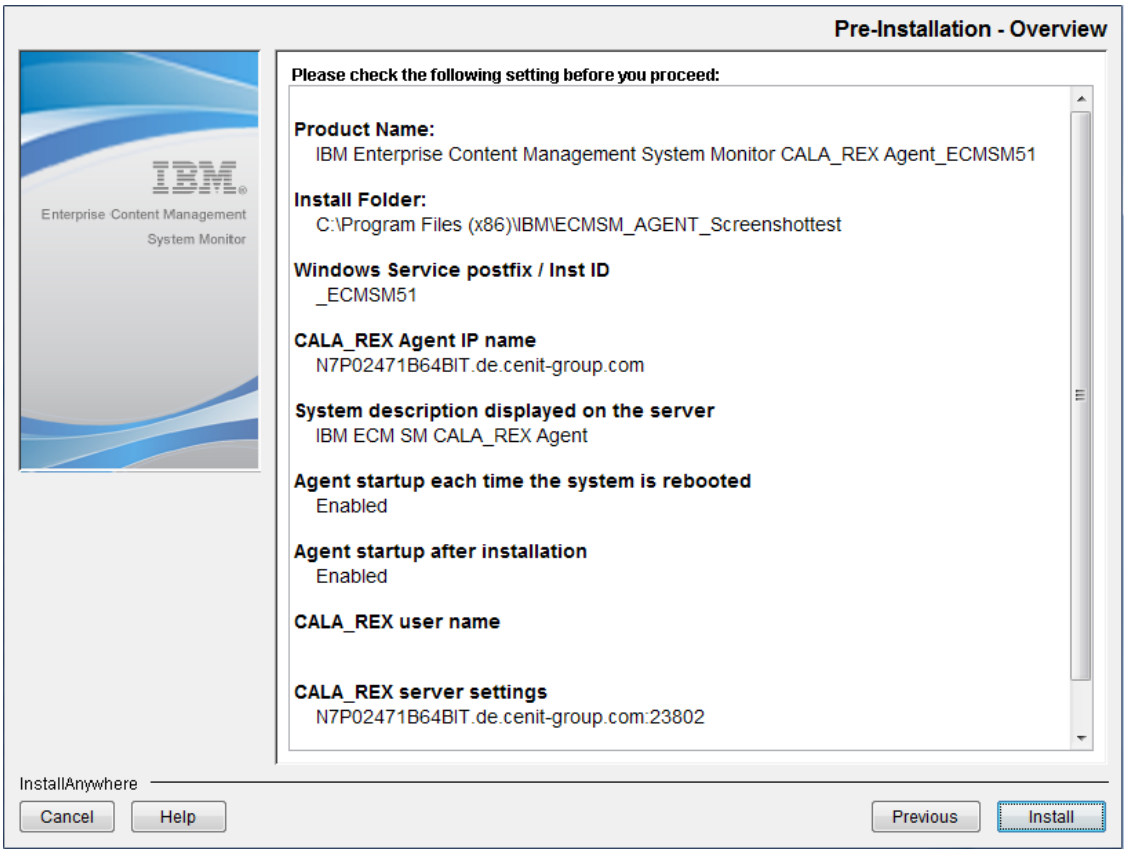
Agent Startup behaviour

Select either Automatic Startup or Manual Startup of the Service/daemon.

Start after installation

Enable or disable startup of the Windows Service after successful installation.

Press **Next** to continue.

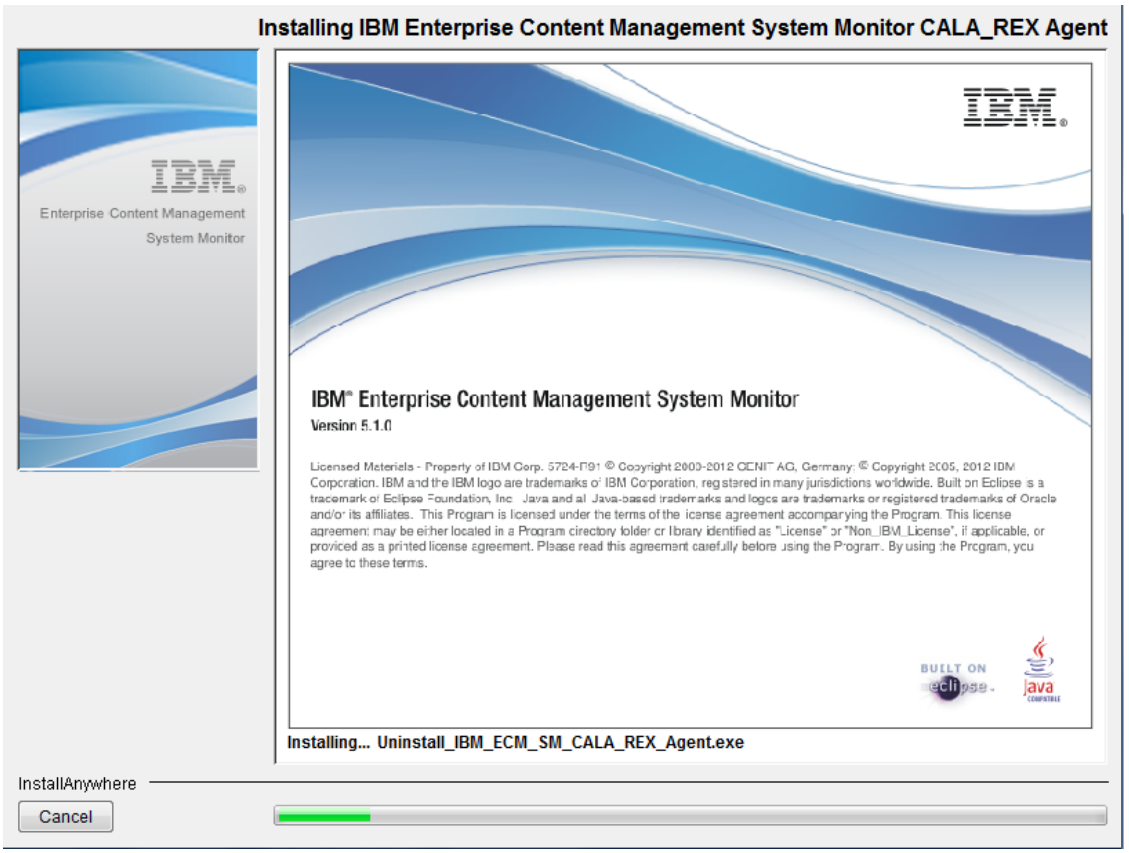


CALA_REX Installation: Pre-Installation Overview.

This panel displays the specified installation parameters. Press the **Previous** button to change settings.

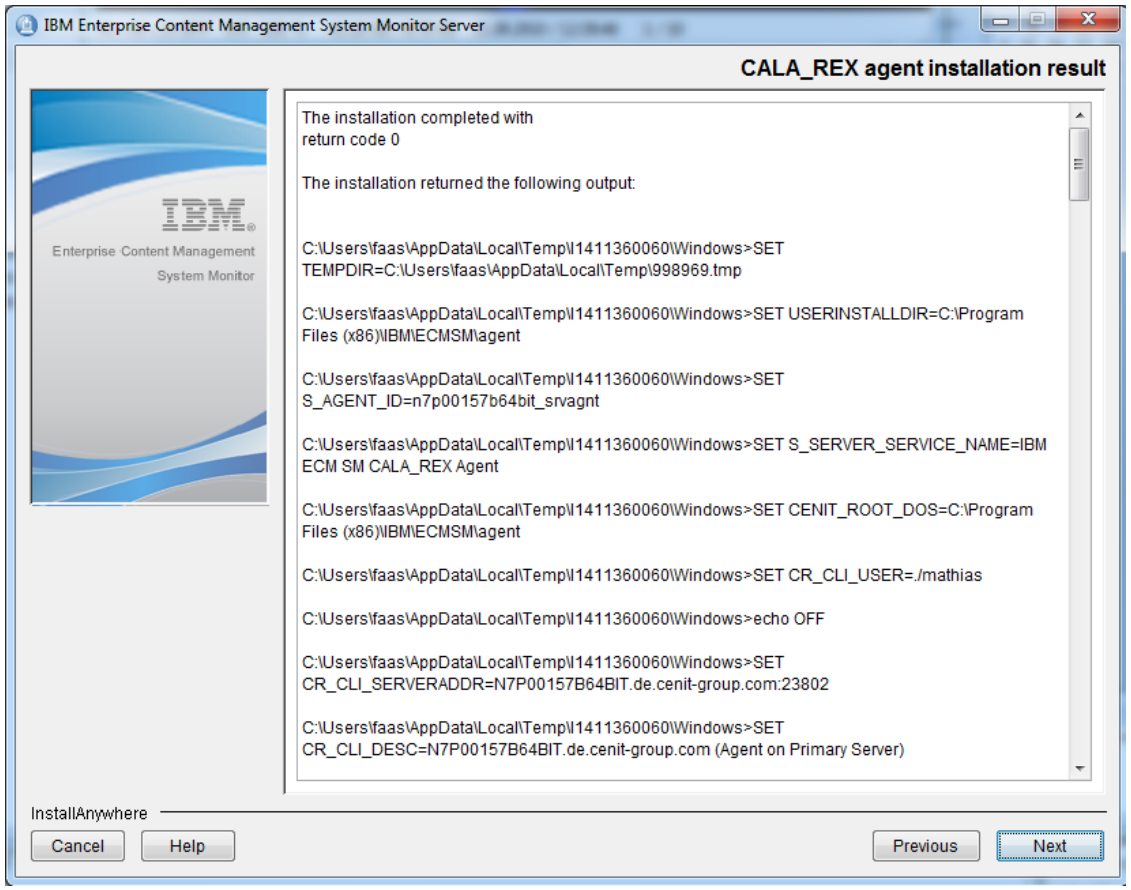
Press **Next** to start the installation process.

During installation the Installation progress panel is displayed. You will see a popup message bar during the agent configuration at the end of the installation step.



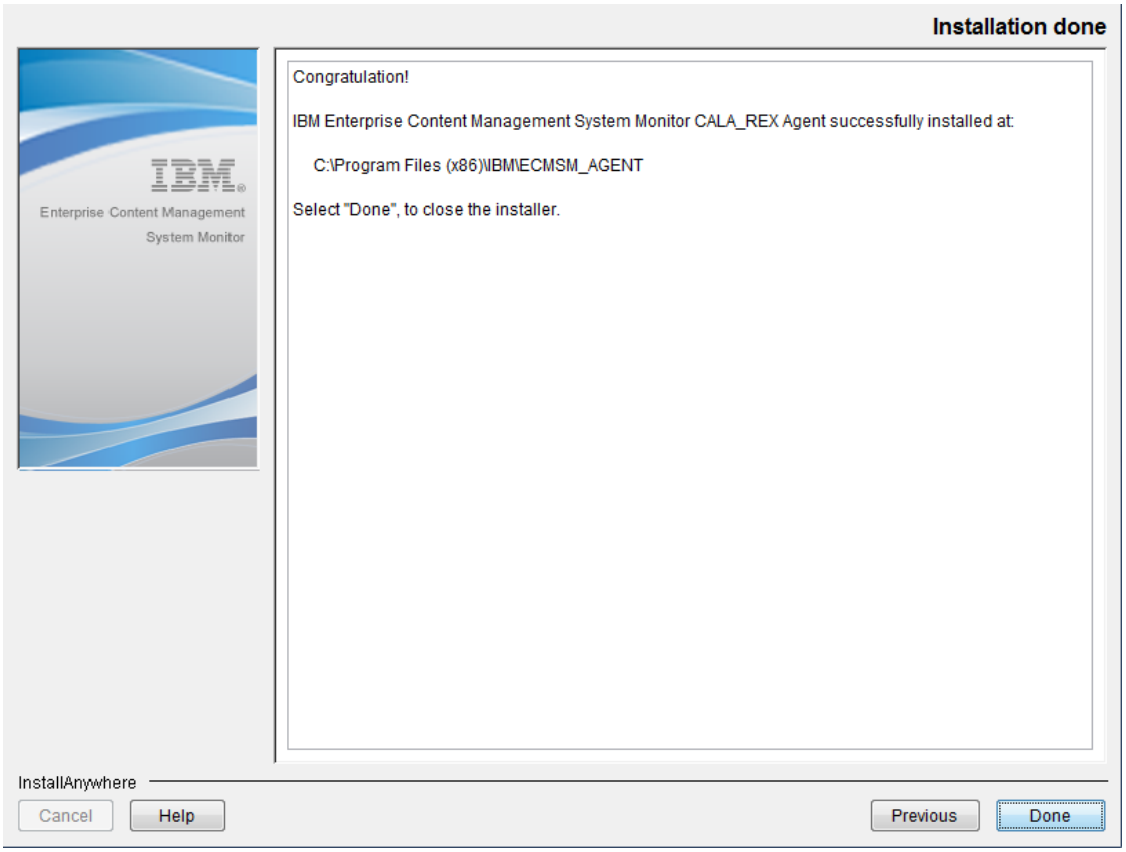
CALA_REX Installation: Installation finished.

Note: At the end of the installation you might see a detailed installation result. This depends on the Installer debugging checkbox setting.



CALA_REX Installation: CALA_REX installation debug output

After the installation the Installation done panel is displayed, which sometimes recommends a restart of the Windows system.

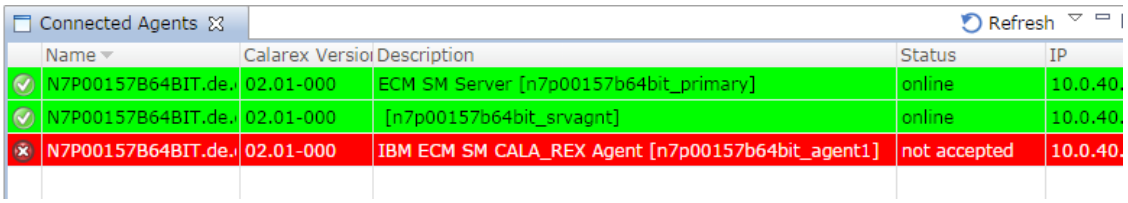


CALA_REX Installation: installation done

Press the **Done** button to finish installation.

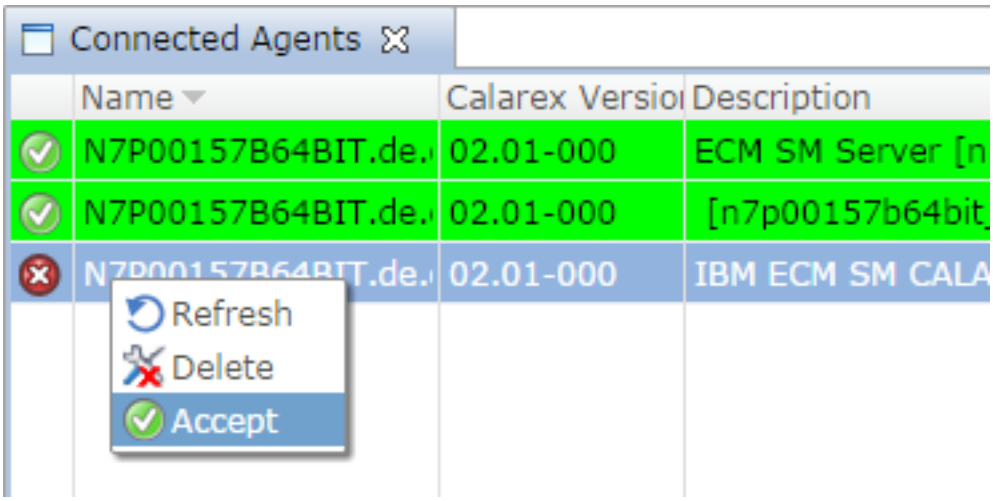
Accepting a new or updated CALA_REX Agent

Since version 5.2.0 CALA_REX agents have to be accepted by an administrative ECM SM user. Only accepted agents can be managed by the ECM SM server. Open the 'Client Administation' console in the Web UI, select the appropriate agent from the list (colored red, status 'not_accepted').



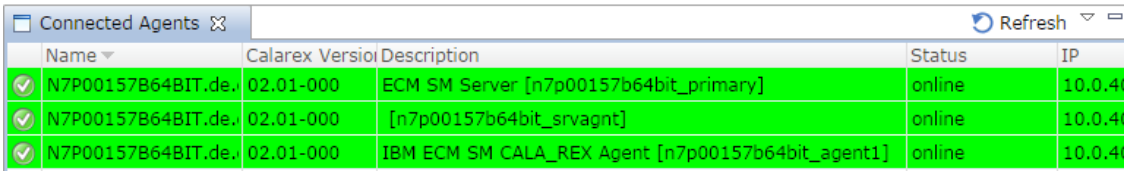
CALA_REX activation: new, not yet accepted agents

To accept the agent open the context menu on the selected agent.



CALA_REX activation: Context menu with 'Accept' menu item.

Press the accept menu item. The new agent will now be accepted, the security key file will be generated and stored on the agent system at **`$CENIT_ROOT/.keys`** directory. Secure this directory to minimize unauthorized access. This directory only requires read-access for the Service / Daemon user that runs the CALA_REX agent.



CALA_REX activation: Accepted agent status changed to 'online', colored green.

NOTE

The key file is missing if you reinstall the CALA_REX agent on a machine which was already accepted in the previous installation. The CALA_REX agent is still accepted after the installation, even though there is no key file yet.
Before you reinstall the CALA_REX agent, please delete the agent from the **Connected Agents** view. Accept the CALA_REX agent again.
If you have already reinstalled the CALA_REX agent delete the CALA_REX agent from the **Connected Agents** view. Restart the CALA_REX server. Accept the CALA_REX agent again.

CALA_REX and Task execution logging on the Agent

Since version 5.2.0 the logfiles (incl .plusdebug directory location of the CALA_REX agent) are located at **`$CENIT_ROOT/cala/temp`**. Create the .plusdebug and cala_rex debugging directory in this directory.

Unattended installation of the CALA_REX agent

ECM SM provides InstallAnywhere CALA_REX agent images for all platforms with full unattended installation functionality.

To record a response file for use as input parameter file for later unattended installation steps run the installer with the following command (example for Windows installer, others are similar):

WINDOWS_IBM_ECM_SM_CALA_REX_AGENT.exe `-r responsefile-name`

The specified parameters will be recorded in the response file. If no filename is specified the settings are recorded into the file installer.properties (default name of the response file).

To start an unattended installation with a previously recorded input parameter file, run the installer with the following command:

WINDOWS_IBM_ECM_SM_CALA_REX_AGENT.exe `-i silent -f input-file`

Note: If running the unattended (silent) installation the system will not be restarted after the installation (Windows only).

Creating an SSL certificate for the agent

If the CALA_REX server is configured to accept only SSL encrypted connections from a agent, you must create and activate an SSL certificate for the agent. This process consists of several steps.

Create an SSL agent certificate request

Go to the directory `$CENIT_ROOT/tools/ssl` on the agent and execute the script `create_client_req.sh`. The script creates a configuration file, a agent certificate request and the private key file for the agent. If the option `-k` is not given, the request and the configuration will be stored in a single file named `$CENIT_ROOT/keys/client_combined.<clientname>`.

NOTE The variable CENIT_ROOT must be set before the script can be executed.

Start the script with the following command:

sh create_client_req.sh `[-k] [-p]`

Options:

-k

Optional. Tells the script to keep the agent certificate request and the corresponding configuration file as two separate files instead of combining them into one file. Recommended if you use an existing PKI infrastructure and process the certificate request with existing tools.

-p
Optional. The script does not use the password from the CALA_REX configuration file or the standard password but waits for user input on stdin. The encrypted password is automatically stored in the CALA_REX configuration file.

Transfer agent request file to the server

Transfer the file created in the step above to your ECM SM server. The file can be stored in a temporary directory, it will be removed after the certificate has been signed.

Sign the certificate request.

Go to the directory `$CENIT_ROOT/tools/ssl` on the server and execute the script **`sign_cert.sh`**. The script signs the agent certificate request with the server CA certificate of the ECM SM server. The script prompts the user for the password of the server CA certificate (see The default passwords for the private keys). The signed certificate will be stored on the server in the file `$CENIT_ROOT/keys/client/cala_rex_cli_cert.<clientname>.pem`.

NOTE The variable CENIT_ROOT must be set before the script can be executed.

Start the script with the following command:

sh sign_cert.sh `filename`

Options:

filename
Required. Name of the file that contains the agent certificate request.

Transfer and activate agent certificate

Transfer the files `$CENIT_ROOT/keys/client/cala_rex_cli_cert.<clientname>.pem` and `$CENIT_ROOT/keys/trusted_cas.pem` from the server to the agent and rename the agent certificate file to `$CENIT_ROOT/keys/cala_rex_cli_cert.pem`.

To disable anonymous connections for this agent call

sh cr_cli_cfg.sh configure "ssl.cipherlist=ALL:!ADH:!LOW:!EXP:!MD5:@STRENGTH"

in the CALA_REX installation directory (*`$CENIT_ROOT/cala_rex`*) on the agent.

NOTE The variable CENIT_ROOT must be set before the script can be executed.

Restart the CALA_REX agent to activate the agent certificate by calling

sh cr_rex.sh restart

Distinctions when installing the CALA_REX agent in a cluster environment

When installing several CALA_REX agent daemons on one machine, like one would like to do in a cluster environment, the following things need to be taken care of:

- Each installation needs an *unique postfix and cenit-root directory*. (The `-I` and `-r` parameters in the Unix installer, the appropriate fields in the Windows installer.)
- The daemons `listenport` must be unique. The default value for the listenport is 127.0.0.1:23804, this must be changed for subsequent installations. Specify `-o listenport=127.0.0.1<:port>` when calling the Unix installer or add `listenport=127.0.0.1:<port>` to the **additional parameters** field in the Windows installer.
- In a cluster environment it's likely, that some instances should not use the systems default *IP address*, but that of any cluster resource. Use the `-i <ip address>` argument of the Unix installer for setting the IP address, add `ip-address=<ip-address>` to the **additional parameters** field of the Windows installer.

For starting and stopping the CALA_REX daemon, the script **`$CENIT_ROOT/CALA_REX/CALA_REX.sh`** can be used. Use the **net** command on Microsoft Windows.

Further CALA_REX installation and configuration options

For further CALA_REX installation and configuration options see chapter Further CALA_REX installation and configuration options

Preparation

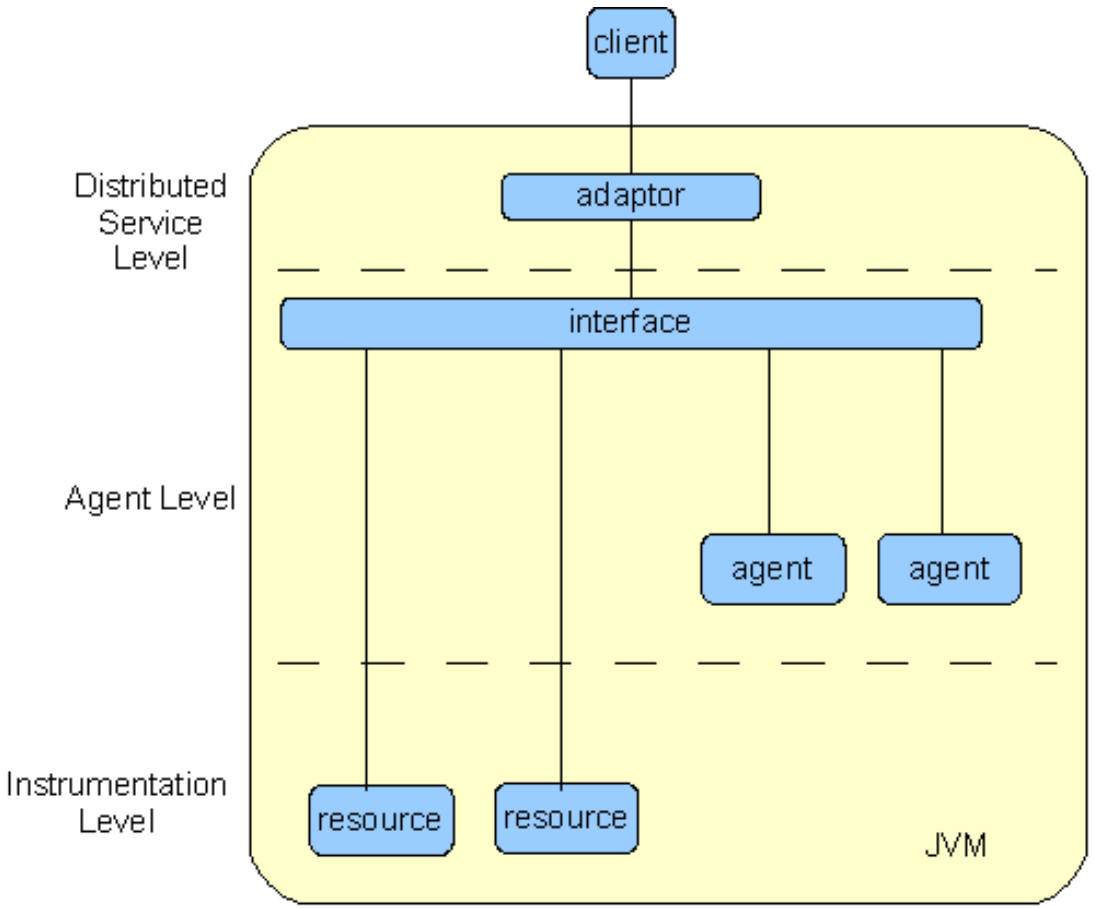
Preparing the ECM SM clients

Before you can configure the IBM Enterprise Content Management System Monitor on the machines, you must install a CALA_REX client on each server that you want to monitor. See the CALA_REX Installation for details.

Preparing JMX Support

This chapter introduces JMX, the "Java Management Extensions". It shows the JMX functionality in principle, how it works, communicates and which components are needed to use JMX. Additionally, this chapter gives an overview of how the various application servers support JMX.

An introduction to JMX



Infrastructure of JMX

JMX is the abbreviation for Java Management Extensions. This technology is used to provide read and write access to resources of a web application server. The upper graphic shows the infrastructure of JMX. It is divided into three levels.

Distributed Service Level
This level is responsible for the provisioning of an interface to the agent level.

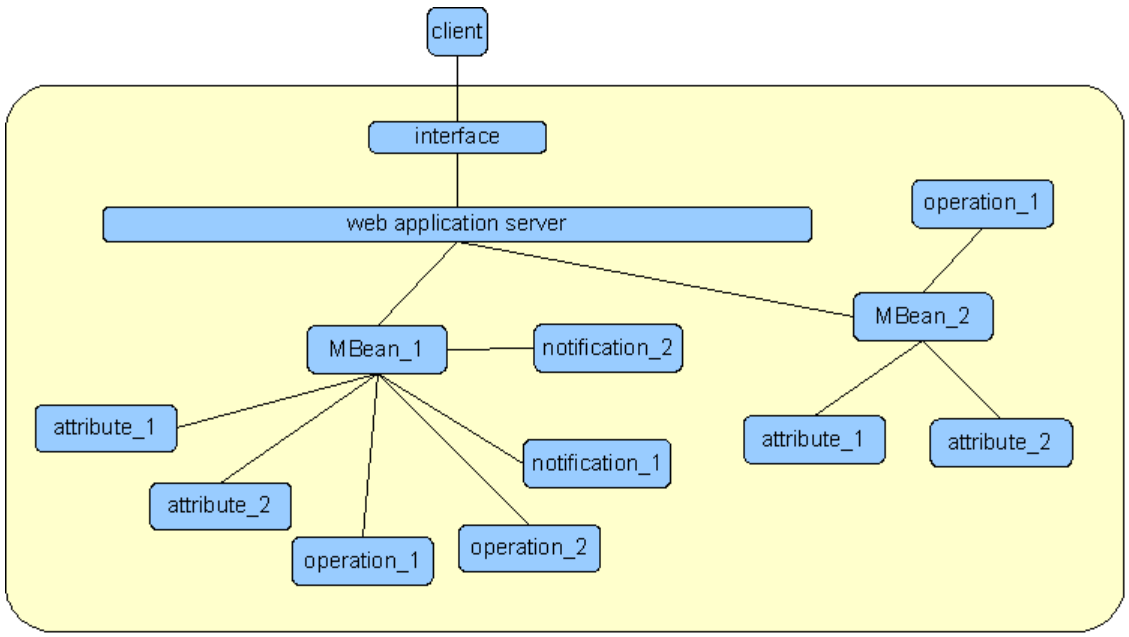
Agent Level
The agent level defines agents which are responsible for the communication with the resources.

Instrumentation Level
The instrumentation level contains the resources which can be managed.

MBeans

"MBeans" is an abbreviation for Managed Beans. The programming model of "Beans" is an official Java "technology" to provide program parts with a kind of "plug and play" mechanism.

The following screen shot shows the JMX MBeans structure.



MBeansMBeans

Beans have uniquely defined interfaces and therefore can be used as exchangeable modules. MBeans use this idea of modularity within a web application server environment.

This way MBeans act as interfaces to the application server's resources (see "Instrumentation Level" in figure "Infrastructure of JMX"). The client in the 'MBeans' figure is the MBeanMonitor software component in this specific case. Via the standard interface, provided by the application server, the MBeans can be accessed.

The client can get an instance of the object, which is represented by the MBean. So, it is possible to access the application server's resources from an external Java program, the JMX Application Server Monitor.

What MBeans are used for

Figure "MBeans" above shows an application server having several MBeans. An application server can have an arbitrary number of MBeans. Two kinds of MBeans exist: static and dynamic MBeans.

Static MBeans exist directly after the start of the application server.

Dynamic MBeans are created during runtime.

The provided MBeans depend on vendor and version of the application server. Each application server has its own set of MBeans. Therefore, there is no standard, which MBeans must be provided by each server.

MBeans can manage several resources of the application server, similar to the administration console of the application server. An MBean represents a collection of mechanisms to access / manage the application server.

As the figure shows, an MBean can have three different kinds of mechanisms:

Attributes

Attributes are mostly used to read or set the attributes of an MBean. An attribute can store almost any information in different kinds of datatypes. For example, a deployed web application can have a hit counter. Other user-specific parameters like groups or user names are stored in attributes, too. Another example for an attribute definition is the maximum allowed cache or memory, which can be used. Each attribute has a rights management. Some attributes cannot be accessed in write mode, yet they are available for read operations. Finally, the description information itself of an MBean can be stored in an attribute.

Operations

The term "Operation" in this context is a synonym for a function or a method in programming languages. Operations are mostly used to perform actions on the server or to access the attributes (even if this is not necessary, as it is possible to access the attributes directly). Operations are often used to run tasks, for example to start or stop an application or resource of the application server. Also, more detailed responses can be realized via operations, like getting one element out of an array of information. For that purpose, operations have parameters, just as functions and methods, which can also have parameters (arguments). Mainly, operations have the bean-specific getter and setter methods to read and write information from respectively to an MBean.

NOTE 'Operations' are used for a more complex and powerful access than 'Attributes' can provide.

Notifications

Notifications are sent, when special, predefined events occur. The used MBean can be configured in such a way, that it sends a notification each time, something special happens. In most cases, a notification informs about a parameter, that has been changed. To receive notifications, a client, that listens permanently, must be running (the notification listener). This mechanism is different to the use of 'Operations' or 'Attributes', where the client explicitly asks for the server response. In the case of notifications, the server performs the action and the client gets the information only, in

case it is listening. The client has to enable the notification mechanism on the server, if it wants to receive the information.

How IBM Enterprise Content Management System Monitor works on the basis of MBeans

The JMX monitor uses MBeans to monitor the application server. This means, that JMX is used to read information from the server, but no write or other executive actions are initiated. Thus, attributes can be read out and operations, that only do read access, can be invoked. Furthermore, the IBM Enterprise Content Management System Monitor JMX monitoring component does not listen for notifications.

JMX versions

There are two different releases of JMX:

JMX1.0

The old specification does neither have very strictly nor exactly defined interfaces and directives and therefore it is no consistent standard. That is why almost every application server vendor created his own interfaces to access the MBeans. This means, that every application server comes with some libraries (jar files) to access the MBeans from this specific application server. Mostly, these libraries are even not compatible from one application server's release to another. Only the server's libraries, that need to be accessed, have to be used. For some of the servers, like JBoss, Oracle WebLogic and IBM WebSphere, this technology is used.

JMX1.2

JMX 1.2 is the successor of the JMX1.0 standard, because no real JMX 1.1 specification exists. The JMX1.2 standard has a more strictly defined interface. At least the JSR160 API defines a unique interface for application server vendors to provide access to their MBeans. If JMX1.2 is used, the way to connect to the server is different from the JMX1.0 method, in as much as other libraries are needed.

Note: Java 5 already contains these libraries. If JMX1.2 is needed to be used with Java 1.4.x a subset of libraries from the project MX4J are used by ECM SM. To access the MBeans via JMX1.2 this technology has to be enabled on the application server itself. Depending on the application server this is done in the starting script, with a special command line call or on the administration console of the server. Older versions of some application servers do not provide JMX1.2 support.

Overview of Supported Application Servers

Application Server	JMX Version	Connection Type	Java Version (Server side)
Oracle WebLogic 7	JMX1.0	WebLogic specific classes	Java 1.4.2
Oracle WebLogic 8.1	JMX1.0	WebLogic specific classes	Java 1.4.2

Application Server	JMX Version	Connection Type	Java Version (Server side)
Oracle WebLogic 9	JMX1.2	WebLogic specific classes	Own Java (JRockit)
Red Hat JBoss 3.x	JMX1.0	JBoss specific classes	Java 1.4.2
Red Hat JBoss 4.0.1	JMX1.0	JBoss specific classes	Java 1.4.2
	JMX1.2	JSR160	Java 5
IBM WebSphere AS 5.1	JMX1.0	WebSphere specific classes	WebSphere Java
IBM WebSphere AS 6.0.x	JMX1.0	WebSphere specific classes	WebSphere Java
IBM WebSphere AS 7.0.x	JMX1.0	WebSphere specific classes	WebSphere Java
IBM WebSphere AS 6, 7 and 8 Versions	JMX1.2	WebService	Java 6
Sun Java Application Server 8.1	JMX1.2	JSR160	Sun Application Server own Java 5
Oracle Application Server 10g	JMX1.2	JSR160	Oracle J2EE
IBM WebSphere AS 6, 7 and 8	JMX1.2	JSR160	Oracle J2EE

The table above lists the different application servers, that are supported by the *IBM ECM SM* MBean Monitor. It gives an overview of which application servers need their specific classes and which use the JSR160 standard.

Oracle WebLogic 7

Needed jar files

- weblogic.jar

Default server lib path

The path has to point to the lib directory of the server installation.

<WebLogicHome>/server/lib

Example: E:\bea\weblogic700\server\lib

Default address to admin console

http://<host>:7001/console

Default JMX Port

7001

Default server lib path

The path has to point to the lib directory of the server installation.

<WebLogicHome>/server/lib

Example: E:\bea\weblogic700\server\lib

Oracle WebLogic 8.1

Needed jar files

- weblogic.jar
- wsclient.jar

Default server lib path

The path has to point to the lib directory of the server installation. The mx4j jar files are referenced automatically.

<WebLogicHome>/server/lib

Example: E:\bea\weblogic81\server\lib

Default address to admin console

http://<host>:7001/console

Default JMX Port

7001

Oracle WebLogic 9

Needed jar files

- weblogic.jar
- wlclient.jar
- wljmxclient.jar

Default server lib path

The path must point to the lib directory

<WebLogicHome>/server/lib

Example: E:\bea\weblogic9\server\lib

Default address to admin console
http://<host>:7001/console

Default service URL
Even if WebLogic9 supports JMX1.2 no service URL is needed, because connection is built up via server own libraries.

Recommended Java Path
Most times Oracle WebLogic is installed with it's own JDK. The Java path given in the monitor or task configuration should point to this.

Example: C:\bea\jdk150_04

Default JMX Port
7001

Red Hat JBoss 3.x

Needed jar files

- jbossall-client.jar
- jboss-jmx.jar
- jmx-client.jar

Default server lib path
The path must point to the Red Hat JBoss home directory, which contains the lib and client directories.

<JBossHome>/

Example: E:\JBoss-328

Default address to admin console
http://<host>:8080/[web-console]

Default JMX Port
1099

Red Hat JBoss 4.0.1

Needed jar files

- mx4j.jar

- mx4j-remote.jar
- mx4j-rjmx.jar
- (or Red Hat JBoss own libs, when using JMX1.0 - see Red Hat JBoss 3.x)

Default server lib path

The path must point to the Red Hat JBoss home directory, which contains the lib and client directories.

<JBossHome>/

Example: E:\JBoss-4

Default service URL when JMX1.2 is activated

service:jmx:rmi:///jndi/rmi://<host>:<port>/jmxrmi

Default address to admin console

http://<host>:8080/[web-console]

Default JMX Port

1099 (JMX1.0)

depending on configuration (JMX1.2)

IBM WebSphere 5.1

Needed jar files

- admin.jar
- bootstrap.jar
- ecutils.jar
- emf.jar
- ffdc.jar
- ibmjsse.jar
- ibmorb.jar
- idl.jar
- iwsorb.jar
- j2ee.jar
- j2ee_2.jar (This file is not contained in the directory by default. It is part of the j2ee (Java Enterprise Edition) and must be copied out of it into the lib directory of the WebSphere installation.)

- jmxc.jar
- mejb.jar
- messaging.jar
- messagingClient.jar
- messagingImpl.jar
- migrate.jar
- lmproxy.jar
- pmiclient.jar (only on WebSphere 5)
- ras.jar
- runtime.jar
- sas.jar
- security.jar
- utils.jar
- wasjmx.jar

Default server lib path

The path must point to the WebSphere directory, which contains the lib and bin directory.

<WebSphereHome>/

Example: E:\WebSphere5\AppServer

Default address to admin console

http://<host>:9090/admin

Default JMX Port

2809 (Bootstrap port - RMI)

IBM WebSphere 6.0.1

Needed jar files

see WebSphere 5.1 jar list

Default server lib path

The path must point to the WebSphere directory, which contains the lib and bin directory.

<WebSphereHome>/

Example: E:\WebSphere601\AppServer

Default address to admin console
http://<host>:9043/ibm/console

Default JMX Port
2809 (Bootstrap port - RMI)

Sun Application Server 8.1

Needed jar files

- mx4j.jar
- mx4j-remote.jar
- mx4j-rjmx.jar

Default server lib path
The mx4j jar files are referenced automatically.

Default address to admin console
http://<host>:4850/admingui

Default service URL
service:jmx:rmi:///jndi/rmi://<host>:3353/management/rmi-jmx-connector

Default JMX Port
3353

Oracle Application Server 10g

Needed jar files

- mx4j.jar
- mx4j-remote.jar
- mx4j-rjmx.jar

Default server lib path
The mx4j jar files are referenced automatically.

Default address to admin console
http://<host>:8888/em/console/ias/cluster/topology

Default service URL
service:jmx:rmi:///jndi/rmi://<host>:<port>/jmxrmi

Default JMX Port
depending on configuration (JMX1.2)

Tomcat 5.x

Needed jar files

- mx4j.jar
- mx4j-remote.jar
- mx4j-rjmx.jar

Default server lib path
The mx4j jar files are referenced automatically.

Default address to admin console
http://<host>:8080/

Default service URL
service:jmx:rmi:///jndi/rmi://<host>:<port>/jmxrmi

Default JMX Port
depending on configuration (JMX1.2)

Additional hints

Default address to admin console
The URL to the admin console can vary, depending on the configuration of the application server.

Default service URL
The service URLs can vary, depending on the configuration of the application server.

Default JMX Port
The ports can vary, depending on the configuration of the application server.

WebSphere 5 and Stats Objects

The MBeanMonitor Java program needs components, that are not delivered with the WebSphere 5 Application Server. They are shipped with Java 5 or J2EE (Java Enterprise Edition). This concerns the "j2ee.jar" file. It has to be copied into the libs directory of the WebSphere 5 Application Server and it must be renamed to "j2ee_2.jar".

Additional Information on JMX relevant for the IBM ECM SM JMX Monitors

This chapter describes some keywords, which are related to the JMX topic and are used by the JMX monitors. It is written for a better understanding of which parameters / values have to be specified for JMX monitors.

JSR160 and Service URL

JSR160 is a specification, which defines an interface to use JMX. With it, it is possible to connect to a server via the javax.management classes. The connection is made via a so called service URL. A service URL can look like the following example:

Example: service:jmx:rmi:///jndi/rmi://192.168.240.154:8765/jmxrmi

The prefix "service:jmx:rmi:" is available in every service URL. Sometimes it may start with "service:jmx:iiop" or "service:jmx:soap". It is recommended to use the "rmi-connection type" because this is the most robust communication type.

The fact, that it works on different servers this way, makes JSR160 very useful, because one implementation works for all servers supporting this technology.

JSR160 is supported by the following Java versions:

Java 1.4.2

When JSR160 shall be used with Java 1.4.2 the open source libraries MX4J from the website http://mx4j.sourceforge.net are needed. The libraries are also provided on the ECM SM installation disc. These libraries implement the JSR160 API and make it possible to use the JMX1.2 technology. Based on the information from the MX4J website, MX4J should work with Java 1.3, too.

Note: The combination Java 1.3.x and MX4J is not supported for ECM SM JMX monitors at present.

Java 5

Java 5 supports the JSR160 API by default. No special libraries like MX4J are needed.

Host and Port

Host is the name of the application server or the IP of the system. The port depends on the application server configuration. The previous chapters give an overview of the default ports of the different application servers.

ObjectName

Several MBeans can be accessed by the ObjectName at once. The ObjectName must exist. One way to find out which ObjectName provides access to which information is the "View JMX Parameters" Task. ObjectNames may look cryptic. Mostly these names describe an element in the hierarchy of the application server's MBean structure.

Example: jboss.jca:name=DefaultDS,service=ManagedConnectionFactory

User Name and Password

Application servers can enable access via authentication, which makes it necessary to specify user and password for the request. The required user and the password are normally not identical with the system user, but they are administered by the application server itself. Depending on the application server, the user and the password are defined during the server installation, when activating JMX on the application server's administration console or when starting the server.

On WebSphere 6 Application Server, JMX monitoring was tested successfully with an administrative user as well as a user having the "monitor" role of the WebSphere security model. Since the JMX monitors and tasks are just designed for reading operations, it is recommended to use a user, which has only monitoring rights.

The different application servers have different policy models and different default configurations for security handling with JMX. The administrator should be able to configure the correct security policies. Some application servers like WebLogic also separate between different levels of security in the MBean hierarchy. Red Hat JBoss has to be configured in its web.xml file. It is not the part of this manual to handle security configuration for every application server in detail. So only some helpful links are included:

JBoss:

https://community.jboss.org/wiki/SecureTheJmxConsole

WebLogic 8:

http://docs.oracle.com/cd/E13222_01/wls/docs81/secwlres/secroles.html

WebLogic 9:

http://docs.oracle.com/cd/E13222_01/wls/docs92/ConsoleHelp/taskhelp/security/DefinePoliciesforMBeans.html

WebSphere:

http://www.redbooks.ibm.com/redbooks/pdfs/sg246316.pdf

Attributes, Operations and Stats

As already mentioned the monitors can get information by calling attributes or invoking operations. Every MBean can be accessed via an ObjectName. When having the ObjectName it is possible to tell the MBean whether an attribute shall be requested or an operation shall be invoked. For the monitors this is done via the parameter "Action". This parameter can have the value "attribute" or "operation". The monitor only can do one thing, either attributes are requested or operations are invoked.

After the monitor knows which action to take (attribute request or operation invocation) it also must know the name of the attribute to request or which operation to invoke. For the monitor this is done via the parameter "ActionNames". The action names and operation names can be found out with the "View JMX Parameters" task or with a JMX browser.

Stats (stats_attribute and stats_operation) are no real action type, but an action to tell the monitor, that in the following monitor configuration has to handle stats return values. Depending on if attributes are requested or operations are invoked, "stats_attribute" and accordingly "stats_operation". Stats objects have a special format when they are returned. stats_statsName_attribute. In chapter 1.3.8 there is an example for how to configure the monitor, when stats objects are requested.

Parameters and Signatures

As operations may have parameters the monitor provides two field: "parameters" and "signatures". With parameters the value(s) of the parameters are specified to the program. This values may be numbers, for example 0, if the operation returns elements of an array (which is a realistic scenario). So 0 would return the first element of the array (just as usual in programming languages). The signature in this case would be "java.lang.Integer" to tell the program that this is a numeric value.

It has to be kept in mind that only primitive datatypes have to be specified as the according Java object to the program.

- int - java.lang.Integer
- long - java.lang.Long
- float - java.lang.Float
- double - java.lang.Double
- boolean - java.lang.Boolean

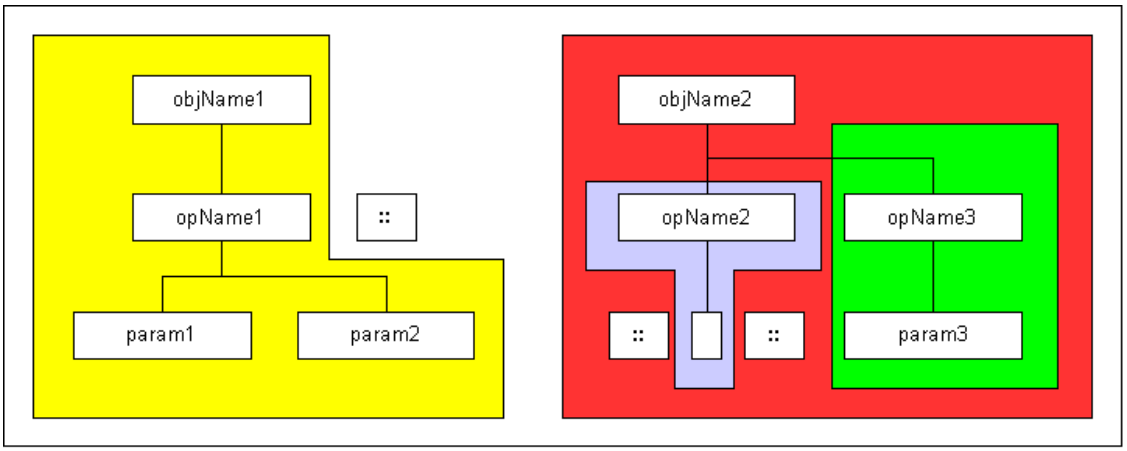
Example: An operation may be implemented like this: int getConnectionArrayElement(int element)

So the parameter will be the number of the requested array *element*. For example 0, 1 or 2.

The value for signature will be *java.lang.Integer*, because the parameter element if of the type int.

NOTE Prior to configuring an individual JMX monitor, parameters for the monitor, the number of parameters and their data type have to be verified with a JMX browser or the task "View JMX Parameters" to prevent erroneous return values.

Example for ObjectName, operationNames, parameters and signatures with real values



Example - parameters and signatures

Imagine the task would return the following (This example uses entirely fictitious ObjectNames, operations, parameters and signatures).

You want to guarantee, that the user "admin" from the group "Administrators" has the rights "allAccess.

You want to guarantee, that the processor load is less 0.8 -> 80%.

You want to guarantee, that the myImportantServlet is the servlet on index 2.

```
0001 +-------------------------------------------------------------------+
0002 |   myDomain:name=UserManagement,type=myApplicationServer     | 1 |
0003 +-------------------------------------------------------------------+
0004 ClassName:   org.this.is.just.nice.to.Have
0005 Description: This information is only to get all of the possible information which ↵
     is provided
0006    +----------------+
0007    |   OPERATIONS   |
0008    +----------------+
0009    Operation: getUserRights
0010    Description: getter for UserRights
0011    ReturnType: java.lang.String;
0012       Parameter 0: p1
0013       Type: java.lang.String
0014       Description: The user's Name
0015       Parameter 1: p2
0016       Type: java.lang.String
0017       Description: The user's Group
0018 ...
0019 +-------------------------------------------------------------------+
0020 |   myDomain:name=ApplicationServer,type=myDomain              | 8 |
0021 +-------------------------------------------------------------------+
0022 ClassName:   org.this.is.just.nice.to.Have
0023 Description: This information is only to get all of the possible information which ↵
     is provided
0024    +----------------+
```

```
0025    |   OPERATIONS   |
0026    +----------------+
0027    Operation: getprocessorLoad
0028    Description:  returns the load as floating value, where 1.0 means 100% processor ↵
     load.
0029     ReturnType: double;
0030 ...
0031    Operation: getServlet
0032    Description: getter for an element of the servlet list
0033    ReturnType: javax.management.ObjectName
0034       Parameter 0: p1
0035       Type: int
0036       Description: The index of the servlet in the array.
0037
```

Imagine, the following rules shall be defined:

- You want to guarantee, that the user "admin" from the group "Administrators" has the rights allAccess.

- You want to guarantee, that the processor load is less 0.8 -> 80%.

- You want to guarantee, that the myImportantServlet is the servlet on index 2.

- ObjectNames: "myDomain:name=UserManagement,type=myApplicationServer;myDomain:
  name=ApplicationServer,↵
  type=myDomain"
- operation names: "getUserRights,!=,allAccess;::;getprocessorLoad,>,0.8;getServlet,!=,myDomain:
  name=myImportantServlet,type=Servlet"
- parameters: "admin;Administrators;::;::;2"
- signature: "java.lang.String;java.lang.String;::;::;java.lang.Integer"

How to configure stats requests

In principal the stats requests "stats_attribute" and "stats_operation" are configured the same way as the normal "attribute" and "operation" actions. There is only one thing to keep in mind: stats objects have a special structure when they are returned. So it is not enough to just write "stats".

The Task will return you the following, if the application server returns supported stats objects:

```
0001    Attribute: stats
0002    Value:
0003 Stats name=DefaultApplication#DefaultWebApplication.war, type=servletSessionsModule
0004 {
0005 name=LiveCount, ID=7, description=The number of sessions that are active at the ↵
     moment , unit=NV, type=RangeStatistic,
0006  lowWaterMark=0, highWaterMark=0, current=0, integral=0.0
0007 }
0008    Description: Provides access to the implementation of the specific Stats ↵
     interface that this managed
0009 object is required to support if it implements the StatisticsProvider model.
0010    Type: javax.management.j2ee.statistics.Stats
0011    Readable: true
0012    Writable: false
0013
```

What is a stats object?

A stats object is a collection of several attributes in one single object. Most times this object is just called "stats". This technology is mainly used by WebSphere Application Servers. The stats object makes it possible to bundle several attributes together if that makes sense. Most times the stats object has a name and a description and some other information, describing the data which is also contained in the stats object.

There is also some information which is not needed to configure the monitor. For example the "Stats name=DefaultApplication#DefaultWebApplication.war, type=servletSessionModule". The monitor only uses the "name" between the curly braces {}.

To make it possible to identify the different attributes (With "attributes" in this case the "highWaterMark", "current" or "integral" are meant) of the stats objects correctly, the naming of the several attributes has to be extended, compared to the single attribute requests.

A stats attribute is requested as follows: *attributeName_statsName_statsAttributeName*. The following example will give a closer look in that.

The MBeanMonitor Java program will return the output in the following format:

```
0001 #host::label::stats_LiveCount_name::LiveCount
0002 #host::label::stats_LiveCount_ID::7
0003 #host::label::stats_LiveCount_description::The number of sessions that are active at ↵
     the moment
0004 #host::label::stats_LiveCount_unit::NV
0005 #host::label::stats_LiveCount_type::RangeStatistics
0006 #host::label::stats_LiveCount_lowWaterMark::0
0007 #host::label::stats_LiveCount_highWaterMark::0
0008 #host::label::stats_LiveCount_current::0
0009 #host::label::stats_LiveCount_integral::0.0
0010
```

Build a stats attribute request - step by step:

It is easy to understand this, when comparing the output of the Java program with the output of the task.

The first line of the task output is: "Attribute: stats"

This means, that every request is started with "stats_". This is the "*attributeName*".

The Java program extracts the name of the stats object (In the curly braces of the task output it is "name=LiveCount". This is the "*statsName*"

Sometimes stats objects can have several collections included in curly braces. To differ them the name (in this case "LiveCount") is added to the attribute request. So it would look like that now: "stats_LiveCount_"

Finally the "*statsAttributeName*" is requested. Imagine "lowWaterMark" shall be requested, so the final call of that attribute is "stats_LiveCount_lowWaterMark".

Example for monitor configuration:

ObjectName: Just the object name which contains the stats attribute.

Action: stats_attribute

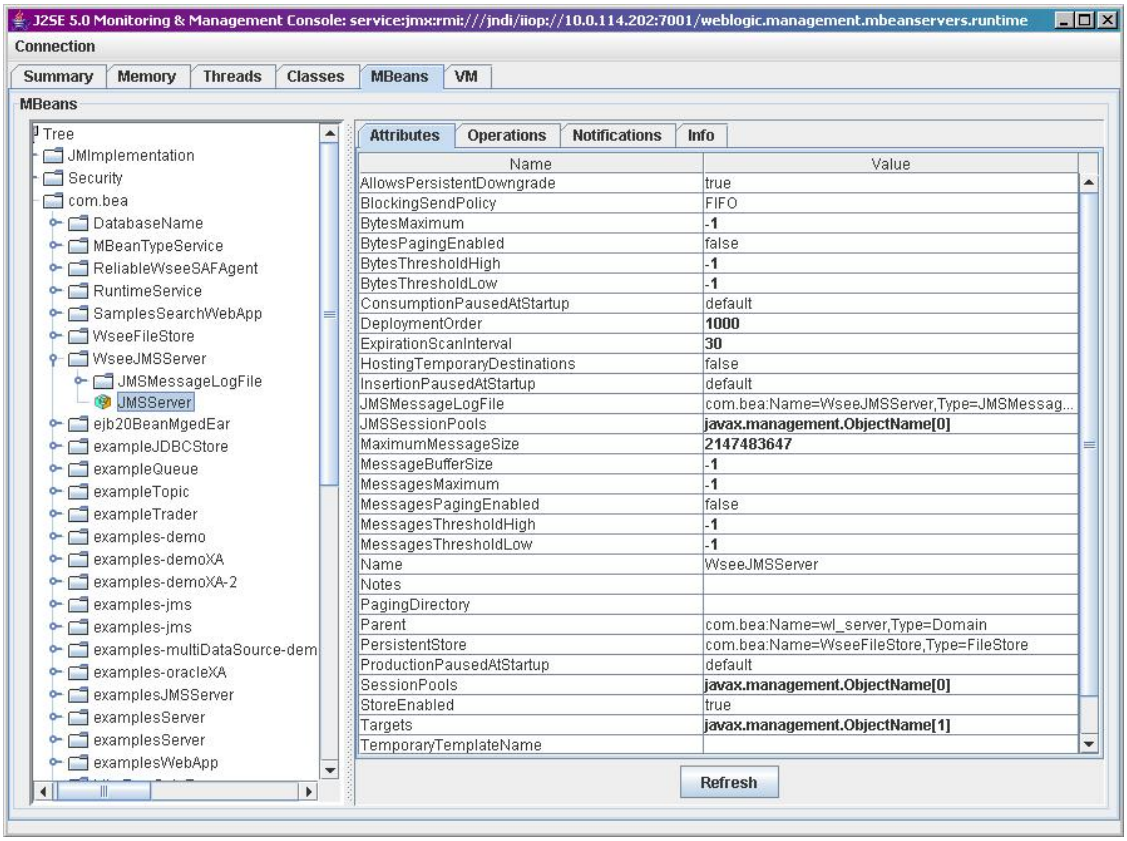
Action Names: stats_LiveCount_lowWaterMark,>,10;stats_LiveCount_highWaterMark,>,40;stats_Live-Count_current,>,25

Tools - JMX Browsers

There are some tools available which make it possible to browse the MBeans of the application server and to change values with a graphical user interface. The following chapters will introduce some of these tools.

JConsole

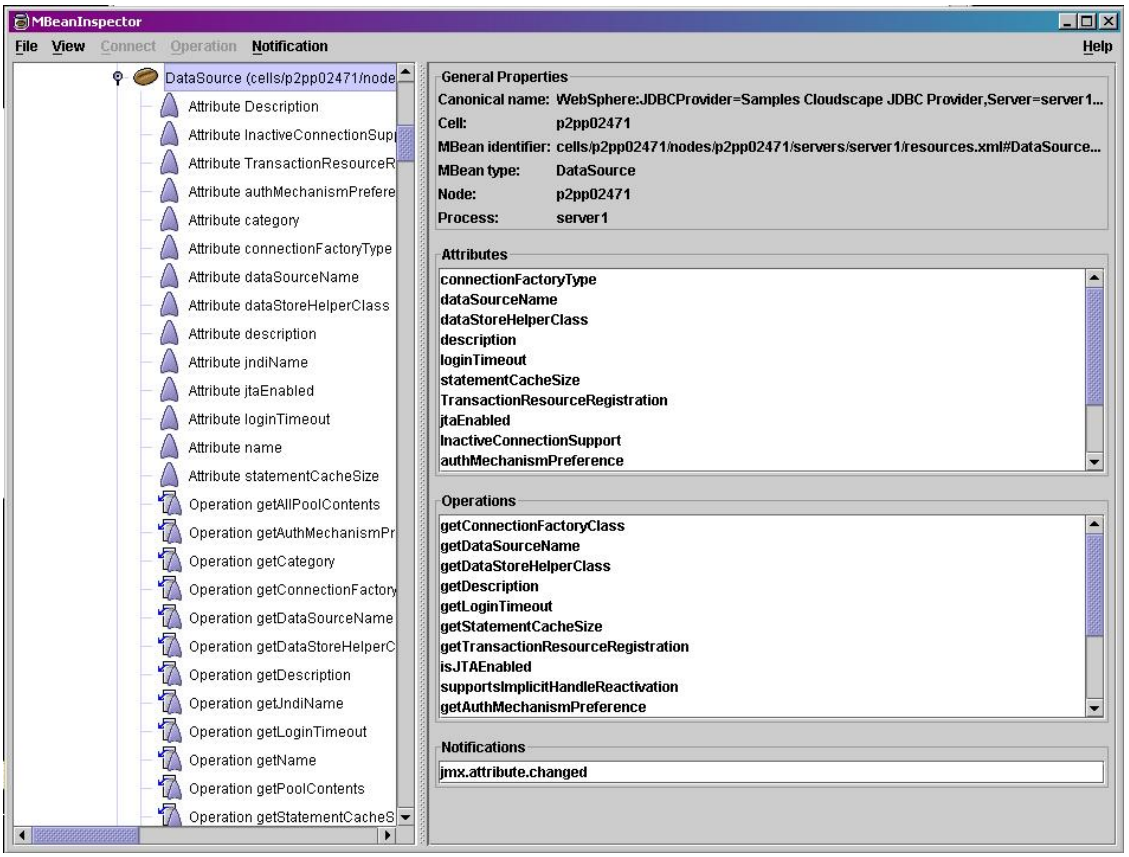
JConsole is a tool delivered with the Java 5 distribution. With JConsole it is possible to view different statistics of the JVM and browse through the MBeans structure. It can be used with JSR160 compatible servers. The JConsole.exe can be found in the /bin directory of the Java 5 JDK. JConsole is recommended for JSR160 servers, running in a Java 5 system. This program is not part of IBM Enterprise Content Management System Monitor.



JConsole

MBean Inspector

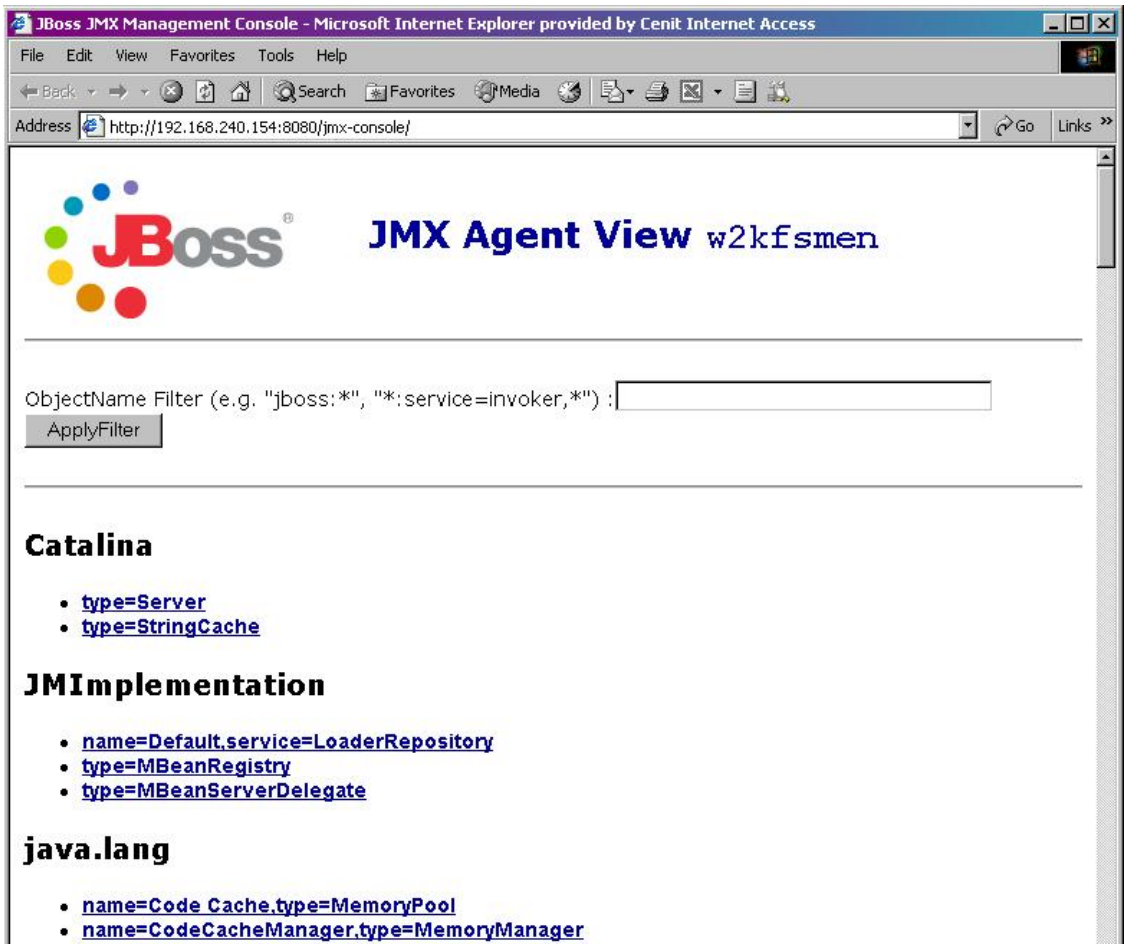
This is a tool for IBM WebSphere Application Servers. It can be downloaded from http://www.alphaworks.ibm.com/tech/mbeaninspector. The components of the tool have to be unzipped to the "lib" and "bin" folder of the WebSphere installation directory. MBeanInspector is recommended to be used with WebSphere Application Servers. This program is not part of IBM Enterprise Content Management System Monitor.



MBean Inspector

Red Hat JBoss - JMX Console

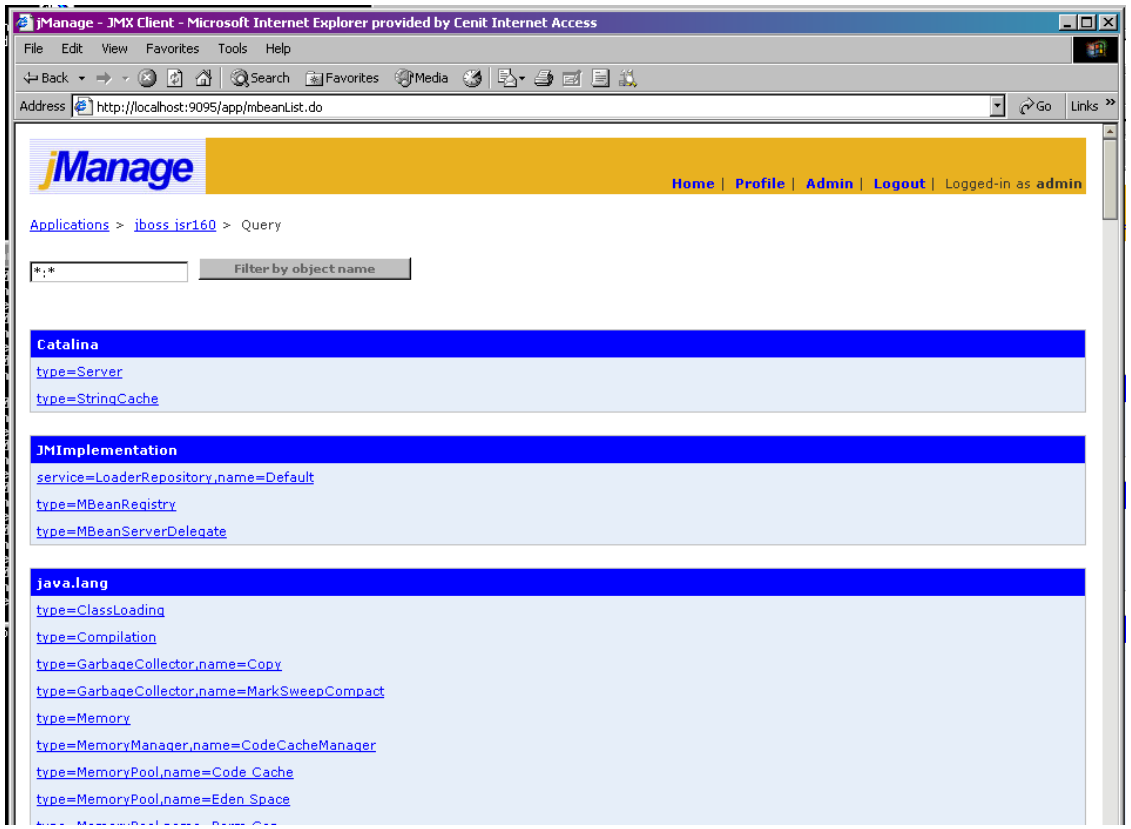
Red Hat JBoss comes with its own JMX console. It can be started when connecting to the following URL (http://<host>:8080/jmx-console). The JBoss - JMX Console is recommended to be used for JBoss Application Servers. This program is not part of IBM Enterprise Content Management System Monitor.



Red Hat JBoss - JMX Console

JManage

JManage is a universal tool to browse and monitor application servers via web console and command line. It supports several application servers. The official website of this open source tool is on http://www.jmanage.org/. It comes with its own Jetty web server. Some configurations have to be made, like loading some application server own libraries. JManage is recommended to be used with every application server. In tests there were some problems when connecting to WebSphere. On all other servers it worked without any bigger problems. The product is documented very well on the website. This program is not part of IBM Enterprise Content Management System Monitor.



JManage

The structure of an MBean

The MBean is an object on the web application server which is referenced by a unique ObjectName. With this ObjectName as reference the attributes can be called and the operation can be invoked. The ObjectName can look as follows:

abstract example of an ObjectName

testServer:type=com.test,name=com.test

real example of an ObjectName

jboss.jca:name=DefaultDS,service=ManagedConnectionFactory

Preparing Application Servers for JMX

On most application servers (especially the JSR160 compatible servers) JMX has to be activated before it can be used. The following list remarks the steps which have to be done on principle. For further information check the application server's instruction manual.

WebLogic 7 and 8
As these Weblogic versions use the standard application server connection libraries no further configuration is needed.

WebLogic 9
WebLogic 9 supports JMX1.2 per default. No additional configuration has to be made.

Red Hat JBoss 3.x and 4.x (using JMX1.0)
As these JBoss versions use the standard application server connection libraries, no further configuration is needed.

Red Hat JBoss 4.x using JMX1.2
JMX1.2 has to be enabled in the startup script.

WebSphere 5.0
JMX has to be enabled in the administrative console. The monitor works with RMI as connection type. So the server has to enabled for JMX connection via RMI.

WebSphere 6.0.1
JMX has to be enabled in the administrative console. The monitor works with RMI as connection type. So the server has to enabled for JMX connection via RMI.

Sun Application Server
JMX has to be enabled in the administrative console. If it has been enabled correctly, the server log-file contains an entry with the service URL.

Oracle Application Server 10g
JMX1.2 has to be activated with the OC4J service of the Oracle Application Server.

Which attributes and Object Names the status monitors use

This chapter handles the status shell scripts. It describes which MBeans and which attributes are requested in the status request. MBean names are written in bold letters. Attributes which are used as maximum border of the threshold (for percentage use) are prefixed with an "B" like border value.. All other attributes have no style change.

```
0001 JBoss 3 + 4
0002 -----------
0003 jboss.system:type=ServerInfo
0004 FreeMemory
0005 TotalMemory
0006 jboss.system:service=ThreadPool
0007 (B)MaximumQueueSize
0008 QueueSize
0009 jboss.web:name=<threadPoolName>,type=ThreadPool maxSpareThreads
0010 (B)maxThreads
0011 currentThreadCount
```

```
currentThreadsBusy
jboss.web:host=localhost,path=/<WebApplication>,type=Manager
maxActiveSessions
activeSessions
expiredSessions
maxActive
rejectedSessions
duplicates
jboss.jca:service=ManagedConnectionPool,name=DefaultDS
(B)AvailableConnectionCount
MaxConnectionsInUseCount
ConnectionCount
InUseConnectionCount
Oracle WebLogic 7 and Oracle WebLogic 8
---------------------------------
<DomainName>:Location=<ServerName>,Name=<ServerName>,ServerRuntime=
<ServerName>,Type=JVMRuntime
HeapFreeCurrent
HeapSizeCurrent
<DomainName>:Name=default,Server=<ServerName>,Type=ExecuteQueue
ThreadsMaximum
ThreadCount
<DomainName>:ApplicationRuntime=<ServerName>_<ApplicationName>,
Location=<ServerName>,Name=<ServerName>_<ServerName>_<ApplicationN
ame>_<ApplicationName>,ServerRuntime=<ServerName>,Type=WebAppComponentRu
ntime
OpenSessionsHighCount
OpenSessionsCurrentCount
<DomainName>:Location=<ServerName>,Name=<ServerName>.jms,
ServerRuntime=<ServerName>,Type=JMSRuntime
ConnectionsCurrentCount
ConnectionsHighCount
Oracle WebLogic 9
--------------
com.bea:Name=<ServerName>,ServerRuntime=<ServerName>,Location=
<ServerName>,Type=JRockitRuntime
FreeHeap
TotalHeap
UsedHeap
HeapSizeCurrent
HeapFreeCurrent
HeapFreePercent
(B)TotalPhysicalMemory
FreePhysicalMemory
UsedPhysicalMemory
TotalNumberOfThreads
AllProcessorsAverageLoad
JvmProcessorLoad
com.bea:Name=ThreadPoolRuntime,ServerRuntime=<ServerName>,Location=MedRecServer,
Type=ThreadPoolRuntime
PendingUserRequestCount
ExecuteThreadIdleCount
HoggingThreadCount
ExecuteThreadTotalCount
MinThreadsConstraintsPending
QueueLength
WebSphere 5
-----------
WebSphere:platform=common,cell=<CellName>,version=5.0.1,name=JVM,mbeanIdentifier
=JVM,type=JVM,node=<NodeName>,process=<ServerName>
stats
```

```
0065 WebSphere:platform=common,cell=<CellName>,version=5.0,name=ORB.thread.pool,↵
     mbeanIdentifier=cells/<CellName>/nodes/<NodeName>/servers/<ServerName>↵
     /server.xml#ThreadPool_1,type=ThreadPool,node=<NodeName>,process=<ServerName>
0066 stats
0067 WebSphere:platform=common,cell=<CellName>,version=5.0,name=MessageListenerThread↵
     Pool,mbeanIdentifier=cells/<CellName>/nodes/<NodeName>/servers/↵
     <ServerName>/server.xml#ThreadPool_3,type=ThreadPool,node=<NodeName>,↵
     process=<ServerName>
0068 stats
0069 WebSphere:platform=common,cell=<CellName>,version=5.0,name=SoapConnectorThreadPo↵
     ol,mbeanIdentifier=com.ibm.websphere.models.config.process.impl.ThreadPoolImpl,↵
     type=ThreadPool,node=<NodeName>,process=<ServerName>
0070 stats
0071 WebSphere:platform=common,cell=<CellName>,version=5.0,name=Servlet.Engine.↵
     Transports,mbeanIdentifier=cells/<CellName>/nodes/<NodeName>/servers/↵
     <ServerName>/server.xml#ThreadPool_2,type=ThreadPool,node=<NodeName>,↵
     process=<ServerName>
0072 stats
0073 WebSphere:platform=common,cell=<CellName>,version=5.0,name=<ApplicationName>↵
     #<WarFileName>,mbeanIdentifier=default_host/<ApplicationName>,type=↵
     SessionManager,node=<NodeName>,process=<ServerName>
0074 stats
0075 WebSphere 6
0076 -----------
0077 WebSphere:name=JVM,process=<ServerName>,platform=dynamicproxy,node=<NodeName>↵
     ,j2eeType=JVM,J2EEServer=<ServerName>,version=<Version>,type=JVM,↵
     mbeanIdentifier=JVM,cell=<CellName>
0078 heapSize
0079 freeMemory
0080 stats
0081 WebSphere:platform=dynamicproxy,cell=<CellName>,version=<Version>,↵
     name=MessageListenerThreadPool,mbeanIdentifier=cells/<CellName>/nodes/↵
     <NodeName>/servers/<ServerName>/server.xml#ThreadPool_<MessageListenerID>↵
     ,type=ThreadPool,node=<NodeName>,process=<ServerName>
0082 stats
0083 WebSphere:platform=dynamicproxy,cell=<CellName>,version=<Version>,↵
     name=ORB.thread.pool,mbeanIdentifier=cells/<CellName>/nodes/<NodeName>↵
     /servers/<ServerName>/server.xml#ThreadPool_<ORB_ID>,type=ThreadPool,↵
     node=<NodeName>,process=<ServerName>
0084 stats
0085 WebSphere:platform=dynamicproxy,cell=<CellName>,version=<Version>,↵
     name=WebContainer,mbeanIdentifier=cells/<CellName>/nodes/<NodeName>↵
     /servers/<ServerName>/server.xml#ThreadPool_<WebcontainerID>,type=↵
     ThreadPool,node=<NodeName>,process=<ServerName>
0086 stats
0087 WebSphere:platform=common,cell=<CellName>,version=<Version>,name=↵
     <ApplicationName>#<WarFileName>,mbeanIdentifier=default_host<↵
     ApplicationName>,type=SessionManager,node=<NodeName>,process=<ServerName>
0088 stats
0089 WebSphere 6.1
0090 -------------
0091 WebSphere:name=__X__,process=<ServerName>,platform=__X__,node=<NodeName>,↵
```

```
     j2eeType=__X__,J2EEServer=<ServerName>,version=<Version>,type=__X__,↵
     mbeanIdentifier=__X__,cell=<CellName>,spec=__X__
0092 heapSize
0093 freeMemory
0094 stats
0095 WebSphere:name=__X__,process=<ServerName>,platform=__X__,node=<NodeName>,↵
     version=<Version>,type=__X__,mbeanIdentifier=cells/<CellName>/nodes/↵
     <NodeName>/servers/<ServerName>/server.xml#ThreadPool_<MessageId>,↵
     cell=<CellName>,spec=__X__
0096 stats
0097 WebSphere:name=ORB.thread.pool,process=<ServerName>,platform=__X__,node=↵
     <NodeName>,version=<Version>,type=__X__,mbeanIdentifier=cells/<CellName>↵
     /nodes/<NodeName>/servers/<ServerName>/server.xml#ThreadPool_<ORB_↵
     Id>,cell=<CellName>,spec=__X__
0098 stats
0099 WebSphere:name=__X__,process=<ServerName>,platform=__X__,node=<NodeName>,↵
     version=<Version>,type=__X__,mbeanIdentifier=cells/<CellName>/nodes/↵
     <NodeName>/servers/<ServerName>/server.xml#ThreadPool_<WebContainerId>↵
     ,cell=<CellName>,spec=__X__
0100 stats
0101 WebSphere:name=__X__,process=<ServerName>,platform=__X__,node=<NodeName>,↵
     version=<Version>,type=ThreadPool,mbeanIdentifier=cells/<CellName>/nodes/↵
     <NodeName>/servers/<ServerName>/server.xml#ThreadPool_<TCP_Id>,↵
     cell=<CellName>,spec=__X__
0102 stats
0103 WebSphere:name=<ApplicationName>#<WarFileName>,process=<ServerName>↵
     ,platform=__X__,node=<NodeName>,version=<Version>,type=__X__,mbeanIdentifie↵
     r=__X__/<ApplicationName>,cell=<CellName>,spec=__X__
0104 stats
```

How to find out the actual configured port of the several application servers

This chapter shows a short description how to find out the port of the application server if it is not the default value.

Red Hat JBoss 3 and 4

On starting up the JBoss Application Server a lot of startup information is given out. The port can be read out in the following line of this output:

15:42:40,593 INFO [NamingService] JNDI bootstrap JNP=/0.0.0.0:1099, RMI=/0.0.0.0:1098, backlog=50, no client SocketFactory, Server SocketFactory=class org.jboss.net.sockets.DefaultSocketFactory

The bootstrap port is 1099, as written in the default information.

If JBoss 4 is configured for JMX 1.2, the administrator has defined the port itself in the startup script and so should know the correct port.

Weblogic 7, 8 and 9

On starting up the WebLogic servers, a lot of startup information is given out. The port can be read out at the end of the startup sequence.

At the end a conclusion is generated and a line following to this is printed out: "http://192.168.240.159:7011/index.jsp"

This is the address to the administration console, but the port is the same for JMX connections as known.

WebSphere 5

To get the port of the WebSphere application server it is necessary do go into the administration console. Expand "server" and click on "Application Server". After that click on the server whose port shall be found out. On the left side there is the link "Endpoints". Click it to enter the port configuration menu. The bootstrap port is the port, which is needed to build up JMX connections. For usual it is port 2809. Beside the "Endpoints" link, there is also an "Administration Services" link which leads to a menu where the connection Type (whether RMI or SOAP) can be chosen. It might be necessary to switch this port to RMI. In some case it was, in some others it was not.

WebSphere 6 and WebSphere 6.1

To get the port of the WebSphere application server it is necessary do go into the administration console. Expand "server" and click on "Application Server". After that click on the server whose port shall be found out. On the left side there is the link "Ports". Click it to enter the port configuration menu. The bootstrap port is needed to build up JMX connections. For usual it is port 2809. Under the sub heading "server infrastructure" there is a link "administration" (the second link) which can be expanded. There is the "Administration Services" link which leads to a menu where the connection Type (whether RMI or SOAP) can be chosen. It might be necessary to switch this port to RMI. In some case it was, in some others it was not.

How to use JMX monitoring and tasks with Tomcat 5.x

As Tomcat is very popular this chapter describes how to configure Tomcat 5.x and run it with JMX 1.2.

Configure Tomcat 5.x

The Jakarta website describes how the startup script must be pre configured to activate JMX. The manual is on http://tomcat.apache.org/tomcat-5.5-doc/monitoring.html .

Tomcat 4 and 6 have not been tested to JMX functionality.

The web site shows some mix between Linux and Windows config. Windows needs a "set" to define the variable but can not handle double quotes around the whole expression. Take the examples below in the configuration. In the example the port 9004 is chosen. Every other free port could be used.

Windows: set CATALINA_OPTS=-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=9004 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false

Linux / Unix: CATALINA_OPTS="-Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.port=9004 -Dcom.sun.management.jmxremote.ssl=false -Dcom.sun.management.jmxremote.authenticate=false"

The web site says to enter the variable in the startup script. It also can be written in the catalina script, since it is called by the startup script. The startup scripts *catalina.bat* or *catalina.sh* are in the bin directory of the Tomcat install directory. $CATALINA_HOME/bin/catalina.sh. Just as the startup script itself.

Hint for Windows: There is also a version of Tomcat 5.x which can be setup via installer and executed as a Windows service. It is recommended not to use this version, because it owns no startup script and it is not known if and where the JMX settings can be configured in the service version.

Java version: To execute Tomcat with JMX enabled, Java version 5 is needed. It should also work, when Tomcat runs with a J2EE 1.4, but Java Standard Edition 1.4.x is not supported out of the box. The web site describes how to configure Tomcat, when Java 1.4.x shall be used. In this case a special adaptor of the MX4J project is needed. The JMX monitors and task need whether Java version 5 or 1.4.x.

Security: The website also describes how to activate security (user authentication). The upper example only shows the basic configuration, without user and password required.

Service URL: Tomcat can be accessed via JSR160 just like all other application servers which support JSR160. The service URL is "service:jmx:rmi:///jndi/rmi://HOST:PORT/jmxrmi"

Monitors which Support Tomcat: Configured like that, Tomcat can be accessed via "JMX WebApplication Thresholds" Monitor, "JMX WebApplication Thresholds" Monitor and "View JMX Parameters" Task.

How to configure sas.client.props for WebSphere

To access the MBeans, when security on WebSphere is enabled, the following steps have to be executed, before this will work.

The file sas.client.props is found in the $WASHOME/AppServer/propertires (WebSphere 5) or $WASHOME/AppServer/profiles/<profilename>/properties (WebSphere 6.0.x.x and WebSphere 6.1.x.x). In the sas.client.props file the following variables have to be changed:

- com.ibm.CORBA.loginUserid=<UserName>
- com.ibm.CORBA.loginPassword=<PasswordAsClearText>

To encrypt the password the following WebSphere command has to be used:

- Windows:
  $WASHOME/AppServer/bin/PropFilePasswordEncoder <pathToSasFile>/sas.client.props com.ibm.CORBA.loginPassword
- Unix:
  $WASHOME/AppServer/bin/PropFilePasswordEncoder <pathToSasFile>/sas.client.props com.ibm.CORBA.loginPassword

This command will encode the password(s) and will also delete all comments. A file with the name sas.client.props.bak will be created with the old version of the file (The new file will not have the comments anymore, because they are deleted by the algorithm . Even if the sas.client.props contains the login data now, the user and password have still to be defined in the monitor because the credentials in the props file only does the CORBA authentication.

How to create the keystore and truststore files for WebSphere 6.1.x.x and newer

By default WebSphere 6.1.x.x application servers have stronger security configurations compared with previous WebSphere versions. A keystore and truststore have to be generated for authentication when JMX data is going to be requested. It is recommended to perform the following steps before configuring WebSphere 6.1.x and newer monitors. It is possible to use the resources of an existing WebSphere profile, but this should only be done, when the WebSphere Administrator has no concerns about that. The following steps were verified on WebSphere 6.1 machines and might differ on newer WebSphere environments.

Important: The following steps are best practices, which are proposed for the JMX monitoring, without changing already existing WebSphere profile configurations. If you are familiar with the WebSphere security configuration, you don't need to perform these steps. But make sure, that the keystore and truststore exists. The JMX monitoring program is using SAS_PATH setting. Therefore the monitors and tasks are looking for the ssl.client.props file at the same place (relative file path).

The following steps have to be performed:

- Open a shell / command line interface.
- Copy the properties directory of a WebSphere profile of your choice to CENIT_ROOT/cala/monitors/pam
  `cp -r $WAS_HOME/profiles/<profile_name>/properties $CENIT_ROOT/cala/monitors/pam`
- Edit the file $CENIT_ROOT/cala/monitors/pam/properties/sas.client.props
  Perform the actions described in the chapter How to configure sas.client.props for WebSphere:
  For <pathToSasFile> use $CENIT_ROOT/cala/monitors/pam/properties/sas.client.props.
- Edit the file $CENIT_ROOT/cala/monitors/pam/properties/ssl.client.props
  Perform the changes in the file as shown in the snippets below. Except of these changes, the file should be left in it's origin
  Attention: Replace the text between the pointed brackets < > through real paths

```
0001 ...
0002 # Has to be set to false later, but now it must be set to true.
0003 com.ibm.ssl.enableSignerExchangePrompt=true
0004 ...
0005 # KeyStore information
0006 ...
0007 com.ibm.ssl.keyStore=<$CENIT_ROOT>/cala/monitors/pam/key.p12
0008 ...
0009 # TrustStore information
0010 ...
0011 com.ibm.ssl.trustStore=<$CENIT_ROOT>/cala/monitors/pam/trust.p12
0012 ...
```

- Copy setupCmdLine.bat / setupCmdLine.sh and to $CENIT_ROOT/cala/monitors/pam
  `cp $WAS_HOME/profiles/<profile_name>/bin/setupCmdLine.* $CENIT_ROOT/cala/monitors/pam`
  `cp $WAS_HOME/profiles/<profile_name>/bin/retrieveSigners.* $CENIT_ROOT/cala/monitors/pam`
- Edit the file `$CENIT_ROOT/cala/monitors/pam/setupCmdLine.bat` or `.../setupCmdLine.sh` and change the following line

Windows: `set USER_INSTALLATION_ROOT=<CENIT_ROOT>/cala/monitors/pam`
Unix: `export USER_INSTALLATION_ROOT=<CENIT_ROOT>/cala/monitors/pam`

- Edit the file `$CENIT_ROOT/cala/monitors/pam/retrieveSigners.bat` or `.../retrieveSigners.sh` and change the following line
Windows: `set WAS_USER_SCRIPT=<CENIT_ROOT>/cala/monitors/pam/setupCmdLine.bat`
Unix: `export WAS_USER_SCRIPT=<CENIT_ROOT>/cala/monitors/pam/setupCmdLine.sh`
- Change to the directory `${CENIT_ROOT}/cala/monitors/pam/profiles/<profileName>/bin`
- Request the remote keystore names and the local keystore names.
Windows: `retrieveSigners.bat -listRemoteKeyStoreNames -listLocalKeyStoreNames`
Unix: `retrieveSigners.sh -listRemoteKeyStoreNames -listLocalKeyStoreNames`
- An output similar to this will be returned:

```
0001 CWPKI0306I: The following remote keystores exist on the specified ↵
     server: CMSKeyStore, NodeLTPAKeys, NodeDefaultTrustStore, NodeDefaultKey↵
     Store
0002 CWPKI0306I: The following remote keystores exist on the specified ↵
     server: CMSKeyStore, NodeLTPAKeys, NodeDefaultTrustStore, NodeDefaultKey↵
     Store
```

  If no output like that, but an error message occurs, try to copy the files from `${WAS_HOME}/profiles/<profileName>/etc/trust.p12` and `${WAS_HOME}/profiles/<profileName>/etc/key.p12` to the pam directory.
- Use one of the keystores, which are returned by the previous command to execute the following command:

```
0001 retrieveSigners <remoteKeyStoreName> <localKeyStoreName>
```

  Example:
  Windows: `retrieveSigners.bat NodeDefault TrustStore ClientDefaultTrustStore`
  Unix: `retrieveSigners.sh NodeDefault TrustStore ClientDefaultTrustStore`
- It might be necessary to authenticate with user and password. For usual a login dialog will appear. After an administrative user and password are entered, a new keystore and truststore are generated in `$CENIT_ROOT/cala/monitors/pam/trust.p12` and `$CENIT_ROOT/cala/monitors/pam/key.p12`.
- The JMX monitors and tasks will give the ssl.client.props file to the Java program as a property. When a sas.client.props path is defined, the monitors and tasks will use this path to refer to the ssl.client.props. For basic use, this file has not to be edited.
- In the monitors the SAS_PATH needs not to be set, when the files are stored in the `pam` directory. But since there are several profiles on WebSphere and each one might have its own security handling it is proposed not to store this data in the `pam` directory, but in `pam/<profileName>` directory. Also all paths which point to the `pam` directory in this scenario must be changed to `pam/<profileName>`. But in this case, the SAS_PATH must be set for each monitor, depending to which profile's servers it shall connect.
- For more information go to the following web sites:

https://www.ibm.com/support/knowledgecenter/SSAW57_8.5.5/com.ibm.websphere.nd.doc/ae/rsec_sslclientpropsfile.html
https://www.ibm.com/support/knowledgecenter/SSAW57_8.5.5/com.ibm.websphere.nd.doc/ae/rxml_retrievesigners.html

The jmx_classpaths.props file

On the client, there is a props file, which contains all class paths for the supported application servers. This file is stored at `CENIT_ROOT/cala/monitors/pam`/jmx_classpaths.props. It can be used, when the class path has to be extended, because of missing jar files. Therefor a task exists in the STANDARD task archive, to load and edit this task. It is called "JMX Class Path Edit Task". Refer to the task guides for more information. All monitors and tasks use this file. If the file does not exist, hard coded class paths are defined inside the script, so the monitors and tasks will not fail.

Workaround for pwdcrypt problem with Unix systems

There may be problems with pwdcrypt on Unix systems, when the JMX monitors are called. An exception will occur in the task output (for tasks) and in the monitor plusdebug output (for monitors) which looks similar to the following.

```
0001 ------Standard Output------
0002 java.lang.reflect.InvocationTargetException
0003  at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
0004  at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:39)
0005  at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.↵
     java:25)
0006  at java.lang.reflect.Method.invoke(Method.java:324)
0007  at com.ibm.ws.bootstrap.WSLauncher.run(WSLauncher.java:219)
0008  at java.lang.Thread.run(Thread.java:534)
0009 Caused by: java.lang.UnsatisfiedLinkError: no PwdCrypt.solaris2 in java.library.path
0010  at java.lang.ClassLoader.loadLibrary(ClassLoader.java:1517)
0011  at java.lang.Runtime.loadLibrary0(Runtime.java:788)
0012  at java.lang.System.loadLibrary(System.java:834)
0013  at de.cenit.eb.sm.cala.utils.PwdCrypt.<clinit>(Unknown Source)
0014  at de.cenit.eb.sm.mbeanmonitor.MonitorMBeans.decryptPassword(Unknown Source)
0015  at de.cenit.eb.sm.mbeanmonitor.MonitorMBeans.fillProperties(Unknown Source)
0016  at de.cenit.eb.sm.mbeanmonitor.MBeanMonitorMain.getOutput(Unknown Source)
0017  at de.cenit.eb.sm.mbeanmonitor.MBeanMonitorMain.main(Unknown Source)
0018  ... 6 more
```

The most important line is "Caused by: java.lang.UnsatisfiedLinkError: no PwdCrypt.solaris2 in java.library.path".

Workaround for tasks and monitors:

1 Create the folder pwdcrypt_libs in the directory $CENIT_ROOT/tools.

2 Change directory to $CENIT_ROOT/tools/de.cenit.

3 Extract the pwdcrypt jar file with the command "jar -xvf pwdcrypt.jar" and execute the following copy command. "cp libPwdCrypt.linux.so ./pwdcrypt_lib/libPwdCrypt.linux.so" so that this file is in the previously created directory.

4 Change to the CALAdirectory and edit the file cala_rex_cli.cfg. Execute "cp libPwdCrypt.linux.so ./pwdcrypt_lib/libPwdCrypt.linux.so".

5 Append the following line to the file: <property name="libpathadd" value="$CENIT_ROOT/tools/pwd-crypt_libs">

6 Restart CALA.

7 Change to cala directory and edit cala_env.sh.

8 Add the following line export LD_LIBRARY_PATH=.:$LD_LIBRARY_PATH. This works as well on Solaris.

   AIX: export LIBPATH=.:$LIBPATH

   HP-UX: export SHLIB_PATH=.:$SHLIB_PATH

9 Save and restart CALA.

How to enable basic JSR160 functionality on Red Hat JBoss 4.x

To enable basic JSR160 functionality in JBoss 4.x, JBoss must be executed with a Java version 5 or later and the following adjustments must be made in the run.bat or run.sh of the JBoss which are in the bin directory.

The example uses port 9999. Any other usable port can be chosen. Also no security is enabled with this configuration. For further information about how to configure security please refer to the JBoss administration manuals.

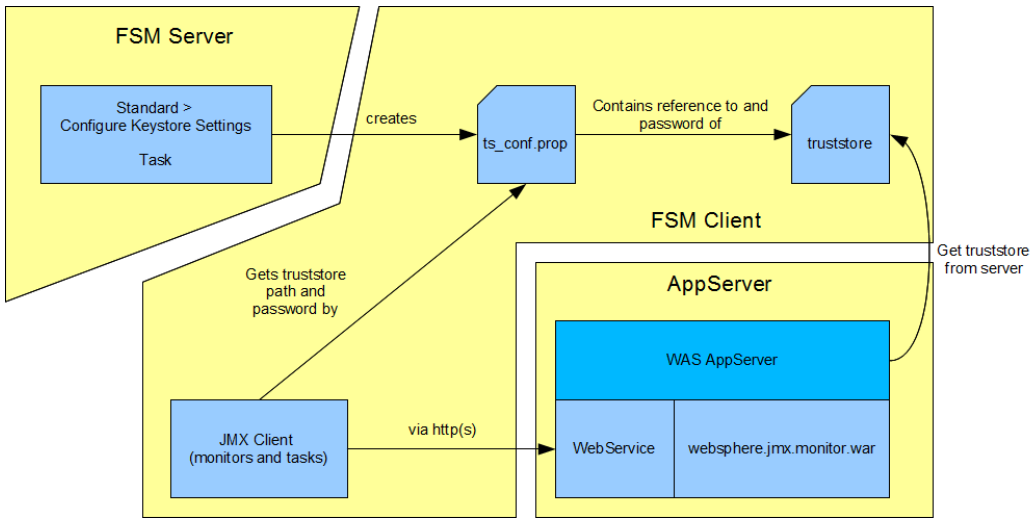
```
0001 Windows in run.bat
0002 ...
0003 set JAVA_OPTS=%JAVA_OPTS% -Xms128m -Xmx512m -Dsun.rmi.dgc.client.gcInterval=3600000 ↵
     -Dsun.rmi.dgc.server.gcInterval=3600000
0004 set JAVA_OPTS=%JAVA_OPTS% -Djavax.management.builder.initial=org.jboss.system.server.↵
     jmx.MBeanServerBuilderImpl
0005 set JAVA_OPTS=%JAVA_OPTS% -Djboss.platform.mbeanserver
0006 set JAVA_OPTS=%JAVA_OPTS% -Dcom.sun.management.jmxremote -Dcom.sun.management.↵
     jmxremote.port=9999 -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.↵
     management.jmxremote.ssl=false
0007 ...
0008 Unix in run.sh
0009 ...
0010 JAVA_OPTS=$JAVA_OPTS -Xms128m -Xmx512m -Dsun.rmi.dgc.client.gcInterval=3600000 ↵
     -Dsun.rmi.dgc.server.gcInterval=3600000
0011 JAVA_OPTS=$JAVA_OPTS -Djavax.management.builder.initial=org.jboss.system.server.jmx.↵
     MBeanServerBuilderImpl
0012 JAVA_OPTS=$JAVA_OPTS -Djboss.platform.mbeanserver
0013 JAVA_OPTS=$JAVA_OPTS -Dcom.sun.management.jmxremote -Dcom.sun.management.jmxremote.↵
     port=9999 -Dcom.sun.management.jmxremote.authenticate=false -Dcom.sun.management.↵
     jmxremote.ssl=false
0014 ...
```

JMX Support via WebService

There is the possibility to deploy a web application with web service (`monitortools.applicationserver.jmx.adaptor.war` / monitortools.applicationserver.jmx.adaptor.ear) on a application server and request the data from this service, avoiding to configure the `sas_client.props` and `ssl-client.props` files as in the usual connection way. This is only available for the JPS JMX Monitor.

The following figure illustrates the dependencies between the web application server (IBM WebSphere, Oracle WebLogic or JBoss) and the JMX Client (monitors and tasks). The JPS Monitor is called as usual and as described in the monitoring guide.

For HTTPS some additional steps have to be performed. The following figure shows in basic, what the following sub sections will describe



WebService dependencies

Note: The web service gets information of the server and its JVM in which it is running. So if a WebSphere cluster (WebSphere Network Deployment) environment shall be monitored, the `monitortools.applicationserver.jmx.adaptor` application must be deployed on every server instance via ND.

Create or get a keystore for IBM WebSphere 6.x and IBM WebSphere 7.x and IBM WebSphere 8.0.x

The simplest solution is to use an existing keytstore. However, if none exists one must be generated. A keystore is a container for server certificates. First the server's certificate is required. This can be acquired from the WebSphere system administrator or simply downloaded and exported using a common web browser. Make sure that the file is stored in "der" format.

Assuming the certificate is named "mycert.cert" it must be added to a keystore using this command:

```
0001 $JAVA_HOME/bin/keytool -import -file mycert.cert -alias WAS-certificate -keystore ↵
     mystore
```

The keytool will ask you if you want to trust the keystore. Accept it by typing "yes". Furthermore it will ask you for a password. Use a password you like, e.g. `adminadmin`.

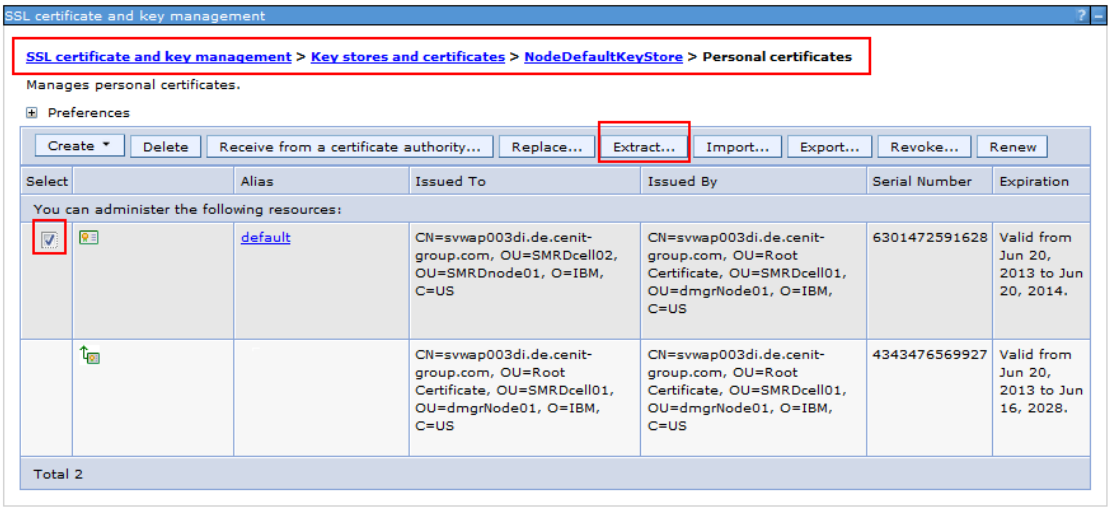
It is recommended to create the truststore on the CALAagent (and use the JRE of the CALA installation), on which the monitor is executed, since the keystore must be stored on the agent machine anyway, to reference it in the `Configure Keystore Settings` task.

Exporting a certificate for IBM WebSphere 8.5.x, using the Integrated Solutions Console

On *IBM WebSphere 8.5* the certificate can be exported from the Integrated Solutions Console as follows:

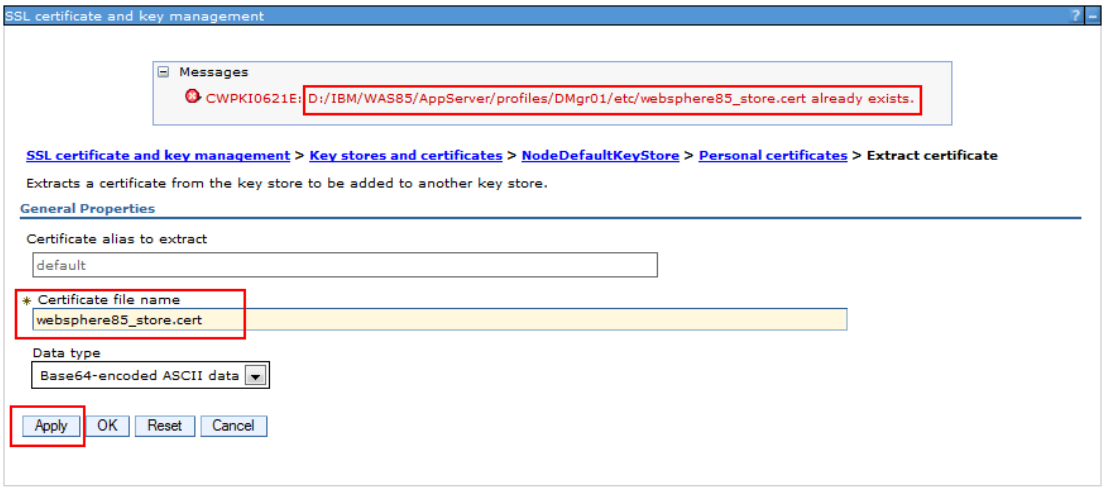
Select `Security > SSL certificate and key management > Key stores and certificates > NodeDefaultKeyStore > Personal certificates > Extract certificate` in the IBM WebSphere 8.5 Integrated Solutions Console.

Store it to an arbitrary name, e.g. `websphere85_store.cert`



Extract certificate under IBM WebSphere 8.5

Hint: The cert file is stored in a directory of your IBM WebSphere installation directory. If you click the Apply button twice, the console will show the message below, where you can see, in which directory the cert was saved to.



Save certificate under IBM WebSphere 8.5

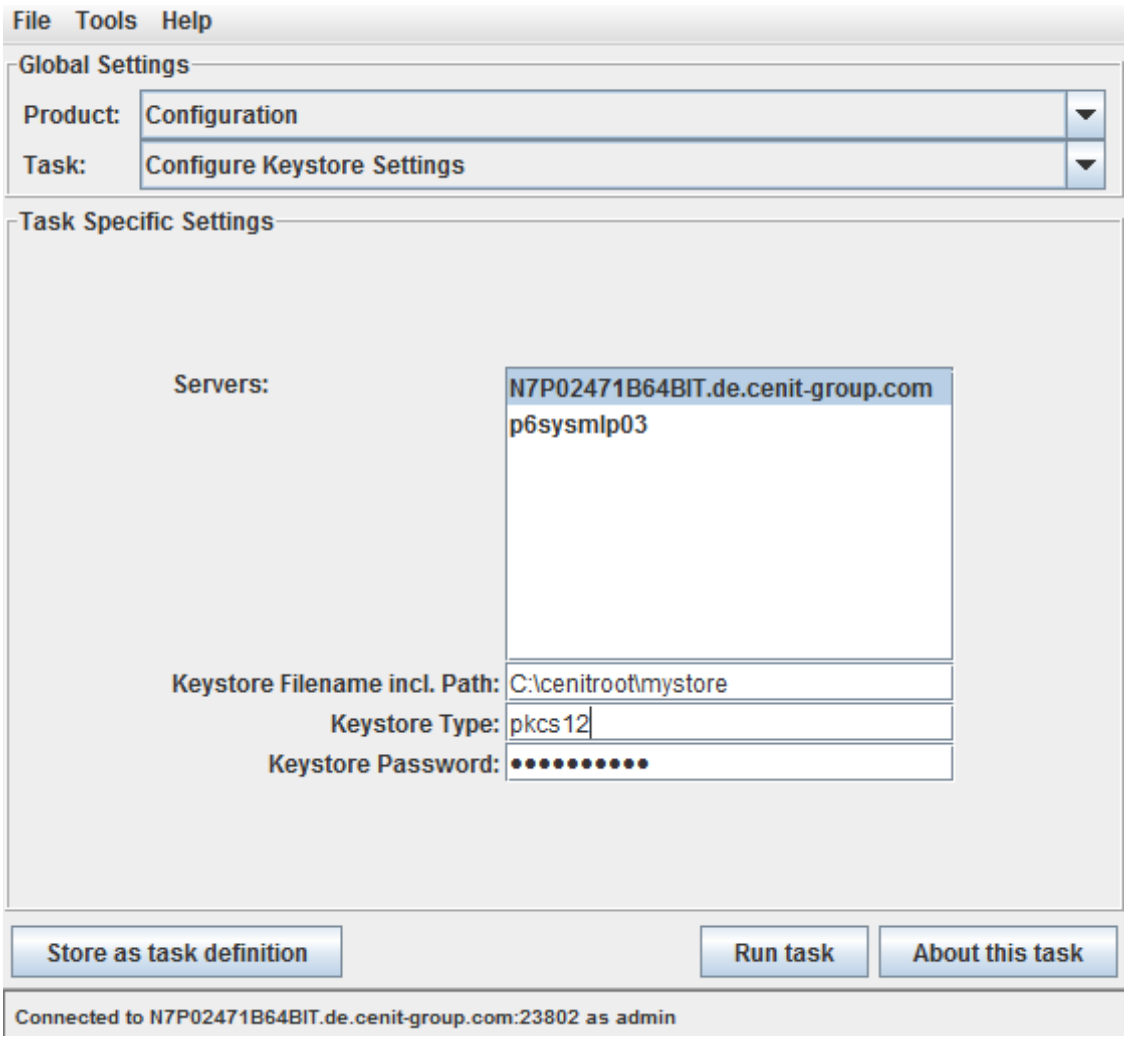
Import the Store Into the Agent's Monitoring Environment

Execute the `Configuration > Configure Keystore Settings` task in the IBM ECM SM Task Execution Manager on the agent, where the *JMX* client is running.

Enter the path to your keystore in the field `Keystore Name` of the task.

The field `Keystore Type` is not important for *JMX* requests. You can enter a default value.

Enter the password for the keystore in the `Keystore Password` field. In the previously shown examples it was `adminadmin`.



Configuration Task

The file `ts_conf.prop` will be stored in the `cala/monitors/pam` directory of the client.

The *JPS JMX* component requests the keystore data automatically from the `ts_conf.prop` file, if an HTTPS URL is requested.

How to deploy the monitortools.applicationserver.jmx.adaptor application as WebSphere Enterprise Application

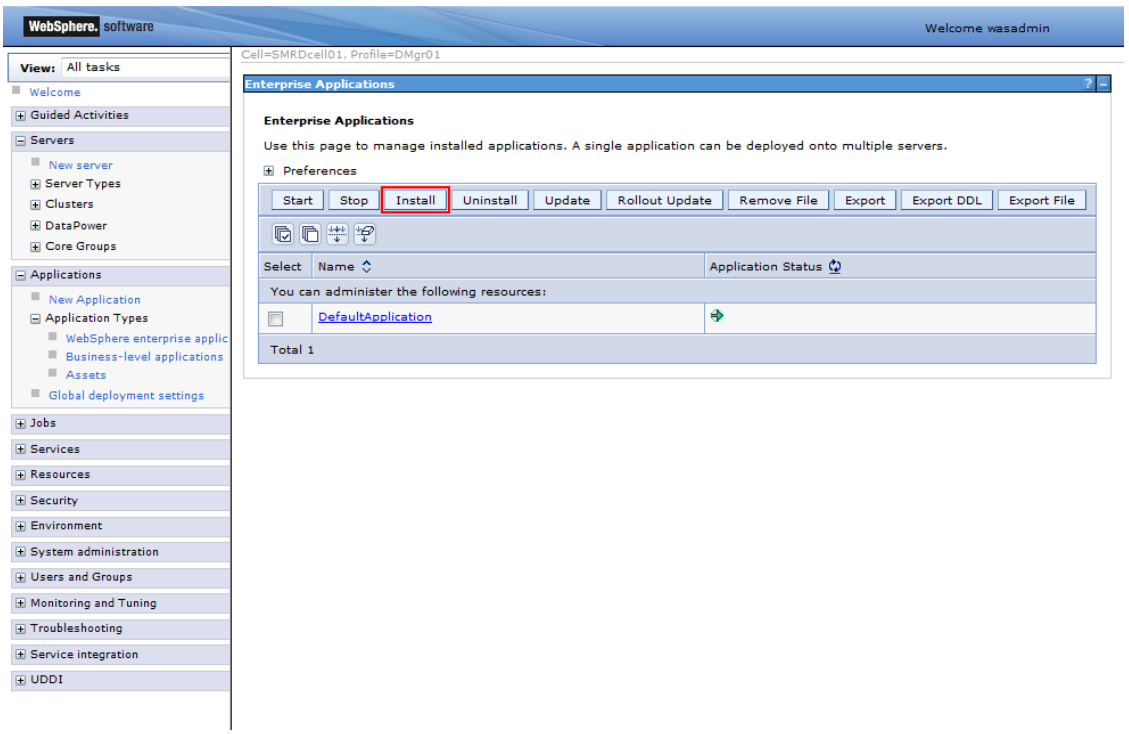
This section describes the deployment of the **`monitortools.applicationserver.jmx.adaptor`** enterprise application onto a standalone *IBM WebSphere Application Server version 7.0*. A separate description of an ND system is not included. For special adjustments of *IBM WebSphere Application Server version 6.0* see the following chapter.

The application is provided as a WAR (Web Archive) and an EAR (Enterprise Archive) file.

Both file types can be found under `<CENIT_ROOT>/repos/install/web_apps` in your IBM ECM SM Server installation.

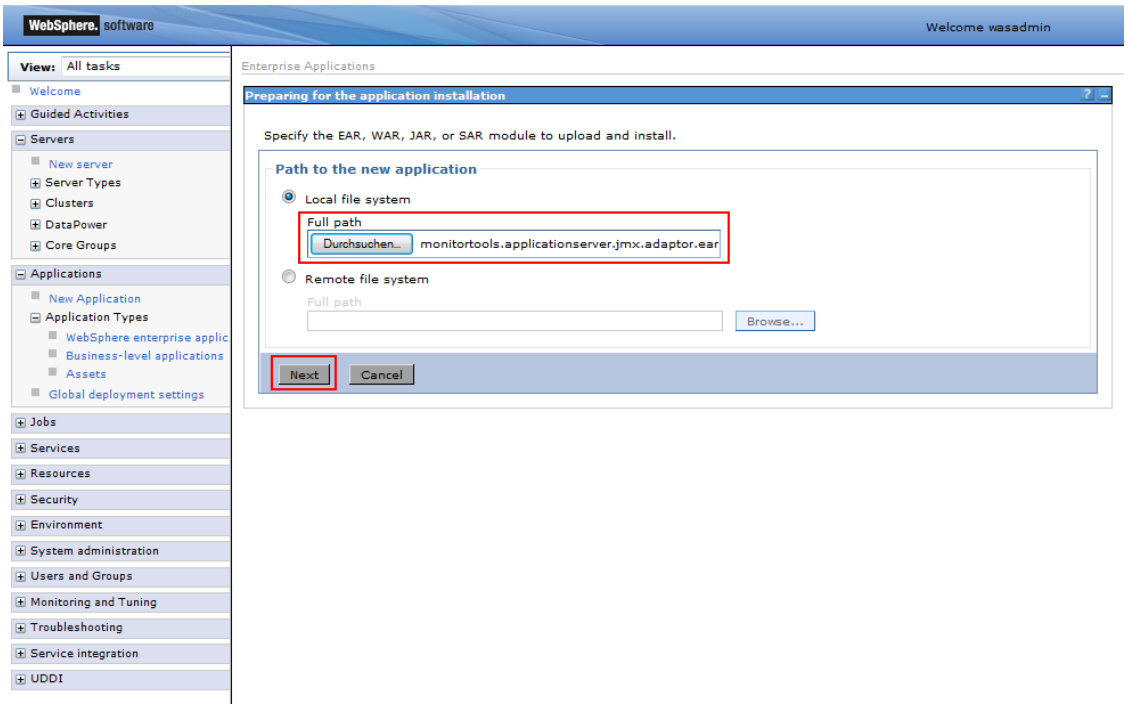
Perform the following steps to deploy the EAR file onto your IBM WebSphere Application Server.

Note: Certain changes you make in the *Integrated Solutions Console* of your IBM WebSphere Application Server require a "Save directly to the master configuration." to become effective. Perform this action by clicking the **Save** link, that is displayed in the **Messages** section on the console.



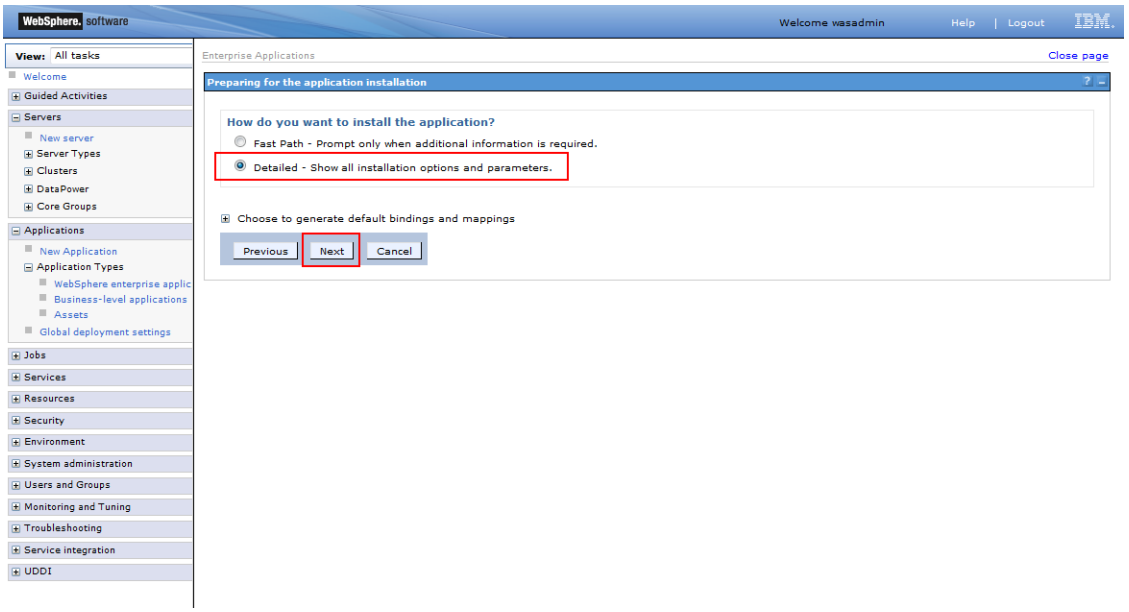
Enterprise Applications Page

Press the **Install** button to install the monitoring application.



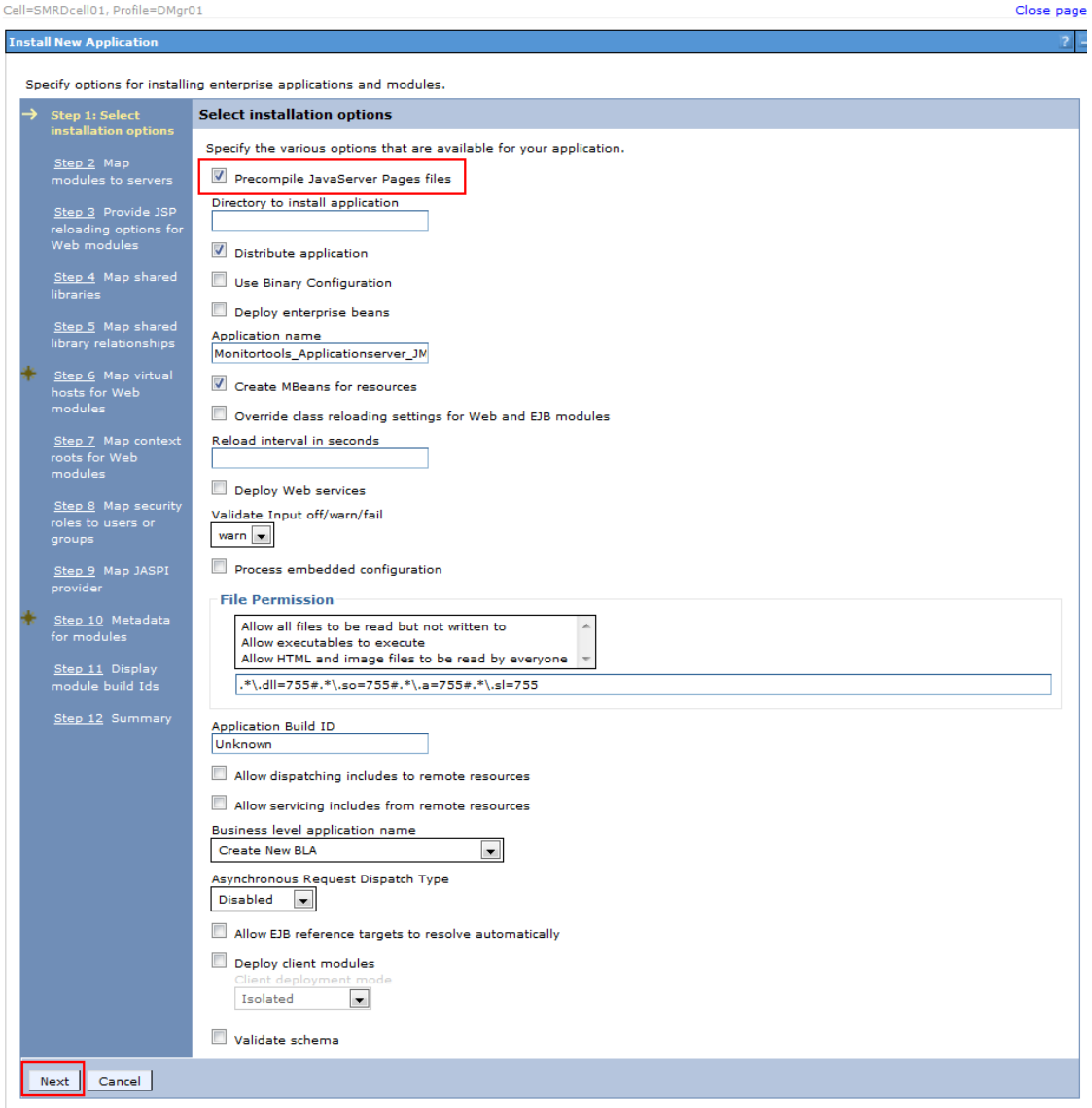
Specifying the path to the new application

Select the `monitortools.applicationserver.jmx.adaptor.ear` file and press **Next**.



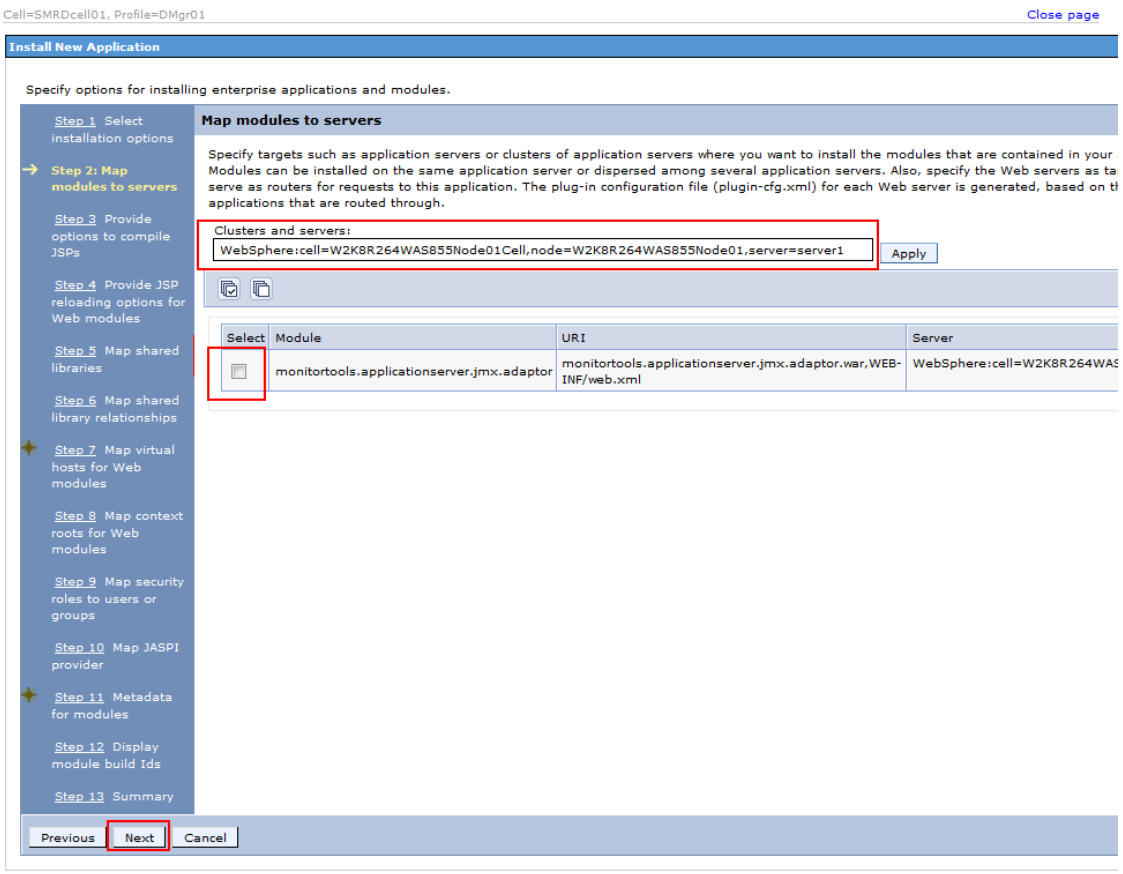
Preparing for the application installation

Choose **Detailed** and press **Next**.



Select installation options

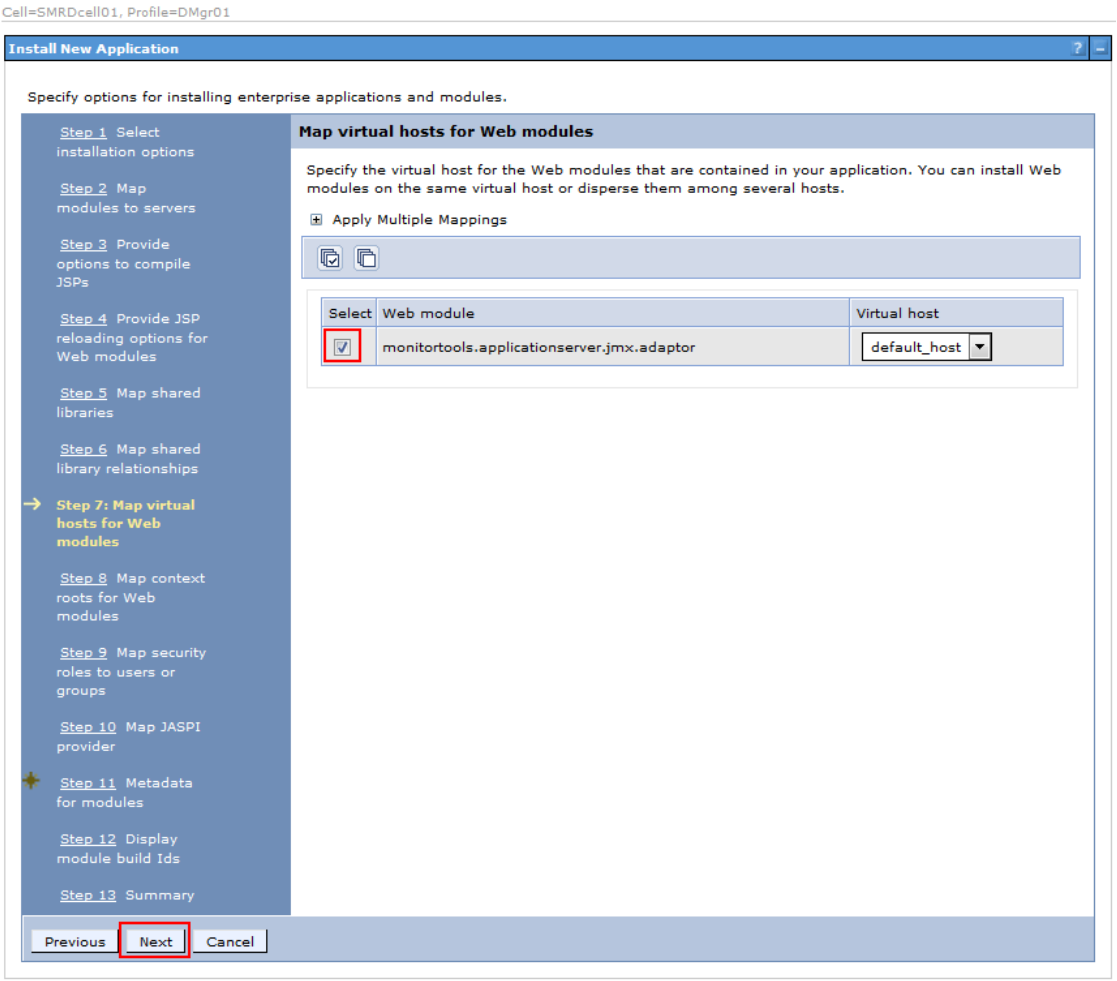
Make sure the **Precompile JavaServer Pages files** checkbox is checked.



Map module to server

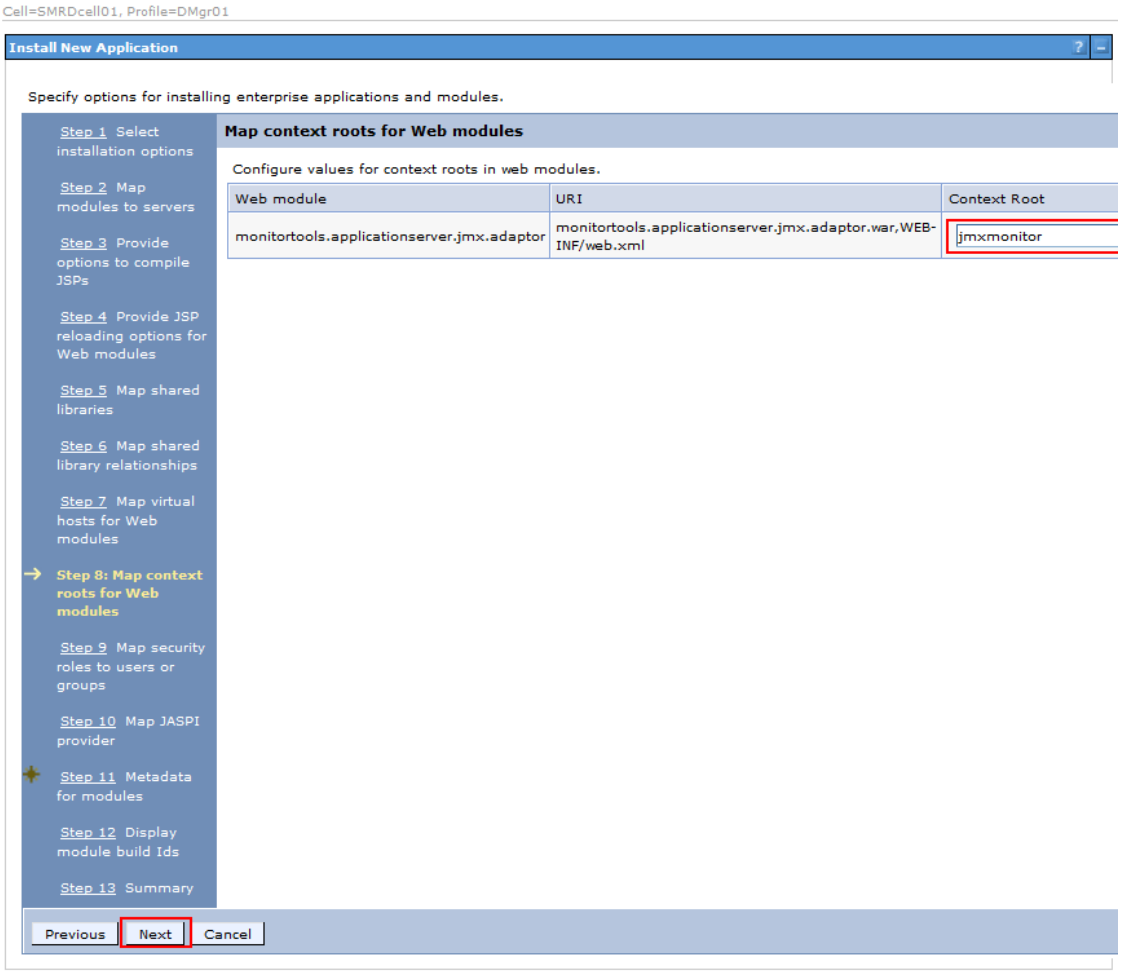
Check the monitortools.applicationserver.jmx.adaptor module checkbox in the table and select the application server on which you want to install the selected module from the **Clusters and servers:** drop-down list box. Click the **Apply** button to carry over the selected server into the table's **Server** column. Click **Next**.

The next steps can be left in their default state. Just check the *Select* checkboxes and click *Next* until you get to the *Map virtual hosts for Web modules* panel.



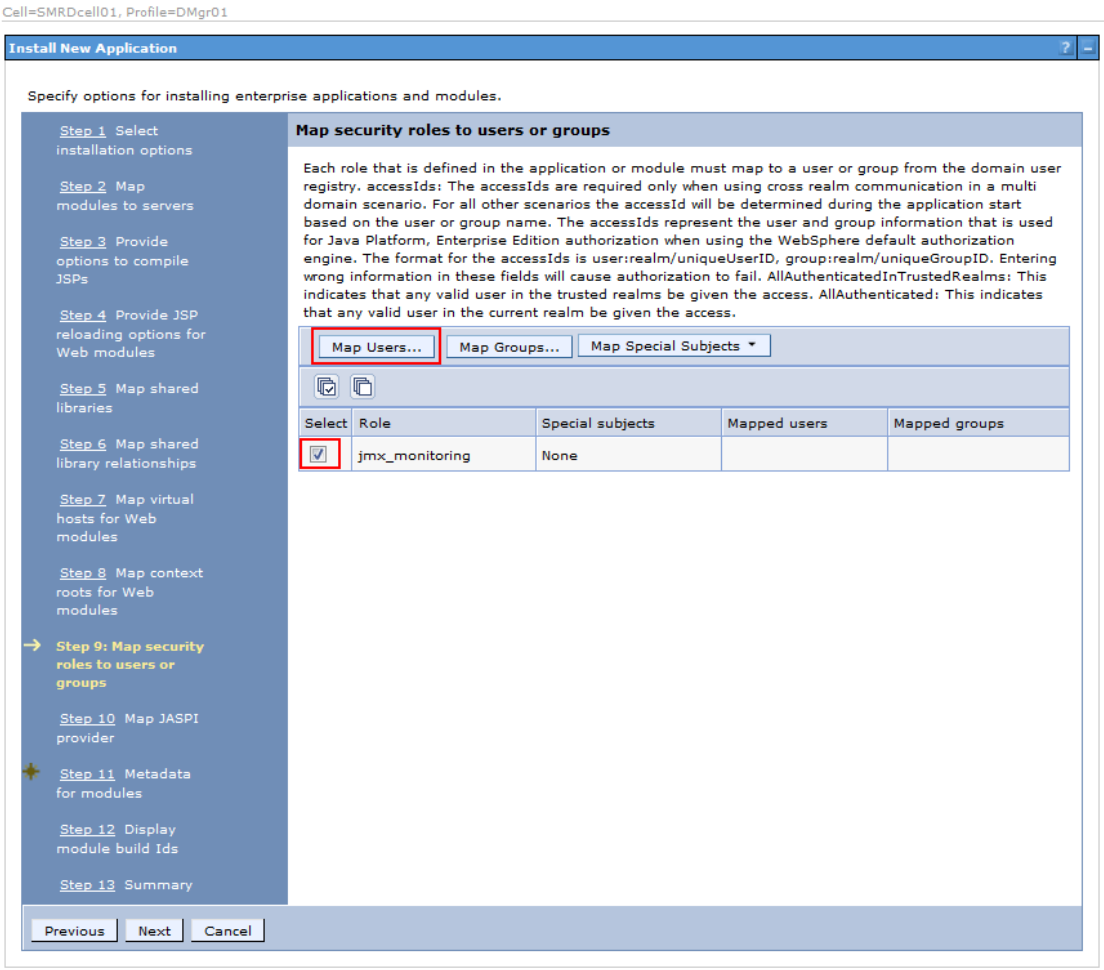
Map virtual hosts for Web modules

Select the **monitortools.applicationserver.jmx.adaptor web module**, map it to the **default_host** and press **Next**.



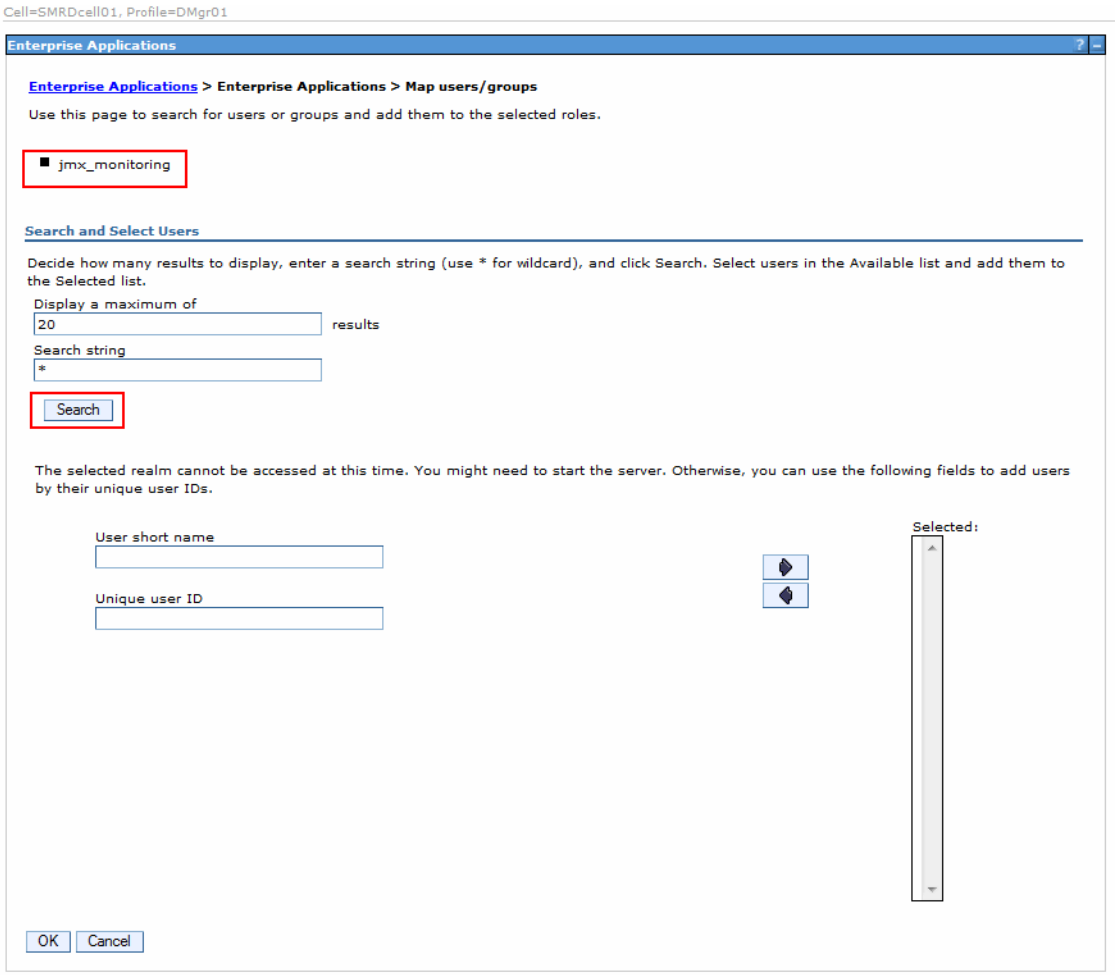
Map context root

Enter the context root. The default value is *jmxmonitor*. Press Next. In the EAR file's installation process, this step is skipped and the context root is automatically set to *jmxmonitor*.



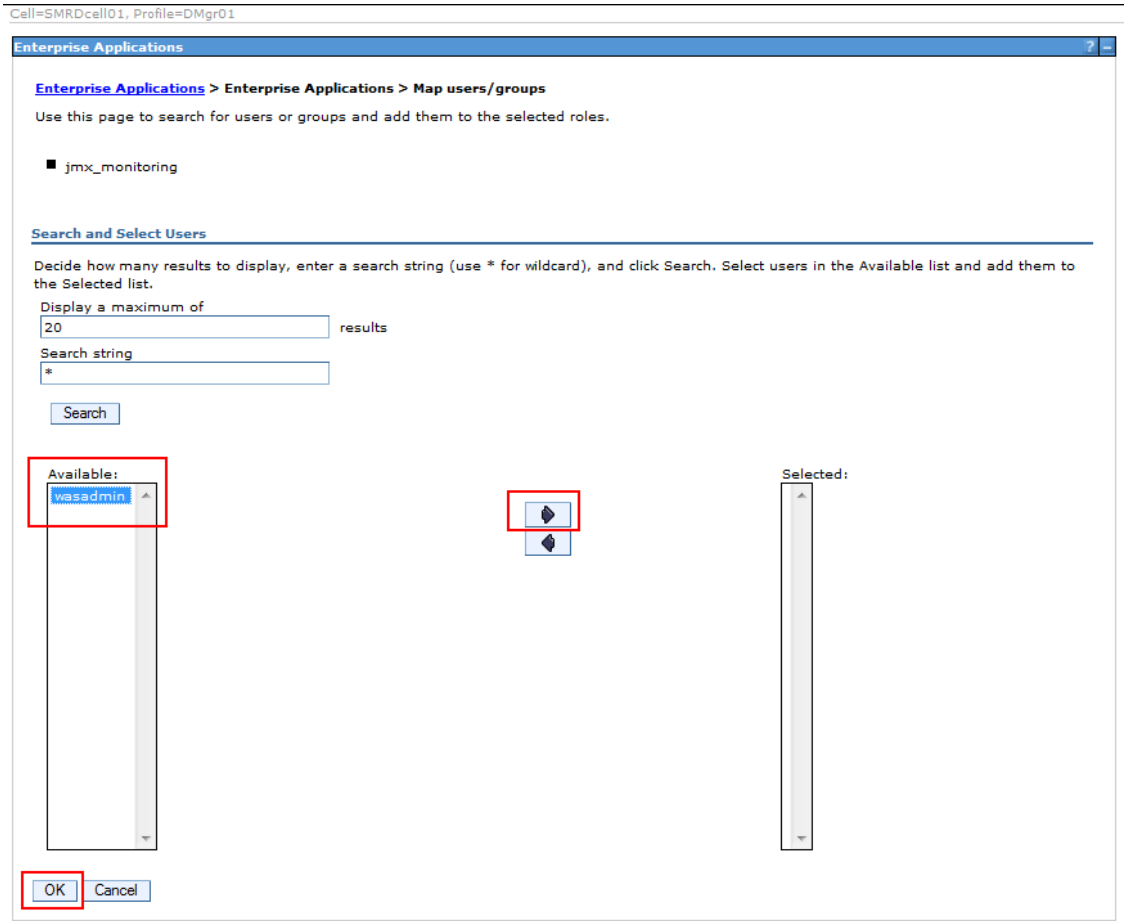
Map Users...

Select the **jmx_monitoring** role and press the **Map Users...** button.



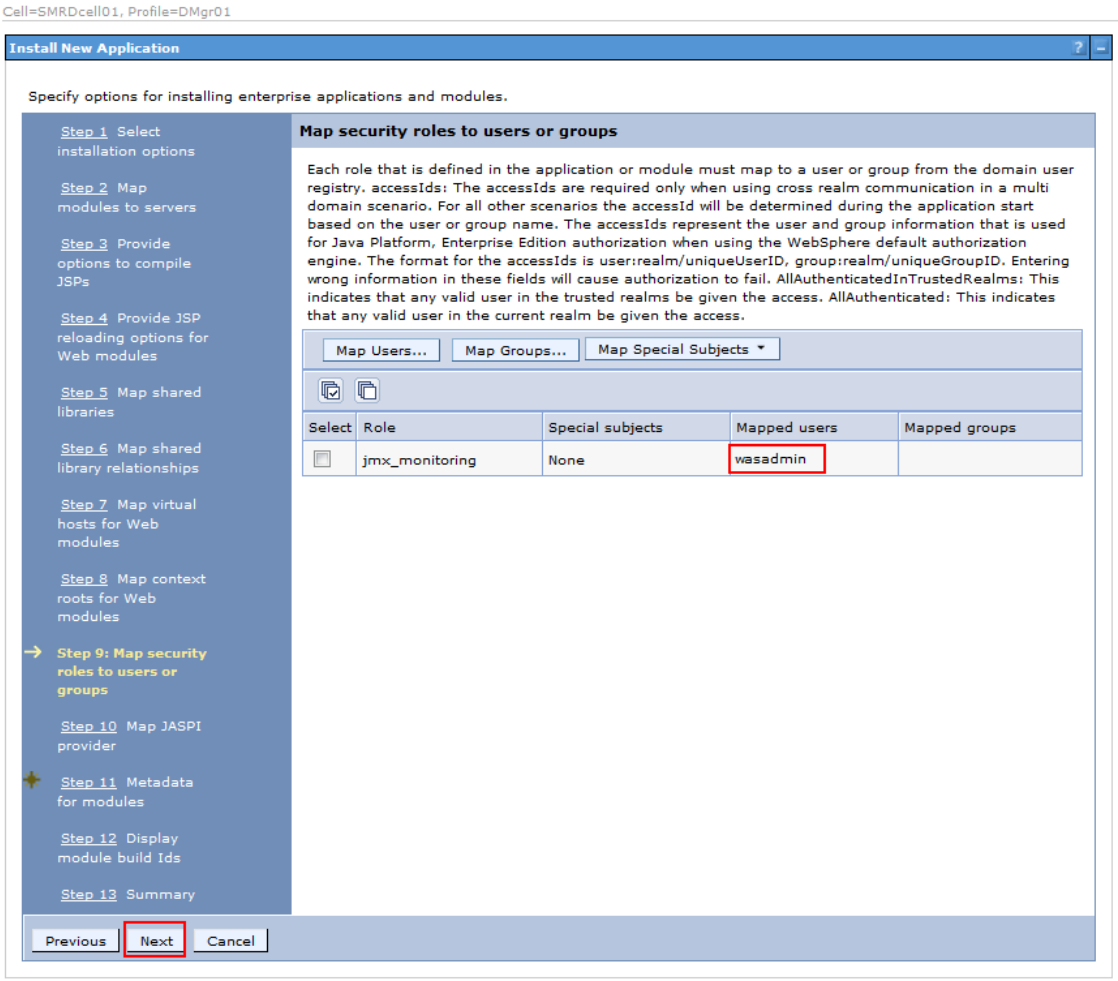
Search and Select Users

Initially, there are no users in the **Available** list. Specify an appropriate search string and click on **Search** to find users, you want to assign to the application's security realm.



Map users/groups

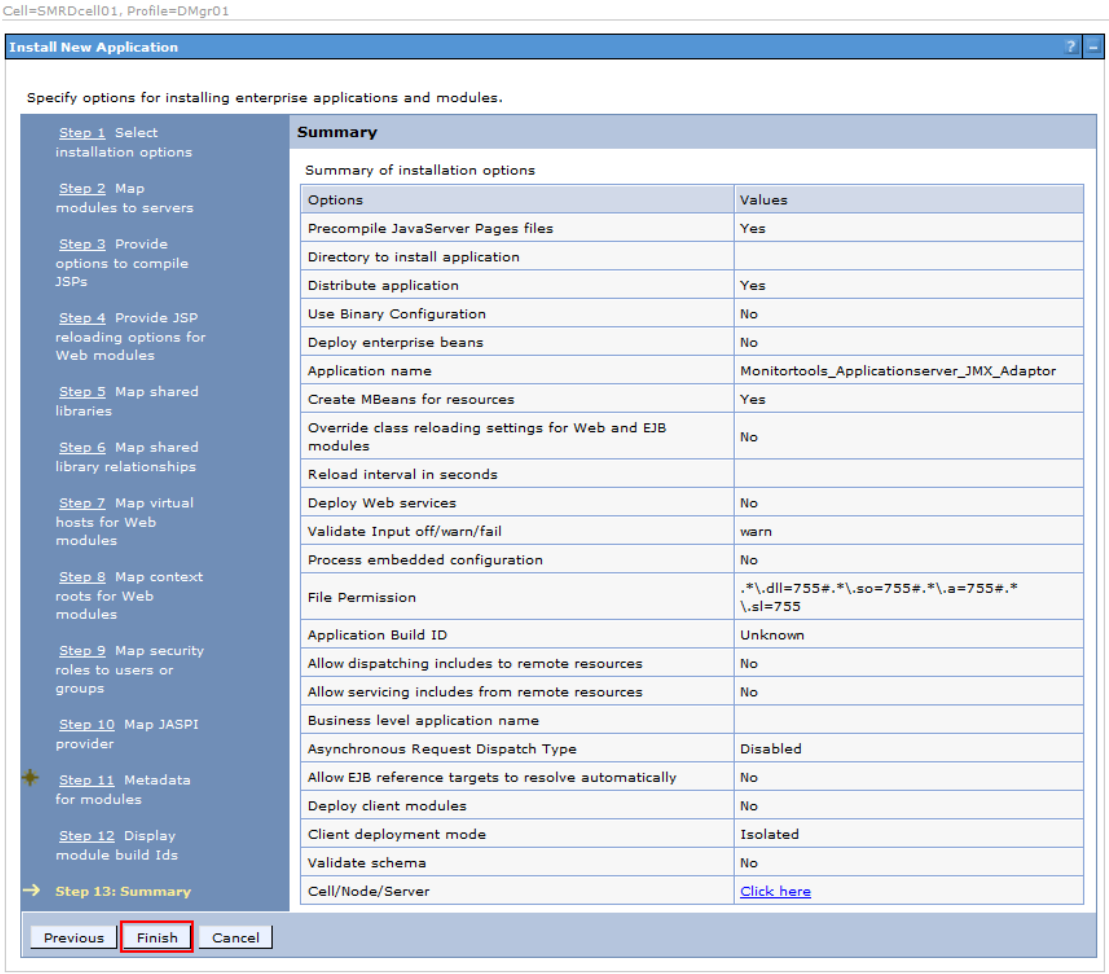
Add the desired OS users (here: *wasadmin*) to the **Selected** list. *The application requires the following minimum access roles: 'Monitor' and 'Auditor'.*



Map security role

The *wasadmin* user is now mapped to the `jmx_monitoring` role.

Leave the settings of the following steps at their default values and click the **Next** button.



Summary

Review the deployment summary page and click **Finish**.

Check the **monitortools.applicationserver.jmx.adaptor** checkbox and start the installed application by pressing **Start**.

The web service is running now and acts as an interface to WebSphere's internal MBeans. These are accessed by the JPS JMX Monitor and its components.

Special Adjustments for WebSphere Application Server (Adapting the JDK Source Level in the Integrated Solutions Console)

The **JDK Source Level** may be set to JDK 1.3 for your *WebSphere Application Server* by default. At monitor runtime, this setting leads to an output, that contains an HTML coded error message.

To avoid this error message, you must set the **JDK Source Level** to version 1.5 in the *Integrated Solutions Console*. The procedure is as follows:

- Log in to the *Integrated Solutions Console*
- Click on the link of the application server, whose JDK source level you want to adapt under **Server Types > WebSphere application servers**
- On the **Configuration** tab under **Container Settings**, click on **Web Container Settings** and then on **Web container**
- Under **Additional Properties** click on **Custom properties**
- On the **Custom properties** page, click the **New** button
- Under **General Properties** specify a name for the custom property (e.g. *jdkSourceLevel*) and enter 15 in the **Value** field to set the JDK source level to the 1.5 JDK version. Optionally, enter a description. Note, that the values of textual properties are case sensitive.
- Click **Apply** or **OK**
- Click **Save** in the **Messages** box, that appears
- Restart the server for the adapted JDK source level custom property to take effect

Special Adjustments for WebSphere Application Server (Adapting the JDK Source Level in the Configuration File)

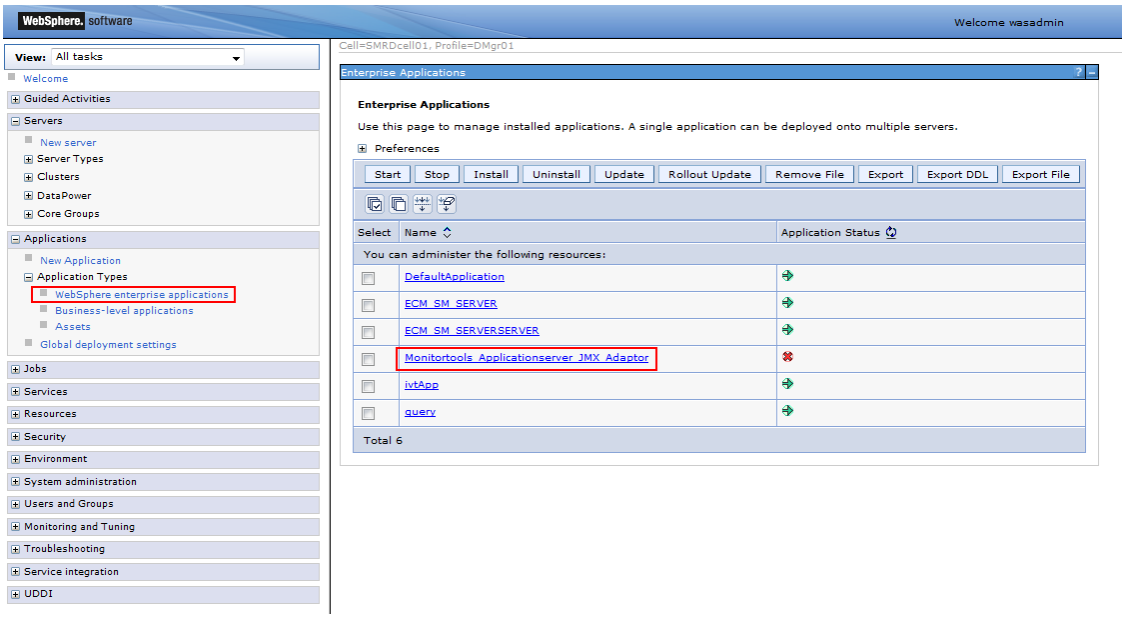
Alternatively to the adaptation on the *WebSphere Integrated Solutions Console*, the JDK source level can also be adapted in a configuration file.

In order to set the JDK source level to version 1.5, proceed as follows (if you have an environment with a DMGR, the changes must be made for the DMGR and the other nodes have to be synchronized):

- Dependent on your *WebSphere Application Server* version, open the following file in a text editor:
  `WebSphere AS 6: {WAS_ROOT}/profiles/<profilename>/config/cells/<cellname>/applications/ <enterpriseappname>/deployments/<deployedname>/<webmodulename>/WEB-INF/ibm-web-ext.xmi`
  `WebSphere AS 7, 8 and 8.5: {WAS_ROOT}/profiles/<profilename>/config/cells/<cellname>/applications/ <enterpriseappname>/deployments/<deployedname>/<webmodulename>/WEB-INF/ibm-web-ext.xml`
- The file contains several configuration parameters. Add the following XML element to the configuration
  `WebSphere AS 6: <jspAttributes xmi:id="JSPAttribute_NUMBER" name="jdkSourceLevel" value="15"/>`
  `WebSphere AS 7, 8 and 8.5: <jsp-attribute name="jdkSourceLevel" value="15"/>`
  The placeholder `NUMBER` in the *WebSphere AS 6* configuration must be a unique ID within the XML file. Check the existing IDs to learn, which ID you can allocate.
- Restart the `monitortools.applicationserver.jmx.adaptor` application.

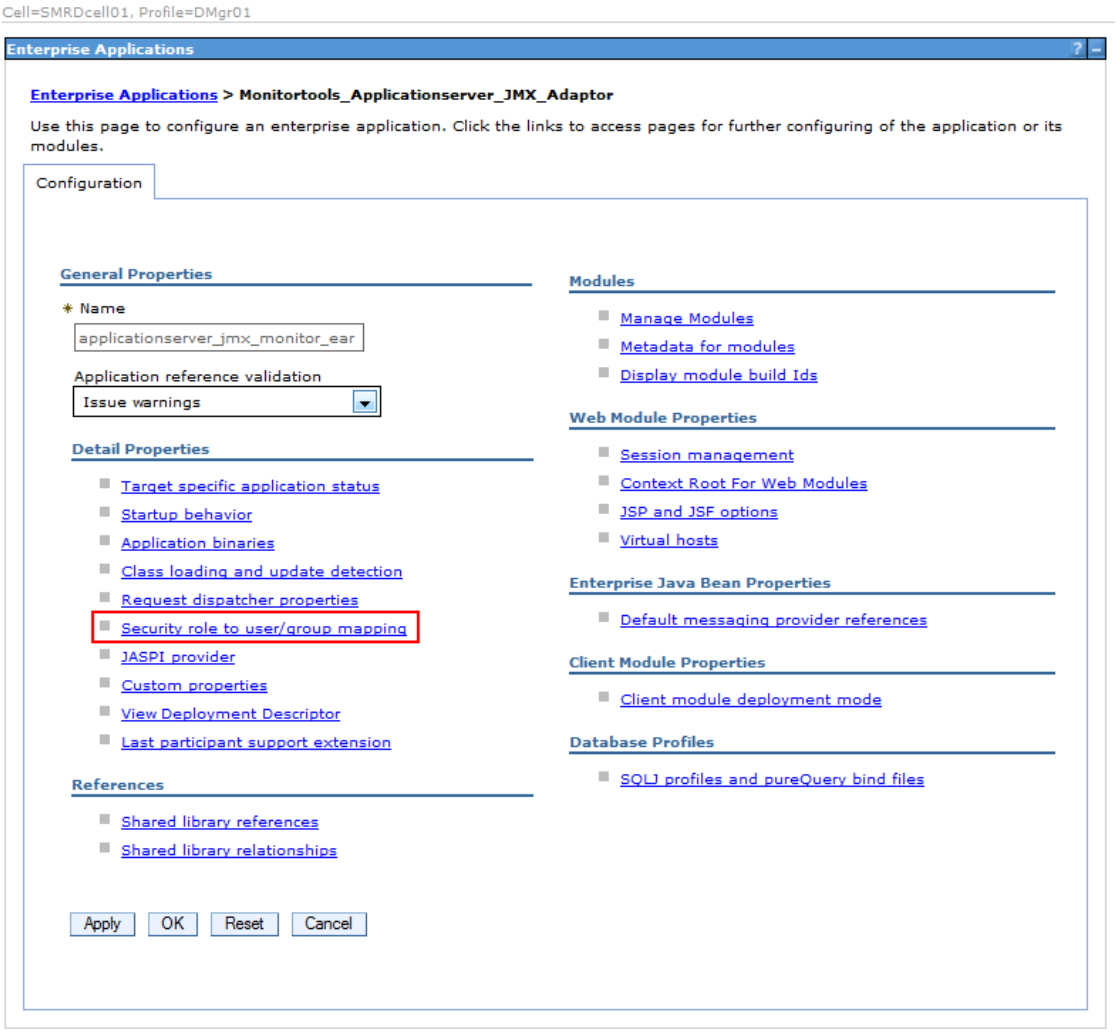
How to change the user / role mapping after the deployment

If you want to adjust your user-role mapping afterwards (in case of some permissions changed), perform the following steps:



Application settings

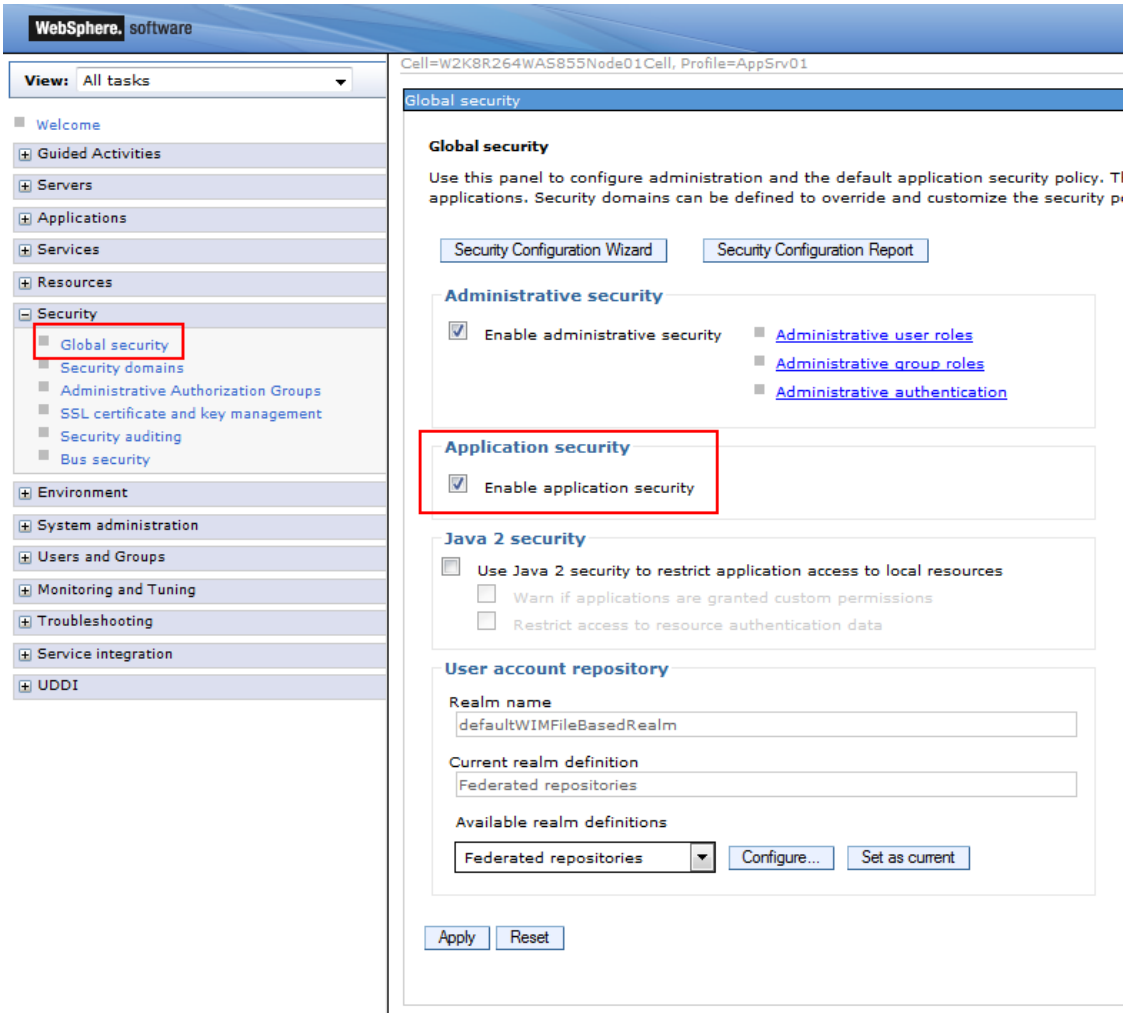
Click on the name of the application.



Application settings

Click on **Security role to user/group mapping**. The **Security role to user/group mapping** page will be displayed. For a more detailed description of the following steps, look up the *How to deploy the monitortools.applicationserver.jmx.adaptor application as WebSphere Enterprise Application* chapter.

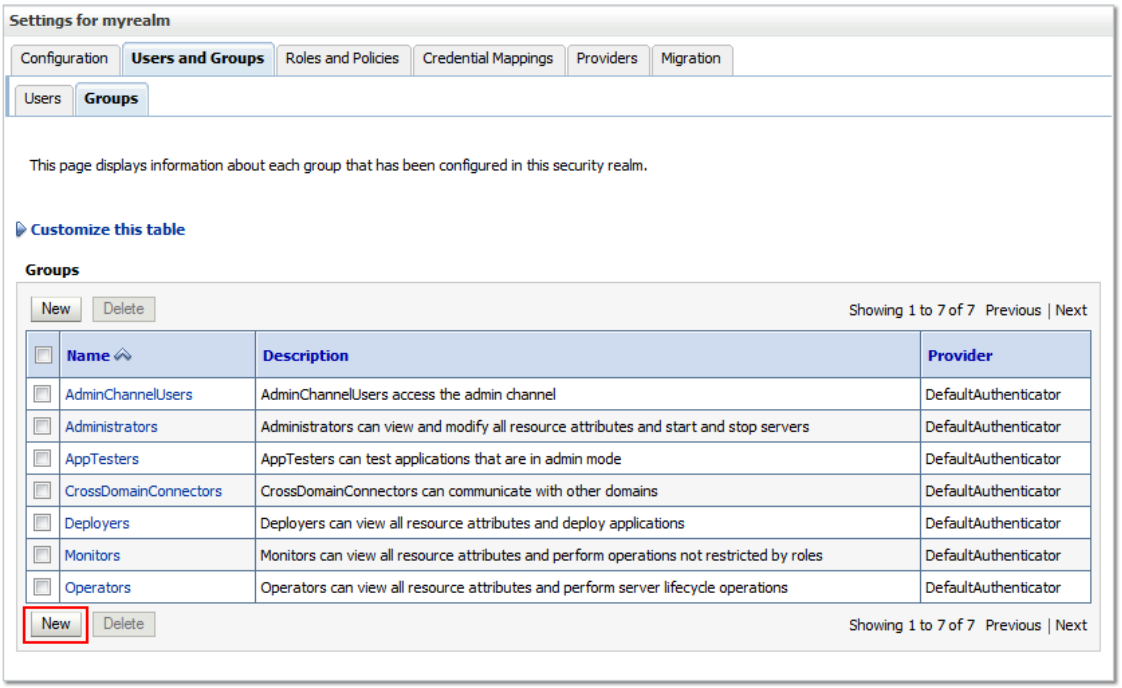
NOTE To retrieve the maximum of MBeans and their attributes, WebSphere application security has to be enabled. Since some MBeans provide system internal information, some of the MBeans need the user's authentication, before the information is provided. With security disabled, no authentication challenge is performed and so the MBean requests return with an exception, due to a missing authentication.



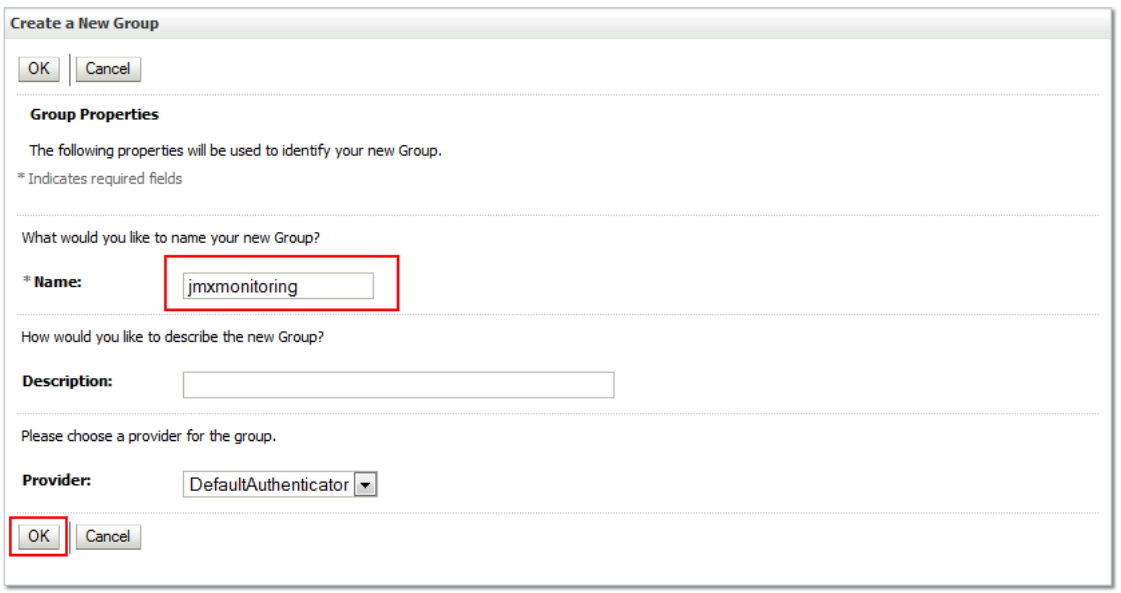
Enable application Security

How to deploy the monitortools.applicationserver.jmx.adaptor Web Application under Oracle WebLogic

First, it is necessary to set up the security settings. The application uses the *jmxmonitoring* group to define permissions.

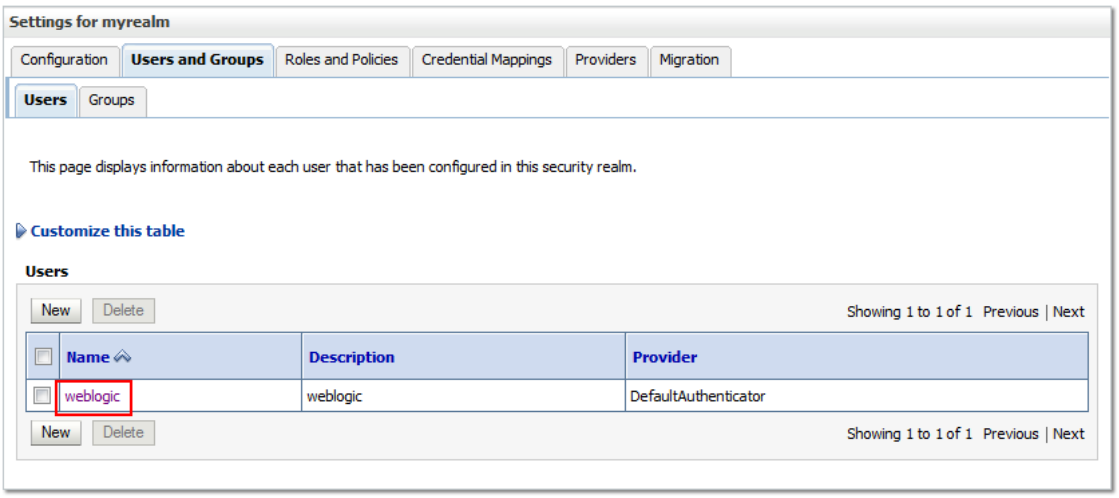


Add a new group

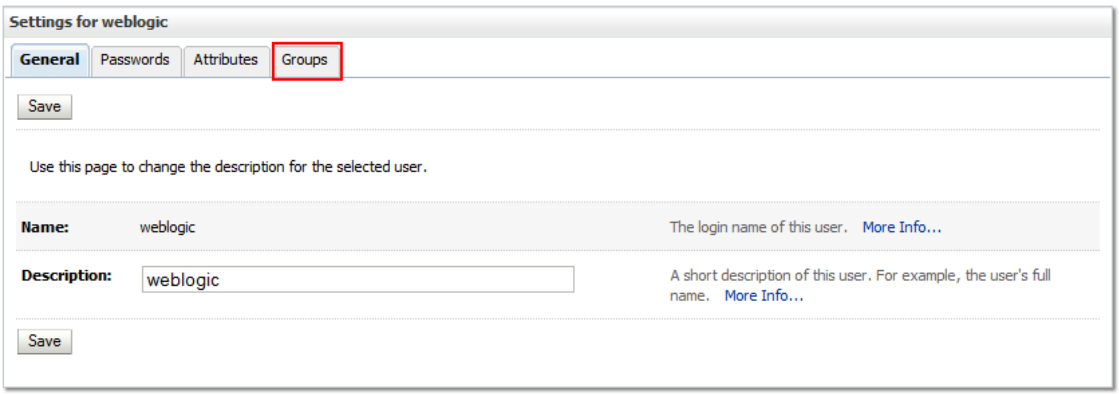


Create jmxmonitoring group

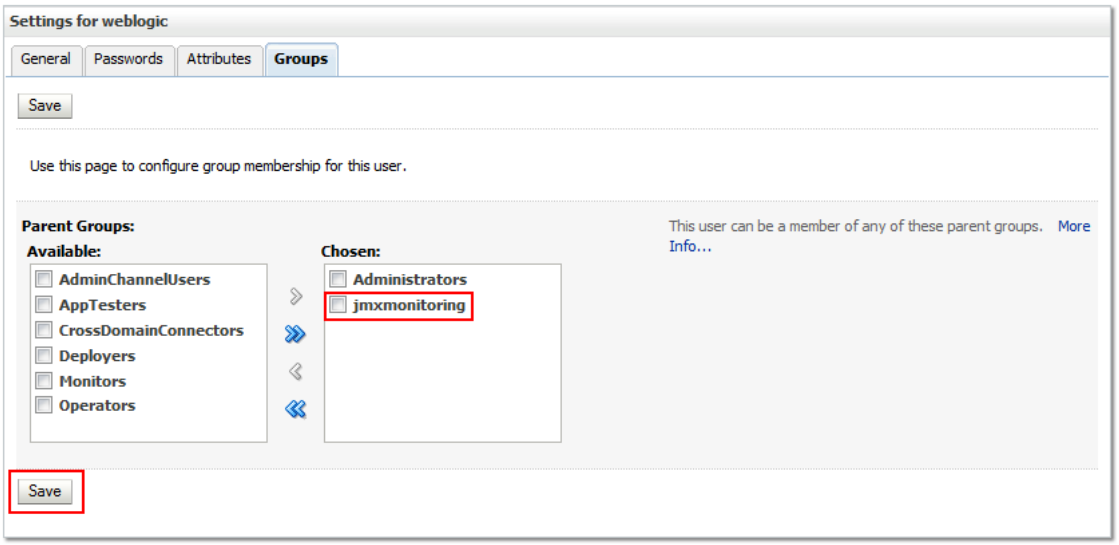
It is recommended to specify a different user (here: the **weblogic** user).



Assign User to Group



Select Groups Tab

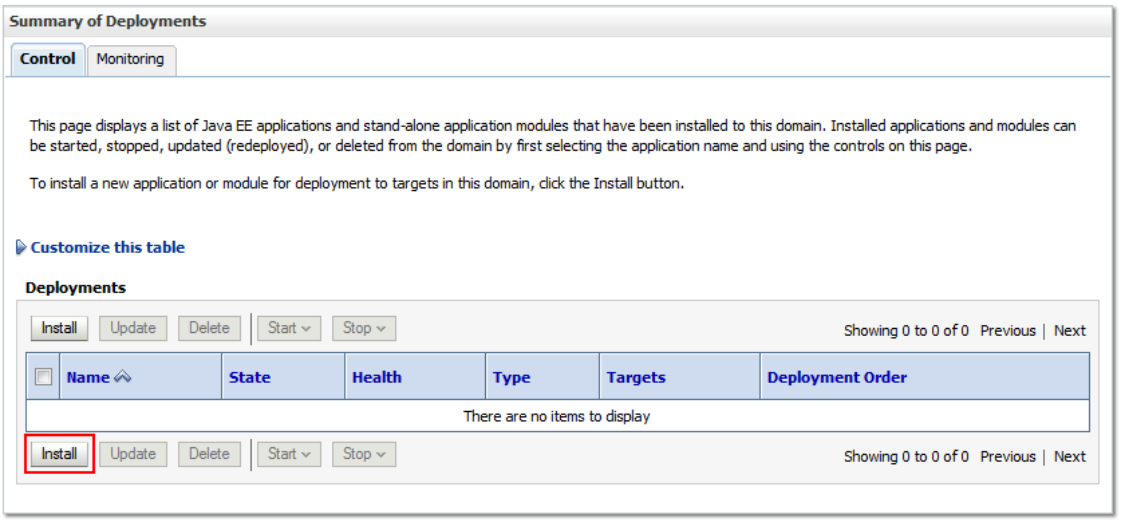


Add jmxmonitoring Group to User

- Create a directory on the WebLogic application server (e.g. `c:\jmxdeployment`).
- Within this directory create a subdirectory "app". (e.g. `c:\jmxdeployment\app`).
- Copy the JMX WebApplication from `$CENIT_ROOT\repos\install\webapps\monitortools.applicationserver.jmx.adaptor.war` to the recently created app directory. (e.g. `c:\jmxdeployment\app\monitortools.applicationserver.jmx.adaptor.war`).
- Copy the plan directory from `$CENIT_ROOT\repos\install\webapps\plan` to the recently created `jmxdeployment` directory (e.g. `c:\jmxdeployment\plan`).
- Retrieve the values for the `agentId` and `keyFileContent` from the agent which is used to monitor the application server, as follows and replace the placeholders with the values in the plan.xml file (e.g. `c:\jmxdeployment\plan\plan.xml`).

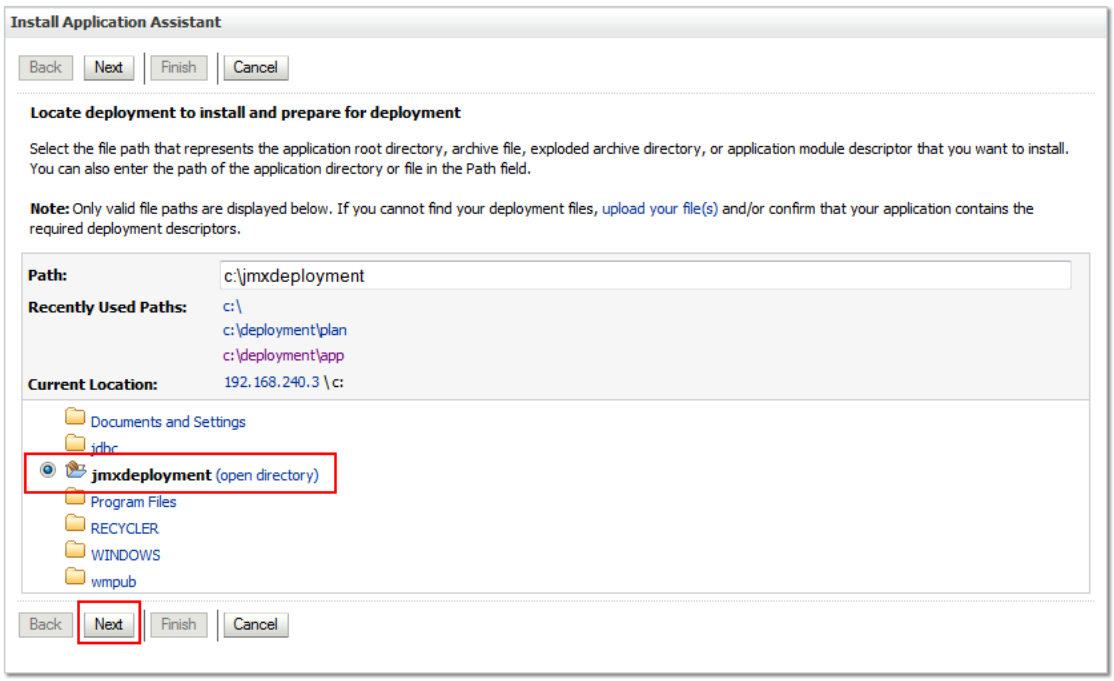
  - agentId
    The value for the agentId can be found on your ECM SM agent in the file `$CENIT_ROOT/set_cenit_env.sh`. The variable is named `S_AGENT_ID`. The value might look like `hostname_agent`. Replace the placeholder `enterAgentIdHere` from the `plan.xml` file with the agent id (e.g. `hostname_agent`).
  - keyFileContent
    Copy the content of the keyfile of the ECM SM agent, which monitors your application server via JMX. The keyfile can be found at `$CENIT_ROOT/.keys/keyfile`. Copy the whole string (including the prefix `:AES12B:BASE64:`) and replace the placeholder `enterKeyFileContentHere` from the `plan.xml` file with the key file content (e.g. :AES12B:BASE64:5om3/Crypt3d/P455w0rd=).
  - Path to plan.xml
    Replace the text `enterDirectoryPathToPlanXmlHere` with the path to the `plan.xml` file on your application server. Specify the directory only, without file name (e.g. `c:\jmxdeployment\plan`).

Deploy the `monitortools.applicationserver.jmx.adaptor` application.



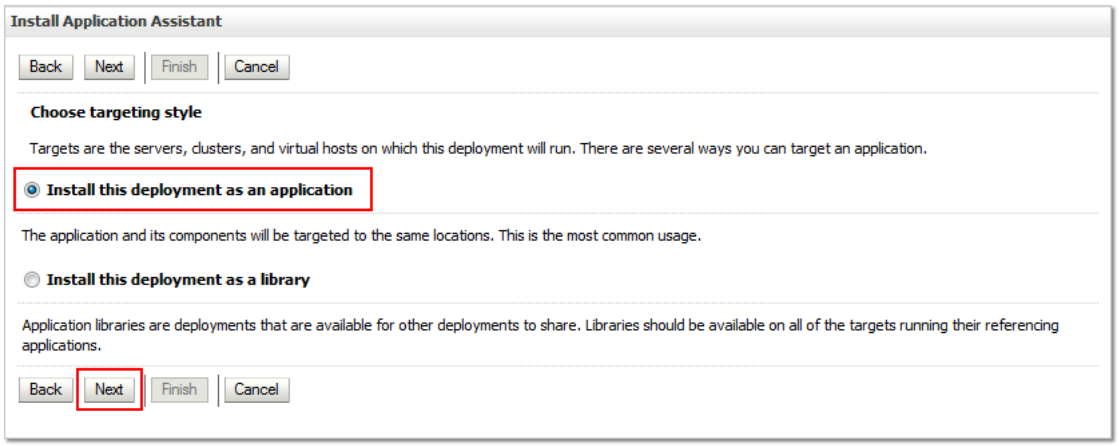
Install the Monitoring Application

Click the *Install* button.



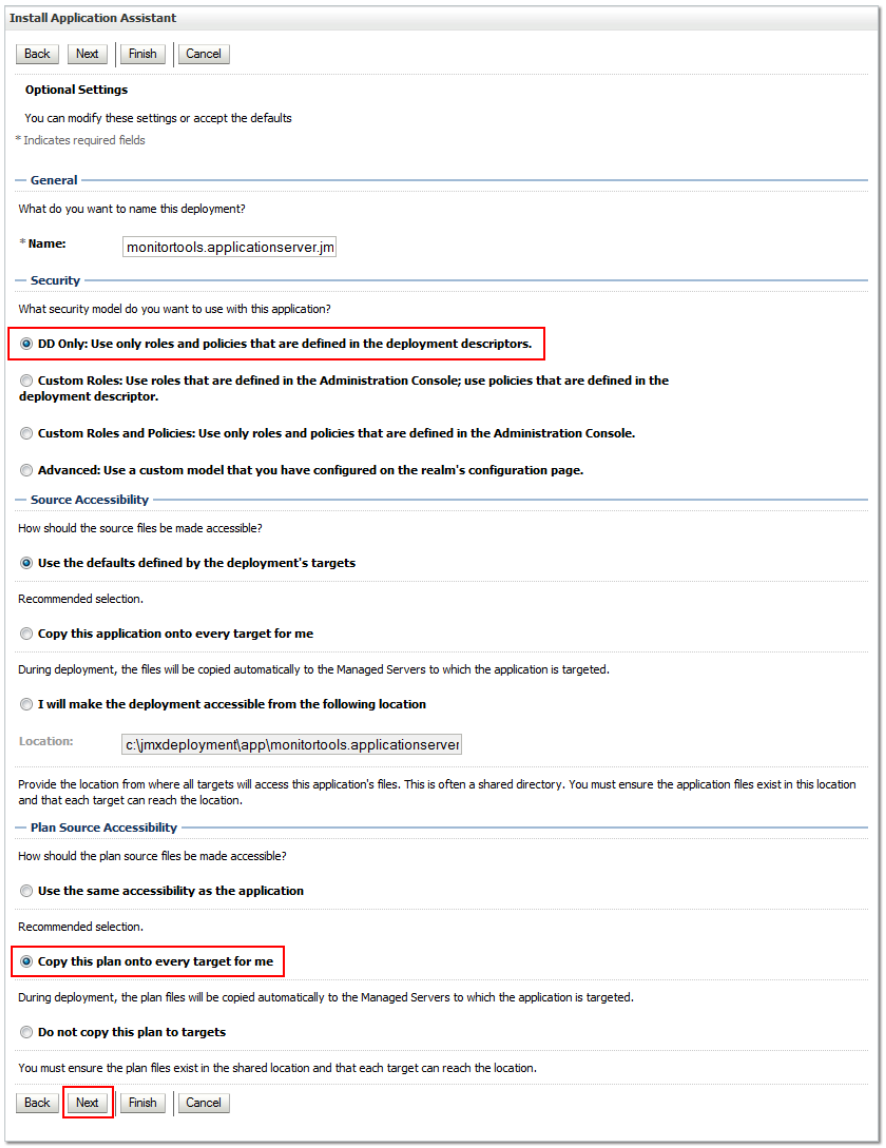
Select the deployment directory

Select the folder, in which you previously copied the `monitortools.applicationserver.jmx.adaptor.war` file and the `plan.xml` file and click *Next*.



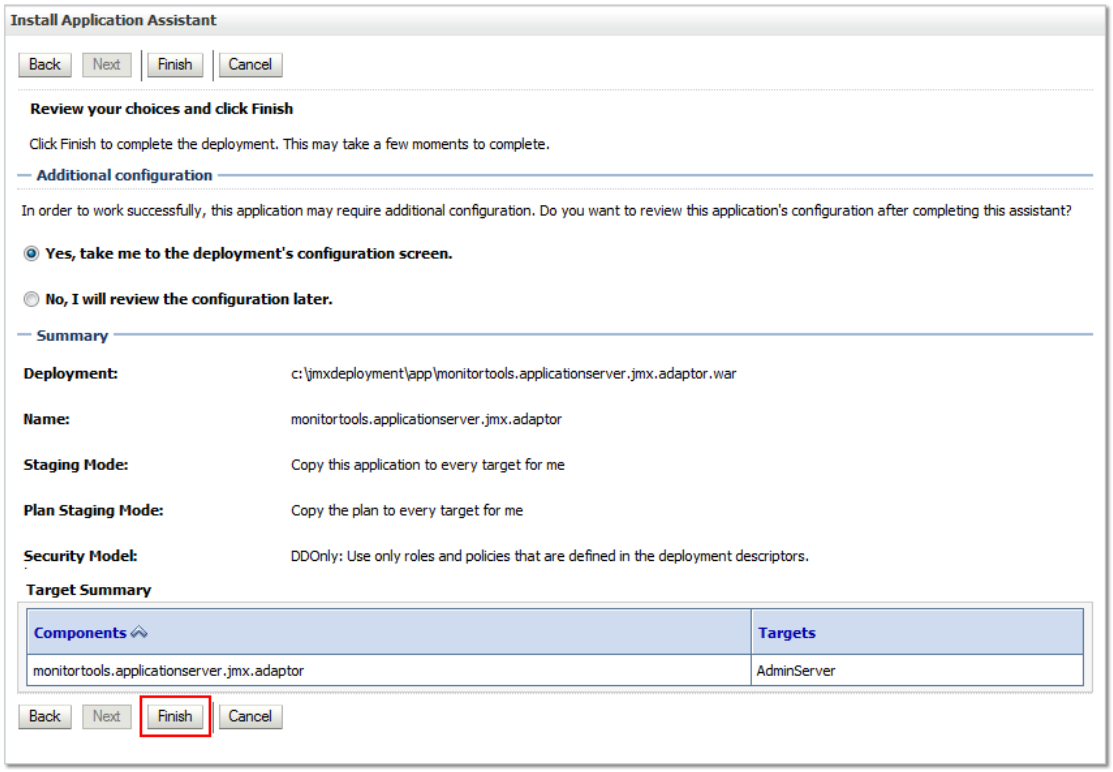
Select Install this Deployment as Application

Select "Install this deployment as an application" and click *Next*.



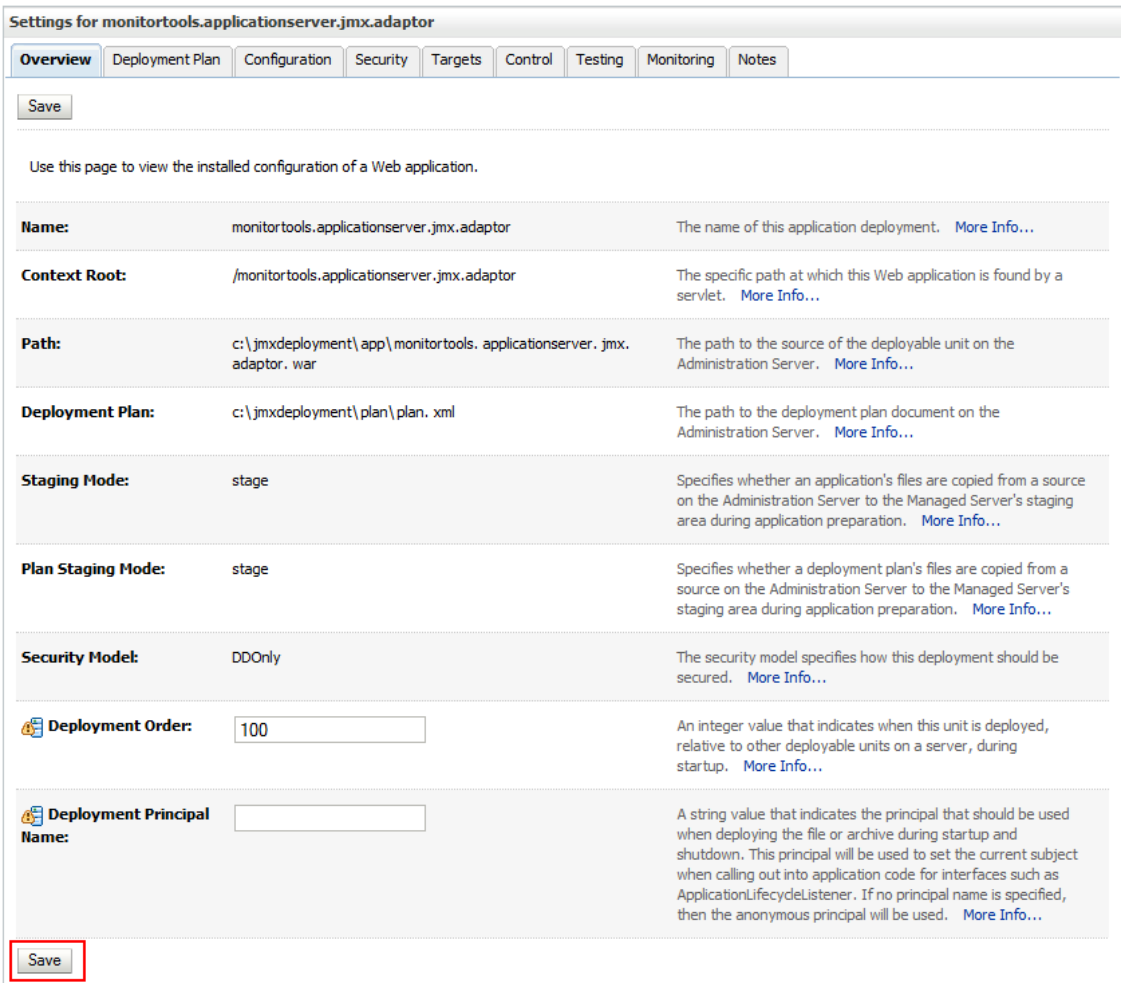
It is recommended to use DD Only Mode

Select the options as on the screenshot and click *Next*.



Finish Deployment

Click *Finish*.



Save the Configuration

How to deploy the monitortools.applicationserver.jmx.adaptor Web Application under Red Hat JBoss

Deploying the application on Red Hat JBoss application server depends on the configuration. With standard settings it is possible to deploy the application simply by putting the file into the **{jboss install dir}/server/default/deploy** folder of the JBoss application server installation. The application will automatically be deployed on the next restart. If your system has another configuration please contact your administrator.

The security settings are defined in the **{jboss install dir}/server/default/conf/login-config.xml** file. Add the following content to the <application-policy> element.

```
<application-policy name="monitortools.applicationserver.jmx.adaptor">
 <authentication>      <login-module
 code="org.jboss.security.auth.spi.UsersRolesLoginModule" flag="required" >
    <module-option name="usersProperties">props/users.properties</module-option>
         <module-option name="rolesProperties">props/roles.properties</module-option>
      </login-module>    </authentication>  </application-policy>
icy name="monitortools.applicationserver.jmx.adaptor">
```

```
   <authentication>
<login-module code="org.jboss.security.auth.spi.UsersRolesLoginModule"
 flag="required" >                <module-option

name="usersProperties">props/users.properties</module-option>                <module-option

name="rolesProperties">props/roles.properties</module-option>
 </login-module>
  </authentication>
```

This configuration defines two files for users and roles: **users.properties** and **roles.properties**. The files can be given different names.

The **users.properties** file contains the users and passwords for the monitoring application.

Sample **{jboss install dir}/server/default/conf/props/users.properties**:

```
admin=admin
```

All users must be mapped to the jmx_monitoring role. This is done in the **{jboss install dir}/server/default/conf/props/roles.properties** file:

```
admin=jmx_monitoring
```

The default URL for connectiontest.jsp to test the connection is:

http://localhost:8080/monitortools.applicationserver.jmx.adaptor/connectiontest.jsp

Preparing IBM FileNet Listener functionality

To enable IBM FileNet Listener functionality for Listener tasks and monitors it is necessary to activate Listener functionality within IBM FileNet and IBM Content Manager before ECM SM specific Listener configuration.

Configuring/enabling the Listener of IBM FileNet and IBM Content Manager applications

Some IBM FileNet products and IBM Content Manager (supported since Version CM 8.4.2) require different configuration steps to activate the IBM product Listener. Check the related product installation guide for details. Note: This step normally requires administrative rights to the application.

Configuring/enabling the Listener during ECM SM client configuration

After activation of the Listener functionality for IBM FileNet and IBM Content Manager products the ECM SM Listener configuration need to be done for each system. For IBM FileNet P8 4.x systems the Listener configuration is part of the core configuration itself. For all other IBM FileNet products that support the Listener interface and for IBM Content Manager the ECM SM Listener configuration need to be done as additional configuration step. See chapter 'Configuring a FileNet Listener' for further information.

Preparing WMI functionality

The monitor can only be run on Windows systems with a 32bit JRE. The 64bit version is currently not supported by com4j.

Preparing VMware ESX/ESXi functionality

ECM SM supports monitoring for VMware ESX/ESXi server. That will monitor the virtual machine that run on this server. To activate this monitoring it is necessary to download free 3rd Party Java JAR files from http://www.vmware.com.

The new monitor can be found in the STANDARD monitoring collection.

Downloading required 3rd party Library

Perform the following steps to download **vim25.jar**, which is required to establish connection to the VMware ESX/ESXi server.

Download the binary file of VMware vSphere Management SDK from vmware.com

ECM SM supports the vSphere Web Service API in version 4.1 and 5.x.

To download the SDK open the URL https://developercenter.vmware.com/web/sdk/51/vsphere-management and download the binary zip file **VMware-vSphere-SDK-5.1.0-774886.zip** (vSphere 5.1 Management SDK) or newer.

NOTE The URL might change over time. So if it is not available the vSphere 5.1 Management SDK has to be searched on the Internet manually.

NOTE vSphere 4.1 Web Management SDK is not available anymore on the official VMware WebSite. Refer to your ESX/ESXi administrator to receive the SDK.

Extract the zip file

Extract the downloaded file **VMware-vSphere-SDK-5.1.0-774886.zip**.

Copy the file vim25.jar to the ECM SM Server

Copy the file **vim25.jar** from folder **VMware-vSphere-SDK-5.1.0-774886.zip/SDK/vsphere-ws/java/JAXWS/lib** to the directory

- **<ECM SM-installation-Dir>/repos/install/tools/com.vmware4**, or
- **<ECM SM-installation-Dir>/repos/install/tools/com.vmware5**

(related on which API you use) on the ECM SM primary Server. This directory does not exist and must be created, when it was not yet set in the ECM SM Fix Pack 1 installer.

Adjust the access rights as well as the user/group membership

Adjust the access rights as well as the user/group membership of the new directory and the copied file. Make sure that they are identical to the directory `org.apache` and the files located in that directory.

Keystore certificate import for use with Java based monitors

This chapter describes how to import a certificate into a keystore on a monitored system for use with secure Java based monitors like the Web Status monitor that checks https Web pages. The following description can differ on your system, because you might use a different Web browser or browser version.

Exporting the certificate of the Web page / application on the local desktop

At this point the certificate of the Web Page / application that need to be monitored has to be imported into your browser already. If this is not yet done open the Application in your browser and import the relevant certificate first.

If you use Microsoft Internet explorer open the 'Tools' menu and select 'Internet Options'. Within options select the 'Content' tab and press the 'Certificates' button. Select the certificate you'd want to export, select Encoded binary X.509 format, specify a filename and export the file.

If you use Firefox open the 'Options' menu, select the 'Advanced' tab, then the 'Encryption' sub tab. Press the 'View certificates' button and select the certificate to export from the various types of certificates. Press the export button, select X.509 certificate file type, specify a file and save the certificate.

Import of previously exported certificate into a keystore

The previously exported X.509 certificate need to be imported into a keystore on the server where the monitor will run. Due to security reasons you may want to create a custom keystore and import the certificate into this keystore and not into the default keystore. Talk to the local administrator before importing the certificate.

Logon to the remote server and copy the exported certificate file in binary mode to the remote server.

Change to the directory where the Java to be used by the monitor is located.

Import the certificate with the Java keytool program by for executing

```
./keytool -import -v -trustcacerts -alias myCertAliasName -file myCert-
FileName
```

Enter the password twice and answer 'Yes' to trust the certificate. The keystore now contains the Web page / application certificate and can be used by monitors.

Starting the ECM SM agent installer

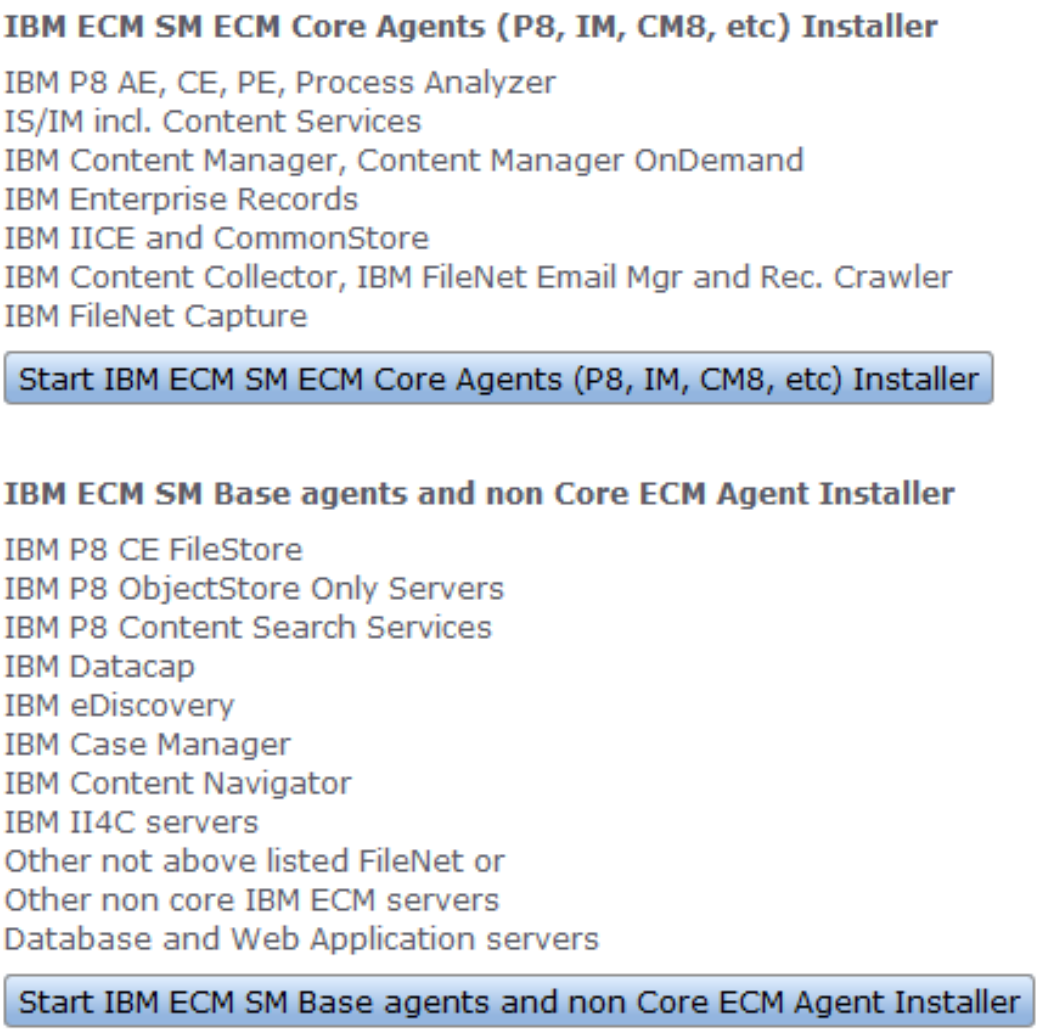
Agents may be installed locally (from the agent machines console) or remote via CALA, the CALA Remote Execution protocol that is installed with the ECM SM server.

The graphical installer depends on a Java runtime environment (Java 7 or newer) installed on the desktop where the installer is started. Supported JREs for various platforms are available on the **Client Administration** console (menu **Window** ***Consoles***) on the ECM SM web interface.

The ECM SM agent installer is started via the ECM SM web interface. Start your browser and enter `http://ServerName:23990/rap?startup=fsm` in its address line (replace *`ServerName`* with the IP address or hostname of your ECM SM server). Additionally you may need to adjust the port.

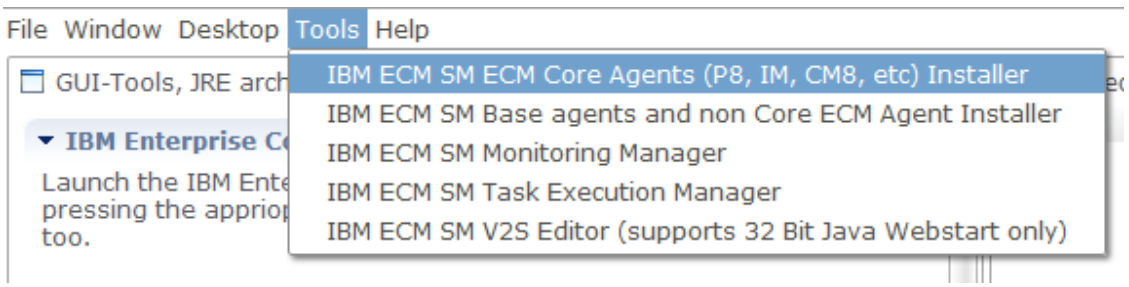
NOTE In the case of a WAS-based installation the URL need to be adjusted, too.

When the ECM SM main page is displayed, change to the **Client Administration** console and select one of the installers in the left frame:



Launch installer - Client Administration console

The installers can be started from the **Tools** menu as well, without changing to the **Client Administration** console:



Launch installer - Tools menu

There are two different installer tools available:

- **IBM ECM SM IBM ECM Core Agents (P8, IM, CM8, etc) Installer:** This is the installer for machines running any IBM FileNet and IBM CM8 software to be monitored. On these machines, the CALA agent components will be installed. The following chapters describe the installation procedure for this kind of servers.
- **IBM ECM SM Base agents and non Core ECM Agent Installer**: This is the installer for additional machines to be monitored that do not run any IBM FileNet or IBM CM8 core software (e.g. machines running WebServices or the ECM SM server itself). On these machines, the CALA agent components will be installed as well.

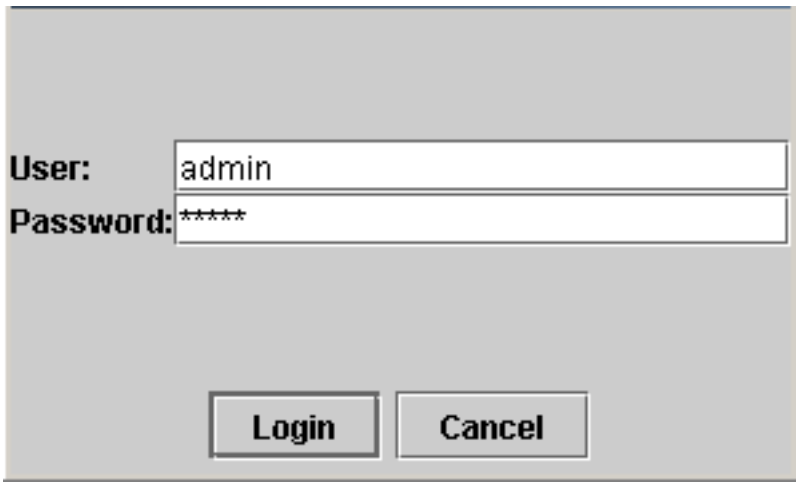
> **NOTE** An agent of this type must be installed on the ECM SM server as well to allow monitoring of the server itself.

Press the appropriate button or select the menu entry to start the Java WebStart based installer tool.

The ECM SM installation - main screen

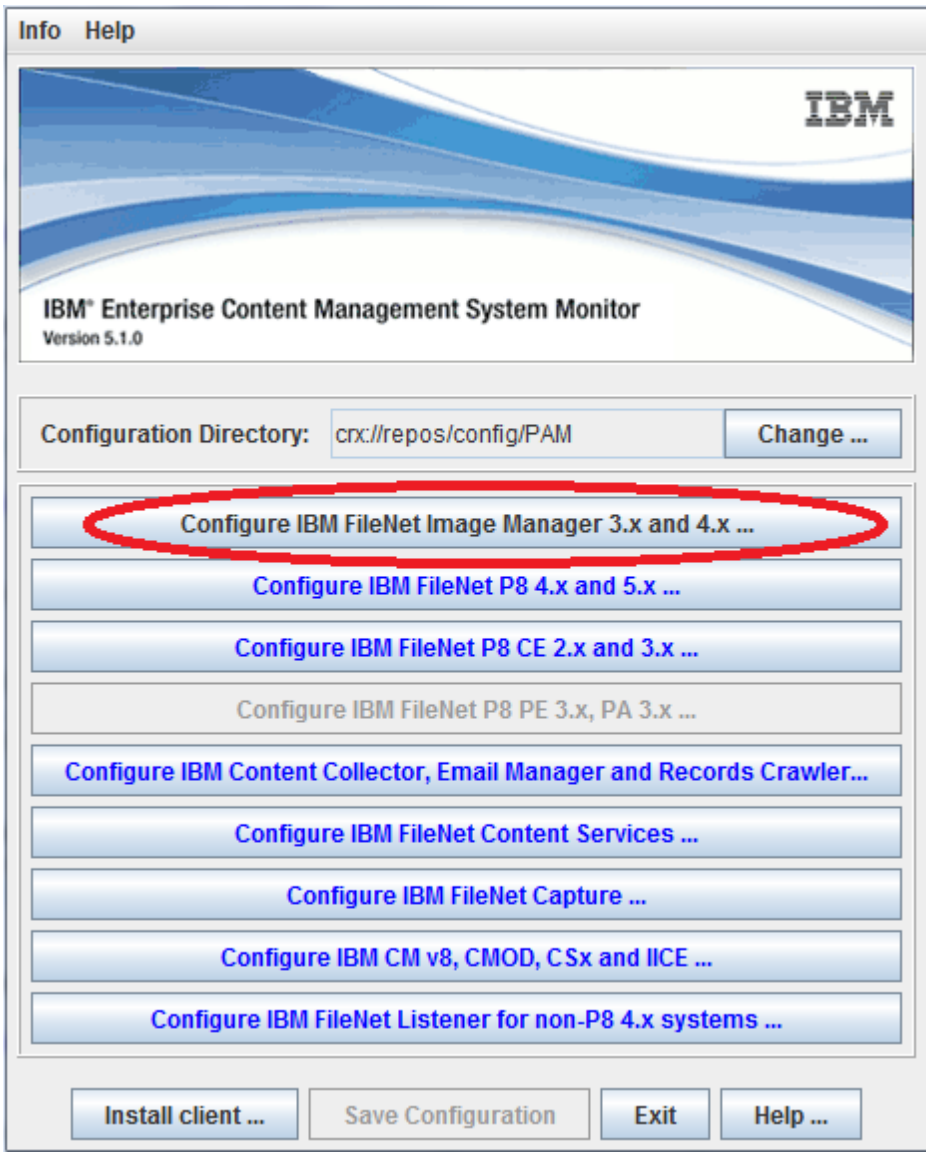
NOTE In case of an HTTPS connection with a self-signed certificate, you will get two warnings about an untrusted connection/certificate. Your browser and Java will warn you separately.
Either you should use an official certificate issued by a trusted certification authority or you must confirm that you know what your are doing and you are trusting the self-signed certificate. For Java you can make this decision permanent by selecting the checkbox *Always trust content from this publisher*. For the browser warning, it depends on the browser how you can handle this situation in the future; ask your administrator for further help.

Before the ECM SM Installer starts, a login window for the ECM SM CALAserver is shown:



Login window

Log in with a user that has the appropriate permission to execute the ECM SM installer. The ECM SM installer window opens.

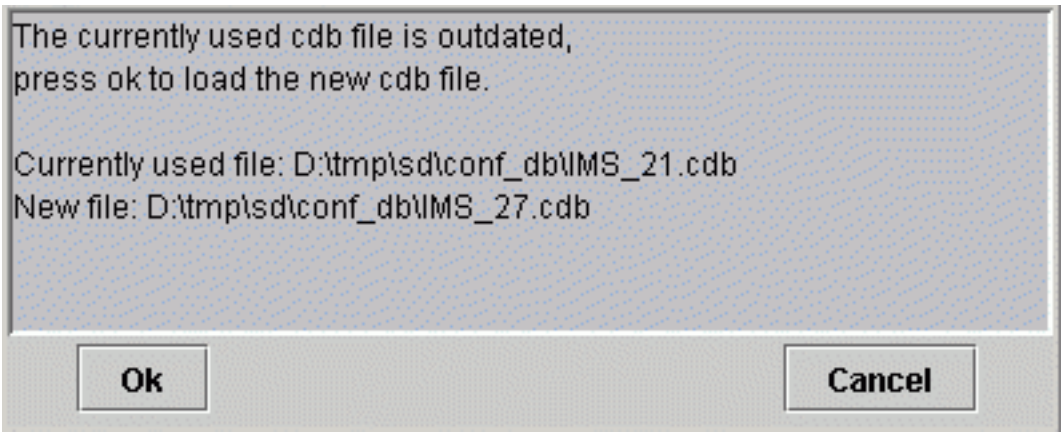


Installer main window

The main screen shows information about the existing configuration and contains the buttons to open further configuration windows.

The field **Configuration Directory** shows the location of the directory containing the ECM SM configuration. The default value for this is the configuration directory on the ECM SM server. Press the **Change ...** button to choose another directory.

If there is already a configuration for IBM FileNet Image Manager, the installer checks for newer versions of the configured cdb files at startup. If a newer CDB file is found on the server, the following message will be displayed:



Dialog: New CDB file available

Press **Ok** to load the new CDB file. Press **Cancel** to keep the old file.

If a CDB file cannot be loaded (e.g. because the server is unreachable), the following warning message is displayed:

Warning: CDB file cannot be loaded

The configuration for all domains that are defined in the listed CDB files may be based on outdated configuration data.

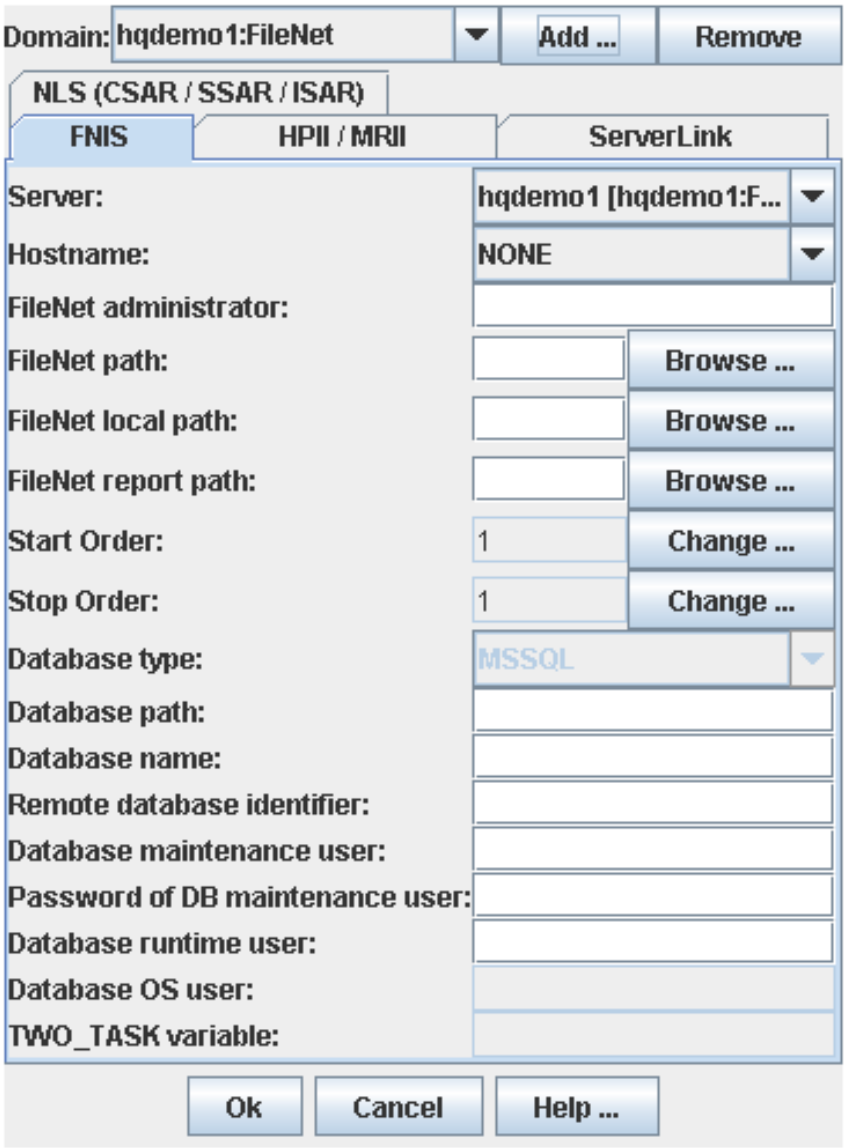
Configuring ECM SM clients for IBM FileNet Image Manager

NOTE It is required to copy the current CDB file prior to configuration to any Storage Server where you plan to run one or more of the following monitors:

- Integral_SDS_DevaiceStatus
- Integral_SDS_DeviceThresholds
- EmptyDisksInOsar
- OsarDemandStatus
- OsarDriveContents
- OsarDriveInfo
- OsarGripperConfig
- OsarGripperContents
- OsarGripperDisabled
- OsarLibraryMode
- OsarSlotContents
- OsarSlotInfo

The file must be located in the subdirectory **sd/conf** of the path specified as **FileNet local path**. Make sure you update the file and perform a reconfigure of the respective client each time you change the definition of your storage libraries.

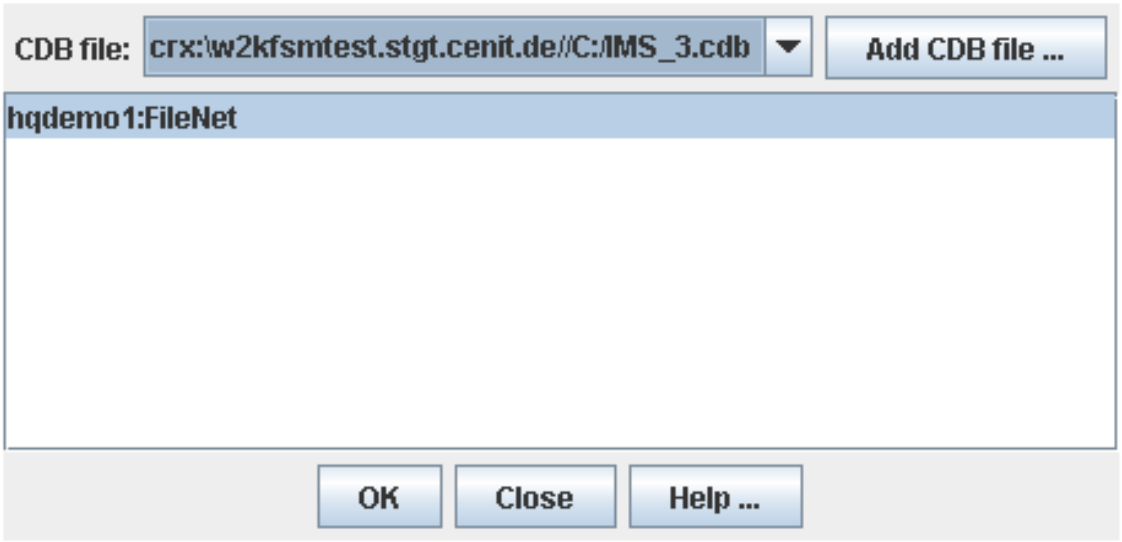
To configure IBM FileNet Image Manager properties, press the **Configure Image Manager** button and the configuration dialog file dialog appears.



The IBM FileNet Image Manager configuration dialog

The upper section of the window is for choosing the domain for what IBM FileNet Image Manager is to be installed. The tabbed section below is for the parameters of configuration. If there is no domain chosen, they will be greyed out. To choose a domain to configure, click the **New ...** button next to the domain combobox and you will get the CDB file dialog.

The CDB file dialog



The CDB file dialog

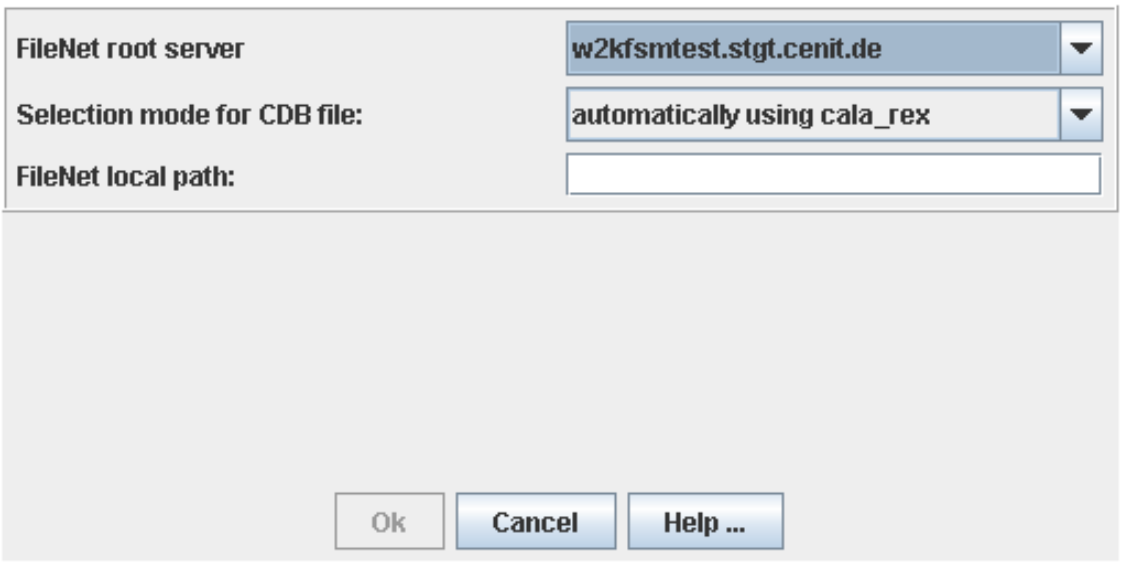
The **CDB file** listbox shows which IBM FileNet Image Manager cdb files are currently known. The listbox is empty if the installer is started the first time. To add a IBM FileNet IM configuration file press the **Add CDB file** button, which shows the **Add a cdb file ...** dialog.

Add a CDB file

There are different methods how a CDB file can be loaded. Depending on the selection in the **Selection mode for CDB file** listbox, the fields in the dialog box change.

Choose **automatically using** CALA to load the file via cala_rex from the IBM FileNet IM server . This method requires that the CDB file is located in the subdirectory **sd/conf_db** of the specified IBM FileNet IM local path.

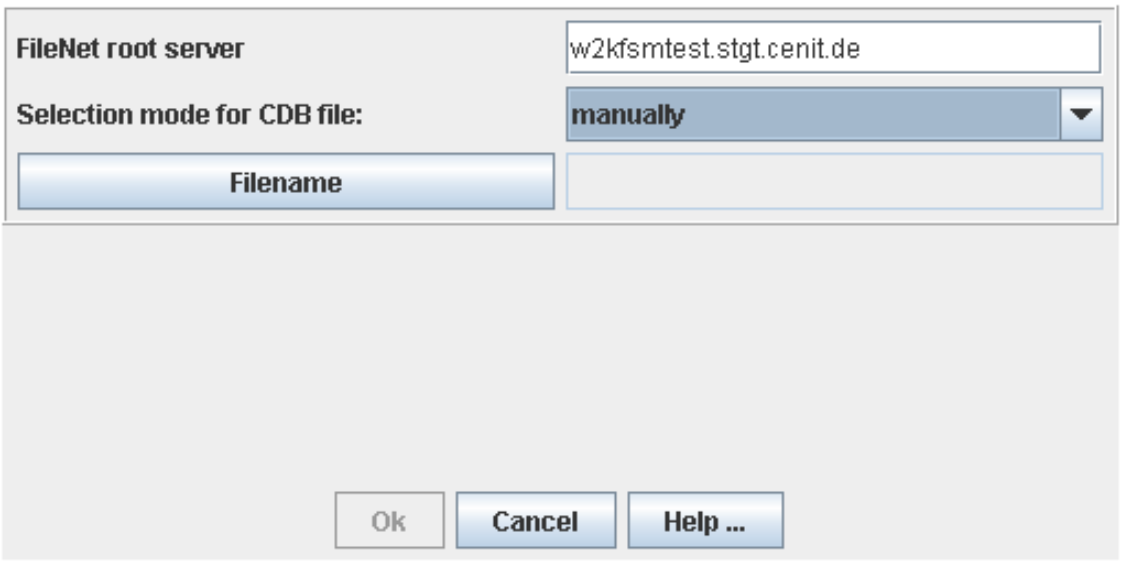
The root server must be chosen from the listbox. The entry field **FileNet local path** must be filled in as well.



Add a CDB file using CALA_REX

Choose **manually** to load the configuration from a local file or from a non-standard location.

The name of the IBM FileNet IM root server has to be entered in the textfield. Pressing the **Filename** button opens a filechooser where you can navigate to the CDB file that must be loaded.



Manually add a CDB file

Press **Ok** to load the cdb file and get back to the CDB file dialog.

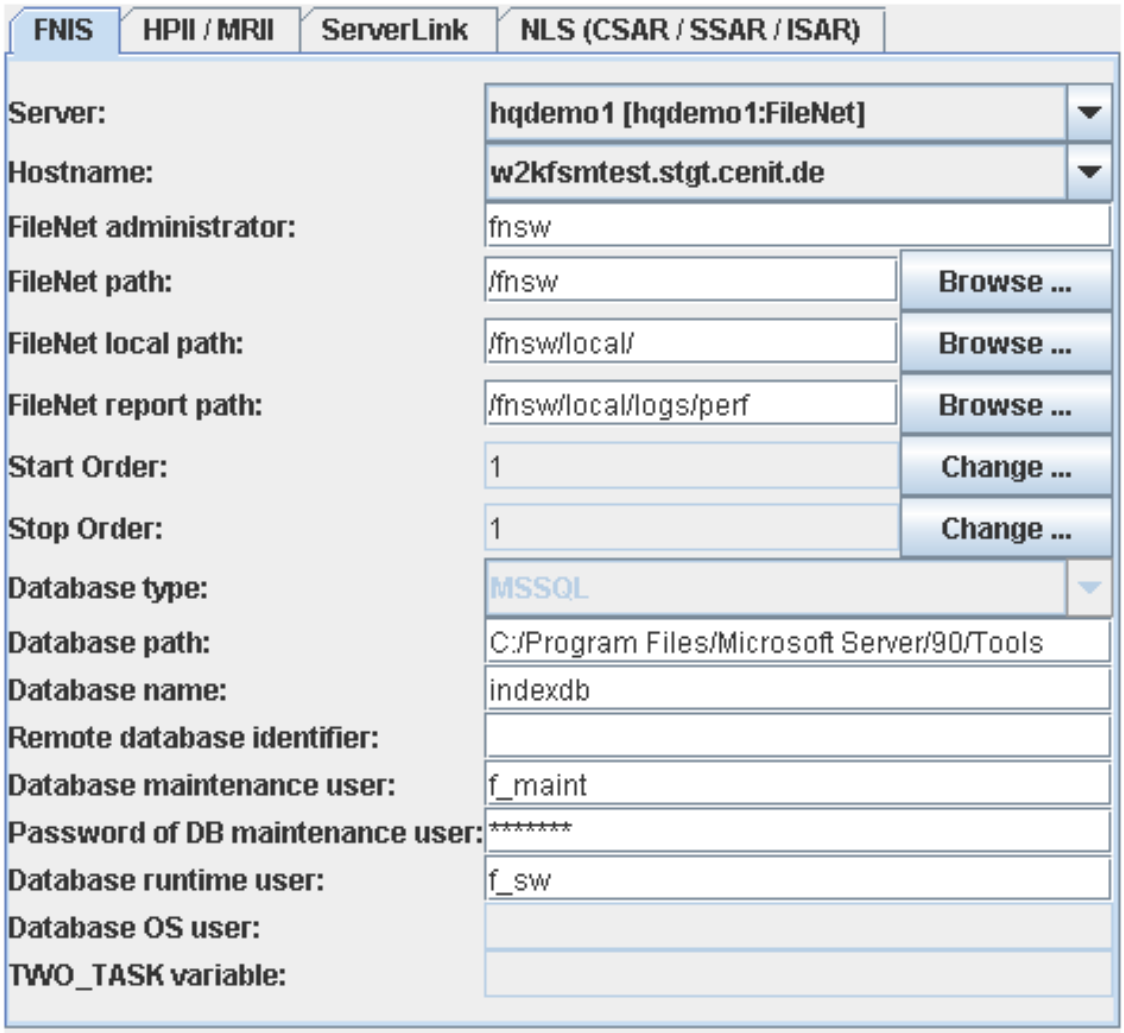
If any CDB files are loaded, the **CDB file** combobox shows a list of loaded CDB files. The listbox in the center of the dialog shows the IBM FileNet IM domains configured in the selected CDB file. To start further configuration, select a domain and press the **OK** button to see the domain configuration window.

The configuration window knows four server types: *FNIS*, *HPII/MRII*, *ServerLink* and *NLS (CSAR/SSAR/ISAR)*. The tabs choose the server type to configure. Depending on the selected server type, different entry fields are visible.

Configuration of IBM FileNet IM servers

Note: Latest versions of IBM FileNet IS, Process Engine FileNet P8 PE support remote MSSQL servers without installed MSSQL client software on the FileNet server. ECM SM now supports DB2, MSSQL and Oracle-based IS installations that monitor the IS/Process Engine-related DB monitors on local and remote database by using Java (UDC / JDBC), too.

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.



Configure IBM FileNet IM server

Servers
This combobox shows all servers that are part of the specified IBM FileNet IM domain. The settings for the currently selected server can be edited in the text fields below. If a server is already configured, the current values will be shown as default.

General Settings

Hostname
Required. The listbox shows all machines that have a CALA_REX client installed. Choose the correct hostname of the server selected in the **Server** listbox. This is the name that will be used in the Web Console.

FileNet Administrator
Required. Enter the IBM FileNet IM administrator name, in most cases *fnsw*. The user you specify should have access to all IBM FileNet IM tools and database devices.

FileNet Path
Required. Enter the IBM FileNet IM base directory, for UNIX normally **/fnsw**, for Windows **<drive letter>:/fnsw**. Instead of /, \\ can also be used on Windows.

FileNet Local Path
Required. Enter the IBM FileNet IM local directory, for UNIX normally **/fnsw/local**, for Windows **<drive letter>:/fnsw_loc**. Instead of /, \\ can also be used on Windows.

FileNet Report Path
Required. Enter the IBM FileNet IM report directory: This directory is used as output location for IBM FileNet IM tools **perf_report** and **getstatus**. You can use the standard output path for **perf_report** (for UNIX normally **/fnsw/local/logs/perf**, for Windows **<drive letter>:/fnsw_loc/logs/perf**) or any other path. Instead of /, \\ can also be used on Windows.

Start Order
Required. Enter a numerical value that indicates the start order of the server. Pressing the **Change** button opens a dialog box where you can see all servers and set the start order as well.

Stop Order
Required. Enter a numerical value that indicates the stop order of the server. Pressing the **Change** button opens a dialog box where you can see all servers and set the stop order as well.

Additional settings for Database server

Database Type
This setting is read from the configuration file and cannot be changed except if the database type is **NONE**.

If the type is shown as **NONE**, the selected server does not have a IBM FileNet IM RDBMS installed (e.g. Cache server). You can change the value and fill in the remaining database related fields if the server has the appropriate database client software installed.

Database Path

Required for database servers. Enter the path to your RDBMS installation.

- Oracle: Path to the **bin** directory where the Oracle tools are installed:
  - Unix: **/usr/oracle**
  - Windows: **<drive letter>:/orant**
- Oracle using JDBC client (UDC): Path to the **bin** directory where the Oracle tools are installed (without /bin) and Java install Path (without /bin), separated by ,:
  - Unix: **/usr/oracle,<JavaInstall-Dir>**
  - Windows: **<drive letter>:/orant,<JavaInstall-Dir>**
- MSSQL: Path to the **binn** directory where the MSSQL tools are installed. The location of this directory depends on the MSSQL Server version:
  - MSSQL Server 2000 or MSDE 2000: **<drive letter>:/Program Files/Microsoft Server/80/Tools**
  - MSSQL Server 2005: **<drive letter>:/Program Files/Microsoft Server/90/Tools**
  - MSSQL Server 2008: **<drive letter>:/Program Files/Microsoft Server/100/Tools**

  The installation script searches the **binn** directory for the tools **sqlcmd.exe**, **osql.exe** or **isql.exe**.
- MSSQL using JDBC client (UDC)
  If the JDBC based UDC communication to the DB should be used, specify the Java install path here (without /bin at the end) instead of the DB installation path. UDC supports Java version 7 and newer.
- DB2: Path to the **bin** directory where the DB2 tools are installed:
  - Unix: **/home/<instancename>/sqllib**
  - Windows: **<drive letter>:/Program Files/IBM/SQLLIB**

  The installation script searches the **bin** directory for the tool **db2sql92**.
- DB2 using JDBC client (UDC): Path to the **bin** directory where the DB2 tools are installed (without /bin) and Java install Path (without /bin), separated by ,:
  - Unix: **/home/<instancename>/sqllib,<JavaInstall-Dir>**
  - Windows: **<drive letter>:/Program Files/IBM/SQLLIB,<JavaInstall-Dir>**

Leave this path blank if there is no RDBMS installed.

NOTE Use / instead of \ in the pathname.

Database Name

Required for database servers. Enter the name of your database if it does not match the shown default value (*IDB* for Oracle, *indexdb* for MSSQLServer and DB2).

For Oracle, this field corresponds to the setting of ORACLE_SID (in most cases *IDB*).

Remote Database Identifier

This field changes its label depending on the selected database type. If the type is **NONE**, the label changes to **Remote Database Identifier**.

DB2 Database Instance name using DB2 client tools:
Label if database type is DB2.

Required. Enter the name of the DB2 instance.

DB2 JDBC settings using Java JDBC client access:
Label if database type is DB2.

Required. If your database is configured for remote access based on JDBC-communication the following parameter set is required: <db-server-name>,<db2-jdbc-driver-path>,<db-port>,com.ibm.db2.jcc.DB2Driver,jdbc:db2://<db-server-name>:<db-port>/<DB2-db-name>

Example: mydb2server,D:/db2/driver,50000,com.ibm.db2.jcc.DB2Driver,jdbc:db2://mydb2server:50000/IDB

Remote Oracle DB name using Oracle client tools (sqlplus)
Label if database type is Oracle.

Optional. If your database is configured for remote access, enter the TNS name (service name) of the database.

Remote Oracle DB name using Java JDBC client access
Label if database type is Oracle.

Required. If your database is configured for remote access based on JDBC-communication the following parameter set is required: <db-server-name>,<oracle-jdbc-driver-path>,<db-port>,oracle.jdbc.driver.OracleDriver,jdbc:oracle:thin:@<db-server-name>:<db-port>:<Oracle-db-name>

In addition to this format the Oracle service name format is supported, too: <db-server-name>,<oracle-jdbc-driver-path>,<db-port>,oracle.jdbc.driver.OracleDriver,jdbc:oracle:thin:@<db-server-name>:<db-port>/<Oracle-service-name>

Example with DB name: myoraserver,D:/oracle/driver,1521,oracle.jdbc.driver.OracleDriver,jdbc:oracle:thin:@myoraserver:1521:IDBW2K

Example with Service name: myoraserver,D:/oracle/driver,1521,oracle.jdbc.driver.OracleDriver,jdbc:oracle:thin:@myoraserver:1521/idbserv

MSSQL Server/Instance name using MSSQL client tools
Label if database type is MSSQL.

Optional: The following combinations are possible for the parameter MSSQL Remote Server or Servername/Instancename:

Leave this parameter unset, if the local Default MSSQL instance should be monitored

Specify the remote MSSQL server name, if the Default instance should be monitored on a remote server

Specify MSSQL Server name/Instance name, if a custom MSSQL instance on the local or remote server should be monitored.

Note: Use "/" instead of "\" between MSSQL Server and Instance name!

MSSQL JDBC settings using Java JDBC Client access
If the JDBC based UDC communication to the MSSQL DB should be used the configuration for a Default MSSQL instance looks like: <MSSQL server name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port]. The default port number is 1433. Example: mssqlServ1,C:/Program Files/sqljdbc11/enu,1433. A MSSQL custom instance UDC configuration looks like: <MSSQL server name>/<Instance name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port]. Example: mssqlServ1/INSTANCE1,C:/Program Files/sqljdbc11/enu,1433.

NOTE For information on how to connect to an SSL secured MSSQL Server see Chapter *How to configure and use the UnifiedDatabaseClient* in the *ECM SM Install Guide*.

Database maintenance user
Required for DB2 and Oracle, optional for MSSQL. Specify the database maintenance user (in most cases *f_maint*).

MSSQL
Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

Password of DB maintenance user
Required for DB2 and Oracle, optional for MSSQL. Specify the password of the database maintenance user. The password will be encrypted before it is stored in the environment file **fnis_srv_env.sh**.

Database runtime user
Required. Specify the database runtime user (in most cases *f_sw*).

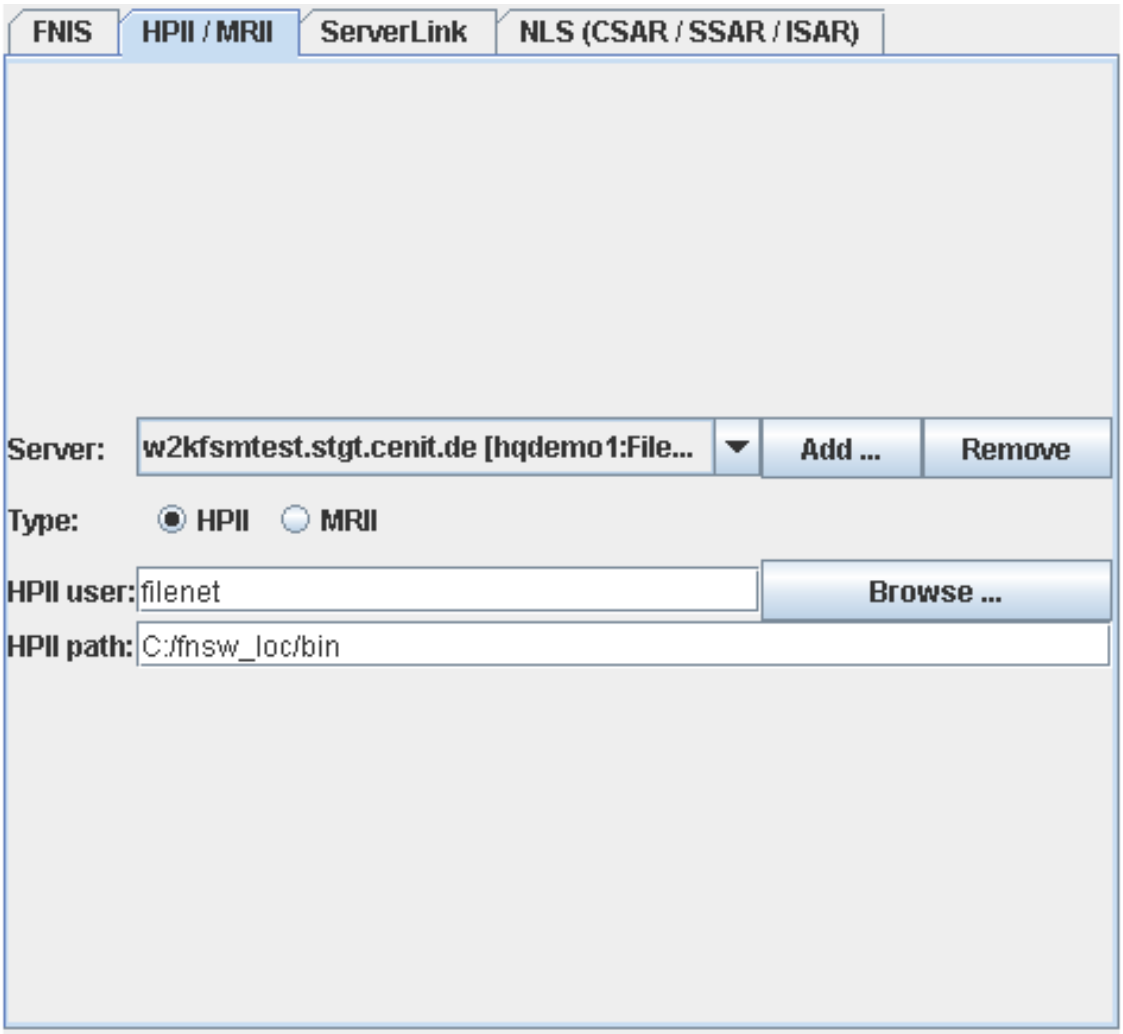
Database OS User

Optional for Oracle and DB2 database servers on UNIX only. Specify the user that is owner of the Oracle or DB2 database installation, e.g. *oracle*.

TWO_TASK variable

Optional for Oracle. Specify the value of the *TWO_TASK* variable that is required to connect to a remote Oracle database (direct connect via SQLNet without specifying a Oracle Remote service name (variable Remote Database identifier, see above).

Configuration of HPII/MRII servers



Configure ImageImport server

Servers

This combobox shows all HPII/MRII servers already configured for the specified IBM FileNet IM domain. The serverlist can be modified using the **Add** and **Remove** buttons.

The settings for the currently selected server can be edited in the text fields below. If a server is already configured, the current values will be shown as default.

Type

Select **HPII** for High Performance Image Import, **MRII** for Mid Range Image Import.

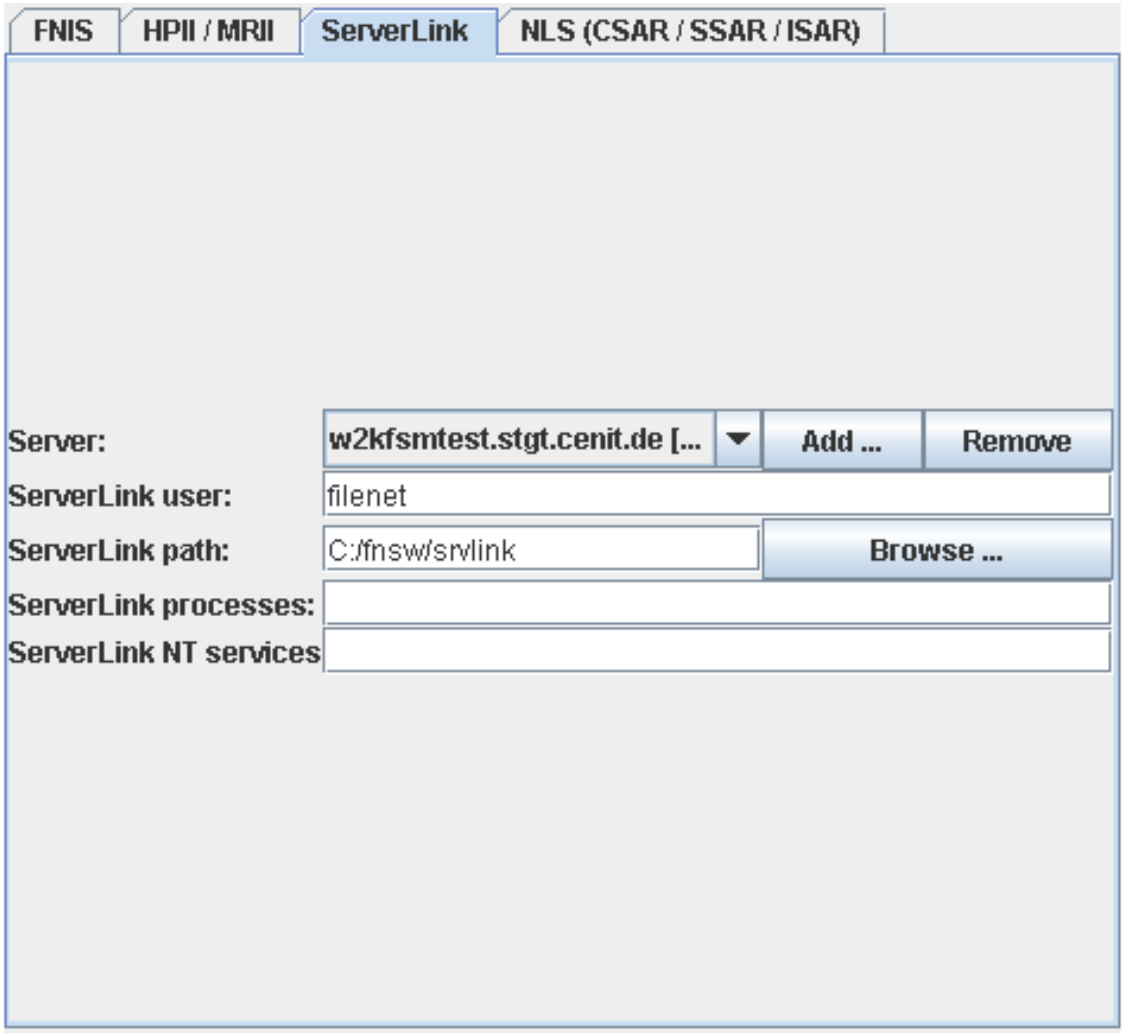
HPII user

Required for UNIX servers. Specify the user that must used to start ImageImport.

HPII path

Required. Specify the path to your ImageImport installation, e.g. `/fnsw/local/bin` for UNIX, `<drive letter>:/fnsw_loc/bin` for Windows.

Configuration of ServerLink servers



Configure ServerLink server

Servers

This listbox shows all ServerLink servers already configured for the specified IBM FileNet IM domain. The serverlist can be modified using the **Add** and **Remove** buttons.

The settings for the currently selected server can be edited in the text fields below. If a server is already configured, the current values will be shown as default.

ServerLink User

Required for UNIX servers. Specify the user that must used to start ServerLink.

ServerLink Path

Required. Specify the path to your ServerLink installation, e.g. **/fnsw/srvlink** for UNIX, **<drive letter>:/fnsw/srvlink** for Windows.

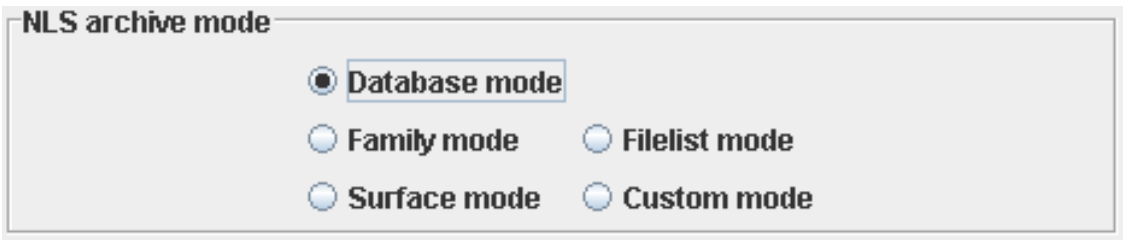
ServerLink Processes

Required for UNIX servers. Specify all processes that must be started for ServerLink to work properly (UNIX). These process names are used as default setting when executing the *ServerLink Processes* monitor.

ServerLink NT Services

Required for Windows servers. Specify all services that must be started for ServerLink to work properly. These service names are used as default setting when executing the *ServerLink Processes* monitor. Additionally, they are used by the task *Start ServerLink* on Windows.

Configuration of NLS (CSAR/SSAR/ISAR) servers



Configure NLS (CSAR/SSAR/ISAR) server

Servers

This listbox shows all NLS (CSAR/SSAR/ISAR) servers already configured for the specified IBM FileNet IM domain. The serverlist can be modified using the **Add** and **Remove** buttons.

The settings for the currently selected server can be edited in the text fields below. If a server is already configured, the current values will be shown as default.

NLS Install Path

Required. Specify the path to your NLS installation, e.g. **/fnsw/local/bin** for UNIX, **<drive letter>:/fnsw_loc/bin** for Windows. You can also use the **Browse...** button to the right of the entry field to open a file browser and navigate to the correct directory.

NLS.cfg file with PATH

Required. Specify the full qualified name if the **NLS.cfg** file, e.g. **/fnsw/local/bin/NLS.cfg** for UNIX, **<drive letter>:/fnsw_loc/bin/NLS.cfg** for Windows. You can also use the **Browse...** button to the right of the entry field to open a file browser and navigate to the correct file.

NLS Tools PATH

Optional. Specify the path where either EMC's tool **c-ping** or **CenteraPing** is installed, e.g. `/fnsw/emc_tools` for UNIX or `<drive letter>:/fnsw_loc/emc_tools` for Windows. You can also use the **Browse...** button to the right of the entry field to open a file browser and navigate to the correct directory.

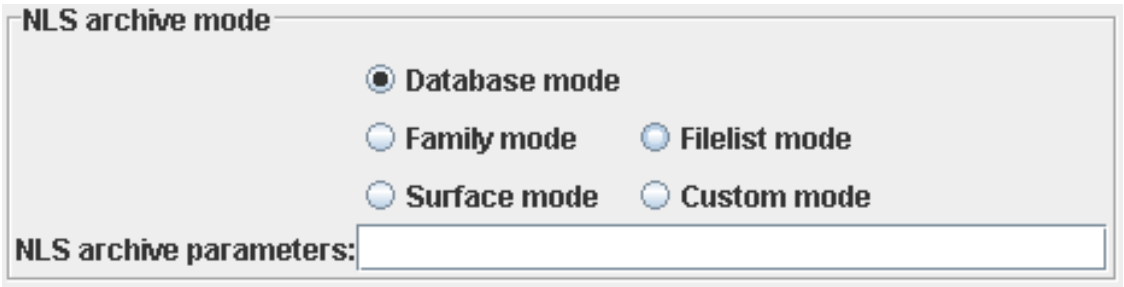
NLS User

Optional, UNIX only. Specify the user that must be used to start and stop NLS. Default is *fnsw*.

NLS Archive Mode

Required. Select one of the predefined NLS archive modes. **Database mode** is default. No additional information is required for this mode.

For archive modes **Family mode**, **Surface mode** and **Filelist mode**, NLS Archive parameters must be specified:



Archive mode Family

NLS Archive Parameters

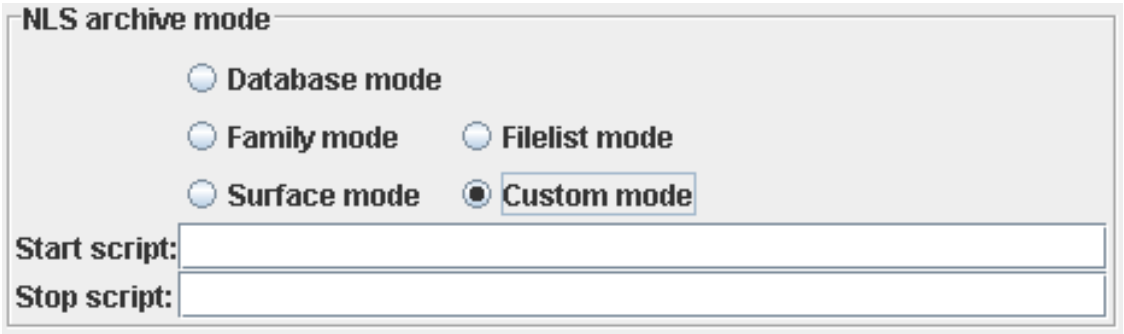
Required. Specify the required NLS parameters.

For **Surface mode**, enter the surface id you want to process. You can add `-both` to process both sides of the surface.

For **Family mode**, enter the family name,

For **Filelist mode**, enter the full qualified file name.

If NLS is not installed as recommended by FileNet and a customized startup and shutdown script is required select **Custom mode**.



Archive mode Custom

Start script
Required. Specify a custom start script. Use forward slashes instead of backslashes.

Stop script
Required. Specify a custom stop script. Use forward slashes instead of backslashes.

Debug NLS:
Required. Specify whether NLS should be started with the *DEBUG* flag or not. Default: No debugging.

Excluding servers of a IBM FileNet IM Domain

If you want to exclude one or more servers of an IBM FileNet Image Manager Domain from being managed, you need to create a file **fnis_do_not_manage.<Domain name>**, which contains the server names to be excluded. The *:* in the domain name must be replaced by _. The file must be located on the ECM SM server in the directory where the configuration files are stored (normally **/opt/FileNet/SysMon/repos/config/PAM**).

Example

If you want to exclude the server *w2kim40* from the Domain *im54db:FileNet*, you need to create the exclude file:

/opt/FileNet/SysMon/repos/config/PAM/fnis_do_not_manage.↵im54db_FileNet.

This is the example content of

/opt/FileNet/SysMon/repos/config/PAM/fnis_do_not_manage.↵im54db_FileNet:

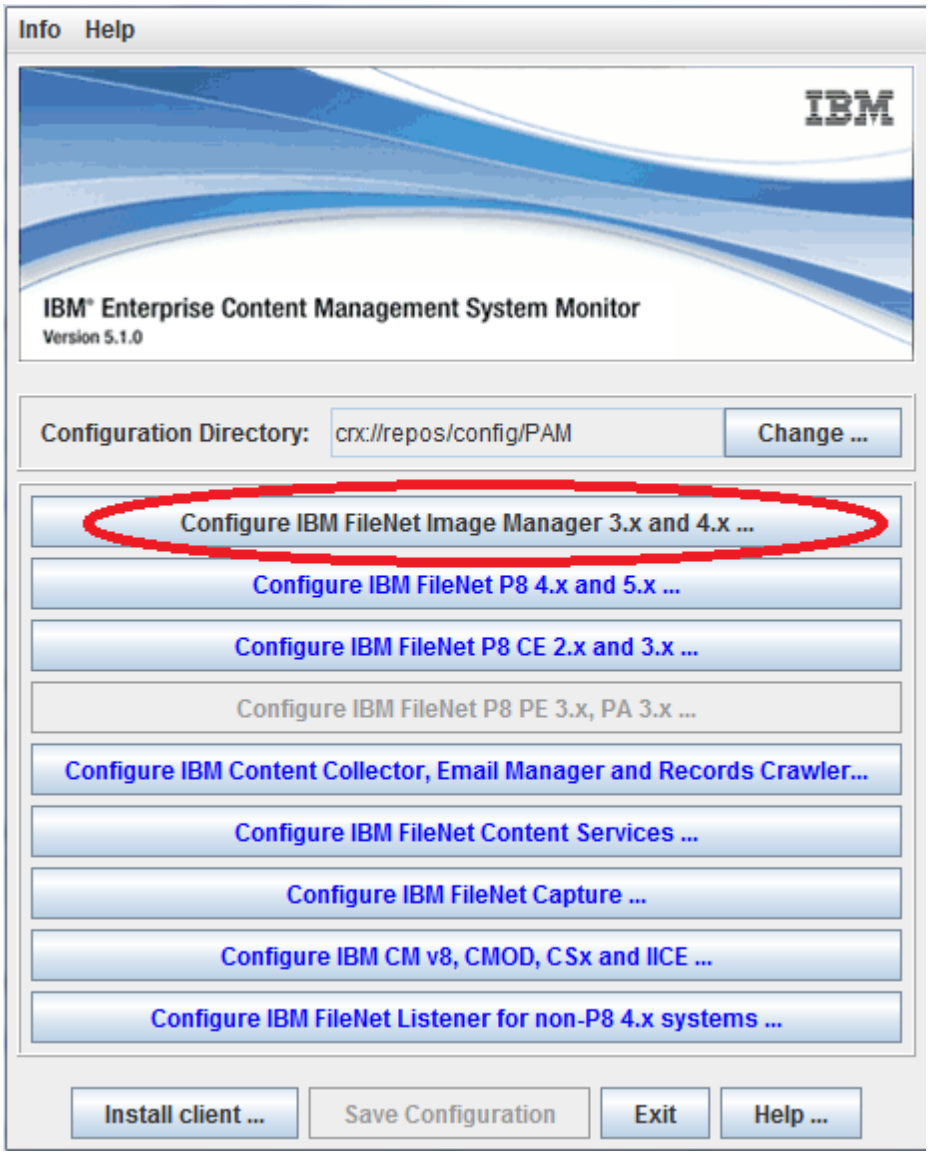
```
# This is the server exclude file of Domain im54db:FileNet
w2kim40
```

The name of the Domain and the name of the server are case sensitive.

Configuring ECM SM clients for IBM FileNet P8

Configure IBM FileNet Image Manager

To configure IBM FileNet Image Manager properties, press the **Configure Image Manager ...** button.



Configure Image Manager ...

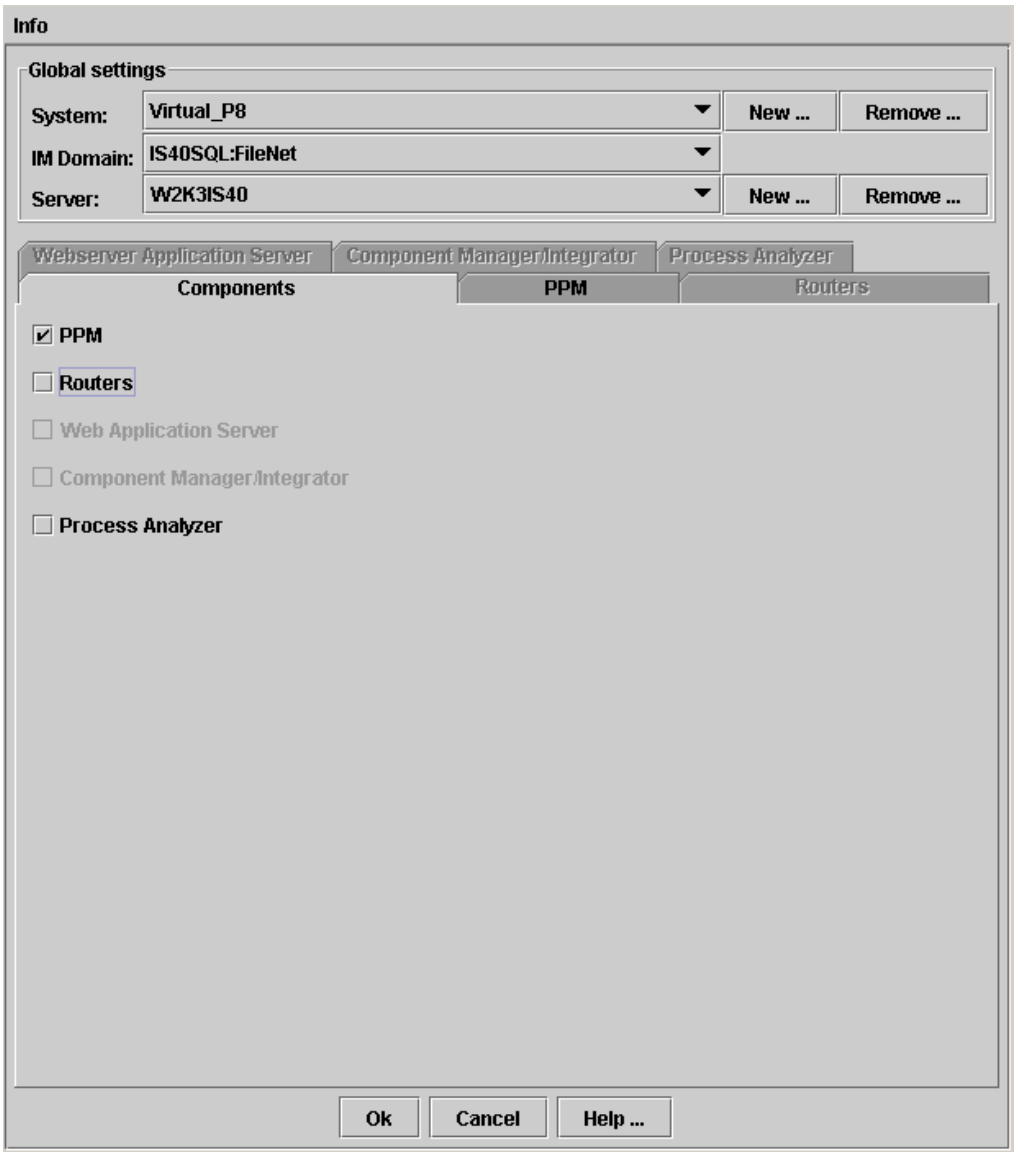
For a complete description of the IBM FileNet Image Manager configuration see the Configuring ECM SM clients for IBM FileNet Image Manager.

Configure Process Engine

To configure FileNet P8 Process Engine properties, press the **Configure Process Engine ...** button.

Configure Process Engine ...

The Process Engine configuration dialog opens:



The Components tab

The dialog consists of an upper part in the **Global settings** box and a bottom part containing some tabs.

Global settings:

System

Required. Select the Process Engine System you want to configure. Press the **New ...** button to create a new P8 system. You can choose any name you like. The currently selected system is removed from the configuration by pressing the **Remove ...** button.

NOTE The System name must not contain blanks.

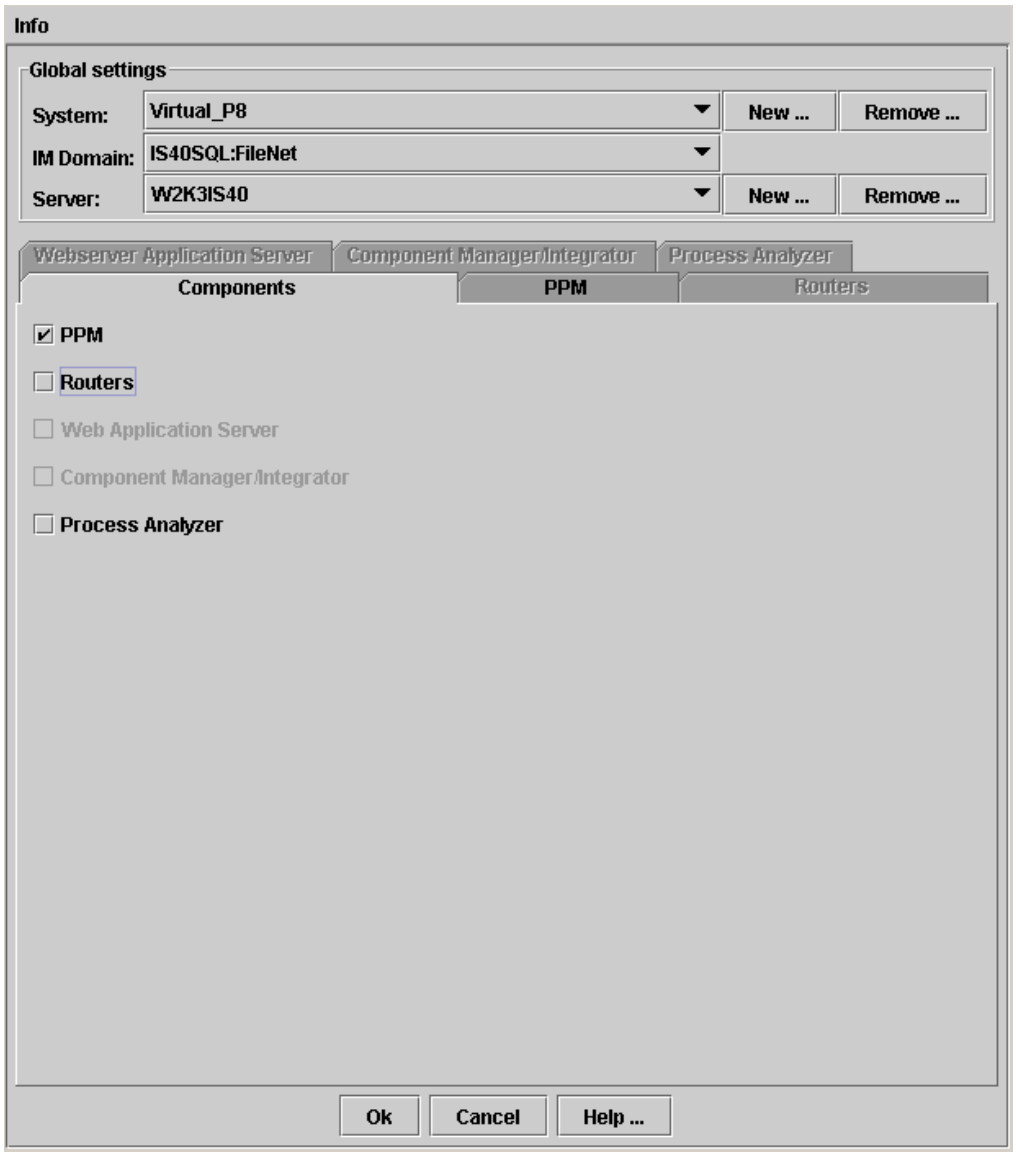
IM Domain

Required. Select the IBM FileNet Image Manager Domain that is associated with the Process Engine that you want to configure. If you selected an existing Process Engine, the corresponding IBM FileNet IM Domain will appear in the listbox.

Server

Required. Select the server you want to configure. Press the **New ...** button to add a server to the list.

The Components tab



The Components tab

The **Components** tab shows the components that have been configured for this server. If a component is installed, select the appropriate checkbox. For each selected component, additional settings must be specified in the appropriated tab.

PPM

Optional. Mark this checkbox if the server has the PPM installed.

Routers

Optional. Mark this checkbox if the server has one or more routers installed.

Web Application Server

Optional. Mark this checkbox if the server has a web server installed. (Only enabled if **Routers** is checked)

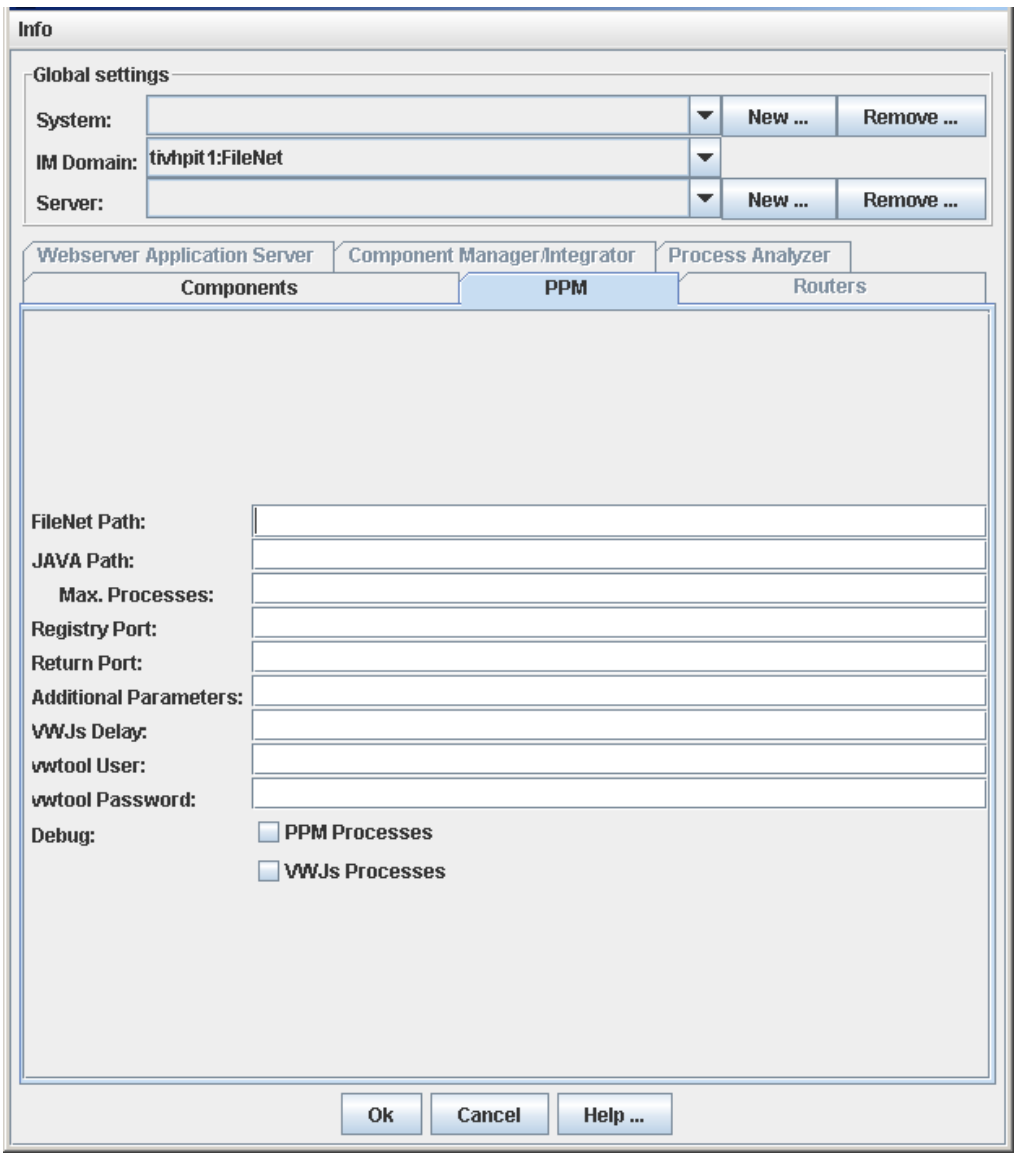
Component Manager / Integrator

Optional. Mark this checkbox if the server has a Component Manager / Component Integrator installed. (Only enabled if **Web Application Server** is checked)

Process Analyzer

Optional. Mark this checkbox if the server has a Process Analyzer installed.

PPM tab



PPM tab

FileNet Path

Required. Enter the path to the PPM jar-archive `pw.jar`, e.g. `C:/fnsw/bin` on Windows, `/fn-sw/bin` on UNIX.

Java Path

Required. Enter the path to Java `bin` directory, e.g. `C:/Program Files/JDK` on Windows or `/usr/local/java` on UNIX.

Max Processes
Required. Maximum number of VWJs server processes that the PPM can run at the same time.

Registry Port
Required. The RMI port the PPM runs on. The PPM port number must be greater than 1024.

NOTE The port number is not optional because it is required by the CENIT Java tools.

Return Port
Optional. The port number where the remote PPM object receives calls. If the return port is 0 (the default value), an anonymous port is chosen. It is only necessary to enter a value other than 0 if you are also specifying the Local Host parameter to accommodate a firewall or Network Address Translator (NAT).

See FileNet documentation for details.

Local Host
Optional. Fully qualified name of the Process Engine, required for communication via a firewall or NAT.

VWJs Delay
Required. Automatically starts the total number of VWJs processes specified in **Max processes** and indicates the delay, in seconds, between starting each process.

vwtool User
Required for P8 3.0 and newer. Specify a valid user for **vwtool**.

vwtool Password
Required for P8 3.0 and newer. Specify the password for the user for **vwtool**.

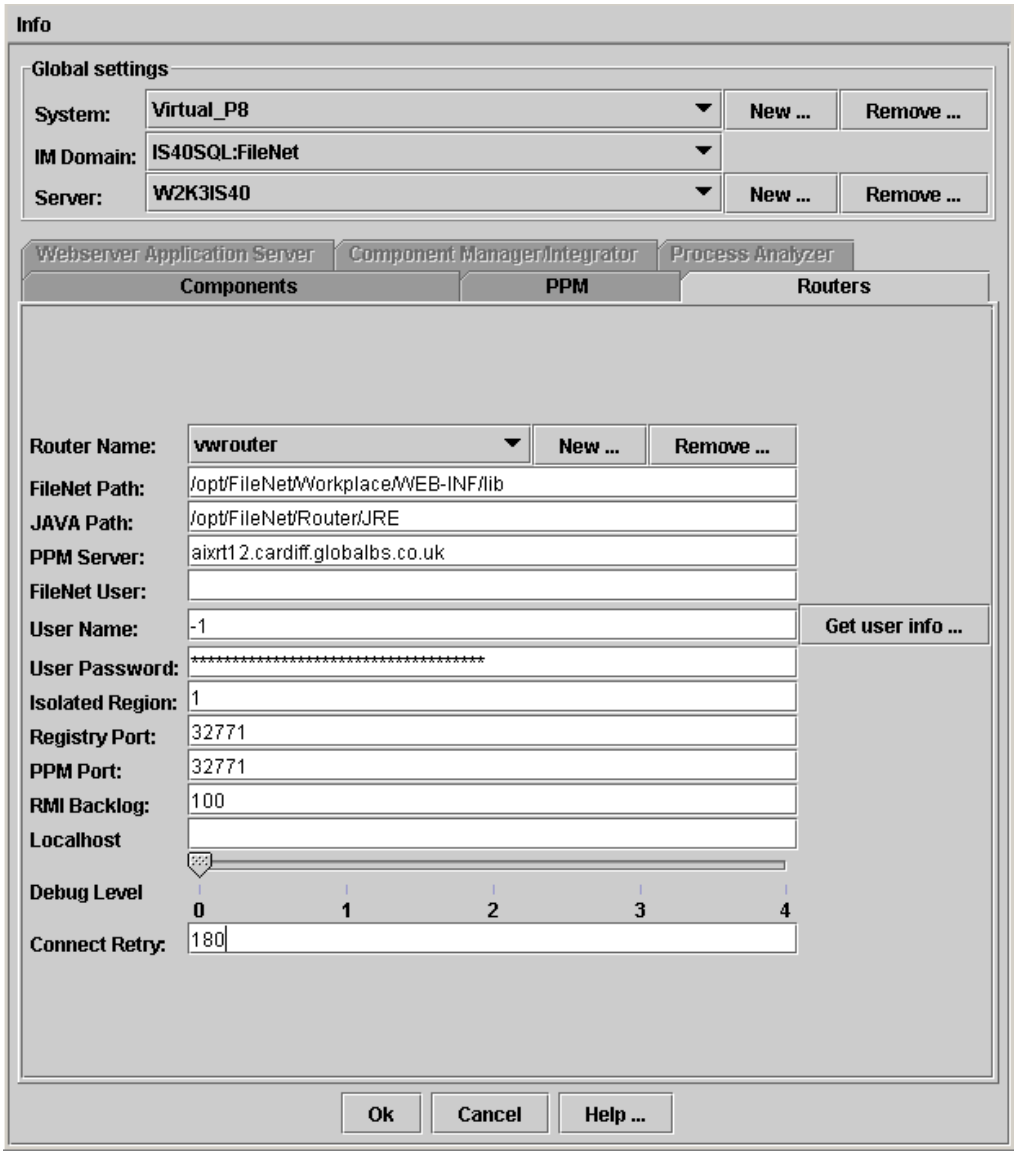
PPM Debugging
Optional. Turns on/off debugging for the PPM processes, including all calls to the RMI registry.

Turning this option on creates trace files called `vwppm.trc` and `vwrmi.log` in the directory from which the PPM is started ($TEMP for the ECM SM tasks).

VWJs Debugging
Optional. Turns on/off debugging for the VWJs processes. Changing this option affects only those processes started after you make the change. If you want to change the debugging setting for existing processes, you must stop and restart the PPM.

Turning this option on creates two trace files called `jVWServer#.trc` and `jVWServer#.exc`, where # is the number of the server process. The files are created in the directory from which the PPM is started ($TEMP for the ECM SM tasks).

The Routers tab



The Routers tab

Router Name

Required. Select a router or add a new router by pressing the **New ...** button. The currently selected router is removed from the configuration by pressing the **Remove ...** button.

FileNet Path

Required. Enter the path to the Router jar file. Name and location of this jar file depend on the FileNet version and the component on which the router runs:

- eProcess 4.2.2 and 5.0: path to **pw.jar**, e.g. **/fnsw/bin** on UNIX, **c:/fnsw/bin** or **C:/Program Files/FileNET/IDM/Web/IDMWS/Redist/WF_Extras** on Windows
- P8 Content Engine: path to **WFLauncher.jar**, e.g. **c:/Program Files/FileNet/Content Engine**
- P8 Application Engine: path to **eProcess.jar**, e.g. **/opt/ae/FileNet/Workplace/WEB-INF/lib**

Java Path
Required. Enter the path to Java bin directory, e.g. **C:/Program Files/JDK** on Windows or **/usr/local/java** on UNIX.

PPM Server
Required. Network name of the PPM Server to which the router connects.

FileNet User
Optional, UNIX only. If you specify a user name, the router will be started with this user instead of the *root* user.

User Name
Required. User name to connect to the PPM Server, e.g. Administrator, SysAdmin or vwuser. Use the **Get user info ...** button to get the user and password information directly from the FileNet server.

User Password
Required. Password of the user specified above. The password will be encrypted before it is stored in the environment file.

Isolated Region
Required. Number of the Isolated Region to connect to.

Registry Port
Required. The RMI port the router uses.

NOTE The port number is not optional because it is required by the CENIT Java tools.

PPM Port
Required. The RMI port that the PPM running on the Process Engine is using (Registry Port in the PPM configuration window for the PPM server).

RMI Backlog
Optional. Maximum queue length for incoming RMI connection indications before connections are refused.

Local Host

Optional. Fully qualified name of the Process Engine, required for communication via a firewall or NAT.

See FileNet documentation for details.

Debug Level

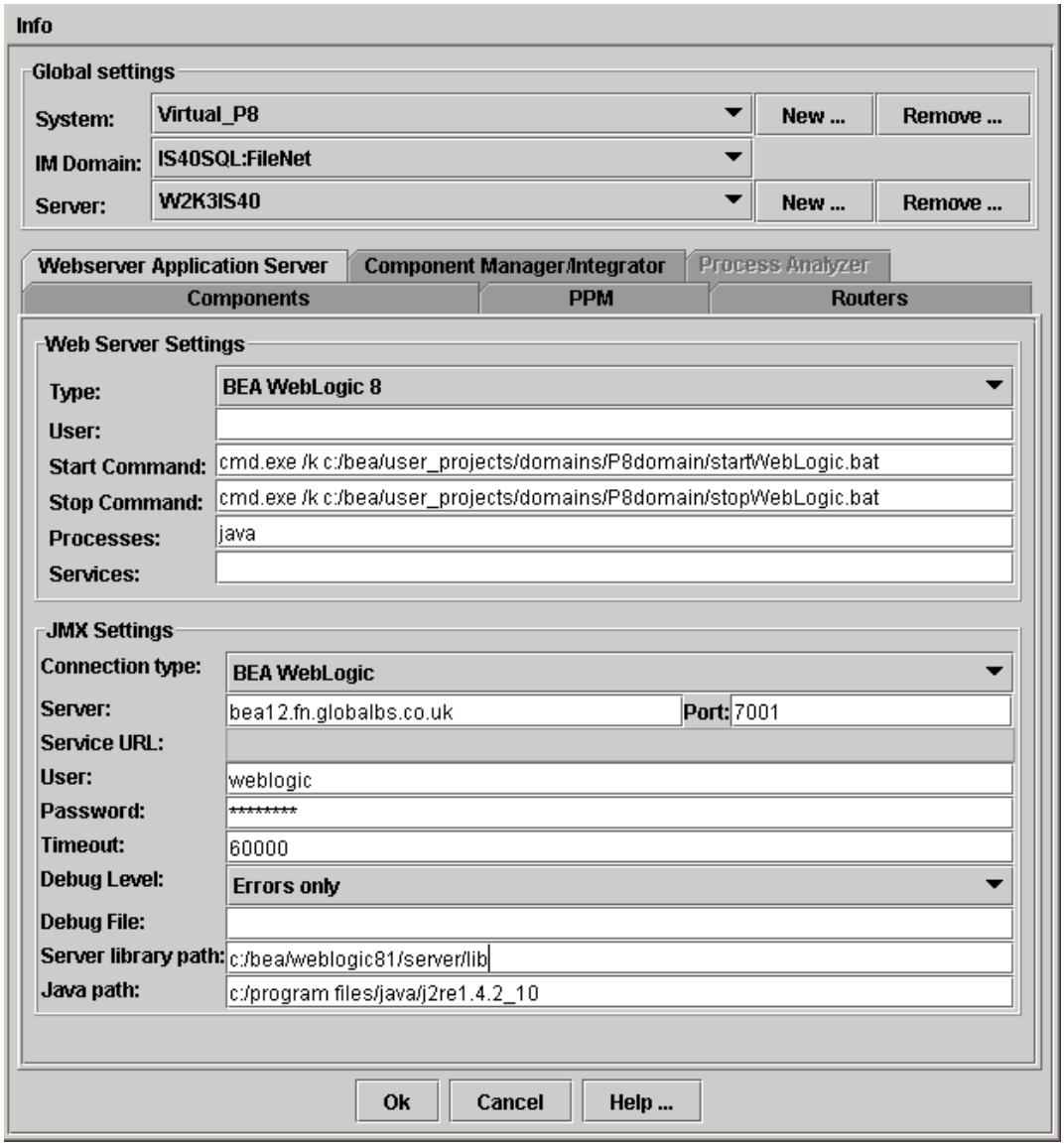
Optional. Debug Level for the router. Debug level 0 turns debugging off.

Selecting a value greater than 0 creates a trace file called `<routername>.trc`. The file is created in the directory from which the router is started (`$TEMP` for the ECM SM tasks).

Connect Retry

Required. Time in seconds for retry to connect to the PPM Server.

The Web Application Server tab



The Web Application Server tab

Web Server Settings

Type

Required. Select the type of web server you are configuring.

User

Optional, UNIX only. Select the user that must be used to start the web server processes. If no user is specified, the web server start and stop scripts will started as *root*.

Start Command

Required. Specify the command to start the web server. This can be a single command as well as a script or binary.

NOTE This script name must not contain blanks! Use the short name (DOS name) of the script instead.
To determine the short name of a command, you can enter the following command:
<path_to_fsm_installation/tools/cosst.exe shortname "<very long path/that contains blanks/and points to script"

Stop Command

Required. Specify the command to stop the web server. This can be a single command as well as a script or binary.

NOTE This script name must not contain blanks! Use the short name (DOS name) of the script instead.
To determine the short name of a command, you can enter the following command:
<path_to_fsm_installation/tools/cosst.exe shortname "<very long path/that contains blanks/and points to script"

Processes

Required. Specify a list of processes that indicate that the web server is up and running. The processes that are specified here will be used by the task *View Process Engine Status* and by the monitor *ComponentStatus*.

Services

Optional, Windows platforms only. Specify a list of services that indicate that the web server is up and running. The services that are specified here will be used by the task *View Process Engine Status* and by the monitor *ComponentStatus*.

JMX Settings

Connection Type

Select the connection type. If the webserver supports JMX 1.2 or higher, you can select **JMX 1.2 Connectivity**. In all other cases, select the type that matches the Webserver type selected above.

Server

Required for connection types **JBoss**, **BEA WebLogic, BEA WebLogic 9** and **WebSphere**. Enter the name of the server for the JMX connect.

Port
Required for connection types **JBoss**, **BEA WebLogic, BEA WebLogic 9** and **WebSphere**. Enter the port of the server for the JMX connect.

Service URL
Required for connection type **JMX 1.2 Connectivity**. Enter the service URL for the JMX connect. This URL contains server name, port and other information.

User
Required. Specify the user for the JMX connect.

Password
Required. Specify the password of the user given above.

Timeout
Optional. Specify a timeout in seconds for the JMX request. If no timeout is given, the program will use 40 second as default timeout.

Debug Level
Required. **Errors only** logs only error messages. **Debug** provides more detailed information.

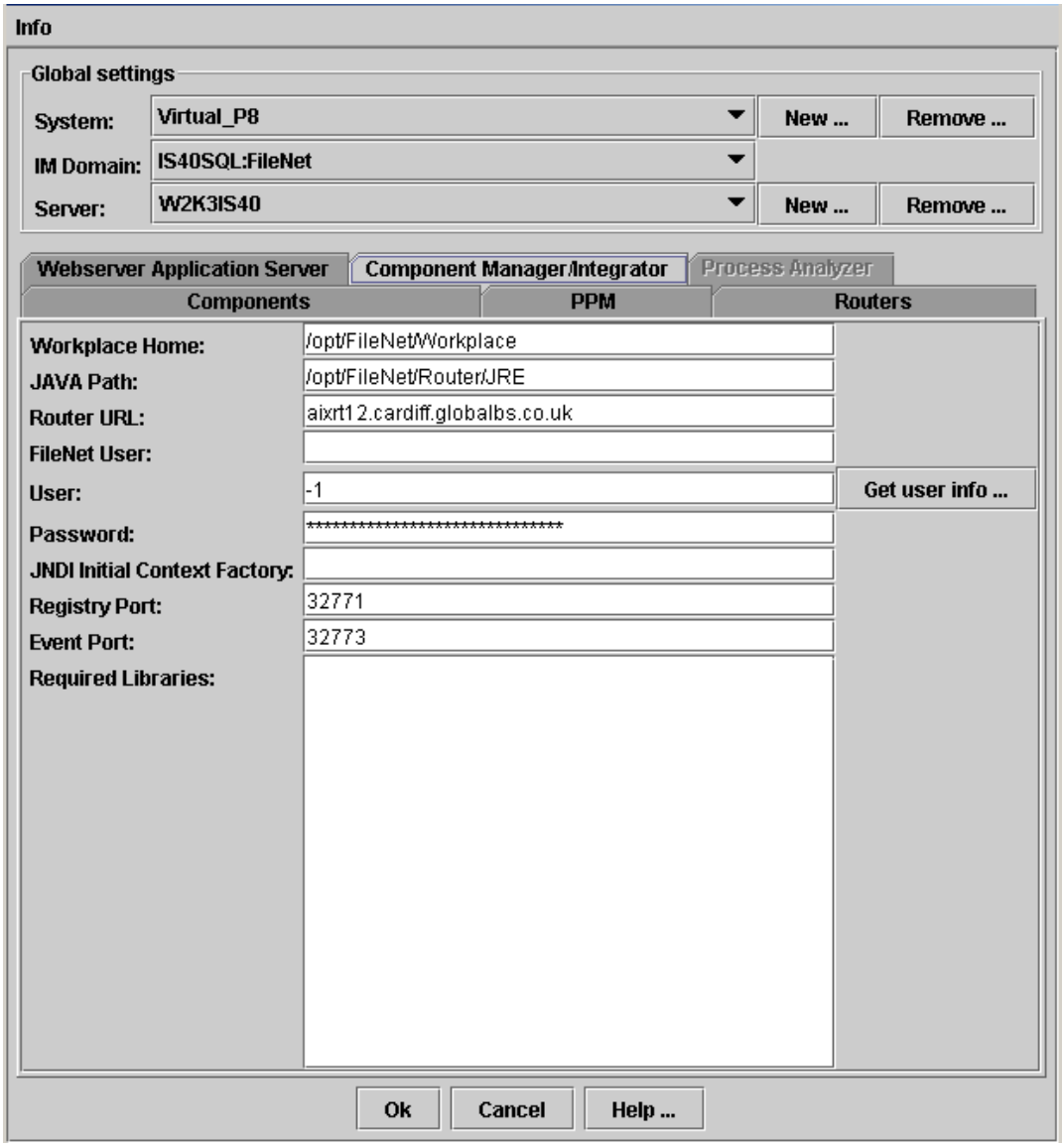
Debug File
Required. Specify the name of the output file where debug output must be written to.

Server library path
Required. Enter the path to the libraries of your web application server. The location of the libraries depends on the webserver type.

Java path
Required. Enter the path to Java bin directory, e.g. `C:/Program Files/JDK` on Windows or `/usr/local/java` on UNIX.

Note: For WebSphere and WebLogic 9 support the product own Java should be used. More detailed information about that is listed in the "prepare JMX support" documentation in the "Install Guide".

The Component Manager/Integrator tab



The Component Manager / Integrator tab

Workplace Home

Required. Enter the path to the Workplace installation directory, e.g. `C:/Program Files/FileNet/Workplace` on Windows or `/opt/ae/FileNet/Workplace` on UNIX.

JAVA Path

Required. Enter the path to Java bin directory, e.g. `C:/Program Files/JDK` on Windows or `/usr/local/java` on UNIX.

Router URL

Required. Enter the URL of the Process Router to be used for authentication. Enter the information in the following format: <*server*>:<*port*>/<*router-name*>.

FileNet User

Optional. If you specify a user name, the Component Manager will be started with this user instead of the *root* user.

User Name

Required. User name to connect to the router. Use the **Get user info ...** button to get the user and password information directly from the FileNet server.

User Password

Required. Password for the user specified above.

JNDI Initial Context Factory

(JMS-based components only) Identifies the class responsible for managing the connection to the J2EE JNDI server through which the JMS adaptor connects to the JMS queue.

Registry Port

Required. The RMI port that the Component Manager runs on. The port number must be greater than 1024.

Event Port

Optional. The port that the Component Manager listens to for incoming events.

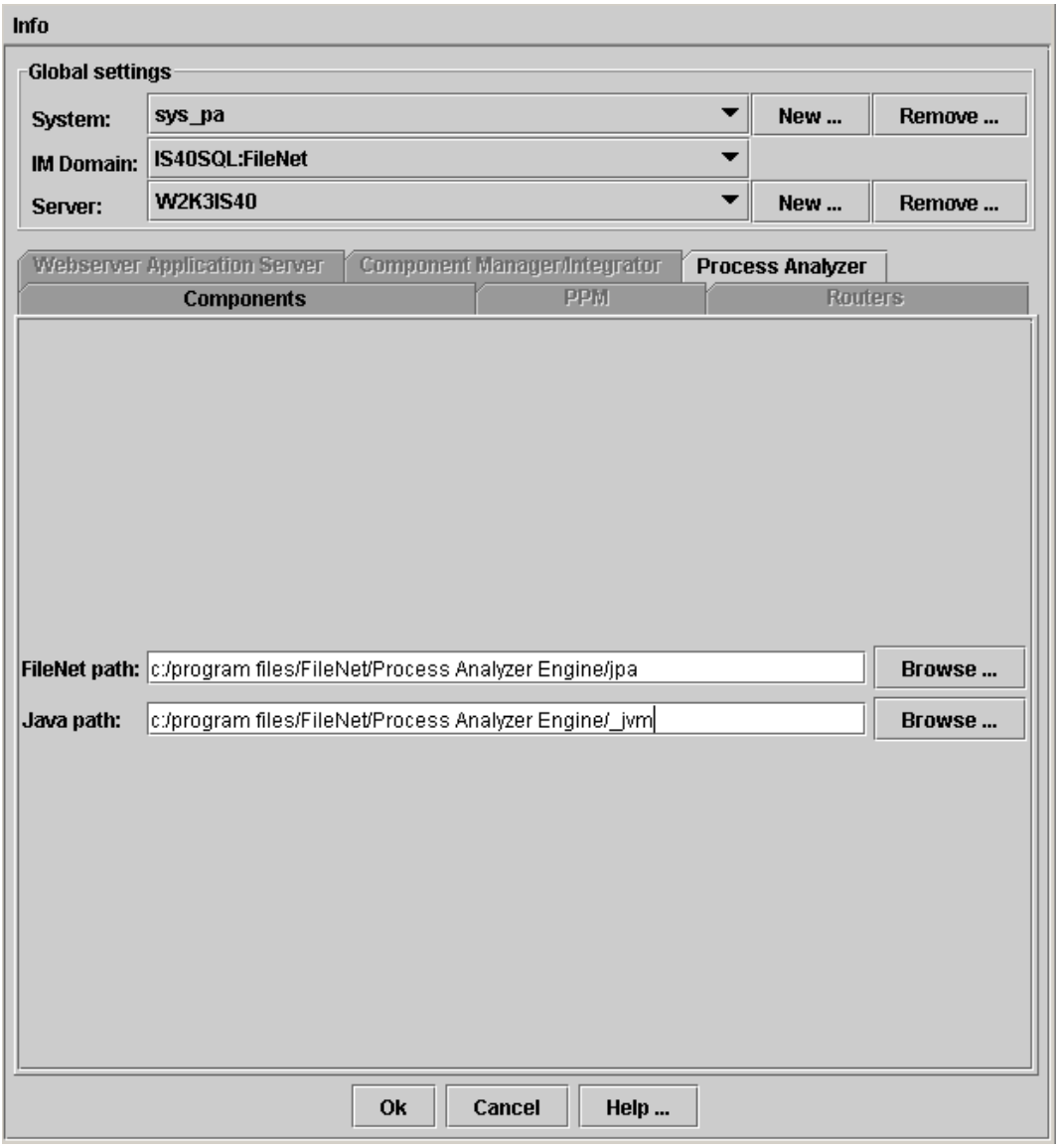
By entering an event port you configure the Component Manager to automatically respond to new events as they occur. Alternatively, if you set the event port to 0, the Component Manager does not automatically respond to new events as they occur; instead, the Component Manager polls periodically for new events.

Required Libraries

Required for external components. Specify the fully qualified names of the jar files that contain the class associated with each component queue. Each jar file must be specified in a single line.

The Start task for the Component Manager appends the jar file locations to the CLASSPATH when starting the Component Manager.

The Process Analyzer tab



The Process Analyzer tab

FileNet Home

Required. Enter the path to the Process Analyzer installation directory, e.g. `C:/Program Files/FileNet/Process Analyzer Engine/jpa`.

JAVA Path

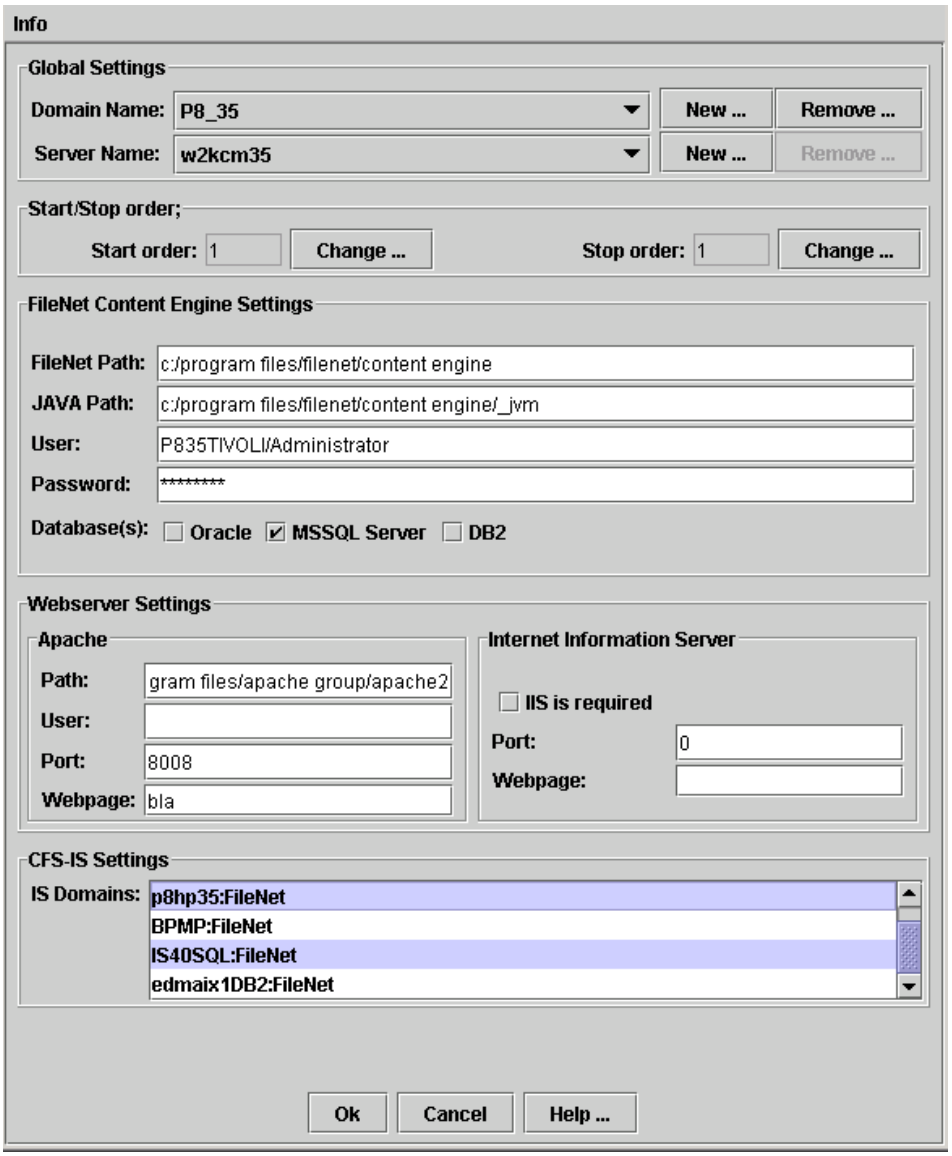
Required. Enter the path to Java bin directory, e.g. `C:/Program Files/FileNet/Process Analyzer Engine/_jvm`.

Configure Content Engine

To configure FileNet P8 Content Engine properties, press the **Configure Content Engine ...** button.

Configure Content Engine ...

The Content Engine configuration dialog opens:



The Content Engine configuration window

Global Settings

Domain Name

Required. Select a already configured domain or add a new by pressing the **New ...** button. The currently selected domain can be removed by pressing the **Remove ...** button.

NOTE The domain is shown in the FileNet Enterprise Manager and is case-sensitive. The FileNet domain specified in this field is completely independent from the Windows logon domain in the username specified in the field **User**.

Server Name
Readonly the server is entered in the **New Domain** dialog.

Start/Stop order

Start order
Use the **Change ...** button to the right of this field to change the start order for the selected server.

Stop order
Use the **Change ...** button to the right of this field to change the stop order for the selected server.

FileNet Content Engine Settings

FileNet Path
Required. Specify the installation path of the Content Engine Software, e.g. `C:/Program Files/FileNet/Content Engine`. The script checks if the file `WFLauncher.jar` (router implementation for CE) can be found in this directory.

JAVA Path
Required. Specify the installation path to the Java bin directory, e.g. `C:/Program Files/FileNet/Content Engine/_jvm`.

Note: JAVA is required for CENIT JAVA tools for Content Engine monitoring only.

User
Required. Specify a user name to the Content Engine.

If you specify a domain user, you can use either double backslashes or forward slashes, i.e. *`domain\\user`* and *`domain/user`* are all the same. For the configuration file, the backslashes are converted to a forward slash.

NOTE The user must be a valid user for the FileNet Enterprise Manager. It may be a domain user (windows_logon_domain/username). The FileNet domain specified as **Domain Name** above is completely independent from the Windows logon domain in the username.

Password
Required. Specify the password of the user given above.

Database
Required. Select the database type(s) that are used for Object Stores on the Content Engine.

Webserver Settings / Apache

Path
Required. Specify the installation path of the Apache Web Server Software, e.g. `C:/Program Files/Apache Group/apache2`.

User
Required on UNIX. Specify the user that must be used to start the Apache Web Server.

Port
Required. Specify the port number on which the Apache Web Server is listening. Default is *8008*.

Webpage
Required. This Apache Webpage needs to exist and will be monitored.

Web Server Settings / Internet Information Server

Required
Select **Yes** if you use IIS to provide WebDAV functionality on the Content Engine.

Port
Required. Specify the port number on which IIS is listening.

Webpage
Required. This IIS (WebDAV) page needs to exist and will be monitored.

CFS-IS Settings

IS Domains
Select one or more IS domains that have been set up for CFS-IS.

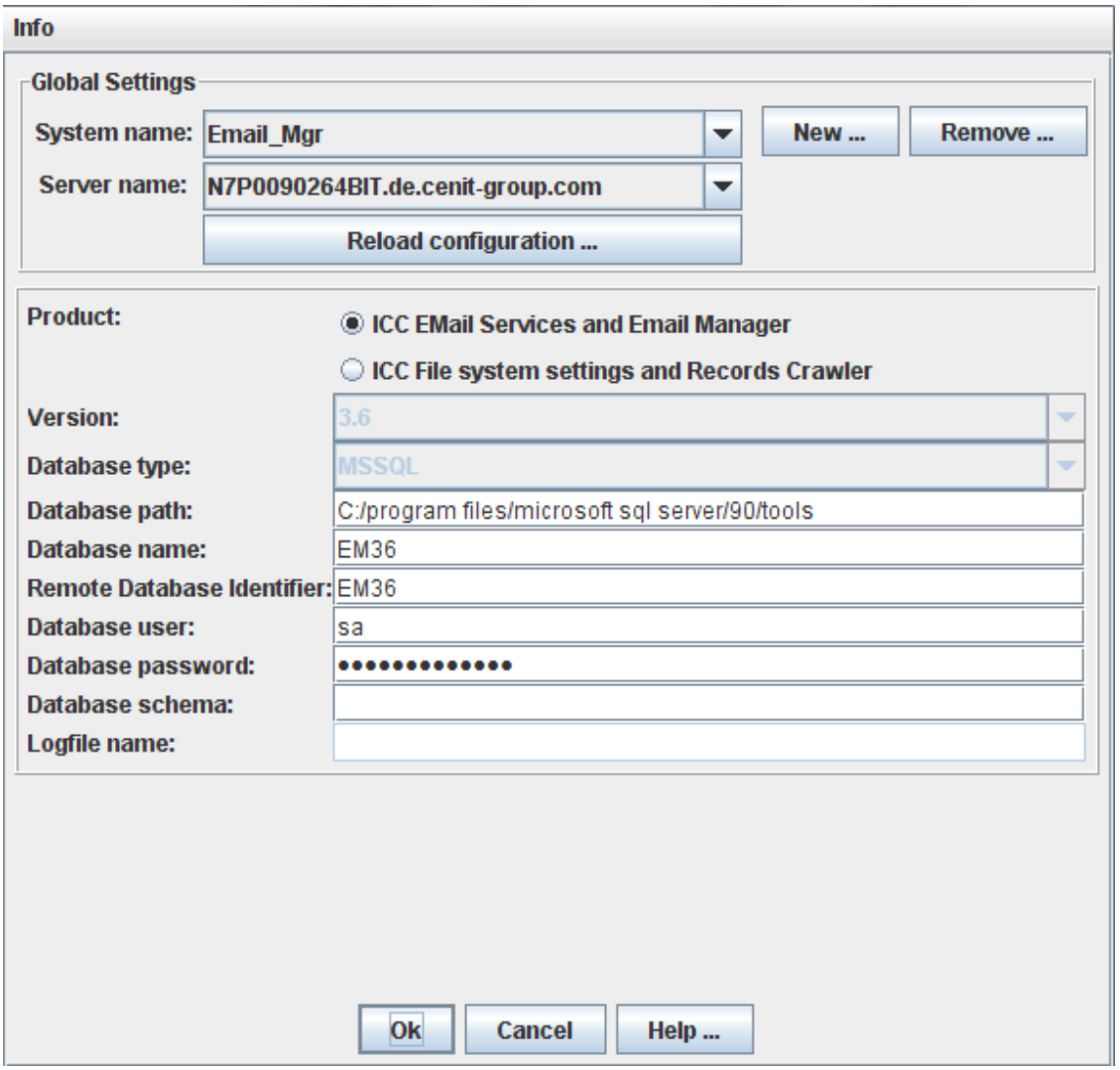
Configure IBM Content Collector, Email Manager and Records Crawler

To configure IBM Content Collector, IBM FileNet P8 Email Manager and Records Crawler properties, press the **Configure IBM Content Collector, Email Manager and Records Crawler...** button.

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication see chapter "How to configure and use the UnifiedDatabaseClient (UDC)" in the Installation Guide.

Configure IBM Content Collector, Email Manager and Records Crawler...

The IBM Content Collector, Email Manager and Records Crawler configuration dialog opens:



The IBM Content Collector, Email Manager and Records Crawler configuration window

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.

Global Settings

System Name

Required. Select an already configured system or add a new by pressing the **New ...** button. The currently selected system can be removed by pressing the **Remove ...** button.

Server Name

Readonly. The server is entered in the **New System** dialog.

Reload configuration ...

Press this button to reload the IBM Content Collector, Email Manager and Records Crawler settings from the registry of the given server.

Product

Select the product type for which the configuration must be saved. If the settings for one of the components cannot be read from the registry of the given server, the corresponding radio button is disabled.

Each server can have either an **IBM Content Collector Email Services and Email Manager** component or an **IBM Content Collector File system settings and Records Crawler** component. If both components must be configured on the same server, two distinct systems must be created.

Version

Readonly if the version can be determined from the registry. If the setting cannot be determined, the version can be selected.

NOTE Please select "4.0" as version number when configuring IBM Content Collector 2.1.x, 2.2.x or 3.0.

Database Type

Readonly if the database type can be determined from the registry. If the setting cannot be determined, the database type can be selected.

Database Path

Required. Enter the path to your RDBMS installation.

- Oracle: Path to the **bin** directory where the Oracle tools are installed:
  - Windows: **<drive letter>:/orant**
- MSSQL: Path to the **binn** directory where the MSSQL tools are installed. The location of this directory depends on the MSSQL Server version:
  - MSSQL Server 2000 or MSDE 2000: **<drive letter>:/Program Files/Microsoft Server/80/Tools**
  - MSSQL Server 2005: **<drive letter>:/Program Files/Microsoft Server/90/Tools**

  The installation script searches the **binn** directory for the tools **sqlcmd.exe**, **osql.exe** or **isql.exe**.
- DB2: Path to the **bin** directory where the DB2 tools are installed:
  - Windows: **<drive letter>:/Program Files/IBM/SQLLIB**
- JDBC client: Java install directory

If the JDBC based UDC communication to the DB should be used, specify the Java install path here (without /bin at the end) instead of the DB installation path. UDC supports Java version 7 and newer.

NOTE Use / instead of \ in the pathname.

Database Name

Required. Enter the name of the components database if it does not match the shown value from the registry.

For Oracle, this field corresponds to the setting of `ORACLE_SID`.

Remote Database Identifier

Oracle via Oracle Client access

If your database is configured for remote access, enter the TNS name (Service name) of the database (otherwise not required).

MSSQL via MSSQL client access

Specify the Server/Instance name. The value is optional.

The following combinations are possible:

- Leave this parameter unset, if the local Default MSSQL instance should be monitored.
- Specify the remote MSSQL server name, if the Default instance should be monitored on a remote server.
- Specify MSSQL Server name/Instance name, if a custom MSSQL instance on the local or remote server should be monitored.

NOTE Use / instead of \ between MSSQL Server and Instance name!

DB2 via DB2 client access

DB2 instance name (required).

Oracle via JDBC (UDC) access

If the JDBC based UDC communication to the Oracle DB should be used the configuration for an ORACLE DB server looks like: <Oracle server name>,<path to the Oracle JDBC driver location>,[optional Oracle port]. The default port number is 1521.

Example: *`oracleServ1,C:/Program Files/oraclejdbc,1521`*

MSSQL via JDBC (UDC) access

If the JDBC based UDC communication to the MSSQL DB should be used the configuration for a Default MSSQL instance looks like: <MSSQL server name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port]. The default port number is 1433.

Example: *mssqlServ1,C:/Program Files/sqljdbc11/enu,1433*

An MSSQL custom instance UDC configuration looks like; <MSSQL server name>/<Instance name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port].

Example: *mssqlServ1/INSTANCE1,C:/Program Files/sqljdbc11/enu,1433*

NOTE For information on how to connect to an SSL secured MSSQL Server see Chapter *How to configure and use the UnifiedDatabaseClient* in the *ECM SM Install Guide*.

DB2 via JDBC (UDC) access
If the JDBC based UDC communication to the DB2 database should be used the configuration for a DB2 instance/database looks like: <DB2 server name>,<path to the DB2 JDBC driver location>,[optional DB2 port]. The default port number is 50000.

Example: *db2Serv1,C:/Program Files/db2jdbc,50000*

User
Required for DB2 and Oracle, optional for MSSQL. Enter the user that must be used to access the components database.

MSSQL
Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

Password
Required for DB2 and Oracle, optional for MSSQL. Enter password for the user specified above. The password will be encrypted before it is stored in the environment file.

Schema name
DB2 only: Specify the DB2 components schema name (required).

Logfile Name
Readonly if the logfile name type can be determined from the registry. If the setting cannot be determined, the logfile name can be entered.

This logfile name (including full path) points to the IBM Content Collector, Email Manager or Records Crawler primary logfile.

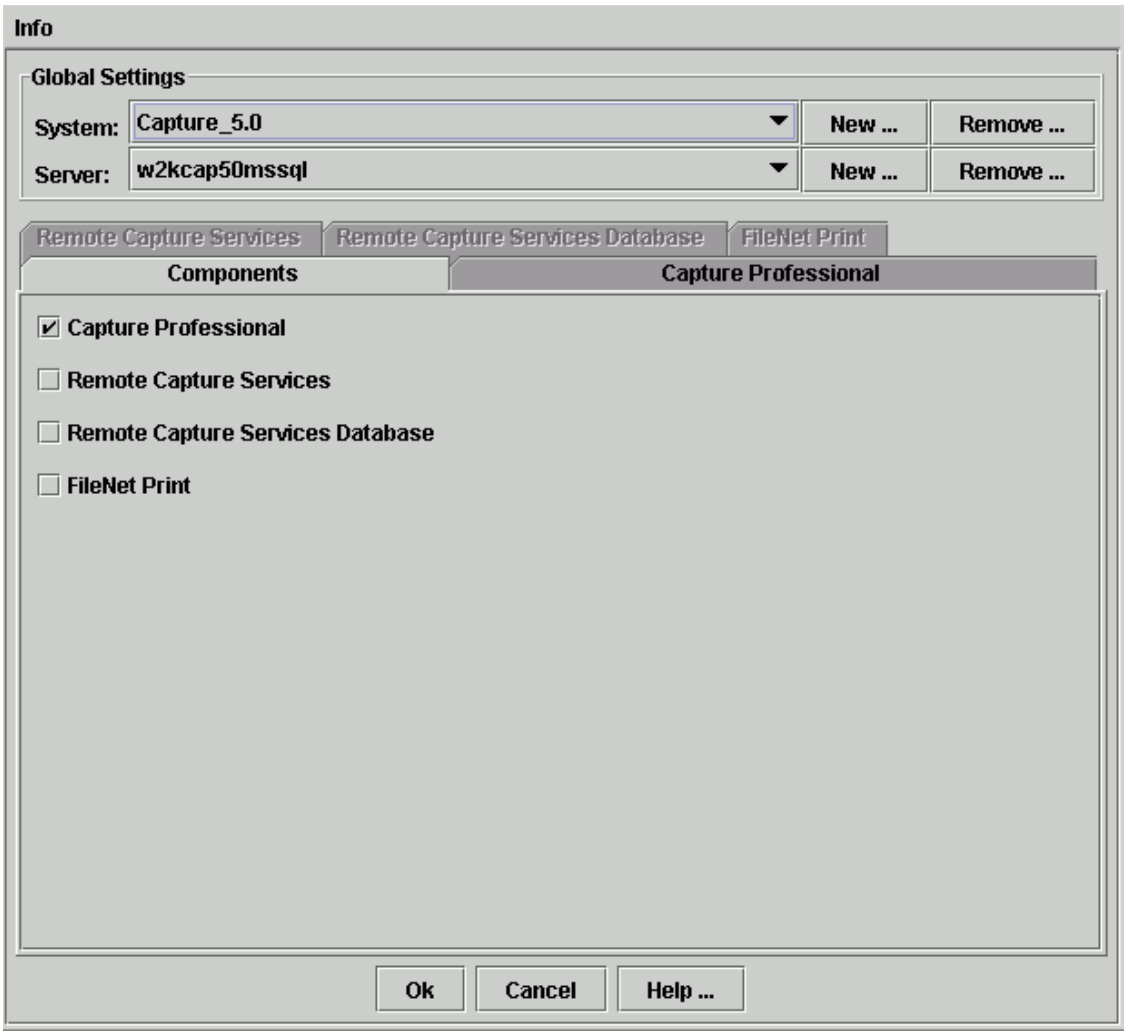
NOTE The location of the log file can be gathered from the ICC configuration manager GUI. Verify the entry of **Log file location**.

Configuring FileNet Capture

To configure FileNet P8 Capture properties, press the **Configure FileNet Capture...** button.

Configure FileNet Capture ...

The FileNet Capture configuration dialog opens:



The FileNet Capture configuration window

The upper part of the dialog shows the **Global Settings**. The lower part shows the components that have already been configured for the selected server.

Global Settings

System Name

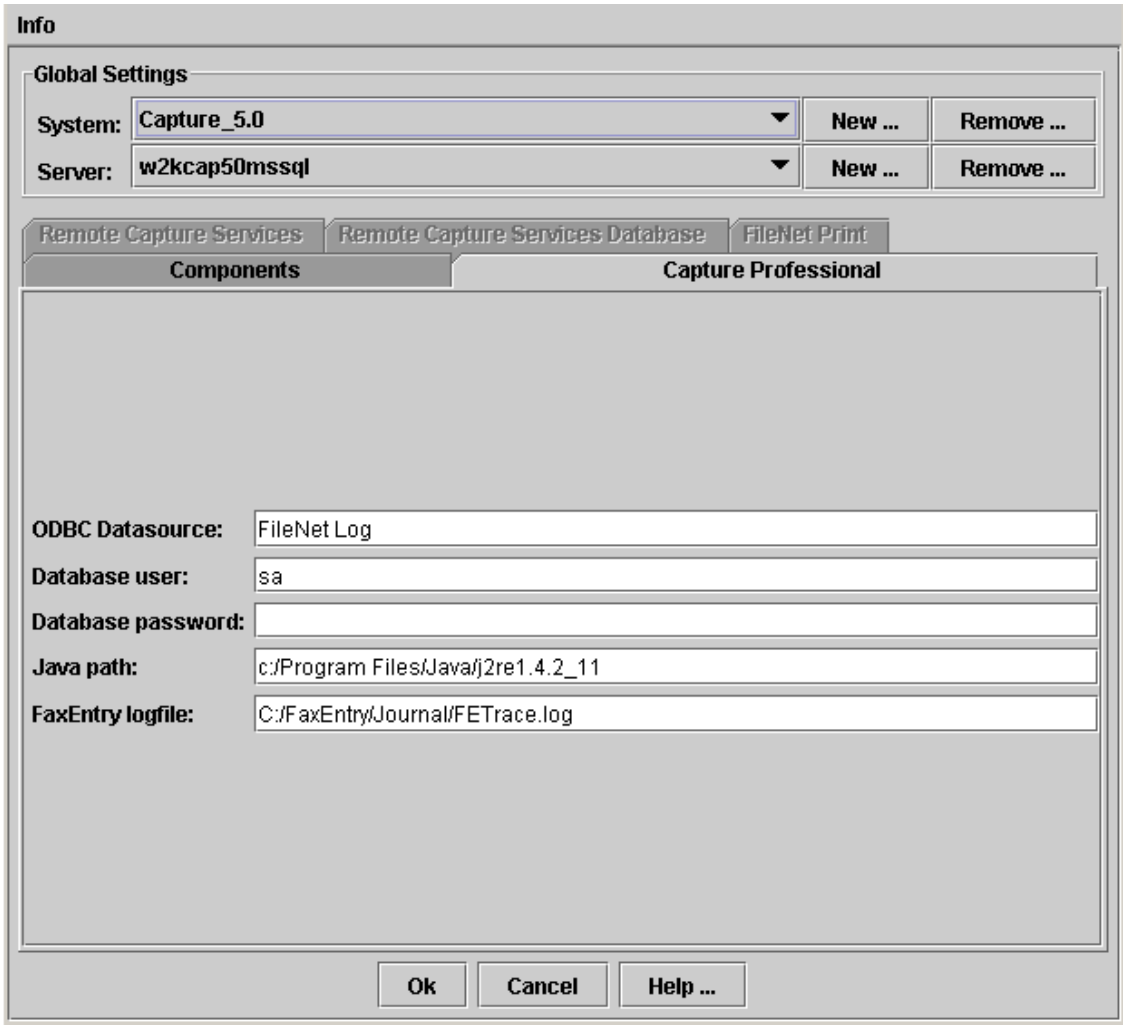
Required. Select an already configured system or add a new by pressing the **New ...** button. The currently selected system can be removed by pressing the **Remove ...** button.

Server Name

Required. Select an already configured server or add a new by pressing the **New ...** button. The currently selected server can be removed by pressing the **Remove ...** button.

If you mark a checkbox, the tab for the corresponding component will be activated. If you unmark a component, the data will be removed for the selected server.

The Capture Professional tab



The Capture Professional tab

ODBC Datasource

Required if you want to monitor the Capture Trace log. Enter the name of the ODBC datasource where CALA must read from.

To enable tracing and find out the name of the ODBC datasource open **Programs FileNet Capture Professional *Trace*** from the Windows start menu. Mark the checkbox **Enable Tracing**. The datasource name is shown in the **Record to** combobox.

Database user

Optional. Enter the user if the ODBC datasource requires a logon.

Database password

Optional. Enter the password for the user specified above if the ODBC datasource requires a logon

Java path

Required if you want to monitor the Capture Trace log. Enter the path to the Java bin directory.

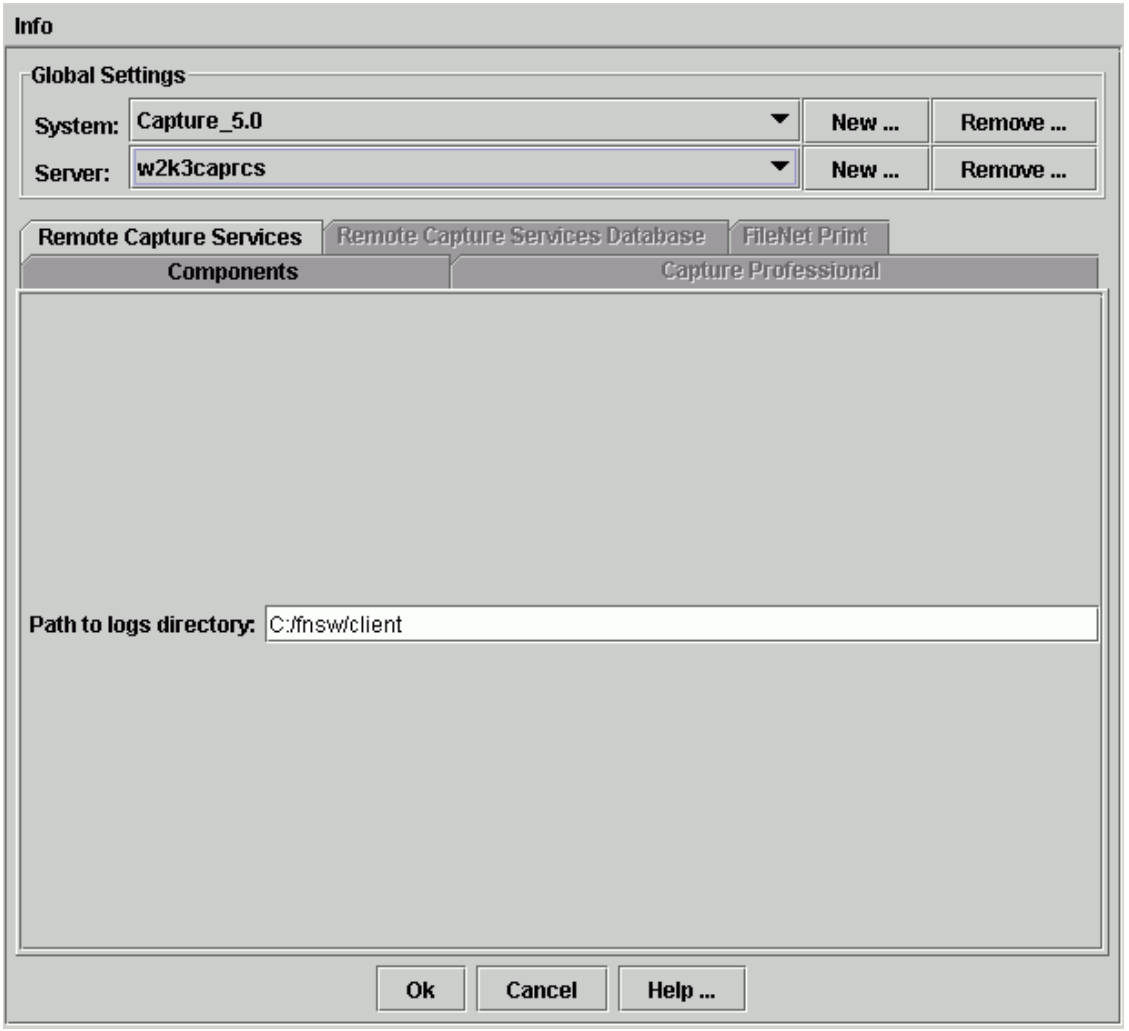
NOTE CALA uses the JDBC-ODBC-Bridge contained in the Java Runtime. Because of this, a Java must be installed on the client to enable reading of the Capture Tracelog.

FaxEntry logfile

Optional. Enter the full-qualified name of the FaxEntry trace file.

To find out the name of the Fax Entry tracefile open **Programs FileNet Capture Professional *Fax Entry*** from the Windows start menu. Select **Configure *Trace*** from the menu. The name of the tracelog file is shown in the field **Trace File Name**.

The Remote Capture Services tab



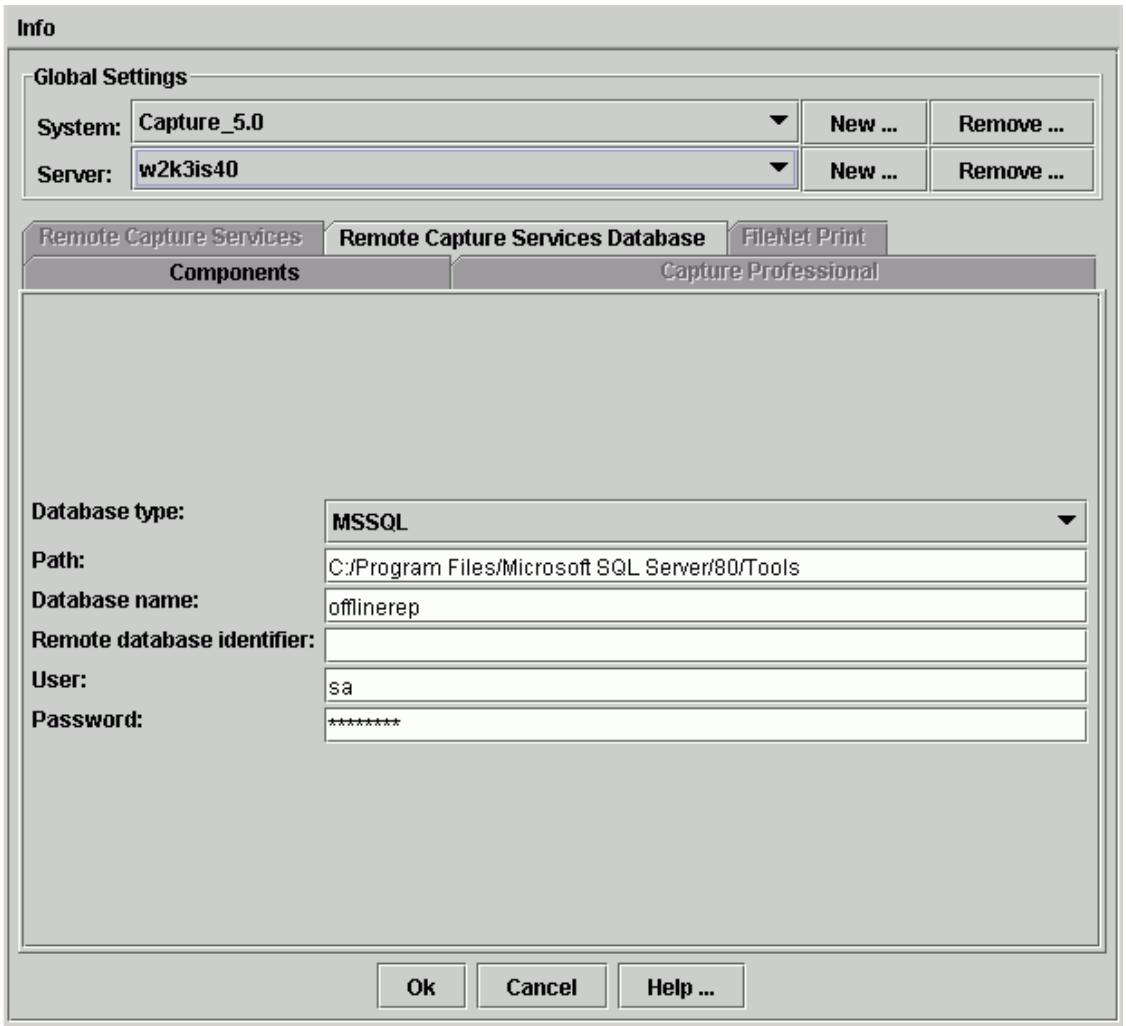
The Remote Capture Services tab

Path to logs directory

Required. Enter the path to the logs directory where the logfiles for RCS are located, e.g. *`c:/fnsw/client`*.

The Remote Capture Services Database tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.



The Remote Capture Services Database tab

Database Type

Required. Select the database type of the RCS database.

NOTE At the moment, only MSSQL is supported.

Database Path

Required. Enter the path to the `binn` directory where the MSSQL tools are installed. The location of this directory depends on the MSSQL Server version:

- MSSQL Server 2000 or MSDE 2000: `<drive letter>:/Program Files/Microsoft Server/80/Tools`
- MSSQL Server 2005: `<drive letter>:/Program Files/Microsoft Server/90/Tools`

- JDBC client
  If the JDBC based UDC communication to the DB should be used, specify the Java install path here (without /bin at the end) instead of the DB installation path. UDC supports Java version 7 and newer.

The installation script searches the `binn` directory for the tools **sqlcmd.exe**, **osql.exe** or **isql.exe**, if UDC is configured it searches for **java.exe** in the `bin` subdirectory of the path.

NOTE Use / instead of \ in the pathname.

Database Name

Required. Enter the name of the RCS database.

Remote Server / Instance name

The following combinations are possible for the parameter MSSQL Remote Server or Servername/Instancename:

Leave this parameter unset, if the local Default MSSQL instance should be monitored

Specify the remote MSSQL server name, if the Default instance should be monitored on a remote server

Specify MSSQL Server name/Instance name, if a custom MSSQL instance on the local or remote server should be monitored.

Note: Use "/" instead of "\" between MSSQL Server and Instance name!

If the JDBC based UDC communication to the MSSQL DB should be used the configuration for a Default MSSQL instance looks like: <MSSQL server name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port]. The default port number is 1433. Example: mssqlServ1,C:/Program Files/sqljdbc11/enu,1433. A MSSQL custom instance UDC configuration looks like; <MSSQL server name>/<Instance name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port]. Example: mssqlServ1/INSTANCE1,C:/Program Files/sqljdbc11/enu,1433.

NOTE For information on how to connect to an SSL secured MSSQL Server see Chapter *How to configure and use the UnifiedDatabaseClient* in the *ECM SM Install Guide*.

User

Optional. Enter the user that must be used to access the RCS database.

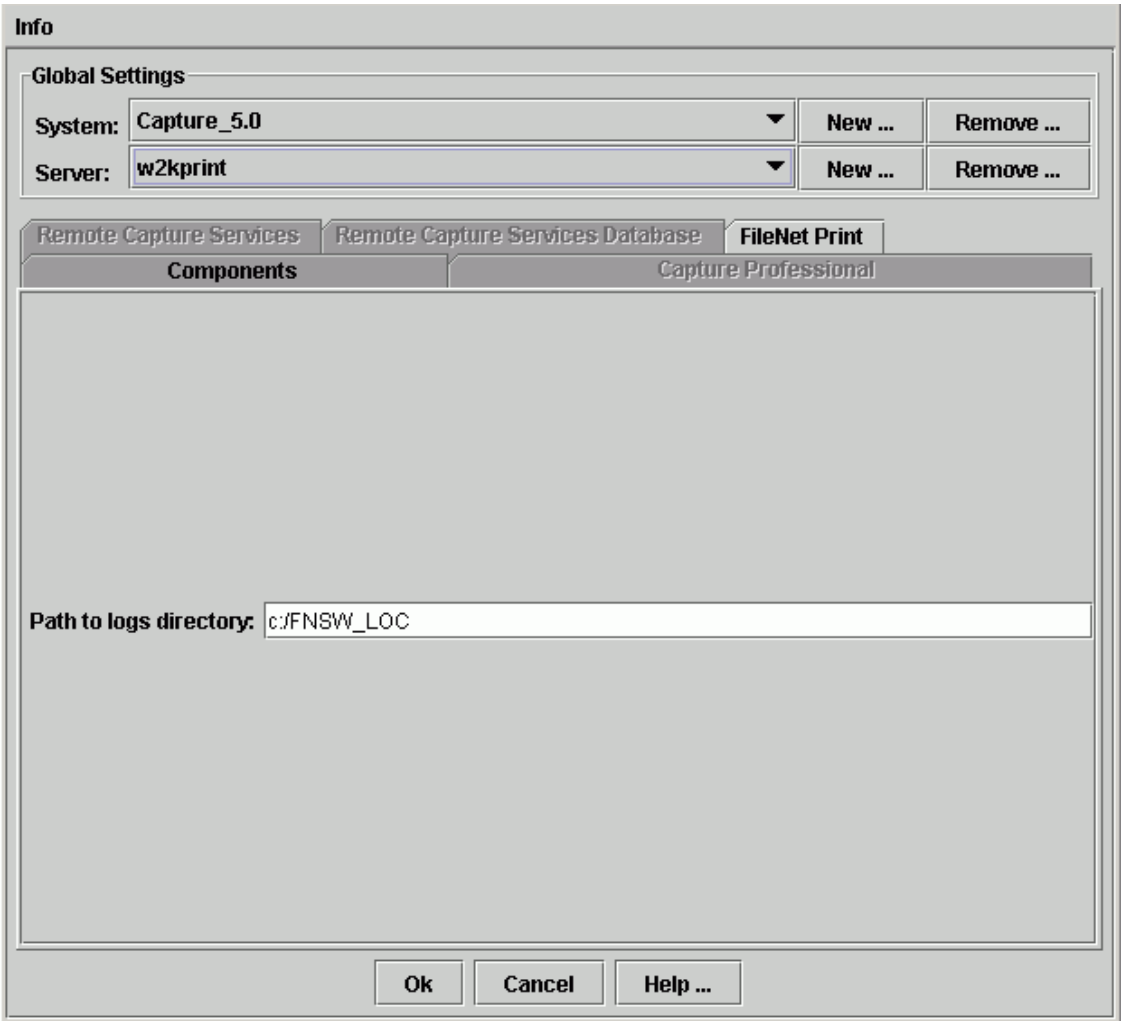
MSSQL

Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

Password

Optional. Enter password for the user specified above. The password will be encrypted before it is stored in the environment file.

The FileNet Print tab



The FileNet Print tab

Path to logs directory

Required. Enter the path to the logs directory where the logfiles for FileNet Print are located, e.g. *c:/*FNISW_LOC.

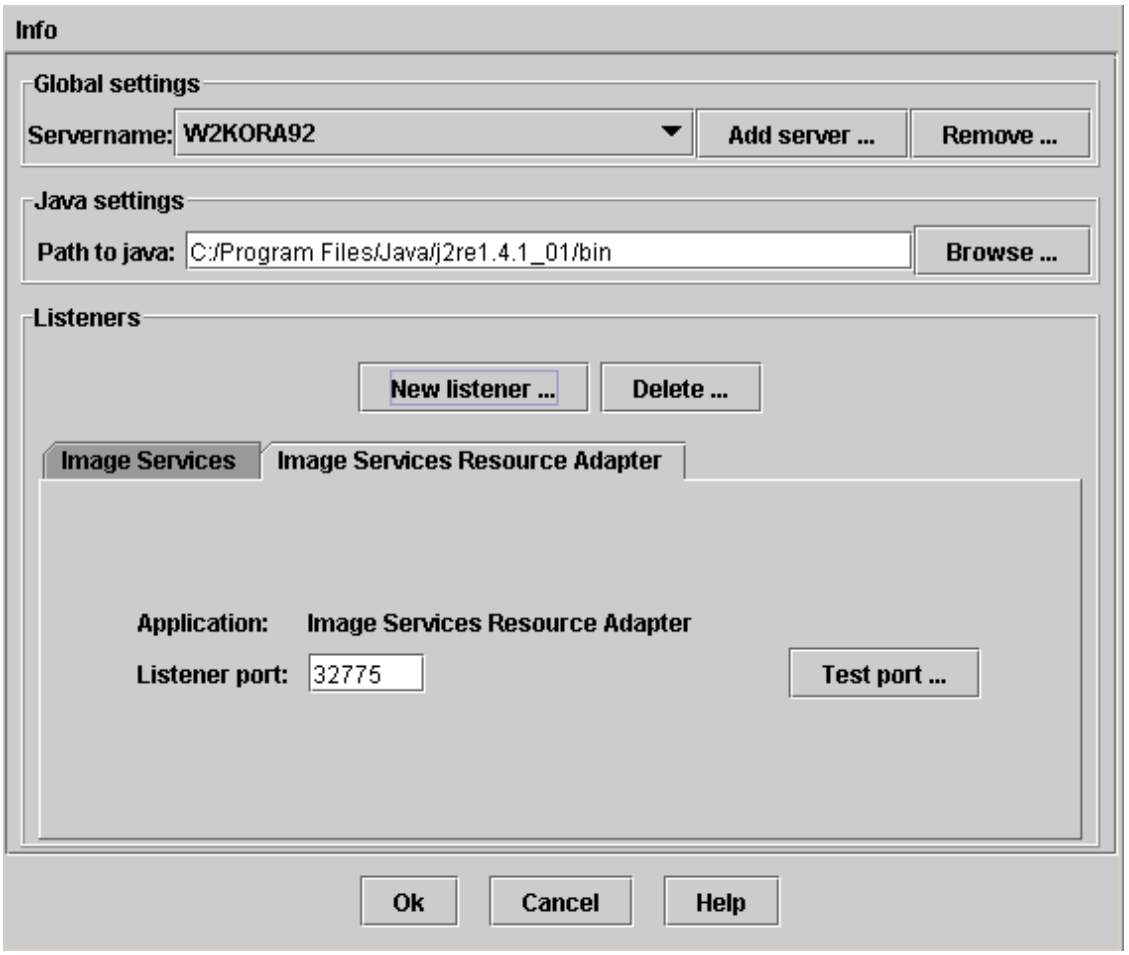
Configuring a FileNet Listener

NOTE The FileNet Listener monitors must be run with Java(TM) 7 or higher. They will not work with older Java(TM) versions.

To configure a FileNet Listener, select the appropriate plug-in in the main installer dialog:

Configure FileNet Listener ...

This is the main window for configuring FileNet Listeners:



Listener configuration window

Global Settings

Server

The listbox shows all servers already configured for FileNet Listeners, use the **Add server...** and **Remove ...** buttons to add or remove servers.

Java Settings

Path to java

Required. Specify the path to the Java bin directory. You can also use the **Browse ...** button to the right of the entry field to open a file browser and navigate to the correct directory.

Listeners

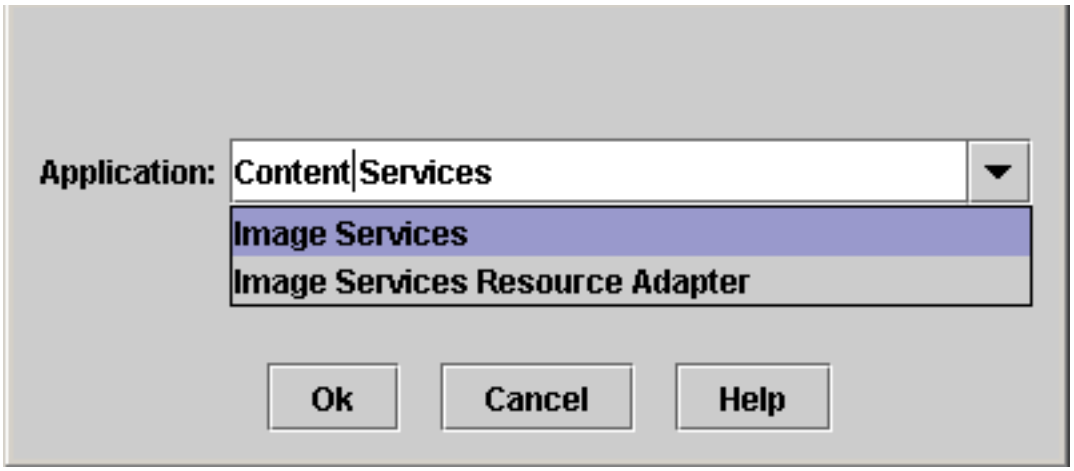
Use the **New listener ...** button to add new Listeners. Each Listener will be shown on its own tab in the lower area of the dialog.

Use the **Delete ...** button to delete a Listener configuration.

Port

Required. Enter the port number for communication with the Listener. This should be the port number of the primary Listener on the server. Use the **Test port ...** button to check the communication with the Listener.

This is the dialog shown after pressing the **New listener ...** button:



New Listener dialog

Application

Choose an application from the list of predefined entries or add a new application in the entry field.

Configuring ECM SM clients for IBM FileNet Content Services

Configure IBM FileNet Content Services

Pressing the **Configure Content Services ...** button opens the IBM FileNet Content Services configuration dialog.

The dialog consists of an upper part in the **Global settings** box and a bottom part containing some tabs (see screenshot on the next page).

Global settings:

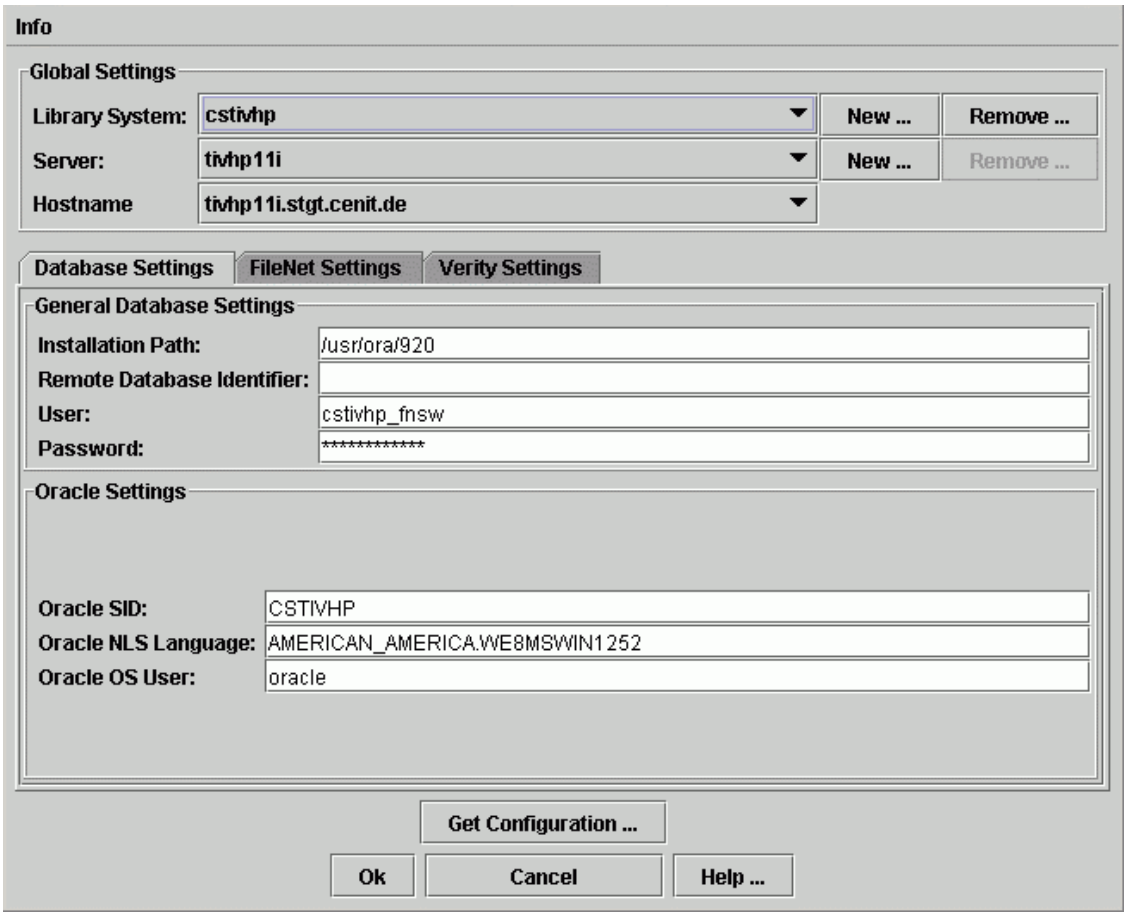
Library System
Select the Library System you want to configure. Press the **New ...** button to add a new Library System system. Press the **Remove ...** button to remove the selected Library System from the configuration.

Server
Select the server you want to configure. Press the **New ...** button to add a new Verity standalone server. The **Remove ...** button is only activated if a standalone Verity server is selected. The servers that form the IBM FileNet CS system (Storage Managers and Content Search Managers) are added automatically to the **Server** list when you press the **Get Configuration ...** button.

Hostname
Required. The list shows all machines that have a CALA_REX client installed. Choose the correct hostname of the server selected in the **Server** listbox. This is the name that will be used in the Web Console.

The Database tab

This tab is only activated if the Property Manager is selected. If another Library System is selected in the listbox, the Property Manager is selected automatically. To reload the configuration from the FileNet database, press the **Get Configuration ...** button.



Database Settings tab

General Database Settings

Installation Path

Required. Enter the path to your RDBMS installation.

The most common values are `/usr/oracle` for Oracle on UNIX or `<drive letter>:/orant` for Oracle on Windows.

For MSSQL Server databases, common values are `<drive letter>:/Program Files/Microsoft Server/80/Tools` for SQL Server 2000 or `<drive letter>:/Program Files/Microsoft Server/90/Tools` for SQL Server 2005.

Remote Database Identifier

Optional. If the database is a remotely hosted Oracle database specify the Oracle Global name (TNS name / Service name).

If the database is a remotely hosted MSSQL database specify one of the following combinations:

Leave this parameter unset, if the local Default MSSQL instance should be monitored

Specify the remote MSSQL server name, if the Default instance should be monitored on a remote server

Specify MSSQL Server name/Instance name, if a custom MSSQL instance on the local or remote server should be monitored.

Note: Use "/" instead of "\" between MSSQL Server and Instance name!

User

Required for Oracle, optional for MSSQL. Specify the Database User for all SQL-Statements.

If your database is Oracle, you can create a database user by executing the task *`Create Library System Oracle User`* with the ECM SM Task Execution Manager.

If your database is MSSQL, you can leave this field empty. In that case, the tasks and monitors will try to connect using Windows authentication. Make sure that CALA and the CALA_REX client are using an account that has permission to access the database.

Password

Required for Oracle, optional for MSSQL. Specify the password of the Database User.

Oracle Settings

Oracle SID

Required for Oracle only. Specify the `ORACLE_SID`, where the IBM FileNet CS tablespace is located (if Property Manager is based on Oracle).

Oracle NLS_LANG

Required for Oracle only. Specify the value of the Oracle `NLS_LANG` parameter.

Oracle OS User

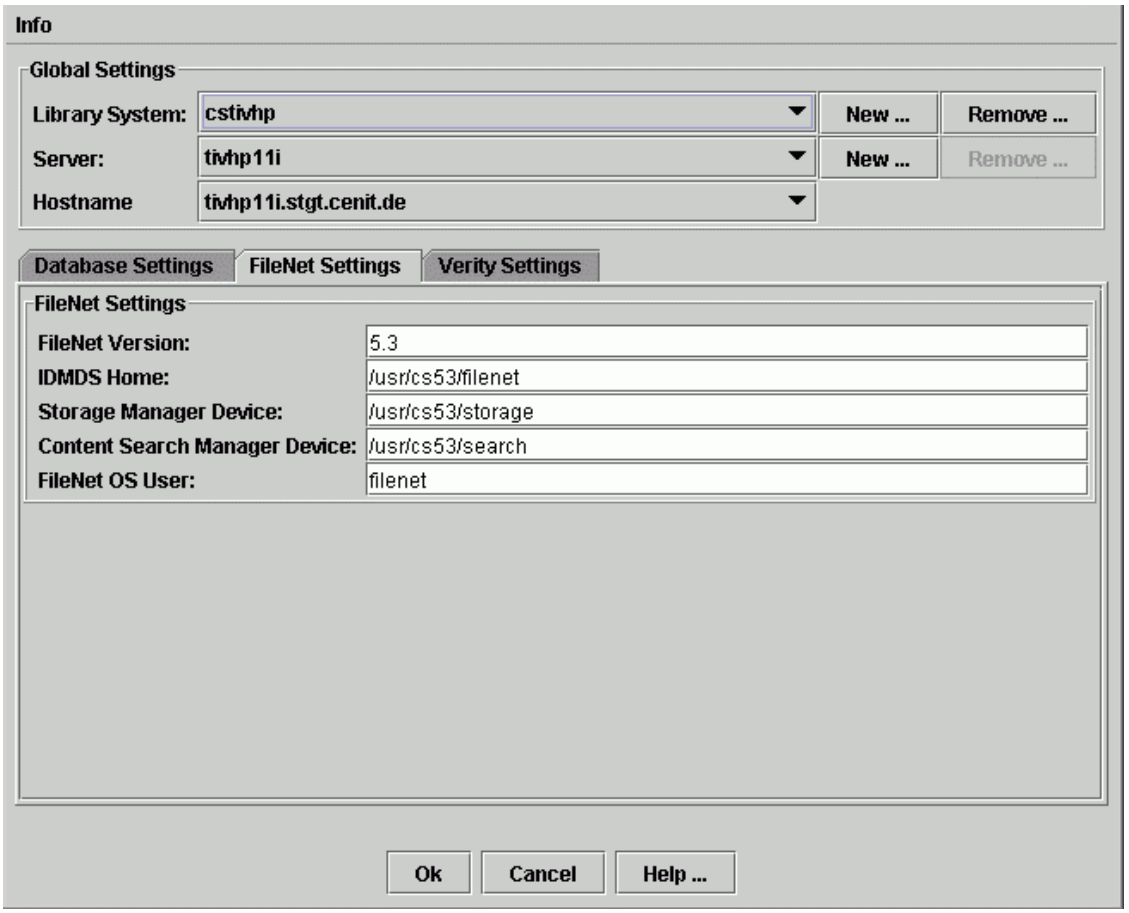
Required for Oracle on UNIX only. OS user to execute Oracle commands.

Get Configuration

Press this button to load the configuration from the IBM FileNet CS database. This fills the **Server** listbox as well.

The FileNet tab

This tab is available for all Storage Managers and Content Search Managers of the IBM FileNet CS system.



FileNet Settings tab

FileNet Settings

FileNet version
Required, normally filled by **Get Configuration ...**. The version of the installed software.

IDMDS Home
Required, normally filled by **Get Configuration ...**. Home directory of the FileNet CS installation.

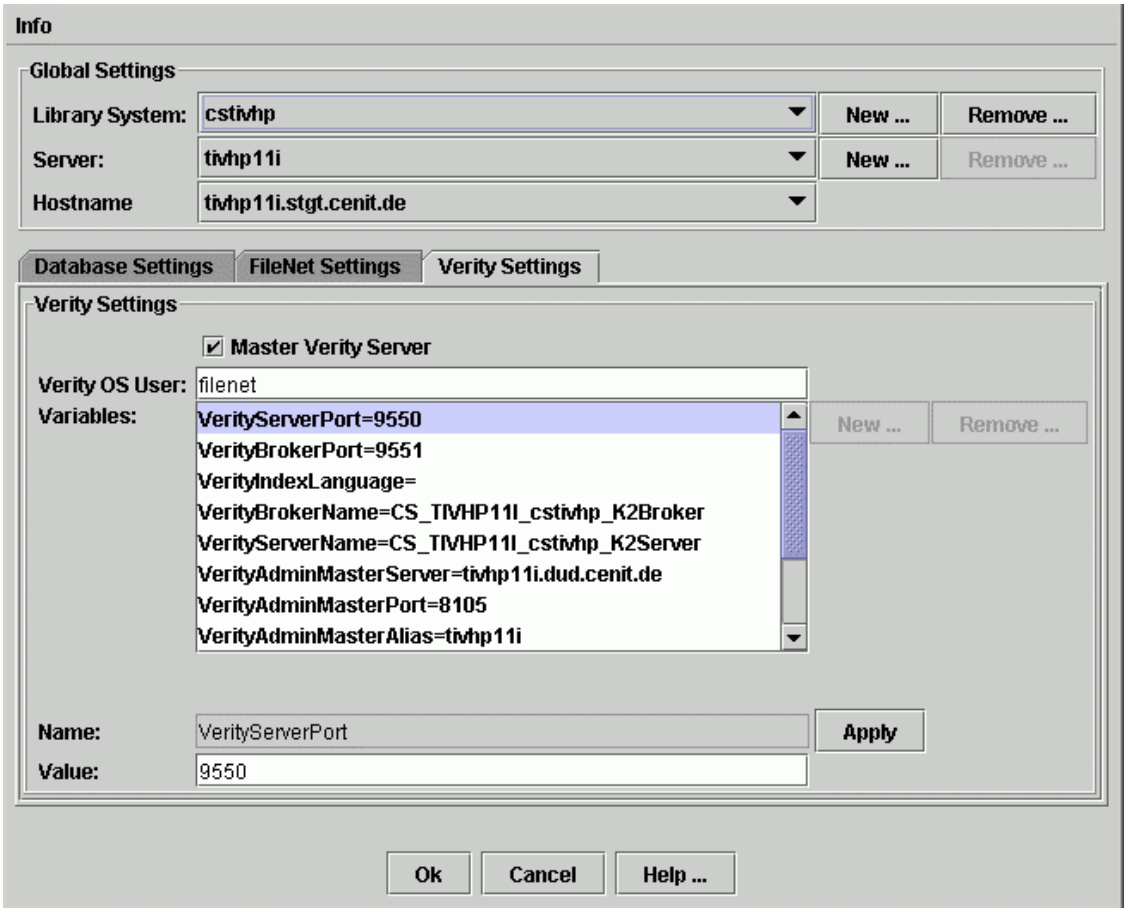
Storage Manager Device
Required for Storage Managers. Enter the installation device of the StorageManager if the value is not correctly shown.

Content Search Manager Device
Required, normally filled by **Get Configuration ...**. Installation device of the Content Search Manager.

FileNet OS User
Required for UNIX only. OS user to execute FileNet commands.

The Verity tab

This is the only tab that is activated for standalone Verity servers.



Verity Settings tab

Verity Settings

Master Verity Server
Optional. Check this box if this is the master Verity Server. If the IBM FileNet CS system contains only one Verity Server, this server will be marked automatically.

Verity OS User
Required for UNIX only. OS user to execute Verity commands.

Variables
Read-only. Shows all Verity variables defined for this server.

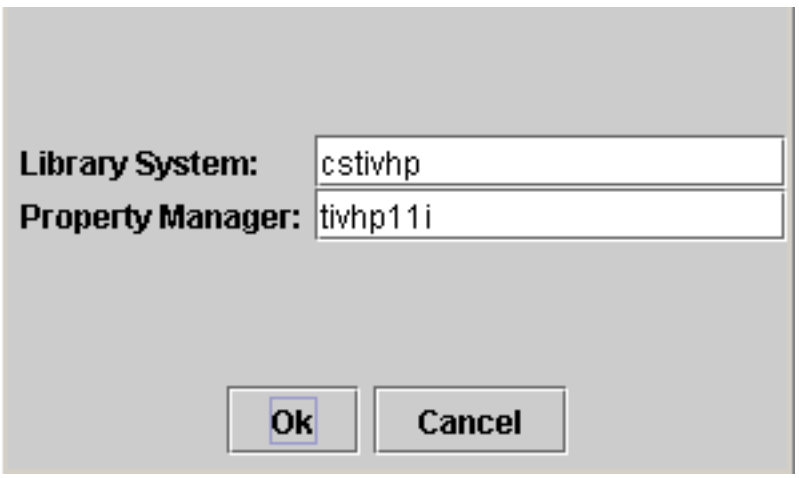
NOTE The **New ...** and **Remove ...** buttons are currently disabled because additional variables are not processed yet

Name
Read-only. Shows the name of the variable that is currently selected in the listbox.

Value
Required. Enter the value of the variable. Use the **Apply** button to transfer the new value to the listbox.

The New Library System dialog

This dialog is shown if you press the **New ...** button next to the **Library System** listbox in the **Global Settings** panel.



New Library System dialog

Library System
Required. Enter the name of the new Library System.

The name entered here must match the name of the Library System in the IBM FileNet CS configuration. Note that the Library System name is case sensitive.

Server
Required. Enter the name of the Property Manager as it is known in the IBM FileNet CS Library System. If the network name differs, you can select it from the **Hostname** listbox in the main window after pressing the **Ok** button.

After pressing the **Ok** button, you are returned to the main configuration window. The **Database Settings** tab will be selected automatically. Adjust the hostname if required and fill in the database details of the IBM FileNet CS database.

The **Get Configuration ...** button retrieves the information about the specified Library System from the database and fills the server listbox. Select each server and complete the settings on the FileNet tab and on the Verity tab.

The New Verity Server dialog

The **New Verity Server** dialog is shown if you press the **New ...** button next to the **Server** listbox in the **Global Settings** panel.

New Verity Server dialog

Hostname

Required. Enter the hostname of the server you want to add. This is the name that is added to the server listbox. You can select a different value in the **Hostname** field in the main configuration window.

Press the **OK** button to add the server to the listbox in the main configuration dialog. The **Verity Settings** tab will be selected automatically.

Excluding servers of a Library System

If you want to exclude one or more servers of a Library System from being managed, you need to create a file `fnds_do_not_manage.<Library System name>`, which contains the server names to be excluded. The file must be located on the ECM SM server in the directory where the configuration files are stored (normally `/opt/FileNet/SysMon/repos/config/PAM`).

NOTE You cannot exclude the Property Manager

Example:

If you want to exclude the server *W2KCS54* from the Library System *cs54db*, you need to create the exclude file **/opt/FileNet/SysMon/repos/config/PAM /fnds_do_not_manage.cs54db**.

This is the example contents of **/opt/FileNet/SysMon/repos/config/PAM /fnds_do_not_manage.cs54db**:

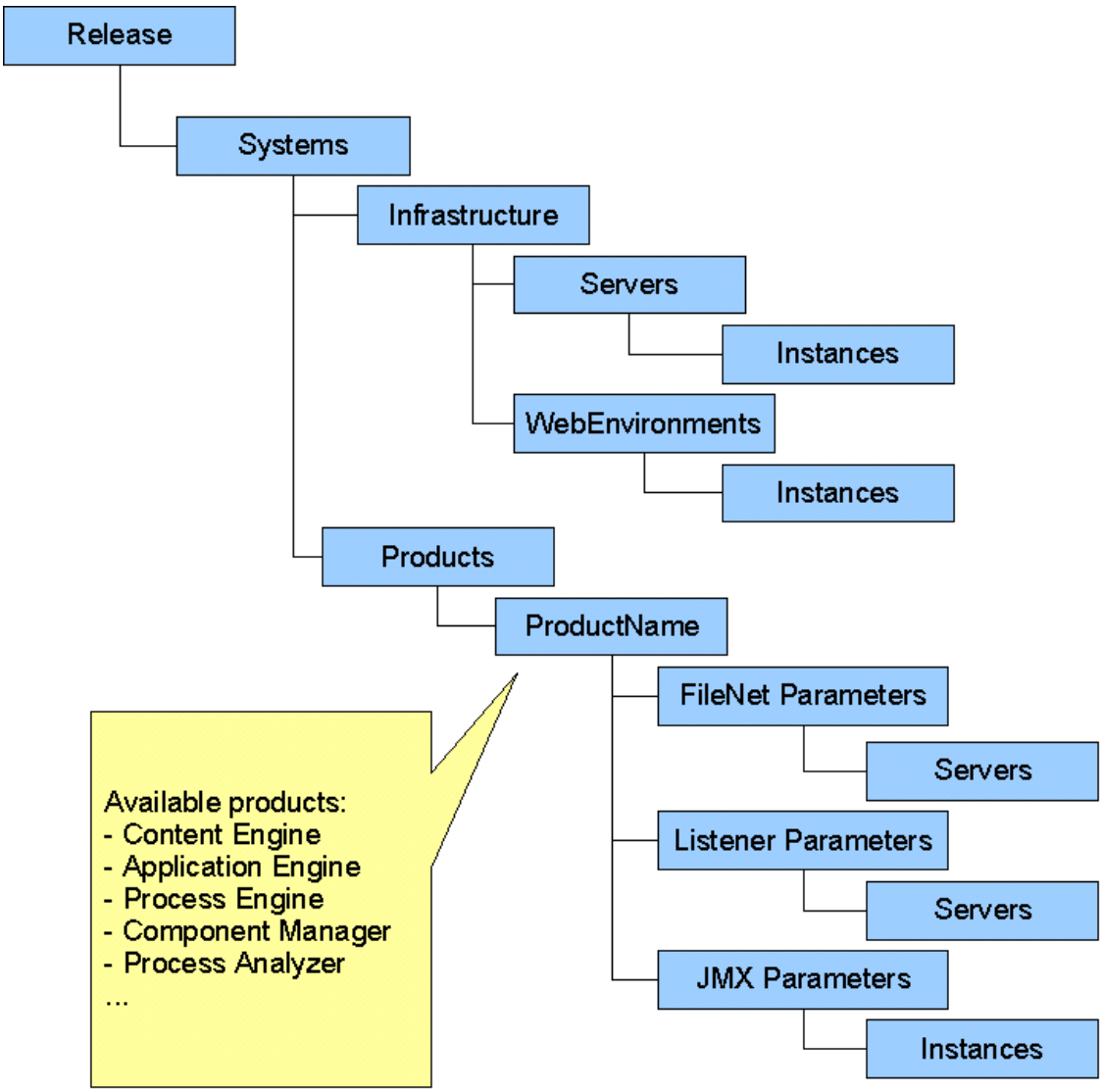
```
# This is the server exclude file of Library System cs54db
W2KCS54
```

The name of the Library System and the name of the server are case sensitive (server names are uppercase letters).

Configuring ECM SM clients for IBM FileNet P8 4.x/5.x

Configure IBM FileNet P8 4.x/5.x

To configure IBM FileNet P8 4.x/5.x properties, press the **Configure FileNet P8 4.x and 5.x Client ...** button.



Structure of the IBM FileNet 4.x / 5.x hierarchy structure.

The root element of the IBM FileNet 4.x/5.0x structure is the so called "Release". It is only an abstract element which is a container of several "Systems". The configuration can consist of several different configured "Systems", which are all stored in the "Release". A system is a whole configuration for a complete environment of several different servers, farms, clusters and products, just as Content Engine or Process Engine running on these machines. Every system has a set of different "Servers" which contain the connection information

of a physical machine. One server can have several "Instances" which contain JMX specific configuration parameters. Instances are abstract servers which are defined in a web application server environment, since application servers have internal structures just as Cells, Nodes and Servers. Several Instances are grouped in so called "WebEnvironments". WebEnvironments can contain also instances from several servers. The servers and instances which are used in the infrastructure, finally are used in the definitions of the products (CE, AE, PE, CM, PA...).

Release

The release is the top level root element. The user will never see the release as an element in the GUI, but since there should not be several root elements (in this case this would be the systems) there is one virtual root element (the release).

System

The system is a collection of all computers and resources of a P8 installation, including the servers and the configuration for the installed products like Process Engine or Content Engine. The system includes the whole configuration for a complete P8 4.x/5.x installation. It is possible to define several systems.

Infrastructure

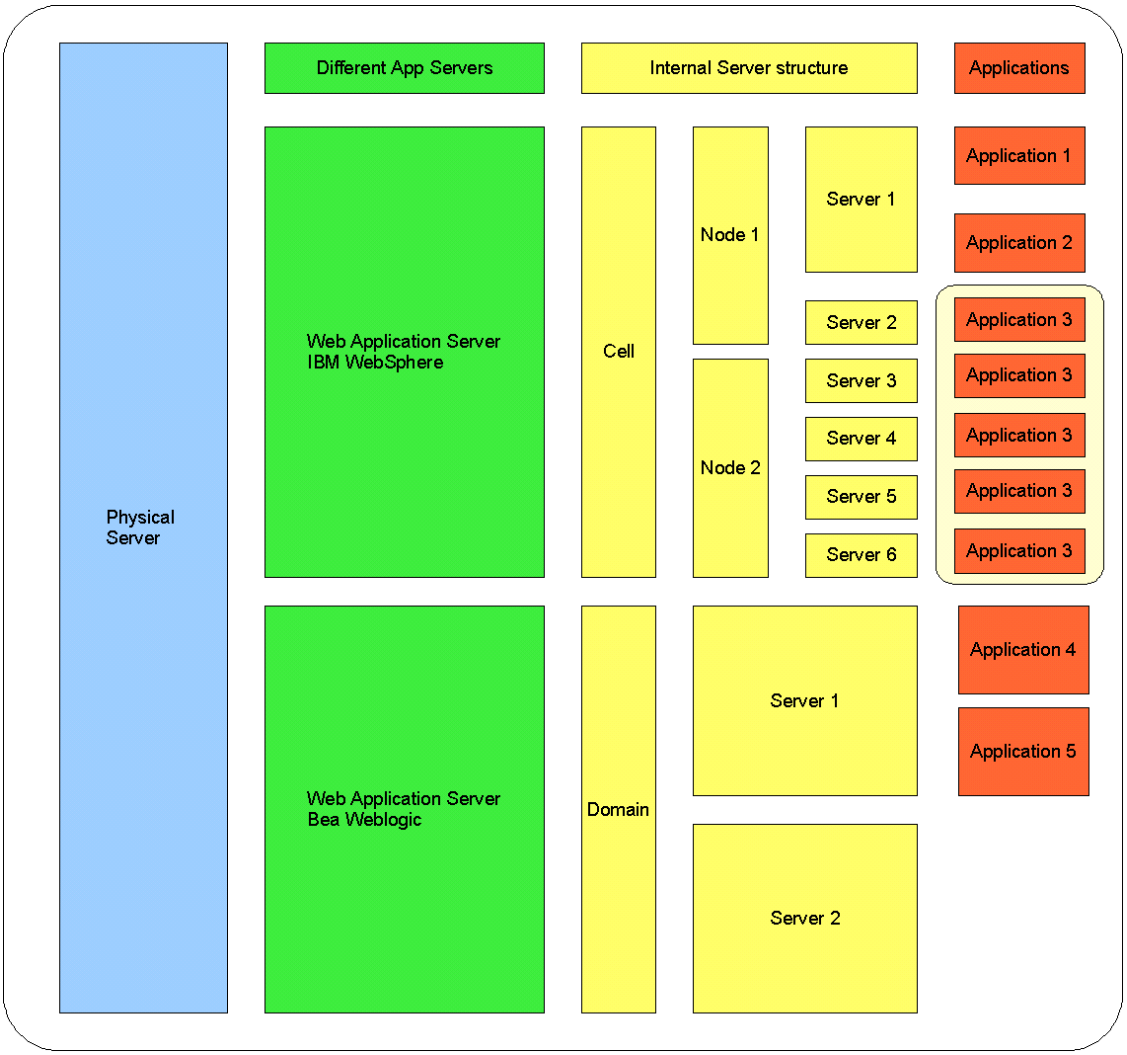
The infrastructure contains all servers of the P8 system which shall be configured. It is only a logical element, like the release element. The collection of all servers and web environments is called the infrastructure, because these elements model the server infrastructure of the P8 system.

Server

The server element contains several server specific parameters like the host name or the Java path. A server also contains several (at least one) JMX instance(s) and exactly one FileNet Listener configuration. The idea is to store as much information as possible on the server level. These parameters are available for several products (PE, AE...) on the server and need not be entered several times for each product.

Instance

An instance is the configuration of the JMX specific parameters. The JMX port is stored the instance as well as the application server type. Also other basic connection data like the user, password and timeout are part of an instance. One of the most important parameters is the server connection data, which contains the most important structure information of the application server internals. The following picture shows how an application server is structured and which information must be contained in the infrastructure.



Structure of application servers.

The image shows one server which has two different application servers running which have several applications deployed. The yellow fields are parameters which are stored in the "server connection data" parameter of the instance parameters. The other fields (Java path, port, user, password...) will be the same for every instance. The following example shows how many instances must be created to monitor all applications.

- Instance 1: [WebSphere - Cell - Node1 - Server 1] will be used for "Application 1" and "Application 2"
- Instance 2: [WebSphere - Cell - Node1 - Server 2]
- Instance 3: [WebSphere - Cell - Node2 - Server 3]
- Instance 4: [WebSphere - Cell - Node2 - Server 4]
- Instance 5: [WebSphere - Cell - Node2 - Server 5]
- Instance 6: [WebSphere - Cell - Node2 - Server 5]

- Instance 7: [WebSphere - Cell - Node2 - Server 6] will be used for the clustered "Application 3".
- Instance 8: [WebLogic - Domain - Server1] is used for "Application 4" and "Application 5"

Web Environment

The Web Environments contain several instances which belong to a logical group. The following Web Environments would be used in the example above:

- WebEnv1: Instance1
- WebEnv2: Instance2, Instance3, Instance4, Instance5, Intsance6, Instance7
- WebEnv3: Instance7

In this example the unusual case is used, that there is only one (physical) server which contains all the instances. In real environment there will be several servers. One web environment can also contain instances from several servers at the same time.

Products

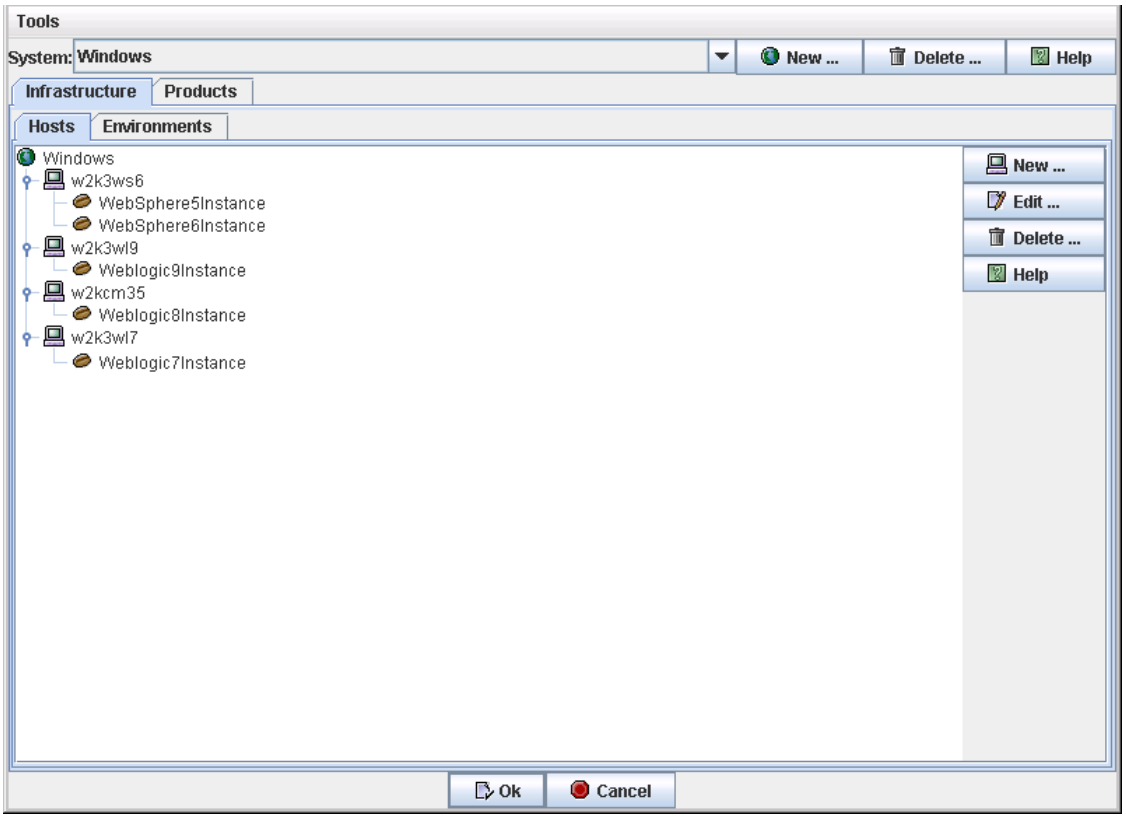
The products contain the configuration of the Content Engine, Process Engine and the other P8 products. It is differentiated between "Server Products" and "Web Products". Content Engine and Application Engine are web products, which mean that they run on application servers. These products use the configuration of the web environments. Content Engine uses exactly one Web Environment and Application Engine can contain several Web Environments. Only web products contain JMX instance data. All other products (Process Engine, Component Manager, Process Analyzer) are server products. These products do not use web environments but can contain one or several servers, depending on which products are used.

Configure IBM FileNet 4.x / 5.x

To configure IBM FileNet 4.x / 5.x properties, press the **Configure IBM FileNet 4.x and 5.x Client ...** button.

The FileNet Installer Plug-in

The IBM FileNet 4.x / 5.x configuration dialog opens.

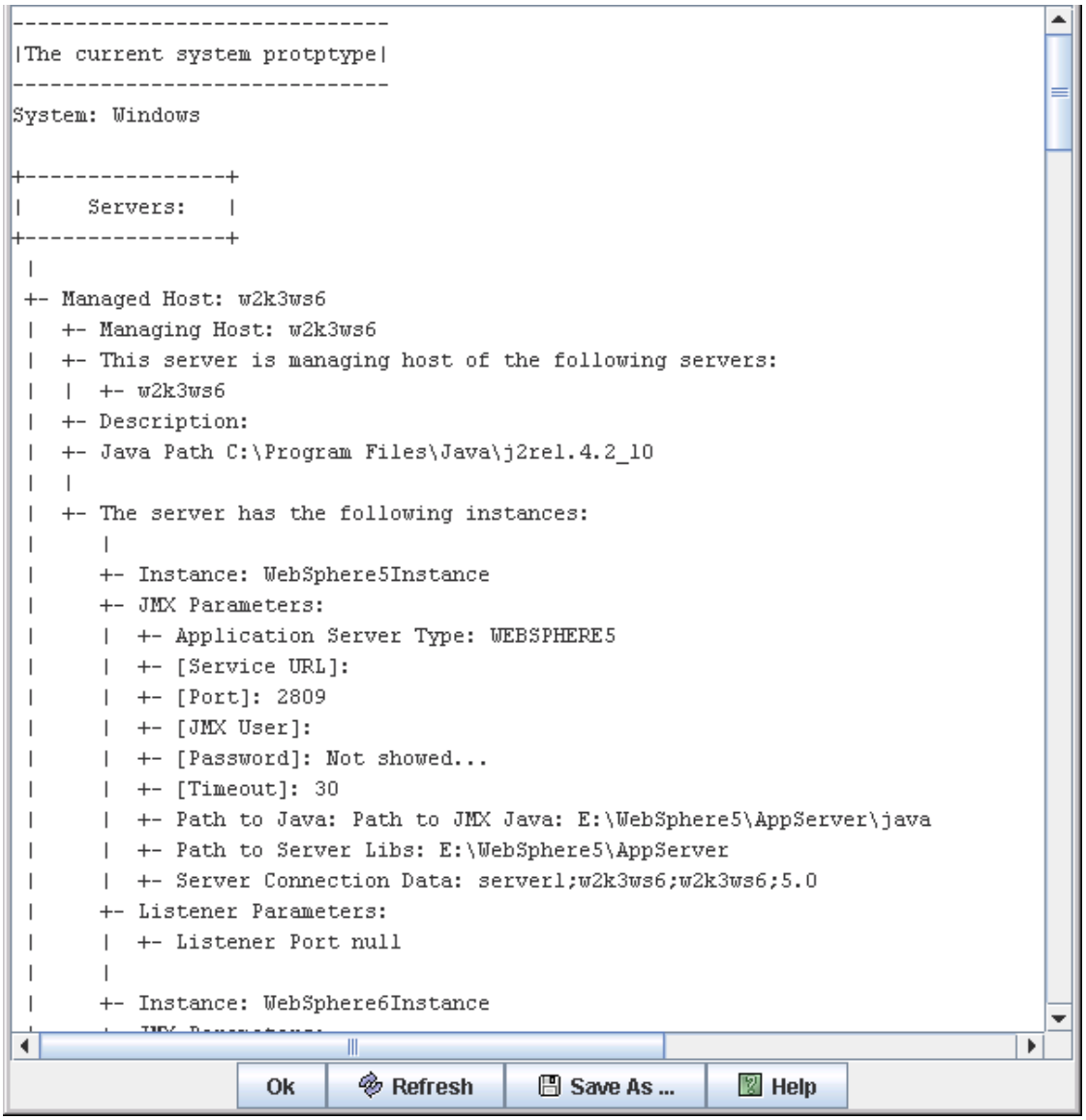


The Installer for IBM FileNet 4.x/5.x dialog with expanded tree view

It consists of several tabs which represent the hierarchical structure of the image above. When the dialog is opened the first time, most of the tabs and buttons are disabled.

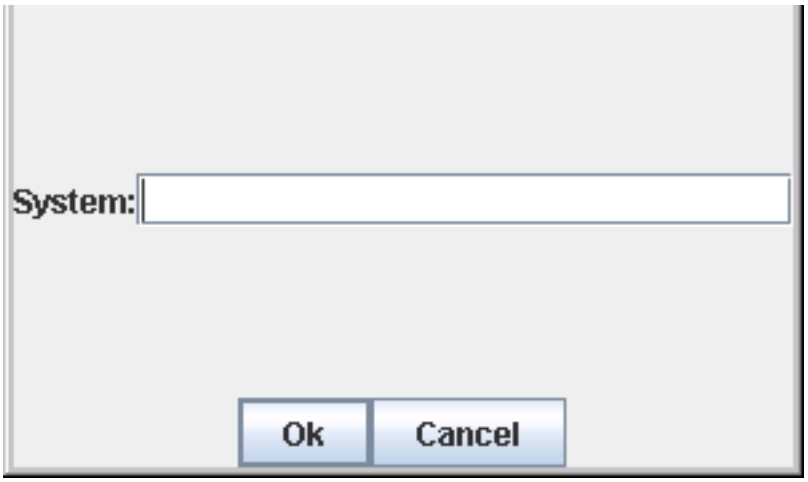
In this main window there is the menu **Tools** . If it is opened, the option ***View config as text*** can be clicked.

In this window the current configuration is shown as textual tree view. It is possible to refresh the view and save the configuration to a file to use it for monitor configuration.



Dialog to view the already configured system as text

Create a new system by clicking on the **New...** button. The **New System** dialog will be displayed.



Dialog to create a new system

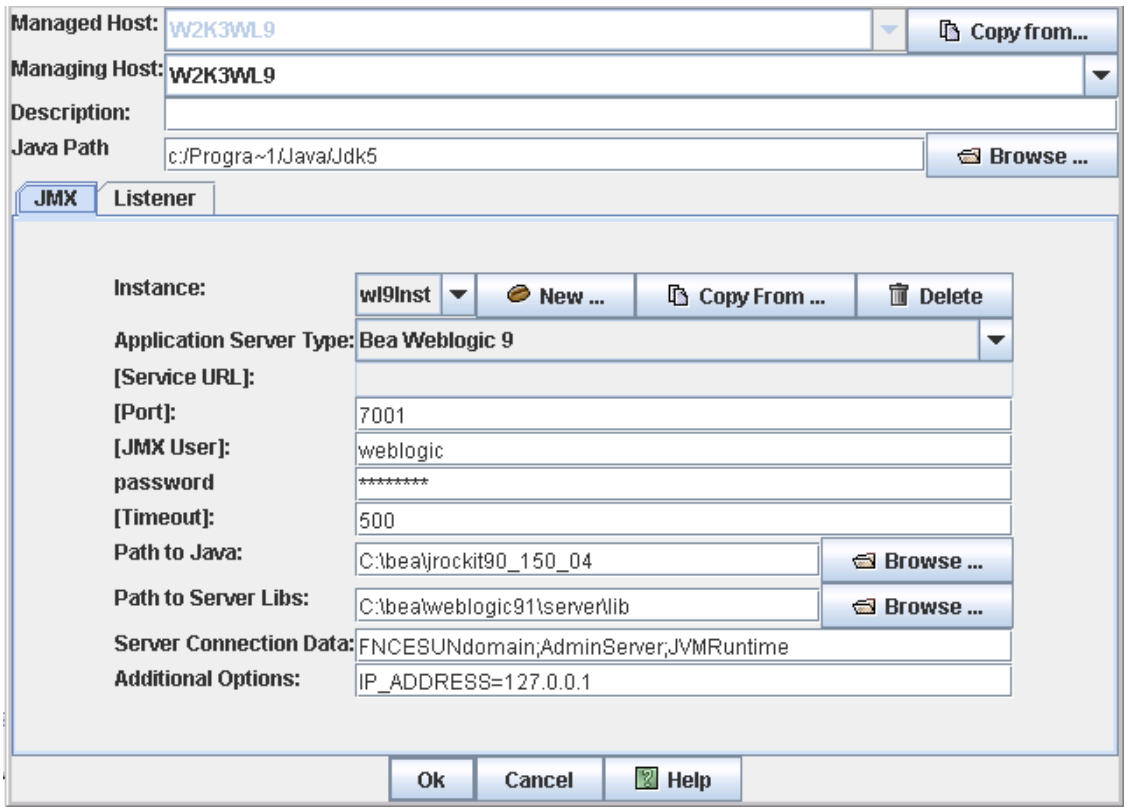
The **New System** dialog has one input field to enter the new system's name, an **OK** button to create the system and a **Cancel** button to leave the dialog without creating the system.

After a system is created the infrastructure tab is enabled and it is possible to create a new server. Clicking the **New...** button opens the **New Server** dialog.

The Infrastructure Tab

The infrastructure tab is used to define the environment in which the system is running. So hosts / servers can be created which contain instances. After creating the servers, the instances are grouped in web environments. The infrastructure tab itself contains two other tabs. The **Hosts** tab to define the server and the **Environment** tab to define the web environments. Both tabs consist of a hierarchical tree of the system, the defined servers and instances in the hosts tab. The environment tab also has a hierarchical tree view with the system, the defined web environments and the instances associated with the web environment. Both tabs have three buttons: **New...**, **Edit...** and **Delete...**.

The New Server dialog - Hosts New... button



Dialog to create a new server . The JMX tab.

The **New Server** dialog is called, when the **New...** button is pressed in the **Hosts** tab. The **New Server** dialog consists of several input fields which are explained in the following list.

Managed Host

This is the host which shall be defined in this dialog. The combo box contains all available CALA_REX clients. The Managed Host field also is editable to enter other servers which are not contained in the combo box.

Managing Host

The Managing Host needs further introduction:

As the FileNet P8 4.x/5.x configuration also must support server farms and clusters, the Managing Host is used. Farms and clusters are a collection of several servers which appear as only one machine to the other servers and clients in the network. So it may not be possible to request information of these machines directly in some cases. The only interfaces to these machines are JMX and FileNet Listener technology. The JMX and Listener requests are executed by the server which is accessible in the network. This server is called the Managing Host and requests the JMX and FileNet Listener parameters.

If a host is Managing Host itself and is not managed by another machine, the Managed Host and the Managing Host are the same machine. The combo box contains all servers which are already defined.

Description

In the description field it is possible to enter some comments about the server (for example if it is part of a cluster or what the name of the cluster is).

Java Path

This is the path of the Java which shall be used. A Java version 6 or higher is required.

> **NOTE** If the host is an Application Engine where monitoring for the Component Manager will be activated, make sure that you specify the path to the Java installation of the Component Manager. Otherwise the Component Manager monitors may fail.

Copy from... Button

This button opens the **Copy Server From...** dialog which makes it possible to copy a whole server configuration of an already existing server.

JMX Tab

The JMX tab is used to define several JMX instances.

Listener Tab

The Listener Tab is used to define FileNet Listener parameters.

The JMX Tab

A server can have several JMX instances. These instances are defined in the **JMX** tab of the **New Server** dialog. The following fields can be configured and the following buttons are available to configure the instances:

Instance

The combo box contains all already defined instances of this server. When creating a new server this combo box will be empty. To create a new instance, the **New...** button has to be pressed. The instances can be switched via the combo box. All instances in this combo box are defined for the server (not only the selected instance).

Application Server Type

The following application servers are supported:

- Oracle WebLogic 7
- Oracle WebLogic 8
- Oracle WebLogic 8 via webservice

- Oracle WebLogic 9, 10, 11
- Oracle WebLogic 9, 10, 11, 10 or 11 via webservice
- IBM WebSphere 5
- IBM WebSphere 6
- IBM WebSphere 6 via webservice
- IBM WebSphere 6.1
- IBM WebSphere 6.1 via webservice
- IBM WebSphere 7, 8 or 8.5 via webservice
  A WebService based connection to a application server, which has the *applicationserver.jmx.monitor.war* / ~.ear application running. In this case the **ServiceUrl** has to be used instead of **host** and **port**. For further information about how to install the functionality on WebSphere, refer to the *Install Guide*, chapter *Preparing JMX Monitoring*.
  The difference between the "<AppServer> via webservice" and the "Webservice" item in the combobox is, that the "<AppServer> via webservice" items support further functionality like the "View AE Status" task. If the JMX webapplication is deployed on a server, which is not listed in the combobox explicitly, it can be used the "webservice" item.
- Red Hat JBoss 4
- Red Hat JBoss 4 via JSR160
- Red Hat JBoss 4 via webservice

Service URL (depends on connection type)

For the WebService connection the ServiceUrl must have the following format: `http(s)://<ip>:<port>/<context_root>`

The values for host, port and contextroot depend on your configuration, described in the *Install Guide*, chapter *Preparing JMX Support*, section *JMX Support via WebService*.

Defaults for WebSphere are:

- port for HTTP: *9080*
- port for HTTPS: *9443*
- context_root: *jmxmonitor*

Defaults for WebLogic are:

- port for HTTP: *7001*
- context_root: *applicationserver.jmx.monitor*

Defaults for JBoss are:

- port for HTTP: *8080*
- context_root: *applicationserver.jmx.monitor*

Port (depends on connection type)

This is the JMX port the software connects to. It is used in combination with the host field. (depends on connection type)

- Oracle WebLogic 7, 8, 9, 10, 11
  7001 per default (WebLogic server port)
  In productive environments the ports may be set to 7010, 7011...
- IBM WebSphere 5, 6 and 6.1 (bootstrap port)
  2809 per default
- JBoss 3, 4, 5
  1099 per default (RMI Port)

Most times the ports are set manually by the admins choice in productive environments.

JMX User (depends on the application server security settings)

The user name of the user that is defined in the application server, to access MBeans, if security is enabled on the server.

NOTE On WebSphere 6.1.x.x SSL is activated per default. In this case the user and password field have to be left empty and the credentials have to be entered in the sas.client.props file and the ssl.client.props file. For more information about these files please refer to the chapter "Preparing JMX Support - How to create the keystore and truststore files for WebSphere 6.1.x.x" in the install guide.

Password (depends on the application server security settings)

The password for JMX access.

Timeout (Optional)

The timeout defines a time after which the operation shall cancel automatically. The timeout must be given in seconds. If no timeout is defined, 40 seconds are used as default.

Path to Java

As Oracle WebLogic 9, 10, 11 as well as WebSphere 5 and 6 use their own Java to access JMX, the Java path of the server can not be used. Therefor the Java path of the application servers must be entered here.

- WebLogic 7
  The default system Java path can be used
- WebLogic 8
  The default system Java path can be used except WebLogic 8 runs with the Oracle own JRockit Java version. The this version can be used.
- WebLogic 9, 10, 11
  .../bea/jdk15x_xx
  .../bea/jrokitxx_xxx_xx
- WebSphere 5, 6, 6.1

<WebSphereHome>/AppServer/java

- IBM WebSphere 7, 8, 8.5
  <CENIT_ROOT>/jre
- JBoss 4
  The default system Java path path can be used. It is recommended to use the same java which is used by the JBoss.
- webservice
  The Java of the WebSphere Application Server must not be used.
  It is recommended to use the Java, which is shipped with the product. Alternatively it is recommended to use a different IBM or Oracle JRE with at least Version 6.

Path to server Libs

This is the path to the libraries which are needed by JMX to get a JMX connection to the application server. The paths can be found as follows.

- Oracle WebLogic 7, 8 and 9
  <WebLogicHome>/server/lib
- IBM WebSphere 5, 6, 6.1
  <WebSphereHome>/AppServer
- IBM WebSphere 7, 8, 8.5
  Since this server is used in WebService context, use the path to the JRE, which is used in here.

Server Connection Data (depends on connection type)

The MBean Java program needs several parameters to establish the connection to the application server. The instances need the following parameters depending on which application server is chosen:

- Oracle WebLogic 7
  <Domain>;<Server>
- Oracle WebLogic 8
  <Domain>;<Server>
- Oracle WebLogic 9, 10, 11
  <Domain>;<Server>;<JavaType>
  Java type may be *JRockitRuntime* if JRockit is used or *JVMRuntime* if a standard JVM is used.
  WebLogic shows in the startup console output which Java version is used.
- IBM WebSphere 5
  <Server>;<Node>;<Cell>;<Version>
- IBM WebSphere 6
  <Server>;<Node>;<Cell>;<Version>;<MessageListenerThreadPool-ID>;<ORBThreadPool-ID>;<WebcontainerThreadPool-ID>
- IBM WebSphere 6.1
  <Server>;<Node>;<Cell>;<Version>;<MessageListenerThreadPool-ID>;<ORBThreadPool-ID>;<WebcontainerThreadPool-ID>;<TCPChannelsThreadPool-ID>

- IBM WebSphere 7, 8, 8.5
  <Server>;<Node>
- RedHat JBoss 4
  <ApplicationName>;<j2eeName>;<ThreadPoolName>
  Example: *`Workplace;Local;http-0.0.0.0-8080`*

CAUTION <Server> is not the computer name of the machine, where the server is running, but the virtual server inside the application server environment.

Additional Options (Optional)

This parameter can contain several key value pairs. This field is only used if the basic configuration needs special treatment. Several key-value pairs are separated via semicolon. Example: *`key1=value1;key2=value2`*.

`SAS_PATH=<path_to_sas_file>` - Is used by WebSphere application servers (5.x, 6.0.x.x, 6.1.x.x) when security is enabled. For further information please check the manuals. The path usually is on *`$WAS_ROOT/AppServer/profiles/<profilename>/properties`*. If no path is given, the monitors will check if there exists a sas.client.props file in *`${CENIT_ROOT}/cala/monitors/pam/properties`*.

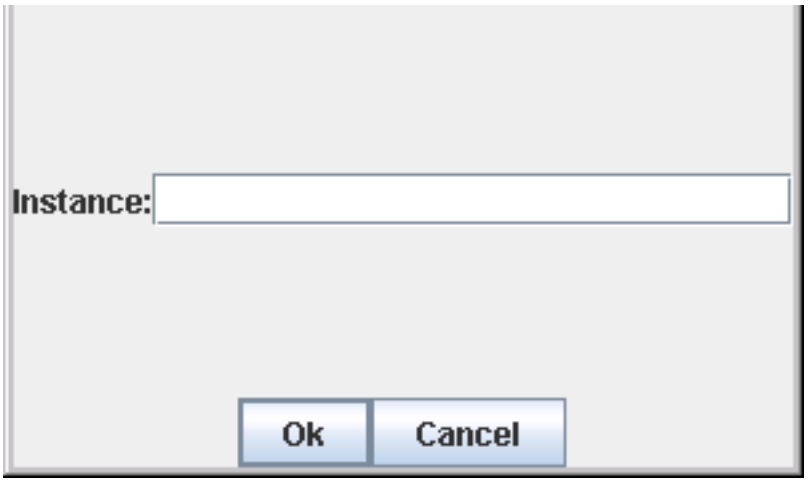
`IP_ADDRESS`=<ip_address_to_connect_to> - For cluster environments the hostname is not usually the address to which can be connected with the jmx client. Enter the IP address of the virtual server to which shall be connected here.

CAUTION On WebSphere 6.1 SSL is activated per default. A keystore and truststore must be created. Please check the *Install Guide*, chapter *Preparing JMX Support - How to create the keystore and truststore files for WebSphere 6.1.x.x*.

For more information about how to configure the *`sas.client.props`* file refer to the *Install Guide*, chapter *Preparing JMX Support - How to Configure sas.client.props for WebSphere*.

The New... button

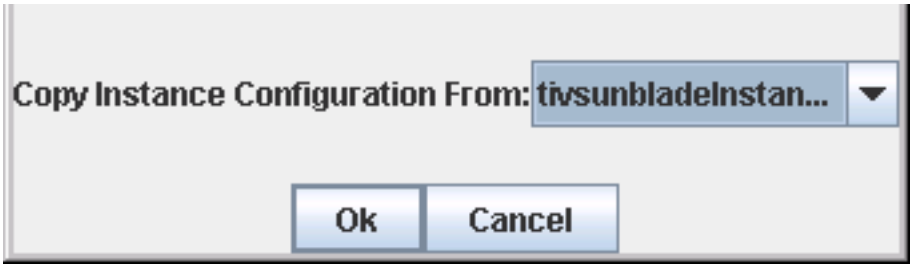
Clicking on this button will open the **New Instance** dialog to create a new JMX instance.



Create a new instance

The Copy From... button

Clicking on this button will open the **Copy Instance from** dialog to copy an existing instance configuration of the current server into the currently selected instance. It is not possible to copy instances from other instances.

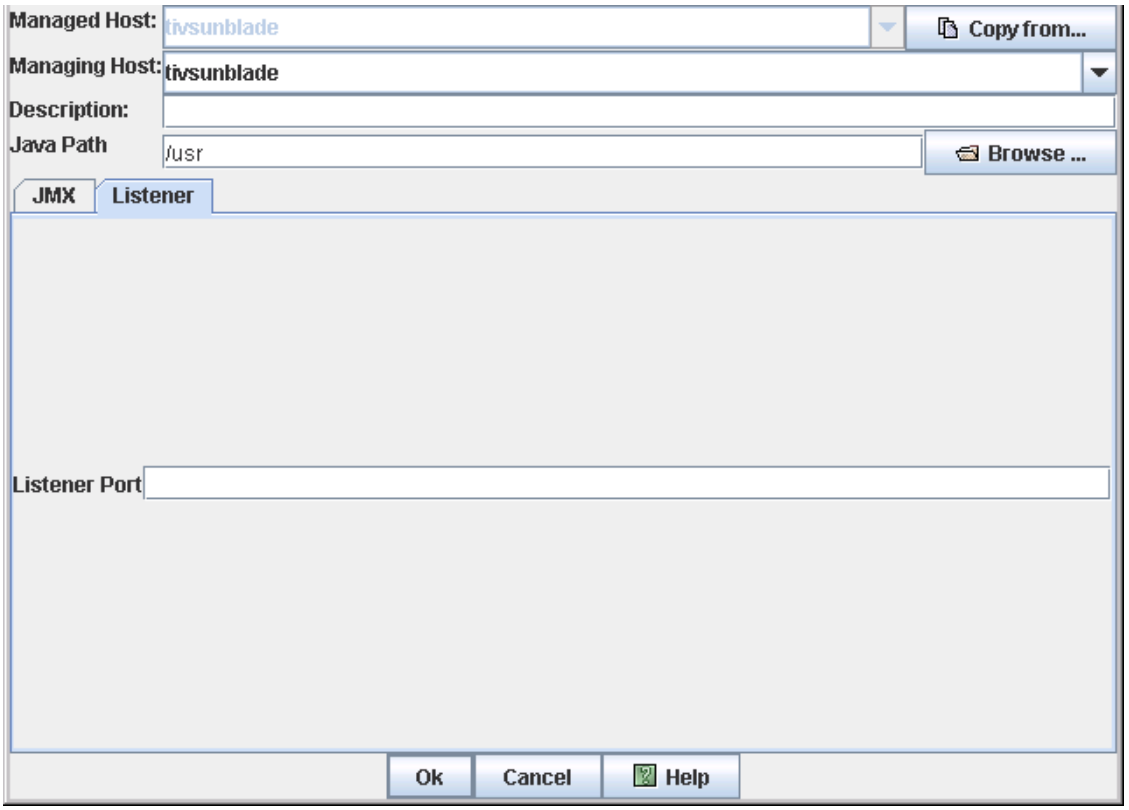


The Copy Instance From... dialog

The Delete button

Clicking on this button will delete the currently selected instance.

The Listener Tab



The Listener Tab in the New Server dialog

The **New Server** dialog also contains a **Listener** Tab, where FileNet Listener specific configuration can be made. The following parameters are available

Listener Port

The FileNet Listener Port. If nothing is entered the default Listener port will be used. In case more than one listener for the same application is running on the server you should read Special port configurations for PCH in case of multiple instances of the same application

Hosts Edit... button

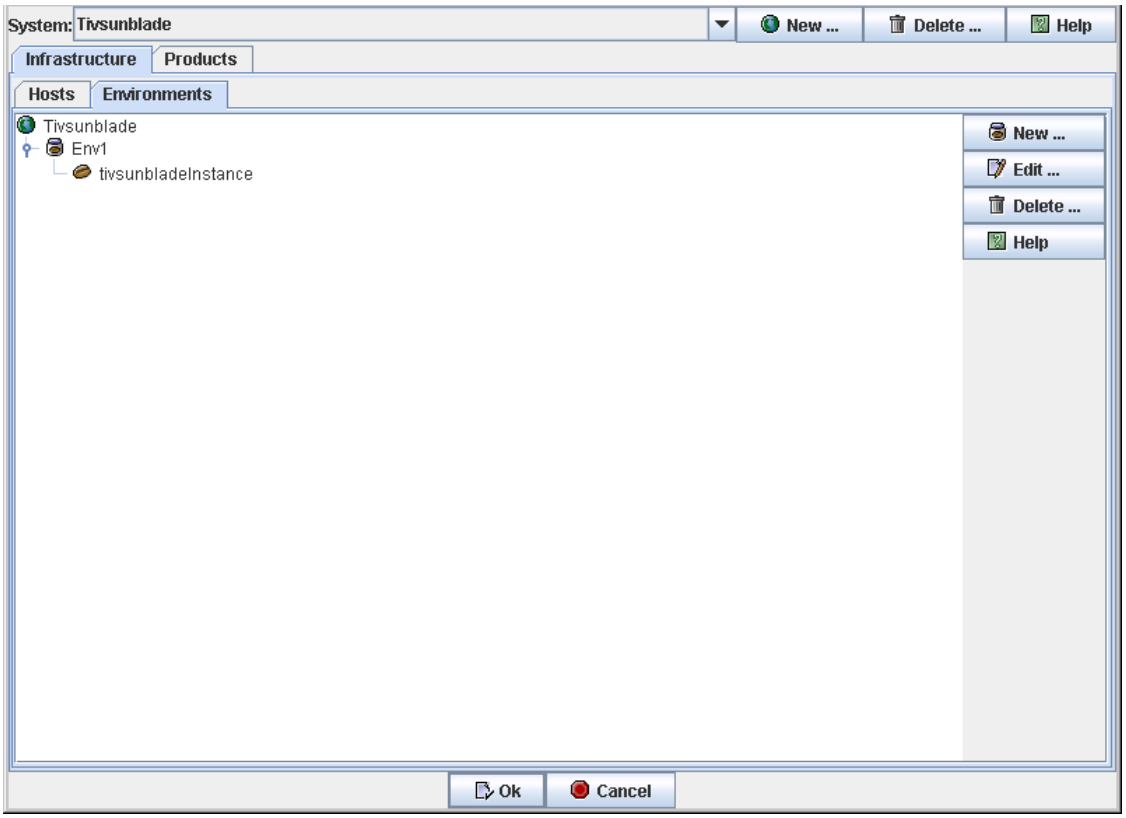
The hosts edit button will also open the **New Server** dialog with the configuration of the server currently selected in the tree. The first instance of the data list will be pre selected. If an instance was selected in the tree when clicking the button, the dialog will open with the server and the instance pre selected. If the system (root element) is chosen when clicking the edit button, nothing will happen.

Hosts Delete... button

If a server is selected, the server and all its instances will be deleted. Also all associated web environments and products are affected by this. A confirmation dialog with an appropriate warning will be shown before the host is deleted. If an instance is selected when pressing the delete button, only the instance will be removed. Again web environment and products will be affected by this. If the last instance of a server is deleted, the server will also be deleted automatically because a server without instance is forbidden.

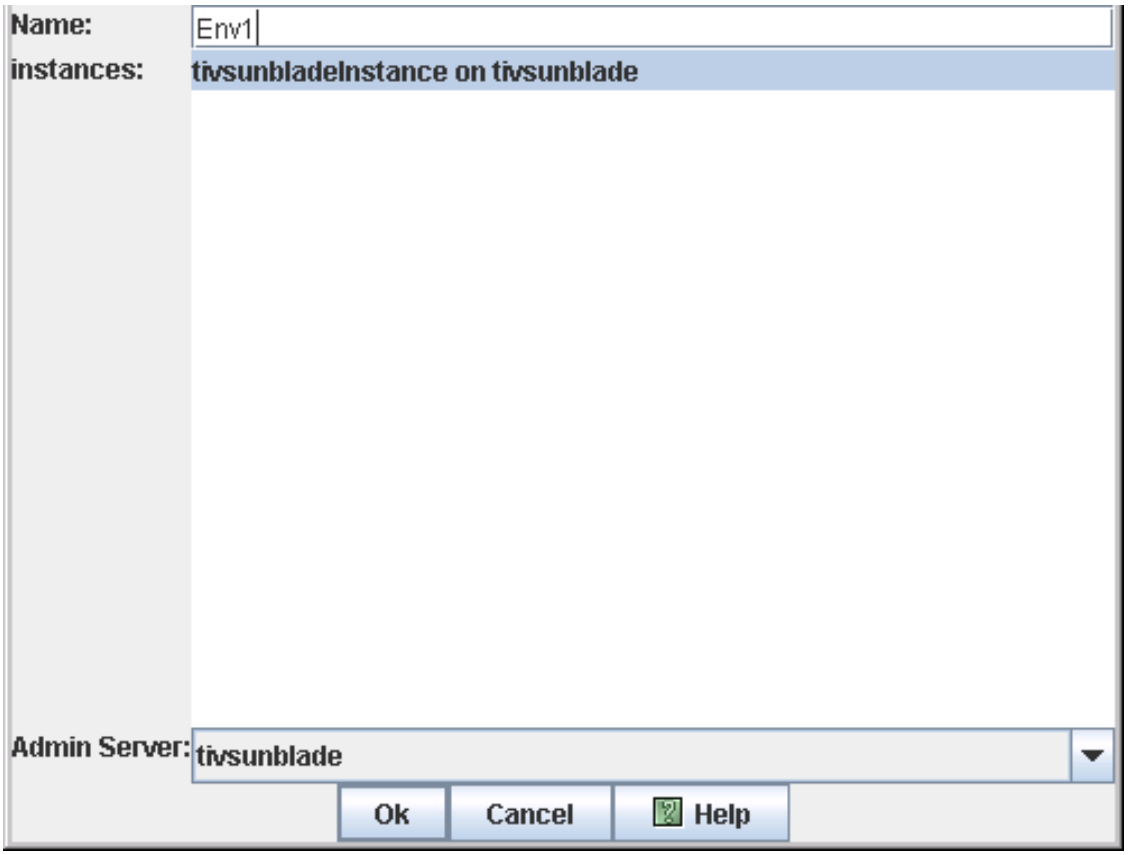
The New Web Environment dialog - New... environment button

The following image shows the infrastructure tab with the **Environments** tab selected.



The Environments tab in the main config window

Pressing the **New...** button in the **Web Environment** tab will open the **New Web Environment** dialog.



The New Web Environment dialog

In this dialog the following parameters can be defined and actions can be performed:

Name

Define the name of the web environment. It is not allowed enter an already used name. In edit mode it is possible to rename the web environment by entering another name.

Instances

In this selection box one or several instances must be chosen. It is not allowed to chose no Instance at all. It is allowed to define one instance in two different web environments.

To choose several elements hold down the Ctrl key on the keyboard and select several elements by clicking them. Release the Ctrl key after selecting the needed instances.

Admin Server

This combo box shows all servers which are associated with the displayed instance. Out of these, an admin server can be defined which is the master host (the host which does the load balancing) in a cluster environment.

OK

Clicking the **OK** button will close this dialog and store the made changes to the system.

Cancel

Clicking the **Cancel** button will close the dialog without saving the changes to the system.

After a web environment was defined, the products tabs are enabled and can be edited now.

Environments Edit... button

The **Edit** button will also call the **New Web Environment** dialog and load the environment currently selected in the tree.

Environments Delete... button

The **Delete** button will delete the environment which is selected in the hierarchy tree. This environment will be lost for all products. A warning dialog will ask for confirmation before the environment is deleted. If an instance is selected and deleted, this instance also will be lost for all products which use the environment. If the last instance from an environment is deleted, the environment will automatically be deleted too.

The Products Tab

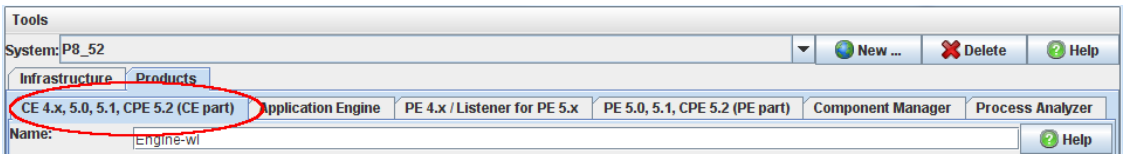
In the **Products** tab the configuration for the IBM FileNet P8 applications / products is made. Every product or component has its own tab, just as Content Engine, Application Engine, Process Engine, Component Manager and Process Analyzer.

NOTE Even though the PE and CE have been merged in CPE 5.2, ECM SM still monitors these components independently. For this reason, the PE and CE components of CPE 5.2 must be configured on different product tabs..

Product Tab → Sub Tab	CPE 5.2 - CE part	CPE 5.2 - PE part	P8 5.0 / 5.1 CE	P8 5.0 / 5.1 PE	P8 4.5 CE	P8 4.5 PE
CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) → FileNet	✓	-	✓	-	✓	-
CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) → Listener	✓	-	✓	-	✓	-
CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) → JMX	✓	-	✓	-	✓	-
PE 4.x / Listener for PE 5.x → FileNet	-	-	-	-	-	✓
PE 4.x / Listener for PE 5.x	-	✓	-	✓	-	✓

Product Tab → Sub Tab	CPE 5.2 - CE part	CPE 5.2 - PE part	P8 5.0 / 5.1 CE	P8 5.0 / 5.1 PE	P8 4.5 CE	P8 4.5 PE
→ Listener						
PE 5.0, 5.1, CPE 5.2 (PE part) → General	-	✓	-	✓	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Security	✓	✓	✓	✓	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Database	-	✓	-	✓	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Server Connections	-	-	-	-	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Advanced	-	✓	-	✓	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Server	-	✓	-	✓	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Listener	-	-	-	-	-	-
PE 5.0, 5.1, CPE 5.2 (PE part) → Region	-	✓	-	-	-	-

The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) Product Tab



The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) Product Tab

The **CE 4.x, 5.0, 5.1, CPE 5.2 (CE part)** tab is used to configure the parameters of the Content Engine as well as the Web Application Server part of the Content Process Engine (CPE). It is only possible to define one single Content Engine per system. This Content Engine is running in one WebEnvironment with possibly several servers and several instances. The following parameters can be defined:

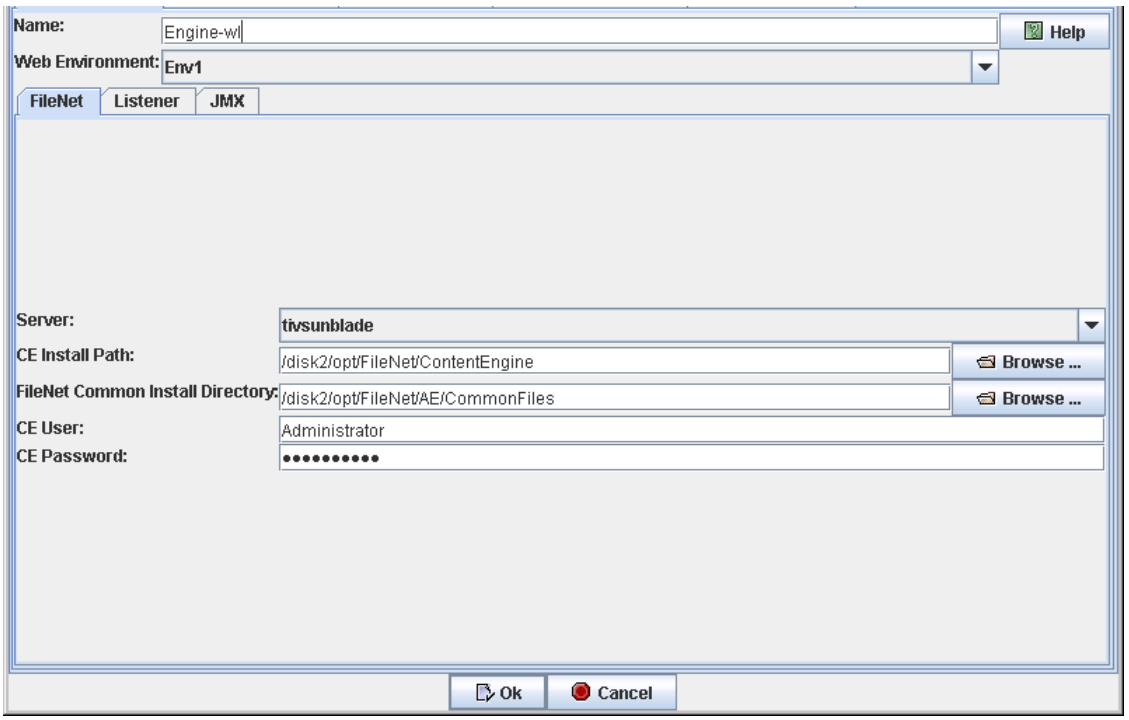
Name

Enter the name of the Content Engine here. The name can be chosen arbitrarily.

Web Environment

The WebEnvironment where the Content Engine is running in can be chosen here. Only one WebEnvironment can be defined for the Content Engine. If another one is chosen, the settings of the current one are discarded.

The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) FileNet Tab



The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) FileNet Tab

Server

There can be several servers defined for the Content Engine. Every server has its own set of parameters.

CE Install Path

The path were the Content Engine is installed on the server.

FileNet Common Install Directory

The directory of the common FileNet resources.

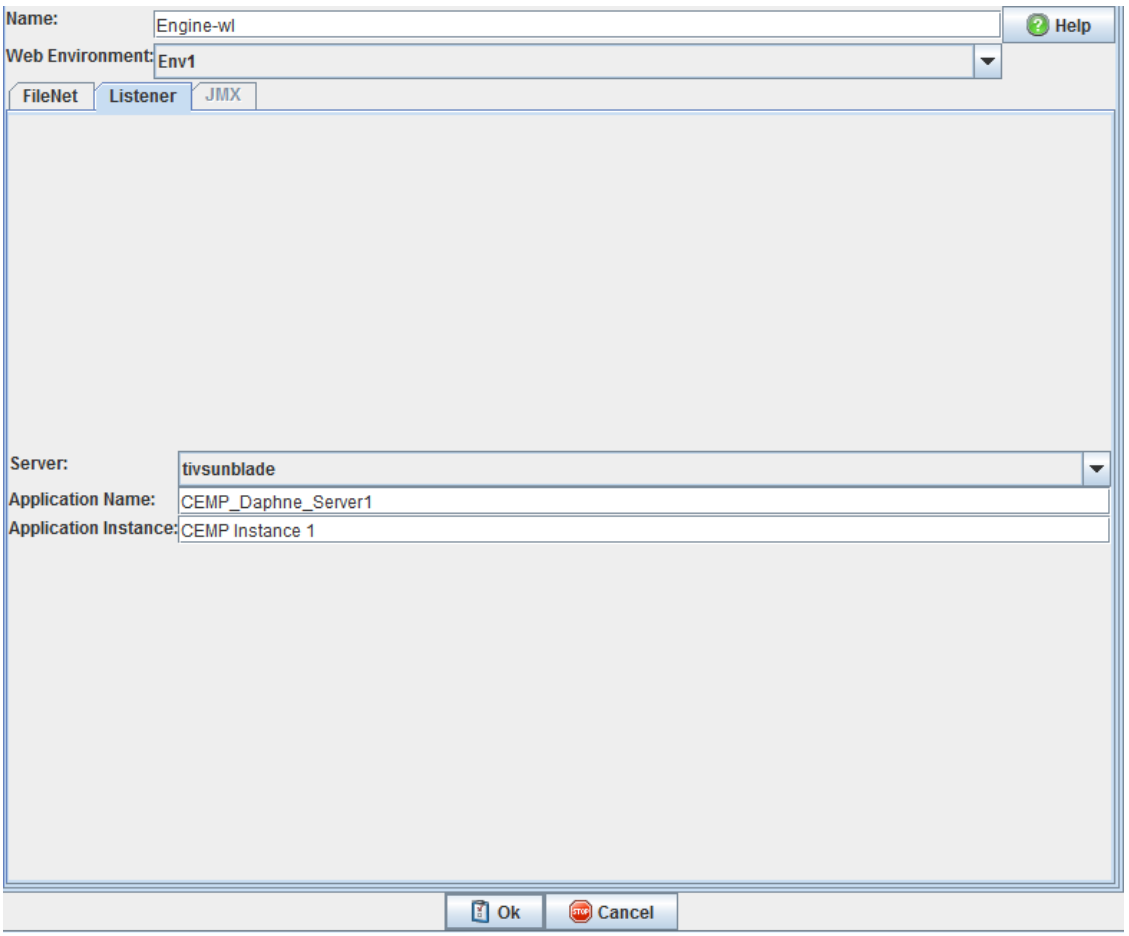
CE User

Enter the user name for the Content Engine here. The user specified here must have permission to log in to the FileNet Enterprise Manager with read access.

CE Password

Enter the password for the Content Engine user here. The password will be encrypted. If no user is given, the password won't be stored.

The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) Listener Tab



The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) Listener Tab

Server

This product can have several servers on which the FileNet Listener can be requested. Please select the server which you want to configure. It is possible to configure several servers.

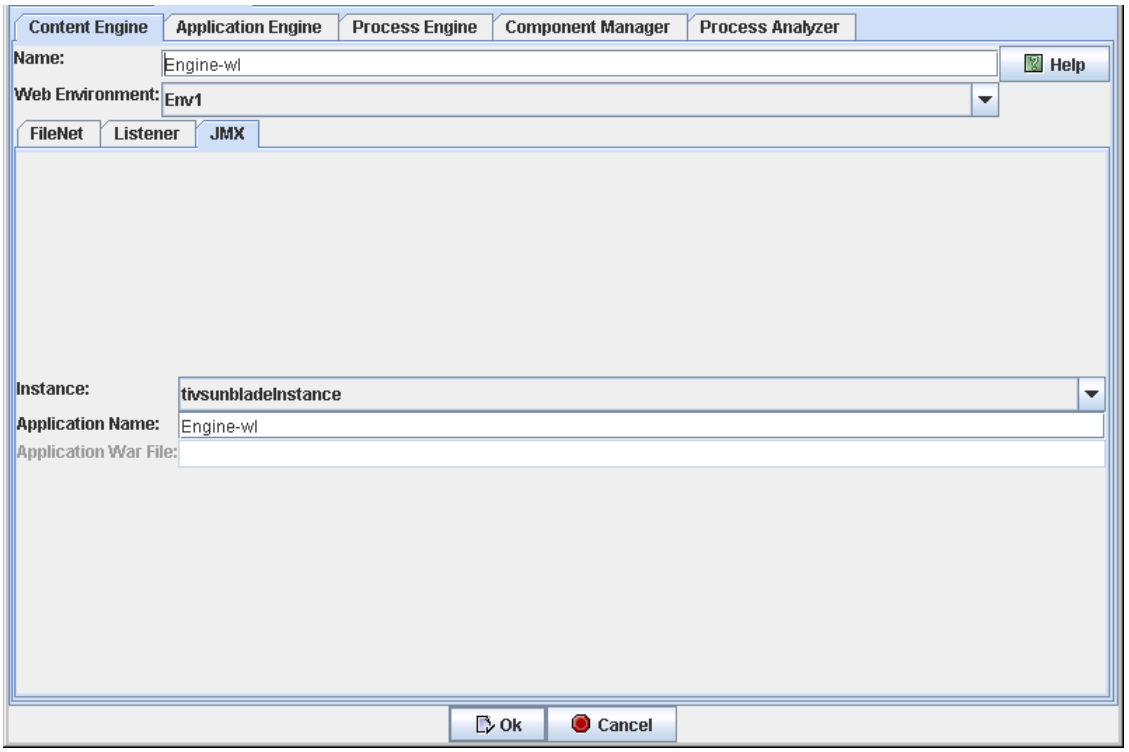
Application Name

Please enter the application name whose data shall be requested via the FileNet Listener.

Application Instance

Please enter the application instance whose data shall be requested via the FileNet Listener.

The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) JMX Tab



The CE 4.x, 5.0, 5.1, CPE 5.2 (CE part) JMX Tab

Instance

This product can have several instances on which JMX can be requested. Please select the instance which you want to configure. It is possible to configure several instances.

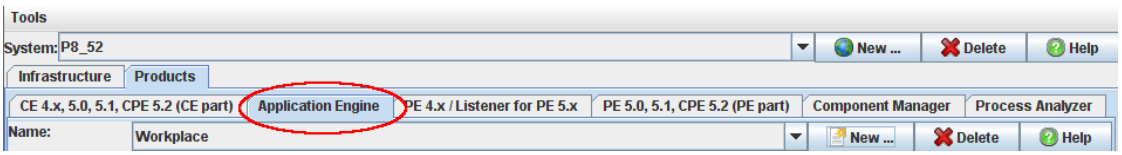
Application Name

Enter the Application whose status shall be monitored in this field. The default application name is *`FileNetEngine`*.

Application War File

WebSphere only: The JMX program also needs the war file name of the application. The Content Engine default war file names are *`Engine-init.war`* and *`wsi-ws.war`*. Some applications also have several war file names. In this case, the war files are separated via semi colon.

The Application Engine Product Tab

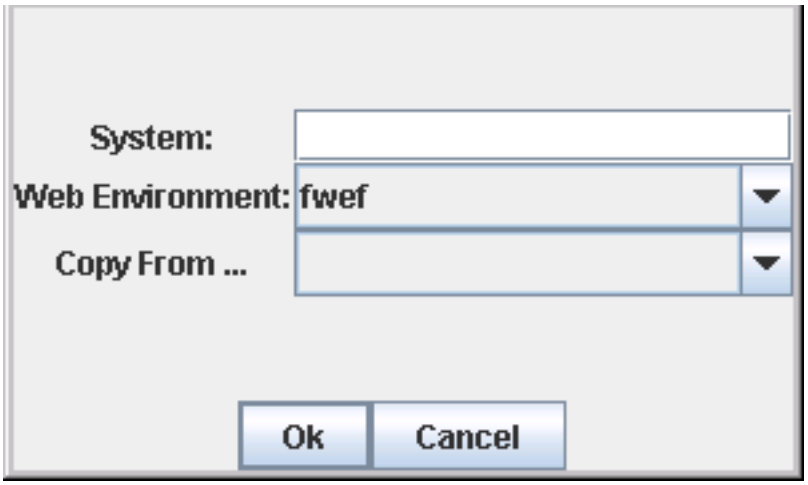


The Application Engine Product Tab

Name

It is possible to create several Application Engines. Click the **New...** button to open the **New System** dialog. It contains a field to enter the Application Engine name and a combo box to select the Application Engine's web environment. If there are already any Application Engines defined in the current system the **Copy From...** combo box is filled with the Application Engine configurations which can be copied.

NOTE The name of the Application Engine MUST BE the real name of the Application Engine, under which the application will be requested in the web browser, For example *`Workplace`*.

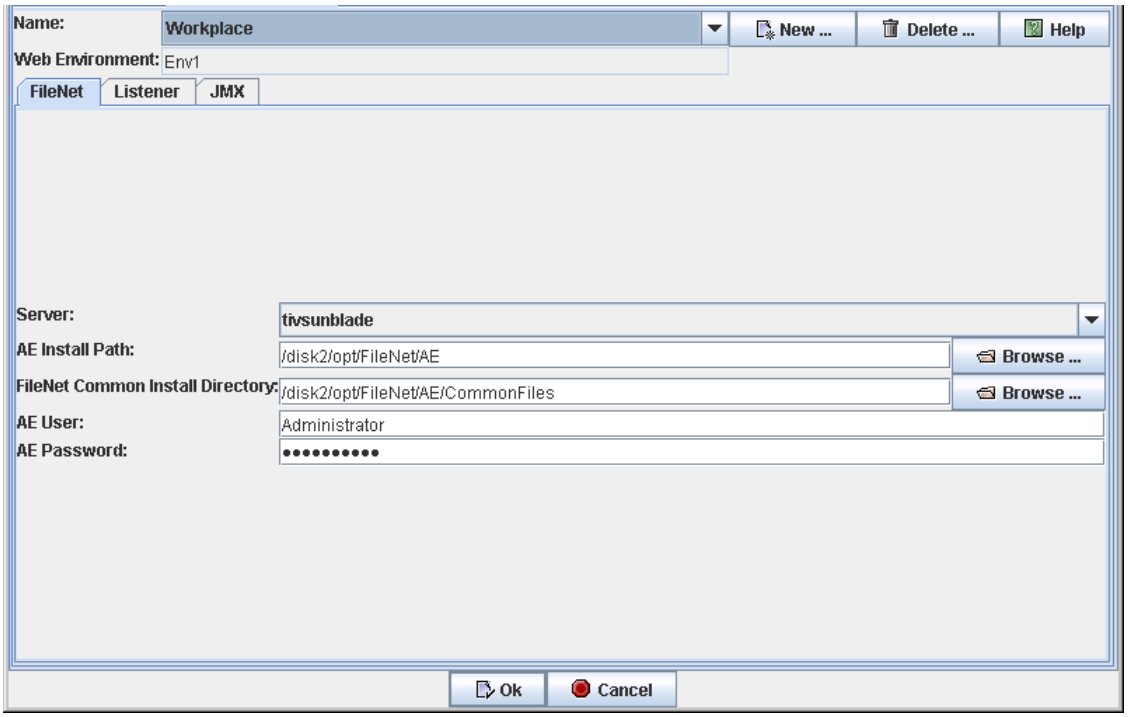


Create a new Application Engine system

Web Environment

This field is read only. If another web environment shall be used, a new Application Engine must be defined by pressing the **New...** button.

The Application Engine FileNet Tab



The Application Engine FileNet Tab

Server

There can be several servers defined for the Application Engine. Every server has its own set of parameters.

AE Install Path

The path where the Application Engine is stored on the application server

FileNet Common Install Directory

The directory of the common FileNet resources.

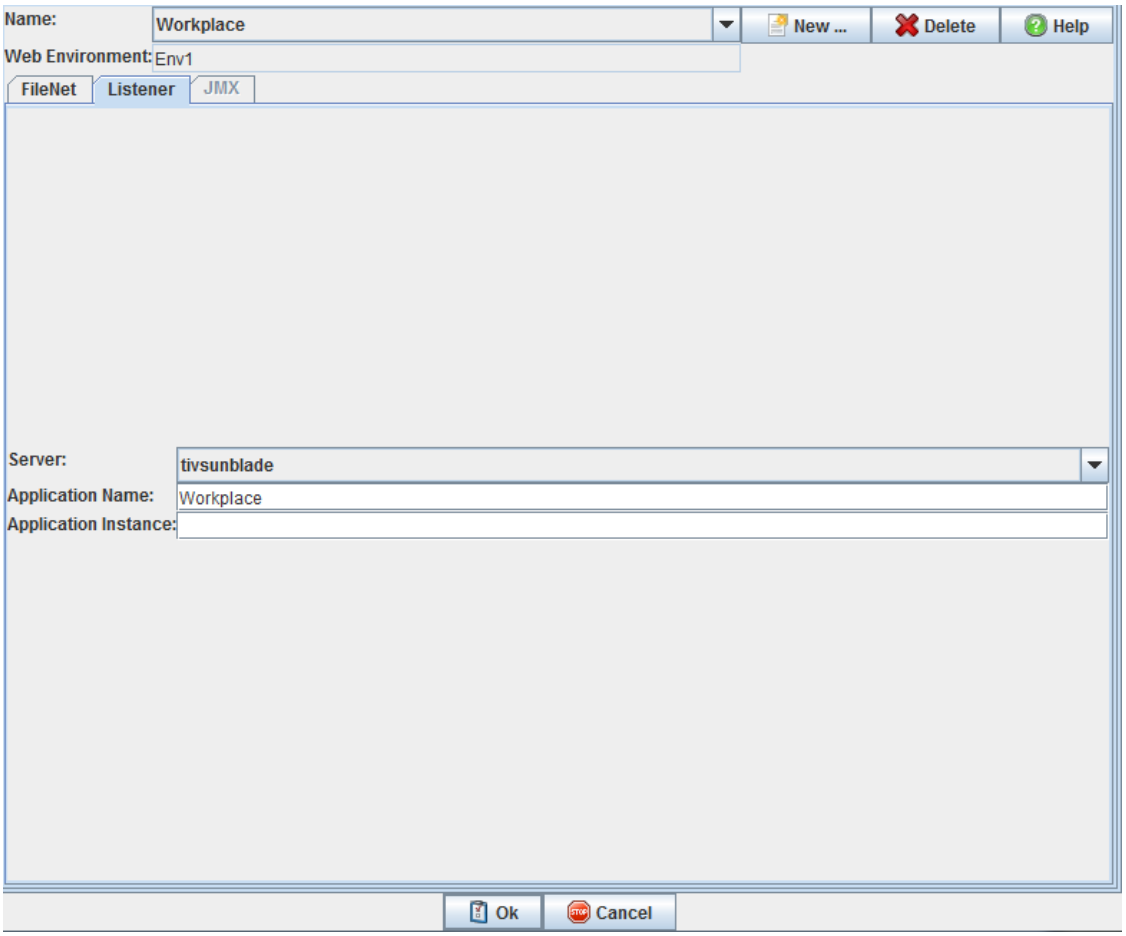
AE User

Enter the user name for the Application Engine here.

AE Password

Enter the password for the Application Engine user here. The password will be encrypted. If no user is given, the password won't be stored.

The Application Engine Listener Tab



The Application Engine Listener Tab

Server

This product can have several servers on which the FileNet Listener can be requested. Please select the server which you want to configure. It is possible to configure several servers.

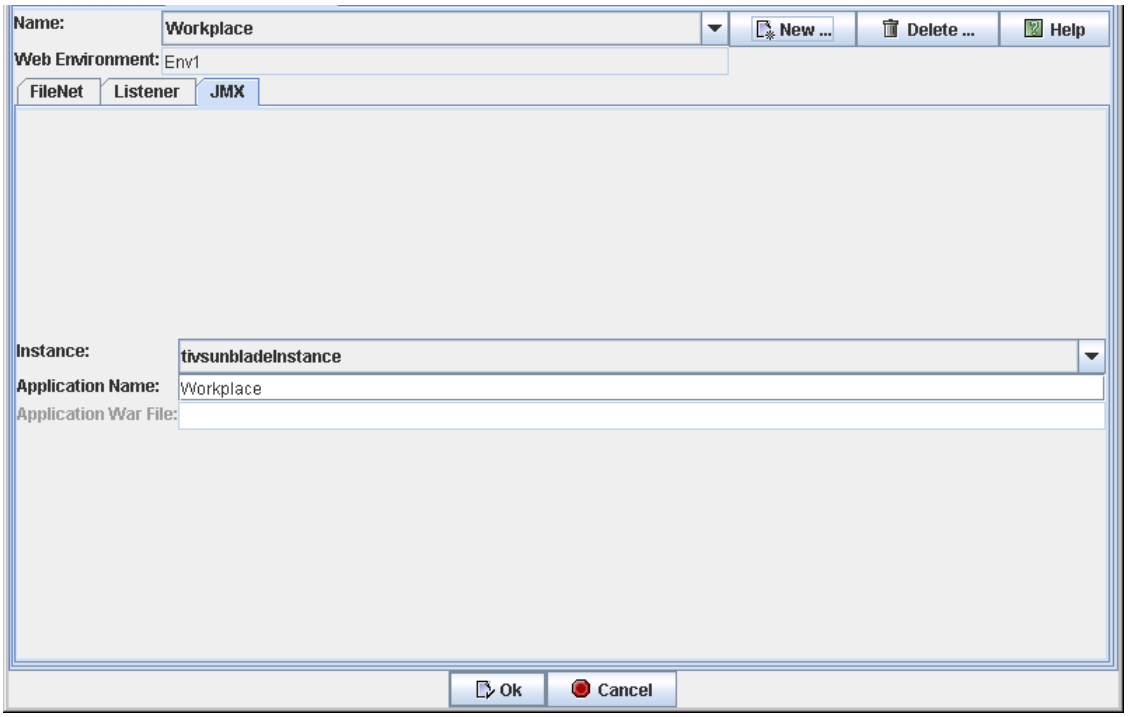
Application Name

Please enter the application name whose data shall be requested via the FileNet Listener.

Application Instance

Please enter the application instance whose data shall be requested via the FileNet Listener.

The Application Engine JMX Tab



The Application Engine JMX Tab

Instance

This product can have several instances on which JMX can be requested. Please select the instance which you want to configure. It is possible to configure several instances.

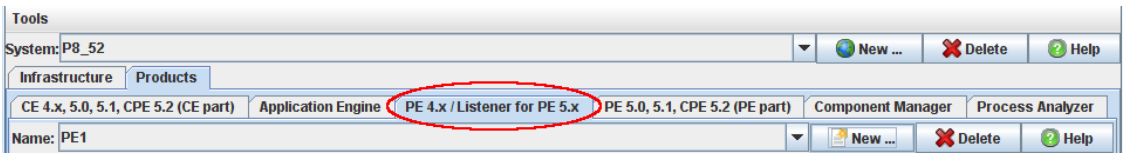
Application Name

Enter the Application whose status shall be monitored in this field. The default application name is *Workplace*.

Application War File

WebSphere only: The JMX program also needs the war file name of the application. The default war file name is *Workplace.war*. Some applications also have several war file names. In this case, the war files are separated via semi colon.

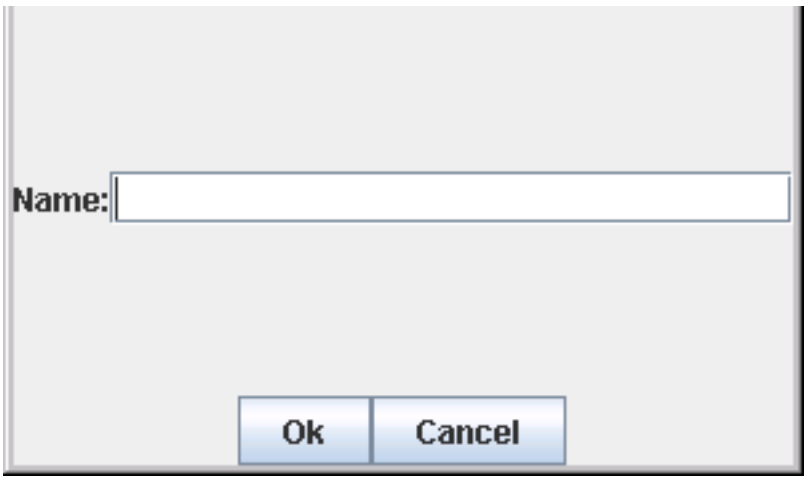
The PE 4.x / Listener for PE 5.x Product Tab



The PE 4.x / Listener for PE 5.x Product Tab

Name

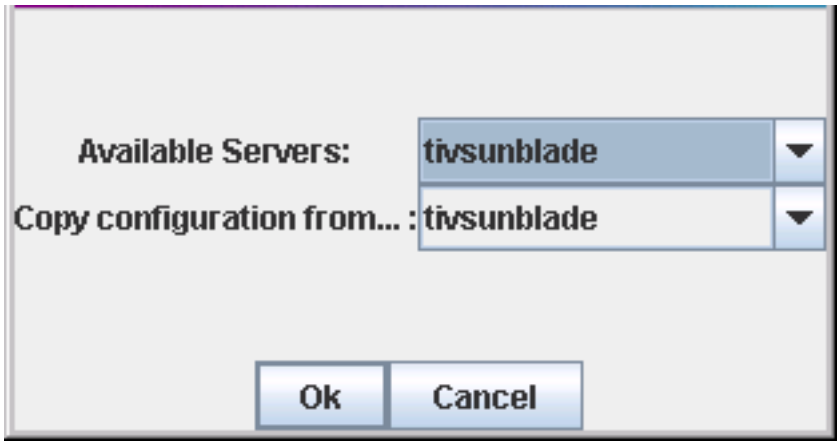
It is possible to define several Process Engines. Click the **New...** button to open the **New System** dialog. There is only a field to input the Process Engines name. Clicking **OK** will create the Process Engine. The **Cancel** button closes the dialog without creating a new configuration entry.



Dialog to create a new PE System

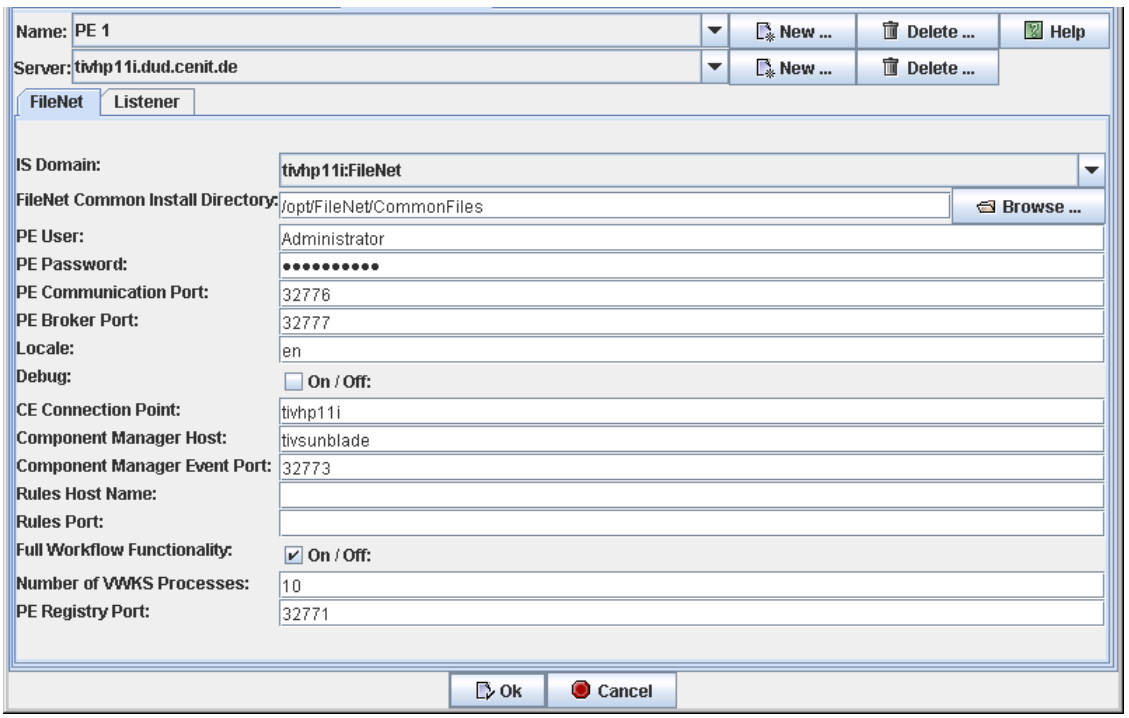
Server

A Process Engine can have several servers. Click the **New...**" button to open the **Add New Server To System** dialog. Choose one of the available servers. The **Copy From...** combo box provides already existing servers. Chose the server from which the configuration shall be copied from. Clicking **OK** will quit the dialog and save the server. The **Cancel** button closes the dialog without creating a new configuration entry..



Dialog to choose a server for the Process Engine

The PE 4.x / Listener for PE 5.x FileNet Tab



The PE 4.x / Listener for PE 5.x FileNet Tab

IS Domain

Select one of the previously configured IS Domains from the list.

FileNet Common Install Directory

Define the PE common installation directory, for instance `/opt/FileNet/CommonFiles` on UNIX systems of `C:/Program Files/FileNet/CommonFiles` for WIndows systems.

PE User
Enter the user name for the Process Engine here. This user requires access to tools like vwtool or vwspy and must have permission to log in to the Process Engine..

PE Password
Enter the password for the Process Engine user here. The password will be encrypted. If no user is given, the password won't be stored.

PE Communication Port
Enter the Process Engine Communication port here. Default value is *32776*.

PE Broker Port
Enter the Process Engine Broker port here. Default value is *32777*.

Default Locale
Specify the default locale of the Process Engine system. See IBM FileNet Process Engine documentation for more details.

Debug
Enables (checked) / disables (not checked) the debugging of the Process Engine.

CE Connection Point
Specify the CE Connection points separated by semicolon (`;`).

Component Manager Host
Enter the name of the system running the connected Component Manager.

Component Manager Event Port
Enter the Component Manager Event port here. Default value is *32773*.

Rules Host
Enter the name of the Rules Engine host here.

Rules Port
Enter the Component Manager Event port here. Default value is *32774*

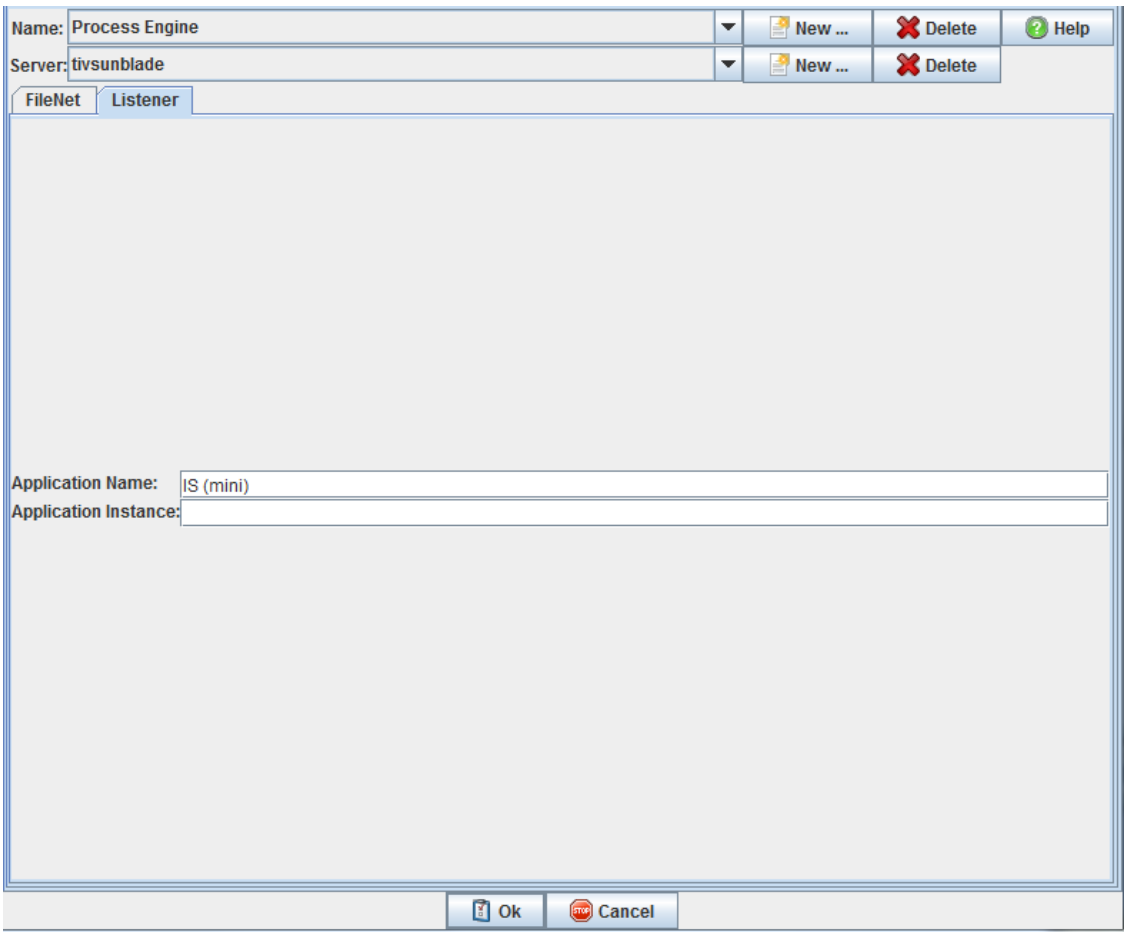
Full Workflow Functionality
Specify whether the Process Engine runs in full Workflow mode or not.

Number of VWKS Processes
The number of VWKS processes.

PE Registry Port

Enter the Process Engine Registry port here. Default value is *32771*.

The PE 4.x / Listener for PE 5.x Listener Tab



The PE 4.x / Listener for PE 5.x Listener Tab

The following parameters are available for the Process Engine Listener configuration.

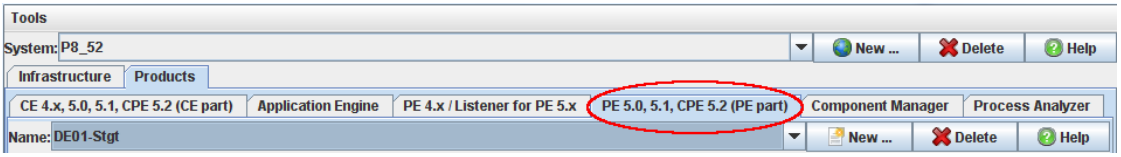
Application Name

Enter the application name whose data shall be requested via the FileNet Listener here. As the Process Engine has servers itself, there is no additional combo box to select the server

Application Instance

Please enter the application instance whose data shall be requested via the FileNet Listener.

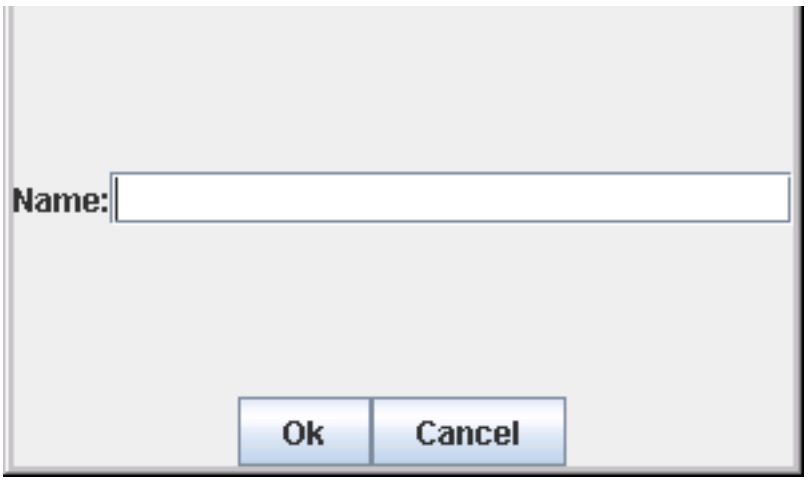
The PE 5.0, 5.1, CPE 5.2 (PE part) Product Tab



The PE 5.0, 5.1, CPE 5.2 (PE part) Product Tab

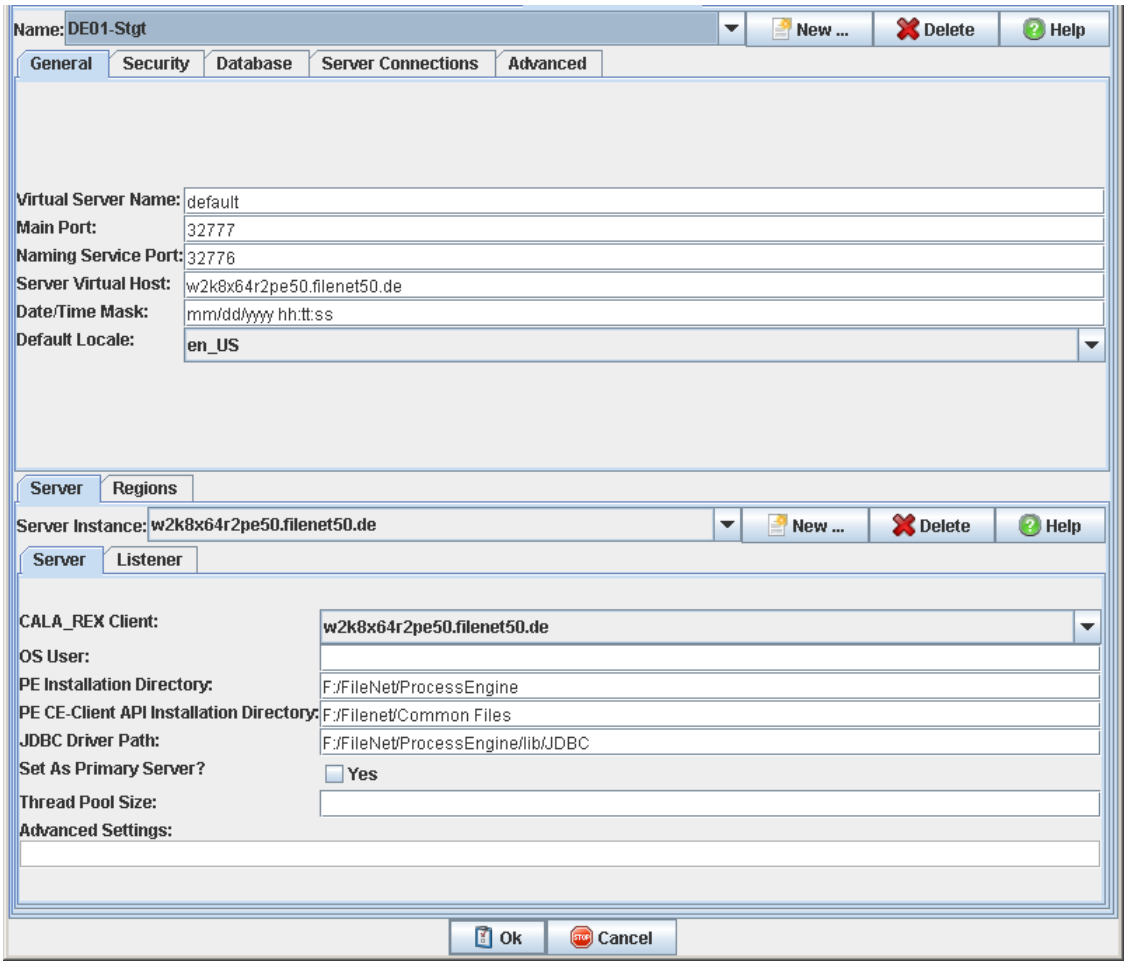
Name

It is possible to define several Process Engines or the Process Egine side of the Content Process ENgine (CPE). Click the **New...**" button to open the **New System** dialog. There is only a field to input the Process Engine's name. Clicking **OK** will create the Process Engine. The **Cancel** button closes the dialog without creating a new configuration entry.



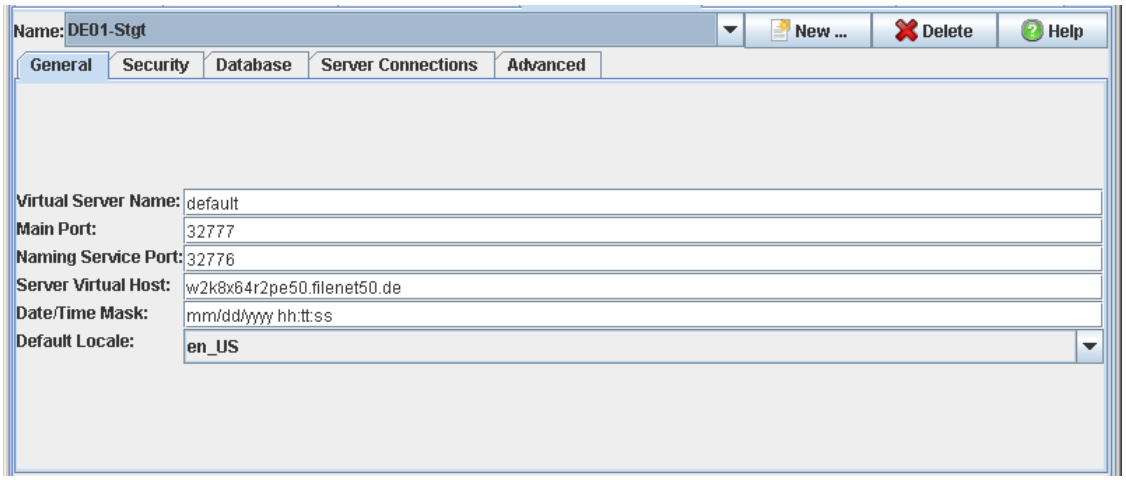
Dialog to create a new PE System.

The PE 5.0, 5.1, CPE 5.2 (PE part) Main Settings Tabs



The PE 5.0, 5.1, CPE 5.2 (PE part) Main Settings Tabs

The General Settings Tab



The Process Engine 5.x General Settings Tab

The following parameters are available for the Process Engine General settings. All parameters can be taken from the IBM 'Process Task Manager' GUI installed on each PE system.

Virtual Server Name
Add the Virtual Server name.

NOTE The PE default value of the first PE is normally *default*.

Main Port
Optional; reserved for future usage.

Specify the PE main port. The default value is *32777*

Naming Service Port
Specify the PE Naming Service port. The default value is *32776*

Server Virtual Host
Add the hostname of the system the PE runs on

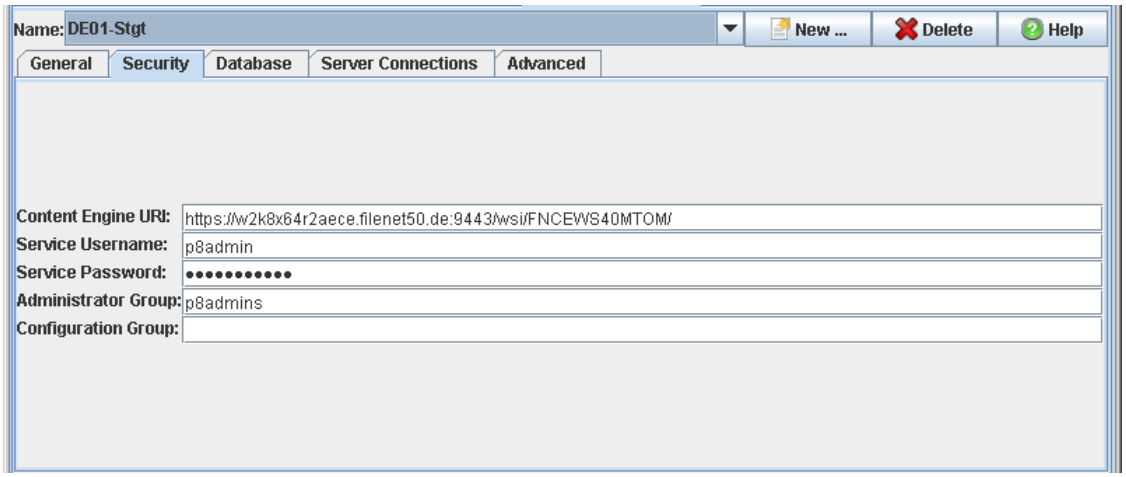
Date / Time Mask
Optional; reserved for future usage.

Specify the value from the corresponding 'Process Task Manager' GUI field.

Default Locale
Optional; reserved for future usage.

Here you will see a selection of locales. Select the default locale of the Process Engine system. Specify the default locale of the Process Engine system. See FileNet P8 Process Engine documentation for more details.

The Security Settings Tab



The Process Engine 5.x Security Settings Tab

The following parameters are available for the Process Engine Security settings.

Content Engine URL
Enter the URL of the IBM Content Engine connected to your PE.

Service Username
Enter the user name used to start the PE component.

Service Password
Specify the password of the Service user.

Administrator Group
Optional; reserved for future usage.

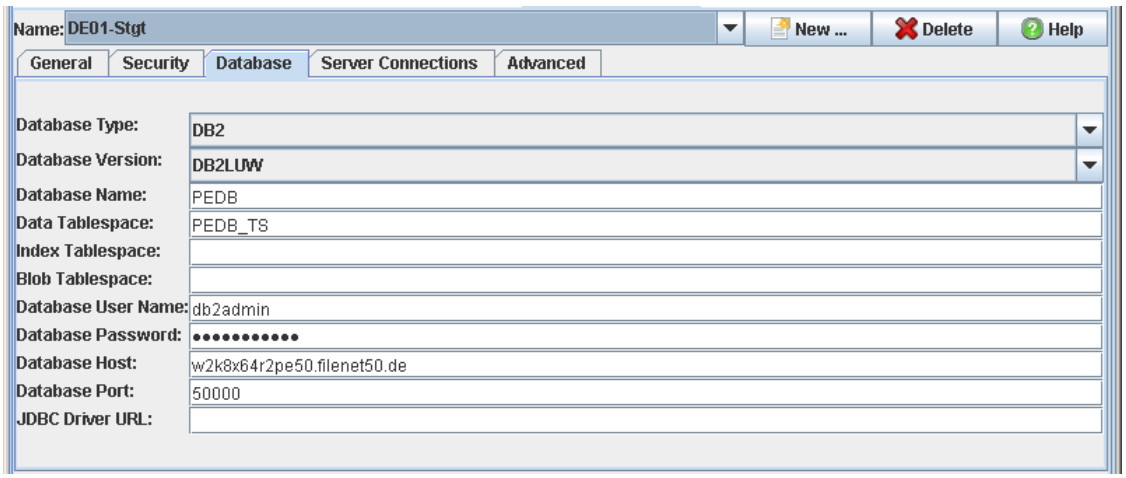
Specify the PE Administrative group name.

Configuration Group
Optional; reserved for future usage.

Enter the Configuration group name, if configured in the 'Process Task Manager' GUI.

The Database Settings Tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.



The Process Engine 5.x Database Settings Tab

The following parameters are available for the Process Engine Database settings.

Database Type

Here you will see a selection of supported database types. Select the one used by the Process Engine. The selection made will have an effect on the other fields of this tab.

Database Version (DB2 only)

Optional; reserved for future usage.

Here you will see a selection of DB2 database types. Select the one appropriate for the Process Engine's DB2 database (*DB2LUW* for UNIX, Linux and Windows based DB2 server, otherwise select *DB2zOS*).

Database Name

Specify the name of the PE database.

Data Tablespace (DB2, Oracle)

Optional; reserved for future usage.

Specify the tablespace used for the PE.

Data File Group (MSSQL)

Optional; reserved for future usage.

Specify the configured MSSQL data file group for the PE.

Index Tablespace (DB2, Oracle)
Optional; reserved for future usage.

Enter the DB2 or Oracle index tablespace.

Index File Group (MSSQL)
Optional; reserved for future usage.

Enter the MSSQL Index file group name for the PE (if used).

Blob Tablespace (DB2 only)
Optional; reserved for future usage.

Specify the DB2 Blob tablespace.

Database User Name
Specify the Database user name which is used by the Process Engine

MSSQL
Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

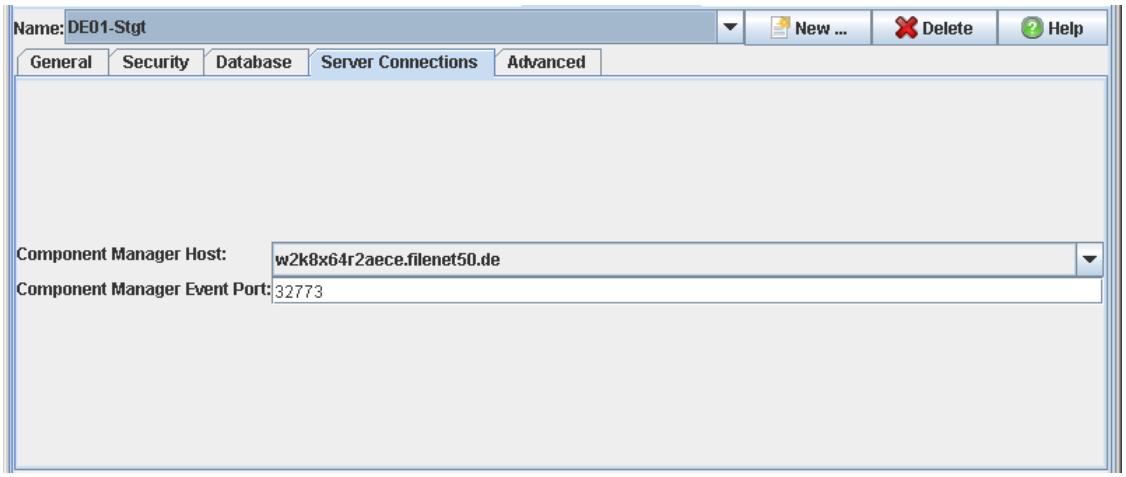
Database Password
Specify the Database users password for PE

Database Host
Specify the database host that runs the PE database

Database Port
Define the database port used for the connection

JDBC Driver URL
Specify the JDBC Driver URL for the configured PE

The Server Connections Settings Tab



The Process Engine 5.x Server Connections Settings Tab

The following parameters are available for the Process Engine Server Connections settings.

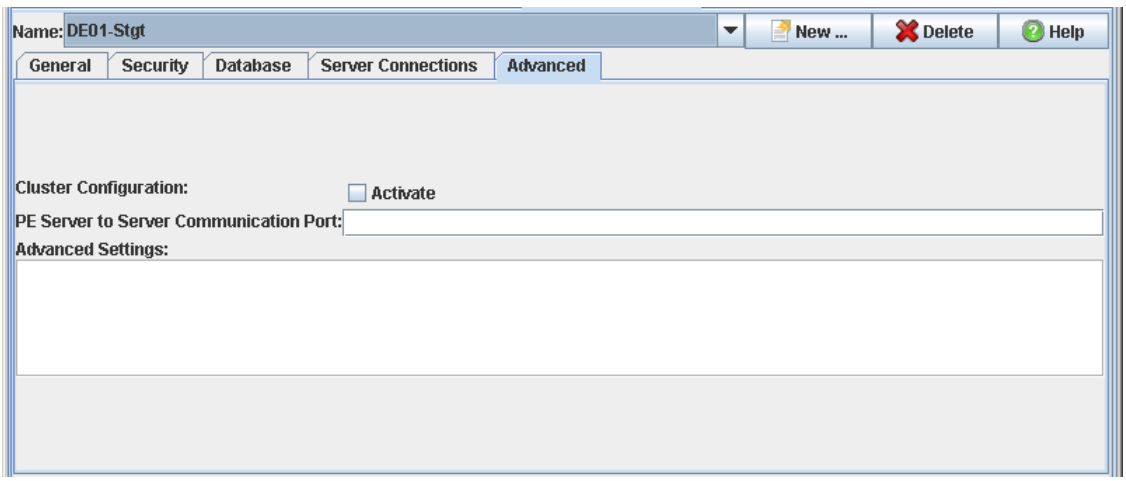
Component Manager Host
Optional; reserved for future usage.

Here you will see a selection of hosts. Select the one, the Component Manager used by the Process Engine is installed at.

Component Manager Event Port
Optional; reserved for future usage.

Specify the Component Manager Event port. The default value is *32773*.

The Advanced Settings Tab



The Process Engine 5.x Server Connections Settings Tab

The following parameters are available for the Process Engine Advanced settings.

Cluster Configuration
Checkbox to activate/deactivate cluster configuration.

PE Server to Server Communication Port
Optional; reserved for future usage.

Specify the PE server to server port

Advanced Settings
Optional; reserved for future usage.

Textfield to enter advanced configuration settings. The settings must be entered line by line as key-value-pairs separated by an equal sign (<key>=<value>).

The PE 5.0, 5.1, CPE 5.2 (PE part) Server Settings Tabs

Here you define the specific settings for each Process Engine installation on a dedicated server.

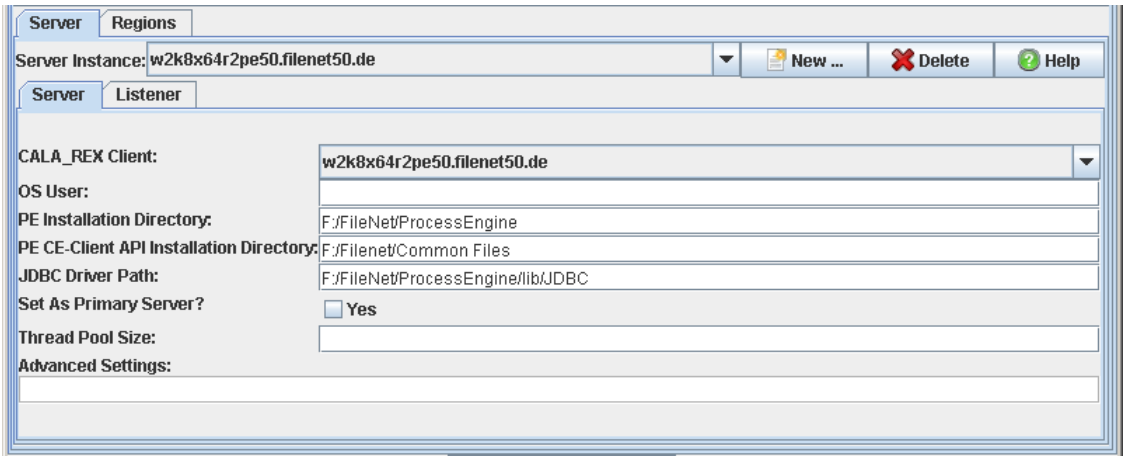
Each server to configure must be added to the PE system as a Server Instance:

Server Instance
It is possible to define several servers a Process Engine is installed at. Click the **New...** button to open the **New Server** dialog.

That dialog shows two selections: **Available Server** to select a server, and **Copy configuration from...**. The latter contains already defined servers whose configurations can be used as a template to fill the server's settings in the configuration. Exactly one server can be used as a template. Clicking **Ok** will create the new server using the selected one from **Copy configuration from...** for default values of the new server. Clicking **Cancel** will close the dialog without creating a new server.

The **Delete...** button will remove the currently selected server. The **Help** button will open the help dialog.

The Process Engine 5.x Servers Server Configuration Tab



The Process Engine 5.x Servers Server Configuration Tab

The following parameters are available for the Process Engine Server configuration.

CALA_REX Client
Here you will see a selection of CALA_REX hosts.

OS User (Unix only)
Specify the Process Engine operating system user that is used to start the PE processes.

PE Installation Directory
Specify the Process Engine installation directory.

PE CE-Client API Installation Directory
Specify the Process Engine related CE API directory. This is normally the CE_API directory located below the PE installation directory.

JDBC Driver Path
Specify the installation directory of the JDBC drivers to be used for PE.

Set As Primary Server?
Optional; reserved for future usage.

Here you define the current server as the primary server of the Process Engine. There can only be exactly one primary server. Selecting a server as a primary server while there already is a different primary server defined will remove this flag from the definition of that other server. De-selecting this checkbox will not lead to any changes of any other servers.

Thread Pool Size
Optional; reserved for future usage.

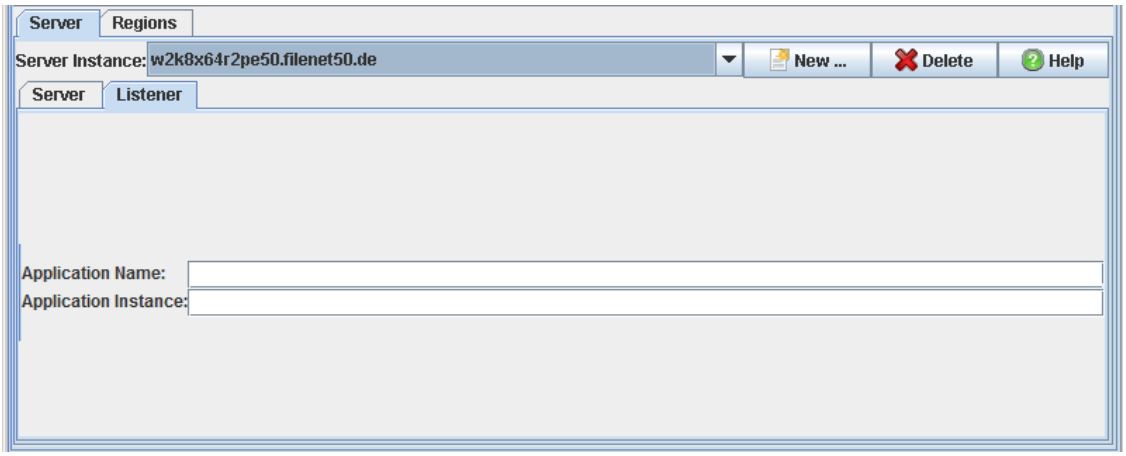
Specify the value of defined in the 'Process Task Manager' GUI.

Advanced Settings

Optional; reserved for future usage.

Textfield to enter advanced configuration settings. The settings must be entered line by line as key-value-pairs separated by an equal sign (<key>=<value>).

The Process Engine 5.x Servers Listener Tab



The Process Engine 5.x Servers Listener Tab

The following parameters are available for the Process Engine Listener configuration.

Application Name

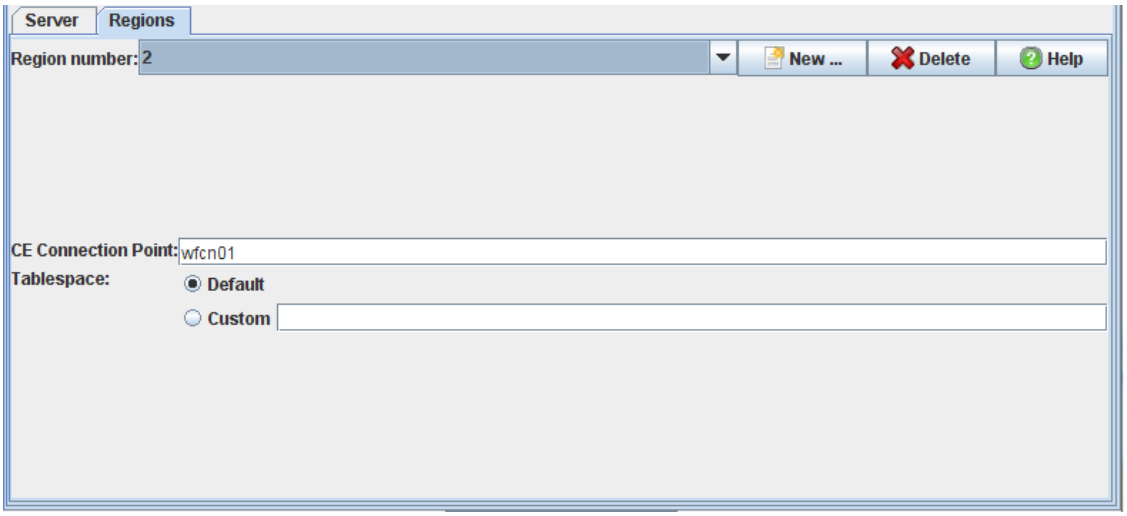
Enter the application name whose data shall be requested via the FileNet Listener here. As the Process Engine has servers itself, there is no additional combo box to select the server.

Application Instance

Please enter the application instance whose data shall be requested via the FileNet Listener.

The PE 5.0, 5.1, CPE 5.2 (PE part) Regions Settings Tab

Here you can define the regions of the Process Engine.



The PE 5.0, 5.1, CPE 5.2 (PE part) Regions Settings Tab

The following parameters are available for the Process Engine Regions configuration.

Region number

It is possible to define several regions for a Process Engine. Click the **New...** button to open the **New Region** dialog.

That dialog contains an input field to enter the region number. Clicking **Ok** will create a new region for the Process Engine. Clicking **Cancel** will close the dialog without creating a new region. If the user has entered an already existing region number, clicking **Ok** will do no changes to the system, leaving the already defined region unaltered.

The **Delete** button will remove the currently selected region. The **Help** button will open the help dialog.

CE Connection Point

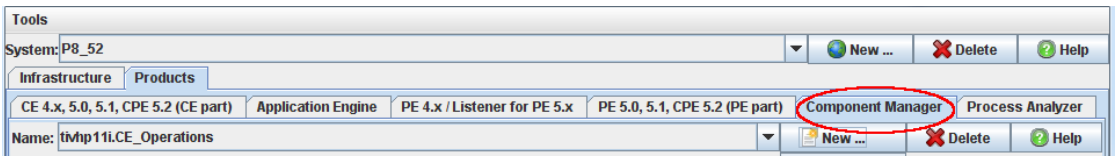
Enter the name of the Content Engine Connection Point associated with this region.

Tablespace

Optional; reserved for future usage.

Allows the definition of the tablespace to be used by the region. The user can select **Default** which is also the default after creating a new region or **Custom**. When selecting **Custom**, the user must enter the name of the custom tablespace. Entering the special tablespace name *`default`* in the custom tablespace field is identical to selecting the **Default** tablespace checkbox.

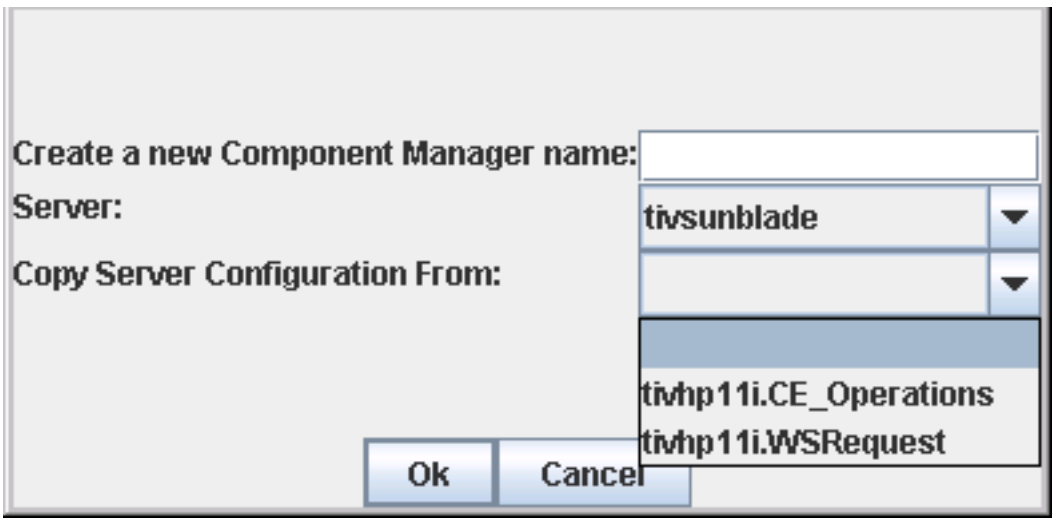
The Component Manager Product Tab



The Component Manager Product Tab

Name

It is possible to create several Component Manager systems. Click the **New...** button to open the **New System** dialog. It contains a field to enter the Component Manager name and a combo box to select the Component Manager's server. If there are already any Component Managers defined in the current system, the **Copy From...** combo box is filled with the Component Manager configurations which can be copied. The **Cancel** button closes the dialog without creating a new configuration entry.

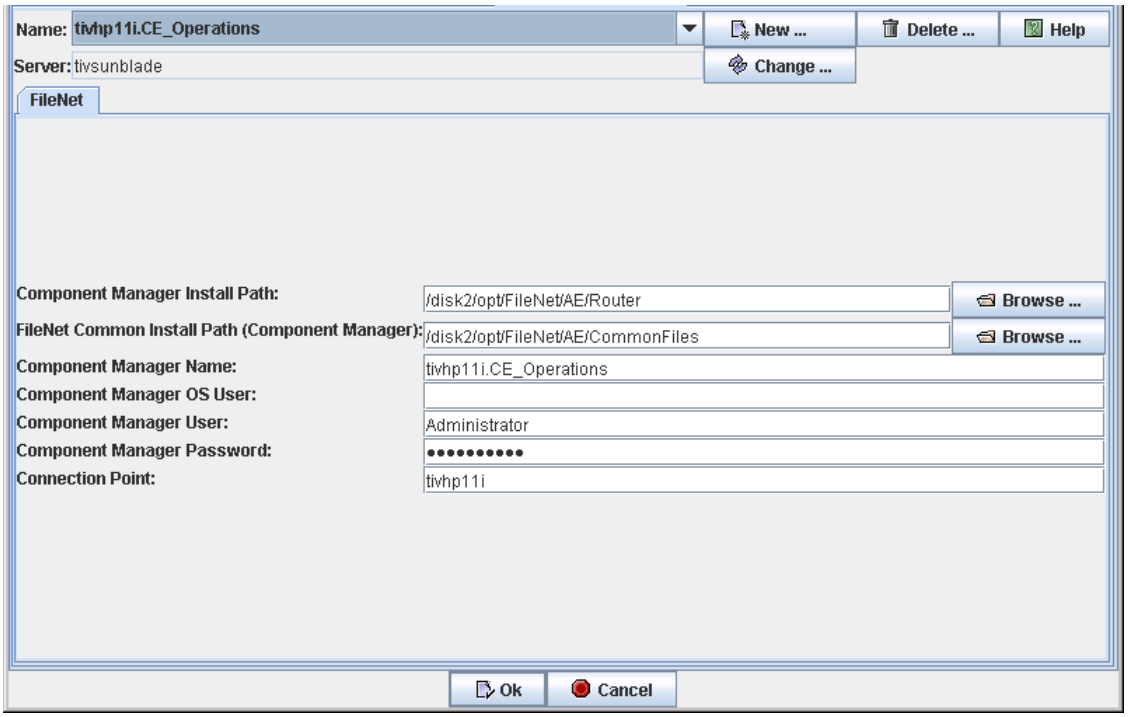


The New Component Manager Dialog

Server

The field is disabled. The server can only be changed via the **Change...** button. The change dialog has also the option to copy an already existing server configuration. After selecting a new server, click **OK** to leave the change dialog. There can be only one Server per Component Manager at one time.

The Component Manager FileNet Tab



The Component Manager FileNet Tab

Component Manager Install Path

The full path to the configuration file *vwtaskman.xml* of the Component Manager to manage.

Common values are:

Installation type	Installation directory
Workplace XT on Windows	*C:/FileNet/WebClient/Router*
Workplace on Windows	*C:/FileNet/AE/Router*
Workplace XT on UNIX	*/opt/FileNet/WebClient/Router*
Workplace on UNIX	*/opt/FileNet/AE/Router*

NOTE For backward compatibility, the Component Manager tasks and monitors check the subdirectories *AE/Router* and *Router* automatically for *vwtaskman.xml* if the file cannot be found in the specified directory.

FileNet Common Install Path (Component Manager)
Specify the Component Manager Common Install Path here. Default value on UNIX systems is */opt/FileNet/CommonFiles* and *C:/Program Files/FileNet/CommonFiles* on Windows systems.

Component Manager Name
Enter the name of the Component Manager here.

NOTE Please enter the characters case sensitive.

Component Manager OS User (Unix only)
Specify the operating user that runs Component Manager software

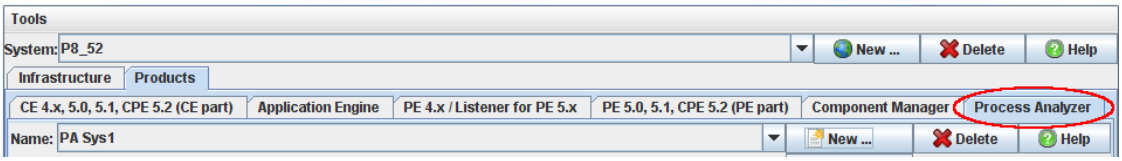
Component Manager User
Enter the user name for the Component Manager here. Specify *-1* if the user credentials defined within the P8 Process Task Manager should be used.

Component Manager Password
Enter the password for the Component Manager user here. The password will be encrypted. If no user is given, the password won't be stored. If *-1* is defined for the user account this parameter is inactive.

Connection Point
Enter the name of the Connection Point here.

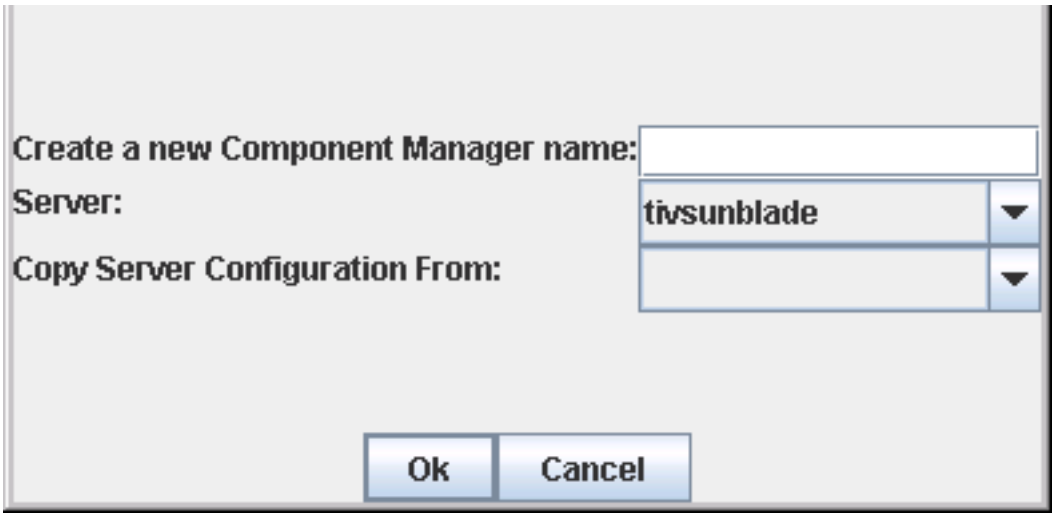
NOTE Please enter the characters case sensitive.

The Process Analyzer Product Tab



The Process Analyzer Product Tab

Name
It is possible to create several Process Analyzer systems. Click the **New...** button to open the **New System** dialog. It contains a field to enter the Process Analyzer name and a combo box to select the Process Analyzer's server. If there are already any Process Analyzers defined in the current system, the **Copy From...** combo box is filled with the Process Analyzer configurations which can be copied. The **Cancel** button closes the dialog without creating a new configuration entry.

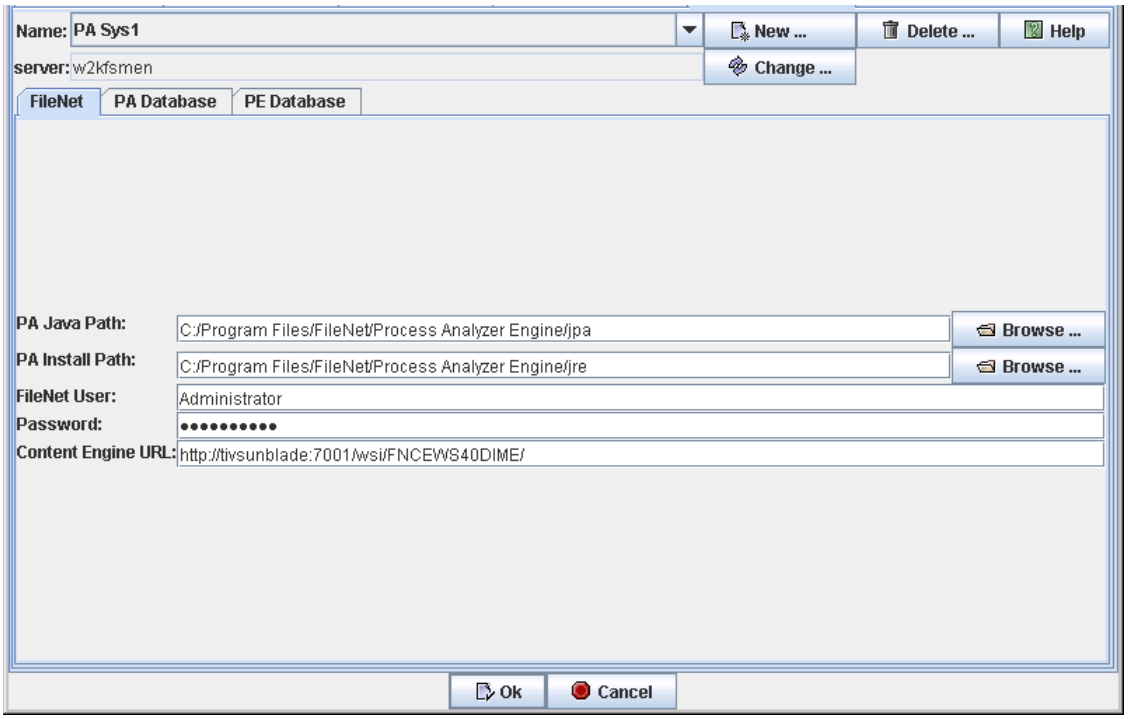


The "New Process Analyzer" dialog

Server

The filed is disabled. The server can only be changed via the **Change...** button. The change dialog has also the option to copy an already existing server configuration. After selecting a new server, click **OK** to leave the change dialog. There can be only one Server per Process Analyzer at one time.

The Process Analyzer FileNet Tab



The Process Analyzer FileNet Tab

PA Java Path
This is the path of the Process Analyzer's Java.

PA Install Path
Enter the path where the Process Analyzer is installed here.

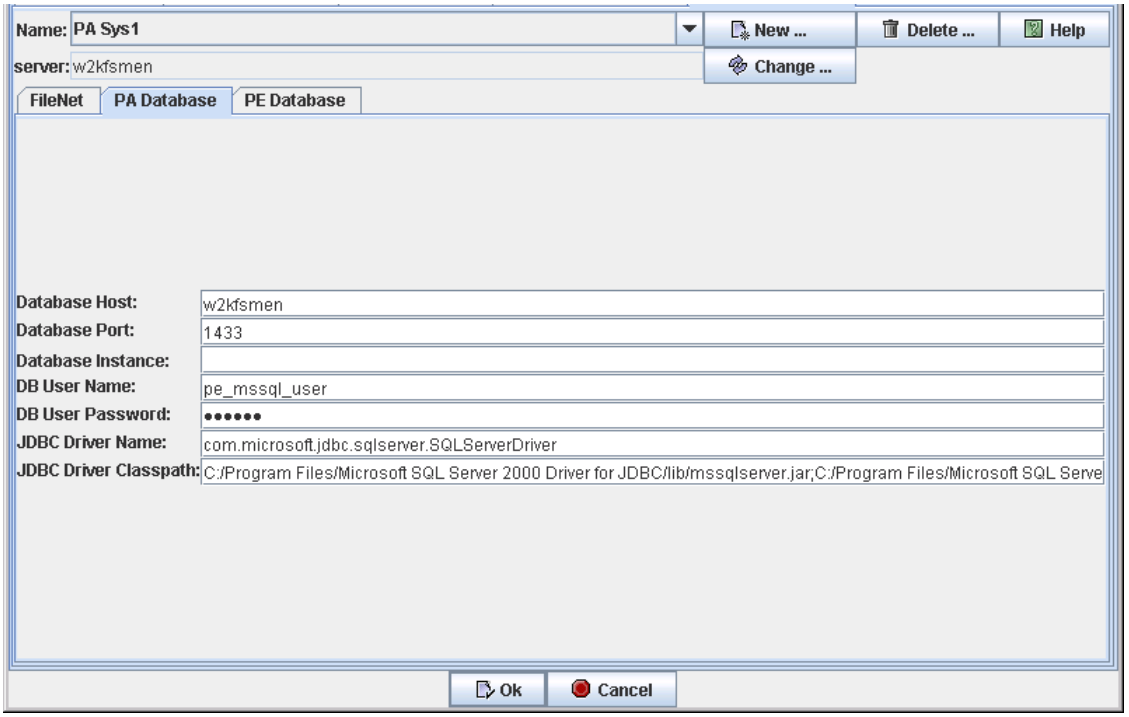
FileNet User
Enter the user name for the Process Analyzer here.

Password
Enter the password for the Process Analyzer user here. The password will be encrypted. If no user is given, the password won't be stored.

Content Engine URL
Enter the Content Engine URL of the associated Content Engine here.

The PA Database Tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication see chapter "How to configure and use the UnifiedDatabaseClient (UDC)" in the Installation Guide.



The PA Database Tab

Database Host
Specify the name of the Process Analyzer database

Database Port
Specify the port of the PA database connection here.

Database Instance
Specify the PA Database Instance name here.

DB User Name
Enter the user name for the PA database user here.

DB User Password
Enter the password for the PA database user here. The password will be encrypted. If no user is given, the password won't be stored.

JDBC Driver Name

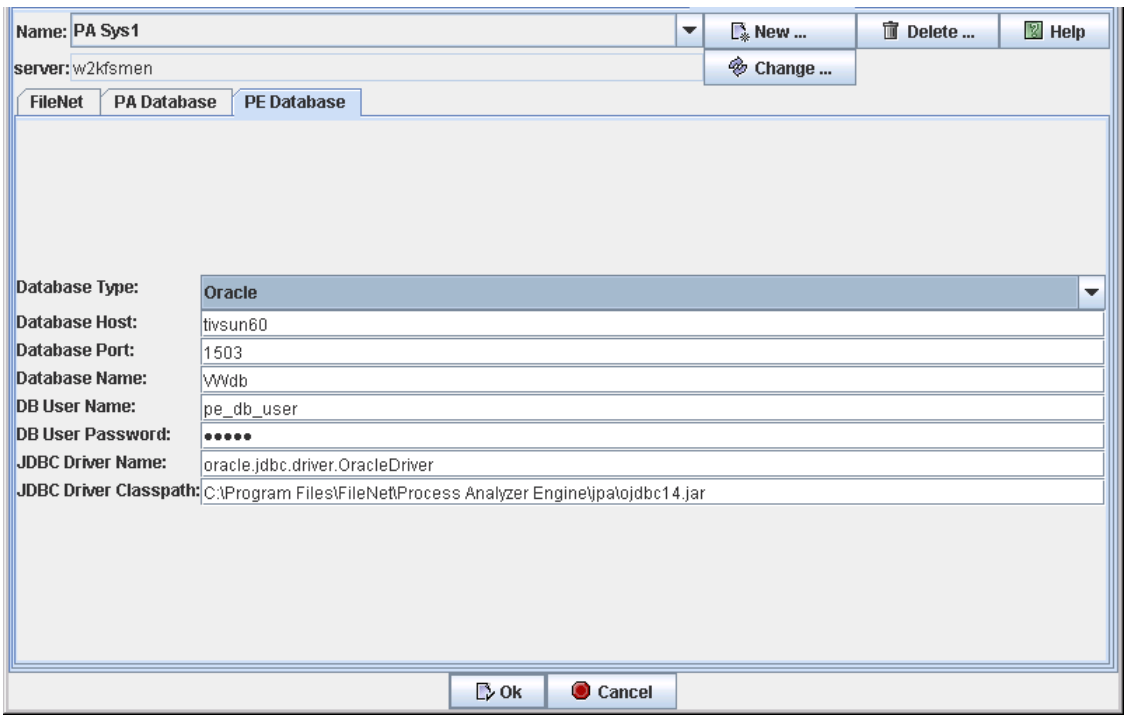
Enter the Process Analyzer JDBC Driver Name (Class) here. See FileNet P8 PA Documentation for further details. Copy the appropriate value from the PA task manager.

JDBC Driver Classpath

Enter the Process Analyzer JDBC Driver CLASSPATH settings here. See FileNet P8 PA Documentation for further details. Copy the appropriate value from the PA task manager.

The PE Database Tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.



The PE Database Tab

Database Type

Choose one of the databases which are supported: (MSSQL, DB2 and Oracle)

Database Host

Specify the name of the Process Engine database host here.

Database Port

Specify the port of the Process Engine connection here.

Database Name
Enter the PE Database name here (default value is VWdb)

DB User Name
Enter the user name for the PE database user for the PA connection here.

MSSQL
Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

DB User Password
Enter the password for the PE database user here. The password will be encrypted. If no user is given, the password won't be stored.

JDBC Driver Name
Enter the Process Engine JDBC Driver Name (Class) here. See FileNet P8 PA Documentation for further details. Copy the appropriate value from the PA task manager.

JDBC Driver Classpath
Enter the Process Engine JDBC Driver CLASSPATH settings here. See FileNet P8 PA Documentation for further details. Copy the appropriate value from the PA task manager.

Special port configurations for PCH in case of multiple instances of the same application

The following applies to the situation more than one PCH listener for the same product, but different instances, is up and running on the same machine. E.g. more than one CE or PE of the same version.

In case of that, the listener monitors and tasks cannot distinguish the different paths for the different instances of the same product version. To distinguish these, the configuration of the PCH ports of these instances must be changed to not use the default ports, like it is described in the following.

For PE and IS - both P8 4.5 and below (non-application server products)

If not already done, enable PCH with these steps:

- Go the `sd` directory to see if a perf_mon.script file exists. UNIX: `/fnsw/local/sd`. Microsoft Windows: `<drive:>\fnsw_loc\sd (Windows)`.
- If a perf_mon_script already exists, skip the next step.

- If a perf_mon_script does not exists, create one by copying it from the lib/perf directory. UNIX: `cp /fnsw/lib/perf/perf_mon.script /fnsw/local/sd/perf_mon.script`. Microsoft Windows: `copy <drive>:\fnsw_loc\sd\perf_mon.script <drive>:\fnsw_loc\sd\perf_mon.script`.
- From the `sd` directory edit the `perf_mon_script` file to make the first command line of the script file to be "`set listener true`". Your edited file might look similar to this example:

```
0001 # stamp
0002 #
0003 set listener true
0004 schedule 0 0:00:00 2:00:00
0005 schedule 0 6:00:00 0:15:00
0006 schedule 0 19:00:00 2:00:00
0007 schedule 1 0:00:00 2:00:00
0008 link 0 1
0009 link 1 0
0010 link 2 0
0011 link 3 0
0012 link 4 0
0013 link 5 0
0014 link 6 1
0015 poll /fnsw/local/sd/1/perflog
0016 echo done
0017 # stamp d;lkfjpojr;wohf
```

- Save and Exit the file.

Change the primary port:

Setting the environment variable called PCHPORT to the desired port.

Restart the Image Services / PE software.

The Listener will start automatically and will use the defined port.

For CE and AE on IBM WebSphere

How to change the default listener port (32775) on CE and AE (and any other) JVMs.

P8 applications (CE, PE, Workplace, WorkplaceXT, etc) and Image Services have the ability to output certain performance metric data. The P8 System Manager and ECM SM products both use the PCH Listener metrics to gather data and report this data. An example of a single metrics is:

```
/P8 Content Engine/USER/BusinessInsurance/Security Descriptor Cache/Cache Hit Count,1667,4,Apr 15, 2009 10:17:56 AM,1239805076695
```

For instance, "`1239805076695`" corresponds to April 15, 2009 10:17:56.695, the timestamp since the application was started. You will also note the number "4" after the value of "1667". This number is used by the System Manager Dashboard to determine what category the counter belongs to. The categories are `RPC`, `DISK`, `NETWORK`, `CPU`, and `USER`.

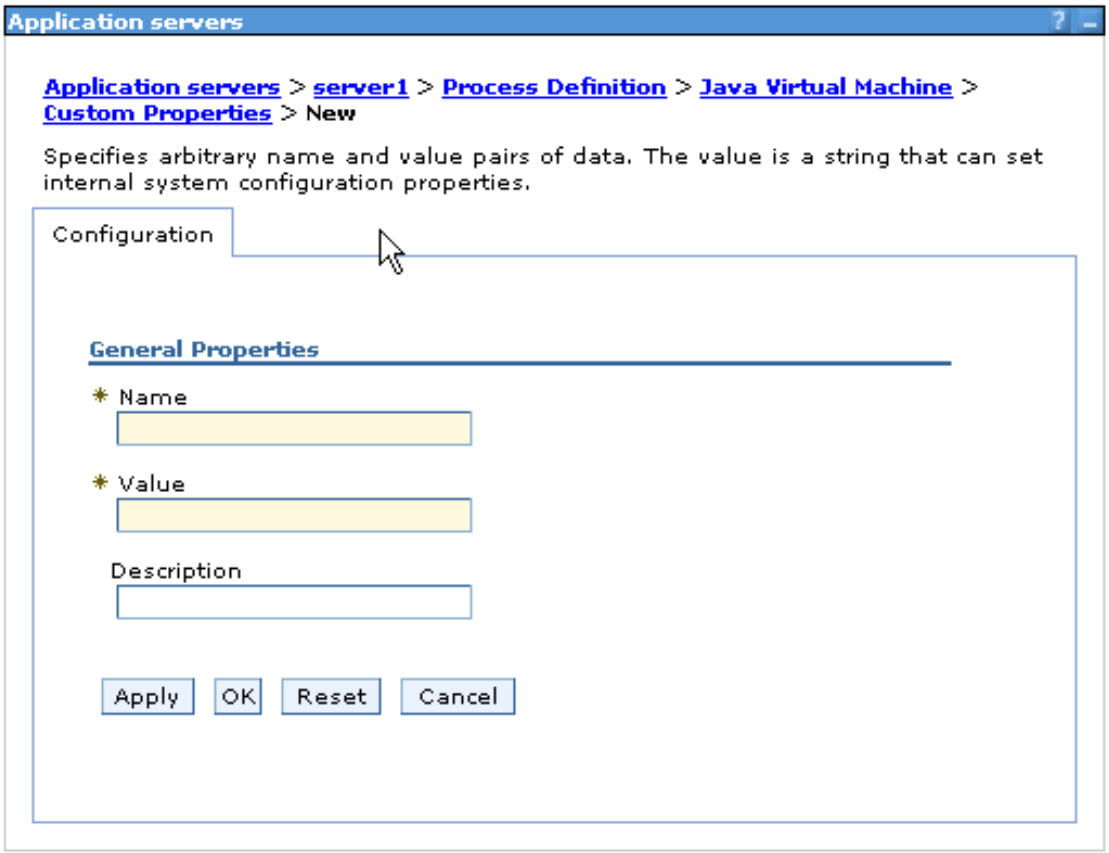
```
0001 RPC=0
0002 DISK=1
0003 NETWORK=2
0004 CPU=3
```

```
0005 USER=4
```

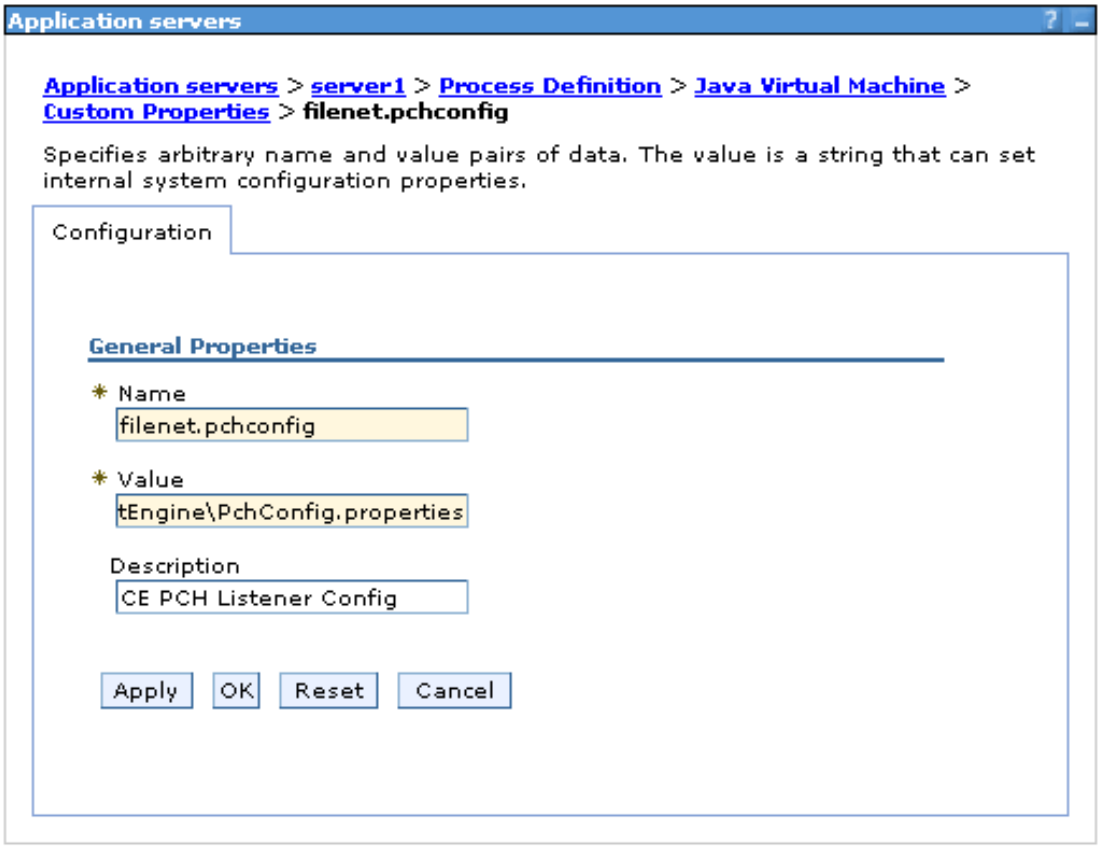
There is nothing else in the task output that identifies what JVM the counter belongs to when multiple JVM's are running on the same physical node using the same IP address. This presents a problem when setting up monitors for systems with multiple of the same type of JVM running on the same OS. If the customer has 4 CEs running on the same server, the Listener task and monitors will return 4 values for each counter. This is due to the fact that all 4 CEs are using the same default listener port (32775). At this time, there is no way to filter out which counter values belong to which JVM.

To work around this issue, each JVM needs to be configured to use a unique port number for the PCH Listener. Use the following procedure to change the listener port for a CE JVM instance:

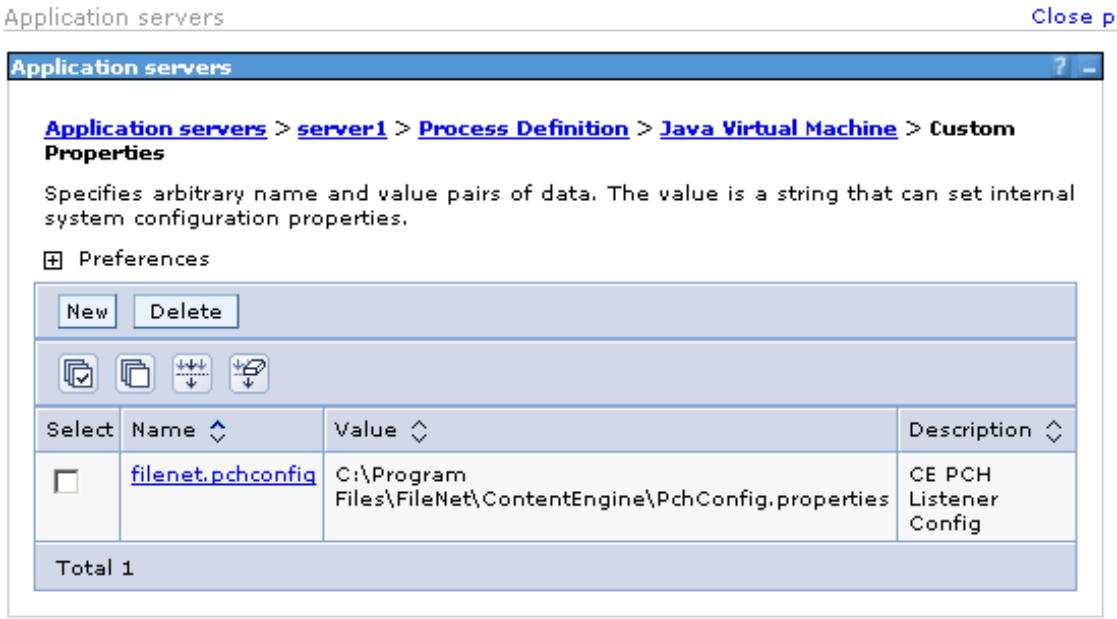
- Create a new custom property in WAS called "`filenet.pchconfig`" that points to a file called "PchConfig.properties". You have to manually create this file and you can place it anywhere on the Content Engine Server. *Process Definition may be under the Java and Process Management group.*



WebSphere: New JVM Custom Properties



WebSphere: New JVM Custom Properties, cntd.

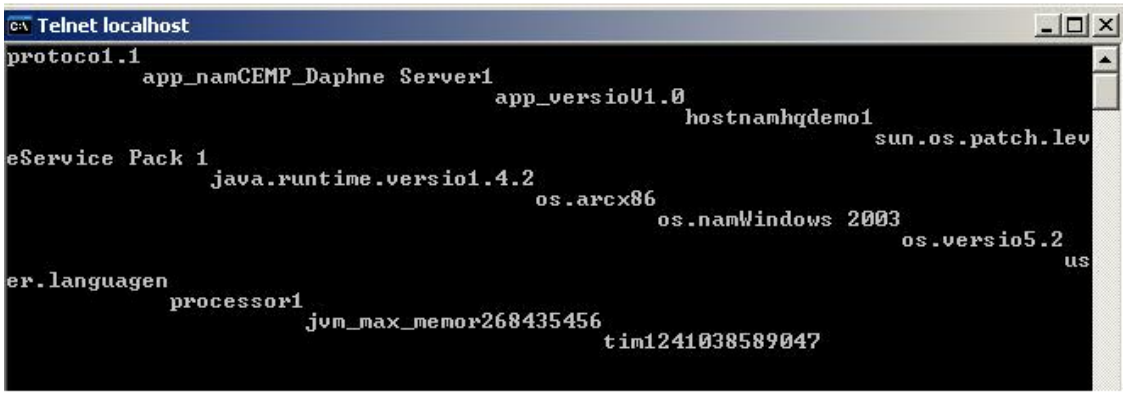


WebSphere: Server Process Definition, JVM Custom Properites

- Create the "`PchConfig.properties`" file with one line specifying the desired new listener port number: `port_number=32885`

PchConfig.properties: Port Number Definition

- Restart the JVM - restarting the cluster is OK
- Ensure that you can telnet to the physical server across the new port number. E.g. calling `telnet localhost 32885` on a Microsoft Windows based IBM WebSphere installation you should see an output similar to the following screenshot.



Telnet Check of Defined PCH Port.

For CE and AE on Oracle Weblogic

Similar to the procedure on IBM WebSphere, we have to create a custom property for the ORacle Weblogic JVM running the application. Depending on the way the application server is started (start script or using the node manager or admin server), there are two options. Option number one works for both ways, so we prefer this one. If a customer wants to use the node manager option, fine.

Option 1

- When the server (instance) is started, the environment file `setDomainEnv.cmd` or `setDomainEnv.sh` is called, no matter which start option is used. The file can be found in the `%domain_home%/bin/` (e.g. `G:\BEA\user_projects\domains\WebLogicDomain\bin`). Edit the file and search for `EXTRA_JAVA_PROPERTIES`. You should at least find a line `JAVA_PROPERTIES="${JAVA_PROPERTIES} ${EXTRA_JAVA_PROPERTIES}"` or `set JAVA_PROPERTIES=%JAVA_PROPERTIES% %EXTRA_JAVA_PROPERTIES%` depending on the operating system. If the variable `EXTRA_JAVA_PROPERTIES` is not set anywhere else in the file, add a line just above the line `JAVA_PROPERTIES=...` Create a new custom property called "`filenet.pchconfig`" that points to a file called "`PchConfig.properties`". You have to manually create this file and you can place it anywhere on the Content Engine Server. Example: `set EXTRA_JAVA_PROPERTIES=-Dfilenet.pchconfig=F:\FilenetCE\PchConfig.properties`

```
set JAVA_PROPERTIES=-Dplatform.home=%WL_HOME% -Dwls.home=%WLS_HOME% -Dweblogic.home=%WLS_HOME%

@REM  To use Java Authorization Contract for Containers (JACC) in this domain,
@REM  please uncomment the following section. If there are multiple machines in
@REM  your domain, be sure to edit the setDomainEnv in the associated domain on
@REM  each machine.
@REM
@REM -Djava.security.manager
@REM -Djava.security.policy=location of weblogic.policy
@REM -Djavax.security.jacc.policy.provider=weblogic.security.jacc.simpleprovider.SimpleJACCPolicy
@REM -Djavax.security.jacc.PolicyConfigurationFactory.provider=weblogic.security.jacc.simpleprovider.PolicyConfigurationFactoryImpl
@REM -Dweblogic.security.jacc.RoleMapperFactory.provider=weblogic.security.jacc.simpleprovider.RoleMapperFactoryImpl

set EXTRA_JAVA_PROPERTIES=-Dfilenet.pchconfig=F:\FilenetCE\PchConfig.properties

set JAVA_PROPERTIES=%JAVA_PROPERTIES% %EXTRA_JAVA_PROPERTIES%

set ARDIR=%WL_HOME%\server\lib
```

setDomainEnv: Java Properties Definition

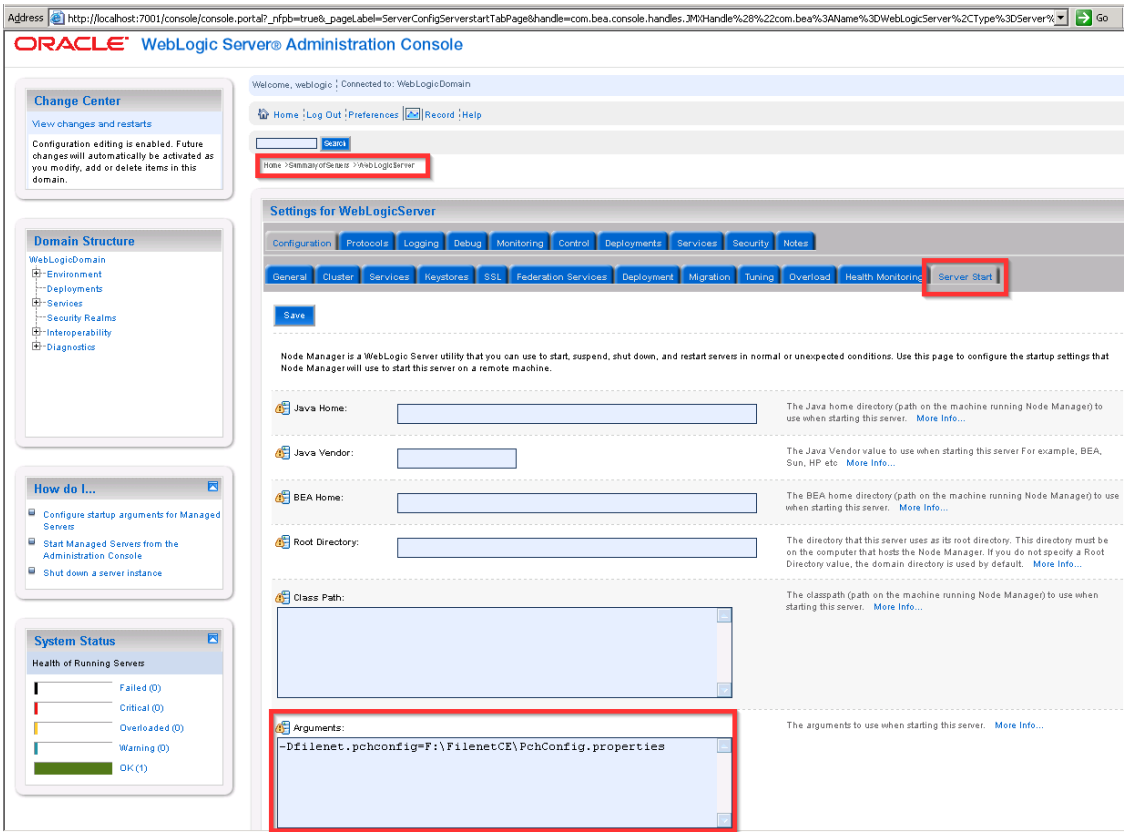
- Create the "`PchConfig.properties`" file with one line specifying the desired new listener port number: `port_number=32885`

PchConfig.properties: Port Number Definition

- Restart the JVM and test the port as described above.

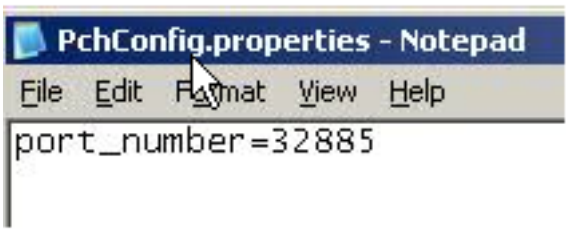
Option 2

- When the managed server (instance) is started using the Node Manager or Admin Server, the custom property can be added using the administration console. Login to `AdminConsole->Environments-Servers->YourManagedServer->Configuration (TAB)->ServerStart (SubTab)-> Arguments:(TextArea)` Add the custom property to the "`Arguments`" area:



WebLogic Server Administration Console: Adding Arguments.

- Create the "`PchConfig.properties`" file with one line specifying the desired new listener port number: `port_number=32885`

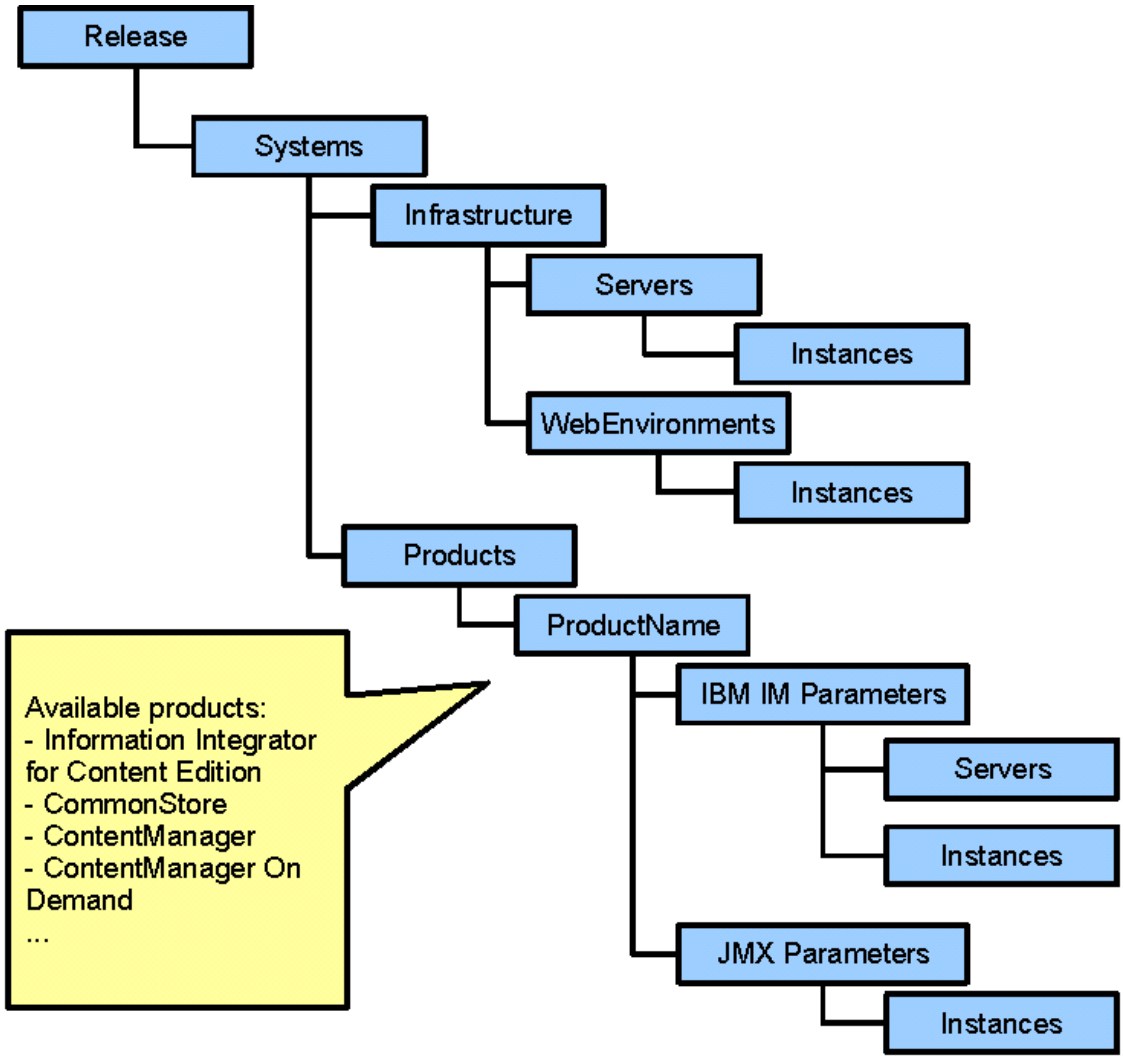


PchConfig.properties: Port Number Definition:

- Restart the JVM and test the port as described above.

Configuring ECM SM clients for IBM Content Management (CM8, OnDemand, Common Store)

ECM SM IBM Content Management (CM8, OnDemand, Common Store) configuration principles



Structure of the IBM CM IM hierarchy structure

The root element of the ECM SM IBM Content Management (CM8, OnDemand, Common Store) (short: IBM CM IM) structure is the so called "Release". It is only an abstract element which is a virtual container of several "Systems". The configuration can consist of several different configured "Systems", which are all stored in the "Release". A system is a whole configuration for a complete environment of several different servers, farms, clusters and products, just as II CE or ContentManager running on these machines. Every

system has a set of different "Servers" which contain the connection information of a physical machine. One server can have several "Instances" which contain common installation, e.g. path to a Java installation, and JMX specific configuration parameters.

Defined instances of different physical servers can be grouped into a kind of virtual servers. Such a group is called a web environment, because it is used to store the JMX specific configurations of the products.

The servers, web environments, and instances, which are defined in the infrastructure, finally are used in the definitions of the products (II CE, CommonStore, ContentManager, …).

Release

The release is the top level root element. The user will never see the release as an element in the GUI, but since there should not be several root elements (in this case this would be the systems) there is one virtual root element (the release).

System

The system is a collection of all computers and resources of a installation, including the servers and the configuration for the installed products like Process Engine or content Engine. The system includes the whole settings for a ECM SM for IBM CM IM products configuration. It is possible to define several systems.

Infrastructure

The infrastructure contains all servers of the system which shall be configured. It is only a logical element, like the release element. The collection of all servers and web environments is called the infrastructure, because these elements model the server infrastructure of the system.

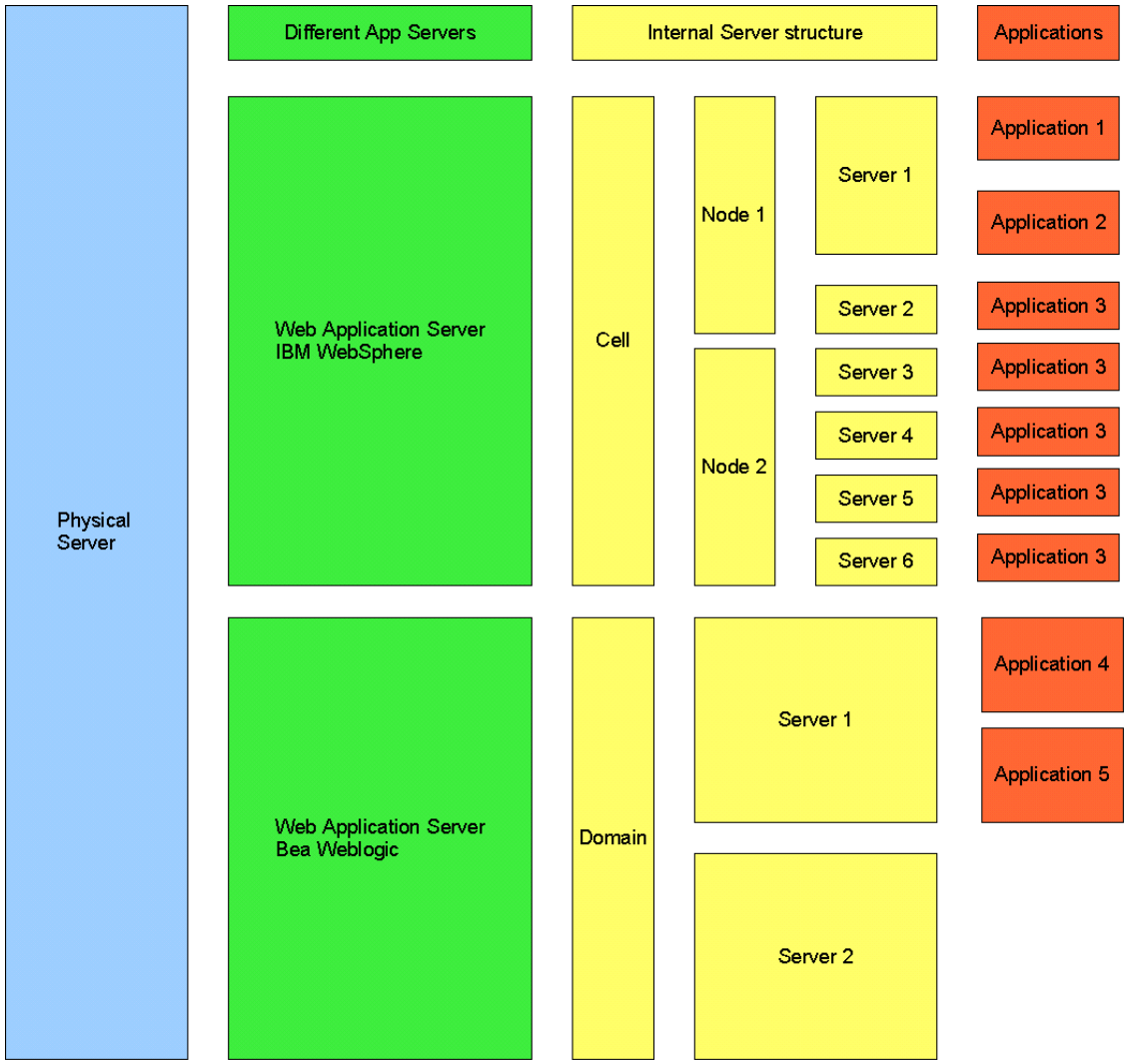
Server

The server element contains several server specific parameters like the host name or the Java path. A server also contains several instances. The idea is to store as much information in the server as possible so that this parameters are available for all products, when needed, and not every of these parameters must be entered every time a new product has to be configured.

Instance

An instance is the configuration of the JMX specific and Java parameters. The Java parameters (e.g. path to the Java installation) must be set to allow monitors to execute Java programs. If the instance does not have any relation to an application server, e.g. an instance of a CommonStore installation, the application server type must be set to *NONE*.

For application server instances, the JMX port is stored in the instance as well as the application server type. Also other basic connection data like the user, password and timeout are part of an instance. One of the most important JMX parameters is the server connection data, which contains the most important structure information of the application server internals. The following picture shows how an application server is structured and which information must be contained in the infrastructure.



Structure of application servers.

The picture shows one server which has two different application servers running which have several applications deployed. The yellow fields are parameters which are stored in the "server connection data" parameter of the instance parameters. The other fields (Java path, port, user, password...) will be the same for every instance. The following example shows how many instances must be created to monitor all applications.

- Instance 1: [WebSphere - Cell - Node1 - Server 1] will be used for "Application 1" and "Application 2"
- Instance 2: [WebSphere - Cell - Node1 - Server 2], Instance 3: [WebSphere - Cell - Node2 - Server 3], Instance 4: [WebSphere - Cell - Node2 - Server 4], Instance 5: [WebSphere - Cell - Node2 - Serv-

er 5], Instance 6: [WebSphere - Cell - Node2 - Server 5], Instance 7: [WebSphere - Cell - Node2 - Server 6] will be used for the clustered "Application 3".

- Instance 8: [Weblogic - Domain - Server1] is used for "Application 4" and "Application 5"

Web Environment

The Web Environments contain several instances which belong to a logical group. The following Web Environments would be used in the example above:

- WebEnv1: Instance1
- WebEnv2: Instance2, Instance3, Instance4, Instance5, Intsance6, Instance7
- WebEnv3: Instance7

In this example the unusual case is used, that there is only one (physical) server which contains all the instances.

Each web environment contains one or more instances. The defined web environments create logical groups. These groups can be seen as virtual servers. Such a group stores JMX specific configuration data per product configuration.

Products

The products contain the configuration of the II CE, the ContentManager and the other IBM Content Management (CM8, OnDemand, Common Store) products. There are products which do have components running as a deployed application in an application server, e.g. the II CE Server, and some which are standalone installations, e.g. CommonStore.

The products with application server deployments do all have an JMX panel for entering the JMX specific configuration parameters of the deployed product instance.

Some products also need database configuration parameters. These can be entered into the appropriate fields of the product panels.

Differences to the other installer plug-ins of the ECM SM

The ECM SM IBM CM IM installer stores its configuration in a binary only format in the same directory where the environment files are stored. This file is created or updated by clicking at the OK button of the IBM CM IM installer plug-in.

At this stage, the system environment files of the configuration are not changed in any way.

The side effect is, the IBM CM IM installer plug-in will never read the ECM SM IBM CM IM system environment file. That file and the server environment files, are *only written* by the installer, but *never read*.

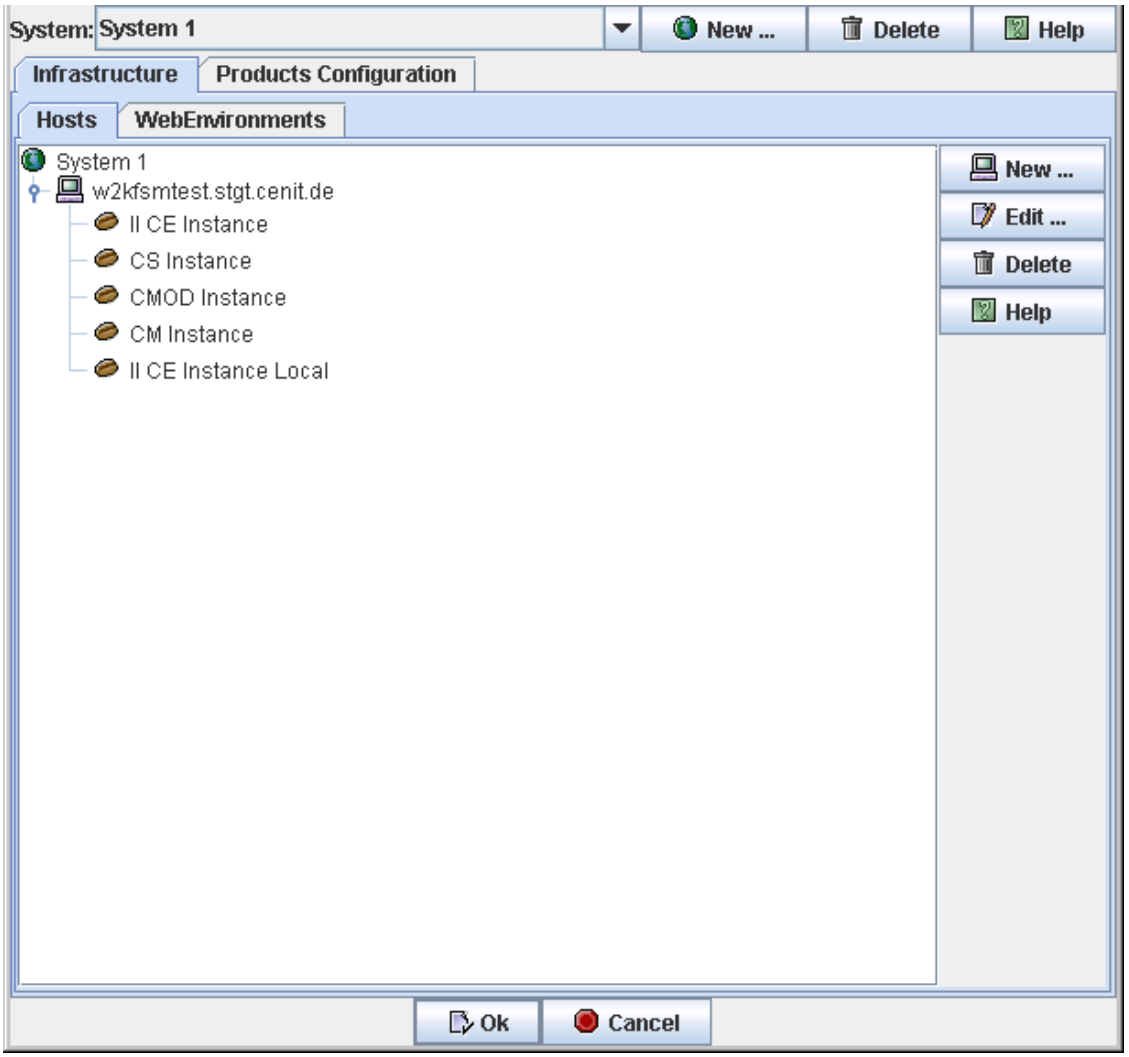
So any manual changes in these files will never show up in the installer plug-in, and they will be overwritten without any further notice later on.

Configure ECM SM IBM Content Management (CM8, OnDemand, Common Store)

To configure ECM SM IBM CM IM properties, press the **Configure IBM Content Management (CM8, OnDemand, Common Store) Products ...** button.

The ECM SM IBM CM IM Installer Plug-in

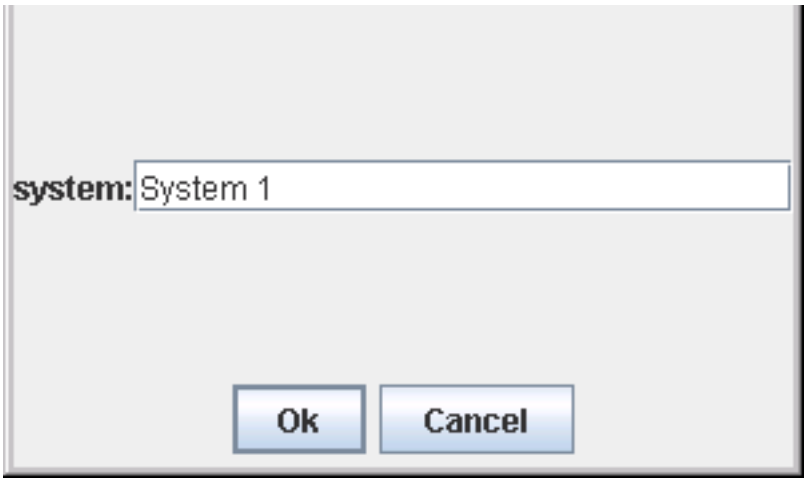
The configuration dialog opens.



The installer's dialog with expanded tree view

It consists of several tabs which represent the hierarchical structure of the image above.

Create a new system by clicking on the **New...** button. **The New System Dialog** will be displayed.



Dialog to create a new system

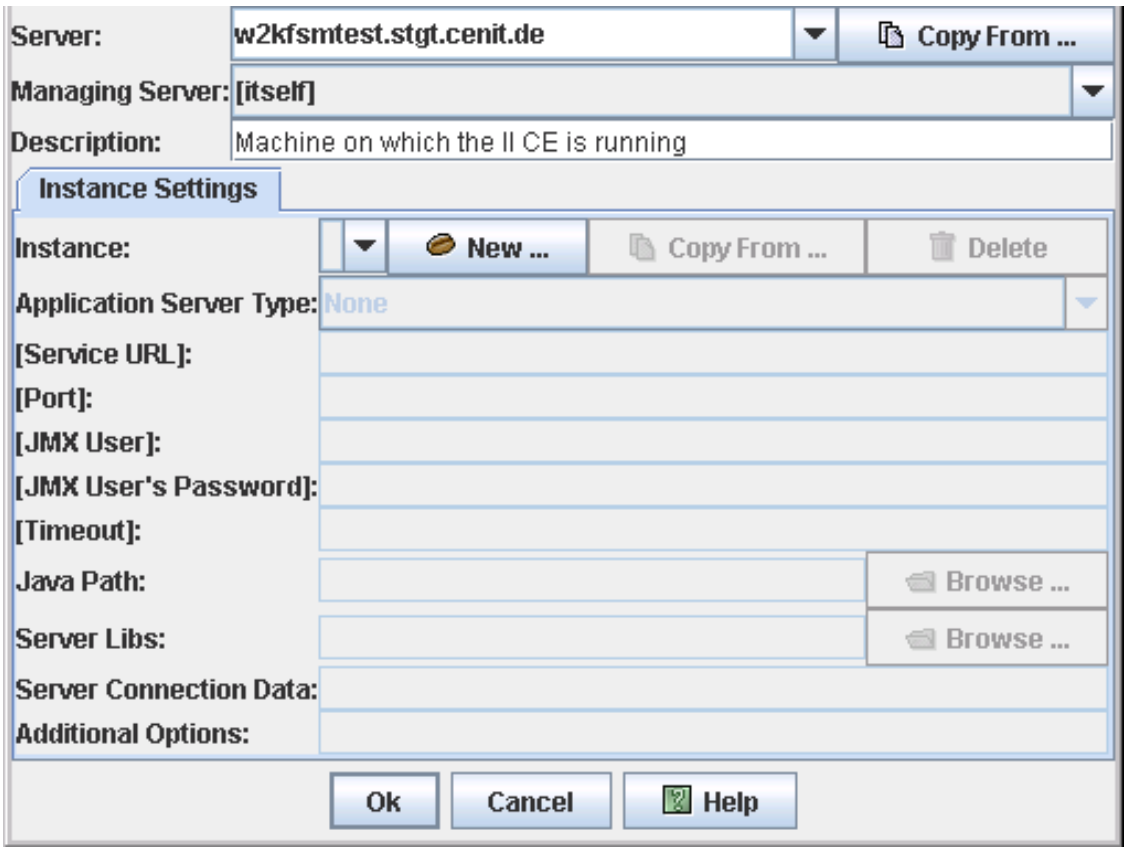
The **New System Dialog** has one input field to enter the new system's name and an **OK** button to create the system and a **Cancel** button to leave the dialog without creating the system.

The Infrastructure Tab

The infrastructure tab is used to define the environment in which the system is running. So hosts/servers can be created which contain instances. After creating the servers, the instances can be grouped in web environments.

The infrastructure tab itself contains two other tabs. The **Hosts** tab to define the server and the **WebEnvironments** tab to define the web environments. Both tabs consist of a hierarchical tree of the system, the defined servers and instances in the hosts tab. The web environment tab also has a hierarchical tree view with the system, the defined web environments and the instances associated with the web environments. Both tabs have four buttons. **New…, Edit…, Delete,** and **Help**.

The New Server dialog - Hosts New... button



Dialog to create a new server . The instances tab.

The **New Server Dialog** is called, when the "New..." button is pressed in the "Hosts" tab. The **New Server Dialog** consists of several input fields which are explained in the following list.

Server

This is the host which shall be defined in this dialog. The combo box contains all available CALA_REX servers. The field also is editable to enter other servers which are not contained in the combo box.

Managing Server

The Managing Server needs further introduction:

As the ECM SM IBM CM IM configuration also must support server farms and clusters, the Managing Server is used. Farms and clusters are a collection of several servers which appear as only one machine to the other servers and clients in the network. So it may not be possible to request information of these machines directly in some cases. The only interfaces to these machines are JMX, and RMI technology. The JMX requests are executed by the server which is accessible in

the network. This server is called the Managing Host and requests the JMX and FileNet Listener parameters.

If a host is Managing Host itself and is not managed by another machine, the Managed Host and the Managing Host are the same machine. The combo box contains all servers which are already defined.

Description

In the description field it is possible to enter some comments about the server. (If it is part of a cluster or what the name of the cluster is)

Copy from… Button

This button opens the "Copy Server From..." Dialog which makes it possible to copy a whole server configuration of an already existing server.

Instances Tab

The Instances tab is used to define several instances at the server.

The Instances Tab

A server can have several (JMX) instances. These instances are defined in the JMX tab of the "New Server Dialog". The following fields can be configured and the following buttons are available to configure the instances:

Instance

The combo box contains all already defined instances of this server. When creating a new server this combo box will be empty. To create a new instance, the "New..." button has to be pressed. The instances can be switched via the combo box. All instances in this combo box are defined for the server (not only the selected instance).

Application Server Type

The following application servers are supported:

- IBM WebSphere 5
- IBM WebSphere 6
- IBM WebSphere 6 via webservice
- IBM WebSphere 6.1
- IBM WebSphere 6.1 via webservice
- IBM WebSphere 7 via webservice
- IBM WebSphere 8, 8.5 via webservice

A WebService based connection to a application server, which has the *applicationserver.jmx.monitor.war* / ~.ear application running. In this case the **ServiceUrl** has to be used instead of **host** and **port**. For further information about how to install the functionality on WebSphere, refer to the *Install Guide*, chapter *Preparing JMX Monitoring*.
The difference between the "<AppServer> via webservice" and the "Webservice" item in the combo box is, that the "<AppServer> via webservice" items support further functionality like the "View AE Status" task. If the JMX webapplication is deployed on a server, which is not listed in the combo box explicitly, it can be used the "webservice" item.

Service URL (depends on connection type)

For the webservice connection the ServvuceUrl must have the following format: `http(s)://<ip>:<port>/<context_root>`

The values for host, port and contextroot depend on your configuration, described in the "Preparing JMX Support > JMX Support via WebService" chapter of the Install Guide.

Defaults for WebSphere are:

- port for HTTP: 9080
- port for HTTPS: 9443
- context_root: jmxmonitor

Port (depends on connection type)

This is the JMX port to which the software shall connect. Default values are as follows:

- IBM WebSphere 5
  2809 per default
- IBM WebSphere 6
  2809 (most likely) per default
- IBM WebSphere 6.1
  2809 (most likely) per default
- IBM WebSphere 7, 8, 8.5
  The port is not used here, because this server is only used via webservice connection

Most times the ports are set manually by the administrator's choice in productive environments.

JMX User (depends on the application server security settings)

Context sensitive. The password for JMX access.

NOTE On WebSphere 6.1.x.x SSL is activated per default. In this case the user and password field have to be left empty and the credentials have to be entered in the sas.client.props file and the ssl.client.props file. For more information about these files please refer to the chapter "Preparing JMX Support - How to create the keystore and truststore files for WebSphere 6.1.x.x" in the install guide.

Password (depends on the application server security settings)
Context sensitive. The password for JMX access.

Timeout (Optional)
The timeout defines a time, after which the operation shall cancel automatically. The timeout must be given in seconds. If no timeout is defined, 40 seconds are used as default.

Path to Java
As Oracle BEA Weblogic 9 as well as WebSphere 5, 6, and 6.1 use their own Java to access JMX, the Java path of the server can not be used. Therefor the Java path of the application servers must be entered here.

- WebSphere 5
  <WebSphereHome>/AppServer/java
- WebSphere 6
  <WebSphereHome>/AppServer/java
- WebSphere 6.1
  <WebSphereHome>/AppServer/java
- IBM WebSphere 7, 8, 8.5
  <CENIT_ROOT>/jre
- webservice
  The Java of the WebSphere Application Server must not be used.
  It is recommended to use the Java, which is shipped with the product. Alternatively it is recommended to use a different IBM or Oracle JRE with at least Version 6.

Path to server Libs
This is the path to the libraries which are needed by JMX to get a JMX connection to the application server. The paths can be found as follows.

- IBM WebSphere 5, 6, and 6.1
  <WebSphereHome>/AppServer
- IBM WebSphere 7, 8, 8.5
  <Server>;<Node>

Server Connection Data
The MBean Java program needs several parameters to establish the connection to the application server. The instances need the following parameters depending on which application server is chosen:

- IBM WebSphere 5
  <Server>;<Node>;<Cell>;<Version>
- IBM WebSphere 6
  <Server>;<Node>;<Cell>;<Version>;<MessageListenerThreadPool-ID>;<ORBThreadPool-ID>;<WebcontainerThreadPool-ID>
- IBM WebSphere 6.1

<Server>;<Node>;<Cell>;<Version>;<MessageListenerThreadPool-ID>;<ORBThreadPool-ID>;<WebcontainerThreadPool-ID>;<TCPThreadPool-ID>

Additional Options (Optional)

This parameter can contain several key value pairs. This field is only used if the basic configuration needs special treatment. Several key-value pairs are separated via semicolon. Example: key1=value1;key2=value2.

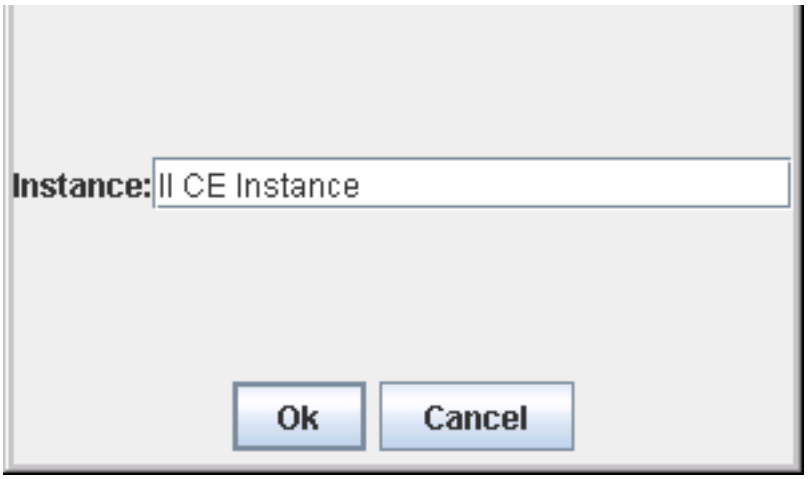
SAS_PATH=<path_to_sas_file> - Is used by WebSphere application servers when security is enabled. For further information please check the manuals. The path usually is on $WAS_ROOT/AppServer/profiles/<profilename>/properties. If no SAS_PATH is defined in the additional options, it uses the path ${CENIT_ROOT}/cala/monitors/pam/properties/sas.client.props if it exists.

IP_ADDRESS=<ip_address_to_connect_to> - For cluster environments the hostname is not usually the address to which can be connected with the JMX client. Enter the IP address of the virtual server to which shall be connected here.

For more information about how to configure the sas.client.props file refer to the chapter "Preparing JMX Support - How to Configure sas.client.props for WebSphere".

The "New..." button

Clicking on this button will open the "New Instance Dialog" to create a new JMX instance.



Create a new instance

The "Copy From..." button

Clicking on this button will open the "Copy Instance from Dialog" to copy an already instance configuration of the actual server into the actual selected instance. It is not possible to copy instances from other instances.

The "Copy Instance From..." dialog

The "Delete" button

Clicking on this button will delete the actually selected instance.

Hosts "Edit…" button

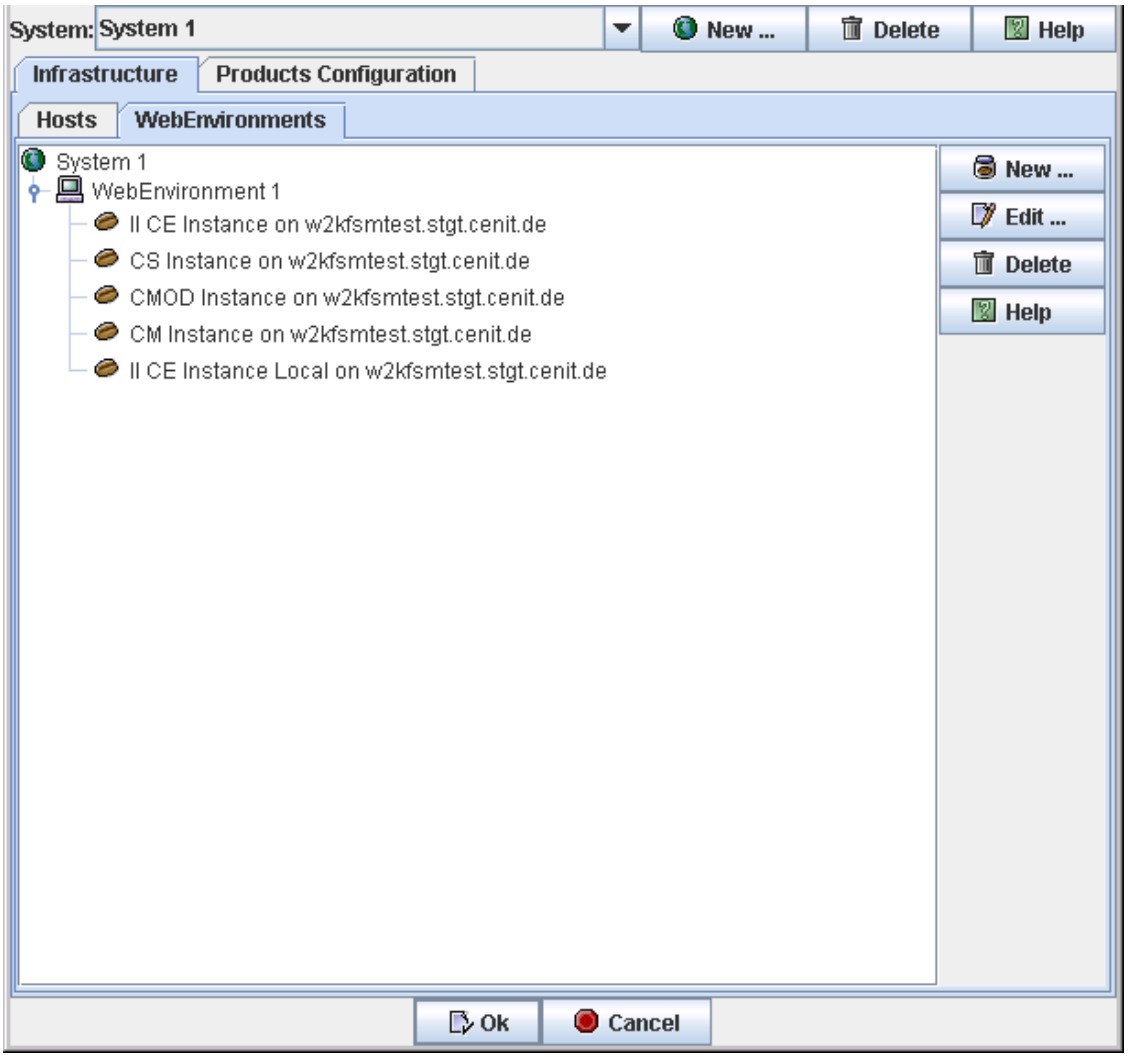
The hosts edit button will also call the "New Server Dialog", with the configuration of the server which was selected in the tree when clicking the button. The first instance of the data list will be pre selected. If an instance was selected in the tree when clicking the button, the dialog will open with the server and the instance pre selected. If the system (root element) is chosen when clicking the edit button, nothing will happen.

Hosts "Delete" button

If a server is selected, the server and all it's instances will be deleted. Also all associated web environments and products are affected by this. A warn dialog advices on that. If an instance is selected, when pressing the delete button, only the instance will be removed. Again web environment and products will be affected by this. If the last instance of a server is deleted, the server will also be deleted automatically, because a server without instance is forbidden.

The "New Web Environment Dialog", "New…" environment button

The following image shows the infrastructure tab with the "WebEnvironments" tab selected.



The "WebEnvironments" tab in the main config window

Pressing the "New..." button in the "Web Environment" tab will open the "New Web Environment Dialog".

The "New Environments" dialog

In this dialog the following parameters can be defined and actions can be performed:

Name
Define the name of the web environment. It is not allowed enter an already used name. In edit mode it is possible to rename the web environment with entering another name.

Instance
In this selection list one or several instances must be chosen. It is not allowed to chose no Instance at all. It is allowed to define one instance in two different web environments.

To choose several elements hold down the Ctrl key on the keyboard and select several elements by clicking them. Release the Ctrl key after selecting the needed instances.

Administrative Server
This combo box shows all servers which are associated with the displayed instance. Out of these an admin server can be defined, which server is the master host (the host which does the load balancing) in a cluster environment.

OK button
Clicking the OK button will close this dialog and store the made changes to the system.

Cancel button
Clicking the Cancel button will close the dialog without saving the changes to the system.

After a web environment was defined, the products tabs are enabled and can be edited now.

WebEnvironments "Edit…" button

The environments edit button will also call the "New Web Environment Dialog", with the environment loaded, which is selected in the tree, when pressing the edit button.

WebEnvironments "Delete" button

The environments delete button will delete the environment which is selected in the hierarchy tree. This environment will be lost for all products. A warning dialog will ask for confirmation before the environment is deleted. If an instance is selected and deleted, this instance also will be lost for all products which use the environment. If the last instance from an environment is deleted, the environment will automatically be deleted too.

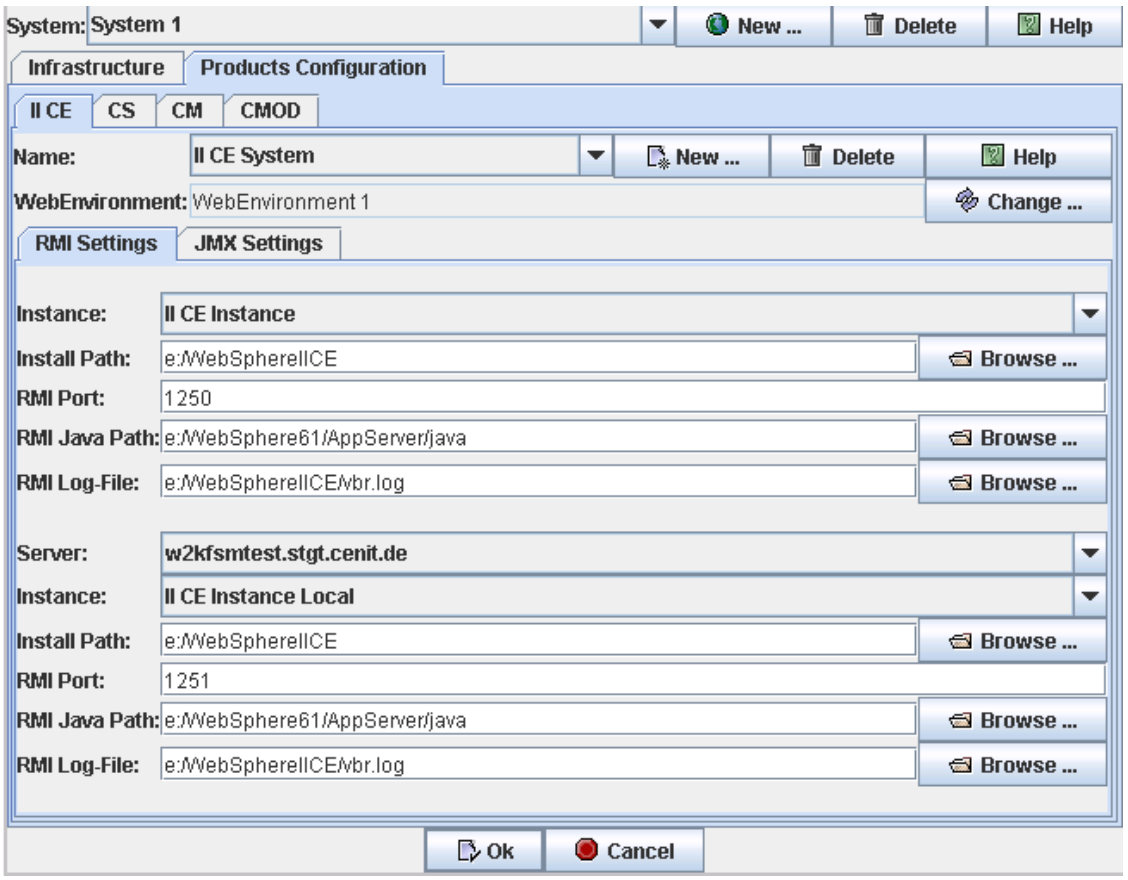
The Products Tab

In the products tab the configuration for the IBM CM IM applications/products is made. Every product has its own tab.

The "II CE" Product Tab

Name

It is possible to create several II CE configurations. To create a new configuration press the "New…" button. A dialog will open, that contains a field to enter the name and a combo box to select the II CE's web environment. If there are already any II CE configurations defined in the actual system, the "Copy From…" combo box is filled with the II CE configurations which can be copied. The "Delete" button will remove the II CE configuration from the system.

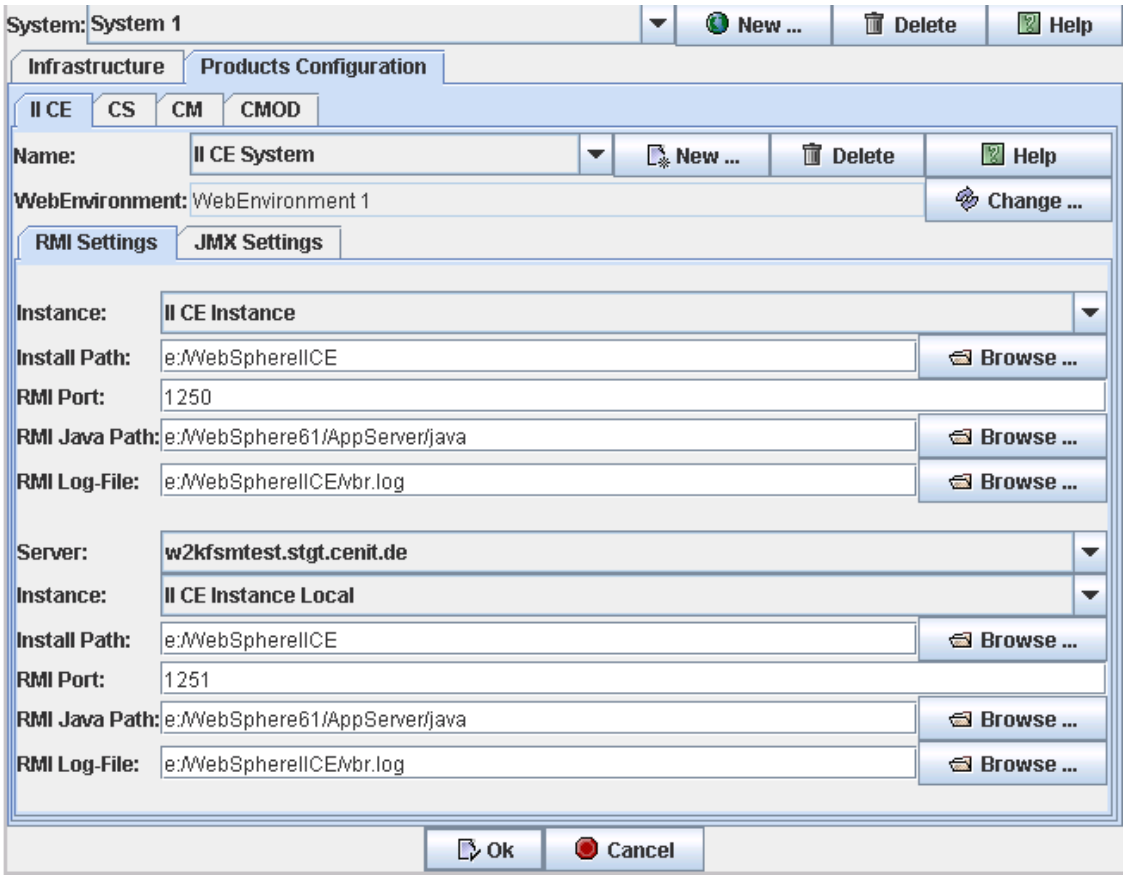


The II CE dialog

WebEnvironment

The field is disabled. The web environment can only be changed via the "Change…" button. The change dialog also has the option to copy an already existing configuration for a specific web environment. After selecting a new web environment, click OK to leave the change dialog. There can be only one web environment per II CE at one time.

The II CE RMI Settings Tab



The II CE Products tab with selected RMI Settings configuration tab

The RMI settings tab is divided in two parts. The upper part contains fields for the RMI settings related with the II CE application server installation.

Instance

Select an instance from the web environment of the II CE. This must be an instance, where the II CE server application is deployed, and running.

Install Path

Enter the path where the II CE Server product is installed.

RMI Port

Enter the RMI port of the configuration service of the II CE here (aka VeniceBridge services). The standard port is 1250.

RMI Java Path
Enter the Java path of the II CE installation here. This can be any Java installed at the server the instance is defined at, if the JVM is capable to run the II CE components.

RMI Log File
Optional field for the RMI logfiles of the II CE server.

The second part contains fields for II CE connectors only installations. These are standalone Java application installations, that are also known as II CE RMI Proxy Connector Servers. Every installation at one server is referenced as an II CE instance of that server.

Server
Select a server an II CE RMI Proxy Connector Server product (aka connectors only installation) was installed at.

Instance
Select an II CE connectors only installation instance from the above server.

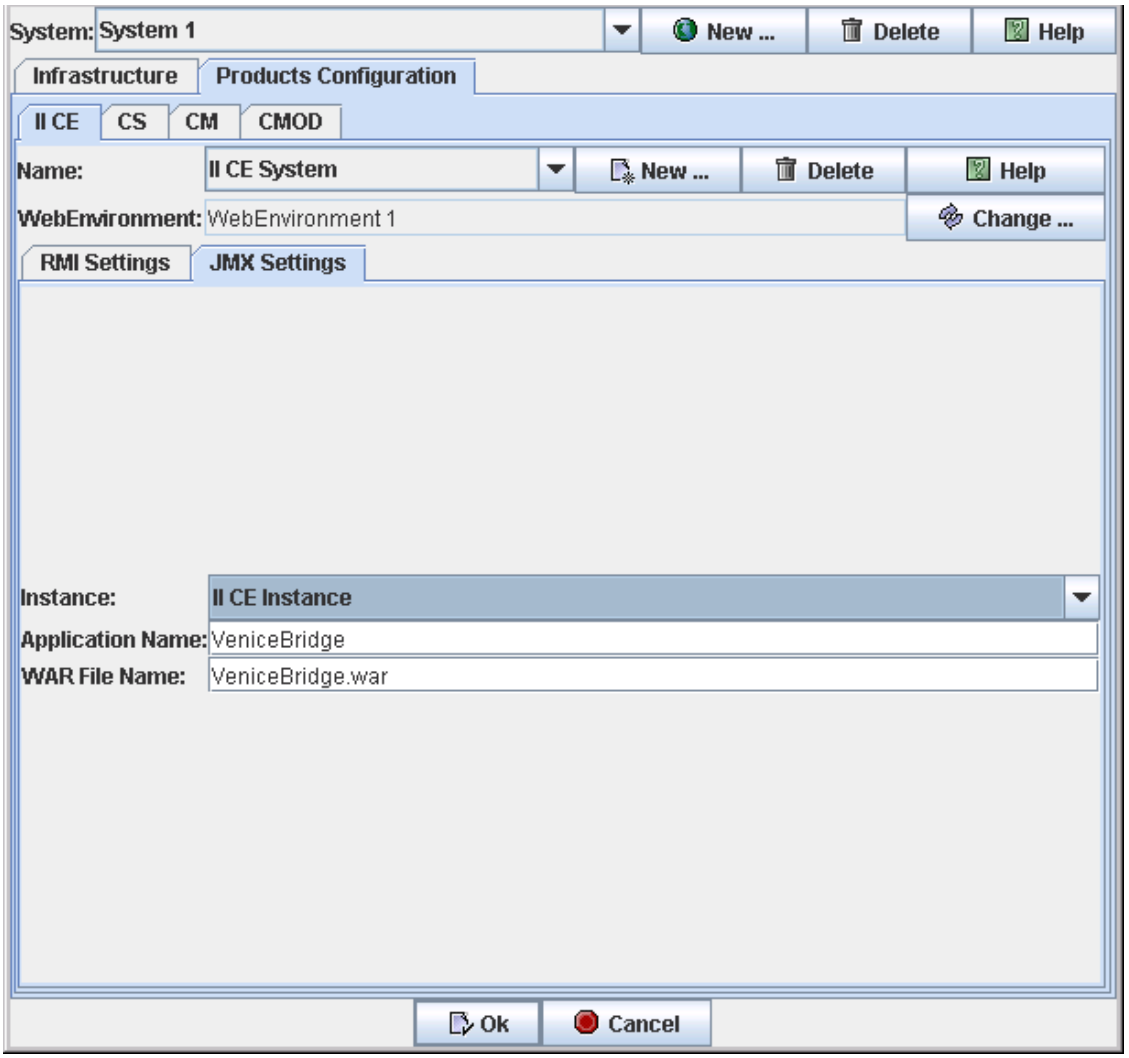
Install Path
Enter the path of the directory the RMI bridge start script is located at.

RMI Port
Enter the RMI port the RMI bridge uses. The default is 1251. Normally this is incremented by one for each separate RMI bridge running at a single server.

RMI Java Path
Enter the Java path of the II CE installation here. This can be any Java installed at the server the instance is defined at, if the JVM is capable to run the II CE components. This can be equal for all instances of a server.

RMI Log File
Optional field for the RMI logfiles of the RMI bridge.

The II CE JMX Settings Tab



The II CE Product tab with selected JMX Settings configuration tab

Instance

This product can have several instances on which JMX can be requested. Please select the instance which you want to configure. It is possible to configure several instances. You can only select an instance, that is part of the web environment the product is related with (see above).

Application Name

Enter the Application whose status shall be monitored in this field. The default is application name for II CE is "VeniceBridge".

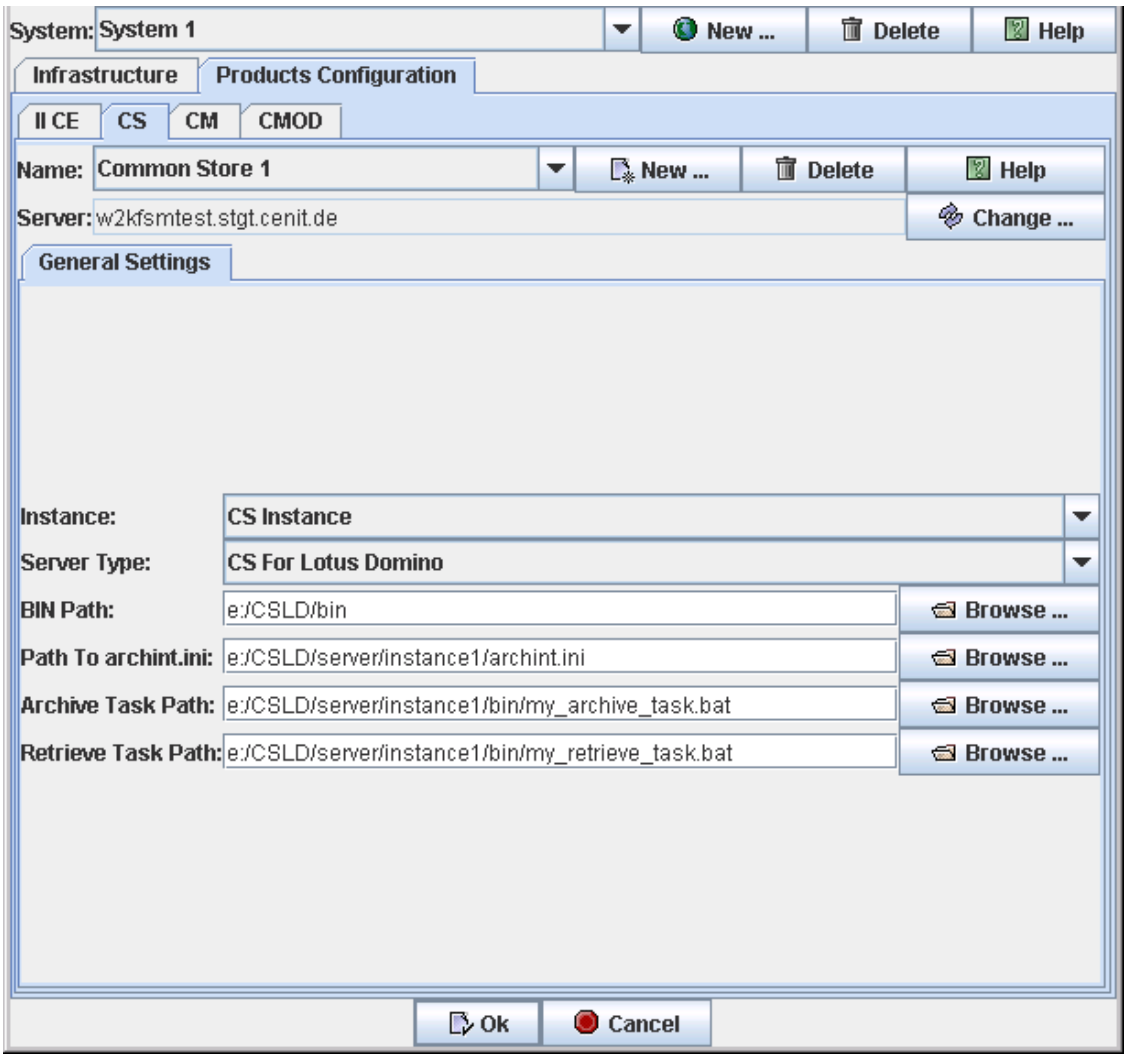
Application War File

WebSphere only: The JMX program also needs the war file name of the application. The default war file name for II CE is "VeniceBridge.war". Some applications also have several war file names. In that case, the war files are separated with semi colons.

The "CS" Product Tab - IBM Common Store

Name

It is possible to create several CS configurations. To create a new configuration press the "New..." button. A dialog will open, that contains a field to enter the name and a combo box to select the CS's web environment. If there are already any CS configurations defined in the actual system, the "Copy From…" combo box is filled with the CS configurations which can be copied. The "Delete" button will remove the CS configuration from the system.

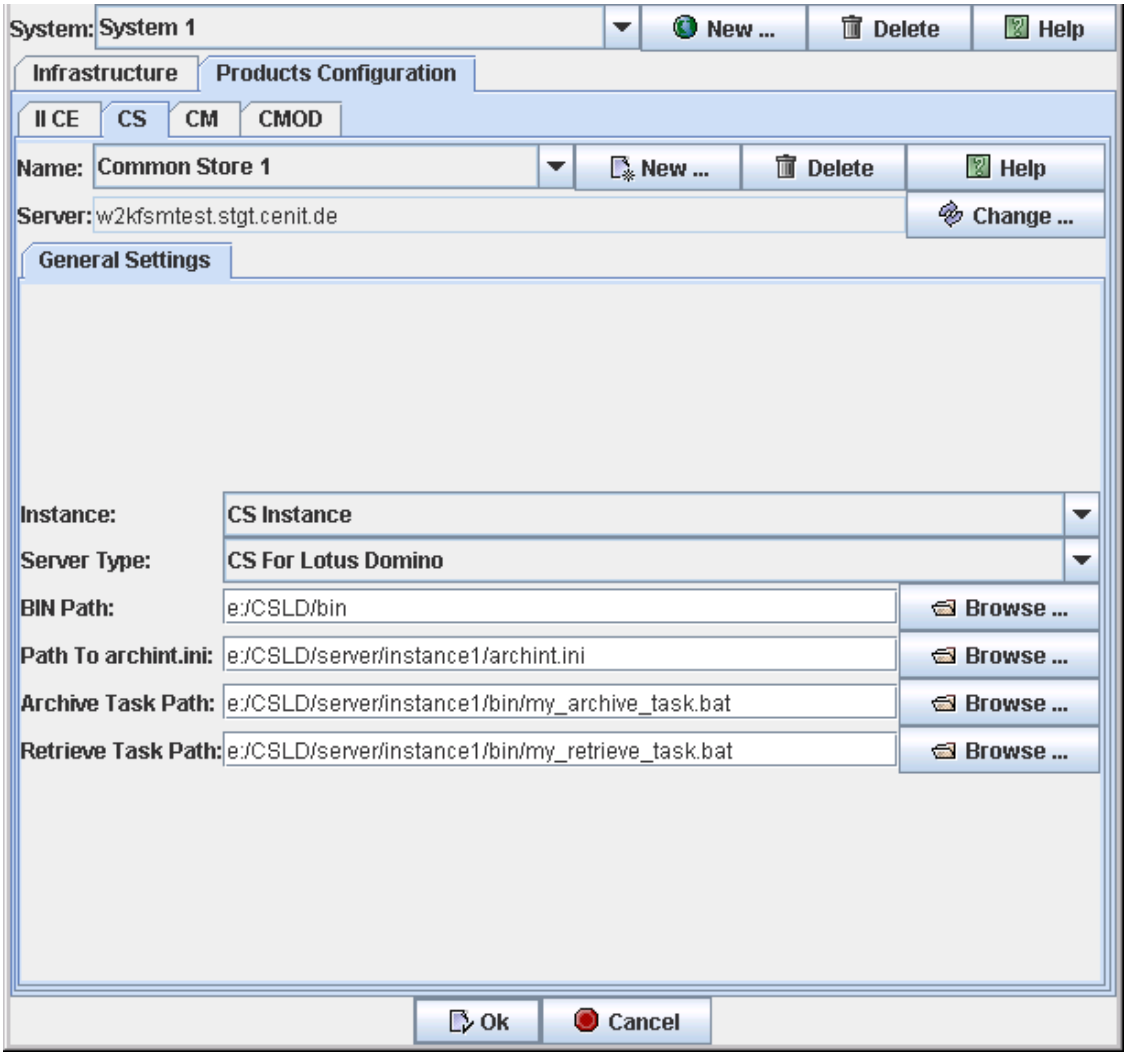


The CS dialog

Server

The field is disabled. The server can only be changed via the "Change…" button. The change dialog also has the option to copy an already existing configuration from a specific server. After selecting a new server, click OK to leave the change dialog. There can be only one server per CS at one time.

The CS General Settings Tab



The CS Product tab with selected General Settings configuration tab

Instance

Select an CS instance. Only instances that are members of the selected CS server are listed here.

Server Type

Select the correct CS type. CSLD (Lotus Domino) and CSX (Microsoft Exchange) are possible.

BIN Path
Enter the full path to the `bin` directory of the CS installation here.

Path To archint.ini
Enter the full path to the archint.ini file of the CS instance. This file is the central configuration file of a specific CS installation.

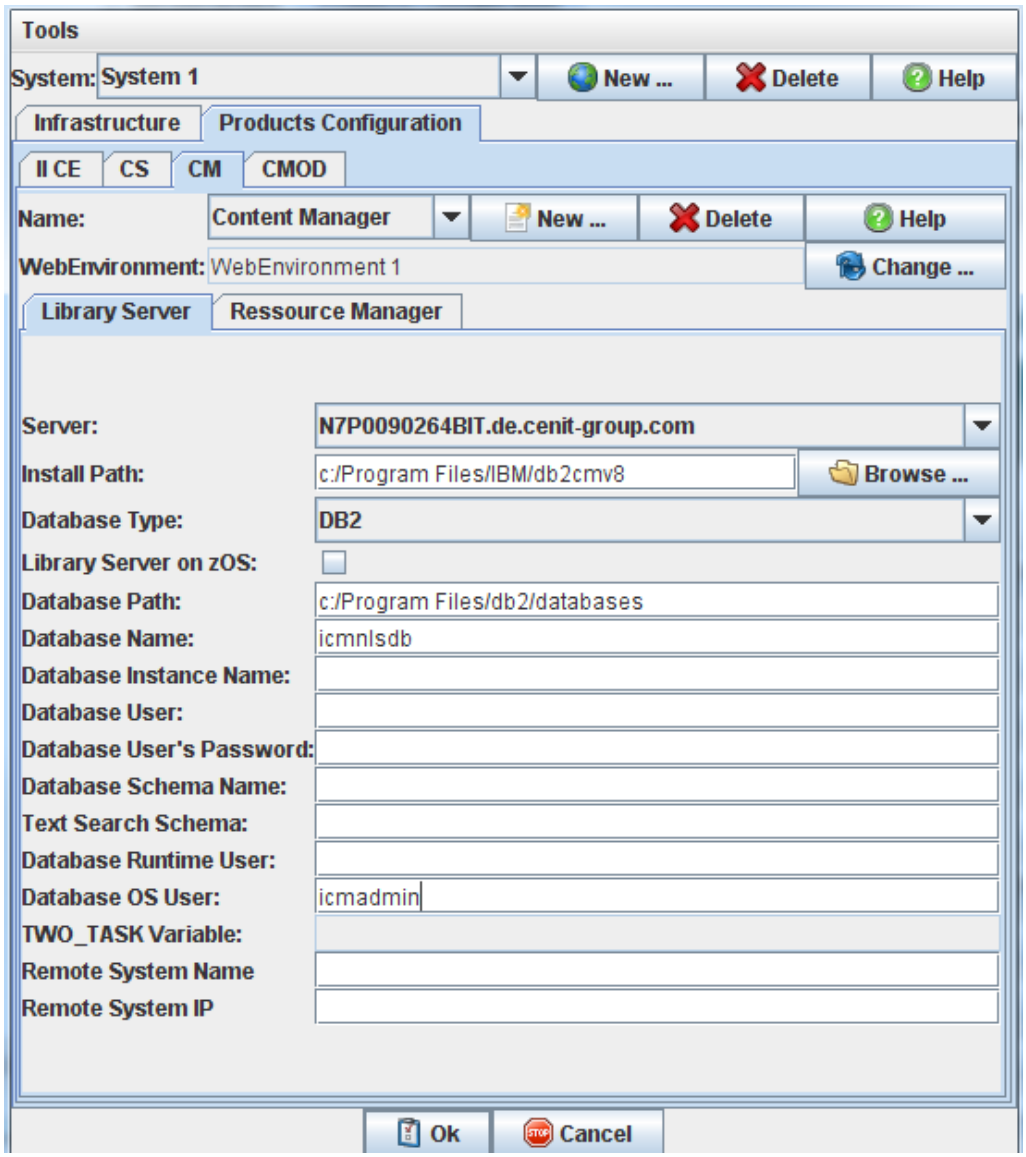
Archive Task Path
If later you want to be able to start and stop an archiving task, enter the full path to the task script here.

Retrieve Task Path
If later you want to be able to start and stop an retrieving task, enter the full path to the task script here.

The "CM" Product Tab - IBM Content Manager

Name
It is possible to create several CM configurations. To create a new configuration press the "New..." button. A dialog will open, that contains a field to enter the name and a combo box to select the CM's web environment. If there are already any CM configurations defined in the actual system, the "Copy From…" combo box is filled with the CM configurations which can be copied. The "Delete" button will remove the CM configuration from the system.

To configure different instances of a CM installation, create a new CM configuration per instance. At the moment, there is no "Copy from…" button to copy data from an already defined configuration to the new one.



The CM dialog

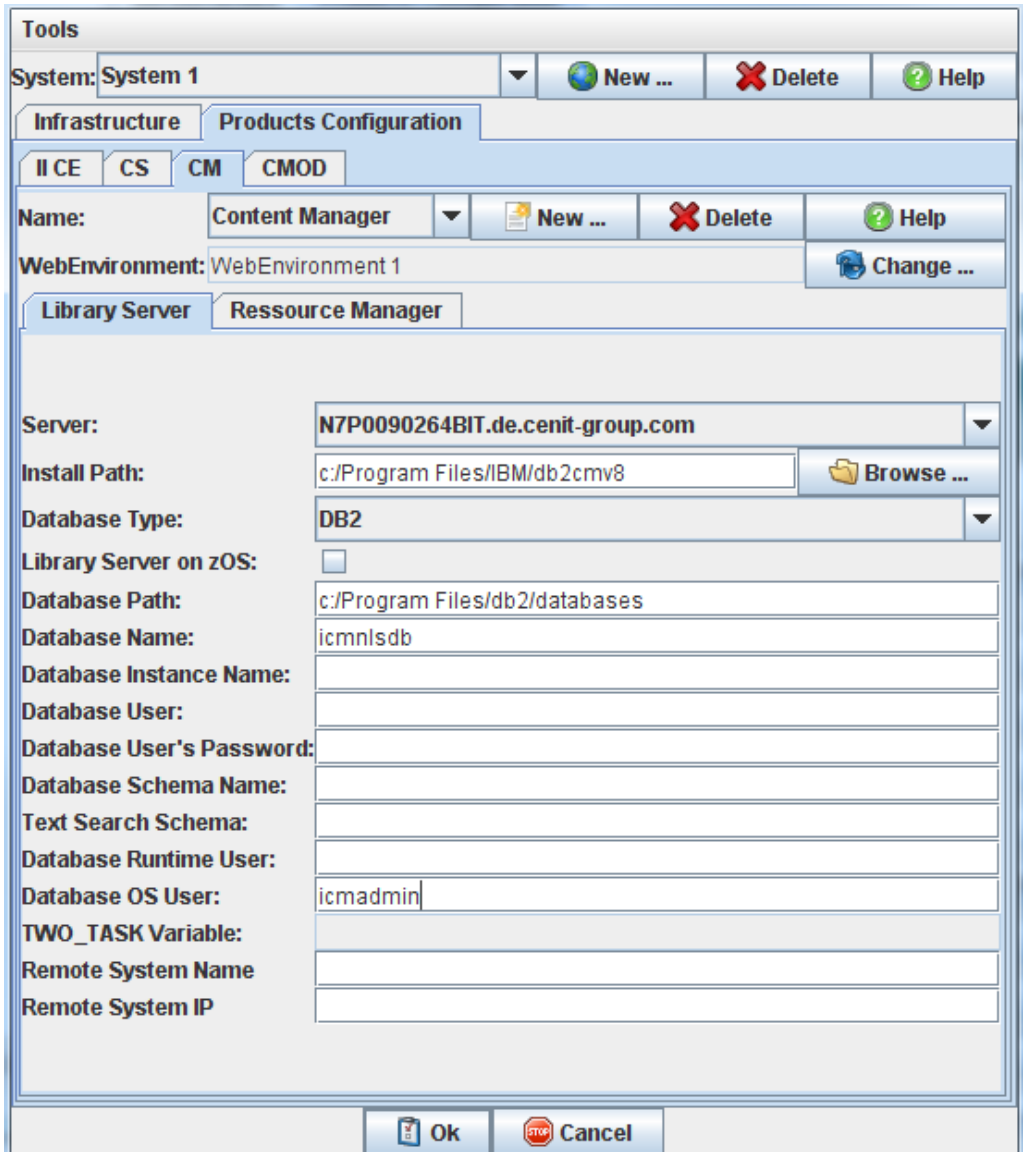
WebEnvironment

The field is disabled. The web environment can only be changed via the "Change…" button. The change dialog also has the option to copy an already existing configuration for a specific web environment. After selecting a new web environment, click OK to leave the change dialog. There can be only one web environment per CM at a time.

The CM Library Server Settings Tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication see chapter "How to configure and use the UnifiedDatabaseClient (UDC)" in the Installation Guide.

Note: The CM8 Library Server configuration tab contains parameters to configure remote monitoring of zOS based CM8 components. Since ECM SM doesn't provide agents for zOS a 'virtual' agent based on Windows, Linux or UNIX has to used to realize remote monitoring.



The CM Products tab with selected Library Server configuration tab

Server

Select the server on which at least one CM instance is installed.

Install Path

Enter the path where the CM product is installed at the server. In the case of a remote monitored Content Manager Library server (for instance a zOS based system) specify the Java JRE path here (without /bin at the end).

Database Type
Select the correct type of the CM database. IBM DB2 and Oracle are supported.

Library Server on zOS
Active this checkbox in the case a remote zOS based CM8 Library server has to be monitored.

Note: Only DB2-based CM8 Library Servers can be monitored.

Database Path
Enter the path to your RDBMS installation. The correct value depends upon the selected database type.

JDBC (UDC) client

If the JDBC based UDC communication to the DB should be used, specify the Java install path here (without /bin at the end) instead of the DB installation path. UDC supports Java version 7 and newer.

Database Name
Enter the name of the database here.

For Oracle this field corresponds to the setting of *ORACLE_SID*. You can specify an Oracle service name in the format */<dbname>* as well.

Remote Database Name
This field changes its label depending on the selected database type. If the type is *NONE*, the label changes to *Remote Database Name*.

For DB2 the label is Database Instance name. The value is required. Enter the name of the DB2 instance here. If the JDBC based UDC communication to the DB2 database should be used the configuration for a DB2 instance/database looks like: <DB2 server name>,<path to the DB2 JDBC driver location>,[optional DB2 port]. The default port number is 50000. Example: db2Serv1,C:/Program Files/db2jdbc,50000.

For Oracle the label is *Remote Oracle DB name*. The value is optional. If your database is configured for remote access, enter the TNS name (Service name) of the database. If the JDBC based UDC communication to the Oracle DB should be used the configuration for an ORACLE DB server looks like: <Oracle server name>,<path to the Oracle JDBC driver location>,[optional Oracle port]. The default port number is 1521. Example: oracleServ1,C:/Program Files/oraclejdbc,1521.

Database User
Enter the user who can connect to the database.

Database User's Password
Enter the password of the database user.

Database Schema Name
The name of the database schema where the CM8 objects are created.

Text Search Schema Name

The name of the Text search schema, if it's different to the default Text search schema name. DB2 on UNIX, Linux and UNIX uses DB2 NetSearch for text search. The default schema name is 'DB2EXT'. DB2 on zOS uses Omnifind for text search. The default schema name is 'SYSIBMTS'. In the case Text search uses the default values this parameter can be unsed, otherwise specify the correct DB2 text search schema name.

Database Runtime User

Enter the runtime user for the database here.

Database OS User

The operating system user who is used to startup the database. If the JDBC based UDC communication to the DB is configured this parameter is ignored.

TWO_TASK Variable (Oracle only)

Optional: This variable is only used for Oracle databases. Specify the value of the Oracle TWO_TASK variable, if SQLNet access without Oracle service name is required. If the JDBC based UDC communication to the DB is configured this parameter is ignored.

Remote System Name (optional)

In case the Library Server runs on a remote system, fill in its host name, here.

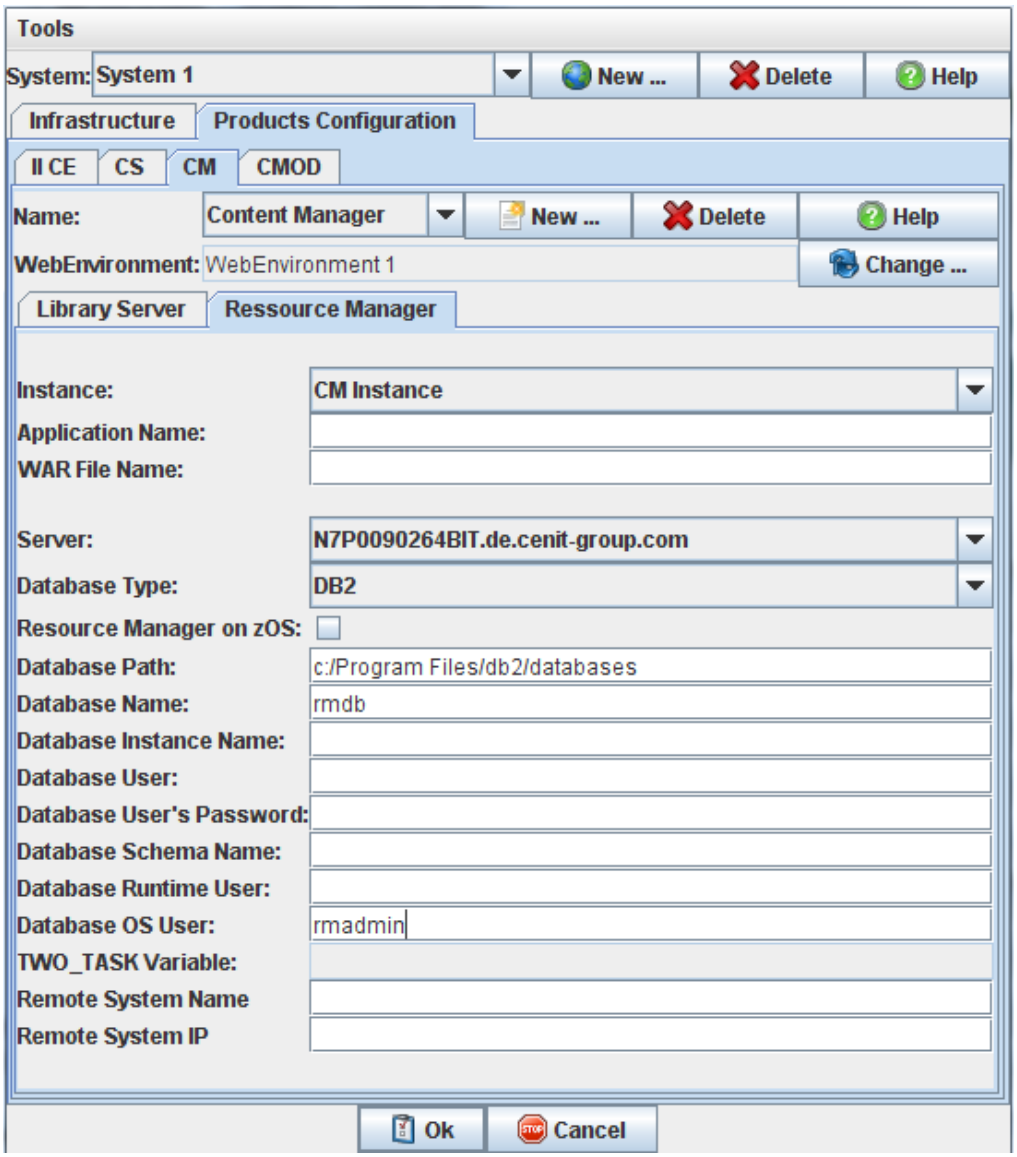
Remote System IP (optional)

In case the Library Server runs on a remote system, fill in its IP address, here.

The CM Resource Manager Settings Tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication see chapter "How to configure and use the UnifiedDatabaseClient (UDC)" in the Installation Guide.

Note: The CM8 Resource Manager configuration tab contains parameters to configure remote monitoring of zOS based CM8 components. Since ECM SM doesn't provide agents for zOS a 'virtual' agent based on Windows, Linux or UNIX has to used to realize remote monitoring.



The CM Product tab with selected Resource Manager configuration tab

The Resource Manager settings tab is divided in two parts. The upper part contains fields for the JMX settings related with the Resource Managers application server parts of the installation.

Instance

This product can have several instances on which JMX can be requested. Please select the instance which you want to configure. It is possible to configure several instances. You can only select an instance, that is part of the web environment the product is related with (see above).

Application Name

Enter the Application whose status shall be monitored in this field.

Application War File
WebSphere only: The JMX program also needs the war file name of the application. Some applications also have several war file names. In that case, the war files are separated with semicolons.

The second part contains fields for the database parts of the Resource Manager.

Server
Select the server on which at least one CM instance is installed.

Database Type
Select the correct type of the CM database. IBM DB2 and Oracle are supported.

Resource Manager on zOS
Active this checkbox in the case a remote zOS based CM8 Resource Manager has to be monitored.

Note: Only DB2-based CM8 Resource Managers can be monitored.

Database Path
Enter the path to your RDBMS installation. The correct value depends upon the selected database type.

JDBC (UDC) client

If the JDBC based UDC communication to the DB should be used, specify the Java install path here (without /bin at the end) instead of the DB installation path. UDC supports Java version 7 and newer.

Database Name
Enter the name of the database here.

For Oracle this field corresponds to the setting of *ORACLE_SID*. You can specify an Oracle service name in the format */<dbname>* as well.

Remote Database Name
This field changes its label depending on the selected database type. If the type is *NONE*, the label changes to *Remote Database Name*.

For DB2 the label is Database Instance name. The value is required. Enter the name of the DB2 instance here. If the JDBC based UDC communication to the DB2 database should be used the configuration for a DB2 instance/database looks like: <DB2 server name>,<path to the DB2 JDBC driver location>,[optional DB2 port]. The default port number is 50000. Example: db2Serv1,C:/Program Files/db2jdbc,50000.

For Oracle the label is *Remote Oracle DB name*. The value is optional. If your database is configured for remote access, enter the TNS name (Service name) of the database. If the JDBC based UDC communication to the Oracle DB should be used the configuration for an ORACLE DB server looks like: <Oracle server name>,<path to the Oracle JDBC driver location>,[optional Oracle port]. The default port number is 1521. Example: oracleServ1,C:/Program Files/oraclejdbc,1521.

Database User
Enter the user who can connect to the database.

Database User's Password
Enter the password of the database user.

Database Runtime User
Enter the runtime user for the database here.

Database OS User
The operating system user who is used to startup the database. If the JDBC based UDC communication to the DB is configured this parameter is ignored.

TWO_TASK Variable
Optional: This variable is only used for Oracle databases. Specify the value of the Oracle TWO_TASK variable, if SQLNet access without Oracle service name is required. If the JDBC based UDC communication to the DB is configured this parameter is ignored.

Remote System Name (optional)
In case the Ressource Manager runs on a remote system, fill in its host name, here.

Remote System IP (optional)
In case the Ressource Manager runs on a remote system, fill in its IP address, here.

The "CMOD" Product Tab

Archive Name
It is possible to create several CMOD configurations. To create a new configuration press the "New..." button. A dialog will open, that contains a field to enter the CMOD archive name and a combo box to select the CMOD's web environment. The "Delete" button will remove the CMOD configuration from the system.

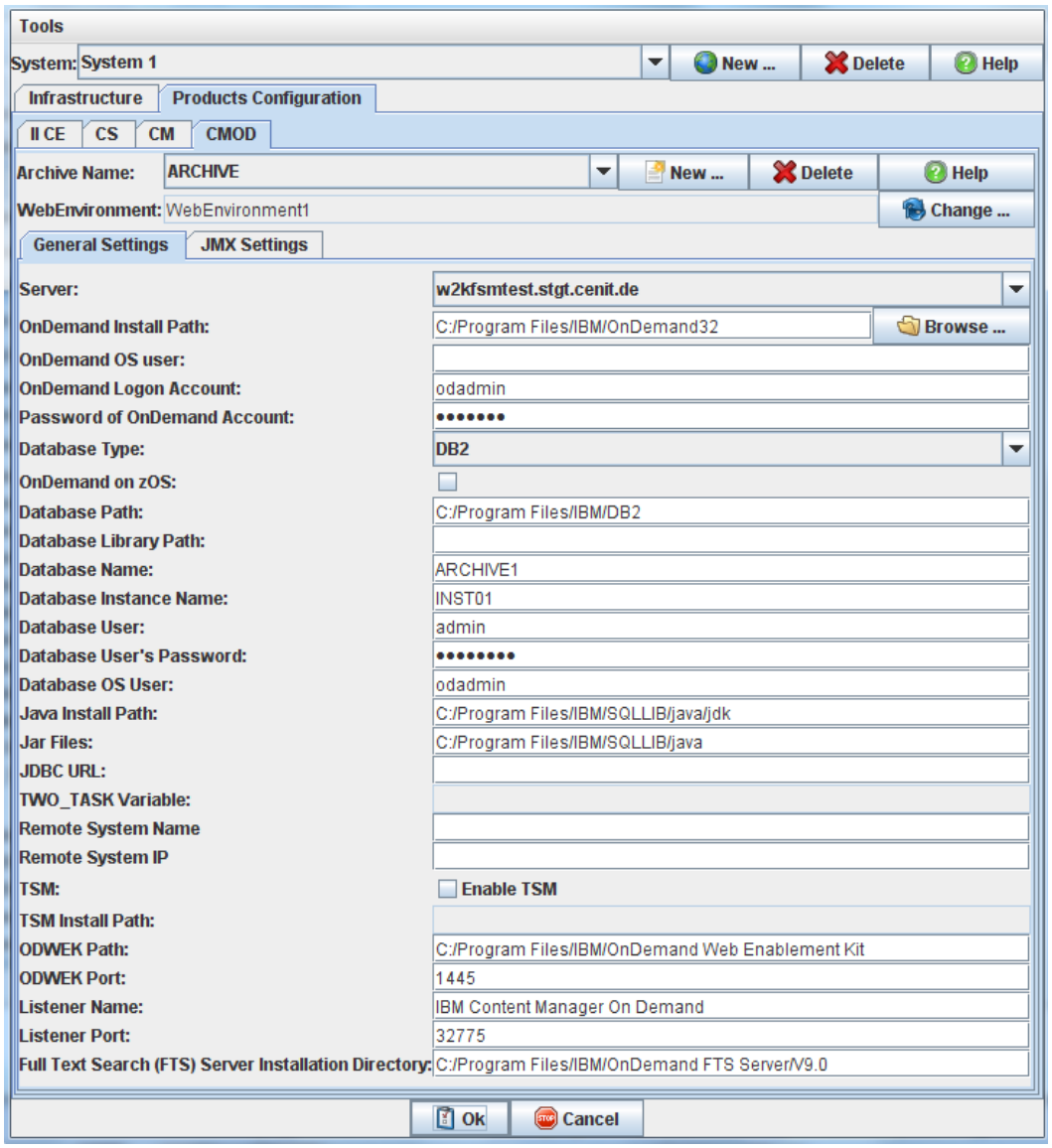
To configure different instances of a CMOD installation, create a new CMOD configuration per instance. At the moment, there is no "Copy from…" button to copy data from an already defined configuration to the new one.

WebEnvironment
The field is disabled. The web environment can only be changed via the "Change…" button. After selecting a new web environment, click OK to leave the change dialog. There can be only one web environment per CMOD at a time.

The CMOD General Settings Tab

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.

Note: The Content Manager OnDemand configuration tab contains parameters to configure remote monitoring of zOS based CMoD components. Since ECM SM doesn't provide agents for zOS a 'virtual' agent based on Windows, Linux or UNIX has to used to realize remote monitoring.



The CMOD General Settings tab

Server
Select the server on which the CMOD is installed.

NOTE For CMoD on zOS, this is the “virtual“ server which is used for remote monitoring.

OnDemand Install Path
Enter the path where the CMOD product is installed at the server.

Note: Leave this parameter unset in the case a remote zOS based CMoD system should be monitored.

OnDemand OS User
This is the operating system user which is allowed to startup and shutdown the database.

NOTE This user name additionally defines the name of the Database schema, where the CMOD instance tables (including the SL2 table) are stored.

NOTE For CMoD on zOS, the OS user parameter is not required (even if the “virtual“ server is a UNIX or Linux system).

OnDemand Logon Account
This account is used by monitors to logon to OnDemand through ODWEK API.

Password of OnDemand Logon Account
Password of the OnDemand logon account.

Database Type
Select the correct type of the CMOD database. IBM DB2, MSSQL and Oracle are supported.

OnDemand on zOS
Select this checkbox in the case the OnDemand runs on zOS.

NOTE Only DB2-based OnDemand servers can be monitored.

Database Path
Enter the path to your RDBMS installation. The correct value depends upon the selected database type.

JDBC (UDC) client

If the JDBC based UDC communication to the DB should be used, specify the Java install path here (without /bin at the end) instead of the DB installation path. UDC supports Java version 7 and newer.

NOTE For CMoD on zOS, this parameter should contain the path to the Java installation to be used. It is recommended to use the JRE installation the ECM_SM agent provides. In this case the Database Library path is not required.

Database Library Path

UNIX only. Enter the path to the shared libraries for your RDBMS installation. The correct value depends upon the selected database type. Depending on the OS version (32Bit or 64Bit) you may need to specify the 64 Bit or 32 Bit version of the database libraries here.

NOTE For CMoD on zOS, the Database Library path is not required if the ECM_SM agent JRE installation is used.

Database Name

Enter the name of the database here.

NOTE The Database name often corresponds with the CMoD archive name you specified above.

NOTE For Oracle this field corresponds to the setting of *ORACLE_SID*. You can specify an Oracle service name in the format */<dbname>* as well.

NOTE For CMoD on zOS, this is the name of the OnDemand database, default ARSDBASE

Database Instance name (DB2), Remote Oracle DB name (Oracle), Server/Instance name (MSSQL)

This field changes its label depending on the selected database type.

For DB2 the label is **Database Instance name**.

DB2 via DB2 client access

DB2 instance name (required).

DB2 via JDBC (UDC) access

If the JDBC based UDC communication to the DB2 database should be used the configuration for a DB2 instance/database looks like: <DB2 server name>,<path to the DB2 JDBC driver location>,[optional DB2 port]. The default port number is 50000.

Example: *db2Serv1,C:/Program Files/db2jdbc,50000*

DB2 via JDBC (UDC) access for CMoD on zOS

This parameter is used by the DB2 database monitors to connect to the remote DB2 on zOS using JDBC.

Specify the parameter using this syntax:

<DB2 server name>,<path to the DB2 JDBC driver location>,<DB2 port>,<JDBC driver class>,<JDBC URL>

Example: *10.0.8.227,E:/jdbc_zos,50000,com.ibm.db2.jcc.DB2Driver,jdbc:db2://10.0.8.227:50000/DBA3*

For MSSQL the label is **Server/Instance name**.

MSSQL via MSSQL client access
Specify the Server/Instance name. The value is optional.

The following combinations are possible:

- Leave this parameter unset, if the local Default MSSQL instance should be monitored.
- Specify the remote MSSQL server name, if the Default instance should be monitored on a remote server.
- Specify MSSQL Server name/Instance name, if a custom MSSQL instance on the local or remote server should be monitored.

NOTE Use / instead of \ between MSSQL Server and Instance name!

MSSQL via JDBC (UDC) access
If the JDBC based UDC communication to the MSSQL DB should be used the configuration for a Default MSSQL instance looks like: <MSSQL server name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port]. The default port number is 1433.

Example: *mssqlServ1,C:/Program Files/sqljdbc11/enu,1433*

An MSSQL custom instance UDC configuration looks like; <MSSQL server name>/<Instance name>,<path to the MSSQL JDBC driver location>,[optional MSSQL port].

Example: *mssqlServ1/INSTANCE1,C:/Program Files/sqljdbc11/enu,1433*

NOTE For information on how to connect to an SSL secured MSSQL Server see Chapter *How to configure and use the UnifiedDatabaseClient* in the *ECM SM Install Guide*.

For Oracle the label is **Remote Oracle DB name**.

Oracle via Oracle Client access
If your database is configured for remote access, enter the TNS name (Service name) of the database (otherwise not required).

Oracle via JDBC (UDC) access
If the JDBC based UDC communication to the Oracle DB should be used the configuration for an ORACLE DB server looks like: <Oracle server name>,<path to the Oracle JDBC driver location>,[optional Oracle port]. The default port number is 1521.

Example: *oracleServ1,C:/Program Files/oraclejdbc,1521*

Database User
Enter the user who can connect to the database.

MSSQL
Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

Database User's Password
Enter the password of the database user.

For MSSQL, leave empty if no user is specified.

Database OS User
The operating system user who is used to executing the database tools. If the JDBC based UDC communication to the DB is configured this parameter is ignored.

NOTE For CMoD on zOS, this parameter is ignored, it can be left empty.

Java Install Path
Enter the path to a Java installation at the CMOD server, which is compatible to the CMOD installation. In the case of remote monitoring you may use the JRE packaged with the ECM SM agent.

Jar Files
Several full qualified jar files names which are needed to set up a connection to the database including the Database specific JDBC driver jar file(s). The full qualified jar file names can be given relative (to installation directory) and absolute paths. Only a colon (UNIX/Linux) or a semicolon (Windows) can be used as separator.

Note: In the case of remote zOS based DB2 the DB2 license file is called db2jcc_license_cisuz.jar.

JDBC URL
Optional. The JDBC URL is used for Linux/UNIX/Windows based systems only to monitor the CMoD system log table (usually SL2), on zOS the ODWEK API is used.

In most cases, the default value can be used which is created automatically during client configuration. These are the generated default values if the field is left empty:

DB2

com.ibm.db2.jcc.DB2Driver:↵
jdbc:db2://localhost:50000/↵
<database_name>

MSSQL

com.microsoft.sqlserver.jdbc.↵
SQLServerDriver:jdbc:sqlserver://↵
<hostname>:<port>;instanceName=<Named-instan↵
ce-name> if a value was specified in the field **server/instance name**. Don't specify the part *;instanceName=<Named-instance-name>*, if the Default MSSQL instance is used.

Oracle

oracle.jdbc.driver.OracleDriver:↵
jdbc:oracle:thin:@localhost:↵
1521:<database_name> or
*oracle.jdbc.driver.OracleDriver:jdbc:oracle:thin:@<remote_*↵
oracle_db_name> if a value was specified in the field **Remote Oracle DB name**

TWO_TASK Variable

Optional: This variable is only used for Oracle databases. Specify the value of the Oracle TWO_TASK variable, if SQLNet access without Oracle service name is required. If the JDBC based UDC communication to the DB is configured this parameter is ignored.

Remote System Name

In case the OnDemand runs on a remote system (e.g. remote zOS), fill in its host name, here.

If the parameter is specified, events will be shown under this hostname in the event console.

Remote System IP

In case the OnDemand runs on a remote system (e.g. remote zOS), fill in its IP address, here.

If the parameter is specified, events will be shown under this hostname in the event console.

TSM

Enable/disable the Tivoli Storage Manager support.

TSM Install Path

The installation path to the IBM Tivoli Storage Manager. If the TSM checkbox is unchecked, this field is not editable. The path still will be stored in the configuration of the installer, but will not be written out to the environment files.

ODWEK Path

Enter the path where the OnDemand Web Enablement Kit product is installed at the server.

In the case of remote CMoD server monitoring the ODWEK API files have to be installed on the system running the monitors ('virtual' CMoD system).

ODWEK Port

Enter the port for the OnDemand Web Enablement Kit, usually *1445*.

Listener Name

Enter the name of the PCH Listener, usually *IBM Content Manager OnDemand*.

NOTE The PCH Listener monitoring requires at least Java(TM) 7. The PCH Listener monitors will not work with older Java(TM) versions. You may use the JRE shipped with the agent.

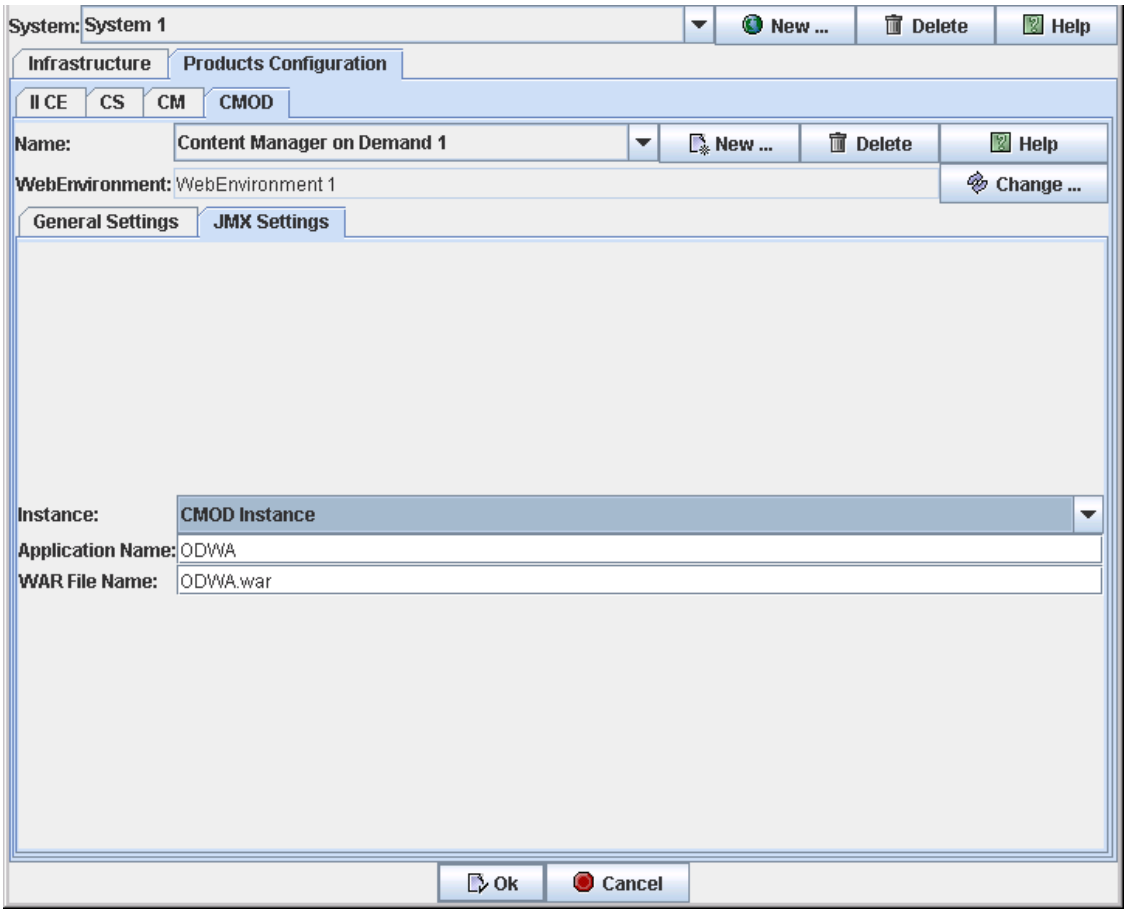
Listener Port

Enter the port of the PCH Listener, usually *32775*.

Full Text Search (FTS) Server Installation Directory

Enter the path to the installation of Full Text Search, usually *C:/Program Files/IBM/OnDemand FTS Server/V9.0*.

The CMOD JMX Settings Tab



The CMOD Product tab with selected JMX Settings configuration tab

Instance

This product can have several instances on which JMX can be requested. Please select the instance which you want to configure. It is possible to configure several instances. You can only select an instance, that is part of the web environment the product is related with (see above).

Application Name

Enter the Application whose status shall be monitored in this field.

Application War File

WebSphere only: The JMX program also needs the war file name of the application. Some applications also have several war file names. In that case, the war files are separated with semi colons.

Default: ODWA.war

Installing ECM SM clients

Saving the FileNet configuration

After configuring all FileNet servers, press the **OK** button in the main configuration window to go on with installation.

Back in the main dialog, press the **Save Configuration** button to save the configuration to the directory selected in the **Configuration directory** field.

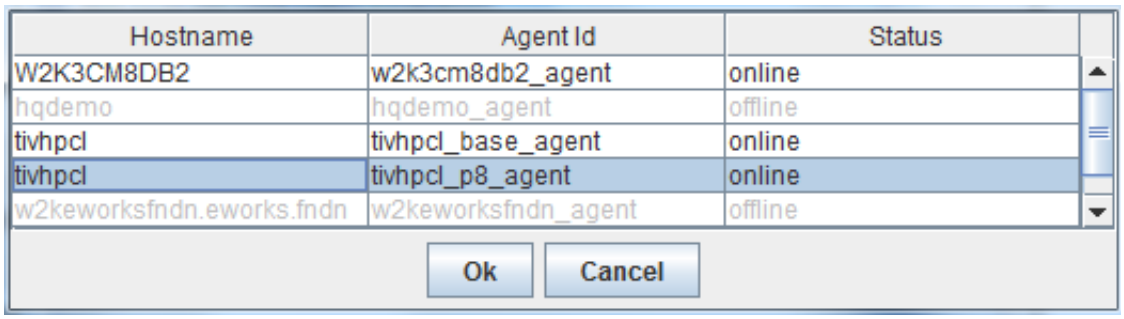
Save configuration

Installing ECM SM client software

To install the client software on an ECM SM client, press the **Install client ...** button in the main dialog.

Install client

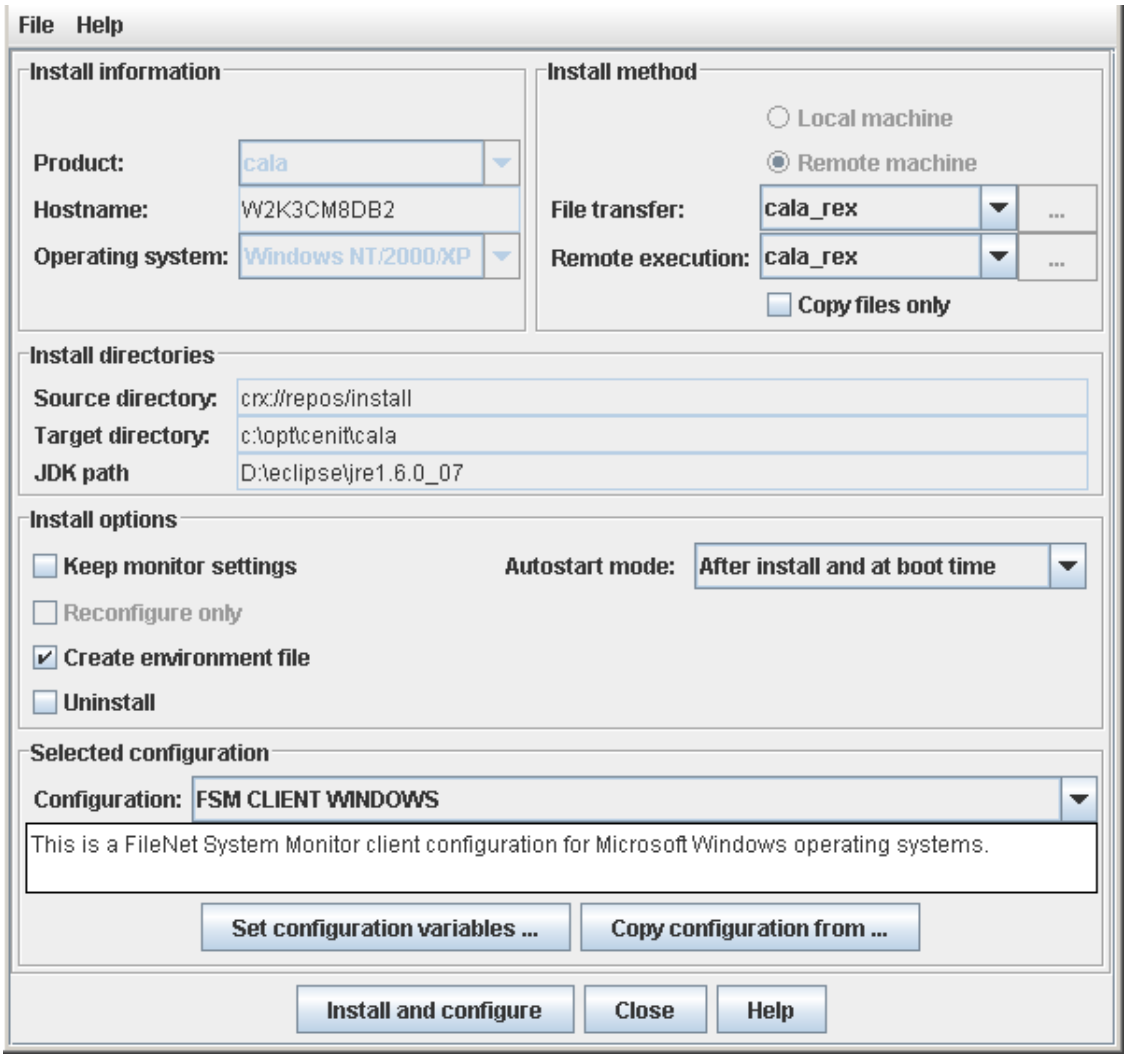
This opens a new dialog showing a list of configured hosts.



Select client

Choose the host to install and press **Ok** to start the installation program.

Note that you can only select hosts with status *online*.



Installer main window

A further description of the installation program can be found in the *ECM SM CALA Users Guide*. Please refer to this document for more information about client installation.

If the client installation has been completed, press the **Close** button to get back to the configuration main dialog.

After installing CALA on a server or client system, the server must be added to the ECM SM web interface GUI.

Select **Host Administration** from the sidebar menu and then click on the **Hosts** link in the central frame, click at the **Insert new host** button. A new input form appears. Insert the hostname or its IP address into the input field, and select a department from the listbox where to add the new client. Press **Apply** to commit the data.

After a few minutes you should see events arriving from the new installed system.

Additional Configuration Tasks

The tasks described in this chapter provide additional optional configuration steps after installing the ECM SM client.

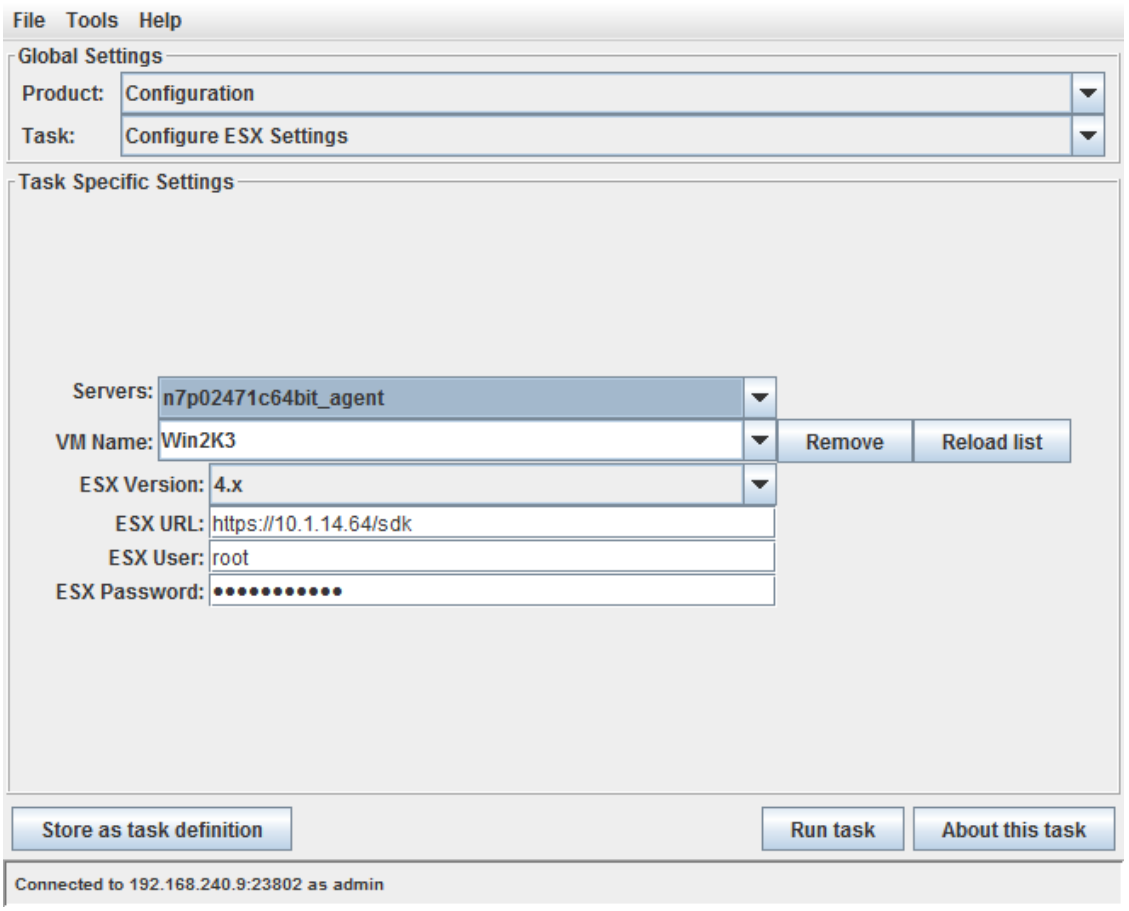
Configure ESX Settings

Description

This task can be used to configure the required settings to monitor the virtual machine.

NOTE To access secure (https based) VMware ESX/ESXi server, you must configure keystore settings using the task **Configure Keystore Settings**.

Parameters



Configure ESX Settings

Servers
Required. The parameters will be stored on the selected server.

VM Name
Required. Specify the name of the virtual machine from the VMware ESX/ESXi server. This name is case-sensitive and may contain blanks.

ESX/ESXi Version
The version of the VMware ESX/ESXi API (vim25.jar) which should be used to establish the connection.

ESX/ESXi URL
Required. Specify the VMware ESX/ESXi server URL. Use the Fully Qualified Domain Name (FQDN) instead of its IP address.

ESX/ESXi User
Required. Specify the user to use for connection to the VMware ESX/ESXi server.

ESX/ESXi Password
Required. Specify the password to use for connection to the VMware ESX/ESXi server.

Sample Output

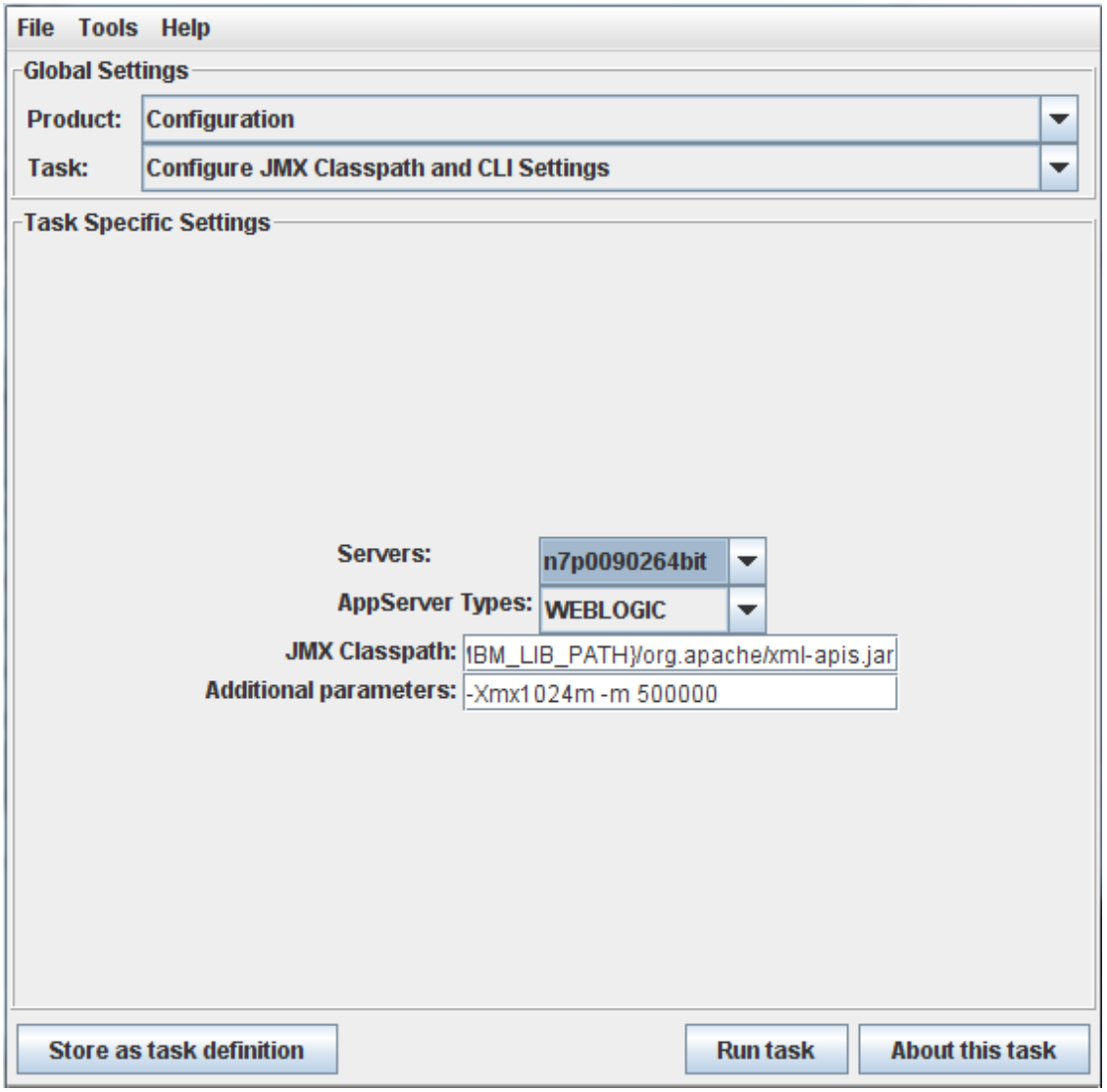
```
------Standard Output------
Successfully configured ESX settings for VM VirtualMachine
```

Configure JMX Classpath and CLI Settings

Description

This task can be used to edit the JMX standard settings for the JMX status monitors and the JPS monitors. This task must be used, when the program needs additional classpath information to run correctly.

Parameters



Configure JMX Classpath and CLI Settings

Servers

Required. Select the server for which the JMX classpath must be edited. The list shows all available CALA_REX clients.

AppServer Type

The classpath config file contains the classpaths for all supported connection types. Select the type of your application server.

JMX Classpath

This is the classpath, which is used in the monitoring script. Use the variables, which are used in the predefined classpath, instead of the full qualified name to avoid errors from spaces in the path name or something similar. Also do never use double quotes.

Additional parameters

This parameter can be used to add Application Server specific parameters to the Java commands that are executed by monitors and tasks against the Application Server.

Possible parameters look like

`–Xmx1024m` (interpreted by all Java command, increases the Java Heap size to 1024 MB)

Or

`-Dweblogic.MaxMessageSize=150000000` (increases Weblogic Max Message Size parameter to 150MB)

Or

`–m 500000` (sets the timeout of the Java call to 500 seconds).

Single parameters containing blanks require masking with \" before and after the value, e.g. `\"–Dmyparameter=This Path contains blanks\"`.

Note: you can specify more than one parameter, e.g. `–Xmx1024m –m 500`

Sample Output

```
------Standard Output------
The new file was written to the following path: /opt/IBM/ECMSM/cala/monitors/pam/jmx_↵
classpaths.prop
```

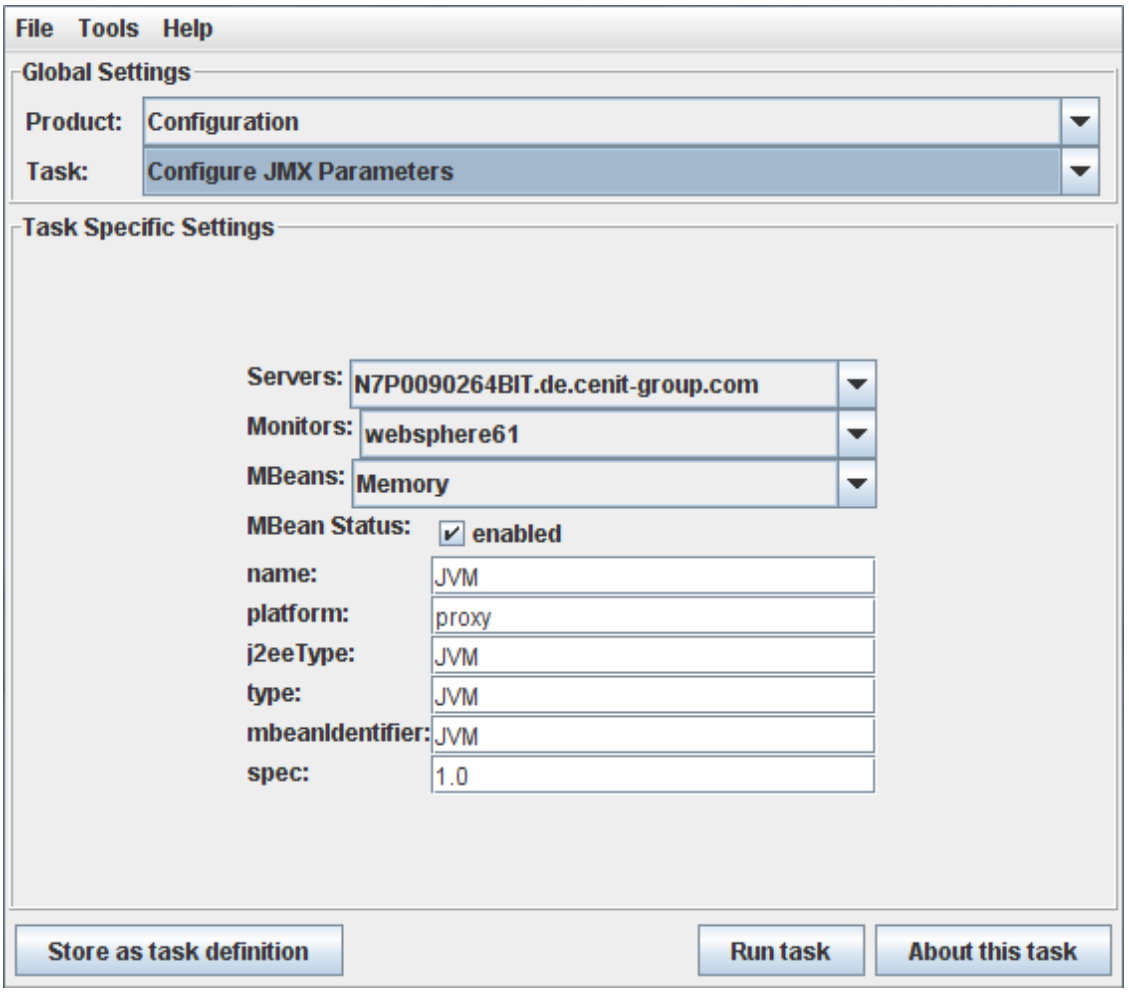
Configure JMX Parameters

Description

This task can be used to edit the JMX standard settings for the JMX Status Monitors. The JMX Status Monitors request several pre defined MBeans and their attributes. This task must be used when the parameters differ from the default templates, which are defined in the monitor and several MBeans must be enabled or disabled.

You can edit the settings for all servers, monitors and MBeans in succession. The settings will be cached locally on the server. When you click the "Run task" button, all changes will be copied to the clients.

Parameters



Configure JMX Parameters

Servers
Required. Select the server for which the JMX parameters must be edited. The list shows all clients where the JMX settings file mbeantemplates.xml can be found.

Monitors
Required. Select the monitor for which the JMX settings must be edited.

MBeans
Required. Select the MBean for which the JMX settings must be edited.

MBean Status
Optional. With this checkbox, MBeans can be enabled or disabled. If an MBean is disabled, it will not be checked by the corresponding monitor.

Note: At least one MBean needs to be enabled.

Entry fields
The number and labels of the entry fields depends on the selected MBean.

Sample Output

```
Successfully updated JMX settings on 10.0.114.204
Successfully updated JMX settings on 10.0.114.216
```

Configure Keystore Settings

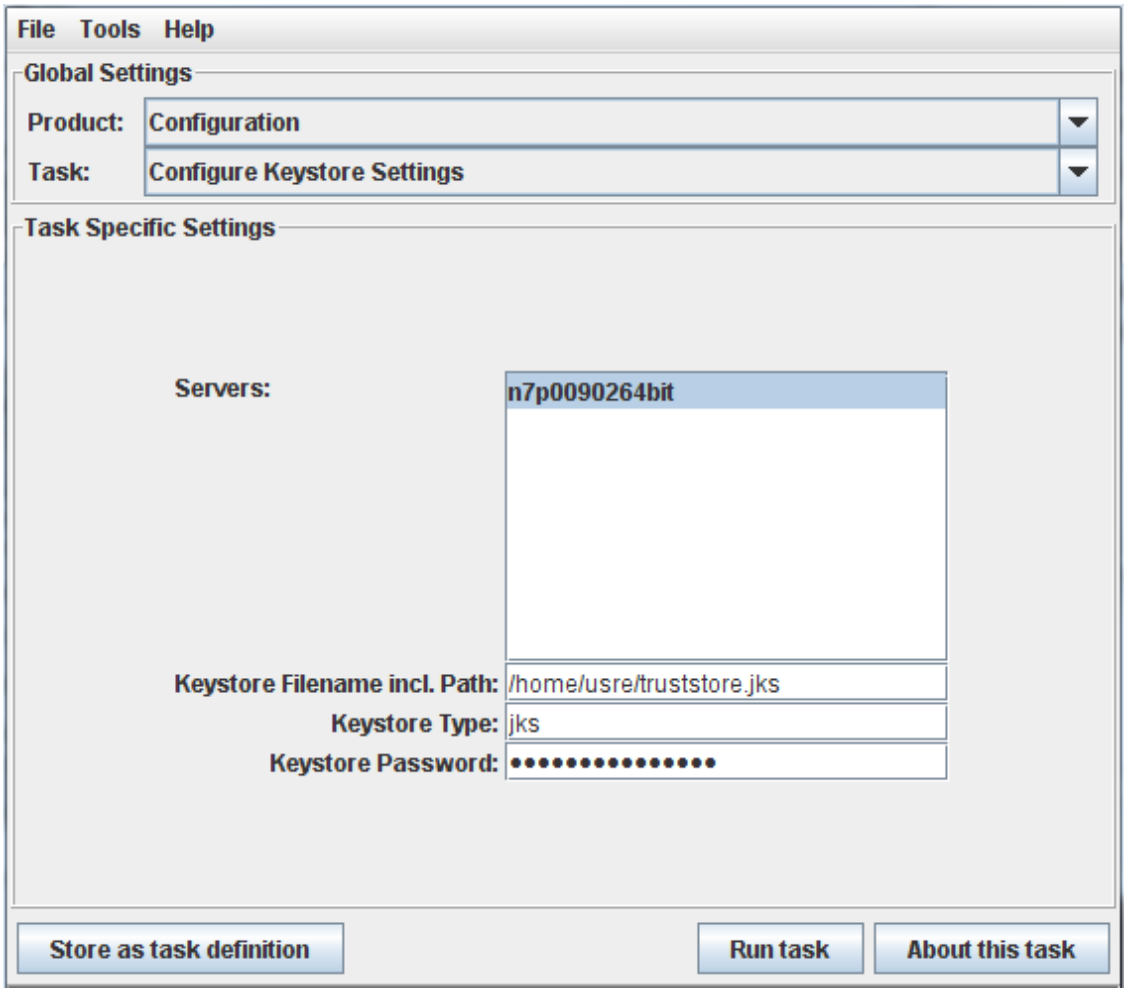
Description

This task is used to specify the keystore that https-based CE-URL communication of P8 4.x ObjectStore monitors require.

NOTE Before you use this task, perform the required steps, which are described in Keystore certificate import for use with Java based monitors.

Note: This task doesn't create a keystore, it only stores settings of an already created keystore for ECM SM use. For further information on how to create a keystore see information on the Web regarding the Java keytool, for instance at http://docs.oracle.com/javase/7/docs/technotes/tools/windows/keytool.html.

Parameters



Configure Keystore Settings

Server (required)
Required. The parameters will be stored on all selected servers.

Keystore File name
Required. Specify the filename that contains the keystore including full path.

Keystore Type
Required. Specify the type of the given keystore. The value that must be specified depends on the JDK. Possible values are jks (default for SUN JDKs) and pkcs12

Keystore Password
Required. Specify the password for the given keystore.

Sample Output

```
|----------
| Successfully configured keystore settings
|
```

Configure LDAP settings on clients

Description

This task creates a login.conf and (if MS ADS is selected) a krb5.conf file on the specified client. Additionally it downloads the file jaas_test.zip to clients and extracts the zip archive on the client into the directory <install-dir>/tools/jaas_test.

In the case this task is executed from a ECM SM Server version 4.5.0+ the server side configured login.conf and krb5.conf file (MS ADS only) can be used.

Background

The settings for the LDAP authentication are all based on the same principles regardless of the concrete LDAP server used. These principles are described here to give a better understanding about the input parameters described in the following sub-sections.

NOTE In the following the placeholders *{0}* and *{1}* will be replaced with the username and the password during runtime. So you should not enter these values directly in your configuration, but use the shown placeholders.

Server Name and Port
These parameters are necessary to establish a network connection to the LDAP server. As server name specify the hostname (without domain) of an LDAP server and the corresponding LDAP port.

Group (Provider) URL
This defines the entry point in the LDAP tree where the search should be done. Depending on the LDAP type (e.g. MS ADS, Novell, etc.) the elements can be either users, that hold the information to which groups it belongs to, or it can be groups, where the user is a member.

Group Attribute
This is the name of the attribute used to identify the groups for the user that was searched for (e.g. memberOf, member).

Group Query
This LDAP pattern is the name of the attribute, that normally contains the login name of a user. It is used to retrieve the belonging groups for the specified account (e.g. sAMAccountName={0}, where {0} is a place holder for the login name).

Group Name Pattern
This is a filter (regular expression) to match distinctive group entries from the LDAP tree. (e.g. group.name.pattern="CN=([^,]*),.*")

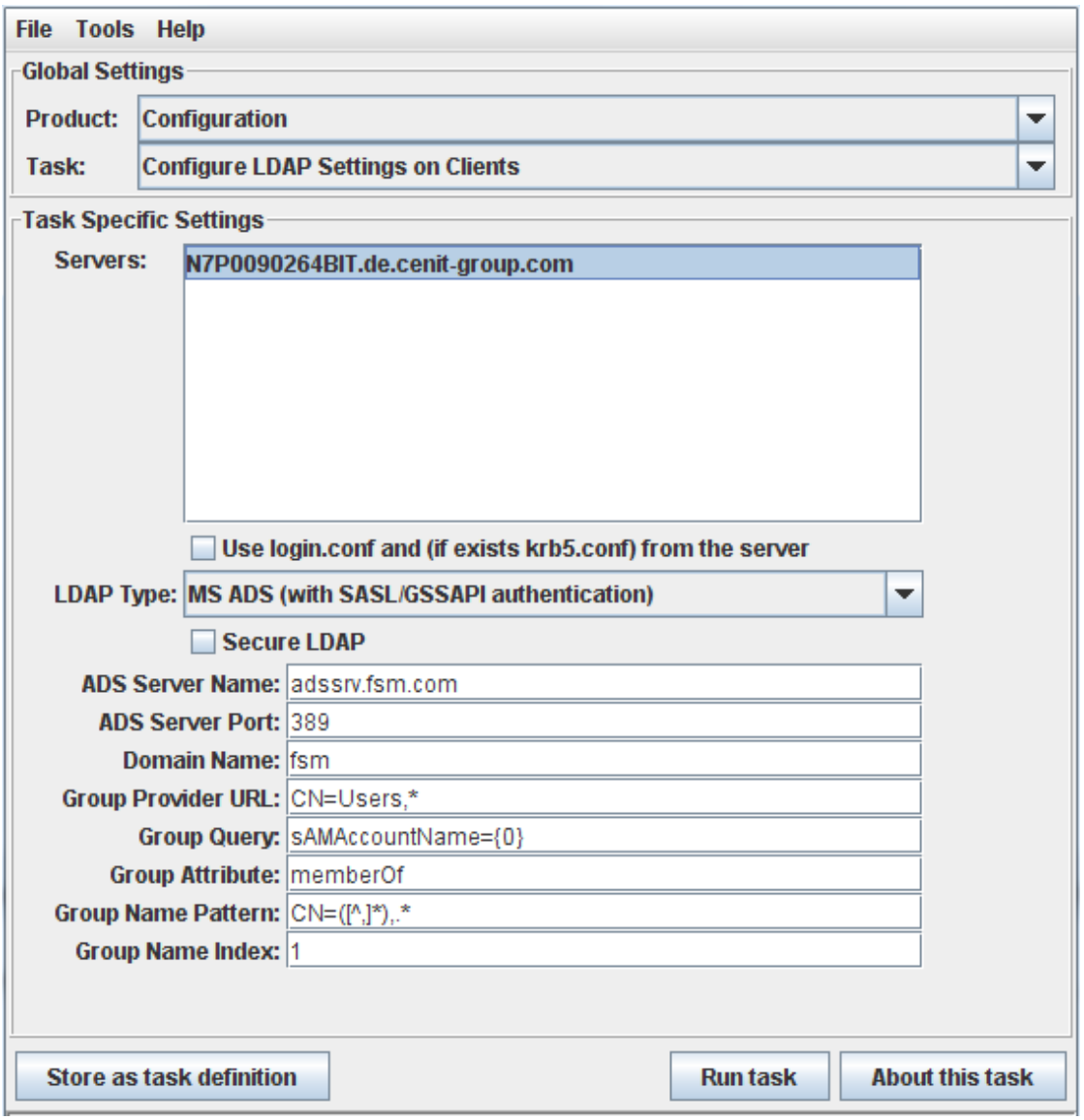
Group Name Index

The result of the regular expression in the "Group Name Pattern" is indexed into groups. The group name index refers to the indexed group. Counting starts by 1 (one).

User URL

This is the LDAP search pattern (aka filter) used to get the elements from the LDAP tree, which contain the user.

Parameters



Configure LDAP settings on clients

Servers
Required. Select the server(s) where the LDAP settings should be created.

Use existing configuration files
Check this box, if the existing login.conf and (if available krb5.conf) should be downloaded

In the case this check box is selected all other parameters except the list box 'Supported LDAP types' can be left unset.

Supported LDAP types
Select one of the following supported LDAP types: MS AD LDS, MS ADS using GSSAPI, MS ADS without GSSAPI, SUN Directory Server, IBM Tivoli Directory Server, Novell eDirectory Server

Select secure or unsecure LDAP
Select whether secured (ldaps) or unsecure (ldap) should be used

All other settings depend on the selection of **LDAP Type**.

- Settings for MS AD LDS based LDAP server

  Server Name
  Specify the full qualified MS AD LDS LDAP server name

  Server Port
  Specify the MS AD LDS LDAP server port (default unsecure port: 389, secured: 636)

  Group URL
  Specify the Group URL pattern to search for groups

  Example: *OU=User,O=fsm,C=com*

  NOTE Do NOT add *CN={0}* to this parameter

  Group Attribute
  Specify the Group attribute that contains group information.

  Default: *memberOf*

  Group Query
  Specify the LDAP query to determine the groups of a specific user. *{0}* will be replaced by the user name.

  Default value is *distinguishedName=CN={0},OU=Users,O=<domain>,C=<domain-suffix>*

If the MS AD LDS server is configured to use the LDAP displayName instead of the distinguished-Name please use the following value without any extension: *displayName={0}*

User URL
Specify the User URL pattern to search for users

Example: *CN={0},OU=User,O=FSM,C=COM*

Group Name Pattern
Adjust the Group name pattern settings, if required

Default: *CN=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

- Settings for MS ADS based LDAP server

Server Name
Specify the MS ADS server name without DNS suffix (for instance adsserv1)

Server Port
Specify the MS ADS server port (default port: 389)

Domain Name
Specify the ADS Domain name in lowercase letter

Group Provider URL
Specify the Group provider URL pattern to search for groups

Group Query
Specify the LDAP query to determine the groups of a specific user. *{0}* will be replaced by the user name.

Default: *sAMAccountName={0}*

Group Attribute
Specify the Group attribute that contains group information.

Default: *memberOf*

Group Name Pattern
Adjust the Group name pattern settings, if required

Default: *CN=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

LDAP Security principal (non GSSAPI-authentication only)
Default value. *{0}* or *{0}@<domain-name>*

Use *{0}@<domain-name>* in the case the ADS server requires 'Bind with Credentials', otherwise use *{0}*

- Settings for SUN Java System Directory Server

Server Name
Specify the full qualified SUN Directory server name

Server Port
Specify the SUN Directory LDAP server port (default: 389)

Group URL
Specify the Group URL pattern to search for groups

Group Query
Specify the LDAP query to determine the groups of a specific user. *{0}* will be replaced by the user name.

Default: *(&(objectClass=groupOfUniqueNames)(uniqueMember=uid={0},*))*

Group Attribute
Specify the Group attribute that contains group information.

Default: *cn*

User URL
Specify the User URL pattern to search for users

Group Name Pattern
Adjust the Group name pattern settings, if required

Default: *ou=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

Default: *1*

- Settings for IBM Tivoli Directory Server

  Server Name
  Specify the full qualified IBM Tivoli Directory server name

  Server Port
  Specify the IBM Tivoli Directory LDAP server port (default: 389)

  Group URL
  Specify the Group URL pattern to search for groups

  Ex.: *ldap[s]://<ldap-server-name>>:<ldap-port>*

  Group Query
  Specify the LDAP query to determine the groups of a specific user. *{0}* will be replaced by the user name.

  Default: *(&(objectClass=accessGroup)(member=cn={0}*))*

  Group Attribute
  Specify the Group attribute that contains group information.

  Default: *cn*

  User URL
  Specify the User URL pattern to search for users

  Group Name Pattern
  Adjust the Group name pattern settings, if required

  Default: *cn=([^,]*),.**

  Group Name Index
  Specify the Group name index that contains group information.

  Default: *1*

- Settings for Novell eDirectory LDAP server

  Server Name
  Specify the full qualified Novell eDirectory server name

  Server Port
  Specify the Novell eDirectory LDAP server port (default: 389)

Group URL
Specify the Group URL pattern to search for groups

Ex.: *ldap[s]://<ldap-server-name>:<ldap-port>↵*
/T=<Novell-Tree-Name>

Group Query
Specify the LDAP query to determine the groups of a specific user. *{0}* will be replaced by the user name.

Default: *(member=cn={0},OU=<ou name>,O=<Organization/domain name>)*

Group Attribute
Specify the Group attribute that contains group information.

Default: none (unset)

User URL
Specify the User URL pattern to search for users

Group Name Pattern
Adjust the Group name pattern settings, if required

Default: *cn=([^,]*),.**

Group Name Index
Specify the Group name index that contains group information.

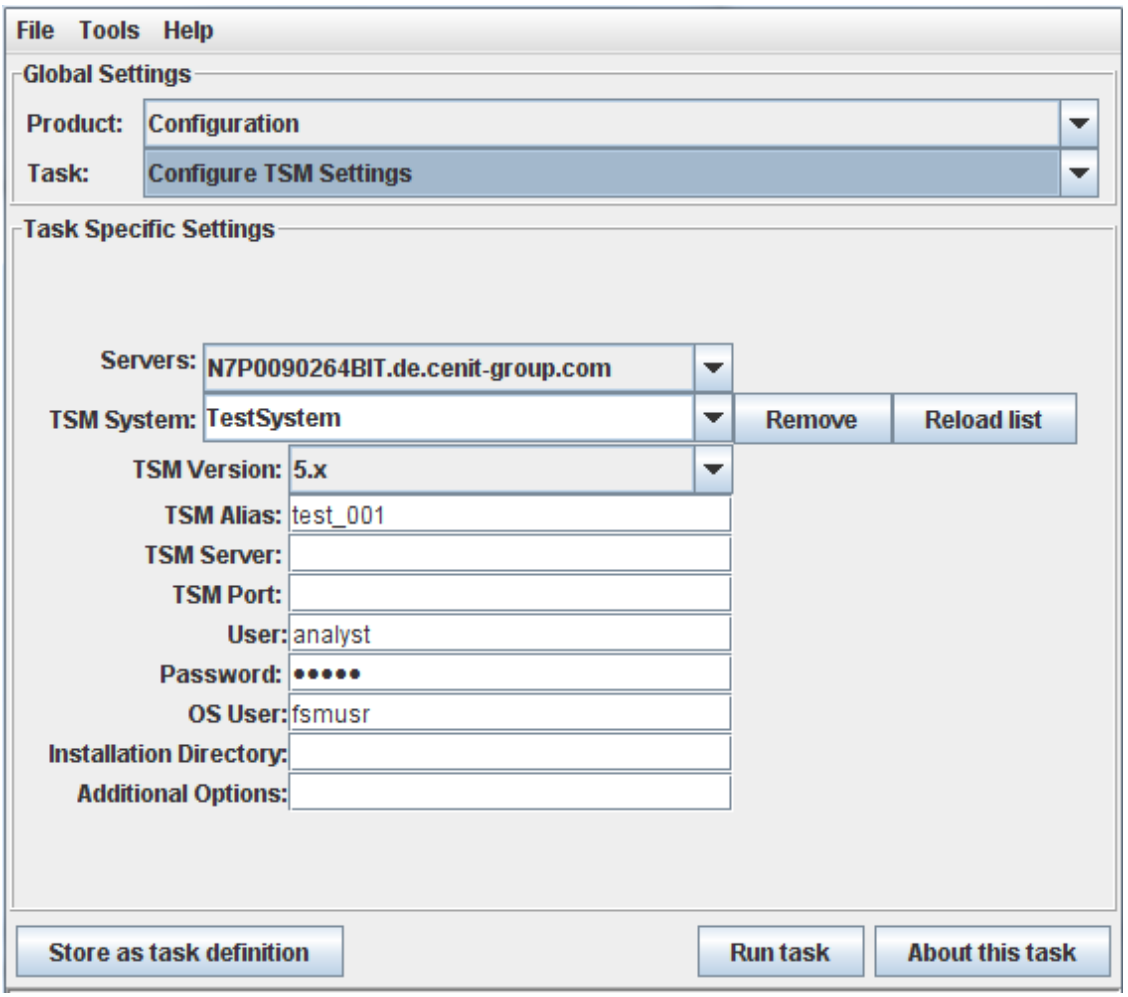
Default: *1*

Configure TSM Settings

Description

This task creates the configuration file required by the monitors in the TSM monitor archive.

Parameters



Configure TSM Settings

Servers

Required. The parameters will be stored on the selected server.

TSM System
Required. Specify a system name for the TSM configuration (logical name).

TSM Version
Required. Select the version of the TSM system from the list.

TSM Alias
Optional, UNIX / Linux only.

Alias as defined in `dsm.sys`. If no alias is specified, **dsmadmc** uses the first server defined in the `dsm.sys` configuration file. If multiple server nodes are configured for the **dsmadmc**, the specific alias name has to be set to ensure that the monitor uses the correct server node

TSM Server
Optional, Windows only.

Specify the TSM server for **dsmadmc**. If no server name is specified, **dsmadmc** tries to connect to the local host.

TSM Port
Optional, Windows only.

Specify the TSM port for **dsmadmc**. If no port number is specified, **dsmadmc** tries to connect using the default port 1500.

User
Required. Specify the user to use for connection to TSM.

The user specified here must be a user of class *`analyst`*. This class can be added for a user with the following command:

```
dsmadmc grant authority <USERNAME> classes=analyst
```

Password
Required. Specify the password to use for connection to TSM.

OS User
Optional, UNIX; Linux only. Specify the operating system user to use for calling the **dsmadmc** tool. This user is required, if the dsmadmc shall be executed with another user, than theCALA_REX user.

Installation Directory
Optional. Specify the path to the **dsmadmc** binary if the binary cannot be found in the *PATH*.

Additional Options
Optional. Specify any required additional options for the **dsmadmc** tool.

Configure WMI Java Path

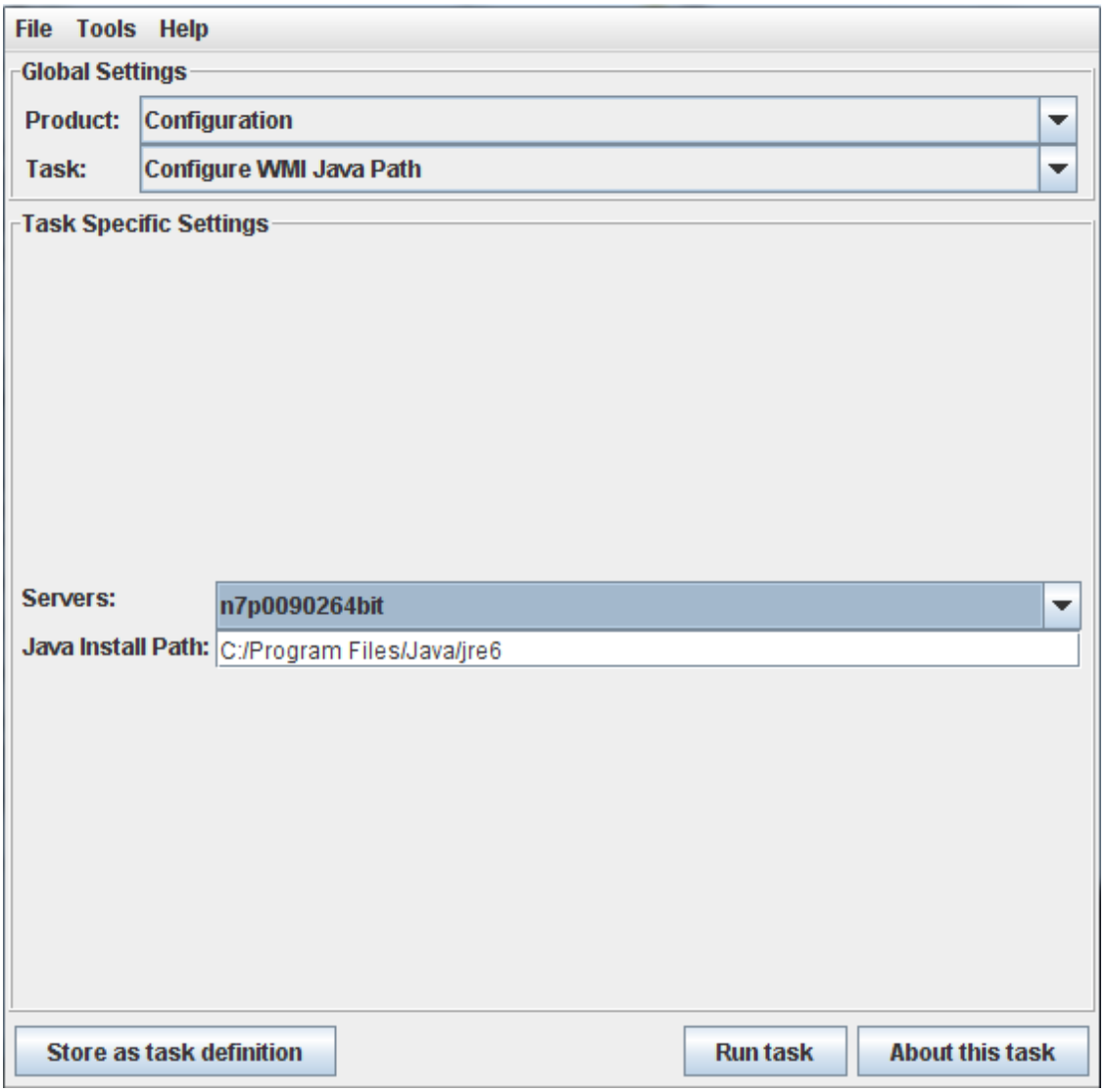
Description

This task can be used to set the Java path for applications (in this case the Java path for WMI).

Some monitors use this Java path. If a monitor uses the path, it is mentioned in the monitor description.

The path should be valid and without the "bin" directory. It is added automatically.

Parameters



Configure WMI Parameters

Servers

Required. Select the server for which the Java installation path for WMI monitoring shall be configured.

Java Install Path

The Java Home of this client.

Sample Output

```
The settings file "C:/opt/ia_stuff/ia_fp2/cala/monitors/pam/standard_env.prop" was updated
(key: "JAVA_HOME", value: "c:/opt/ia_stuff/ia_fp2/jre")
```

Additional ECM SM specific Configuration Tasks

The tasks described in this chapter provide additional optional configuration steps after installing the ECM SM client.

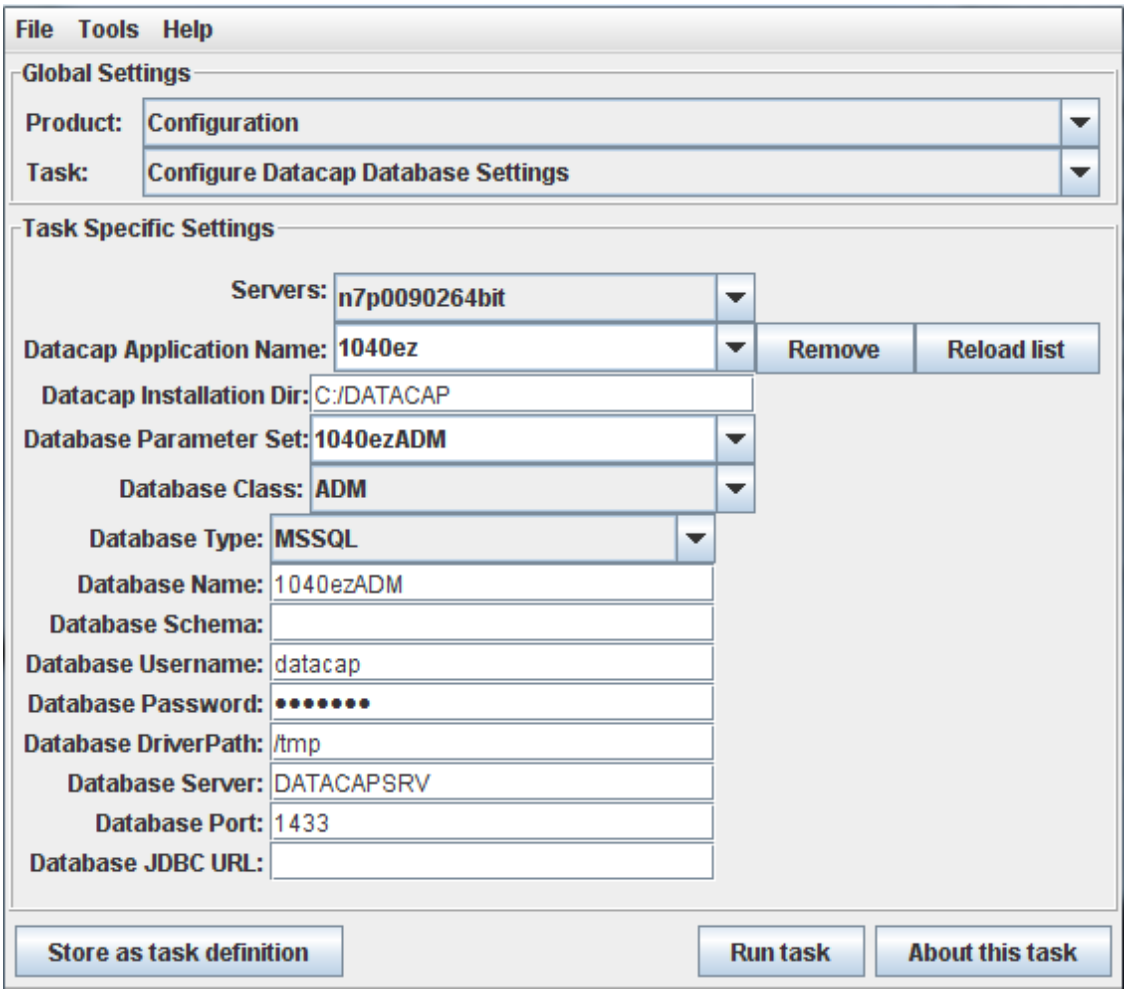
Configure Datacap Database Settings

Description

This task stores the database settings of a Datacap application in a file for later usage.

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.

Parameters



Configure Datacap Database Settings

Server

Required. Select a server from the listbox. The Datacap settings file will be created on the selected server.

Datacap Application Name

Required. Enter the name of a new Datacap application to configure or select an existing Datacap application for editing or removal.

Datacap Installation Dir

Required. Enter the installation directory of the Datacap application.

Database Parameter Set
Required. Enter a descriptive name for the database parameter set related to this Datacap application or select an existing set from the list.

Database Class
Required. Select a Datacap database class from the list. Possible types are *ADM*, *ENGINE*, *EXPORT* and *FINGERPRINT*.

Database Type
Required. Select the database type of the Datacap application from the list.

Database Name
Required. Enter the database name.

- Oracle: in the case Oracle naming service is used the following format is required: */ServiceName*

Database Schema
Required for DB2, optional for Oracle and MSSQL based Datacap applications. Enter the database schema name.

Database Username
Required for DB2 and Oracle, optional for MSSQL. Enter the name of the user to use for database connection.

MSSQL
Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

Database Password
Required for DB2 and Oracle, optional for MSSQL. Enter the password of the database user.

Database Driver Path
Required. Enter the full qualified path to the JDBC driver files.

Database Server
Required. Enter the DB server name. In the case the Custom Database JDBC URL is specified with this task this parameter is not required.

- DB2: Database server name or IP address.
- MSSQL with Default instance: Server name.
- MSSQL with Custom Instance: serverName/InstanceName.

- Oracle: Oracle server name or IP address

Database Port

Required. Enter the port number of the database. In the case the Custom Database JDBC URL is specified with this task this parameter is not required.

Database JDBC URL

Optional. Enter the JDBC URL to connect to the database.

The format of the URL depends on the database and driver. Common formats are:

DB2

jdbc:db2://localhost:50000/<database_name>

MSSQL

jdbc:sqlserver://<hostname>:<port>;instanceName=<Named-instance-name>

Oracle

- Oracle database with ORACLE_SID / Database name configuration: jdbc:oracle:thin:@localhost:1521:<database_name>
- Oracle database with service name configuration: jdbc:oracle:thin:@localhost:1521/<service-name>
- jdbc:oracle:thin:<remote_oracle_db_name>
- jdbc:oracle:thin:@(DESCRIPTION=(load_balance=yes)(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP) (HOST=oraserv1)(PORT=1521)) (ADDRESS=(PROTOCOL=TCP)(HOST=oraserv2)(PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=myoradb)(failover_mode=(type=select)(method=basic) (retries=32)(delay=4))))

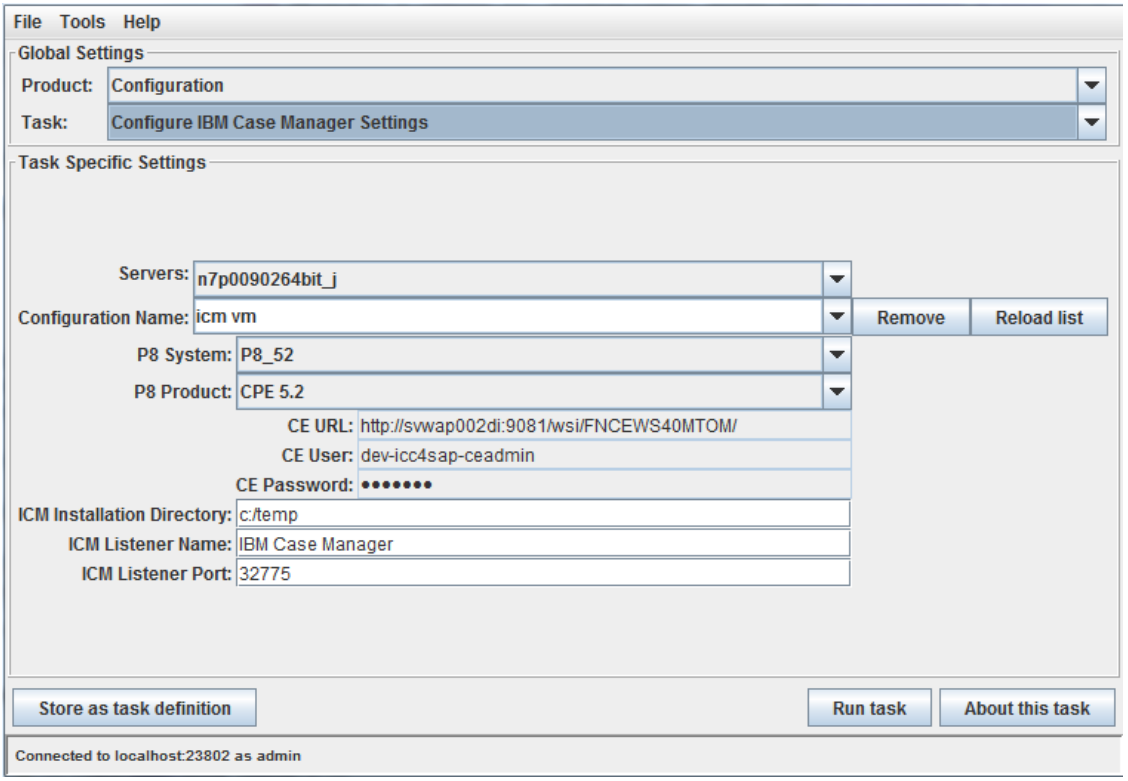
Either server and port or the JDBC URL must be given.

Configure IBM Case Manager Settings

Description

This task creates the file `icm_conf.prop` on the selected server. This configuration file is required for IBM Case Manager monitoring.

Parameters



Configure IBM Case Manager Settings

Servers

Required. The parameters will be stored on the selected server.

Configuration Name

Required. Specify a user defined name to create a new configuration or select an existing configuration.

P8 System
Required. Select the P8 5.x system that contains the CE connection settings corresponding to the ICM installation.

P8 Product
Required. Specify the P8 5.x product that contains the CE connection settings corresponding to the ICM installation.

Selecting the P8 System and Product will fill the following fields:

CE URL
The CE connection URL for the selected P8 System. This URL will be used by the ICM monitors CaseStatus, SolutionStatus and TaskStatus to connect to the CE to gather data.

CE User
The CE user for the selected P8 System. This user will be used by the ICM monitors CaseStatus, SolutionStatus and TaskStatus to connect to the CE to gather data.

CE Password
The CE password for the selected P8 System. This password will be used by the ICM monitors CaseStatus, SolutionStatus and TaskStatus to connect to the CE to gather data.

These values are taken from the Core Agent Installer, plugin **Configure IBM FileNet 4.x / 5.x**, tab **PE 5.0, 5.1, CPE 5.2 (PE part)**, sub tab **Security** because the Java-based ICM monitors require the same connection data to the CE as the Java-based PE monitors.

Note that these fields cannot be changed by this configuration task. If the CE URL or the credentials change, first reconfigure the CE connection settings in the Core Agent Installer, then rerun this task to update the data on the selected ICM server.

ICM Installation Directory
Required. Specify the installation path of the Case Manager software.

The JAR files required to connect to the Case Manager will be searched in the subdirectories **`CaseAPI/lib`** and **`CaseAPI/lib_cm8`** of the given directory.

ICM Listener Name
Optional. Specify the name of the PCH listener for IBM Case Manager.

Default: *`IBM Case Manager`*

ICM Listener Port
Optional. Specify the port of the PCH listener for IBM Case Manager.

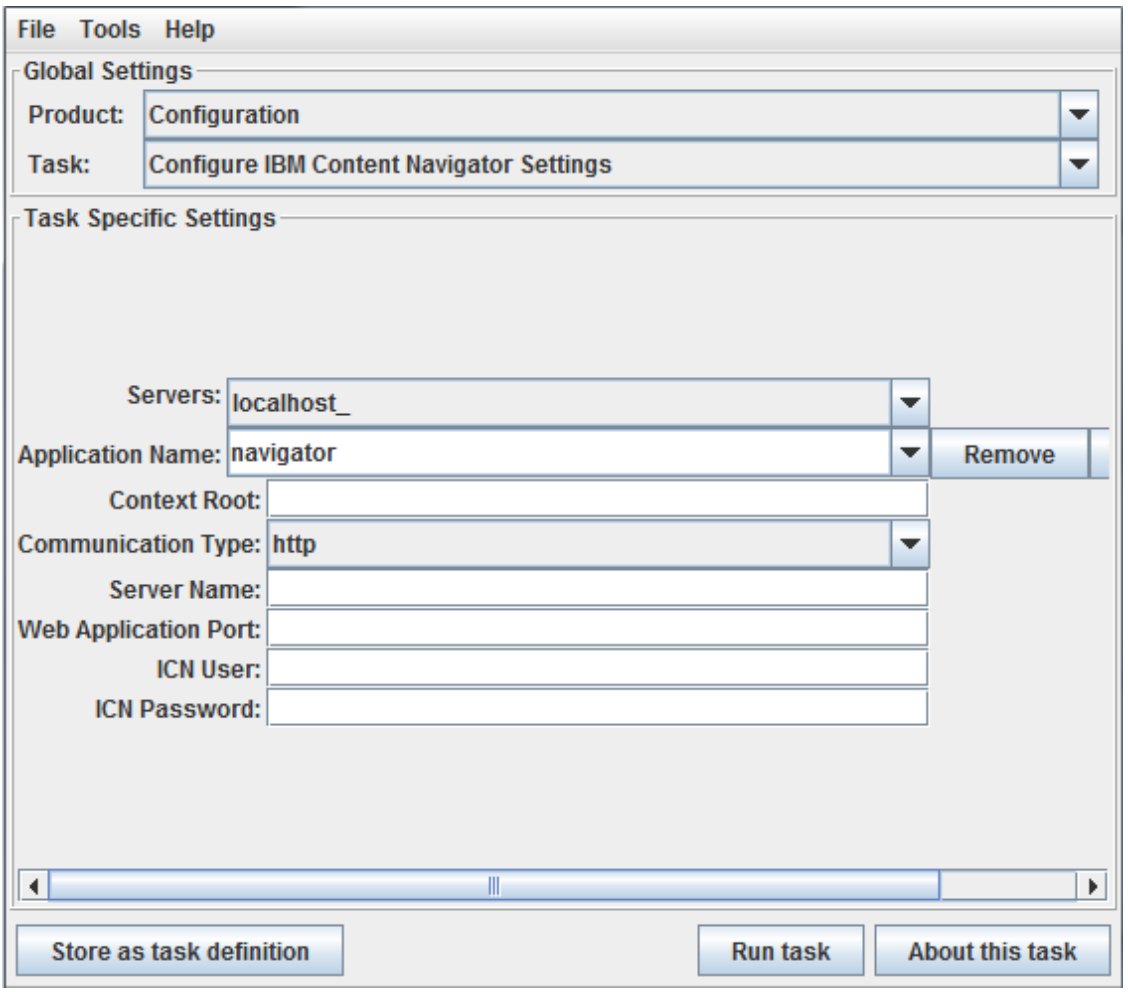
Default: *`32775`*

Configure IBM Content Navigator Settings

Description

This task creates the file `cont_nav_conf.prop` on the selected server. This configuration file is required for IBM Content Navigator monitoring.

Parameters



Configure IBM Content Navigator Settings

Servers

Required. Select the server(s) where the IBM Content Navigator settings should be created.

Application Name
Required. Enter the name of the IBM Content Navigator web application.

Communication Protocol
Required. Select either *https* or *http* as communication protocol.

Server Name
Optional. Specify the name of the server where IBM Content Navigator is running.

Default: local hostname

Web Application Port
Required. Specify the port number of the IBM Content Navigator web application.

ICN User
Optional. Specify the name of the user to use to login to the ICN system.

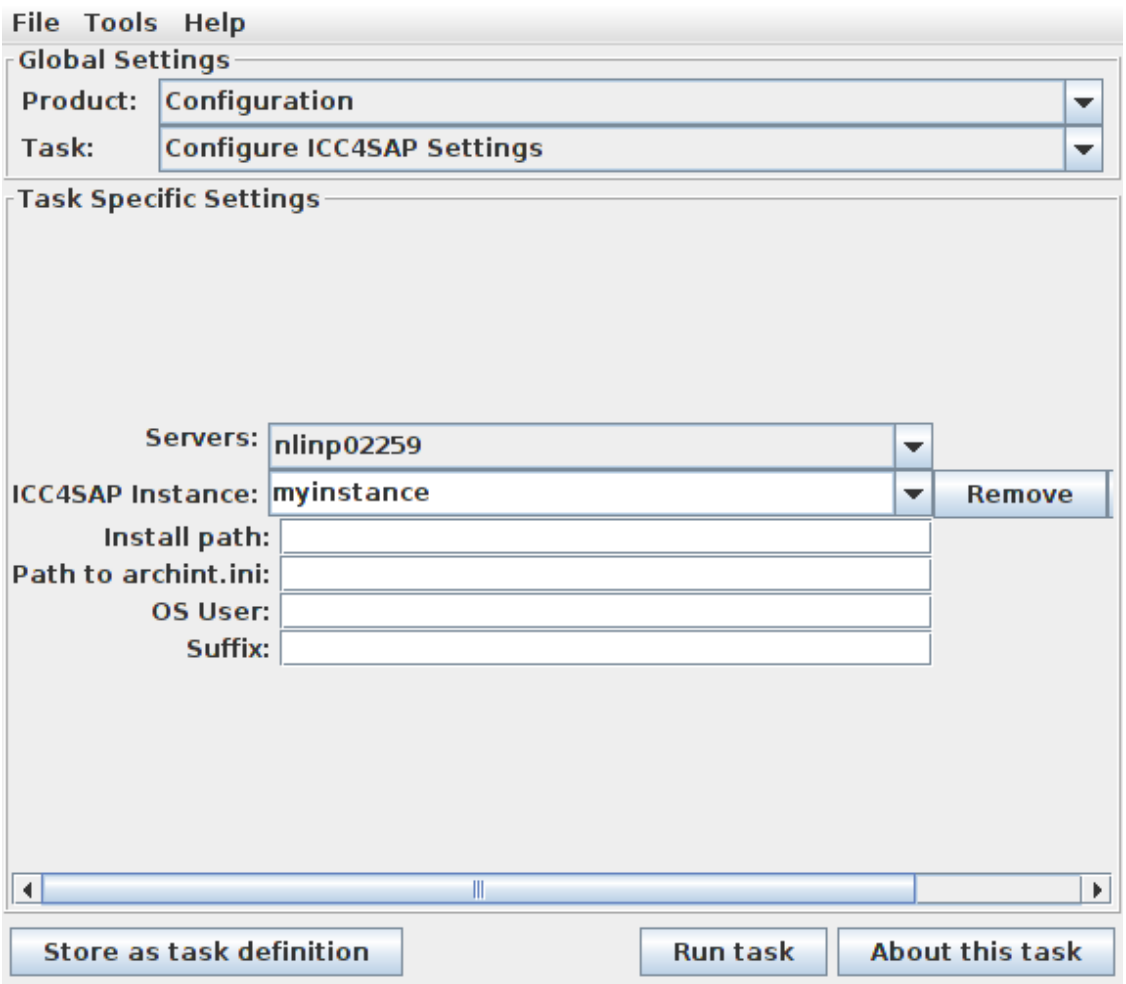
ICN Password
Optional. Specify the password of the user to use to login to the ICN system.

Configure ICC4SAP Settings

Description

This task creates the file `icc4sap_conf.prop` on the selected server. This configuration file is required for ICC4SAP monitoring.

Parameters



Configure ICC4SAP Settings

Servers

Required. Select the server(s) where the ICC4SAP settings should be created.

ICC4SAP Instance

Required. Specify an instance name for the ICC4SAP configuration.

Install path

Required. Enter the path where ICC4SAP is installed.

Path to archint.ini

Required. Enter the path to the archint.ini of the ICC4SAP instance.

OS User

Optional. UNIX, Linux only. Specify the operating system user to be used for calling the ICC4SAP tools. This user is required, if the ICC4SAP tools shall be executed with a user other than the CALA_REX User.

Default: The standard monitoring user on the system.

Suffix

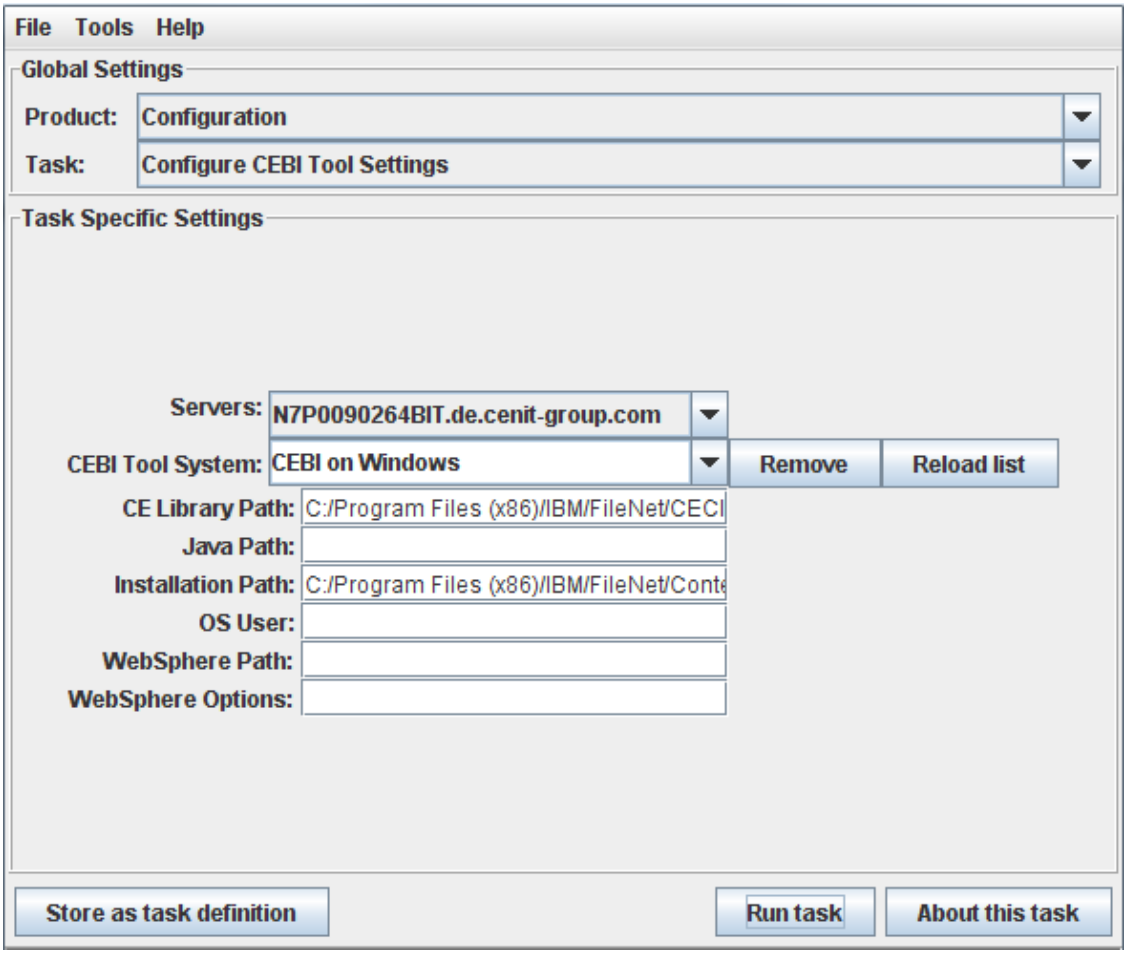
Optional. Service suffix used to identify service and process names if several instances of ICC4SAP are installed.

Configure CEBI Tool Settings

Description

This task creates the file `cebit_conf.prop` on the selected server. This configuration file is required for IBM CE Bulk Import Tool monitoring.

Parameters



Configure CEBI Tool Settings

Servers

Required. Select the server(s) where the IBM CE Bulk Import Tool settings should be created.

CEBI Tool System
Required. Select or enter the name of the CEBI Tool System to be configured.

CE Library Path
Required. Enter the path to the IBM Content Engine's libraries.

Example: C:\Program Files (x86)\IBM\FileNet\CEClient\

Java Path
Optional. Enter the path to the preferred Java Runtime Environment to run the monitors.

Default: The ECM SM standard JRE

Installation Path
Required. Enter the installation path of the CEBI Tool System.

Example: C:\Program Files (x86)\IBM\FileNet\ContentEngine\tools\CEBI\

OS User
Optional. Enter the user to run the monitors. That must be a valid user on the system the monitor runs and must have access to the CEBI Tool directories and services.

Default: The standard monitoring user on the system.

WebSphere Path
Optional. In case of running CEBI Tool on WebSphere Application Server enter its installation path here.

WebSphere Options
Optional. In case of running CEBI Tool on WebSphere Application Server enter additional options here.

Default: None.

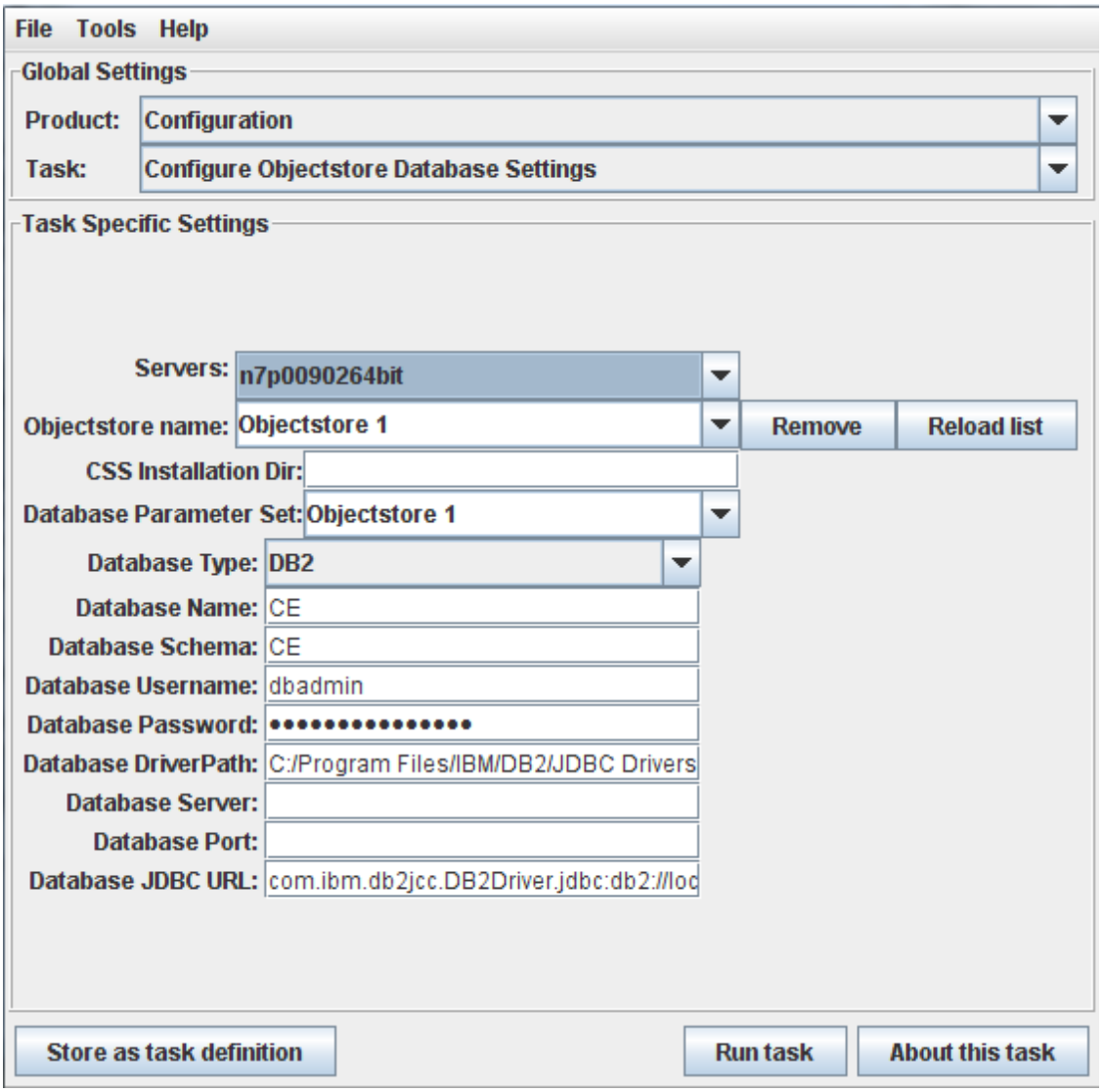
Configure ObjectStore Database Settings

Description

This task stores the database settings of an ObjectStore in a file for later usage.

This component can be configured to use either native or JDBC-based communication. For details about JDBC-based communication refer to the Installation Guide, chapter "How to configure and use the Unified-DatabaseClient (UDC)", section "Usage" > <*DatabaseType*>.

Parameters



Configure ObjectStore Database Settings

Server

Required. Select a server from the listbox. The ObjectStore settings file will be created on the selected server.

ObjectStore name

Required. Enter the name of a new ObjectStore to configure or select an existing ObjectStore for editing or removal.

CSS Main Installation Dir

Optional. Enter the main installation directory of the Content Search Services software, if applicable. Note: this is not the subdirectory of the CSS server configuration. Help: specify the directory that contains the *css-servers.xml* file.

CSS Server name

Optional. Enter the real CSS server name. Verify the server name, check the file *css-servers.xml*.

Database Parameter Set

Required. Enter a descriptive name for the database parameter set related to this ObjectStore or select an existing set from the list.

NOTE It is currently not possible to share a Database Parameter Set between multiple ObjectStores.

Database Type

Required. Select the database type of the ObjectStore from the list.

Database Name

Required. Enter the database name.

- Oracle: in the case Oracle naming service is used, the following format is required: */ServiceName*

Database Schema

Required for DB2, optional for Oracle and MSSQL based ObjectStores. Enter the database schema name.

Database Username

Required for DB2 and Oracle, optional for MSSQL. Enter the name of the user to use for database connection.

MSSQL

Leave field empty to connect using Windows authentication with the credentials of the CALA service user. For details about JDBC-based Windows authentication refer to the Installation Guide, chapter "How to configure and use the UnifiedDatabaseClient (UDC)", section "Usage" > "MSSQL" > "Windows authentication over JDBC driver".

Database Password

Required for DB2 and Oracle, optional for MSSQL. Enter the password of the database user.

Database Driver Path

Required. Enter the full qualified path to the JDBC driver files.

Database Server

Required. Enter the DB server name. In the case the Custom Database JDBC URL is specified with this task this parameter is not required.

- DB2: Database server name or IP address.
- MSSQL with Default instance: Server name.
- MSSQL with Custom Instance: serverName/InstanceName.
- Oracle: Oracle server name or IP address

Database Port

Required. Enter the port number of the database. In the case the Custom Database JDBC URL is specified with this task this parameter is not required.

Database JDBC URL

Optional. Enter the JDBC URL to connect to the database.

The format of the URL depends on the database and driver. Common formats are:

DB2

jdbc:db2://localhost:50000/<database_name>

MSSQL

jdbc:sqlserver://<hostname>:<port>;instanceName=<Named-instance-name>

Oracle

- Oracle database with ORACLE_SID / Database name configuration: jdbc:oracle:thin:@localhost:1521:<database_name>
- Oracle database with service name configuration: jdbc:oracle:thin:@localhost:1521/<service-name>
- jdbc:oracle:thin:<remote_oracle_db_name>
- jdbc:oracle:thin:@(DESCRIPTION=(load_balance=yes)(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP) (HOST=oraserv1)(PORT=1521)) (ADDRESS=(PROTOCOL=TCP)(HOST=oraserv2)(PORT=1521))) (CONNECT_DATA=(SERVICE_NAME=myoradb)(failover_mode=(type=select)(method=basic) (retries=32)(delay=4))))

Either server and port or the JDBC URL must be given.

ECM SM Mobile app installation and configuration

Installation Prerequisites

Ensure you have access to a supported iOS or Android device.

Ensure you have access to a current ECM SM server.

IBM Enterprise Content Management System Monitor Mobile Installation and configuration routine

- Install the App from the Apple App Store or Google Play Store.
- Start the IBM IBM Enterprise Content Management System Monitor Mobile app
- Select the 'plus' icon and add one or more ECM SM server.
  Specify a logical name, the real server name, the port of the ECM SM UI and select whether http or https based communication is required. Press the Save button.
- Once at least one server is configured you can specify username and password to connect to the ECM SM system.

ECM SM HA and DR support

General ECM SM HA and DR support

ECM SM server and client agents support OS generic startup and shutdown methods. This allows the installation of more than one agent of each kind (ECM SM CALA_REX and ECM SM CALA) on one system.

The following OS specific agent registration methods (responsible for the control of the agent) are supported:

- Windows based systems: Windows Services registration
- AIX /etc/inittab registration
- SUN Solaris, HP-UX and SuSE/Redhat Linux /etc/rc.* registration

In general ECM SM agents can be installed using other, none OS specific, startup and shutdown methods. Therefore the installation GUI and the Command Line install scripts provide checkboxes / CLI parameters to disable the OS specific startup registration method. An independent ECM SM startup script is created during the agent installation anyway. This ECM SM Control-Script can be integrated into HA scenarios.

ECM SM Server HA and DR support

ECM SM server agents can be installed on active / passive cluster systems, where the name and IP address of the system stays the same after takeover.

The following components need to be started / stopped / taken over on a ECM SM server:

- ECM SM Database system with the database
- ECM SM webserver
- ECM SM CALA_REX Server agent
- ECM SM CALA Server (Monitoring) agent

ECM SM Agent HA and DR support

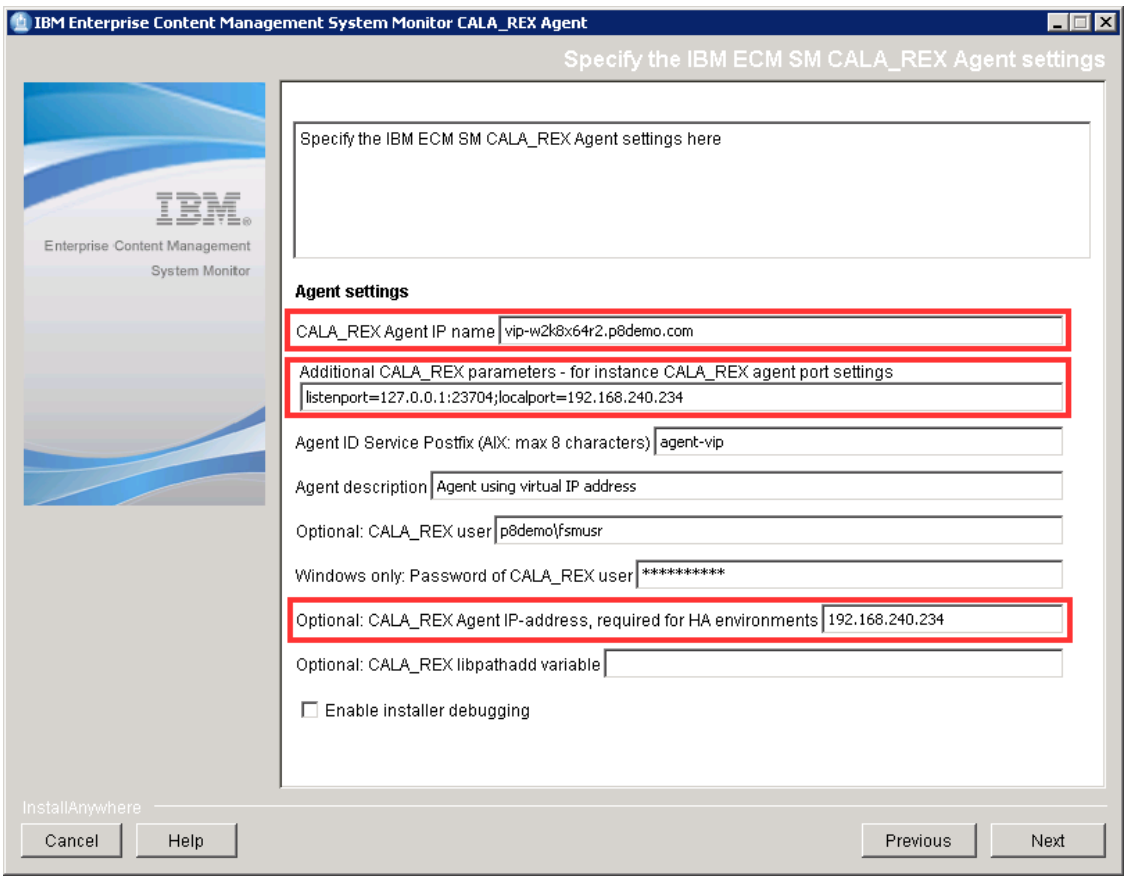
The ECM SM agents can be installed on active / passive cluster systems, where the name and IP address of the system stays the same after takeover.

The following components need to be started / stopped / taken over on a ECM SM agent:

- ECM SM CALA_REX agent
- ECM SM CALA (Monitoring) agent

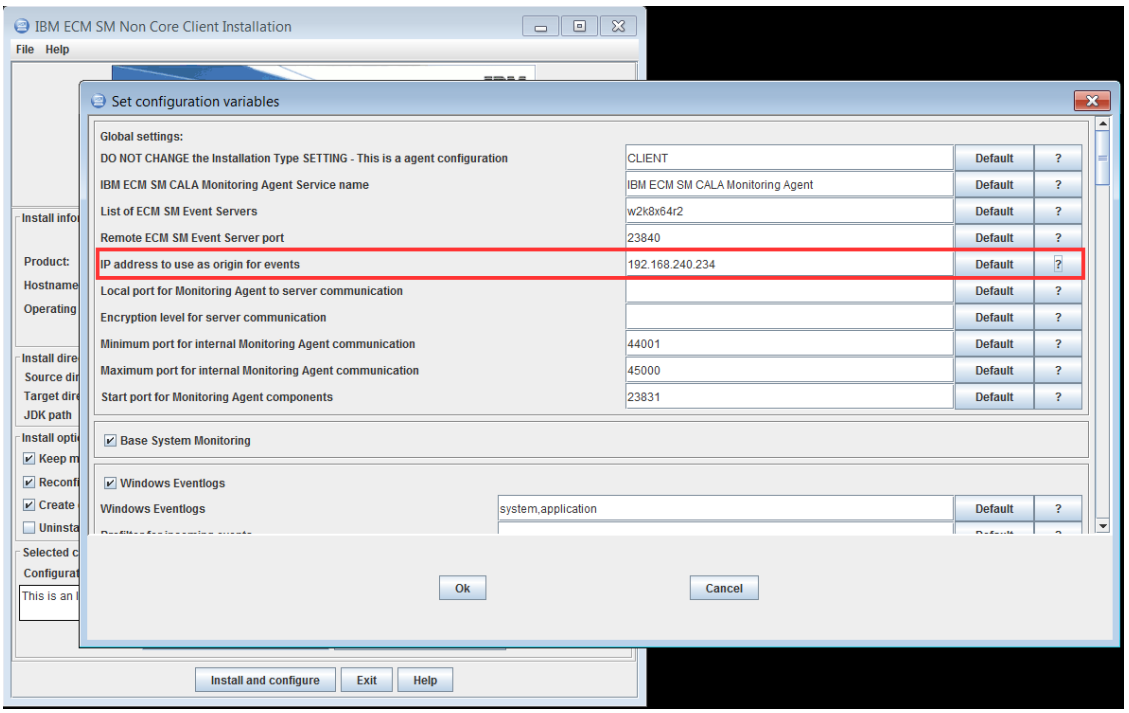
Both agents should be installed on the file system / disk / nfs mount that is accessible from both nodes. The start/stop scripts for the agents have to be manually included into the HA takeover configuration.

The configuration for CALA_REX and CALA agents to use the virtual address of the HA package is done while installing the CALA_REX agent. The graphical installer offers a parameter "CALA_REX Agent IP-address" for the IP address used with the hostname specified in parameter "CALA_REX Agent IP name". If the CALA_REX agent should technically use the virtual network interface to connect to the ECM SM server instead of the primary network interface, the additional parameter "localport=<virtual ip address>:*" needs to be set in the field "Additional CALA_REX parameters".



CALA_REX installer: IP Address of agent and virtual address

This hostname and IP address will be used in subsequent CALA agent installations or updates. It can be manually changed in the "Set configuration variables" menu of the CALA installer. The parameter is named "IP address to use as origin for events".



Set configuration variables: IP Address of agent

ECM SM Agent multi agent / multi destination CALA_REX and CALA installation

ECM SM agents are installed with so called Instance ID's. With this functionality more than one CALA_REX and CALA agent can be installed on one single system. For more details about CALA_REX installation parameters see chapter CALA_REX Installation.

Additionally the ECM SM CALA agent supports multi-server configuration. This means that events from one CALA agent can be forwarded to more than one ECM SM server in parallel.

CALA configuration settings

Configuration variables for ECM SM Client Unix

Global Settings

Select the checkbox "Global Settings" to activate this section.

IBM ECM SM Monitoring Agent name

Optional:Specifies the displayed daemon name.If unset "IBM ECM SM CALA Monitoring Agent" will be used.

Do NOT add non-ASCII characters, "#", ";" or "$"!

List of ECM SM Event Servers

Required. Specify a list of ECM SM Event Servers.

If the list is separated by semicolon, the agent will send its events to the first server where connection is successful. The order describes the order the Monitoring Agent tries to connect to the Event Servers.

If the list is separated by comma, the agent will send its events to all given event servers.

Note: In the case more than one Event Server is installed you should specify all installed Event Server hostnames here to allow the agent to find the active Event Server itself without reconfiguration.

Note: In the case you already specified the list of Event Servers during the installation of the CALA_REX Agent specify 'ALL_EVENT_SERVERS' as value.

Remote ECM SM Event Server port

Required. Specify the port on which the Event Server component on the ECM SM server is running.

Default setting is 23840.

IP address to use as origin for events

Optional. Specify the IP address that must be set as origin for events sent from this agent. Default value is the IP address specified in the ip-address parameter for CalaRex. If you leave this field empty, the IP address determined by nslookup will be used (this may lead to unexpected results on agents with multiple IP addresses).

Local port for Monitoring Agent to server communication

Optional. Specify the port that must be used locally for communication with the server. All outgoing data from the agent will be sent through this port. If you leave this field empty, each sending component will open a random port for itself.

Encryption level for server communication

Optional. Specify the encryption level (1-3) to use for communication with the server. If you leave this field empty, the encryption level will be set to "1".

Minimum port for internal Monitoring Agent communication

Optional. Specify the minimum port number to use for internal CALA communication.If you do not specify a port number range, random ports will be used for internal communication.

Default setting is 44001.

Maximum port for internal Monitoring Agent communication

Optional. Specify the maximum port number to use for internal CALA communication. If you do not specify a port number range, random ports will be used for internal communication.

Default setting is 45000.

Start port for Monitoring Agent components

Required. Specify the start port for CALA components. In the configuration file, each component will have a different port starting from this base port number.

Default setting is "23831".

Custom su program

Specify the name of a custom su program (Substitute user), which should be used instead of su. Note: Filename including path is required.

su parameters

Specify parameters that follow the custom 'su' program at the CLI before the user name is specified (example: If /opt/my_sy/my_su_proc is the custom su program and of this program requires the parameter -u to specify the username than enter '-u' here. Note: If 'sudo' is used specify '-H -u ' here.)

Additional su parameters

Specify required execution parameters that follow the username (example: If /opt/my_sy/my_su_proc is the custom su program and of this program requires the parameter -c to specify the command than enter '-c' here.) Note: the normal 'su' program would require '-c' here, too. Note: If 'sudo' is used leave this parameter unset.

Custom shell Binary

Due to issues with some shell implementations it is possible to specify a custom shell for tasks and monitors. Note: Filename including path is required, e.g. /opt/freeware/bin/bash.

Custom AWK Binary

Due to limilations with some awk / nawk implementations (AIX and HP-UX) it is possible to specify a custom awk for tasks and monitors. Note: Filename including path is required, e.g. /opt/local/bin/gawk

Base System Monitoring

Select the checkbox "Base System Monitoring" to activate this section.

System Log

Select the checkbox "System Log" to activate this section.

Syslog settings

Optional. Specify a list of syslog settings separated by ";". Example is *.emerg;*.alert;*.crit;*.err. If you use 'USE_EXISTING_SETTINGS' the current settings will be used and Syslog monitoring will be activated.

To deactivate Syslog monitoring, proceed as follows:

1. Open the "Set Configuration Variables" dialog.

2. Uncheck the "System Log" entry.

3. Select any other logfile. This can be a valid logfile or a non-existing one (e.g. "Oracle Alert Log"). Do not specify a valid directory, if the logfile does not exist on the system or should not be monitored (you may leave the default value). Be sure, that at least one logfile is selected. Otherwise the installation will fail.

4. Reinstall the agent with the new settings.

The System Log will now be monitored no longer.

AIX Error Report

Select the checkbox "AIX Error Report" to activate this section.

Configure Error Report hardware check (AIX only)
Required. Specify "Yes" to enable the Error Report hardware check. If Error Report hardware check is already configured, this setting will be ignored.

Oracle Alert Logfiles

Select the checkbox "Oracle Alert Logfiles" to activate this section.

Oracle Alertlog Logfile directory
Required. To specify the directory where the Oracle Alert logfiles are located, replace <ORACLE_HOME> by your current installation setting, e.g. "/usr/ora920".

Oracle Listener Logfiles

Select the checkbox "Oracle Listener Logfiles" to activate this section.

Oracle Listener Logfile directory
Required. To specify the directory where the Oracle Listener logfiles are located, replace <ORACLE_HOME> by your current installation setting, e.g. "/usr/ora920".

Monitors for Oracle

Select the checkbox "Monitors for Oracle" to activate this section.

ORACLE_HOME directory
Required. Specify the setting of ORACLE_HOME, e.g. "/usr/ora920".

Oracle SID
Required. Specify the Oracle SID that you want to monitor.

Default setting is "orc1".

Oracle OS user
Required. Specify the OS user that must be used to execute Oracle commands.

Default setting is "oracle".

IBM FileNet Image Manager Logfiles

Select the checkbox "IBM FileNet Image Manager Logfiles" to activate this section.

Monitors for IBM FileNet Image Manager

Select the checkbox "Monitors for IBM FileNet Image Manager" to activate this section.

ServerLink Logfiles

Select the checkbox "ServerLink Logfiles" to activate this section.

CSAR, SSAR and ISAR (NLS) Logfiles

Select the checkbox "CSAR, SSAR and ISAR (NLS) Logfiles" to activate this section.

ISCE Logfiles

Select the checkbox "ISCE Logfiles" to activate this section.

ISCE Logfile name
Required. Specify the name of the ISCE logfile.

ISCE Logfile directory
Required. To specify the directory where the ISCE logfiles are located, replace <ISCE_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

ACSAP Logfiles

Select the checkbox "ACSAP Logfiles" to activate this section.

ACSAP Logfile directory
Required. Specify the directory where the ACSAP logfiles are located, e.g "C:/ACSAP/logs".

Note: Use "/" instead of "\".

Apache Error Logfile
Required. Specify the name of the Apache error logfile, e.g. "ACSAP_J2EEDD_MM_YYYY*.txt".

You can use wildcards to monitor more than one logfile at once or placeholder for the actual date (DD, MM, YYYY).

BP8 Logfiles

Select the checkbox "BP8 Logfiles" to activate this section.

BP8 Logfile name
Required. Specify the name of the BP8 logfile.

BP8 Logfile directory
Required. To specify the directory where the BP8 logfile is located, replace <PB8_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

BP8 Logfile name
Required. Specify the name of the BP8 logfile.

BP8 Logfile directory
Required. To specify the directory where the BP8 logfile is located, replace <PB8_Operations_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

ISRA Logfiles

Select the checkbox "ISRA Logfiles" to activate this section.

ISRA Logfile name
Required. Specify the name of the ISRA logfile. In most cases, this file is called "ISRA.log".

You can use wildcards to monitor more than one logfile at once (e.g. "ISRA*.log").

ISRA Logfile directory
Required. To specify the directory where the ISRA logfiles are located, replace <ISRA_Logging_Directory> by your current installation setting.

IBM P8 Process Engine Log files

Select the checkbox "IBM P8 Process Engine Log files" to activate this section.

P8 PE 5.0 Manager system Logfile name
Required. Specify the name of the P8 PE 5.0 Manager system logfile name. Default value: pemgr_system.log

P8 PE 5.0 Manager Log directory
Required. To specify the directory where the P8 PE Manager system logfile is located, replace <P8_5.0_Manager_Log_Directory> by the PE 5.0 Manager logfile path.

Example: /opt/IBM/ProcessEngine/data/logs

P8 PE 5.0 Server Logfile name
Required. Specify the name of the P8 PE 5.0 Server logfile name. Default value: pesvr_system.log

P8 PE 5.0 Server Log directory
Required. To specify the directory where the P8 PE 5.0 Server logfile is located, replace <P8_5.0_Server_Log_Directory> by the PE 5.0 Manager logfile path.

Example for the virtual PE server called 'default': /opt/IBM/ProcessEngine/data/pesrv.default/logs

P8 Server Error Log

Select the checkbox "P8 Server Error Log" to activate this section.

P8 Server Error Logfile name
Required. Specify the name of the P8 Server Error logfile. Default value: p8_server_error.log

P8 Logfile directory
Required. To specify the directory where the P8 Server Error logfile is located, replace <P8_Logging_Directory> by your current installation setting.

Example for an IBM WebSphere based P8 server is: /opt/IBM/WebSphere/AppServer/profiles/default/FileNet/server1

PPM Tracefiles

Select the checkbox "PPM Tracefiles" to activate this section.

RMI Logfiles

Select the checkbox "RMI Logfiles" to activate this section.

Router Tracefiles

Select the checkbox "Router Tracefiles" to activate this section.

FileNet Listener

Select the checkbox "FileNet Listener" to activate this section.

Configuration file for FileNet Listener

Required. Specify the name of the FileNet Listener configuration file. The file must be located in the subdirectory "repos/install/custom" of the WebConsole server installation.

FileNet Content Services Logfiles

Select the checkbox "FileNet Content Services Logfiles" to activate this section.

FileNet Content Services Auditlog

Select the checkbox "FileNet Content Services Auditlog" to activate this section.

Verity Logfiles

Select the checkbox "Verity Logfiles" to activate this section.

Monitors for FileNet Content Services

Select the checkbox "Monitors for FileNet Content Services" to activate this section.

IBM Content Manager Version 8 Eventlog

Select the checkbox "IBM Content Manager Version 8 Eventlog" to activate this section.

Prefilter for incoming events from table ICMSTITEMEVENTS

Optional. Define a prefilter for incoming events from table ICMSTITEMEVENTS to process only those events that match this filter.

Prefilter for outgoing events from table ICMSTITEMEVENTS

Optional. Define a prefilter for outgoing events from table ICMSTITEMEVENTS to discard all events that match this filter.

Prefilter for incoming events from table ICMSTSYSADMEVENTS

Optional. Define a prefilter for incoming events from table ICMSTSYSADMEVENTS to process only those events that match this filter.

Prefilter for outgoing events from table ICMSTSYSADMEVENTS

Optional. Define a prefilter for outgoing events from table ICMSTSYSADMEVENTS to discard all events that match this filter.

IBM CM Library Server Logfile

Select the checkbox "IBM CM Library Server Logfile" to activate this section.

IBM CM Library Server Logfile directory

Required. To specify the directory where the Library Server logfile is located, replace <DB2CMV8_HOME> by your current installation setting, e.g. "C:/Program FilesIBM/db2cmv8".

The logfile name and path can be found in the system administration client,

Library Server Parameters - Configurations - Library Server Configuration - Log and Trace - Trace file name

or with query "select LIBRARYSERVERID, TRACEFILENAME from ICMSTSYSCONTROL"

Note: Use "/" instead of "\".

IBM CM Library Server Logfile

Required. Specify the name of the Library Server logfile, e.g. "icmserver.log".

You can use wildcards to monitor more than one logfile at once (e.g. "icmserver*.log").

The logfile name and path can be found in the system administration client,

Library Server Parameters - Configurations - Library Server Configuration - Log and Trace - Trace file name

or with query "select LIBRARYSERVERID, TRACEFILENAME from ICMSTSYSCONTROL"

IBM Content Manager Version 8 Agent and Common Store Server Error Log

Select the checkbox "IBM Content Manager Version 8 Agent and Common Store Server Error Log" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Content Manager Version 8 Agent and Common Store Server Error Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

IBM Common Store Retrieve Logfile

Select the checkbox "IBM Common Store Retrieve Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Common Store Retrieve Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Common Store Retrieve Logfile.

IBM Common Store Archive Logfile

Select the checkbox "IBM Common Store Archive Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Common Store Archive Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Common Store Archive Logfile.

IBM Content Manager Resource Manager Migrator Logfile

Select the checkbox "IBM Content Manager Resource Manager Migrator Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Content Manager Resource Manager Migrator Log-files are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Content Manager Resource Manager Migrator Logfile.

IBM Content Manager Resource Manager Asyncr Logfile

Select the checkbox "IBM Content Manager Resource Manager Asyncr Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Content Manager Resource Manager Asyncr Log-files are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Content Manager Resource Manager Asyncr Logfile.

IBM Content Manager Resource Manager Logfile

Select the checkbox "IBM Content Manager Resource Manager Logfile" to activate this section.

IBM CM Resource Manager Logfile directory

Required. To specify the directory where the Resource Manager logfile is located, replace <WASHOME> by your current installation setting, e.g. "/usr/WASCMSTU01".

Note: Use "/" instead of "\".

IBM CM Resource Manager Logfile

Required. Specify the name of the Resource Manager logfile, e.g. "icmrm.logfile.413818".

You can use wildcards to monitor more than one logfile at once (e.g. "icmrm.logfile.*").

"

IBM Content Manager On Demand Database Log

Select the checkbox "IBM Content Manager On Demand Database Log" to activate this section.

IBM WebSphere Application Server System out / system error Logfiles

Select the checkbox "IBM WebSphere Application Server System out / system error Logfiles" to activate this section.

WAS system out / system error Logfile directory (first instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (first instance/server/profile)

Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (second instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (second instance/server/profile)
Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (third instance/server/profile)
Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (third instance/server/profile)
Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (fourth instance/server/profile)
Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (fourth instance/server/profile)
Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (fifth instance/server/profile)
Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (fifth instance/server/profile)
Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (sixth instance/server/profile)
Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (sixth instance/server/profile)
Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

Apache Access Logfiles

Select the checkbox "Apache Access Logfiles" to activate this section.

Apache Logfile directory
Required. To specify the directory where the Apache logfiles are located, replace <APACHE_HOME> by your current installation setting, e.g "/var/log/httpd".

Apache Access Logfile
Required. Specify the name of the Apache access logfile, e.g. "access_log".

You can use wildcards to monitor more than one logfile at once (e.g. "*access_log").

Apache Error Logfiles

Select the checkbox "Apache Error Logfiles" to activate this section.

Apache Logfile directory
Required. To specify the directory where the Apache logfiles are located, replace <APACHE_HOME> by your current installation setting, e.g "/var/log/httpd".

Apache Error Logfile
Required. Specify the name of the Apache error logfile, e.g. "error_log".

You can use wildcards to monitor more than one logfile at once (e.g. "*error_log").

Tivoli Storage Manager Logfiles

Select the checkbox "Tivoli Storage Manager Logfiles" to activate this section.

TSM dsierror logfile directory
Required. Specify the directory where the TSM logfiles are located.

Note: Use "/" instead of "\".

TSM logfile names to be checked
Required. Specify the name of the TSM logfile. You can use the wildcard "*" to monitor more than one logfile at once.

TSM dsmerror logfile directory
Required. Specify the directory where the TSM logfiles are located.

Note: Use "/" instead of "\".

TSM logfile names to be checked
Required. Specify the name of the TSM logfile. You can use the wildcard "*" to monitor more than one logfile at once.

ICC4SAP Error Logfiles

Select the checkbox "ICC4SAP Error Logfiles" to activate this section.

ICC4SAP Logfile directory
Required. Specify the directory where the ICC4SAP Error logfiles are located, e.g "/opt/IBM/ICCSAP/Server/instances/RT1".

ICC4SAP Error Logfile
Required. Specify the name of the ICC4SAP Error logfile, e.g. "icc_error.log".

You can use wildcards to monitor more than one logfile at once or placeholder for the actual date (DD, MM, YYYY).

SAPIC Error Logfiles

Select the checkbox "SAPIC Error Logfiles" to activate this section.

SAPIC Logfile directory
Required. Specify the directory where the SAPIC Error logfiles are located, e.g "/opt/CENIT/import-manager-2.8/log".

SAPIC Error Logfile
Required. Specify the name of the SAPIC Error logfile, e.g. "sapic.log".

You can use wildcards to monitor more than one logfile at once or placeholder for the actual date (DD, MM, YYYY).

Agent waits for server to connect

Select the checkbox "Agent waits for server to connect" to activate this section.

Device to listen for server to connect

Required. Specify the local network device (ip address) on which the agent is listening for incoming requests from the server(s). This should be the address of the network card connected to the internal (private) network. Specify * to listen on all network devices.

Port to listen for server to connect

Required. Specify the local port on which the agent must listen for the server(s) to connect.

Default setting is "11030".

Servers ip address

Required. Specify the ip address of the server(s) allowed to connect to this agent. The ip address may contain the wildcard "*" to allow a range of ip addresses to connect (e.g. "10.0.114.*") or just "*" to allow all servers.

Local port on server which is used to connect

Required. Specify the port the server is connecting from or "*" to allow all server ports. If a specific port is given, the agent will only accept connections coming from this port.

Default setting is "11031".

MInimum encryption level to be used

Optional. Specify the encryption level (1-3) to use for communication with the server(s). If you leave this field empty, the encryption level will be set to "1".

Configuration variables for ECM SM Client Windows

Global Settings

Select the checkbox "Global Settings" to activate this section.

IBM ECM SM CALA Monitoring Agent Service name

Optional:Specifies the Windows Service name.If unset "IBM ECM SM CALA Monitoring Agent" will be used.

Do NOT add non-ASCII characters, "#", ";" or "$"!

List of ECM SM Event Servers

Required. Specify a list of ECM SM Event Servers.

If the list is separated by semicolon, the agent will send its events to the first server where connection is successful. The order describes the order the Monitoring Agent tries to connect to the Event Servers.

If the list is separated by comma, the agent will send its events to all given event servers.

Note: In the case more than one Event Server is installed you should specify all installed Event Server hostnames here to allow the agent to find the active Event Server itself without reconfiguration.

Note: In the case you already specified the list of Event Servers during the installation of the CALA_REX Agent specify 'ALL_EVENT_SERVERS' as value.

Remote ECM SM Event Server port

Required. Specify the port on which the Event Server component on the ECM SM server is running.

Default setting is 23840.

IP address to use as origin for events

Optional. Specify the IP address that must be set as origin for events sent from this agent. Default value is the IP address specified in the ip-address parameter for CalaRex. If you leave this field empty, the IP address determined by nslookup will be used (this may lead to unexpected results on agents with multiple IP addresses).

Local port for Monitoring Agent to server communication

Optional. Specify the port that must be used locally for communication with the server. All outgoing data from the agent will be sent through this port. If you leave this field empty, each sending component will open a random port for itself.

Encryption level for server communication
Optional. Specify the encryption level (1-3) to use for communication with the server. If you leave this field empty, the encryption level will be set to "1".

Minimum port for internal Monitoring Agent communication
Optional. Specify the minimum port number to use for internal CALA communication.If you do not specify a port number range, random ports will be used for internal communication.

Default setting is 44001.

Maximum port for internal Monitoring Agent communication
Optional. Specify the maximum port number to use for internal CALA communication. If you do not specify a port number range, random ports will be used for internal communication.

Default setting is 45000.

Start port for Monitoring Agent components
Required. Specify the start port for CALA components. In the configuration file, each component will have a different port starting from this base port number.

Default setting is "23831".

Base System Monitoring

Select the checkbox "Base System Monitoring" to activate this section.

Windows Eventlogs

Select the checkbox "Windows Eventlogs" to activate this section.

Windows Eventlogs
Required. Specify a comma-separated list of Windows eventlogs that must be monitored.

Prefilter for incoming events
Optional. Define a prefilter for incoming events to process only those events that match this filter.

A filter definition is structured like this:

* the eventlog names entered in the prefilter fields must match the names entered in the "Windows Eventlog names" field exactly (case-sensitive!)

* the eventlog name and its filters are separated by a colon (:): <eventlog>:<filterdefinition>

* filters for several eventlogs are separated by a percent sign (%): <eventlog1>:<filterdefinition1>%<eventlog2>:<filterdefinition2>

* a filter definition consists of one or more filter assignments

* each filter assignment contains a list of assignments: <key>=<value>

* several possible values for one key can be separated by a comma: <key>=<value1>,<value2>

* if filter assignments are separated by semicolons (;), both assignments must match to make the filter match: <key1>=<value1>;<key2>=<value2>

* if filter assignments are separated by pipe symbols (|), at least one of the assignments must match to make the filter match: <key1>=<value1>|<key2>=<value2>

Possible pre-filter keys are: eventid , eventtype and source. Note that space characters in the source name must be replaced by underscores (see examples below).

Examples:

application:eventtype=Information|source=SceCli;eventid=1202%system:eventtype=Information|source= User_Profile_Service;EventId=1111

This filter will match for:

application log: all events with Event Type "Information", all events with Event Source "SceCli" AND Event ID "1202"

system log: all events with Event Type "Information", all events with Event Source "User Profile Service" AND Event ID "1111"

application:eventtype=Information|source=SceCli;eventid=1202%system:eventtype=Information|source=TermDD;eventid=50|source=W32Time,Print

This filter will match for:

application log: all events with Event Type "Information", all events with Event Source "SceCli" AND Event ID "1202"

system log: all events with Event Type "Information", all events with Event Source "TermDD" AND Event ID "50", all events with Event Source "W32Time" OR "Print"

A useful filter for IBM ECM related Windows event logs is:

application:
source=IMS,VWServices,VWServicesAE,VWServicesPA,VWServicesPE,VWServicesPS,FileNET,Content_Engine_File_Store_Service,Content_Engine_Object_Store_Service,Content_Engine_Content_Cache_Service,FileNet_Publishing,FileNET_Content_Engine,VMAE_Publisher_Service,AEEngine,CSMGR,ftserver,MSSQLSERVER,FileNETPrintService.

Prefilter for outgoing events

Optional. Define a prefilter for outgoing events to discard all events that match this filter.

A filter definition is structured like this:

* the eventlog names entered in the prefilter fields must match the names entered in the "Windows Eventlog names" field exactly (case-sensitive!)

* the eventlog name and its filters are separated by a colon (:): <eventlog>:<filterdefinition>

* filters for several eventlogs are separated by a percent sign (%): <eventlog1>:<filterdefinition1>%<eventlog2>:<filterdefinition2>

* a filter definition consists of one or more filter assignments

* each filter assignment contains a list of assignments: <key>=<value>

* several possible values for one key can be separated by a comma: <key>=<value1>,<value2>

* if filter assignments are separated by semicolons (;), both assignments must match to make the filter match: <key1>=<value1>;<key2>=<value2>

* if filter assignments are separated by pipe symbols (|), at least one of the assignments must match to make the filter match: <key1>=<value1>|<key2>=<value2>

Possible pre-filter keys are: eventid , eventtype and source. Note that space characters in the source name must be replaced by underscores (see examples below).

Examples:

application:eventtype=Information|source=SceCli;eventid=1202%system:eventtype=Information|source= User_Profile_Service;EventId=1111

This filter will match for:

application log: all events with Event Type "Information", all events with Event Source "SceCli" AND Event ID "1202"

system log: all events with Event Type "Information", all events with Event Source "User Profile Service" AND Event ID "1111"

application:eventtype=Information|source=SceCli;eventid=1202%system:eventtype=Information|source=TermDD;eventid=50|source=W32Time,Print

This filter will match for:

application log: all events with Event Type "Information", all events with Event Source "SceCli" AND Event ID "1202"

system log: all events with Event Type "Information", all events with Event Source "TermDD" AND Event ID "50", all events with Event Source "W32Time" OR "Print"

Monitors for MSSQL Server

Select the checkbox "Monitors for MSSQL Server" to activate this section.

Oracle Alert Logfiles

Select the checkbox "Oracle Alert Logfiles" to activate this section.

Oracle Alertlog Logfile directory

Required. To specify the directory where the Oracle Alert logfiles are located, replace <ORACLE_HOME> by your current installation setting, e.g. "c:/ORANT".

Note: Use "/" instead of "\".

Oracle Listener Logfiles

Select the checkbox "Oracle Listener Logfiles" to activate this section.

Oracle Listener Logfile directory

Required. To specify the directory where the Oracle Listener logfiles are located, replace <ORACLE_HOME> by your current installation setting, e.g. "c:/ORANT".

Note: Use "/" instead of "\".

Monitors for Oracle

Select the checkbox "Monitors for Oracle" to activate this section.

ORACLE_HOME directory

Required. Specify the setting of ORACLE_HOME, e.g. "C:/ORANT".

Note: Use "/" instead of "\".

Oracle SID

Required. Specify the Oracle SID that you want to monitor.

Default setting is "orc1".

IBM FileNet Image Manager and WAL Logfiles

Select the checkbox "IBM FileNet Image Manager and WAL Logfiles" to activate this section.

Monitors for IBM FileNet Image Manager

Select the checkbox "Monitors for IBM FileNet Image Manager" to activate this section.

IBM Content Collector, IBM FileNet Email Manager & Records Crawler Logfiles

Select the checkbox "IBM Content Collector, IBM FileNet Email Manager & Records Crawler Logfiles" to activate this section.

ICC, EMM or RC Logfile created by ECM SM LogfileErrors monitor - reduced processing load

Select the checkbox "ICC, EMM or RC Logfile created by ECM SM LogfileErrors monitor - reduced processing load" to activate this section.

Name of Logfile generated by ECM SM Monitor LogfileErrors monitor, which reads errors from ICC, EMM or RC Logfile

Directory where logfile of ECM SM Monitor LogfileErrors is located, which reads errors from ICC, EMM or RC Logfile

Monitors for IBM Content Collector, IBM FileNet Email Manager & Records Crawler

Select the checkbox "Monitors for IBM Content Collector, IBM FileNet Email Manager & Records Crawler" to activate this section.

ServerLink 4 Logfiles

Select the checkbox "ServerLink 4 Logfiles" to activate this section.

CSAR, SSAR and ISAR (NLS) Logfiles

Select the checkbox "CSAR, SSAR and ISAR (NLS) Logfiles" to activate this section.

Capture Trace Logfiles

Select the checkbox "Capture Trace Logfiles" to activate this section.

Capture FaxEntry Logfiles

Select the checkbox "Capture FaxEntry Logfiles" to activate this section.

ISCE Logfiles

Select the checkbox "ISCE Logfiles" to activate this section.

ISCE Logfile name
Required. Specify the name of the ISCE logfile.

ISCE Logfile directory
Required. To specify the directory where the ISCE logfiles are located, replace <ISCE_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

ACSAP Logfiles

Select the checkbox "ACSAP Logfiles" to activate this section.

ACSAP Logfile directory
Required. Specify the directory where the ACSAP logfiles are located, e.g "C:/ACSAP/logs".

Note: Use "/" instead of "\".

Apache Error Logfile
Required. Specify the name of the Apache error logfile, e.g. "ACSAP_J2EEDD_MM_YYYY*.txt".

You can use wildcards to monitor more than one logfile at once or placeholder for the actual date (DD, MM, YYYY).

IBM P8 Process Engine Log files

Select the checkbox "IBM P8 Process Engine Log files" to activate this section.

P8 PE 5.0 Manager system Logfile name
Required. Specify the name of the P8 PE 5.0 Manager system logfile name. Default value: pemgr_system.log

P8 PE 5.0 Manager Log directory
Required. To specify the directory where the P8 PE Manager system logfile is located, replace <P8_5.0_Manager_Log_Directory> by the PE 5.0 Manager logfile path.

Example: C:/Program Files/IBM/ProcessEngine/data/logs

Note: Use "/" instead of "\".

P8 PE 5.0 Server Logfile name
Required. Specify the name of the P8 PE 5.0 Server logfile name. Default value: pesvr_system.log

P8 PE 5.0 Server Log directory
Required. To specify the directory where the P8 PE 5.0 Server logfile is located, replace <P8_5.0_Server_Log_Directory> by the PE 5.0 Manager logfile path.

Example for the virtual PE server called 'default': C:/Program Files/IBM/ProcessEngine/data/pesrv.default/logs

Note: Use "/" instead of "\".

BP8 Logfiles

Select the checkbox "BP8 Logfiles" to activate this section.

BP8 Logfile name
Required. Specify the name of the BP8 logfile.

BP8 Logfile directory
Required. To specify the directory where the BP8 logfile is located, replace <PB8_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

BP8 Logfile name
Required. Specify the name of the BP8 logfile.

BP8 Logfile directory
Required. To specify the directory where the BP8 logfile is located, replace <PB8_Operations_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

ISRA Logfiles

Select the checkbox "ISRA Logfiles" to activate this section.

ISRA Logfile name
Required. Specify the name of the ISRA logfile. In most cases, this file is called "ISRA.log".

You can use wildcards to monitor more than one logfile at once (e.g. "ISRA*.log").

ISRA Logfile directory
Required. To specify the directory where the ISRA logfiles are located, replace <ISRA_Logging_Directory> by your current installation setting.

Note: Use "/" instead of "\".

P8 Server Error Log

Select the checkbox "P8 Server Error Log" to activate this section.

P8 Server Error Logfile name
Required. Specify the name of the P8 Server Error logfile. Default value: p8_server_error.log

P8 Logfile directory
Required. To specify the directory where the P8 Server Error logfile is located, replace <P8_Logging_Directory> by your current installation setting.

Example for an IBM WebSphere based P8 server is: C:/Program Files/IBM/WebSphere/AppServer/profiles/default/FileNet/server1

Note: Use "/" instead of "\".

PPM Tracefiles

Select the checkbox "PPM Tracefiles" to activate this section.

RMI Logfiles

Select the checkbox "RMI Logfiles" to activate this section.

Router Tracefiles

Select the checkbox "Router Tracefiles" to activate this section.

Process Analyzer Logfiles

Select the checkbox "Process Analyzer Logfiles" to activate this section.

IBM FileNet Listener

Select the checkbox "IBM FileNet Listener" to activate this section.

Configuration file for IBM FileNet Listener

Required. Specify the name of the IBM FileNet Listener configuration file. The file must be located in the subdirectory "repos/install/custom" of the WebConsole server installation.

IBM FileNet Content Services Logfiles

Select the checkbox "IBM FileNet Content Services Logfiles" to activate this section.

IBM FileNet Content Services Auditlog

Select the checkbox "IBM FileNet Content Services Auditlog" to activate this section.

Verity Logfiles

Select the checkbox "Verity Logfiles" to activate this section.

Monitors for IBM FileNet Content Services

Select the checkbox "Monitors for IBM FileNet Content Services" to activate this section.

IBM Content Manager Version 8 Eventlog

Select the checkbox "IBM Content Manager Version 8 Eventlog" to activate this section.

Prefilter for incoming events from table ICMSTITEMEVENTS
Optional. Define a prefilter for incoming events from table ICMSTITEMEVENTS to process only those events that match this filter.

Prefilter for outgoing events from table ICMSTITEMEVENTS
Optional. Define a prefilter for outgoing events from table ICMSTITEMEVENTS to discard all events that match this filter.

Prefilter for incoming events from table ICMSTSYSADMEVENTS
Optional. Define a prefilter for incoming events from table ICMSTSYSADMEVENTS to process only those events that match this filter.

Prefilter for outgoing events from table ICMSTSYSADMEVENTS
Optional. Define a prefilter for outgoing events from table ICMSTSYSADMEVENTS to discard all events that match this filter.

IBM CM Library Server Logfile

Select the checkbox "IBM CM Library Server Logfile" to activate this section.

IBM CM Library Server Logfile directory
Required. To specify the directory where the Library Srever logfile is located, replace <DB2CMV8_HOME> by your current installation setting, e.g. "C:/Program FilesIBM/db2cmv8".

The logfile name and path can be found in the system administration client,

Library Server Parameters - Configurations - Library Server Configuration - Log and Trace - Trace file name

or with query "select LIBRARYSERVERID, TRACEFILENAME from ICMSTSYSCONTROL"

Note: Use "/" instead of "\".

IBM CM Library Server Logfile

Required. Specify the name of the Library Server logfile, e.g. "icmserver.log".

You can use wildcards to monitor more than one logfile at once (e.g. "icmserver*.log").

The logfile name and path can be found in the system administration client,

Library Server Parameters - Configurations - Library Server Configuration - Log and Trace - Trace file name

or with query "select LIBRARYSERVERID, TRACEFILENAME from ICMSTSYSCONTROL"

IBM Content Manager Version 8 Agent and Common Store Server Error Log

Select the checkbox "IBM Content Manager Version 8 Agent and Common Store Server Error Log" to activate this section.

Logfile directory

Required. Specify the directory where the IBM Content Manager Version 8 Agent and Common Store Server Error Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

IBM Common Store Retrieve Logfile

Select the checkbox "IBM Common Store Retrieve Logfile" to activate this section.

Logfile directory

Required. Specify the directory where the IBM Common Store Retrieve Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name

Required. Specify the name of the IBM Common Store Retrieve Logfile.

IBM Common Store Archive Logfile

Select the checkbox "IBM Common Store Archive Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Common Store Archive Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Common Store Archive Logfile.

IBM Content Manager Resource Manager Migrator Logfile

Select the checkbox "IBM Content Manager Resource Manager Migrator Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Content Manager Resource Manager Migrator Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Content Manager Resource Manager Migrator Logfile.

IBM Content Manager Resource Manager Asyncr Logfile

Select the checkbox "IBM Content Manager Resource Manager Asyncr Logfile" to activate this section.

Logfile directory
Required. Specify the directory where the IBM Content Manager Resource Manager Asyncr Logfiles are located.

You can use wildcards ("*" and "?") to searchin one than more directory.

Note: Use "/" instead of "\".

Logfile name
Required. Specify the name of the IBM Content Manager Resource Manager Asyncr Logfile.

IBM Content Manager Resource Manager Logfile

Select the checkbox "IBM Content Manager Resource Manager Logfile" to activate this section.

IBM CM Resource Manager Logfile directory
Required. To specify the directory where the Resource Manager logfile is located, replace <WASHOME> by your current installation setting, e.g. "/usr/WASCMSTU01".

Note: Use "/" instead of "\".

IBM CM Resource Manager Logfile
Required. Specify the name of the Resource Manager logfile, e.g. "icmrm.logfile.413818".

You can use wildcards to monitor more than one logfile at once (e.g. "icmrm.logfile.*").

"

IBM Content Manager On Demand Database Log

Select the checkbox "IBM Content Manager On Demand Database Log" to activate this section.

IBM WebSphere Application Server System out / system error Logfiles

Select the checkbox "IBM WebSphere Application Server System out / system error Logfiles" to activate this section.

WAS system out / system error Logfile directory (first instance/server/profile)
Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (first instance/server/profile)
Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (second instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (second instance/server/profile)

Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (third instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (third instance/server/profile)

Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (fourth instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (fourth instance/server/profile)

Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (fifth instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (fifth instance/server/profile)

Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

WAS system out / system error Logfile directory (sixth instance/server/profile)

Required. To specify the directory where the WAS system output / system error logfiles are located. Leave this parameter unset to ignore this parameter.

Note: Use "/" instead of "\".

WAS system out / system error Logfile name (sixth instance/server/profile)

Required. Specify the name of the WAS system out / system error logfile.You can specify comma separated files, if you want to check more than one file in the previously defined directory

Apache Access Logfiles

Select the checkbox "Apache Access Logfiles" to activate this section.

Apache Logfile directory

Required. To specify the directory where the Apache logfiles are located, replace <APACHE_HOME> by your current installation setting, e.g. "c:/Program Files/Apache Group/apache2".

Note: Use "/" instead of "\".

Apache Access Logfile

Required. Specify the name of the Apache access logfile, e.g. "access.log".

You can use wildcards to monitor more than one logfile at once (e.g. "*access.log").

Apache Error Logfiles

Select the checkbox "Apache Error Logfiles" to activate this section.

Apache Logfile directory

Required. To specify the directory where the Apache logfiles are located, replace <APACHE_HOME> by your current installation setting, e.g. "c:/Program Files/Apache Group/apache2".

Note: Use "/" instead of "\".

Apache Error Logfile

Required. Specify the name of the Apache error logfile, e.g. "error.log".

You can use wildcards to monitor more than one logfile at once (e.g. "*error.log").

Tivoli Storage Manager Logfiles

Select the checkbox "Tivoli Storage Manager Logfiles" to activate this section.

TSM dsierror logfile directory
Required. Specify the directory where the TSM logfiles are located.

Note: Use "/" instead of "\".

TSM logfile names to be checked
Required. Specify the name of the TSM logfile. You can use the wildcard "*" to monitor more than one logfile at once.

TSM dsmerror logfile directory
Required. Specify the directory where the TSM logfiles are located.

Note: Use "/" instead of "\".

TSM logfile names to be checked
Required. Specify the name of the TSM logfile. You can use the wildcard "*" to monitor more than one logfile at once.

ICC4SAP Error Logfiles

Select the checkbox "ICC4SAP Error Logfiles" to activate this section.

ICC4SAP Logfile directory
Required. Specify the directory where the ICC4SAP Error logfiles are located, e.g "C:/IBM/ICCSAP/Server/instances/RT1".

Note: Use "/" instead of "\".

ICC4SAP Error Logfile
Required. Specify the name of the ICC4SAP Error logfile, e.g. "icc_error.log".

You can use wildcards to monitor more than one logfile at once or placeholder for the actual date (DD, MM, YYYY).

SAPIC Error Logfiles

Select the checkbox "SAPIC Error Logfiles" to activate this section.

SAPIC Logfile directory

Required. Specify the directory where the SAPIC Error logfiles are located, e.g "C:/CENIT/import-manager-2.8/log".

Note: Use "/" instead of "\".

SAPIC Error Logfile

Required. Specify the name of the SAPIC Error logfile, e.g. "sapic.log".

You can use wildcards to monitor more than one logfile at once or placeholder for the actual date (DD, MM, YYYY).

Agent waits for server to connect

Select the checkbox "Agent waits for server to connect" to activate this section.

Device to listen for server to connect

Required. Specify the local network device (ip address) on which the agent is listening for incoming requests from the server(s). This should be the address of the network card connected to the internal (private) network. Specify * to listen on all network devices.

Port to listen for server to connect

Required. Specify the local port on which the agent must listen for the server(s) to connect.

Default setting is "11030".

Servers ip address

Required. Specify the ip address of the server(s) allowed to connect to this agent. The ip address may contain the wildcard "*" to allow a range of ip addresses to connect (e.g. "10.0.114.*") or just "*" to allow all servers.

Local port on server which is used to connect

Required. Specify the port the server is connecting from or "*" to allow all server ports. If a specific port is given, the agent will only accept connections coming from this port.

Default setting is "11031".

Minimum encryption level to be used

Optional. Specify the encryption level (1-3) to use for communication with the server(s). If you leave this field empty, the encryption level will be set to "1".

Appendix A. Further CALA_REX installation and configuration options

Installing CALA_REX to run as non-root

If CALA_REX is not installed as user root or administrator, configuring of autostart may fail because of lacking permissions. This can be configured retrospectively by calling the script **cr_cli_cfg.sh** (CALA_REX client) or **cr_srv_cfg.sh** (CALA_REX server).

If CALA_REX is not installed as user root on UNIX / Linux systems the Syslog settings cannot be changed/adjusted by the CALA installation program. If Syslog monitoring is required use 'USE_EXISTING_SETTINGS' (the default value) for the Syslog settings. Note: If changes cannot be done no warning or error message is displayed during CALA installation.

NOTE If the CALA_REX client or server has been installed from root or Administrator, the steps described in this chapter have already been performed and don't need to be executed again.

Running shell scripts on Microsoft Windows

The shell scripts described above need the Windows shell to be in the path. Please set the environment variable `CENIT_ROOT` to your cenit-root directory and add `%CENIT_ROOT%/shell` to the `PATH` environment variable.

The shell scripts are started with the command

sh.exe [script-name] [script parameters]

Creating the environment scripts

Write access to **/etc/cenit** is needed for this step.

The environment script is used from ECM SM applications to determine the cenit-root directory. The script is named **set_cenit_env.sh** and is located in the cenit-root directory. The directory **/etc/cenit** contains a link to this script.

The script **cr_cli_cfg.sh** (**cr_srv_cfg.sh** for CALA_REX server) is used to create and remove the env script and the link in **/etc/cenit**. Before calling this script, the environment variable `CENIT_ROOT` needs to be set.

NOTE On UNIX systems, you need root permissions to execute both calls successfully as the calls create links in /etc and entries in /etc/inittab (see section The autostart links below for details).

To create the script and link call:

cr_cli_cfg.sh `create-env-script`

The both files are removed by calling:

cr_cli_cfg.sh `remove-env-script`

On Microsoft Windows systems, a copy of the original `set_cenit_env.sh` script is located in `[System-Root]/system32/Drivers/etc/cenit`.

Configuring autostart

To configure CALA_REX for autostart call:

cr_cli_cfg.sh `autostart`

To remove CALA_REX from the startup procedure, call the script with the remove-autostart parameter:

cr_cli_cfg.sh `remove-autostart`

NOTE You will need administrative permissions to add or remove CALA_REX to/from autostart.

The autostart links

On Microsoft Windows, CALA_REX client and server are registered as service and can therefore be managed via the Windows service manager.

On Unix systems, the script creates links in the `init.d` directories. The location of the init scripts depends on the operating system, refer to the following table for information (for CALA_REX server replace `FileNetCrxCli` with `FileNetCrxSrv`).

If an installation id is given during install, the links are extended with the installation id as a postfix.

Operating system	path of start/stop script	autostart links
AIX	`/etc/rc.FileNetCalaRexCli`	entry in `/etc/inittab`

Linux	`/etc/init.d/FileNetCalaRexCli`	`/etc/init.d/rc3.d/S500FileNetCalaRexCli`
		`/etc/init.d/rc5.d/S500FileNetCalaRexCli`
		`/etc/init.d/rc3.d/K500FileNetCalaRexCli`
		`/etc/init.d/rc5.`

Operating system	path of start/stop script	autostart links
		`d/K500FileNetCalaRexCli`
HP-UX	`/sbin/init.d/FileNetCalaRex-Cli`	`/sbin/rc3.d/S500FileNetCalaRex-Cli` `/sbin/rc0.d/K500FileNetCalaRex-Cli`
SUN Solaris	`/etc/init.d/FileNetCalaRexCli`	`/etc/rc3.d/S500FileNetCalaRexCli` `/etc/rc0.d/K500FileNetCalaRexCli`

The start/stop script is a link to `CALA_REX.sh` in the CALA_REX installation directory.

Adjusting CALA_REX configuration settings

Note: A administrator requires write access to the configuration file and directory to change the CALA_REX configuration files. Starting the configuration commands (see below) requires the same rights.

After installing the CALA_REX client, you can adjust the settings with the script **cr_cli_cfg.sh**. On the CALA_REX server, the configuration script is called **cr_srv_cfg.sh**. The parameters accepted by these scripts are the same.

Usage:

./cr_srv_cfg.sh configure <option>=<value>

./cr_cli_cfg.sh configure <option>=<value>

The following table shows the available options and their default values, without the transaction log parameters. The latter are described in their own section below.

Option	Description and default value	Note
debugfile	the name of the debugfile	
debuglevel	the debug level (0 - log all ... 9 - log fatal errors only) Default Value: 0	
listenport	port to accept connections on format: hostname:port *Default Value:* 127.0.0.1:23802 (server) 127.0.0.1: 23804 (client)	
description	machine description	
ip-address	the machines ip address Default Value: automatically detected	
cenit-root	the CENIT_ROOT directory	
cenit-instid	the installation id (if several instances are installed on one machine)	
tempdir	the directory used for temporary files	
pathadd	a string to add to the PATH of child processes	
libpathadd	a string to add to the libpath variable of child processes	
usessl	switch for using SSL possible values: true, false Default Value:	

Option	Description and default value	Note
	true	
`pingperiod`	the period (in seconds) to check if the server connection is alive Default Value: 120	
`server`	the host and port of the CALA_REX server format: hostname:port	client only
`localport`	the outgoing port when connection to the server, format: hostname:port Default Value: automatically assigned	client only
`java.argument.%d`	arguments to be passed to the java virtual machine (replace %d with a number starting from 0)	server only
`java.libjvm`	name, or path an name of the java virtual machine library to be used Default Value: jvm on Windows, libjvm on Unix	server only
`hostdb.database`	the url of the database holding the hosts table Default Value: (see Format of database urls)	server only
`hostdb.databasehost`	the host running the database Default Value: 127.0.0.1	server only, not used in the jdbc context
`hostdb.user`	the user for accessing the host table Default Value: webtpladmin	server only
`hostdb.passwd`	the (encrypted) password for accessing the hosts table Default Value: 00001204190d081409081e00	server only
`hostdb.table`	the name of the hosts table Default Value: CALA_REX_hosts	server only
`hostdb.col.hostname`	the name of the hostname column Default Value: Hostname	server only
`hostdb.col.description`	the name of the host description column Default Value:	server only

Option	Description and default value	Note
	Description	
`hostdb.col.os`	the name of the hosts' operating system column Default Value: OS	server only
`hostdb.col.cenit_root`	the name of the hosts' cenit root column Default Value: CENIT_ROOT	server only
`hostdb.col.cala_rex_version`	the name of the hosts' CALA_REX version column Default Value: CALA_REX_Version	server only
`hostdb.col.ip_address`	the name of the hosts' ip address column Default Value: IP_Address	server only
`hostdb.col.status`	the name of the hosts' status column Default Value: Status	server only
`hostdb.col.ciphers`	The database column to receive the cipher algorithms used on the client connection Default Value: *`CSM_CIPHERS`*	server only
`hostdb.col.cert`	The database column to receive the client's certification data Default Value: *`CSM_CERT`*	server only
`hostdb.status.online`	the value for "host is online" Default Value: online	server only
`hostdb.status.offline`	the value for "host is offline" Default Value: offline	server only
`hostdb.col.type`	the name of the hosts' type column Default Value: Type	server only
`hostdb.type.server`	the value for "host is running CALA_REX server" Default Value: SERVER	server only

Option	Description and default value	Note
`hostdb.type.client`	the value for "host is running CALA_REX client" Default Value: CLIENT	server only
`permdb.database`	the url of the database holding the user permissions table Default Value: (see Format of database urls)	server only, not used in the jdbc context
`permdb.user`	the user for accessing the permissions table Default Value: webtpladmin	server only
`permdb.passwd`	the (encrypted) password for accessing the permissions table Default Value: 00001204190d081409081e00	server only
`permdb.table`	the name of the permissions table Default Value: rights	server only
`permdb.field.user`	the name of the user column Default Value: User	server only
`permdb.field.passwd`	the name of the password column Default Value: password	server only
`permdb.perms.table`	the name of the privileges table Default Value: user_priv	server only
`permdb.perms.field.user`	the name of the user column in the privileges table Default Value: User	server only
`permdb.perms.field.type`	the name of the type column in the privileges table Default Value: Type	server only
`permdb.perms.field.allow`	the name of the allowed column in the privileges table Default Value: allow	server only

Option	Description and default value	Note
`permdb.perms.field.deny`	the name of the deny column in the privileges table Default Value: deny	server only
`ssl.allowanoncnx`	Specifies for which connection types anonymous connections are allowed. One of the values: *`none`*, *`auto`*, *`application`*, *`server`*, *`client`*, *`client_and_application`* Default Value: *`client_and_application (srv)`* *`auto`* (cli)	*`auto`* allows anonymous connections only if the file specified in **`ssl.trustcert.file`** is not found.
`ssl.trustcert.file`	The file containing a trusted certificate Default Value: **`$CENIT_↵ ROOT/keys/trusted_↵ cas.pem`**	
`ssl.trustcert.dir`	A directory containing trusted certificates Default Value: *`NULL`*	
`ssl.cipherlist`	The list of ciphers to use (see OpenSSL documentation for details) Default Value: **`ALL:!LOW:↵ !EXP:↵ !MD5:↵ @STRENGTH`**	
`ssl.verifydepth`	The maximum length of the verify chain. Default Value: *`3`*	
`ssl.certificatestore`	The name of the certificate store file. This file contains the certificates to be send to the peer. It may contain several certificates (e.g. some certificates of the certificate chain) Default Value: **`$CENIT_↵ ROOT/keys/cala_rex_↵ srv_cert.↵ pem`** (srv)	

Option	Description and default value	Note
	$CENIT_↵ ROOT/keys/cala_rex_↵ cli_cert.↵ pem (cli)	
ssl.keystore	The name of the keystore file. This files contains the private key Default Value: **$CENIT_↵ ROOT/keys/cala_rex_↵ srv_priv.↵ pem** (srv) **$CENIT_↵ ROOT/keys/cala_rex_↵ cli_priv.↵ pem** (cli)	
ssl.keystore.password	The password for opening the keystore file (pwdcrypt encrypted) Default Value: *11201e1900242a0b1733041d00313↵ 30b0116422a1600* (srv) *11201e1900242a1b3e50171606313↵ 30b0116422a1600* (cli)	

The value may contain reference to environment variables or to other properties defined before.

The syntax for referring environment variables is:

`$(env:[variable_name])`

prior defined properties can be accessed using the following syntax:

`$(prop:[property_name])`

NOTE The $ symbol needs to be quoted if passed as a parameter to the cfg script.

Examples

To add the directories **/usr/local/bin** and **/etc/Tivoli/bin** to the PATH setting, enter the following command:

./cr_cli_cfg.sh configure 'pathadd=/usr/local/bin:/etc/Tivoli/bin'

NOTE On Windows systems, the existing `pathadd` entry for the shell (`$(prop:cenit-root)/shell`) must not be removed. If you need to add more entries to the path, you must always add the entry for the shell as well, e.g.

./cr_cli_cfg.sh configure 'pathadd=$(prop:cenit-root)/shell:C:/Tools/perl/bin'

Format of database urls

Database urls must be given in the following format: <ctk-driver class>:<jdbc-driver class>:<jdbc-url>

The CTK Driver class must be *de.cenit.eb.sm.ctk.db.DB2CTKDriver* when accessing a DB2 database or *de.cenit.eb.sm.ctk.db.DefaultCTKDatabaseDriver* for all other databases.

```
de.cenit.eb.sm.ctk.db.DefaultCTKDatabaseDriver:com.mysql.jdbc.Driver:jdbc:mysql://
localhost/CALA
```

Example url for accessing the mysql database CALA

Additional configuration settings for authentication for the CALA_REX server (JAAS configuration)

ECM SM uses JAAS for authenticating users. For details about JAAS see the JAAS Homepage at http://docs.oracle.com/javase/7/docs/technotes/guides/security/jaas/JAASRefGuide.html.

On the ECM SM server, there are two additional configuration files for user authentication: **$__envvar_CENIT_ROOT_name__/cala_rex/cala_rex_auth.cfg** and **$__envvar_CENIT_ROOT_name__/cala_rex/cala_rex_altauth.cfg**.

These files configure the authentication mechanism used for authenticating users. The file **cala_rex_auth.cfg** configures the authentication mechanism to be used for normal users. A special authentication mechanism can be configured for exactly one user in the file **cala_rex_altauth.cfg**.

```
<propertygroup name="alt.authentication">
  <property name="alt.user" value="admin"/>
  <property name="implementation.class" value="de.cenit.eb.sm.ctk.aal.DefaultAALDriver"/>
  <!-- configuration for the kerberos login -->
  <propertygroup name="loginmodule.0">
    <property name="class" value="com.sun.security.auth.module.Krb5LoginModule"/>
    <property name="controlflag" value="required"/>
    <propertygroup name="systemproperties">
      <property name="java.security.krb5.realm" value="MYFSMDOMAIN" />
      <property name="java.security.krb5.kdc" value="dc.myfsmdomain.example" />
    </propertygroup>
    <propertygroup name="options">
      <property name="useTicketCache" value="true"/>
      <property name="ticketCache" value="${user.krb5cc}"/>
    </propertygroup>
  </propertygroup>
```

```
</propertygroup>
```

An example cala_rex_altauth.cfg file

The format of both files is nearly identical. The property *alt.user* is only valid in the **cala_rex_altauth.cfg** file.

The name of the outermost property group must be *authentication* in **cala_rex_auth.cfg** and *alt.authentication* in **cala_rex_altauth.cfg**.

The *implementation.class* property is ECM SM internal and should always been set to *de.cenit.eb.sm.ctk.aal.DefaultAALDriver*.

JAAS supports configurations with several login mechanism (implemented in so called login modules) to be chained. Add a property group for each login module to be used. The groups are named loginmodule followed by a period and serial number (starting with 0). For each group the following parameters can be configured:

- *class*: the module implementation class
- *controlflag*: sets the module's control flag, JAAS supports the following values: *required*, *requisite*, *sufficient* and *optional*

There are also two property groups to configure the login module. The property group *systemproperties* specifies the java system property settings to be passed to the module, the group *options* specifies the options to be passed to the login module. For the supported system properties and options refer to the documentation of the used login module.

Configuration options of the ECM SM native login module

The ECM SM login module is implemented in the class *de.cenit.eb.sm.ctk.aal.module.CtkWebTemplateLoginModule* and supports the following options (system property settings are not used):

- *database.url*: the database url (see Format of database urls)
- *database.user*: the name of the database user
- *database.passwd*:the (pwdcrypt encrypted) password of the database user
- *sql.getpasswd*: the sql statement for selecting a user's group (the string *{0}* is replaced with the username)
- *sql.getgroups*:the sql statement for getting the groups a user is assigned to (the string *{0}* is replaced with the username

Configuration options of the ECM SM JNDI login module

There is a also a login module for accessing JNDI sources (see the JNDI homepage at http://docs.oracle.com/javase/7/docs/technotes/guides/jndi/index.html). This module can be used to access LDAP directory services and is implemented in the class *de.cenit.eb.sm.ctk.aal.*

module.CtkAALJndiLoginModule.

The JNDI login module takes the following configuration options:

- *initial.context.env.java.naming.factory.initial*: Classname of the factory for creating the JNDI context.
- *initial.context.env.[varname]*: Sets an environment variable *[varname]* for creating the JNDI context object.
- *initial.context.env.provider.url*: The LDAP URL used for user authentication.
- *group.provider.url*: The URL used for finding the user's groups.
- *group.query*: The LDAP query for finding the user's groups.
- *group.attribute*: The attribute containing a group's name.
- *group.name.pattern*: A regular expression for post-processing the groupname returned by the query.
- *group.name.index*: The index of the groupname in the group mask specified.
- *authentication*: One of *internal* or *external*. Use *external* if authentication is done by another module e.g. the kerberos module. The *CtkAALJndiLoginModule* is used only for detecting the user's groups in this case.

These configuration parameters may contain the variables *{0}* (for username) and *{1}* (for password) which are replaced with the corresponding values.

```
<propertygroup name="authentication">
  <!-- To use the default configuration just adjust the two values
       "domain.name.uppercase" and "domain.controller.name".
  -->
  <!-- use the CTK ALL driver -->
  <property name="implementation.class" value="de.cenit.eb.sm.ctk.aal.DefaultAALDriver"/>
  <!-- configuration for the kerberos login -->
  <propertygroup name="loginmodule.0">
    <property name="class" value="com.sun.security.auth.module.Krb5LoginModule"/>
    <property name="controlflag" value="required"/>
    <propertygroup name="systemproperties">
      <!-- realm is the domain in uppercase letters:
           default value: DOMAIN in uppercase letters
       -->
      <property name="java.security.krb5.realm" value="FSMDOMAIN" />
      <!--kdc is the domain controller:
           default value: the name of the domain server
      -->
      <property name="java.security.krb5.kdc" value="dc.fsmdomain.example" />
    </propertygroup>
    <propertygroup name="options">
      <property name="useTicketCache" value="true"/>
      <property name="ticketCache" value="${user.krb5cc}"/>
    </propertygroup>
  </propertygroup>
  <!-- configuration for the group query via ldap -->
  <propertygroup name="loginmodule.1">
    <property name="class" value="de.cenit.eb.sm.ctk.aal.module.CtkAALJndiLoginModule"/>
```

```
    <property name="controlflag" value="required"/>
    <propertygroup name="options">
      <propertygroup name="initial.context.env">
        <property name="java.naming.factory.initial" value="com.sun.jndi.ldap.LdapCtxFactory" />
        <!-- provider.url is the ldap url of the domain server
               default value: ldap://DOMAINSERVER:389
         -->
        <property name="java.naming.provider.url" value="ldap://dc.fsmdomain.example:389" />
        <property name="java.naming.security.authentication" value="GSSAPI" />
        <property name="javax.security.sasl.qop" value="auth" />
      </propertygroup>
      <!-- group.provider.url is the ldap url for searching groups
        default value: ldap://DOMAINSERVER:389
      -->
      <property name="group.provider.url" value="ldap://dc.fsmdomain.example):389"/>
      <!-- group.query is the ldap group query string
        default value: sn={0}
      -->
      <property name="group.query" value="sn={0}"/>
      <!-- group.attribute is the attribute containing the group names(s): -->
      <property name="group.attribute" value="memberOf"/>
      <!-- group.name.pattern is the groupname pattern for cutting the groupname from the group text:
        default value: CN=([^,]*),.*
      -->
      <property name="group.name.pattern" value="CN=([^,]*),.*"/>
      <!-- group.name.index is the index of the groupname in the patter:
        default value: 1
      -->
      <property name="group.name.index" value="1"/>
      <property name="authentication" value="external"/>
    </propertygroup>
  </propertygroup>
</propertygroup>
```

An example configuration using the JNDI login module in combination with the kerberos login module

Additional configuration settings for the transaction log

The following table lists all possible transaction log specific CALA_REX configuration parameters.

NOTE For better visual appearance the prefix 'translog' is removed from every attribute in the following table.

name attribute	Description and allowed value(s) of the *value* attribute
.actions	Type of transactions to be logged. The values are identical to the values of the *TypeText* field of the *CSM_DEF_TRANSTYPES* database table. The default is to log all types of transactions (value = *). A list of values must be separated with spaces or commas. Allowed value(s) of the *value* attribute:

name attribute	Description and allowed value(s) of the *value* attribute
	*login, login-reply, get-file, put-file, list-files, list-clients, mkdir, exec, has-permission, status, ping, register, shut-down, *.*
.target	Target of the log: *file* means a csv logfile, *db* means the server's database. The default is *db*. Allowed value(s) of the *value* attribute: *file*, *db*
.file.filename	If *target* is set to *file*, this property sets the path and filename the log should be written. If *target* is set to *db*, this property will be ignored. The filename can contain valid strftime format strings, which are evaluated the very first time, the file is created. The default is **crxtlog.log**. Allowed value(s) of the *value* attribute: *<filename>*
.db.host	If target is set to *db*, this property sets the database table name, the log should be written. If target is set to *file*, this property will be ignored. The default is *CSM_TRANSACTIONS*. Allowed value(s) of the *value* attribute: *<database host>*
.db.name	If target is set to *db*, this property sets the database name, the log should be written. If target is set to *file*, this property will be ignored. The default is *CALA*. But for a productive environment, it must be something like *<complete-jdbc-url>/CALA*. Allowed value(s) of the *value* attribute: *<database name>*
.db.user	If target is set to *db*, this property sets the user's name to access the database. If target is set to *file*, this property will be ignored. The default is *webadmin*. Allowed value(s) of the *value* attribute: *<database user>*
.db.passwd	If target is set to *db*, this property sets the database user's password. If target is set to *file*, this property will be ignored. The default is the standard password for the above named user. Allowed value(s) of the *value* attribute: *<database user's password>*
.db.logtable.tablename	If target is set to *db*, this property sets the database table name, the log should be written. If target is set to *file*, this property will be ignored. The default is *CSM_TRANSACTIONS* for MySQL and *CALA.CSM_TRANSACTIONS* for DB2 and MS-SQL. Allowed value(s) of the *value* attribute:

name attribute	Description and allowed value(s) of the *value* attribute
	<database log table name>
.db.logtable.columns.selectid	If target is set to *db*, this property sets the column name for the select id in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_SELECTID*. Allowed value(s) of the *value* attribute: *<name for selected column in the log table>*
.db.logtable.columns.username	If target is set to *db*, this property sets the column name for the username in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_USERNAME*. Allowed value(s) of the *value* attribute: *<name for username column in the log table>*
.db.logtable.columns.clientip	If target is set to *db*, this property sets the column name for the client IP address in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_CLIENTIP*. Allowed value(s) of the *value* attribute: *<name for client ip column in the log table>*
.db.logtable.columns.clientname	If target is set to *db*, this property sets the column name for the client hostname in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_CLIENTHOSTNAME*. Allowed value(s) of the *value* attribute: *<name for client name column in the log table>*
.db.logtable.columns.targetip	If target is set to *db*, this property sets the column name for the destination IP address in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_TARGETIP*. Allowed value(s) of the *value* attribute: *<name for target ip column in the log table>*
.db.logtable.columns.targetname	If target is set to *db*, this property sets the column name for the destination hostname in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_TARGETHOSTNAME*. Allowed value(s) of the *value* attribute: *<name for target name column in the log table>*
.db.logtable.columns.type	If target is set to *db*, this property sets the column name for the transaction type in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_TYPE*. Allowed value(s) of the *value* attribute: *<name for transaction type column in the log table>*
.db.logtable.columns.starttime	If target is set to *db*, this property sets the column name for the start time of the transaction in the log table. If target

name attribute	Description and allowed value(s) of the *value* attribute
	is set to *file*, this property will be ignored. The default is *CSM_STARTTIME*. Allowed value(s) of the *value* attribute: <*name for starttime column in the log table*>
.db.logtable.columns.endtime	If target is set to *db*, this property sets the column name for the end time of the transaction in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_ENDTIME*. Allowed value(s) of the *value* attribute: <*name for endtime column in the log table*>
.db.logtable.columns.status	If target is set to *db*, this property sets the column name for the transaction status in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_STATUS*. Allowed value(s) of the *value* attribute: <*name for status id column in the log table*>
.db.logtable.columns.params	If target is set to *db*, this property sets the column name for the transaction parameters in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_PARAMETERS*. Allowed value(s) of the *value* attribute: <*name for parameters column in the log table*>
.db.logtable.columns.output	If target is set to *db*, this property sets the column name for the transaction output in the log table. If target is set to *file*, this property will be ignored. The default is *CSM_OUTPUT*. Allowed value(s) of the *value* attribute: <*name for output column in the log table*>
.db.ttypes.tablename	If target is set to *db*, this property sets the database table name of the possible transaction types. If target is set to *file*, this property will be ignored. The default is *CSM_DEF_TRANSTYPES*. Allowed value(s) of the *value* attribute: <*database types table name*>
.db.ttypes.columns.id	If target is set to *db*, this property sets the column name for the transaction type id in the types table. If target is set to *file*, this property will be ignored. The default is *CSM_TYPEID*. Allowed value(s) of the *value* attribute: <*name for id column in the types table*>
.db.ttypes.columns.text	If target is set to *db*, this property sets the column name for the transaction description text in the types table. If target is set to *file*, this property will be ignored. The default is *CSM_TYPETEXT*. Allowed value(s) of the *value* attribute:

name attribute	Description and allowed value(s) of the *value* attribute
	<name for text column in the types table>
.db.stats.tabelname	If target is set to *db*, this property sets the database table name of the possible status values. If target is set to *file*, this property will be ignored. The default is *CSM_DEF_TRANSSTATS*. Allowed value(s) of the *value* attribute: *<database status table name>*
.db.stats.columns.id	If target is set to *db*, this property sets the column name for the status type id in the status table. If target is set to *file*, this property will be ignored. The default is *CSM_STATUSID*. Allowed value(s) of the *value* attribute: *<name for id column in the status table>*
.db.stats.columns.text	If target is set to *db*, this property sets the column name for the status description text in the status table. If target is set to *file*, this property will be ignored. The default is *CSM_STATUSTEXT*. Allowed value(s) of the *value* attribute: *<name for text column in the status table>*

Most of the time, only the *translog.actions* property will be set to alter the default, which is to log all possible types of transactions.

Beside that, the *translog.target* is also of a broader interest. Through this property, the log can be redirected into a CSV file or a database. If the *translog.target* is set to *file*, the path of the filename must be set with the *translog.file.filename property*. The default is to log into the standard ECM SM database.

NOTE The file based logging should only be used for testing or debugging purposes.

Required adjustments on the server

On the server the supported Java version must be found in the PATH to allow execution of distributed tasks.

Make sure that Perl 5 or higher is in the PATH as well. Otherwise, CALA installation will fail.

Required adjustments on the client

Make sure that Perl 5 or higher is in the PATH. Otherwise, CALA installation will fail.

Starting and Stopping CALA_REX daemons manually

Starting and Stopping CALA_REX services on Microsoft Windows

The CALA_REX client and server processes are installed as Windows services and can simply be started and stopped using the Microsoft Windows service manager. For default display and short-name of CALA_REX processes refer to the following table.

process type	display name	shortname
CALA_REX client	IBM CalaRex Client	CALA_REX_cli
CALA_REX server	IBM CalaRex Server	CALA_REX_srv

If an installation id has been given at installation time, the service display- and shortname are extended with this id as a postfix.

The processes can also be started or stopped using the **net `start`** and **net `stop`** commands, passing the service's shortname as parameter.

Examples

To start the CALA_REX client, enter at the command prompt:

net `start` `CALA_REX_cli`

To stop the CALA_REX server, enter at the command prompt:

net `stop` `CALA_REX_srv`

Starting and Stopping CALA_REX daemons in Unix systems

The CALA_REX daemons are started and stopped via the **`cala_rex.sh`** script. The scripts are located in the CALA_REX installation dir (**`$CENIT_ROOT/CALA_REX`**) and take the arguments `start`, `stop` or `restart`.

Examples

To start the CALA_REX client or server daemon:

./CALA_REX.sh `start`

To stop the CALA_REX client or server daemon:

./CALA_REX.sh `stop`

Appendix B. How To...

Adding a new monitor command table to a configuration archive

The steps how to add a new monitor command table to an existing configuration archive are described in the CALA Monitoring Manager User's Guide, chapter *Adding a command table to a configuration archive*.

Adding a new logfile to a configuration archive

The following steps describe how to add a new logfile to the ECM SM monitoring.

NOTE Changing the configuration archives can result in a corrupt configurations and may lead to unspecified behaviour of the monitoring application. It should therefore only be performed by experienced ECM SM users.

When adding a new logfile configuration, the client configuration archives need adjusting.

The archives are located in the repository directory on the ECM SM server:

- **<Installation-Directory>/repos/install/configurations**/ on Linux and Unix servers
- **<Drive>:<Installation-Directory>/repos/install/configurations/** on Windows servers

First of all, you need a **.fmt** or **.v2s** format description for the logfile to be monitored. See the *V2SEditor User's Guide* for how to create such files.

Adjusting the client archives

The client archives are named **ECM SM_CLIENT_<OS>.tar.gz**, while <*OS*> is either WINDOWS (for Microsoft Windows clients) or **UNIX** (for Linux and Unix clients).

1 Locate the archive to be changed and unpack it to a temporary directory. Use the command **gzip -dc <filename>.tar.gz|tar -xvf -** to unpack the archive, where <*filename*> is the path and name of the appropriate archive.

2 Choose a datatype for the new logfile. The datatype should be a alphanumerical string without spaces and special characters.

3 Copy the new format description file to the **fmt/** subdir. Its name should be **<datatype>.v2s**

4 Create a **<dataype>.cala** in the **tmp/<subdir>**. An existing **.cala** (e.g. **oraalert.cala**) file can be used as a template. *Be sure to adjust all paths before saving the new file.*

5 Edit the file **cala_defaults.txt** from the package root dir, add a new entry: <datatype>;;SELECTION;;1. Setting SELECTION to 1 means, that the new data type is selected by default, setting it to 0 means that it has to be checked by the user.

6 Repack the directory. Call the following command from the temporary directory where the archive has been unpacked. Be sure, that **<filename>** also contains a path.

tar -cvf filename.tar .; gzip filename.tar

Change hostname or IP address of ECM SM server

If the hostname or ip address of the ECM SM server changes, some following steps have to be done before the change takes place.

Before you adjust configuration files on the server be aware all connected agents (managed systems) are prepared to connect to the changed server.

Run the 'Update CALA_REX' task on each agent

Run the 'Update CALA_REX# task on each agent. Specify the changed server name and if necessary the server port, too. The CALA_REX and CALA agent on the managed system will be reconfigured to the new server name (and port if specified) and restarted afterwards. Note: unless the Server is adjusted, too, the managed systems can no longer be monitored and managed.

In the case the ECM SM Server components are installed on more than one server be aware to specify the correct server names. The parameter 'CalaRex / Primary Server name' is the name of the server where the CALA_REX Server component is installed, the parameter 'Event Servers' contains the semicolon separated list of available Event Servers (please do not add blanks to the list of Event Servers).

After changing the server name on all connected agents the server have to be adjusted. The following next steps are required:

Shut down the ECM SM Event Server service

Shut down the ECM SM Event Server service. In the case the system runs on WebSphere stop the deployed WAS application.

Shut down the ECM SM GUI Server service

Shut down the ECM SM GUI Server service. In the case the system runs on WebSphere stop the deployed WAS application.

Shut down the ECM SM CALA_REX service

Shut down the ECM SM CALA_REX service.

After shut down of the Server services / agents the adjustment of configuration files is necessary:

$CENIT_ROOT/cala_rex/cfg/cala_rex_finca.cfg

Verify and adjust the Database server name, if necessary.

$CENIT_ROOT/cala_rex/cfg/cala_rex_srv.cfg

Verify and adjust the Database server name, if necessary.

$CENIT_ROOT/.prodinfo/FSM_SERVER.settings

Verify and adjust the ECM SM server name and if necessary the Database server name.

$CENIT_ROOT/eventserver/cfg/finca-cfg.xml
Verify and adjust the ECM SM server name of the Event Server

$CENIT_ROOT/eventserver/cfg/db-cfg.xml
Verify and adjust the Database Server name of the Event Server

$CENIT_ROOT/gui/cfg/finca-cfg.xml
Verify and adjust the ECM SM server name of the GUI Server

$CENIT_ROOT/gui/cfg/db-cfg.xml
Verify and adjust the Database Server name of the GUI Server

$CENIT_ROOT/downloadserver/cfg/finca-cfg.xml
Optional Verify and adjust the ECM SM server name of the Download Server service

$CENIT_ROOT/initdb/cfg/db-cfg.xml
Verify and adjust the Database Server name of the initdb component (Database initialization)

$CENIT_ROOT/cala/cala_variables.txt
Verify and adjust the ECM SM server name. Note: This file only exists in the case the Monitoring Agent CALA in installed on the ECM SM server

$CENIT_ROOT/cala/logctlsrv.conf
Verify and adjust the ECM SM server name. Note: This file only exists in the case the Monitoring Agent CALA in installed on the ECM SM server

Now all stopped ECM SM services / agents can be restarted.

Restart the ECM SM Event Server service
Restart the ECM SM Event Server service. In the case the system runs on WebSphere start the deployed WAS application.

Restart the ECM SM GUI Server service
Restart the ECM SM GUI Server service. In the case the system runs on WebSphere start the deployed WAS application.

Restart the ECM SM CALA_REX Server service
Restart the ECM SM CALA_REX Server service.

On all administrative desktops the JAVA Webstart cache of the ECM SM applications need to be cleared before you use the applications again.

Start a Unix-like shell on Microsoft Windows

NOTE

The commands listed below are Unix shell commands. Users of Microsoft Windows need to open a command prompt window and call the following cmd script to open the bash:

```
<windowsDrive>:\<WindowsPath>\system32\drivers\etc\cenit
\start_shell.cmd
Example:              c:\windows\system32\drivers\etc\cenit
\start_shell.cmd
```

If the shell has started successfully, the command promt bash$ is printed. Unix shell commands can now be entered, the shell is left with the command **exit**.

Deinstall the ECM SM agent software

- Uninstall CALA using the CALA installer
- Uninstall the CALA_REX agent:
  - Microsoft Windows:
    Remove the CALA_REX agent with the *`Add or Remove Software (Windows)`* entry in the *`Administrative tools`* section or use the *`InstallAnywhere Uninstall-program`* (all platforms incl. Windows) to remove both CALA and CALA_REX from the agents.
  - Unix/Linux:
    Remove the CALA_REX agent by calling the uninstaller. The uninstaller can be found in the directory where the CALA_REX software is installed. There exists a sub-directory named `Uninstall_IBM…_CALA_REX_Agent`. Change into that directory and execute the uninstaller named `Uninstall_IBM…_CALA_REX_Agent`.
- The remaining content of the ECM SM client installation directory can be removed.

Deinstall the ECM SM server software

- Uninstall the ECM SM client software on the clients (seeDeinstall the ECM SM agent software).
- Uninstall CALA using the CALA installer
- Uninstall the CALA_REX server
  Remove the ECM SM Server software with the *`Add or Remove Software (Windows)`* entry in the *`Administrative tools`* section or use the *`InstallAnywhere Uninstall-program`* (all platforms incl. Windows) to remove both ECM SM from the server system.
- The remaining content of the ECM SM server installation directory can be removed.
  Note: in the directory **`$CENIT_ROOT/.prodinfo`** you'll find several **`*.settings`** files. If you keep the **`.prodinfo`** directory with the **`*.settings`** files the installer can use the previous settings for later installation.
- Delete the database and its content used by ECM SM.

Reinstall CALA_REX agent or server

NOTE The commands listed below are Unix shell commands. The section Start a Unix-like shell on Microsoft Windows describes how to start a Unix-like shell on Microsoft Windows systems.

Reinstall CALA_REX agent

- stop CALA_REX agent and remove start scripts/registry entries

```
cd $CENIT_ROOT
. ./set_cenit_env.sh
sh cala_rex/cala_rex.sh stop
sh cala_rex/cr_cli_cfg.sh remove-autostart
sh cala_rex/cr_cli_cfg.sh remove-env-script
```

- reinstallCALA_REX agent, configure autostart and start the service

```
cd $CENIT_ROOT
. ./set_cenit_env.sh
sh cala_rex/cr_cli_cfg.sh create-env-script
sh cala_rex/cr_cli_cfg.sh autostart
sh cala_rex/cala_rex.sh start
```

Reinstall CALA_REX server

- stop CALA_REX server and remove start scripts/registry entries

```
cd $CENIT_ROOT
. ./set_cenit_env.sh
sh cala_rex/cala_rex.sh stop
sh cala_rex/cr_srv_cfg.sh remove-autostart
sh cala_rex/cr_srv_cfg.sh remove-env-script
```

- reinstallCALA_REX agent, configure autostart and start the service

```
cd $CENIT_ROOT
. ./set_cenit_env.sh
sh cala_rex/cr_srv_cfg.sh create-env-script
sh cala_rex/cr_srv_cfg.sh autostart
sh cala_rex/cala_rex.sh start
```

Move a ECM SM agent to another server

Adjust CALA configuration

It is strongly recommended to use the task 'Update CalaRex' from the 'Migration' task archive to connect the CALA_REX and CALA Monitoring agent to a new server.

- Load the file **logctlsrv.conf** in the **cala** subdir of your ECM SM into an editor.

> **NOTE** Since the file may use Unix line separators, users of Microsoft Windows should should use WordPad instead of notepad for editing.

- Find the line staring with `remote_calmon=`. The hostname or ip address of the server is specified in the item starting with `ip!` and ending with a comma.

```
remote_calmon=ip!10.0.114.214,port!23840,conf!ip;port
```

Figure: An example configuration line from logctlsrv.conf

Adjust CALA_REX configuration

It is strongly recommended to use the task 'Update CalaRex' from the 'Migration' task archive to connect the CALA_REX and CALA agent to a new server.

- Load the file cala_rex_cli.cfg in the **cala_rex** subdir of your ECM SM into an editor.

> **NOTE** Since the file may use Unix line separators, users of Microsoft Windows should should use WordPad instead of notepad for editing.

- Find the line which configures the *server* property and alter it's value.

```
<property name="server" value="10.0.14.193:23802"/>
```

Figure: An example configuration line from cala_rex_cli.cfg

How to install ECM SM on a Windows Cluster

Requirements

- Running Windows Cluster with shared drive
- Working DNS for cluster name

The best way for running ECM SM in a cluster is to use a remote database.

Pre-Steps

First decide if you want to keep the required “3rd Party Software“ local on each node, or if you want switch it as well.

Example of a working cluster

On the shared drive:

- JDBC Driver

Installation

Begin with the installation on the active node and install everything you want to switch on the shared drive.

- Set your needed environment variables
- Run the graphical InstallAnywhere installeron the system
- Start the “WebConsole“ and install the “CALA“ part of the ECM SM Server (optional).

Take a look if the ECM SM servers registers with the cluster name in your “WebConsole“ and if the events appear correct.

- Stop all the services for the Software you installed on the shared drive and switch the startup method to manual.
- Export the registry entries for “IbmFsmRap“ and “IbmFsmSrv“ and “CALA“ (optional, if exists) and “cala_rex_srv“ service to the shared drive. You can find them by executing regedit and browsing to HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services
- Run the cluster administrator and move the active node.

Now the installation on the former active node is finished.

- On the node, that is active right now, please install again the software you wanted to keep local

- Then install again the software you wanted to have on the shared drive (e.g. JDBC driver)

Be sure to use the same installation directory as on the first node again.

- (Optional): Open a command line and switch to your <ECM SM-directory>\cala. Run cala_srv.exe – auto to install the “CALA_REX“ Service.
- Switch to CALA_REX folder (<ECM SM-directory>\cala_rex) and run cala_rex_srv.exe – auto to install “CALA_REX“ Service
- Import the previous export Services Entries for “IbmFsmRap“ and “IbmFsmSrv“ and “CALA“ (optional, if exists) and “cala_rex_srv“ by simply double clicking. This will overwrite the settings made from the manual service installation.
- Stop again all the services for the software you installed on the shared drive and switch the startup method to manual.
- Restart this node and move the cluster again.

The installation of the software is finished. Now the Cluster Administrator must be adjusted.

Preparing Cluster Administrator

When the second node is up again start the cluster administrator.

- Right click on the Cluster Group and add new Resource
- Give a name and choose “Generic Service“ from Resource type.
- Leave the possible owners like it is
- From the dependencies choose the Cluster Name and the Shared drive
- Enter Service name for the application
- There is no need to add a Registry Key. Just click finish.

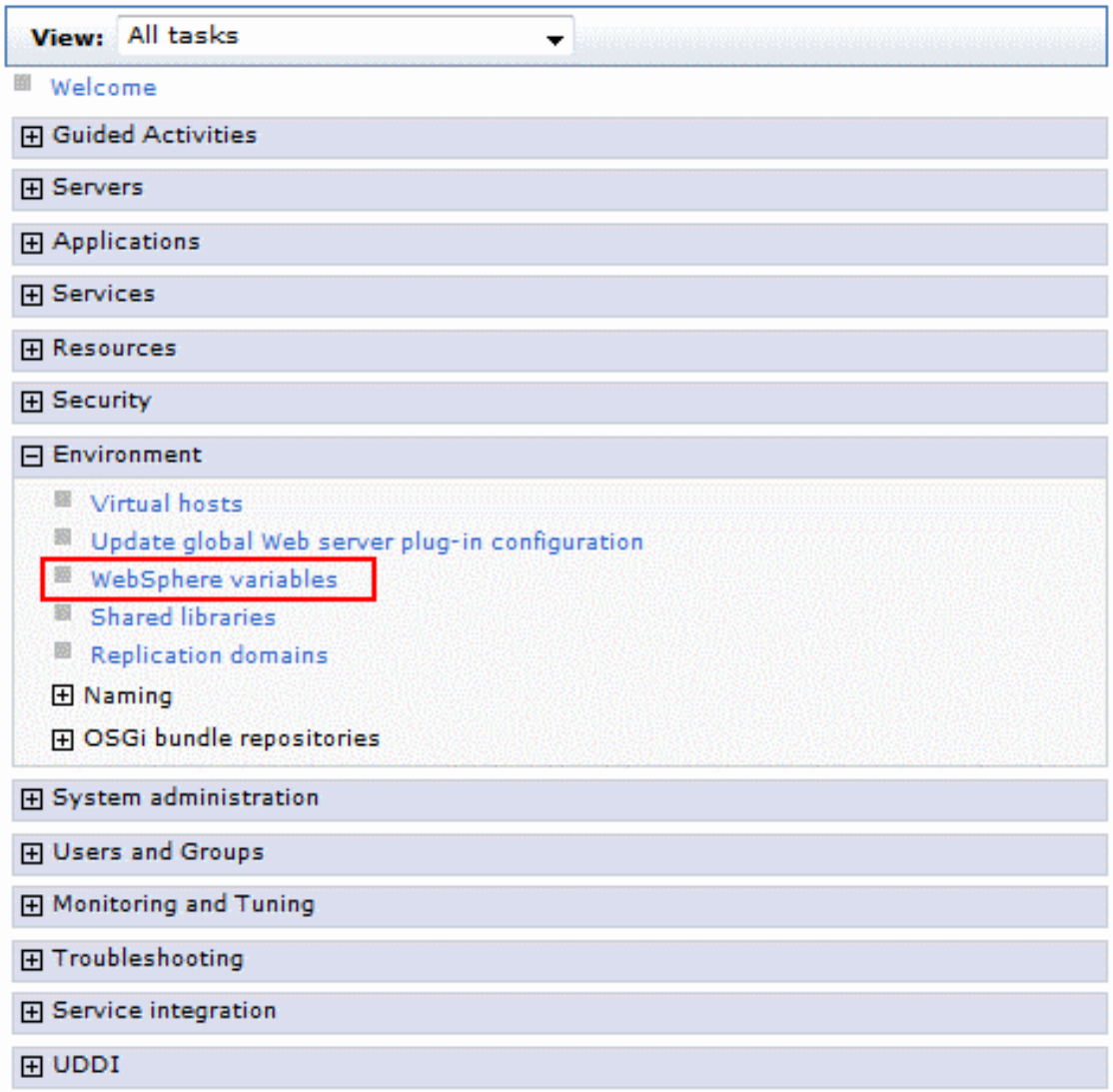
Repeat these steps for “IbmFsmRap“ and “IbmFsmSrv“ and “CALA“ (optional, if exists) and “cala_rex_srv“ Service. Start with “CALA_REX“ and use the following dependencies: Cluster Name and Shared Drive.

The ECM SM cluster installation is now completed. Do some test by moving the active node and try the access the “WebConsole“ on the clustername.

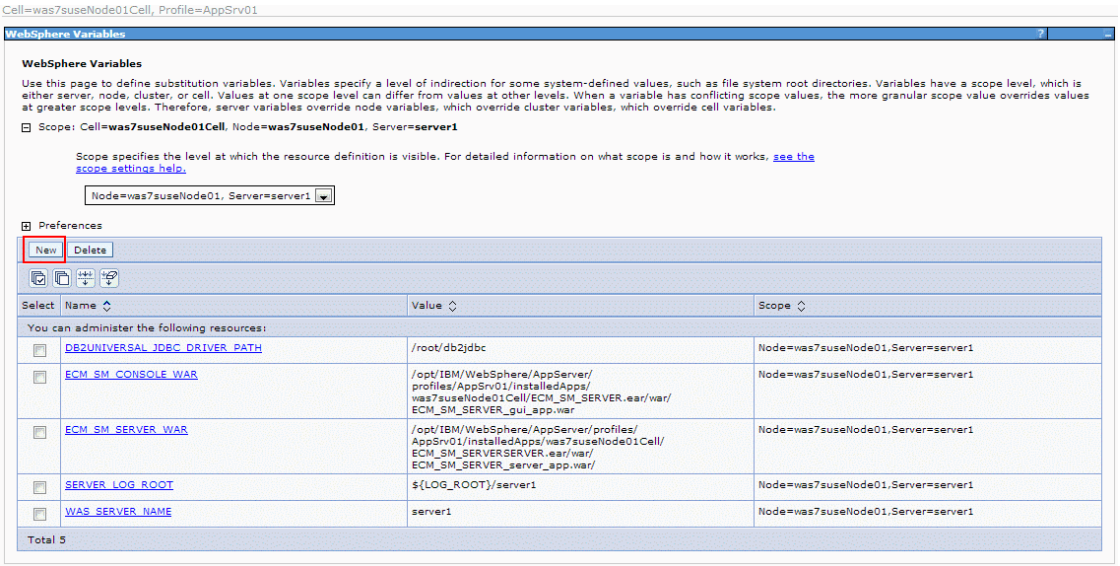
Switch the node during you have an opened “WebConsole“ and see if you can access pages after successful cluster switch.

JVM Properties for an IBM WebSphere Based Installation

It is recommended to set the following environment variables in the IBM WebSphere server the application is running at; simply to avoid tedious repetitions of long paths.



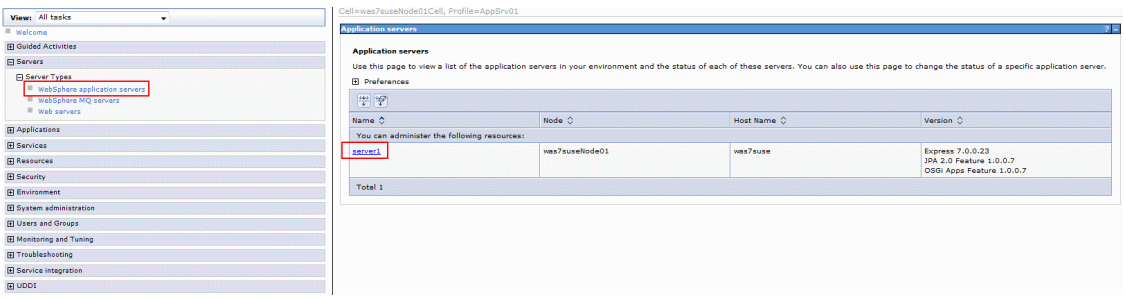
Navigate to "Environment" > "WebSphere variables".



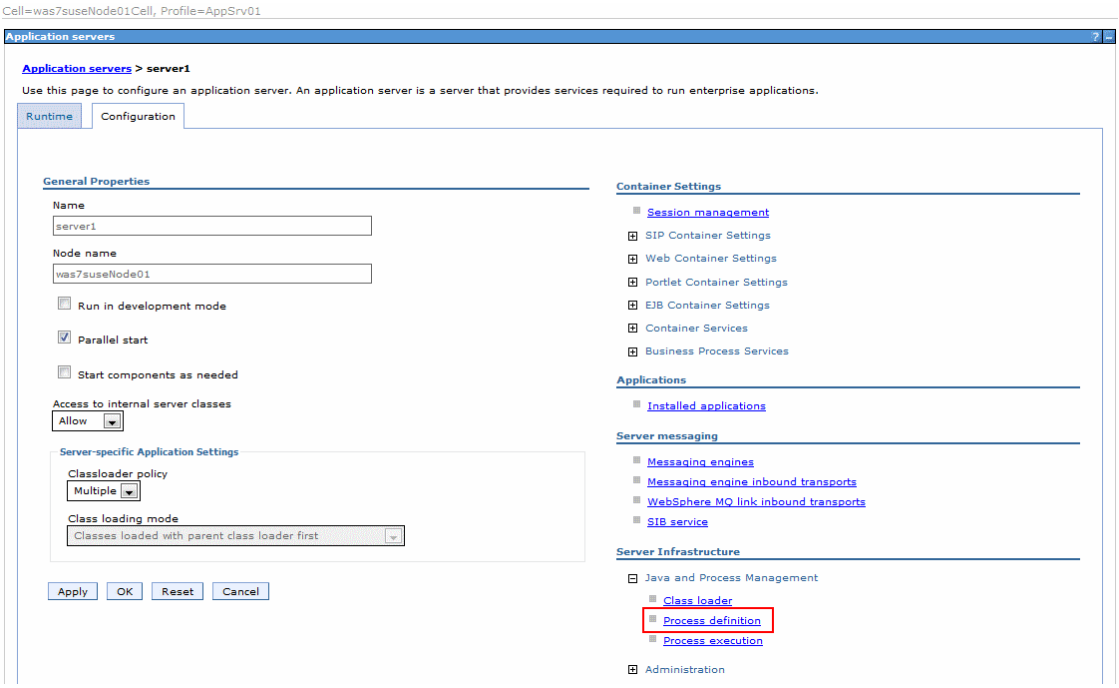
Create new "WebSphere variables" via "New". The necessary variables:

${ECM_SM_CONSOLE_WAR}	/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/installedApps/was7suseNode01Cell/ECM_SM_SERVER.ear/war/ECM_SM_SERVER_gui_app.war
${ECM_SM_SERVER_WAR}	/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/installedApps/was7suseNode01Cell/ECM_SM_SERVERSERVER.ear/war/ECM_SM_SERVER_server_app.war/

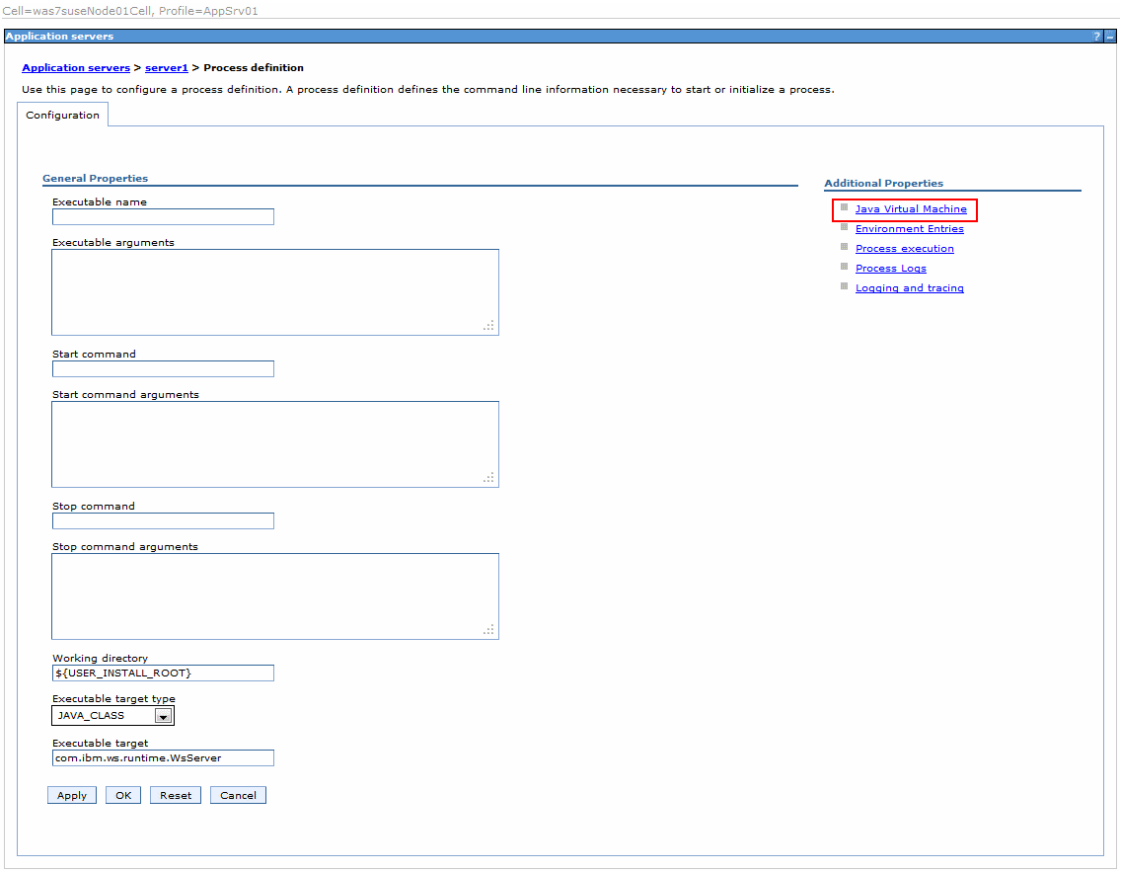
The following custom properties must be set for the application server's JVM the application is running with/on.



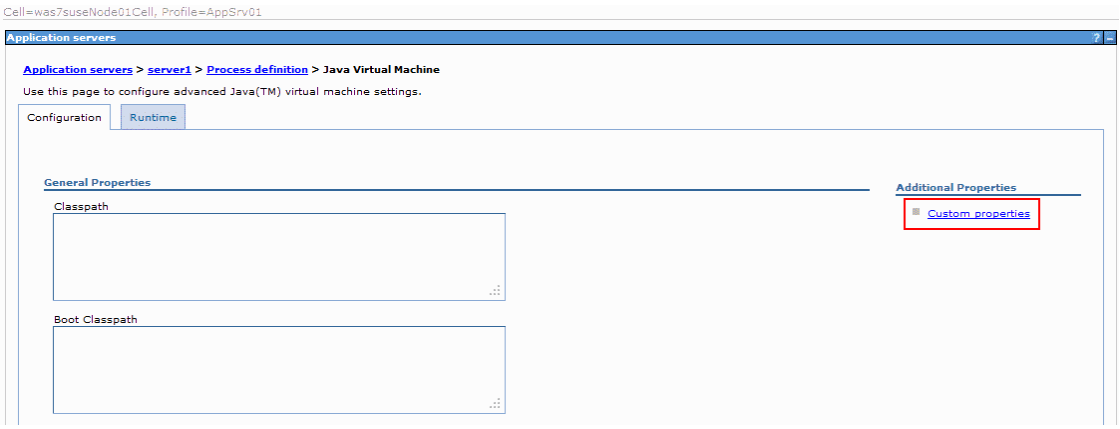
Navigate to "Servers" > "Server Types" > "WebSphere application servers" and click on your server.



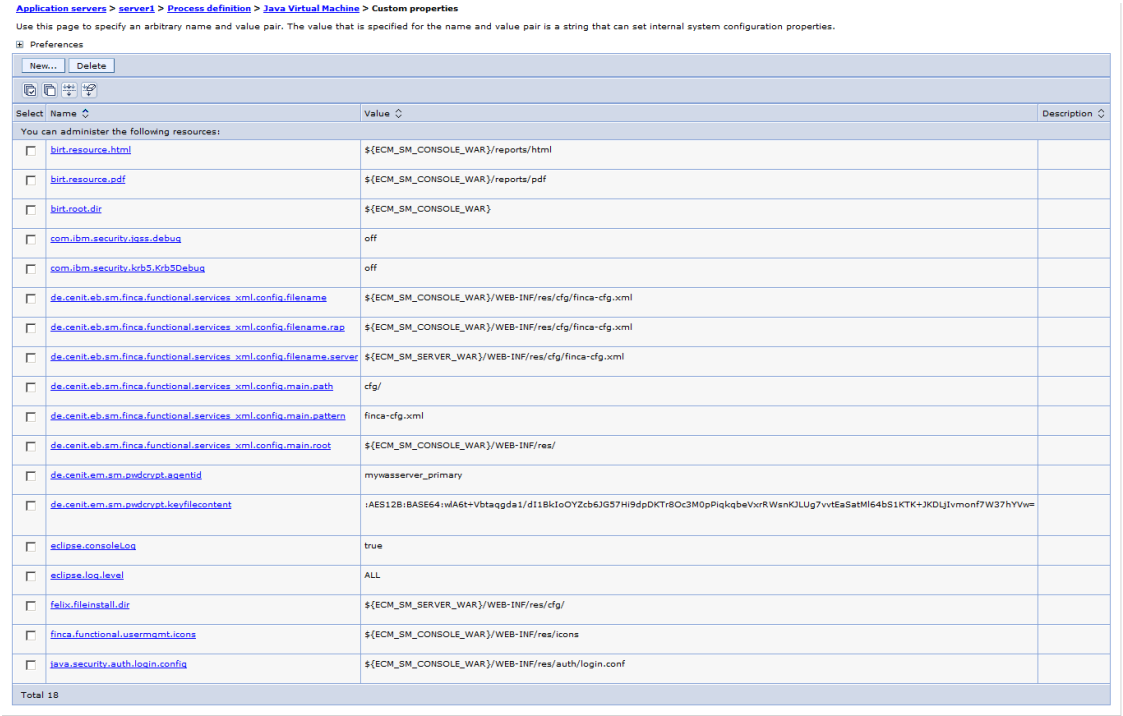
Click on the "Process definition" link under "Java and Process Management".



Click on the "Java Virtual Machine" link.



Click on the "Custom properties" link.



Application servers > server1 > Process definition > Java Virtual Machine > Custom properties

Use this page to specify an arbitrary name and value pair. The value that is specified for the name and value pair is a string that can set internal system configuration properties.

Preferences

New... Delete

Select	Name	Value	Description
You can administer the following resources:			
	birt.resource.html	${ECM_SM_CONSOLE_WAR}/reports/html	
	birt.resource.pdf	${ECM_SM_CONSOLE_WAR}/reports/pdf	
	birt.root.dir	${ECM_SM_CONSOLE_WAR}	
	com.ibm.security.jgss.debug	off	
	com.ibm.security.krb5.Krb5Debug	off	
	de.cenit.eb.sm.finca.functional.services_xml.config.filename	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/cfg/finca-cfg.xml	
	de.cenit.eb.sm.finca.functional.services_xml.config.filename.rap	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/cfg/finca-cfg.xml	
	de.cenit.eb.sm.finca.functional.services_xml.config.filename.server	${ECM_SM_SERVER_WAR}/WEB-INF/res/cfg/finca-cfg.xml	
	de.cenit.eb.sm.finca.functional.services_xml.config.main.path	cfg/	
	de.cenit.eb.sm.finca.functional.services_xml.config.main.pattern	finca-cfg.xml	
	de.cenit.eb.sm.finca.functional.services_xml.config.main.root	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/	
	de.cenit.em.sm.pwdcrypt.agentid	mywasserver_primary	
	de.cenit.em.sm.pwdcrypt.keyfilecontent	!AES128:BASE64:wA6t+Vbtaqgda1/d11Bk1oOYZcb6JG57Hi9dpDKTr8Oc3M0pPiqkqbeVxrRWsnKJLUg7vvtEaSatMl64bS1KTK+JKDLjIvmonf7W37hYVw=	
	eclipse.consoleLog	true	
	eclipse.log.level	ALL	
	felix.fileinstall.dir	${ECM_SM_SERVER_WAR}/WEB-INF/res/cfg/	
	finca.functional.usermgmt.icons	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/icons	
	java.security.auth.login.config	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/auth/login.conf	

Total 18

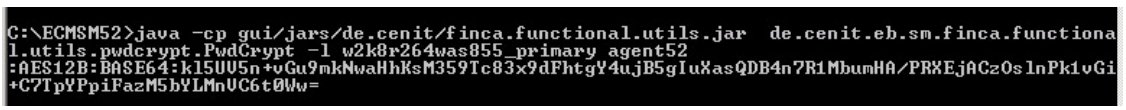
Create new "Custom properties" via "New". The necessary properties:

Property	Value
birt.root.dir	${ECM_SM_CONSOLE_WAR}
birt.resource.html	${ECM_SM_CONSOLE_WAR}/reports/html
birt.resource.pdf	${ECM_SM_CONSOLE_WAR}/reports/pdf
eclipse.consoleLog	true
eclipse.log.level	ALL
finca.functional.usermgmt.icons	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/icons
java.security.auth.login.config	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/auth/login.conf
de.cenit.eb.sm.finca.functional.services_xml.config.filename	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/cfg/finca-cfg.xml
de.cenit.eb.sm.finca.functional.services_xml.config.filename.rap	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/cfg/finca-cfg.xml
de.cenit.eb.sm.finca.functional.services_xml.config.filename.server	${ECM_SM_SERVER_WAR}/WEB-INF/res/cfg/finca-cfg.xml
de.cenit.eb.sm.finca.functional.services_xml.config.main.path	cfg/
de.cenit.eb.sm.finca.functional.services_xml.config.main.pattern	finca-cfg.xml
felix.fileinstall.dir	${ECM_SM_SERVER_WAR}/WEB-INF/res/cfg/

Property	Value
de.cenit.eb.sm.finca.functional.services_xml.config.main.root	${ECM_SM_CONSOLE_WAR}/WEB-INF/res/
de.cenit.em.sm.pwdcrypt.agentid	You can define the agent Id by yourself, in lower case. Use the format `<serverHostname>_primary`. E.g. `mywasserver_primary`
de.cenit.em.sm.pwdcrypt.keyfilecontent	Add the content of your keyfile in here. See the description (1) below this table for details.

(1) The following description shows how to create the keyfile.

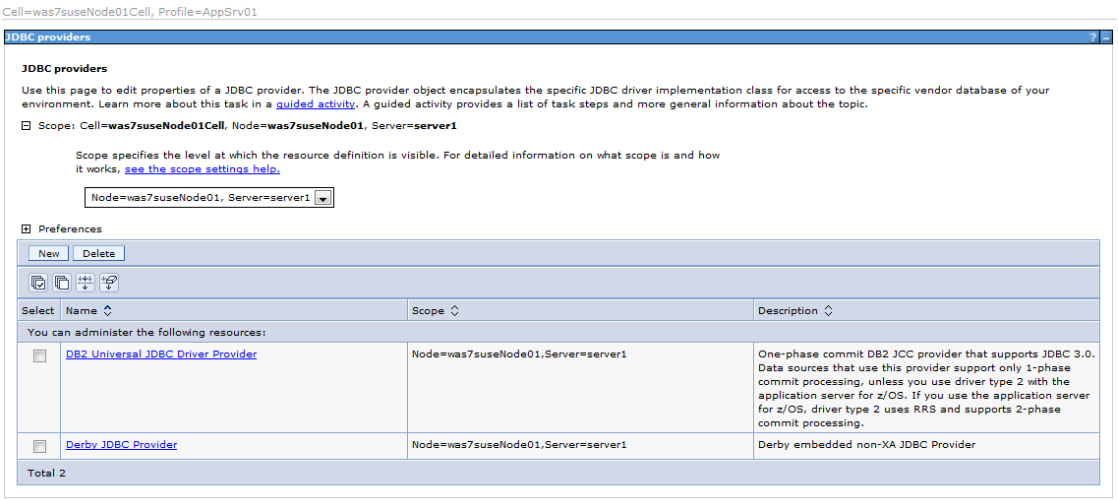
- Open the cmd / bash and change directory to $CENIT_ROOT
- set CENIT_ROOT=.
- jre\bin\java.exe -cp gui/jars/de.cenit/finca.functional.utils.jar de.cenit.eb.sm.finca.functional.utils.pwdcrypt.PwdCrypt -l <agetnId>
  In the example above, agent Id is "mywasserver_primary"
- The key will be printed out to the command line. Copy the complete key into the properties field of your WebSphere Adminsitrative Console.



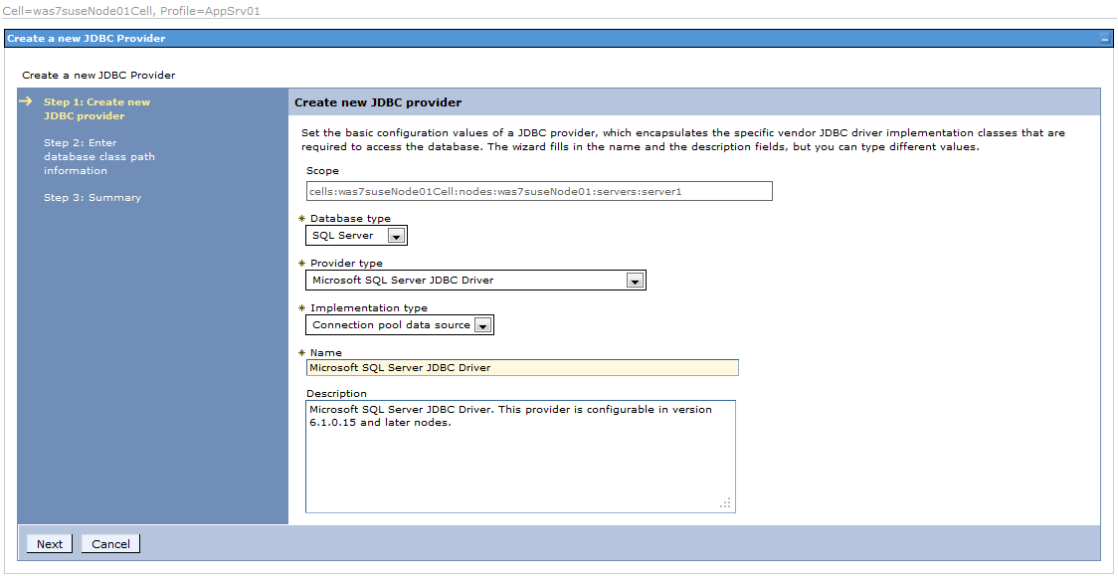
Creation of a datasource on IBM WebSphere

The creation of a datasource for the WebSphere based installation (e.g. Microsoft SQL Server):

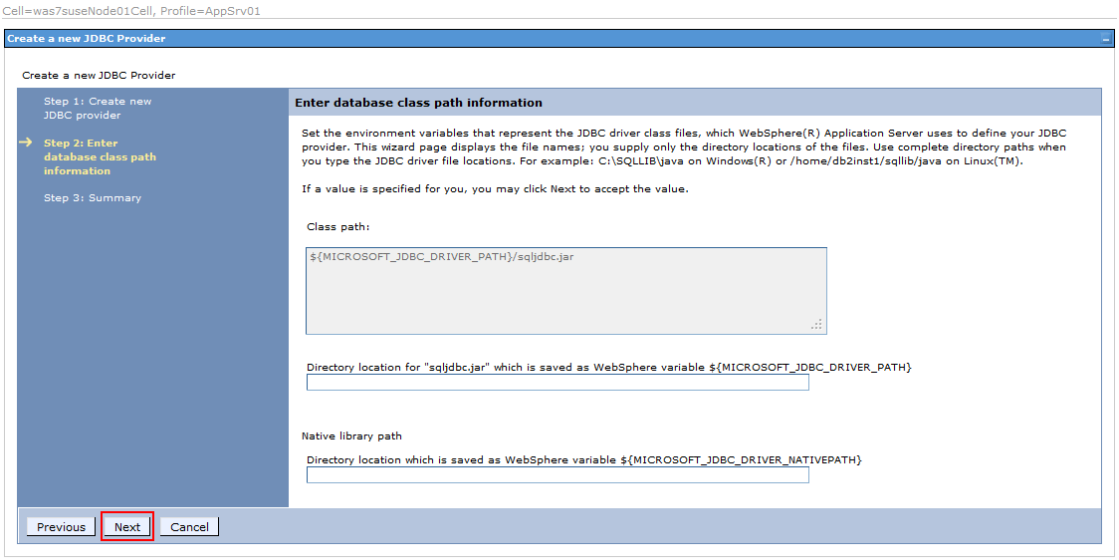
Click on "Resources" > "JDBC Providers".



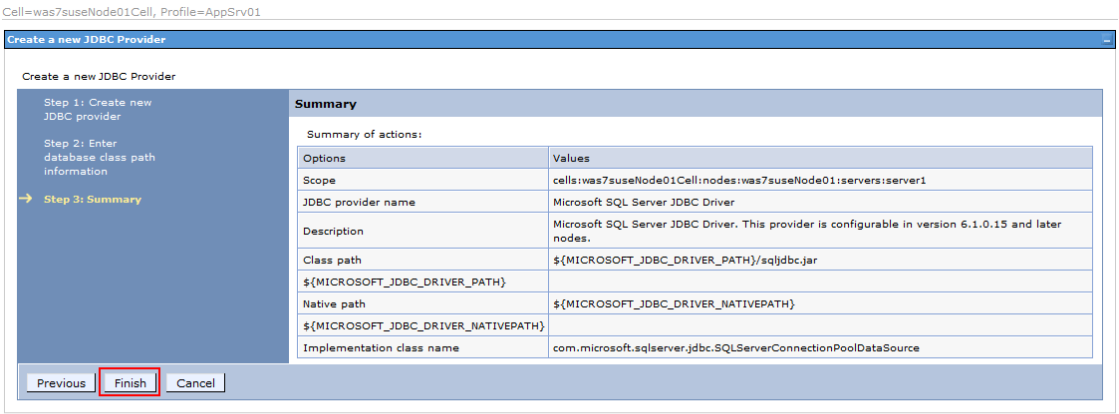
Select your scope in the dropdown box. Click "New" to create a new JDBC Provider.



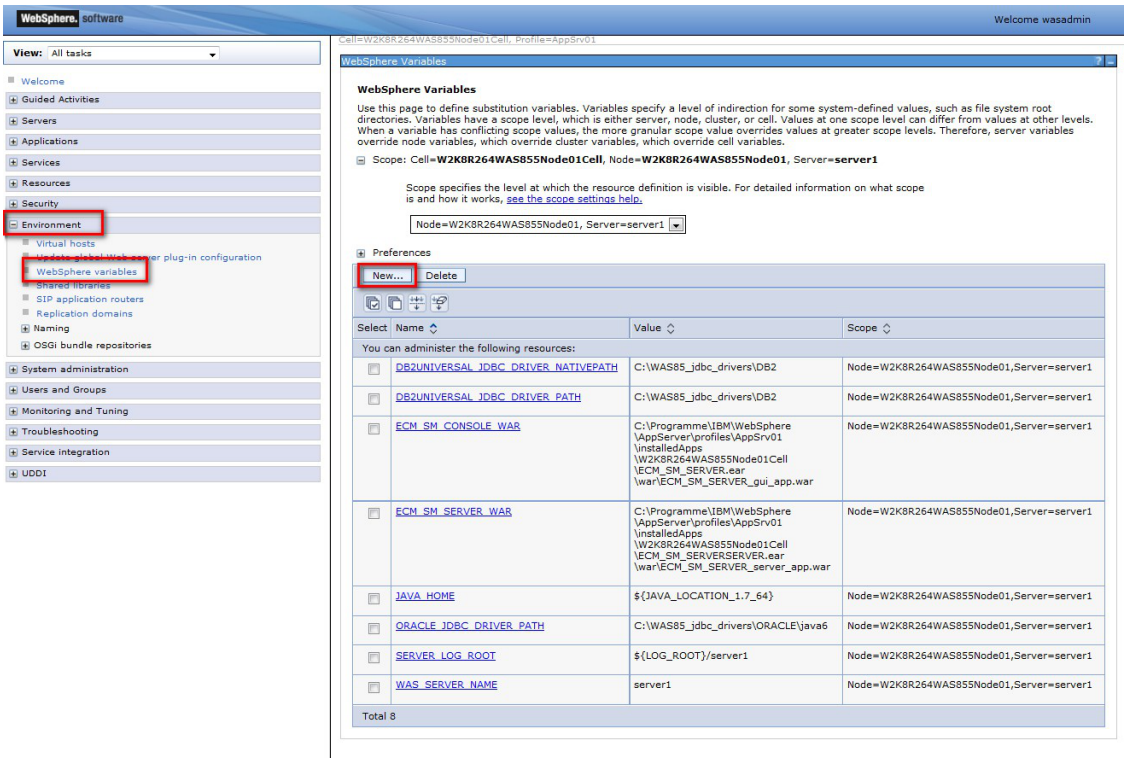
Step 1: Select the type of the provider. The necessary settings are shown in the screenshot above.



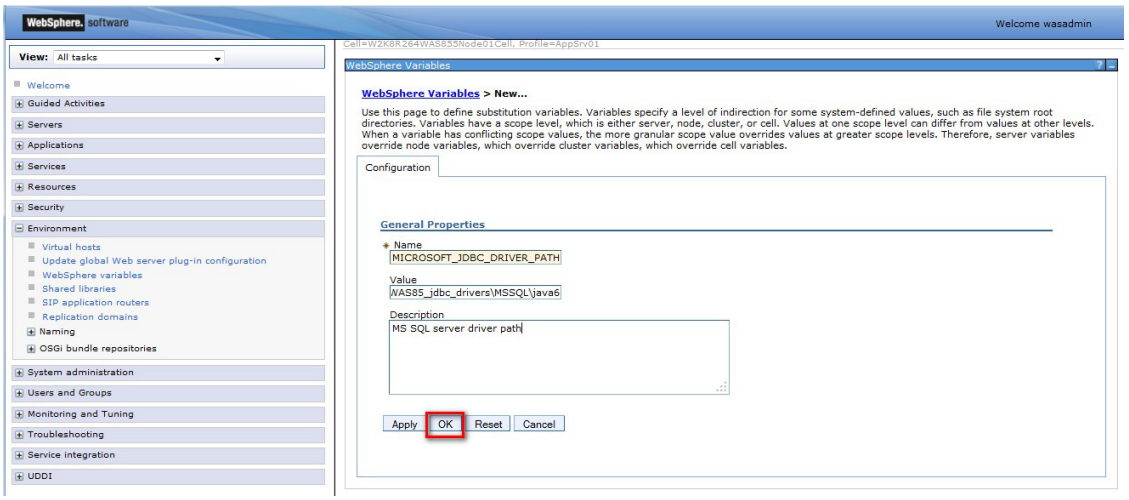
Step 2: Nothing to do here.



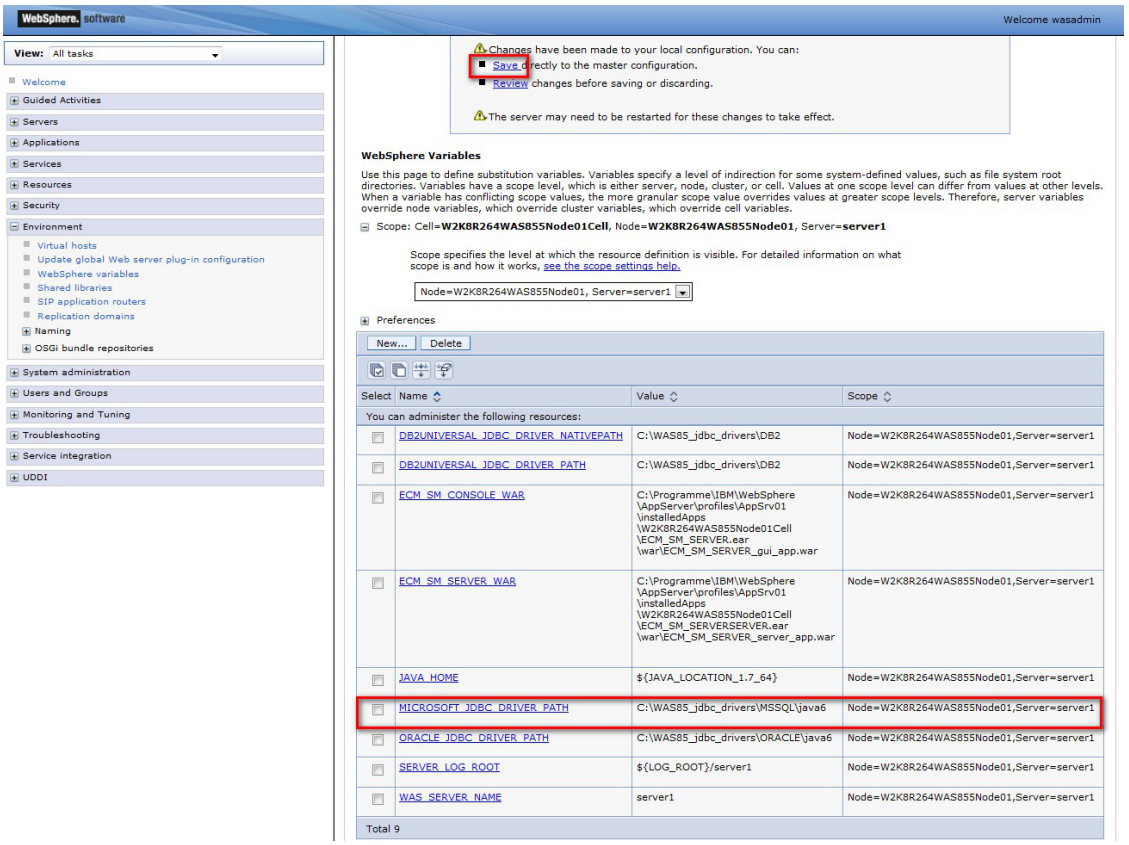
Step 3: Shows the summary, click "Finish".



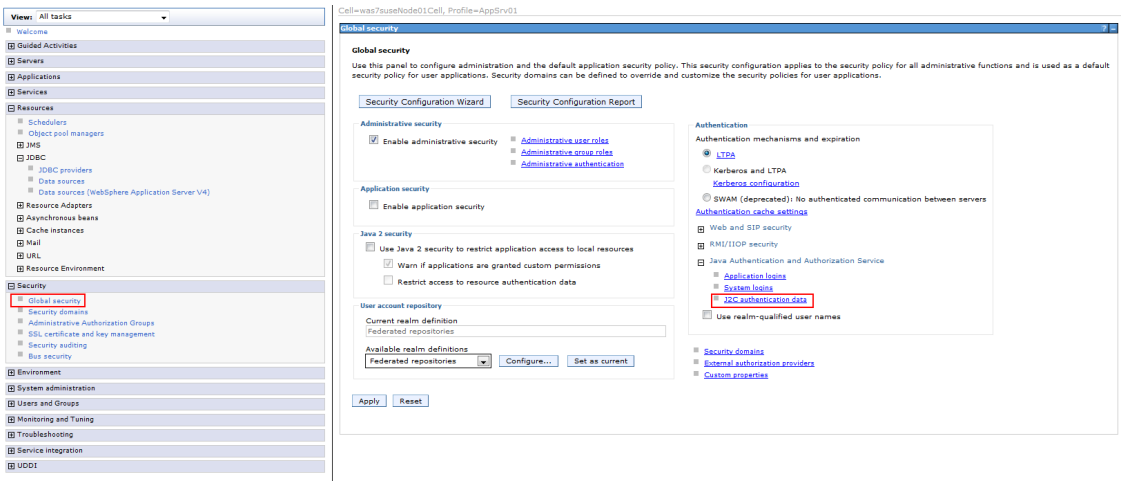
Create Microsoft JDBC driver path. Click Environment > WebSphere variables > New...



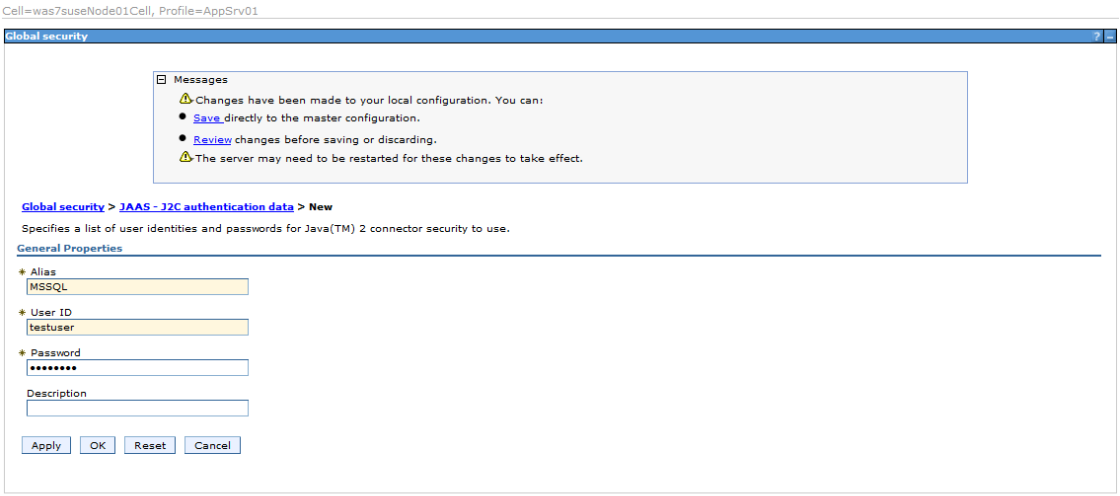
Enter the name `MICROSOFT_JDBC_DRIVER_PATH` and set value to the path to your JDBC driver directory, containing the `sqljdbc4.jar` file. Click OK.



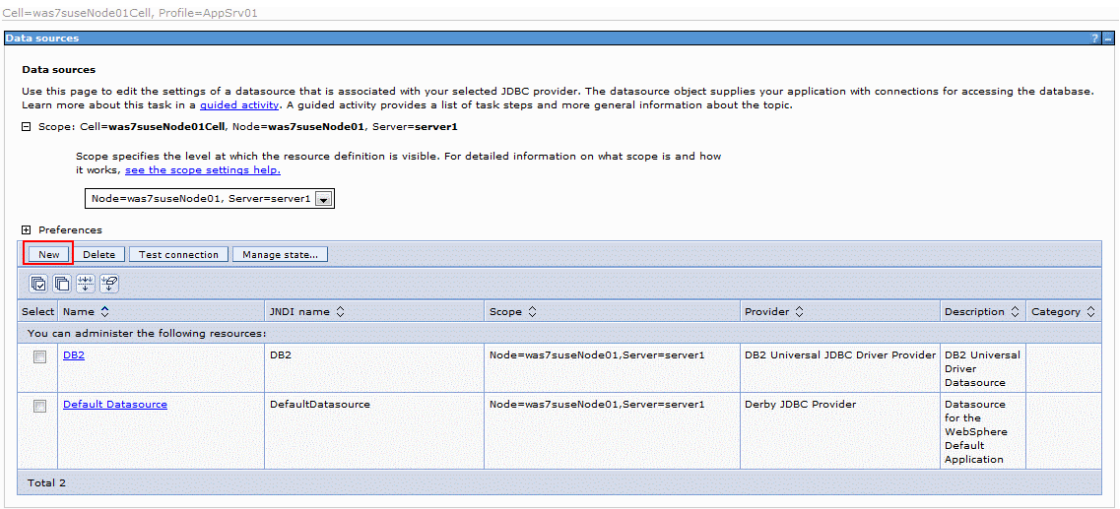
Accept the changes by clicking *Save*.



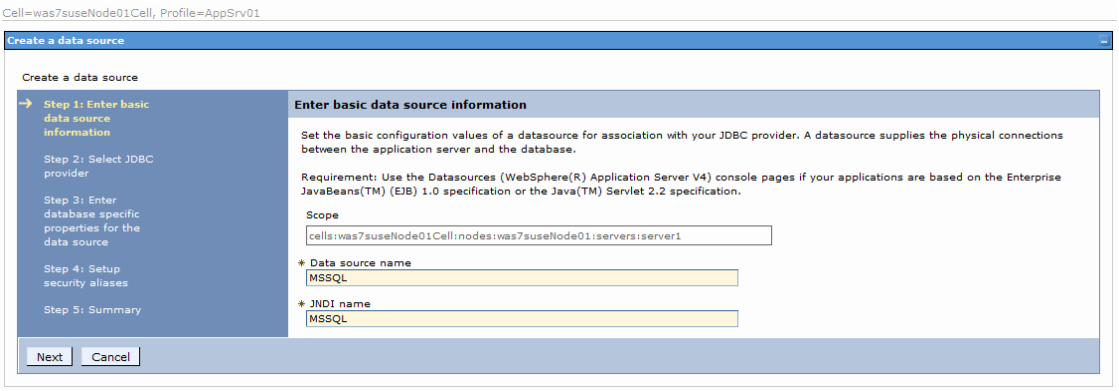
Navigate to "Security" > "Global Security" and click on the "J2C authentication data" link.



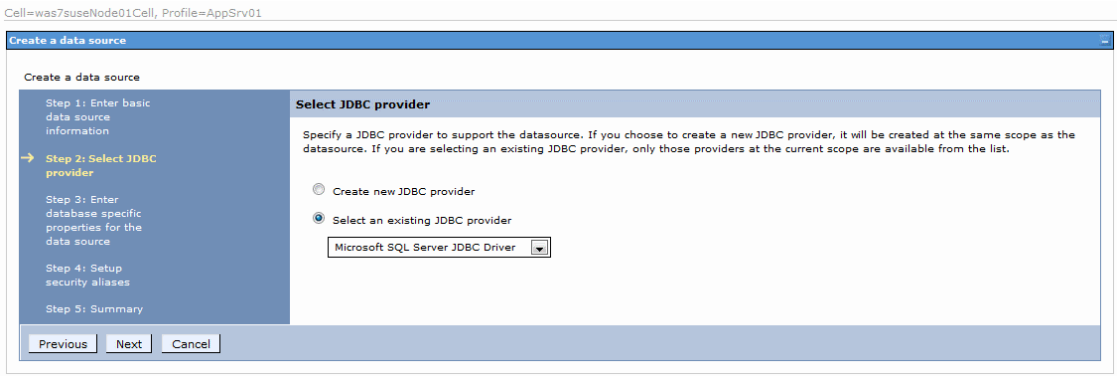
Enter the name of your database, the user and the password. Then press "OK".



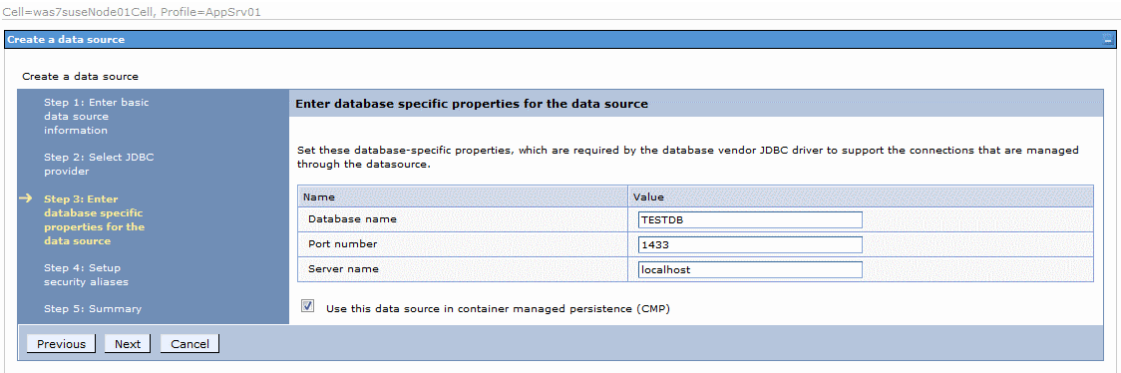
Navigate to "Resources" > "Data Sources". Select your scope. Click "New" to create a new datasource.



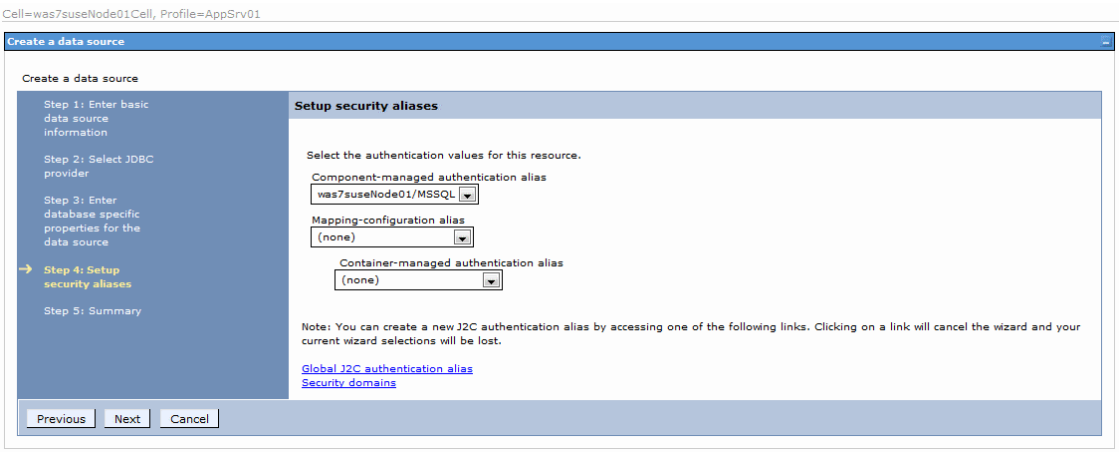
Step 1: Enter the name of the datasource and the JNDI name of the datasource. Both names should be the same. Remember the name for the installation. It is used to identify the database connection in our application.



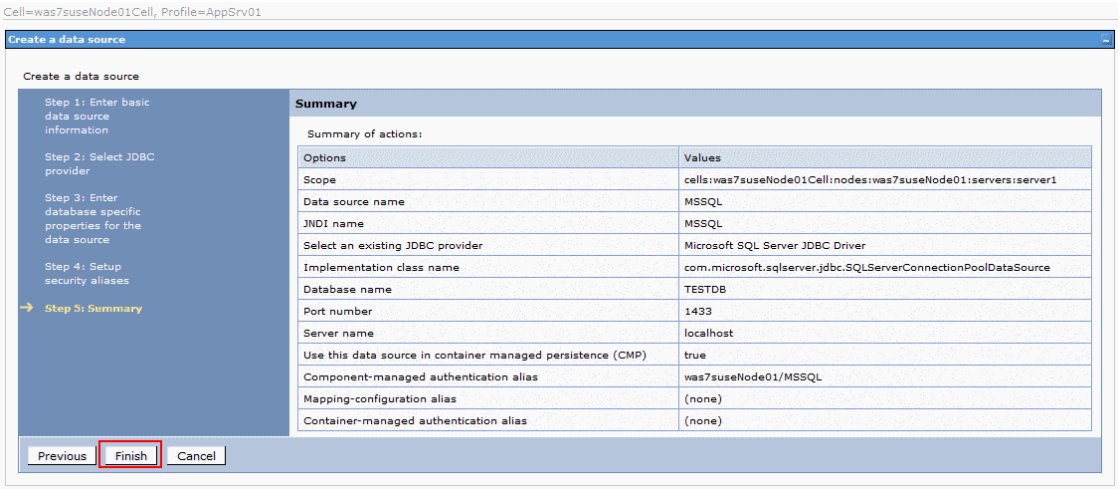
Step 2: Select the JDBC provider we created before.



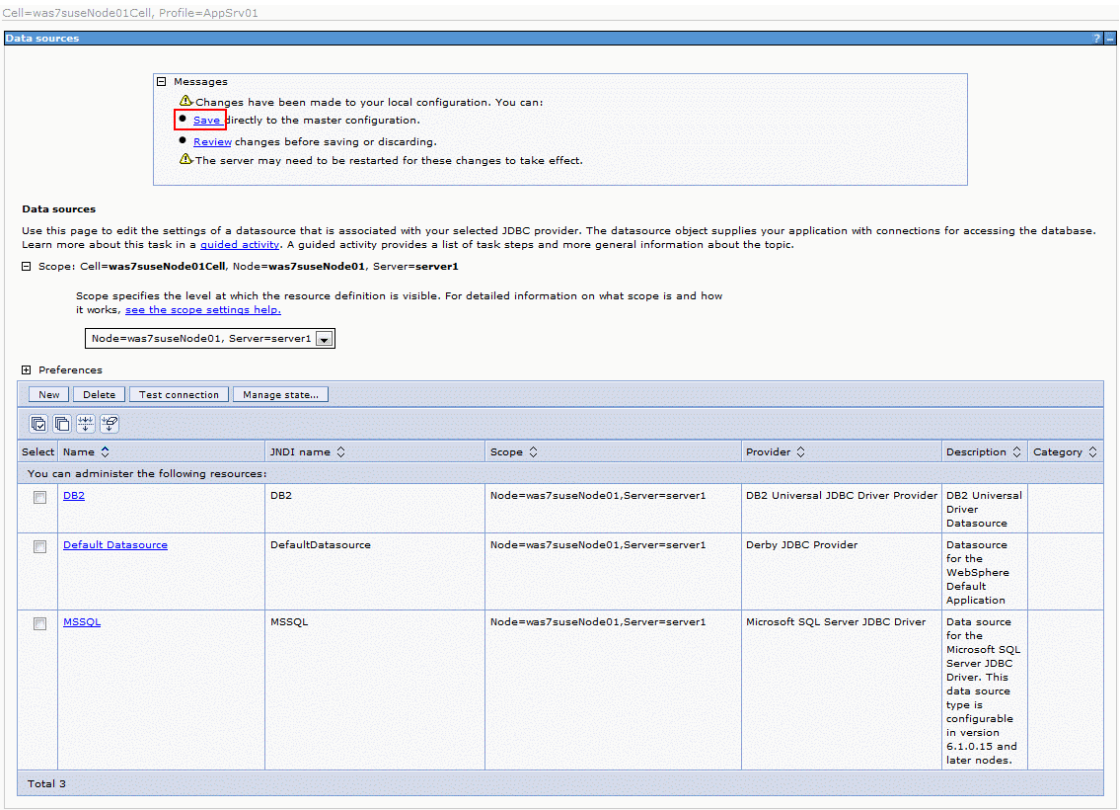
Step 3: Enter the database name, the port and the host name.



Step 4: Select the J2C authentication alias we created before.



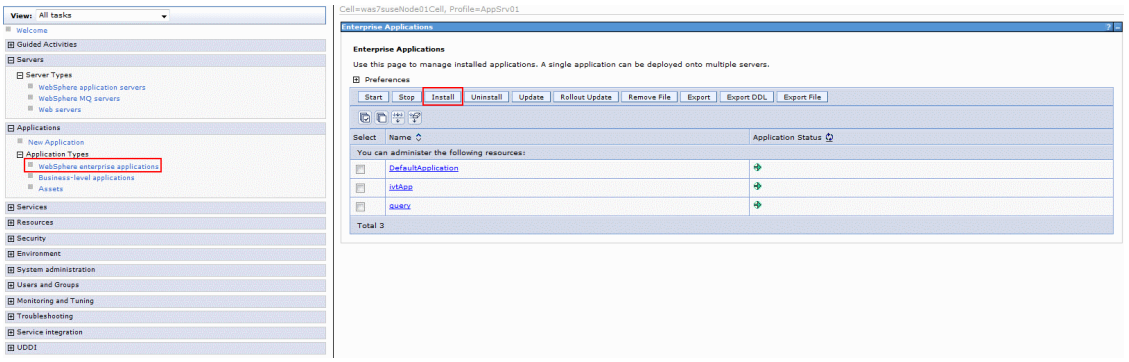
Step 5: Shows the summary. Click "Finish".



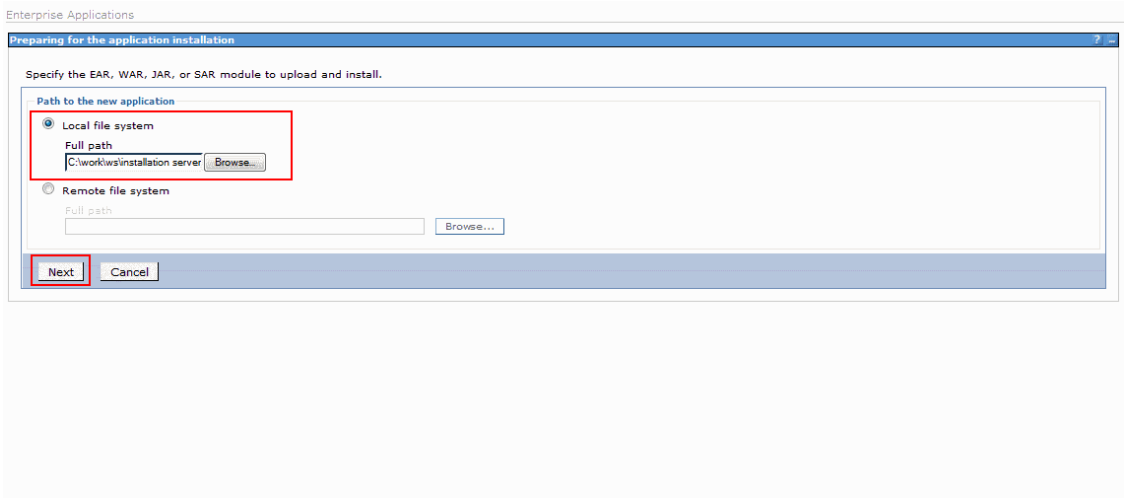
Click "Save" to save it to the master configuration.

The deployment of the ECM_SM on IBM WebSphere

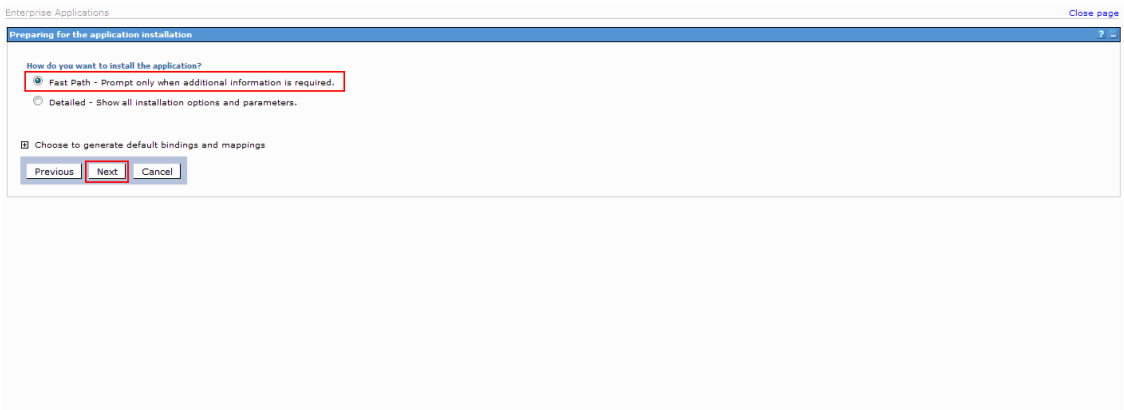
The deployment process for the WebSphere based installation:



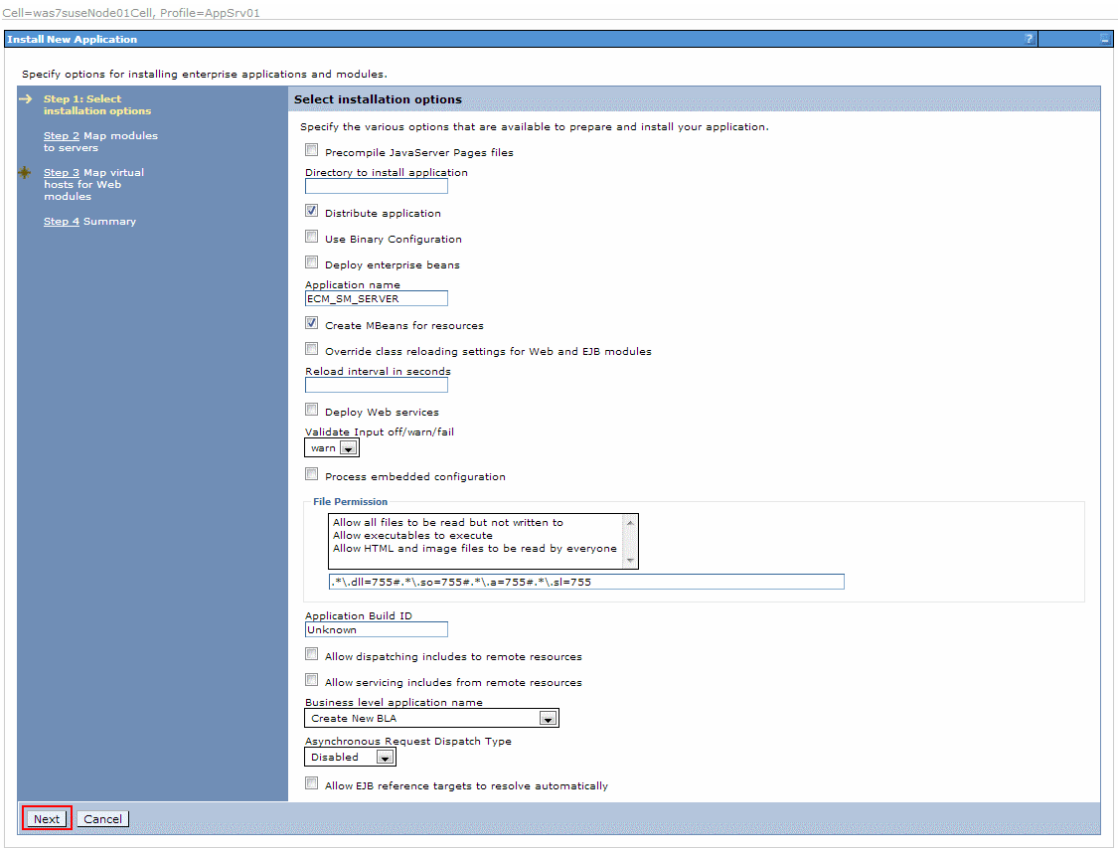
Navigate to "Application" > "Application Types" > "WebSphere enterprise applications". Click "Install".



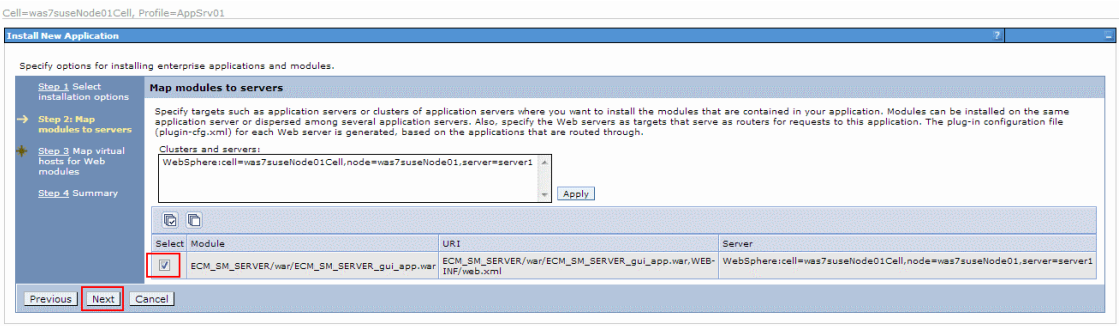
Click on "Browse...", select the ear file on your disk and click "Next".



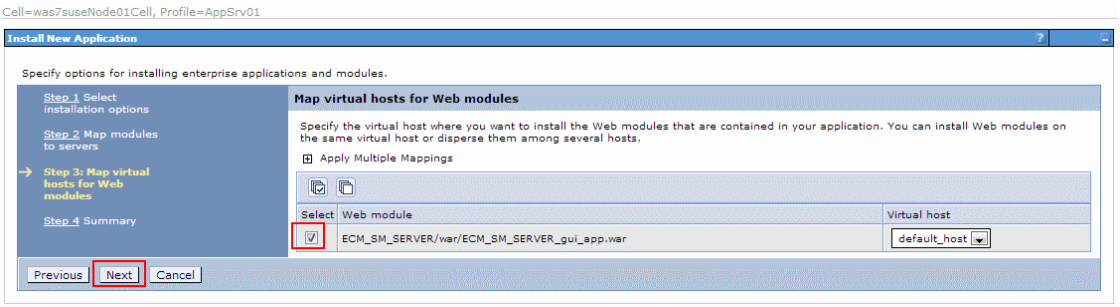
Click "Next".



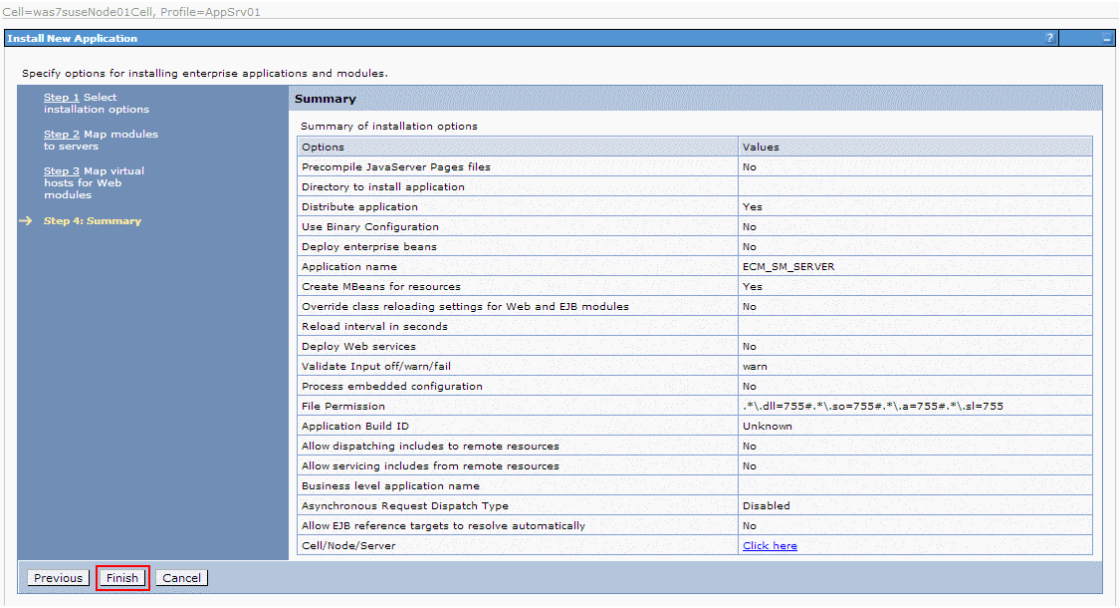
Click "Next".



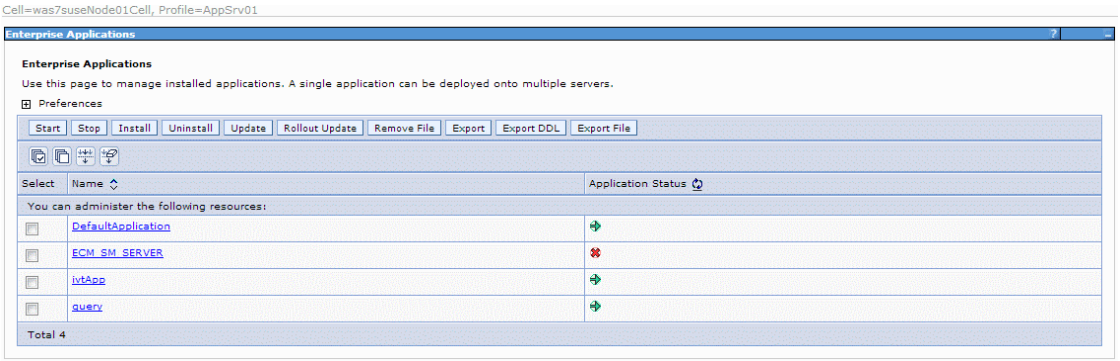
Check the box under "Select". Click "Next".



Check the box under "Select". Click "Next".



Click "Finish".



Repeat the same for the server ear. And restart IBM WebSphere.

Appendix C. An example charset.alias file

An example /usr/lib/charset.alias file for Solaris 8

```
#
# This file is needed by the ECM SM agent.
# Filename: /usr/lib/charset.alias
#
646 ASCII
ISO8859-1 ISO-8859-1
ISO8859-2 ISO-8859-2
ISO8859-3 ISO-8859-3
ISO8859-4 ISO-8859-4
ISO8859-5 ISO-8859-5
ISO8859-6 ISO-8859-6
ISO8859-7 ISO-8859-7
ISO8859-8 ISO-8859-8
ISO8859-9 ISO-8859-9
ISO8859-15 ISO-8859-15
koi8-r KOI8-R
ansi-1251 CP1251
BIG5 BIG5
Big5-HKSCS BIG5-HKSCS
gb2312 GB2312
GBK GBK
GB18030 GB18030
cns11643 EUC-TW
5601 EUC-KR
ko_KR.johap92 JOHAB
eucJP EUC-JP
PCK SHIFT_JIS
TIS620.2533 TIS-620
UTF-8 UTF-8
```

Appendix D. General Configuration of ECM SM Server

Introduction

This section describes how certain general properties of the *ECM SM Server* product can be configured in order to obtain a rather user-specific customization.

Flow Limiter

This section describes the configuration of the flow limiter.

Configuring the flow limiter in the configuration

In the file `finca-cfg.xml` the flow limiter can be configured. The flow limiter prevents the application from event storms.

Example for logging configuration

The following snippet from the `finca-cfg.xml` file shows an example flow limiter configuration.

```
0001    <flowlimiter>
0002    <!--
0003      On an event storm, the events will be written into a log file. There are many ↵
     ways to configure this mechanism.
0004      - name the name of the log file
0005      - gzipped = true => the logfile is written gzipped
0006      - archive => no. of logfiles to archive (blocked_events.log.1.gz  ... etc.)
0007      - size => maximum size which one log file shall have, before next is ↵
    written. The unit is bytes. Write 'k' for kiloByte (e.g. 500k) 'M' for MegaByte (e.g. ↵
     12M) or G for GigaByte (e.g. 0.1G).
0008      - location => the relative or absolute filepath of where the file shall be ↵
     stored.
0009      -->
0010    <logfile name="blocked_events.txt" gzipped="false"
     archive="3" size="4k" location="./test/"/>
0011
0012     <!-- multiple timeframes are possible
0013      - timeframe length = length of a timeframe in seconds
0014      - remind = The time interval after a further blocked event is sent if the ↵
    blocked condition still exists, to update the timestamp of the current blocked event ↵
     in the event view.
0015      - The elements of the timeframe tag are
0016          -overall (all incoming events)
0017          -host (All events from a specific host)
0018          -datastream (all events from a specific host AND datastream)
0019          -application (all events from a specific host AND application)
0020         -application instance (all events from a specifig host AND application AND ↵
```

```
instance).
0021          The elements have the following attributes
0022              -block: Number of events per timeframe, which have to occur to block ↵
the events from this source.
0023              -unblock: The number of events must go under this value, that the ↵
events are unblocked.
0024     -->
0025    <timeframe length="30" remind="60">
0026                                    <overall    block="500000"    unblock="400000"/>
0027                                         <host     block="10000"     unblock="8000"/>
0028                                     <datastream     block="5000"     unblock="4000"/>
0029                                    <application     block="3000"     unblock="2000"/>
0030                              <applicationinstance    block="3000"    unblock="2000"/>
0031    </timeframe>
0032    <!--  This gives the possibility to create a specific block event. The 'field' ↵
elements
0033   show the properties of a DataStream event. The ${key} 'value' for example ${HOST} ↵
means that the block event will get the
0034   value from the original event. The timestamp will be overwritten in every case by ↵
the program  - with the current timestamp.
0035    It is also possible to insert individual text. For example in the MSG field.
0036    -->
0037    <blockevent>
0038                                  <field         dest="STREAM"     value="${STREAM}"/>
0039                                    <field         dest="SEQNO"     value="${SEQNO}"/>
0040                                    <field         dest="CLASS"     value="${CLASS}"/>
0041                               <field        dest="TIMESTAMP"    value="${TIMESTAMP}"/>
0042                                 <field        dest="HOSTNAME"    value="${HOSTNAME}"/>
0043                              <field       dest="IP_ADDRESS"    value="${IP_ADDRESS}"/>
0044                    <field     dest="ADAPTER_HOSTNAME"   value="${ADAPTER_HOSTNAME}"/>
0045                  <field    dest="ADAPTER_IP_ADDRESS"  value="${ADAPTER_IP_ADDRESS}"/>
0046                   <field    dest="MSG"  value="This  event  was  blocked.  ${MSG}"/>
0047                                  <field         dest="SEVERITY"     value="FATAL"/>
0048                                 <field         dest="SOURCE"     value="${SOURCE}"/>
0049                               <field       dest="SUB_SOURCE"    value="${SUB_SOURCE}"/>
0050                             <field       dest="SOURCE_NAME"    value="${SOURCE_NAME}"/>
0051                             <field       dest="SOURCE_TYPE"    value="${SOURCE_TYPE}"/>
0052                             <field       dest="APPLICATION"    value="${APPLICATION}"/>
0053                                    <field         dest="MODULE"     value="${MODULE}"/>
0054                                <field        dest="INSTANCE"    value="${INSTANCE}"/>
0055                                <field        dest="ERROR_ID"    value="${ERROR_ID}"/>
0056                                       <field          dest="VALUE"     value="BLOCK"/>
0057                                   <field         dest="COUNT"     value="${COUNT}"/>
0058                                     <field          dest="LOG"     value="${LOG}"/>
0059                               <field       dest="ANNOTATION"    value="${ANNOTATION}"/>
0060                             <field       dest="ACKNOWLEDGE"    value="${ACKNOWLEDGE}"/>
0061    </blockevent>
0062
0063
0064       <!--  This gives the possibility to create a specific unblock event. The ↵
'field' elements
0065   show the properties of a DataStream event. The ${key} 'value' for example ${HOST} ↵
means that the unblock event will get the
0066   value from the original event. The timestamp will be overwritten in every case by ↵
the program  - with the current timestamp.
0067    It is also possible to insert individual text. For example in the MSG field.
0068    -->
0069    <unblockevent>
0070                                  <field         dest="STREAM"     value="${STREAM}"/>
0071                                    <field         dest="SEQNO"     value="${SEQNO}"/>
0072                                    <field         dest="CLASS"     value="${CLASS}"/>
0073                               <field        dest="TIMESTAMP"    value="${TIMESTAMP}"/>
```

```
0074                            <field        dest="HOSTNAME"    value="${HOSTNAME}"/>
0075                          <field       dest="IP_ADDRESS"    value="${IP_ADDRESS}"/>
0076                    <field     dest="ADAPTER_HOSTNAME"   value="${ADAPTER_HOSTNAME}"/>
0077                 <field    dest="ADAPTER_IP_ADDRESS"  value="${ADAPTER_IP_ADDRESS}"/>
0078                 <field    dest="MSG"  value="This  event  was  unblocked.  ${MSG}"/>
0079                               <field         dest="SEVERITY"     value="FATAL"/>
0080                             <field         dest="SOURCE"     value="${SOURCE}"/>
0081                          <field       dest="SUB_SOURCE"    value="${SUB_SOURCE}"/>
0082                        <field       dest="SOURCE_NAME"    value="${SOURCE_NAME}"/>
0083                        <field       dest="SOURCE_TYPE"    value="${SOURCE_TYPE}"/>
0084                        <field       dest="APPLICATION"    value="${APPLICATION}"/>
0085                               <field         dest="MODULE"     value="${MODULE}"/>
0086                            <field        dest="INSTANCE"    value="${INSTANCE}"/>
0087                            <field        dest="ERROR_ID"    value="${ERROR_ID}"/>
0088                                  <field          dest="VALUE"     value="BLOCK"/>
0089                                <field         dest="COUNT"     value="${COUNT}"/>
0090                                   <field          dest="LOG"     value="${LOG}"/>
0091                          <field       dest="ANNOTATION"    value="${ANNOTATION}"/>
0092                        <field       dest="ACKNOWLEDGE"    value="${ACKNOWLEDGE}"/>
0093    </unblockevent>
0094
0095
0096                                                                          </flowlimiter>
0097
```

External Users

The configuration settings for external users can be altered by the file **finca-cfg.xml**. The following snippet shows the default configuration.

```
0001 <external.users require_internal_user="true" carry_over_external_groups="true"/>
```

The attribute

- *require_internal_user:* If set to true, an internal user is required for external authentication. The user must be created manually in the User Management Console. If it is set to false, the user is created automatically during first log in of the user.
- *carry_over_external_groups:* If set to true, the group memberships for the user logging in are retrieved from the external LDAP system. If set to false, the group memberships are retrieved from the internal user management database.

Appendix E. FIR configuration

FIR configuration

FIR Receiver is the component that receives CALA FIR events from clients and transforms them to ECM SM 5.2.0 events that can be sent to the console. The FIR Receiver uses a field translation service to determine how the FIR fields must be handled.

If a FIR field is not listed in the *fir-translation* section of the configuration, a field with the same name and contents will be created in the new ECM SM 5.2.0 event. So only the following fields need to be listed in the translation config:

- fields that must be set to a constant value
- fields that must be renamed for new ECM SM 5.2.0 events (example: field containing datastream is called *$SECTYPE* in FIR but must be called *STREAM* in ECM SM 5.2.0 event)
- fields that must be reformatted
- fields that must be set depending on another field

The FIR translation service is also used to import events from the older architecture to ECM SM 5.2.0.

A detailed list of fields mappings can be found below.

Current field mappings

Events from agents

These mappings are used when Events are received from an agent.

The configuration is located in **<install_root>/eventserver/cfg/eventprocessing-cfg.xml** in the XML tag <*datastream name="fir"*>.

Field in ECM SM 5.2.0 event	Value
ORIGINAL_STREAM	*fir*
ORIGINAL_TIMESTAMP	FIR field *$CTIME*
STREAM	depends on FIR field *$SECTYPE*: • if *$SECTYPE* starts with *calamon*, field is set to concatenation of FIR fields *$area* and *$info* • otherwise, field is set to FIR field *$SECTYPE*
TIMESTAMP	depends on FIR field *$CTIME* • if *$CTIME* matches *MMM dd hh:mm:ss yyyy*, it will be converted to format *yyyy-mm-dd hh:mm:dd*

Field in ECM SM 5.2.0 event	Value
	• otherwise field will be set directly to FIR field *$CTIME*
CLASS	FIR field *$CLASS*
MSG	FIR field *msg*
HOSTNAME	FIR field *$HOSTNAME*
IP_ADDRESS	FIR field *$ORIGIN*
ADAPTER_HOSTNAME	FIR field *$ADAPTER_HOSTNAME* or *$HOSTNAME* if *$ADAPTER_IP_ADDRESS* is not set
ADAPTER_IP_ADDRESS	FIR field *$ADAPTER_IP_ADDRESS* or *$ORIGIN* if *$ADAPTER_IP_ADDRESS* is not set
APPLICATION	depends on FIR field *$SECTYPE*: • if *$SECTYPE* starts with *calamon*, field is set to FIR field *$CLASS* • otherwise, field is set to FIR field *$area*
INSTANCE	FIR field *$info*
INSTALL_PATH	*<undef>*
SEQNO	*-1*
COUNT	*0*
SOURCE_NAME	FIR field *$LOGFILENAME*
SOURCE	FIR field *source*
SUB_SOURCE	FIR field *sub_source*
MODULE	*<undef>*
ERROR_ID	FIR field *error_id*
VALUE	depends on FIR field *$SECTYPE*: • if *$SECTYPE* starts with *calamon*, field is set to FIR field *value* • otherwise, field is set to *<undef>*
SOURCE_TYPE	depends on FIR field *$SECTYPE*: • if *$SECTYPE* starts with *calamon*, field is set to *monitor* • otherwise, field is set to *logfile*

SEVERITY	depends on FIR field *severity*:
	• numerical value is mapped to text:
	  • *0* -> *HARMLESS*
	  • *1* -> *WARNING*
	  • *2* -> *CRITICAL*

Field in ECM SM 5.2.0 event	Value
	• *3*, *4*, *5* -> *FATAL* • text values *HARMLESS*, *WARNING*, *CRITICAL*, *FATAL* are copied • for any other value of severity, field is be set to *UNKNOWN*

Special fields in ECM SM 5.2.0 events

Most fields in the ECM SM 5.2.0 events are self-explanatory. The following table lists some fields with a special meaning:

Event field	Meaning
ORIGINAL_STREAM	Used internally for rules processing. Set to *fir* for all events received from the FIRReceiver.
ORIGINAL_TIMESTAMP	Contains the original event timestamp as received from the client. For events created by FIRReceiver, this is the contents of the field *$CTIME*.
INSTALL_PATH	Required to fill the field *INSTANCE* as only *INSTANCE* and *INSTALL_PATH* together define the application instance where the event was created.
SEQNO	Used internally. Set to *-1* for all events received from the FIRReceiver.
COUNT	Indicates the duplicate count of an event. Set to 0 in the FIRReceiver to make sure that the field is always visible in the events details view.

Transfer CALA -> ECM SM 5.2.0 configuration

There are some basic differences between the CALA configuration and the configuration for ECM SM 5.2.0:

- some standard mappings required for all events are now done directly when receiving an FIR, e.g. setting the *SEVERITY* field to a valid value
- completers and remappers are no longer required; they were mainly used to fill event fields for the various emitters which is now done in the sink-specific configuration
- rules are now implemented as JavaScript, this is much more flexible than the old rules maps

Mappings

Transfer of old mappings

Mappings are configured in the Server Configuration console. See online help for this console for details.

CALA mappings	now located in configuration for...
***status.map**	no longer required; the mapping is now done in the FIRReceiver configuration (cannot be changed in GUI)
***smtp.map**	smtpsink
***snmp.map**	snmpsink
***dup.map**	duplicatedetection
apache_access_codes.map	no longer required; *$httpcode* is visible in event details view
fncap_trc_sev.map	• *MSG* and *ADDITIONAL_KEY* is set in script *fncap_trc_script* • *SEVERITY* is set in mapping
fnds_auditlog_sev.map	• *MSG* and *ADDITIONAL_KEY* is set in script *fnds_auditlog_script* • *SEVERITY* is set in mapping
fndw4log_evt.map	mapping
fnislog_evt.map	mapping
fnislog_except*.map	• *ADDITIONAL_KEY* is in script *fnislog_script* • *SEVERITY* and *MSG* is set in mapping
ibm_cm8_eventlog_sev.map	• *MSG* is set in script *ibm_cm8_eventlog_script* • *SEVERITY* is set in mapping

CALA mappings	now located in configuration for...
ibm_cm8_icmsrvlog_drop.map	mapping
ibm_cmod_log_sev.map	• *MSG* is set in script *ibm_cmod_log_script* • *SEVERITY* is set in mapping
oraalert_drop.map	mapping
oralist_drop.map	mapping
syslog_drop.map	mapping

What is the ADDITIONAL_KEY field?

The mapping definition has a different approach than the old CALA map files. There is only one large table where mappings for all datatypes are defined. All fields that are affected by a mapping are shown as columns in the table.

There are some fields that are used as keys for mappings of different datatypes, e.g. ERROR_ID.

Other fields like EventType for datatype fncap_trc are used only by one datatype. Including all these "single-use fields" as key columns would increase the number of columns and make the configuration more confusing. To decrease the number of columns, the column ADDITIONAL_KEY is used instead. The value of the column is set in the datatype-related script as described in the table above.

Another usage for the ADDITIONAL_KEY column are the exception maps for the fnislog configuration. There are some exceptions from the "normal" event processing depending on a substring of the message text. This substring of the message is copied to the ADDITIONAL_KEY field as well as this cannot be handled in the mapping configuration table.

Rules

Transfer of old rules

Rules are implemented as JavaScript in the Rules and Scripts Administration. See online help for this console for details.

Some of the old rules have been implemented as configuration for the smtpsink.

CALA rule	now located in script...
bp8_mysql.rmp	*bp8_script*
cala_check.rmp	*cala_script*, *cala_timer_script*
fnds_auditlog_logon.rmp	*fnds_auditlog_script*
fndslog_idxlog.rmp	*fndslog_script*
fndslog_timer.rmp	*fndslog_script*, *fndslog_timer_script*

CALA rule	now located in script...
ibm_cm8_icmsrvlog_mysql.rmp	*ibm_cm8_icmsrvlog_script*
isce_mysql.rmp	*isce_script*
p8srverror_mysql.rmp	*p8srverror_script*
saperion*_smtp.rmp	config for smtpsink

Code snippets for the CALA rules actions

You can implement the various CALA rules actions in the new configuration as well. The following code snippets must be added to the processEvent(evt) function of the corresponding <datastream>_script.

Actions that do not send events

CREATE_BASE - create an event on heap, do not send event

```
    // get reference to heap    var heap = rulesEngineCfgSrv.getHeap("scriptplugin",
   "event_timer");          //   add   event   to   heap          var   heapEntryId   =
 rulesEngineCfgSrv.addHeapEntry(heap, evt);   // return nothing   return null;
 heap   var heap = rulesEngineCfgSrv.getHeap("scriptplugin",
 "event_timer");   // add event to
 heap   var heapEntryId = rulesEngineCfgSrv.addHeapEntry(heap,
 evt);   // return
 nothing   return
```

DISCARD_BASE - remove matching events from heap, do not send event

```
    // get reference to heap    var heap = rulesEngineCfgSrv.getHeap("scriptplugin",
  "event_timer");       //  create  key  array  to  read  events  from  heap       var
  keyArray  =  ["HOSTNAME",  evt.get("HOSTNAME"),  "STREAM",  evt.get("STREAM")];     //
  remove  all  events  from  heap  that  match  the  key  array     var  eventidArray  =
 rulesEngineCfgSrv.getHeapEntries(heap, keyArray, null);   if (eventidArray.length > 0)
   {       // process all events that were returned from heap       for (var index=0;
 index < eventidArray.length; index++)        {            // remove entry
 rulesEngineCfgSrv.deleteHeapEntry(heap, eventidArray[index]);       }    }   // return
 nothing   return null;
 heap   var heap = rulesEngineCfgSrv.getHeap("scriptplugin",
 "event_timer");   // create key array to read events from
 heap   var keyArray = ["HOSTNAME", evt.get("HOSTNAME"), "STREAM",
 evt.get("STREAM")];   // remove all events from heap that match the key
 array   var eventidArray = rulesEngineCfgSrv.getHeapEntries(heap, keyArray,
 null);   if (eventidArray.length >
 0)
 {      // process all events that were returned from
 heap      for (var index=0; index < eventidArray.length; index
++)
 {         // remove
 entry         rulesEngineCfgSrv.deleteHeapEntry(heap,
 eventidArray[index]);
 }
 }   // return
 nothing   return
```

DISCARD_CURRENT - do not change heap, do not send event

```
   // return nothing   return null;
```

```
ing   return
```

Actions that send events

When using the SEND actions, either the current event or the base event can be sent. The following snippet shows how to get the base event:

```
   // get reference to heap    var heap = rulesEngineCfgSrv.getHeap("scriptplugin",
 "event_timer");    // create key array to read events from heap    var keyArray =
["HOSTNAME", evt.get("HOSTNAME"), "STREAM", evt.get("STREAM")];  // get all events from
heap that match the key array  var eventidArray = rulesEngineCfgSrv.getHeapEntries(heap,
keyArray, null);   if (eventidArray.length > 0)   {     // simply return the first base
event     return rulesEngineCfgSrv.getHeapEntryAsEvent(heap, eventidArray[0], true);   }
  else   {     // no base event found -> current event will be returned     return evt;   }
heap   var heap = rulesEngineCfgSrv.getHeap("scriptplugin",
"event_timer");   // create key array to read events from
heap   var keyArray = ["HOSTNAME", evt.get("HOSTNAME"), "STREAM",
evt.get("STREAM")];   // get all events from heap that match the key
array   var eventidArray = rulesEngineCfgSrv.getHeapEntries(heap, keyArray,
null);   if (eventidArray.length >
0)
{      // simply return the first base
event      return rulesEngineCfgSrv.getHeapEntryAsEvent(heap, eventidArray[0],
true);
}
else
{      // no base event found -> current event will be
returned      return
evt;
```

You can combine this code with the snippets shown above to achieve the different SEND actions.

CALA supported sending a "new" event as well by specifying key=value pairs in the action. You can do this by setting the event fields to the required values

```
(evt.put("key", "value");
```

Architecture Model

The following chapter describes the functionality of the ECM SM Service and the GUI Service.

The Server Service

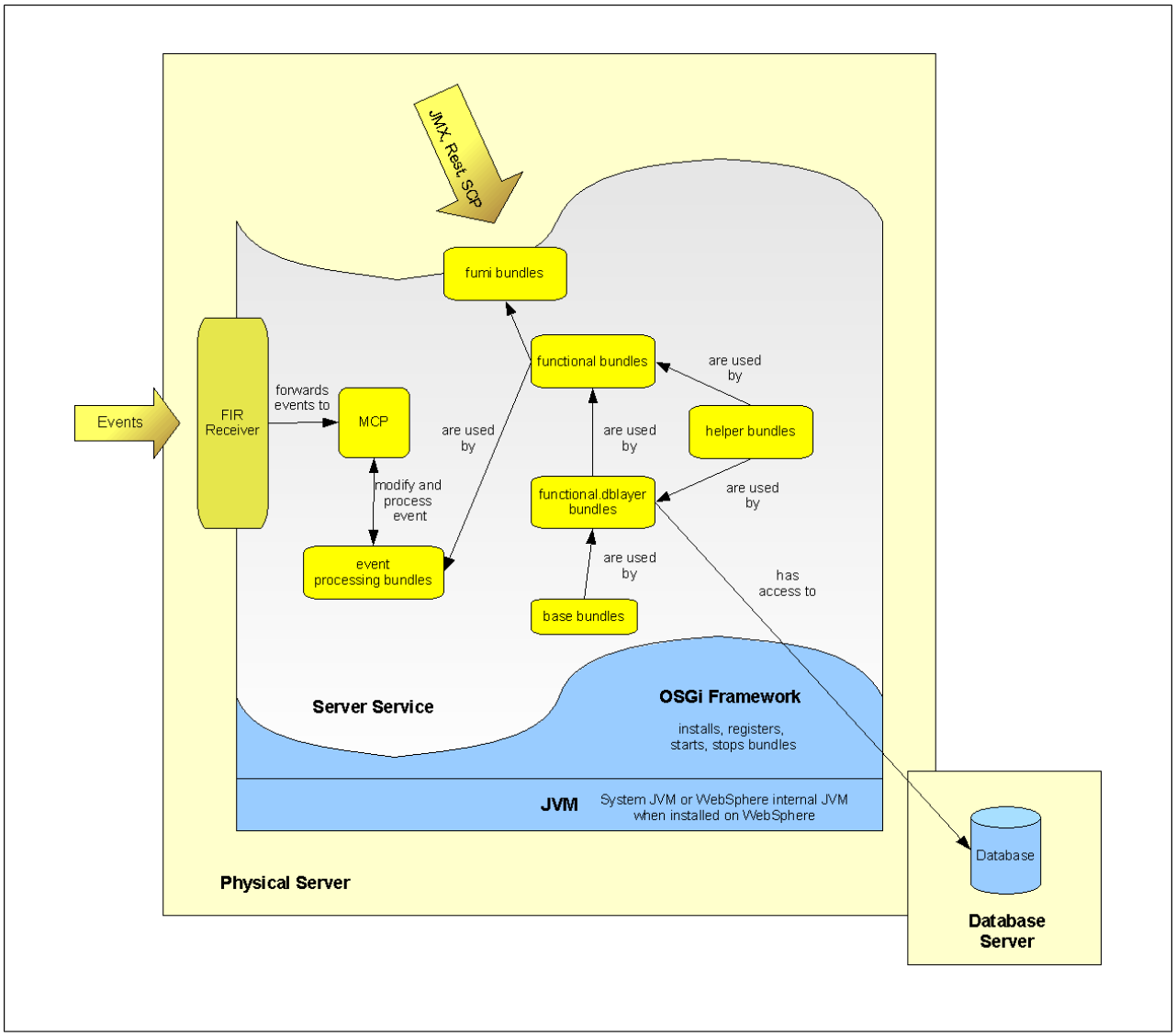


Figure: The Server Service

The following list describes the figure above:

- JVM
  The JVM (Version 5 or higher) is installed on the Physica Server machine. It runs all components of the Server Service. Also the OSGi Framework.

- OSGi Framework
  The OSGI framework handles the bundles. It starts, updates, stops, registers and installs bundles. At this point, the only thing to know about OSGi is, that it is an environment for the bundles to run in. The bundles are all plug-ins, which can be connected to each other but not run as an individual application. The OSGi framework has to plug these components together to a running application.
- Server Service
  The Server Service is the application, which runs inside the OSGi framework. This application is used to receive events, process and / or modify them and write them into the database.
- FIR Receiver
  The FIR Receiver is a component, which gets events from the old version and maps / transforms them into events of the new version, so that it fits into the database.
- MCP
  After events are transformed into the new format, they are sent to the MCP (Master Control Plug-in). This is the head of the event processing. The event contains information for the MCP, so that it knows, what to do with the event.
- event processing bundles
  These bundles are used to modify the events and send them back to the MCP in their modified format. Finally the event is written into the database by one of the event processing bundles.
- fumi bundles
  The FUMI bundles are bundles, which provide JMX, SCP and REST connection to our application. So it is possible to instrument the application from outside.
- functional bundles
  These bundles can best be explained as the "main backend components". They organize the trees, create reports, and are an abstract layer between database and other classes.
- functional.dblayer bundles
  These bundles have access to the database and are used to write items into the databases as well as deleting and updating them.
- base bundles
  These bundles define basic program structures like interfaces for the other (functional) bundles.
- helper bundles
  These bundles most likely contain mock (fake) implementations for tests.
- The Database Server
  The database server can be an separate machine or the same server as the Physical Server.

The RAP GUI Service

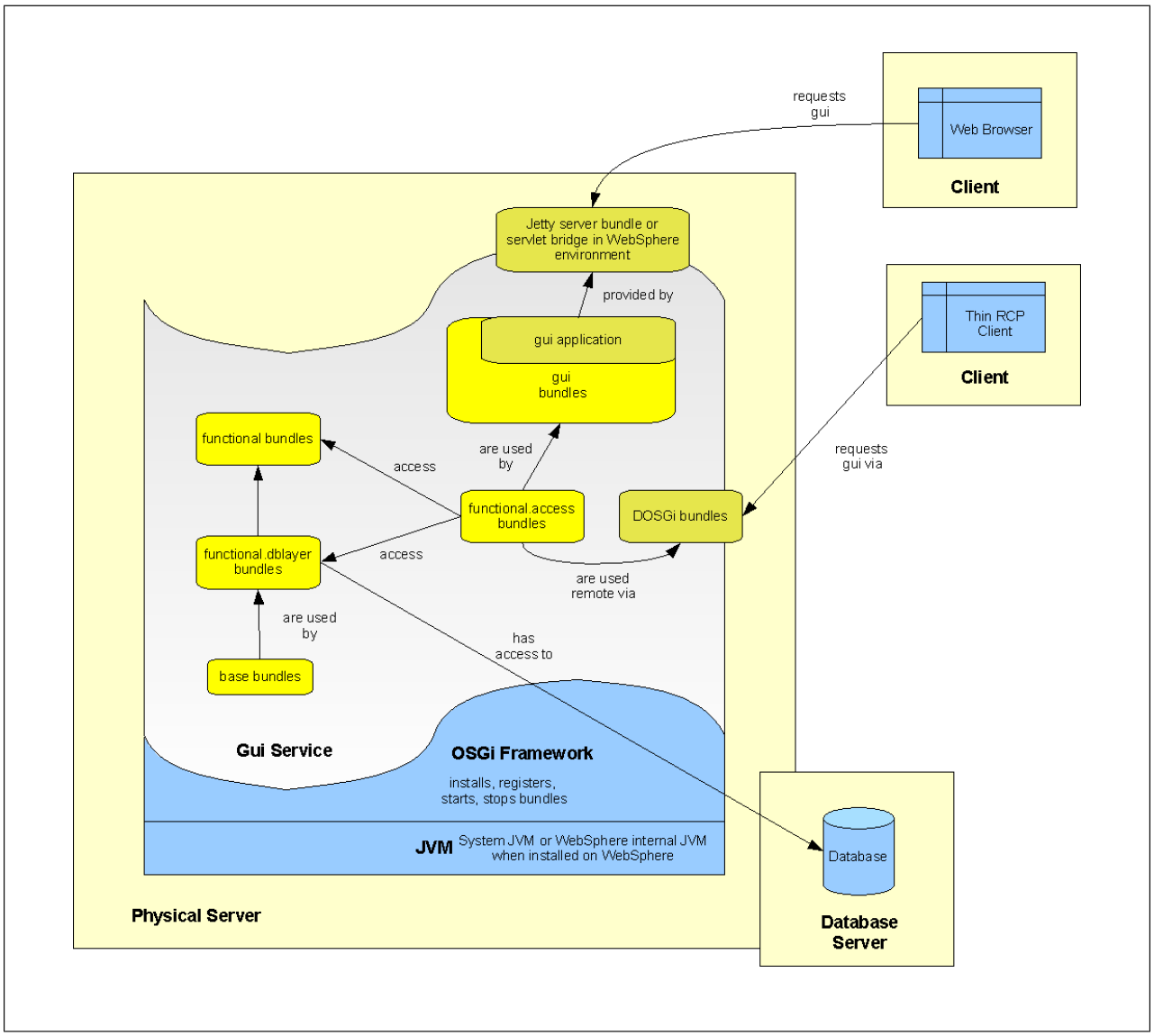


Figure: The RAP GUI Service

The following list describes the figure above:

- JVM
  The JVM (Version 5 or higher) is installed on the Physical Server machine. It runs all components of the RAP GUI Service. Also the OSGi Framework.
- OSGi Framework
  The OSGi Framework handles the bundles. It starts, updates, stops, registers and installs bundles. At this point, the only thing to know about OSGi is, that it is an environment for the bundles to run

in. The bundles are all plug-Ins, which can be connected to each other, but not run as an individual application. The OSGi Framework has to plug these components together to a running application.

- GUI Service
  The GUI Service is the application, which runs inside the OSGi Framework. This application is used to display the GUI to the user via RAP.
- functional bundles
  These bin bundles can best be explained as the "main backend components". They organize the trees, create reports, and are an abstract layer between database and other classes.
- functional.dblayer bundles
  These bundles have access to the database and are used to write items into the databases as well as deleting and updating them.
- base bundles
  These bundles define basic program structures like interfaces for the other (functional) bundles.
- helper bundles
  These bundles most likely contain mock (fake) implementations for tests.
- gui bundles
  The gui bundles are the RAP application its perspectives, views and editors. So all the bundles, which provide views.
- The Database Server
  The database server can be an separate machine or the same server as the Physical Server.
- The Servlet Container / Application Server
  In this server there run several servlets which provide the RAP Framework, which makes it possible to show the GUI in RAP.
- Client
  There is a web client (The web browser) for the RAP GUI consisting of the bundles needed to display the GUI.

Event Processing

The following chapter describes how incoming events are processed.

Event processing components

There are three kinds of event processing components. These are described in the list below.

- Source
  A component that creates events. (E.g the monitoring component on the client, but also the FIR receiver on the server - the FIR source). In the old architecture this was a reader.
- Processor
  A component that modifies events (receives events, modifies them and sends them to the next component)
- Sink
  A component that receives events without sending them to another (internal) component. A sink consumes events from the view of ECM SM - meaning that if an event arrives in the sink, it leaves the ECM SM event processing system and goes into another system (e.g. database, smtp, snmp, etc.) In the old architecture it was an emitter.

Event Processing Overview

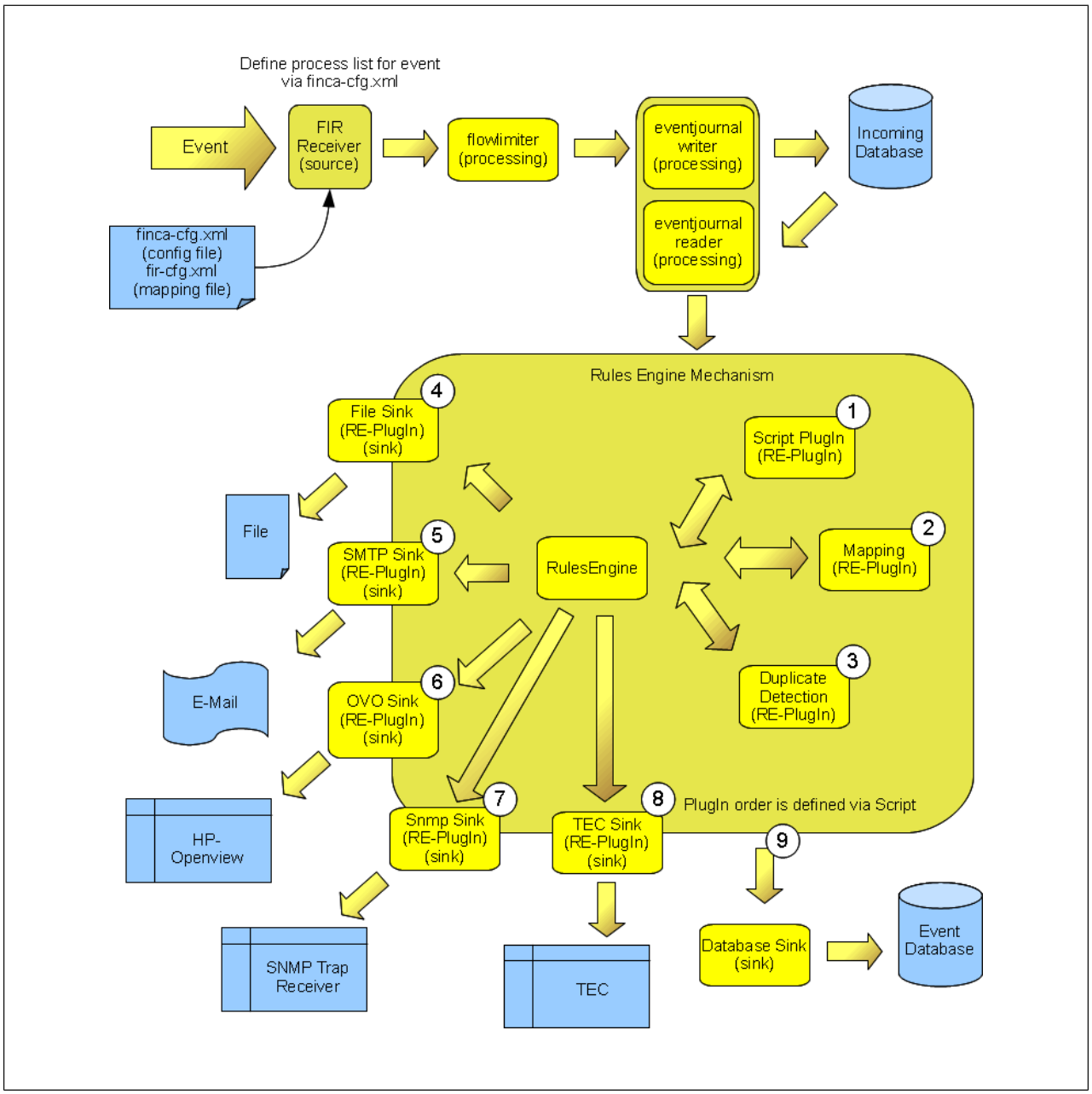


Figure: The Event Processing of ECM SM

The following list describes the figure above:

- Event

The event is represented by the arrows in the graphic. This is a FIR event. At the moment no other events than FIR events are supported. The event is sent to several bundles which process the event and give the modified event to the next event processing instance.

- FIR Receiver (source)
  The FIR Receiver transforms FIR events from the old architecture into events of the new architecture. In the installation directory there is a configuration file `eventserver/cfg/eventprocessing-cfg.xml`, in which a mapping for the FIR events is defined. This file is an entity for the `eventserver/cfg/finca-cfg.xml` file.
- Flowlimiter (processing)
  The FlowLimiter receives the events and checks if there is an event storm (many events in short period of time). If there is an event storm, the events will not be forwarded, but be written out in a rolling log file system. A "block event" will be sent. When the event storm is over, an "unblock event " will be sent and after that the events are forwarded as usual.
- Eventjournal (processing)
  The EventJournaling writes the incoming events into a special database table.
- Incoming Database Table
  This table stores unprocessed events. So it acts as a cache in case that the ECM SM server will crash. After the restart the events from the Incoming Events Table will be processed and after that the new events will be processed.
- RulesEngine Mechanism
  The RulesEngine Mechanism is the context in which the RulesEngine is running.
- RulesEngine (processing)
  The RulesEngine has several RulesEngine-Plug-ins. The RulesEngine is the main component to process events. There are RulesEngine Scripts, which process the event. There is one entrance script, which has several conditions. Those conditions lead the event to another script, etc. The scripts can send the event into the Plug-ins to modify it.
- Mapping Plug-in (RE-Plug-in)
  The mapping Plug-in is used to map fields of the event, according to a mapping table and to conditions of the current event. After the event was processed, the modified event will be sent back to the RulesEngine.
- Duplicate Detection Plug-in (RE-Plug-in)
  This Plug-in detects duplicate events. The event severity might change depending on the rules, which are defined for the duplicate detection. If there are several events of the same type, the severity will increase to a higher level. The event is sent back to the RulesEngine.
- OVO Sink, SMTP Sink and File Sink RulesEngine Plug-ins
  These plug-ins can redirect the events to its destination. So for example another system like Open View for Operations (OVO sink), e-Mail (SMTP sink) or just a file (File sink).
- Database Sink
  The database sink writes the event into the Event Database. Every event is sent to this sink by the RulesEngine Plug-in.
- Event Database
  Contains all the events to be displayed. In the event database there is a table for current events and a history table.

User Management

The following chapter describes the relation between users, groups, roles, etc.

RBAC Basics

The user management and rights concept is based on the standard of RBAC (short for Role Based Access Control).

This means, that every user has one or several roles. The roles have none or several rights defined. So the user has all the rights, which are defined by the roles, to which the user belongs to. It is not part of the concept, that a user can have a right directly. So every user in our system gets a role, which is named just like the user.

The following chapter describes the different components of the roles rights management in detail.

RBAC Overview

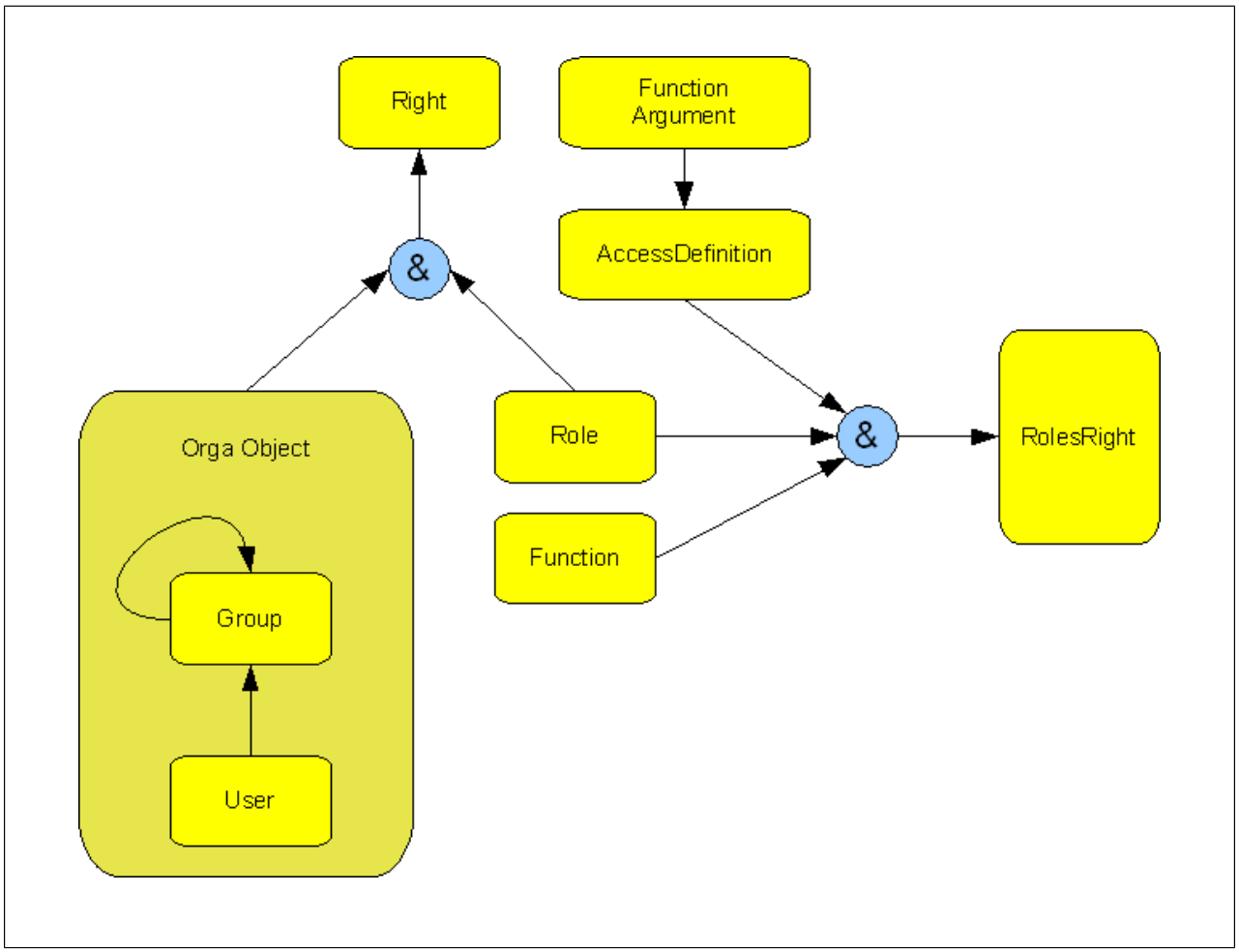


Figure: The RBAC Concept

The following list describes the figure above:

- User
  The user is the instance, which represents a single real user, which works with the system, as well as technical users to administer the system. Users have a set of properties, which can be defined individually for every user. There is a `_commonpropertiesuser_`, which has defined all properties, that shall be available for all users per default. All users inherit the properties from this special technical user if they have not defined them by their own. Some properties like password, room, phone number are available for every user. Other properties like text decorators, icon decorators, severity colors are basically defined by the _commonpropertiesuser_ and can be adjusted individually for every single user afterwards.
  Users are defined in the `UserEditor`. To edit the list of user properties, there is the special `UserPreferencesEditor`.

Users can belong to none or several groups and are a so called `Orga Object`. Orga Objects can be associated with roles. More about that relations can be found in description to `Group`, `Role` and `Right`.

- Group
  It is possible to associate several users to one group as well as groups can also contain other groups. Groups can also be associated to roles. A user, which is inside a group is automatically associated with the roles which "belong" to the group. So it is possible to give a bunch of users the same rights.
  Groups are Orga Objects and are defined in the `GroupEditor`.

- Orga Object
  An Orga Object is an abstract instance, which is whether a group or a user. It does not have any individual functionality. Combined with a role it is defined as a right.
  There are no editors for Orga Objects, since users as well as groups are Orga objects by their self.

- Right
  The right is an association between Orga Objects (users and groups) and roles. Internal the permission handling uses these rights objects to resolve the relations between users and roles to verify whether a user has permission for an action or not.
  Rights are not accessible by the user directly. Rights are defined by associating a group with a role in the `GroupEditor` and by associating a user with a role in the `UserEditor`.

- Role
  A role can have an arbitrary name. There exists a role for every user (with the same name of the user). When the user is renamed, also this special role is renamed. Roles are a central element in the RBAC.
  Roles are edited in the `RoleEditor`, in which the association between roles, functions and access definitions are defined.
  In the roles rights relation the role can be defined as "The instance WHICH is allowed to do something.

- Function
  Functions are used to define WHAT a role is allowed to do. So functions are named like `update`, `remove`, `create`.
  A function can be enabled and disabled. If the function is disabled, the action which is represented by the function is not available any more. So if the function `create` is disabled, no more new items can be created.
  Functions can be edited in the `FunctionEditor`.

- AccessDefinition
  An access definition represents every entity in the tree as a unique data type. So every host, every user, every datastream or every tree itself has an access definition, representing the object. So it is some kind of entity for all objects. It is used to define with WHAT something shall be done. An access definition can also have function arguments.
  Access definitions are edited in the `AccessDefinitionEditor`. This editor is reached by opening the context menu in the `TreeView` and clicking "Edit Access Definition".

- Function Argument
  A function argument can specify the access definition more detailed. It is like to define with WHAT something shall be done with WHICH limitations.
  The function arguments are edited in the `AccessDefinitionEditor` and are globbing strings, like on bash. They are used to specify the access definition more detailed like an url or a path which specifies the access definition more detailed. Per default no access definition is needed. There are

also special function arguments like "*HOST", which for example makes it possible to enable the visibility for all hosts for a user.

- Roles Rights
  Roles Rights are the association between a `role`, a `function` and an `access definition`. It is the definition of WHO (the role) is allowed to do WHAT (the function) on WHICH (the access definition) entity.
  Internally the roles rights definition is a table which stores the roles id, the function id and the access definition id in a row.

RBAC Explicit Example

The following section gives an explicit example about how RBAC works.

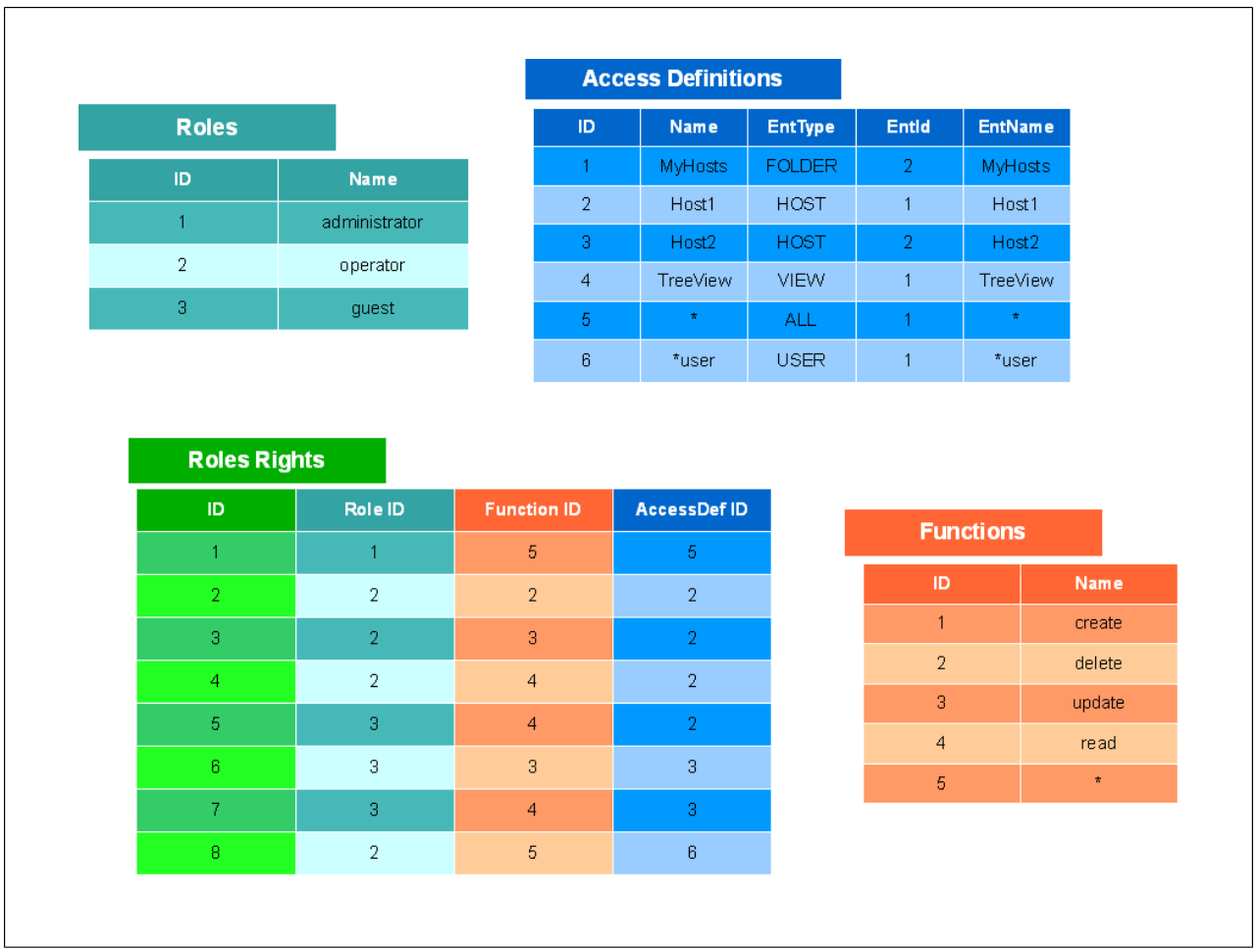


Figure: The RBAC Example

The figure above describes how the roles rights mechanism works. The list below describes the meaning of the tables.

- Roles
  The Roles table defines the roles in the system (manually created as well as automatically created). The administrator is supposed to have access to every item, the operator is supposed to have several access on several items and the guest role is supposed to have only read access on several items, for example.

- Access Definitions
  The Access Definitions table represents every visible and invisible tree item in the system. So it defines folders, users, hosts, datastreams, roles, groups, views and every other type of item which needs to have access control. In the example there are two hosts, a folder a view and two special access definitions. The access definition with the id "5" is the special "ALL" access definition. It has wildcard functionality and represents every access definition.
  Another special access definition is the one with id "6". It is a "*user" access definition and represent "all users". It is also possible to define a *HOST or *FOLDER access definition, which represent "all hosts" respective "all folders".
  The Name column defines the name of the access definition, the EntType represents the type of the entity which is represented by the access definition. EntId defines the id of the entity inside its own table and EntName is the name of the entity inside its table. It is also possible to create a second access definition for the same entity.

- Functions
  The functions table shows the basic functions of the system, such as create, delete and update. There is a special function "*" with the id "5". It has wildcard functionality and represents every function.

- Roles Rights
  The roles rights table brings all the other tables in relation to each other. Each row of the roles rights table will be treated manually.
  - *Row 1:* Role Id "1" means that the administrator is allowed to perform function 5 (*) on access definition 5 (ALL). This means that the administrator is allowed to perform every function on every access definition. Total access.
  - *Row 2:* Role Id "2" means that the operator is allowed to perform function 2 (delete) on the access definition 2 (Host1) .
  - *Row 3:* Role Id "2" means that the operator is allowed to perform function 3 (update) on the access definition 2 (Host1).
  - *Row 4:* Role Id "2" means that the operator is allowed to perform function 4 (read) on the access definition 2 (Host1). So this role is allowed to delete, update (edit) and read (show in editor and in tree) the item Host1. It would also have been possible to use the function with the id 5 (*) to give the user all access to the item Host1.
  - *Row 5:* Role Id "3" means that the guest is allowed to perform function 4 (show) on the access definition 2 (Host1). Guest is not allowed to perform any other functions on this item. So the role guest has read only access to this item.
  - *Row 6 and Row 7:* Role Id "3" means that the guest is allowed to perform function 3 (update) and 4 (read) on the access definition 3 (Host2).
  - *Row 8:* Role Id "2" means that the operator is allowed to perform function 5 (*) on access definition 6 (*user). This means that the operator role has full access (function *) on all users (access definition *user).
  - Since there are no other rows in the roles rights table, no roles (except the administrator role, which has full access on every access definition) have any access to the access definition 1 and 4 (MyHosts folder and TreeView).

How to Reset the Admin Account?

If an administrator has changed the last account with administrator rights, it will not be possible to undo that action! So it can be necessary to re-enable the default administrator account, that was created while the IBM Enterprise Content Management System Monitor was installed. To allow the re-creation/re-enablement of that default admin account the following has to be done in that order:

1 Get the full host name of the ECM SM event server by calling the token generation script without any arguments, see below.

2 Open a call at the official ECM SM support asking to send you a token to reset the admin account, append the host name from step 1 to that call.

3 After the support has send you a token, call the reset admin script with the host name and the token as arguments, see below.

If nothing went wrong, it should be possible to login as "admin" with the default password "admin" again.

It is strongly recommended to change the default password right after the first successful re-login.

Getting the correct Host name

Preconditions

The following preconditions must be met to allow a successful execution of the script to resolve the correct host name of the ECM SM server:

- The DNS lookup for the host name of the event server host is functioning properly.
- A Java JRE with a version not lower than 7 is installed at the event server.
- The JAVA_HOME environment variable is set to point to the Java JRE's installation directory.
- The caller of the script is logged on at the event server.
- The caller of the script has access to the script's installation directory at the event server.
- The caller of the script has the permission to execute the script at its installation location.
- The caller of the script has changed the current directory of the command line interface to the directory the script is installed.

Getting the Host name

To get the host name to be used for the token generation and later on to reset the admin account, the resetter script has to be called without any arguments. Replace `"<ext>"` with `"sh"` for Unix(TM)/Linux(TM) and `"cmd"` for Microsoft Windows(TM) in the following.

```
ResetAdmin.<ext>
```

The result should look like the following:

```
The name of this host to be used is 'pw2k3sysm01'.
Syntax: ResetAdmin <id> <token>
With: <id>    = the full qualified domain name of this host; must be the EC
      <token> = the token received from the support. Note: Must be set in d
All parameters are mandatory.
```

Mention the host name shown in the first output line. That host name has to be send to the support with a request to get the token for that host (aka id).

Resetting the Admin Account

Preconditions

The following preconditions must be met to allow a successful execution of the admin account resetter script:

- The correct host name of the event server host is known, see above.
- The DNS lookup for the host name of the event server host is functioning properly.
- The official IBM Enterprise Content Management System Monitor support has provided the token for the correct host name of the ECM SM server. If not already done, the token must be requested. Beware: The token expires after 14 days after its creation. The expiration date it the part after the TX in the token.
- A Java JRE with a version not lower than 7 is installed at the event server.
- The JAVA_HOME environment variable is set to point to the Java JRE's installation directory.
- The event server database must be accessible through JDBC.
- The caller of the script is logged on at the event server.
- The caller of the script has access to the script's installation directory at the event server.
- The caller of the script has the permission to execute the script at its installation location.
- The caller of the script has changed the current directory of the command line interface to the directory the script is installed.

Calling the ResetAdmin Script

The admin account resetter script has to be called like shown below. Replace `"<ext>"` with `"sh"` for Unix(TM)/Linux(TM) and `"cmd"` for Microsoft Windows(TM) in the following.

```
ResetAdmin.<ext> <host name event server> <token>
```

On success, the result should look similar to this:

```
 SUCCESS
        Login as admin should now be possible again.
```

What to do Next?

Restart the GUI server.

Login as user "admin" with the default password "admin".

It is strongly recommended to change the default password right after the first successful re-login.

Error Codes and Messages

The so called error codes are the return codes of the script. They are not printed to stdout, but can be accessed by the platform specific environment variables. The return '0' (zero) signals success.

The following error codes and messages are possible.

Error code: 1
ERROR: Failed to load database settings from "dbcfg.properties".

Error code 2
ERROR: Database corruption too severe.

The database is too damaged to allow the automatic account restoration.

Details: The ANY entity does not exist.

Error code 3
Failed to persist the corrective actions.

Details: The database commit failed.

Error code 4 (case: Script called without any arguments)
The name of this host to be used is '<hostname>'.

```
Syntax: ResetAdmin <id> <token>
With: <id> = the full qualified domain name of this host; must be the ↵
ECM SM server host
      <token> = the token received from the support
All parameters are mandatory.
```

Error code 4 (case: Script called with arguments)
ERROR: Wrong number of arguments!

```
Syntax: ResetAdmin <id> <token>
With: <id> = the full qualified domain name of this host; must be the ↵
ECM SM server host
      <token> = the token received from the support
All parameters are mandatory.
```

Error code 5

Failed to retrieve host name.

Details: The host name of this host could not be resolved.

Error code 6

ERROR: Invalid id given.

Details: The host name given is not the full qualified domain name of this host.

Error code 7

ERROR: Invalid token given.

Details: The given token is not valid for the given id or invalid at all.

Error code 8

ERROR: Invalid token given.

Details: The given token is not valid for the given id or invalid at all.

Error code 9

ERROR: The name of this host could not be resolved.

Details: A working host name resolution via DNS is absolutely necessary for this program to function properly.

Error code 10

ERROR: The token has expired.

Details: The used token is too old. Every token has an expiration date. That date is shown as the last part of the token name after the letters TX. The expiration date has the format: `YYYMMDDHHmmSS`, where the hours are in the 24 hours format.

Note: Changing the expiration date by renaming the token file will invalidate the token. Renaming it back to its original name is possible and will enable the token again as long as the expiration date has not been passed.

Error code -1

ERROR: An unknown error occurred.

Details: Most likely this signals a Java RuntimeException.

Error code 99

Cannot find a valid Java installation.

A Java executable is essential for this tool.

Please install a Java JRE; at least version 7.

Set the JAVA_HOME environment variable appropriately.

Exiting.

Other error codes

ERROR: An unknown error occurred.

Details: The return code was <numeric error code>

Context-sensitive help

Windows

On a windows system only get focus of a view or something else and press F1 on the keyboard. Now will it open a new view with help for the given object.

UNIX/Linux

On a linux or unix system the context-sensitive help will working similar to windows, but some newer Linux systems like to press SHIFT+F1 on the keyboard to perform the desired action.

Appendix F. Logging Configuration

Introduction

This section describes how diverse logging mechanisms of the *ECM SM Server* product can be adjusted in order to obtain a user-specific customization.

How to Configure Logging

The *ECM SM Server* software provides several ways to gather logging information.

Setting a Log Level

The log level can be defined in two ways:

- Globally for the whole application (default log level)
- Separately for each bundle, package or class.

NOTE The bundle log level overrides the global log level for this specific bundle.

The log level can be defined at two different locations:

- Via `$CENIT_ROOT/<componentName>/cfg/logging.conf` (persistently)
- Via OSGi console (temporarily - as long as the respective component is running)

You ought to distinguish between two fundamentally different log file types for the *GUI Server* and the *Event Server* component:

- Log files (e.g. **`gui.0.log`** or **`eventserver.0.log`**)
  These files log all messages of the `INFO` severity or worse.
- Trace files (e.g. **`gui.0.trace`** or **`eventserver.0.trace`**)
  Trace log files are deactivated per default. When activated during the installation process (see *Enable ECM SM Event Server and GUI Debugging* installer option in the *Server Installation Process* chapter), trace log files will contain all log messages of the FINE severity.
  The trace log settings can be changed in the `$CENIT_ROOT/<componentName>/cfg/logging.conf` file at any time.
  This mechanism is used to be able to log the same processes at two different log levels. In this sense, the log file mechanism is used for a more product-internal view whereas the trace log file mechanism is used for a rather 3rd-party-bundle-oriented logging providing a high granularity of logged messages.

Change Logging on the OSGi Console

Log levels are alternatively set over the OSGi console. Log in to the OSGi console via *Telnet* or *SSH*.

Setting the log level via bundle name

```
0001 osgi> setloglevel <BundleName> <LogLevel>
0002 For example:
0003 osgi> setloglevel finca.functional.hashcode DEBUG
```

In the brief example above, the log level of the `finca.functional.hashcode` bundle is set to `DEBUG` for the current session - until the configuration is read in again.

Setting the log level via package name

The log level can specifically be set for a distinct package of a bundle.

```
0001 osgi> setloglevel <PackageName> <LogLevel>
0002 For example:
0003 osgi> setloglevel finca.functional.hashcode.internal DEBUG
```

In the brief example above, the log level of the `finca.functional.hashcode.internal` package is set to `DEBUG` for the current session - until the configuration is read in again.

Setting the log level via class name

It is possible to set the log level for a specific class inside a specific package of a bundle.

```
0001 osgi> setloglevel <ClassName> <LogLevel>
0002 For example:
0003 osgi> setloglevel finca.functional.hashcode.internal.OsgiHashCodeService DEBUG
```

In the brief example above, the log level of the `finca.functional.hashcode.internal.OSGiHashCodeService` package is set to `DEBUG` for the current session - until the configuration is read in again.

NOTE Class-specific log level configuration is only available for classes, logging was implemented for explicitly. This logging type should be used for debugging purposes only. Due to this reason the list of classes, that support this kind of logging, is not public.

Log Levels

There are several log level nuances on the OSGi console, to which the log level of a bundle can be set to:

- OFF
  Logging is turned off.
- SEVERE (Internal level ERROR)
  This log entry indicates the bundle or service may not be functional. It is used, when exceptions occur.
- WARNING (Internal level WARNING)
  This log entry indicates a bundle or service is still functioning but may experience problems in the future because of the warning condition.
- INFO (Internal level INFO)
  An informational message. This log entry may be the result of any change in the bundle or service and does not indicate a problem.
- CONFIG (*3rd party level ERROR and WARNING)
- FINE (Internal Level DEBUG)
  This is the most helpful log level for problem determination.
- FINER (*3rd party level INFO)

- FINEST (Internal Level TRACE)
- ALL (*3rd party level DEBUG)
  This is the most granular log level, which can be defined. It is used for problem determination and may be irrelevant to anyone but the bundle developer. It contains detailed information about object values at runtime.

*3rd party levels are used by OSGi logging or SLF4J logging, which are used by several 3rd party components. Since they are not part of our product logging, they are logged with low priority.

Configure Logging and Tracing via logging.conf

The `logging.conf` can be found at `$CENIT_ROOT/<componentName>/cfg/logging.conf`.

The `logging.conf` file is documented by detailed inline comments. This chapter only provides additional information about the log levels, which can be set for the logging mechanism.

- .level = SEVERE
  This level sets the level for the 3rd party components of the product. It is recommended not to change it, unless a deep debugging / tracing should be performed.
- de.cenit.eb.sm.finca.level = FINE
  This is the default log level. Every component inherits at least from this log level, if it has no log level defined for itself and its parent does not have any log levels. You can enter an arbitrary log level here. FINE is only used as example.
- java.util.logging.FileHandler.level = INFO
  This is the log level for the logging component. If there are any log entries, worse than the log level, which is defined here, they will not be written into the log file. You can enter an arbitrary log level here. INFO is only used as example.
- de.cenit.eb.sm.finca.helper.loghandler.TraceFileHandler.level = OFF
  This is the log level for the tracing component. If there are any log entries, worse than the log level, which is defined here, they will not be written into the trace file. You can enter an arbitrary log level here. OFF is only used as example. It is recommended, that it is a finer log level, than the level which is defined in `java.util.logging.FileHandler.level`.

Inheritance of log levels

There is a hierarchy between the log levels of the several bundles / packages. Since there is a package structure, the child inherits the log level of the parent, if no log level is set. The following example illustrates how the log levels are inherited.

```
0001 # Example for a log level configuration
0002 finca.functional.dblayer.entitymanager.provider       <no log level set>
0003  |- finca.functional.dblayer.entitymanager            <log level DEBUG set>
0004      |- finca.functional.dblayer                      <log level WARNING set>
0005           |- finca.functional                         <Default log level INFO ↵
     set>
```

Let's imagine, that there is an error assumed to be somewhere in the `dblayer.entitymanager`.

So it is possible to set the log level of the `entitymanager` to DEBUG, which allows a very detailed logging for this component.

Since `dblayer` is a very complex component, you might to reduce the output of `non-entitymanager` components of the `dblayer` and so set the level to WARNING.

The default log level (`finca.functional`) is set to INFO in `logging.conf`. As the `finca.functional.dblayer` log level is explicitly set to WARNING, the default log level is overwritten for this component.

The `entitymanager.provider` has no log level set. It inherits the log level of its parent. The parent of `finca.functional.dblayer.entitymanager.provider` is the bundle `finca.functional.dblayer.entitymanager`.

In case that `finca.functional.dblayer.entitymanager` had no level set, the parent's parent log level would be used, which means `finca.functional.dblayer`. Finally if `finca.functional.dblayer` was not set the next parent would be `finca.functional` (default log level).

Appendix G. InstallAnywhere Installer Variables

Documentation of the InstallAnywhere installer variables

The following table provides an overview of the public installer variables used by the *InstallAnywhere* software during the installation of *ECM SM Server*. In general, the value of a variable should not be altered. Please adapt it only in case, you know what you are doing, and exclusively use one of the specified allowable values listed below:

ECM SM server installer variable	Description
CENIT_ROOT	The CENIT tools base installation directory.
S_ADMIN_EMAIL	The e-mail address of the person or group responsible for administering this ECM SM (CALA remote execution) server and agent service.
S_APP_HOST	The WebSphere Server name (hostname).
S_APP_PORT	The WebSphere Server port.
S_APP_TYPE, S_APP_TYPE_LONG	Web Application Server type (in short and long version)
S_AUTH_LOGIN, S_AUTH_PLAIN, S_AUTH_DIGEST, S_AUTH_NTLM, S_AUTH_SASL	The supported SMTP authentication method (LOGIN, PLAIN, DIGEST-MD5, NTLM or SASL).
S_AUTH_LONG_METH	Authentication method written in long version. Allowable values: (Internal authentication, no LDAP)
S_AUTH_NONE	Disables the SMTP authentication.
S_AUTOMATIC_STARTUP, S_MANUAL_STARTUP	The startup behavior: • Automatic Startup • Manual Startup
S_CALA_REX_HOST	The full qualified IP name of the ECM SM server.
S_CALA_REX_HOST_DETECT	Full qualified system name for the CALA_REX.
S_CALA_REX_PASSWD_ORIG	The password of the Services/Agents User, only for MS SQL Windows Authentication.
S_CALA_REX_PORT	This parameter defines the server-side port of the agent that's responsible for client installation, task execution and other action taken on clients.
S_CALA_REX_USER_ORIG, S_CALA_REX_USER, S_CALA_REX_USER_SHORT	If this parameter is specified the services/agents will be installed with this user account. Otherwise the service/daemon will be started as Local System (Windows) or root (UNIX/Linux). The "_SHORT" version is the name without domain. The version "S_CALA_REX_USER" is the normalized version of the String.

ECM SM server installer variable	Description
S_CONFIGURE	The default Install type: Upgrade
S_CREATE_DB	Is set to 1, if the option to create the database and not to create DDL files was selected in the installer. In this case the installer will automatically create the database and no DDL files will be written out.
S_CREATE_DB_AND_DDL	Is set to 1, if the option to create the database by the installer and additionally write down the DDL files, else 0.
S_CREATE_DDL	Is set to 1, if DDL creation was selected in the installer, else 0. In this case the database is not created automatically, but must be created via script.
S_CUSTOM_FORMATFILE_ORIG	The custom event forwarding format file inclusive relative path to <install-dir>/eventserver.
S_DB_DB2, S_DB_MSSQL, S_DB_ORACLE, S_DB_POSTGSQL	The supported database access: • DB2 • MSSQL Server, only for Windows based ECM SM servers) • Oracle • PostgreSQL, only supported for Demo and testing purposes
S_DB_HOST	The host name (IP address) of the host on which the database management system is running.
S_DB_INST_NAME	The instance name of the configured database.
S_DB_JNDI_NAME	The created WebSphere datasource name.
S_DB_NAME	Name of the database inside the database management system
S_DB_PASSWD_ORIG	The password to authenticate against the configured database.
S_DB_PORT	The port of the configured database.
S_DB_SCHEMA	The database schema of the configured database.
S_DB_SCHEMA_ORACLE_UC	The database schema of the configured database (special upper case handling for oracle databases).
S_DB_TYPE, S_DB_TYPE_LONG	Database type, like (DB2 or MSSQL) in short and long version
S_DB_TYPE_PREVIOUS	The database type of the FSM 4.0 installation whose events shall be imported.
S_DB_USER_ORIG	The user to authenticate against the DB management system.
S_DB2_COPY_LOC	The IBM DB2 driver file location.
S_DDL_FOLDER	The directory for create DDL's, when running in "create database automatically and additionally DDL files" mode.

ECM SM server installer variable	Description
S_DDL_FOLDER_ADDON	The directory for created DDL's, when running the AddOn installation.
S_DDL_FOLDER_ONLY	The directory for created DDL's, when running the installation in "create database manually via DDL files" mode.
S_DL_PORT	The ECM SM Download Server port. The default value of this port is 23990.
S_DONT_USE_SSL	Is set to 0 if the GUI was configured for HTTPS, else to 1.
S_EAR_CONTEXT_ROOT	The context root path of the ECM SM installation inside a WebSphere based installation for the GUI service. It is used insite the application.xml file, which is part of the ear file.
S_EAR_DISPLAY_NAME	This variable is used to specify the name of the application inside application.xml file, which is part of the ear file. This name will be visible in the WebSphere Integrated Solutions console, after deployment for the GUI service.
S_EAR_FILE	The name of the ear file, for the GUI service, which is created, when the application is installed in WebSphere mode.
S_EAR_SERVER_CONTEXT_ROOT	The context root path of the ECM SM installation inside a WebSphere based installation for the event server service. It is used inside the application.xml file, which is part of the ear file.
S_EAR_SERVER_DISPLAY_NAME	This variable is used to specify the name of the application inside application.xml file, which is part of the ear file. This name will be visible in the WebSphere Integrated Solutions console, after deployment for the event server service.
S_EAR_SERVER_FILE	The name of the ear file, for the event server service, which is created, when the application is installed in WebSphere mode.
S_EEIF_ENABLE, S_EEIF_DISABLE	Enables/Disables the IBM EEIF Event forwarding.
S_EEIF_JARS	When configuring the EEIF sink, the path to the jar files, which must be copied from the server on which the Tivoli Enterprise Console is running, is stored in this variable.
S_EEIF_LIB_DIR	The IBM Tivoli EEIF Java library directory (location of evd.jar and log.jar).
S_EEIF_PORT	The IBM Tivoli EEIF port. The default value of this port is 5529.
S_EEIF_SERVER	The IBM Tivoli EEIF event server name or IP address.
S_ESX_COPY_LOC	The VMWare ESX driver file name (full name of file vim25.jar).

ECM SM server installer variable	Description
S_FIR_PORT	The event reception port. This is used to receive events from clients (managed systems). The default value of this ECM SM server monitoring port (CALA Port) is 23840.
S_IMPORT_DB	Is set to 1, when the option to import events from an old FSM 4.0 system was activated, else it is set to 0.
S_INSTALL_DEBUG	Enables the ECM SM server installer debugging.
S_JAVA_INSTALLER_DEBUG	The Java debug parameter '-Dde.cenit.eb.sm.installer.debug=true'.
S_JDBC_CLASS	The JDBC class, which is used for the InitDB process.
S_JDBC_CLASS_DBIMPORT	The JDBC class, which is used for the import db process, when importing for FSM 4.0 events was created.
S_JDBC_DBIMPORT_PASSWORD_ORIG	The password for the user to authenticate against the database management system, which is used to perform the import of old FSM 4.0 events.
S_JDBC_DBIMPORT_USER	The user to authenticate against the database management system, which is used to perform the import of old FSM 4.0 events.
S_JDBC_DRIVER_PATH	The path to the JDBC driver path (jar file or directory which contains the jar files), which is used for the database initialization.
S_JDBC_DRIVER_PATH_FW	The path to the JDBC driver path with forward slashes (jar file or directory which contains the jar files), which is used for the database initialization.
S_JDBC_FILE_PREVIOUS	The path to the JDBC driver path (jar file), which is used for the FSM 4.0 event import.
S_JDBC_MANIFEST_FILE	Gather JDBC driver file for Oracle, MSSQL or PostgreSQL.
S_JDBC_PROVIDER_DIR	The JDBC providers directory, that specifies the driver files that can be used to connect to a database.
S_JDBC_PROVIDER_DIR_PREVIOUS	The JDBC providers directory, that specifies the driver files that can be used to connect to a database, which is used for the FSM 4.0 event import.
S_JDBC_SETTINGS	The JDBC connection string, as example 'jdbc:postgresql:<database-name>' for the PostgreSQL.
S_JETTY, S_WAS	The used type of the Web Application Server (Embedded Jetty Server or IBM WebSphere).
S_KEYSTORE_FILE_ORIG	The full qualified keystore file name including path.
S_KEYSTORE_KEY_PW_ORIG, S_KEYSTORE_PW_ORIG	The SSL key password. If unset the store password will be used.
S_KEYSTORE_PATH	The directory of the keystore.

ECM SM server installer variable	Description
S_LDAP	Allowable values: 0 or 1. (0): Internal authentication is used. (1): The used authentication type is LDAP. In this case, an external LDAP (Directory Service) system is required to authenticate users.
S_LDAP_CARRY_OVER_EXT_GRP	Allowable values: 0 or 1. (0): User groups will be assigned to the user from the internal RBAC database. (1): User groups will be carried over from an external system like an LDAP directory service.
S_LDAP_DEFAULT_PORT	The LDAP Server port (e.g. 389, 636 if SSL activated).
S_LDAP_DOMAIN_LC_ADS, S_LDAP_DOMAIN_LC_ADS2	The Domain name in lowercase letters, e.g. mydomain.com.
S_LDAP_GROUP_ATTRIBUTE_ADS, S_LDAP_GROUP_ATTRIBUTE_ADS2, S_LDAP_GROUP_ATTRIBUTE_ADAM, S_LDAP_GROUP_ATTRIBUTE_SUN, S_LDAP_GROUP_ATTRIBUTE_IBM, S_LDAP_GROUP_ATTRIBUTE_NOVELL	The LDAP Group attribute that contains group information.
S_LDAP_GROUP_NAME_INDEX_ADS, S_LDAP_GROUP_NAME_INDEX_ADS2, S_LDAP_GROUP_NAME_INDEX_ADAM, S_LDAP_GROUP_NAME_INDEX_SUN, S_LDAP_GROUP_NAME_INDEX_IBM, S_LDAP_GROUP_NAME_INDEX_NOVELL	The LDAP Group name index that contains group information. The default index is 1.
S_LDAP_GROUP_NAME_PATTERN_ADS, S_LDAP_GROUP_NAME_PATTERN_ADS2, S_LDAP_GROUP_NAME_PATTERN_ADAM, S_LDAP_GROUP_NAME_PATTERN_SUN, S_LDAP_GROUP_NAME_PATTERN_IBM, S_LDAP_GROUP_NAME_PATTERN_NOVELL	The LDAP Group name pattern.
S_LDAP_GROUP_QUERY_ADS, S_LDAP_GROUP_QUERY_ADS2, S_LDAP_GROUP_QUERY_ADAM, S_LDAP_GROUP_QUERY_SUN, S_LDAP_GROUP_QUERY_IBM, S_LDAP_GROUP_QUERY_NOVELL	The LDAP Group query.
S_LDAP_GROUP_URL_ADS, S_LDAP_GROUP_URL_ADS2, S_LDAP_GROUP_URL_ADAM, S_LDAP_GROUP_URL_SUN, S_LDAP_GROUP_URL_IBM, S_LDAP_GROUP_URL_NOVELL	The LDAP Group provider URL to search for groups.
S_LDAP_KIND	The prefix used in the specified LDAP URL. Allowable values: ldap or ldaps. The URL format is ldap://host:port/dn?attributes?scope?filter?extensions respectively ldaps://host:port/dn?attributes?scope?filter?extensions
S_LDAP_OVER_SSL, S_LDAP, S_INTERNAL_AUTH	The used authentication type (LDAP over SSL, LDAP or ECM SM internal authentication).

ECM SM server installer variable	Description
	• LDAP over SSL: In this case, specify the path to the truststore file name and the password. • ECM SM internal authentication: In this case, no external LDAP (Directory Service) is required to authenticate users for ECM SM.
S_LDAP_PORT_ADAM, S_LDAP_PORT_ADS, S_LDAP_PORT_ADS2, S_LDAP_PORT_IBM, S_LDAP_PORT_NOVELL, S_LDAP_PORT_SUN	The LDAP Server port (e.g. 389, 636 if SSL activated).
S_LDAP_REQ_INT_USER	Requires internal ECM SM user.
S_LDAP_SERVER_ADS, S_LDAP_SERVER_ADS2	The ADS Server name (Domain Controller without DNS suffix, e.g. 'adsserv').
S_LDAP_SERVER_ADAM, S_LDAP_SERVER_SUN, S_LDAP_SERVER_IBM, S_LDAP_SERVER_NOVELL	The full qualified LDAP Server name.
S_LDAP_SSL_PASSWORD_ENC	Encrypts truststore password S_LDAP_SSL_PASSWORD to S_LDAP_SSL_PASSWORD_ENC
S_LDAP_SSL_PW	The LDAP password.
S_LDAP_SSL_SECURITY_PRINCIPAL_ADS2	The LDAP Security principal. The default value is '{0}' or '{0}@<domain-name>'.
S_LDAP_SSL_SECURITY_PROTOCOL	Security protocol to use, eg: 'ssl'.
S_LDAP_TRUSTSTORE_FILE	The LDAP truststore file name.
S_LDAP_TRUSTSTORE_PATH	The keystore file including full path.
S_LDAP_TYPE, S_LDAP_LONG_TYPE	LDAP Type in short and long name, like "ADAM" for "Microsoft ADAM"
S_LDAP_USER	The valid LDAP user name of the specified directory server.
S_LDAP_USER_URL_ADAM, S_LDAP_USER_URL_SUN, S_LDAP_USER_URL_IBM, S_LDAP_USER_URL_NOVELL	The LDAP User URL.
S_LOCAL_HOST	Contains the full qualified host name of the local server.
S_LOGF_ENABLE, S_LOGF_DISABLE	Enables/Disables log file event forwarding.
S_LOGF_FILENAME_ORIG	The log file with path relative to <install-dir>/eventserver or absolute path (directory must exist).
S_LOGF_MINLEVEL	Sets the log file logging level to the highest.
S_MSADS_AUTH, S_MSADS2_AUTH, S_MSADAM_AUTH, S_SUNJAVA_AUTH, S_IBMTIVOLI_AUTH, S_NOVELL_AUTH	The (LDAP) authentication types: • MS ADS (with SASL/GSSAPI authentication) • MS ADS (with simple authentication method) • MS ADAM • SUN Java System Directory Server

ECM SM server installer variable	Description
	• IBM Tivoli Directory Server • Novell eDirectory
S_MSSQL_COPY_DLL_FILE	MSSQL Windows authentication DLL file sqljdbc_auth.dll inclusive full path.
S_MSSQL_COPY_LOC	The JDBC driver file name (full name of file sqljdbc4.jar).
S_MSSQL_DB_AUTH, S_MSSQL_WIN_AUTH	The MSSQL authentication method: • Database authentication, the technical user that connects to the database requires database authentication only. • Windows authentication (integrated authentication), this authentication method requires the access to an integrated authentication Windows DDL file.
S_MSSQL_DLL_FILE	The MSSQL Windows authentication file sqljdbc_auth.dll inclusive full path.
S_MULTILINE, S_SINGLELINE	The output format of the log file event forwarding. • The default multi line output format. • The default single line output format.
S_ALL_RE, S_NO_HARMLESS, S_NO_WARNING	The configuration of the report events. • Report all events. • Report all except HARMLESS events. • Report all except HARMLESS and WARNING events.
S_ORACLE_COPY_LOC	The JDBC driver file name (full name of file ojdbc5.jar or ojdbc6.jar).
S_OVO_ENABLE, S_OVO_DISABLE	Enables/Disables the HP Operations forwarding (HP OVO Forwarding).
S_OVO_LIB_DIR	HO OVO Java library directory (location of jopcagtbase.jar and jopcagtmsg.jar).
S_OVO_PORT	HO OVO port. The default value of this port is 381.
S_OVO_SERVER	The HP OVO server name (full qualified DNS name).
S_PRG_OS_USER_ORIG, S_PRG_OS_USER	For Windows there is the possibility to define the user of the windows services. This user is also selected, when the MSSQL database installation setting is configured for Windows authentication instead of database authentication. This feature is only supported for MSSQL.
S_PROD_DEBUG	Enables ECM SM Server and GUI debugging.

ECM SM server installer variable	Description
S_PROD_DISP_NAME	The product display name (name, which is shown in the GUI).
S_PROD_NAME_LC	The internal product name. "_LC" stands for "lower case"
S_PROD_NAME_VENDOR	The internal product name, focused on the vendor of the product. It is used to build the name references of the downloadable content of the webstart directory.
S_PROD_SHORT_NAME	The internal product name in its short version.
S_PROD_TECH_NAME	The technical name is used to set the name of files and internal processes at the time of installation process.
S_PROD_TECH_NAME_SHORT	The technical name is used to set the name of files and internal processes at the time of installation process. This is the short version of this variable.
S_PROD_TECH_NAME_SHORT_LC	The technical name is used to set the name of files and internal processes at the time of installation process. This is the short version in lower case of this variable.
S_PROD_TECH_NAME_SHORT_UC	The technical name is used to set the name of files and internal processes at the time of installation process. This is the short version in upper case of this variable.
S_RAP_CONSOLE_ENABLED	Enables OSGi RAP (WEB GUI) console. (coded as alphanumeric value - can be true for enabled and false for disabled)
S_RAP_CONSOLE_NUM_ENABLED	Enables OSGi RAP (WEB GUI) console. (coded as number - can be 1 for enabled and 0 for disabled)
S_RAP_CONSOLE_PORT	The RAP console port (default: 23980) Default console port of the Port of the OSGi console of the RAP (Rich Ajax Platform) Web server. Allows access to the OSGi console of the event server. Only used for maintenance.
S_RAP_HTTP_PORT	The port to access the RAP GUI via web browser. Default in Jetty based installations is 23990.
S_RAP_HTTP_SERVER	The RAP HTTP Server name. Full qualified IP name or address of the ECM SM RAP (Rich Ajax Platform) Web server.
S_RAP_REMOTE_DEBUG_PORT	The Server RAP Remote Debug port (Default: 8001).
S_SERVER_CONSOLE_ENABLED	Enables OSGi server console (coded as alphanumeric value - can be true for enabled and false for disabled)
S_SERVER_CONSOLE_NUM_ENABLED	Enables OSGi server console (coded as number - can be 1 for enabled and 0 for disabled)
S_SERVER_CONSOLE_PORT	The Server console port (default: 23960). Port of the OSGi console of the event server. Allows access to

ECM SM server installer variable	Description
	the OSGi console of the event server. Only used for maintenance.
S_SERVER_INIT_REMOTE_DEBUG_PORT	Specifies the -Xdebug port for remote Java debugging for the InitDB component. Is empty, if the port was not set in the installer. It is only used in the Unix/Linux version of the initdb.sh script. The line for remote debugging is commented out and must be uncommented, if debugging shall be enabled. It is only used for manual execution of the InitDB process.
S_SERVER_INITDB_PORT	The Server InitDB console port (default: 23962). Port of the OSGi console of the database initialization process. Allows access to the OSGi console of the database initialization process of the installer. Only used for maintenance.
S_SERVER_REMOTE_DEBUG_PORT	Specifies the -Xdebug port for remote Java debugging for the event server component. Is empty, if the port was not set in the installer.
S_SHELL_ARCHIVE	The name of the zip archive, which contains the Windows shell, when it was downloaded manually.
S_SHELL_PATH	The path to the zipped Windows shell, when it was downloaded manually and referenced in the installer.
S_SMTP_AUTH_PASSWD_ORIG	The password of authentication user.
S_SMTP_AUTH_USER	The user to authenticate against the SMTP server, when an authentication method was defined in the SMTP sink configuration panel.
S_SMTP_AUTH_USER_ORIG	The SMTP authentication user (if authentication is enabled).
S_SMTP_AUTHTYPE	Is not set, if SMTP authentication is not activated. Else it defines the authentication type with which the ECM SM SMTP components shall authenticate against the SMTP server.
S_SMTP_ENABLE, S_SMTP_DISABLE	Enables/Disables the email forwarding (SMTP).
S_SMTP_PORT	The SMTP Server port. The default value of this port is 25.
S_SMTP_SERVER	The SMTP Server name (full qualified DNS name).
S_SMTP_USER	The SMTP email account to forward events.
S_SNMP_ENABLE,S_SNMP_DISABLE	Enables/Disables the SNMP event forwarding.
S_SNMP_ENTERPRISE_OID	The SNMP Enterprise Object Identifier. The default identifier is 1.3.6.1.4.1.8235.
S_SNMP_PORT	The SNMP Server port. The default value of this port is 162.
S_SNMP_SERVER	The SNMP Server name or IP address.
S_SNMP_V1, S_SNMP_V2C, S_SNMP_V2C_INFORM	The used SNMP type (Version 1, Version 2C or Version 2C Inform).

ECM SM server installer variable	Description
S_START_NOW	Is set to 1, if the ECM SM services shall startup after the installation finished. If it is set to 0, the services (GUI and Server) shall not be started.
S_STARTUP_TYPE	Is set to "auto", if the ECM SM services (GUI and Server) shall be started automatically after system startup. If "manual" is entered, the services won't start automatically at system startup, but have to be started manually.
S_NEWINSTALL, S_RECONFIGURE, S_UPGRADE	By detecting previous installations, it is possible to select the installation types: • New Install: The previous installation of the ECM SM server can no longer be used, because only one ECM SM server installation instance is supported on a server. • Reconfigure Only: The installer will not install components of ECM SM on the system into the existing installation directory. Use this for changing global configuration settings. • Upgrade: The installer will use the existing installation directory. All product components will be installed and configured again. Existing service/agent settings will be removed and installed again.
S_COMPLETEINSTALL, S_PRIMARY_INSTALL, S_COMPONENTINSTALL	By detecting previous installations, it is possible to select the Server types: • Complete Serevr Installation (S_COMPLETEINSTALL): All Server components of the ECM SM server will be installed. All components are: Database initialization, CALA_REX server, Event Server and GUI Server. A ECM SM CALA_REX Agent can optionally be installed on the server. • Primary Server installation (S_PRIMARY_INSTALL): The Primary Server ECM SM installation contains the Database initialization, the CALA_REX Server, the Download Server or instead of the Downlaod Server the GUI Server component. Note: the Primary Server is a subset of the Complete installation, without an additional GUI Server and Event Server installation as Secindary Server installation the ECM SM System architecture is not complete. A ECM SM CALA_REX Agent can optionally be installed on the server.

ECM SM server installer variable	Description
	• Secondary Server installation (S_COMPONENTINSTALL): This server installation type is used to install the first or another GUI Server and / or Event Server comonent. A ECM SM CALA_REX Agent can optionally be installed on the server.
S_INSTALL_CALAREX, S_INSTALL_INITDB, S_INSTALL_GUI, S_INSTALL_EVENTSERVER, S_INSTALL_DOWNLOADSERVER, S_INSTALL_CALAREX_AGENT	Since this version of the product supports the installation of specific components the following variables are set to 1, if the component is being installed or to 0 in the case the component wont be installed: • S_INSTALL_CALAREX: Defines the status of the CALA_REX Server installation. • S_INSTALL_INITDB: Defines the status of the Database initialization. • S_INSTALL_GUI: Defines the status of the GUI Server installation. • S_INSTALL_EVENTSERVER: Defines the status of the Event Server installation. • S_INSTALL_DOWNLOADSERVER: Defines the status of the Download Server installation. • S_INSTALL_CALAREX_AGENT: Defines the status of the CALA_REX Agent installation.
S_USE_DB2_FILES, S_DONT_USE_DB2_FILES	The IBM DB2 driver file location: • The used of DB2 JDBC driver files for remote databases. • No used of DB2 JDBC driver files.
S_USE_ESX_FILES, S_DONT_USE_ESX_FILES	The VMWare ESX monitoring: • The used VMWare ESX driver file. • No used VMWare ESX driver file.
S_USE_KRB5	The Kerberos authentication in Active Directory, only for MS ADS with GSSAPI.
S_USE_MSSQL_FILES, S_DONT_USE_MSSQL_FILES	The Microsoft SQL Server driver location: • The used MS SQL JDBC driver files for remote databases. • No used MS SQL JDBC driver files.
S_USE_ORACLE_FILES, S_DONT_USE_ORACLE_FILES	The Oracle Database driver location: • The used Oracle JDBC driver files for remote databases. • No used Oracle JDBC driver files.

ECM SM server installer variable	Description
S_USE_SSL	Allowable values: 0 or 1. (0): Unsecured website access is used. (1): Secure website access is used.
_WAR_FILE	The GUI WAR file to deploy the WebSphere Application Server ($S_PROD_TECH_NAME_SHORT $_gui_app.war).
S_WAR_SERVER_FILE	The Server WAR file to deploy the WebSphere Application Server ($S_PROD_TECH_NAME_SHORT $_server_app.war).
S_WEB_PORT	ECM SM Web Server GUI and download port. The default value of this port is 23990 (any free port can be chosen).

Appendix H. Required database permissions

The following tables show the database permissions each monitor requires grouped by database. Additional tables show the permissions required by generic database monitors and configuration scripts that can access different database types.

All monitors and configuration scripts only require READ access to the listed tables.

DB2

These monitors are available for all products with a DB2 database component.

Monitor	Permissions	Note
DB2Status	SYSCAT.TABLESPACES	
DB2TablespaceStatus	**Version 8** SYSCATV82. SNAPTBSPACEPART **Version 9** SYSIBMADM. SNAPTBSP_PART	
DB2TablespaceFree	**Version 8** SYSCATV82. SNAPTBSPACEPART **Version 9** SYSIBMADM. SNAPTBSP_PART	
DB2TablespaceUsed	**Version 8** SYSCATV82. SNAPTBSPACEPART **Version 9** SYSIBMADM. SNAPTBSP_PART	
DB2Statistic	**UNIX** OS execute permission for command line tool db2 **Windows** OS execute permission for command line tool db2cmd	cannot be used with UDC

Monitor	Permissions	Note
	In order to run the DB2Statistics command, the following roles are needed (for both operating systems): SYSADM SYSCTRL SYSMAINT SYSMON	

MSSQL

These monitors are available for all products with an MSSQL database component.

Monitor	Permissions	Note
MSSQLDatabaseSize	master..sysdatabases sysfiles master..spt_values	
MSSQLDatabaseStatus	master..sysdatabases	
MSSQLDataspaceUsed	master..sysdatabases exec for stored procedure sp_spaceused	
MSSQLDataspaceUsedPct	master..sysdatabases exec for stored procedure sp_spaceused exec for tool DBCC SQLPERF (LOGSPACE) permission for VIEW SERVER STATE	
MSSQLLogspaceUsed	master..sysdatabases exec for tool DBCC SQLPERF (LOGSPACE) permission for VIEW SERVER STATE	
MSSQLLogspaceUsedPct	master..sysdatabases exec for tool DBCC SQLPERF (LOGSPACE) permission for VIEW SERVER STATE	
MSSQLNumberOfProcesses	master..sysdatabases master..sysprocesses	

Oracle

These monitors are available for all products with an Oracle database component.

Monitor	Permissions	Note
OracleDatafileAvailable	sys.dba_data_files	
OracleFreeTablespace	sys.dba_free_space	
OracleNextExtend	sys.dba_tablespaces sys.dba_tables dba_free_space sys.dba_indexes sys.dba_clusters sys.dba_rollback_segs sys.dba_segments v$parameter	
OracleNonActiveRedologs	v$log	
OracleRollbackSegmentOnline	sys.dba_rollback_segs	
OracleTablespaceAvailable	sys.dba_tablespaces	
OracleUserAccountStatus	dba_users	

Generic monitors

Generic monitors can monitor different database types.

Standard monitors

Monitor	Permissions	Note
ServiceLevel Monitor	**DB2** <schema>.evt_mon_inst <schema>.evt_new <schema>.evt_hosts **MSSQL** <schema>.evt_mon_inst <schema>.evt_new <schema>.evt_hosts **Oracle** [<schema>.]evt_mon_inst [<schema>.]evt_new [<schema>.]evt_hosts **PostGRESQL** <schema>.evt_mon_inst <schema>.evt_new <schema>.evt_hosts	
SqlAlphaNumericMonitor		As the SELECT statement is a monitor argument, the required permissions depend on the given SELECT statement. There are no default database permissions required by this monitor.
SqlNumericMonitor		As the SELECT statement is a monitor argument, the required permissions depend on the given SELECT statement. There are no default database permissions required by this monitor.

Monitors for IBM FileNet Image Manager

Monitor	Permissions	Note
IndexDatabaseAvailability	**DB2** SYSCAT. TABLESPACES **MSSQL** master..sysdatabases **Oracle** sys.dba_tablespaces	

Monitors for IBM FileNet P8 4.x/5.x

In addition to the below listed IBM FileNet P8 4.x/5.x monitors the IBM FileNet P8 4.x/5.x monitoring archive contains pre-configured IBM FileNet CE Objectstore monitors for the supported database types. These monitors (name prefix ObjectStore followed by the DB type) are equivalent to the basic DB-specific monitors listed in this chapter, but require only minimum parameters. All other Database specific parameters are configured using the task 'Configure Objectstore Database Settings'. These monitors require the same Database permissions described in the first section of this chapter.

Monitor	Permissions	Note
Content Search Services Index Requests	**DB2** <schema>. INDEXREQUESTS **MSSQL** <dbname>. INDEXREQUESTS **Oracle** [<schema>.] INDEXREQUESTS	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor

Monitor	Permissions	Note
		configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. The schema name is optional.
Content Search Services Indexing Errors	**DB2** <schema>. INDEXREQUESTS **MSSQL** <dbname>. INDEXREQUESTS **Oracle** [<schema>.] INDEXREQUESTS	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor

Monitor	Permissions	Note
		configuration. See monitor documentation for details. The schema name is optional.
IccMailObjects	**DB2** <schema>.DocVersion <schema>. ClassDefinition **MSSQL** <dbname>.DocVersion <dbname>. ClassDefinition **Oracle** [<schema>.]DocVersion [<schema>.] ClassDefinition	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. The schema name is optional.
IccMailInstances	**DB2** <schema>.Generic <schema>. ClassDefinition	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor

Monitor	Permissions	Note
	MSSQL <dbname>.Generic <dbname>. ClassDefinition **Oracle** [<schema>.]Generic [<schema>.] ClassDefinition	configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. The schema name is optional.
IccObjectsNotStoredFinally	**DB2** <schema>. CONTENTQUEUE **MSSQL** <dbname>. CONTENTQUEUE **Oracle** [<schema>.] CONTENTQUEUE	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor

Monitor	Permissions	Note
		configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. The schema name is optional.
StorageAreaInformationSql	**DB2** <schema>.StorageClass <schema>. ClassDefinition **MSSQL** <dbname>.StorageClass <dbname>. ClassDefinition **Oracle** [<schema>.] StorageClass [<schema>.] ClassDefinition	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor

Monitor	Permissions	Note
		configuration. See monitor documentation for details. The schema name is optional.
StorageAreaStatusSql	**DB2** <schema>.StorageClass <schema>. ClassDefinition **MSSQL** <dbname>.StorageClass <dbname>. ClassDefinition **Oracle** [<schema>.] StorageClass [<schema>.] ClassDefinition	**DB2** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **MSSQL** <dbname> is the database name name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. **Oracle** <schema> is the schema name either given as monitor argument or read from the file *objectstore_conf.prop*, depending on monitor configuration. See monitor documentation for details. The schema name is optional.

Monitors for IBM Content Management (CM8, OnDemand, Common Store)

Monitor	Permissions	Note
NetSearchExtenderDiskSpace	**DB2** DB2EXT. TTEXTINDEXES **MSSQL** n/a **Oracle** n/a	**MSSQL** not supported for this monitor **Oracle** not supported for this component
NetSearchExtenderError	**DB2** DB2EXT. TTEXTINDEXES **MSSQL** n/a **Oracle** n/a	**MSSQL** not supported for this monitor **Oracle** not supported for this component
ResourceManagerHeartbeat	**DB2** <schema>. ICMSTRESOURCEMGR **MSSQL** n/a **Oracle** ICMSTRESOURCEMGR	**DB2** <schema> is the schema name given in the CM Ressource Manager configuration in the field **Database Schema Name** **MSSQL** not supported for this monitor
ResourceManagerServices	**DB2** <schema>.RMVERSION <schema>. RMCONFIGURATION **MSSQL** n/a	**DB2** <schema> is the schema name given in the CM Ressource Manager configuration in the field **Database Schema Name** **MSSQL** not supported for this monitor

Monitor	Permissions	Note
	Oracle RMVERSION RMCONFIGURATION	
ResourceManagerVolumeSpace	**DB2** <schema>. RMVOLUMES **MSSQL** n/a **Oracle** RMVOLUMES	**DB2** <schema> is the schema name given in the CM Ressource Manager configuration in the field **Database Schema Name** **MSSQL** not supported for this monitor
ResourceManagerWebStatus	**DB2** <schema>. ICMSTRESOURCEMGR <schema>. ICMSTRMACCESS- TYPES **MSSQL** n/a **Oracle** ICMSTRESOURCEMGR ICMSTRMACCESS- TYPES	**DB2** <schema> is the schema name given in the CM Ressource Manager configuration in the field **Database Schema Name** **MSSQL** not supported for this monitor
Monitoring for IBM Content Manager Version 8 Eventlog	**DB2** <schema>. ICMSTSYSADMEVEN- TS <schema>. ICMSTITEMEVENTS **MSSQL** n/a **Oracle** ICMSTSYSADMEVEN- TS	**DB2** <schema> is the schema name given in the CM Library Server configuration in the field **Database Schema Name** **MSSQL** not supported for this type of monitoring

Monitor	Permissions	Note
	ICMSTITEMEVENTS	

Monitors for AddOn components

Monitor	Permissions	Note
DatacapPagesProcessed	**DB2** <schema>.queue <schema>.tasks <schema>.qstats <schema>.taskstats **MSSQL** <schema>.queue <schema>.tasks <schema>.qstats <schema>.taskstats **Oracle** [<schema>.]queue [<schema>.]tasks [<schema>.]qstats [<schema>.]taskstats	
DatacapPagesQueued	**DB2** <schema>.queue <schema>.tasks <schema>.qstats <schema>.tmbatch **MSSQL** <schema>.queue <schema>.tasks <schema>.qstats	

Monitor	Permissions	Note
	<schema>.tmbatch	
	Oracle	
	[<schema>.]queue	
	[<schema>.]tasks	
	[<schema>.]qstats	
	[<schema>.]tmbatch	

Configuration scripts

Configuration for IBM FileNet Image Manager

	Permissions	Note
Configure_IS_Server	**DB2** no DB access required during configuration **MSSQL** no DB access required during configuration **Oracle** sys.nls_database_parameters	

Configuration for IBM Content Collector, FileNet Email Manager and Records Crawler

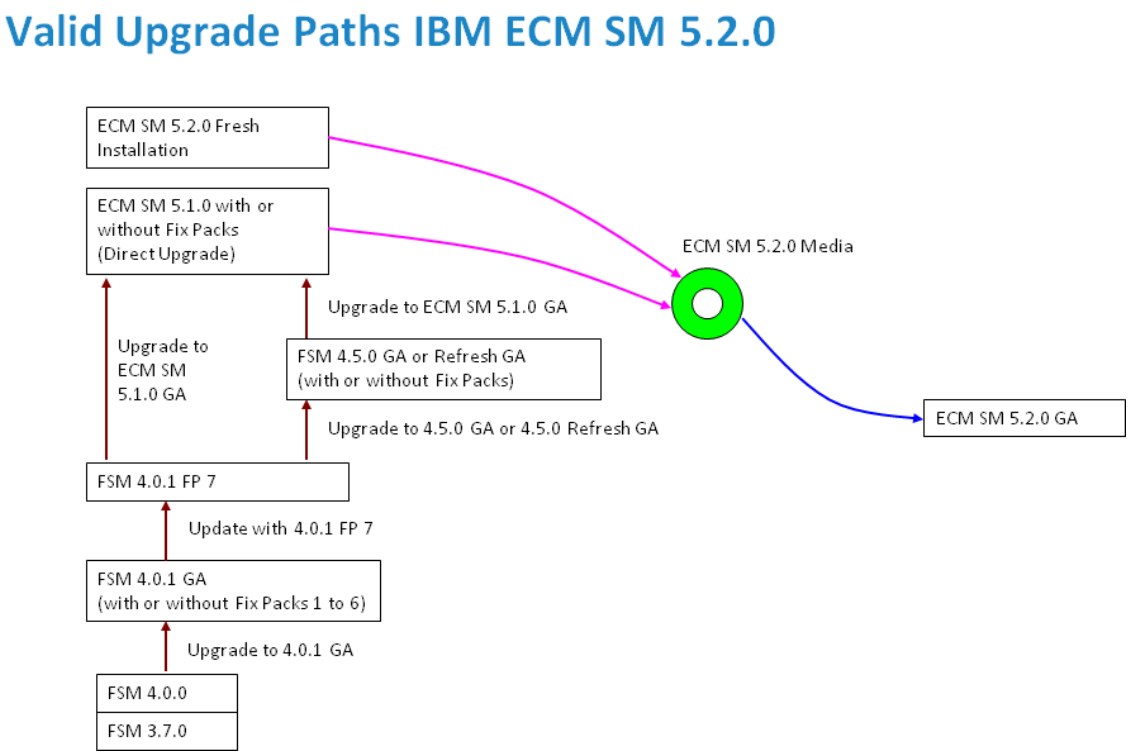
	Permissions	Note
Configure ICC / Email Manager or Records Crawler	**DB2** **EM = 4.0 (ICC 2.1x, 2.2x and 3.0)** <schema>.schema_version **EM < 4.0** <schema>.component_config_option **MSSQL** **EM = 4.0 (ICC 2.1x, 2.2x and 3.0)** <dbname>.schema_version	**DB2** <schema> is the schema name given in the Email Manager configuration in the field **Database Schema** **MSSQL** <dbname> is the database name given in the Email Manager configuration in the field **Database Name**

	Permissions	Note
	EM < 4.0 <dbname>.component_ config_option	
Oracle		
	EM = 4.0 (ICC 2.1x, 2.2x and 3.0) schema_version	
	EM < 4.0 component_config_ option	

Appendix I. Upgrade Explanation

IBM ECM SM Server Upgrade Path Explanation

The following graphic illustrates the upgrade path scenarios supported by *IBM ECM SM Server 5.2.0*.



IBM ECM SM Server 5.2.0 Upgrade Path Overview

Valid upgrade paths from IBM FSM 4.0.1 version to IBM ECM SM Server 5.2.0

1 Update FSM 4.0.1 with 4.0.1 Fix Pack 7, then either upgrade through FSM 4.5.0 GA or FSM 4.5.0 Refresh GA to ECM SM 5.1.0 GA and in a final step upgrade to *IBM ECM SM Server 5.2.0*

2 Update FSM 4.0.1 with 4.0.1 Fix Pack 7, then directly upgrade to ECM SM 5.1.0 GA and subsequently upgrade to *IBM ECM SM Server 5.2.0*

NOTE During each of these steps, it is strongly recommended to create a backup copy of the ECM SM Server environment and database. Please consider also the *Upgrade Notes* chapter in the *ECM SM Release Notes* of the IBM ECM SM Server version you want your system to be upgraded to.

IMPORTANT In case of uncertainty about how to properly upgrade your ECM SM Server system please contact the IBM Support Portal.

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IBM Enterprise Content Management System Monitor (December 2016)

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