MiVoice MX-ONE

MX-ONE Management Applications Installation and Configuration

Release 7.2

February 19, 2020

Mitel®

Notice

The information contained in this document is believed to be accurate in all respects but is not warranted by **Mitel Networks™ Corporation (MITEL®)**. The information is subject to change without notice and should not be construed in any way as a commitment by Mitel or any of its affiliates or subsidiaries. Mitel and its affiliates and subsidiaries assume no responsibility for any errors or omissions in this document. Revisions of this document or new editions of it may be issued to incorporate such changes.No part of this document can be reproduced or transmitted in any form or by any means - electronic or mechanical - for any purpose without written permission from Mitel Networks Corporation.

Trademarks

The trademarks, service marks, logos and graphics (collectively “Trademarks”) appearing on Mitel's Internet sites or in its publications are registered and unregistered trademarks of Mitel Networks Corporation (MNC) or its subsidiaries (collectively "Mitel") or others. Use of the Trademarks is prohibited without the express consent from Mitel. Please contact our legal department at legal@mitel.com for additional information. For a list of the worldwide Mitel Networks Corporation registered trademarks, please refer to the website: http://www.mitel.com/trademarks.

®,™ Trademark of Mitel Networks Corporation
© Copyright 2020, Mitel Networks Corporation
All rights reserved

Contents

Chapter: 1 **MX-ONE Provisioning Manager, End User Portal Description 1**

Introduction 1
- New End User Portal GUI 1
- New Sub-Menus 3

Menu Description 4
- End User Information Menu 5
  - Services 5
  - User Information 11
  - Personal Number 11
- General Menu 12
  - Settings 12
  - Status 13
  - License 13
  - PIN Reset 13

Chapter: 2 **Installing MX-ONE Provisioning Manager, Installation Instruction . . 16**

Introduction 16
- Installation Scenarios 16
- Installation Using mxone_maintenance Script 16

Prerequisites 16
- StandAlone Installation 17
- Coexistence Installations on Server 1 17

Considerations 17

Preparations 17
- Obtaining a Digital Certificate 17

Installation 18

Accessing MX-ONE Provisioning Manager 18

MX-ONE Provisioning Manager Start and Stop 18

Upgrade 19

Migrating 5.x or 6.x Manager Provisioning Data to 7.x PM 19

Migrating from D.N.A. to MX-ONE Provisioning Manager 19
- Migration Scenarios 19

Migrating from D.N.A. to MX-ONE Provisioning Manager 20
Exporting User and Department Data in D.N.A. 20
Backing Up Data in MX-ONE Provisioning Manager 20
Importing D.N.A. Data in MX-ONE Provisioning Manager 21
Migrating from D.N.A. to MX-ONE PM in Environments 21
Exporting User and Department Data from D.N.A. 22
Importing D.N.A. Data to CMG 22
Downloading and Installing the CMG Export Registry File 22
Exporting Data from CMG 23
Backing Up Data in MX-ONE Provisioning Manager 24
Adding CMG as a Subsystem in MX-ONE Provisioning Manager 25
Creating Locations for CMG Customer Groups in MX-ONE PM 25
Importing CMG Data in MX-ONE Provisioning Manager 25
Migrating to MX-ONE PM from Environments 26
Backing Up Data in CMG 26
Important Post-Migration Considerations 26
Post Installation 27
Uninstallation 28
Log Files 28
Fault Recovery 28
Increasing Heap Memory Size in Jboss Configuration File 28

Chapter: 3 MX-ONE Provisioning Manager Deployment 30

Introduction 30
MX-ONE PM Deployment Alternatives 30
General 30
MX-ONE SNM and PM on the same SN 31
MX-ONE SNM and PM on different Service Nodes 34
MX-ONE PM on Separate Server 35

Chapter: 4 MX-ONE Provisioning Manager, User Instructions 36

Introduction 36
Scope 36
Target Group 36
Internet Browser Settings 36
Target Group 36
Internet Browser Settings 36
MX-ONE Provisioning Manager Overview 37
System Requirements 37
Key Features of MX-ONE Provisioning Manager 37
Preferred Language 38
Getting Started 38
Manual Workflow When Getting Started 38
Integrating With MITEL CMG 39
Integration With MiCollab Advanced Messaging 40

Integration With MS Active Directory 40
Integration With SIP-DECT OMM 40
Integration With MiCollab Server 41
Using MX-ONE Provisioning Manager 41
Logging In and Logging Out 41
Navigating in MX-ONE Provisioning Manager 41
Icons, Symbols and other Graphical Elements 42
Using the Help 45
Basic or Advanced Settings 45
Enabling the Automatic Logout Indicator 45
Actions 45
Self Services 46
Adding Data 46
Viewing Data 46
Filtering Data in List Views 47
Sorting Listviews 47
Comparing Data 47
Searching for Users 48
Changing Data 48
Removing Data 49
Printing Data 49
Swapping Equipment Positions 49
Handling Templates 50
Creating a Template for a Configuration Item 50
Uploading or Downloading a Template 50
Using a Template to Create a Configuration Item 51
Using a Multistep Button 51
Using Shortcuts 52
Using Backup & Restore 52
Subsystem Backup 52
Using Compare with Subsystem 53
Importing Data to MX-ONE Provisioning Manager 54
Importing from D.N.A. and CMG 54
Importing from CSV 54
Exporting Data from MX-ONE Provisioning Manager 55
Exporting Data for CMG 55
Exporting General Data 55
Exporting Call Accounting Data 56
Tenant and Feature Configuration 56
Create a Service Provider 57
Create a Reseller 59
Create a Tenant Administrator 61
Create a Tenant 63
Setup a New MX-ONE PM to Monitor Different Sites 65
CPE Mode Setup 66
End User Profile Settings to Monitor Group Data 72

System and Error Messages 73
Logs 73
Changing the Log Level 74
Post-Installation Configuration Tool 74
MX-ONE Provisioning Manager Interface with WebSEAL 74
General 74
Requirements 74
WebSEAL 75
Connection to the Provisioning Manager 75
PM webserver_configuration for login via WebSEAL 75
Registration via WebSEAL 78

Chapter: 5 MX-ONE Provisioning Manager integration with MS Active Directory 80

Introduction 80
Scope 81
Target Groups 81
Functionality 81
Overview 81
Active Directory Connection Setup 82
AD – PM Field Mapping 82
PM Active Directory Task 86
Extension Handling Details 89
Name Handling 89
Execution Flow 89
Limitations 90
Additional Info 91

Chapter: 6 AD Authentication, Description 92

Introduction 92
Description of AD Authentication 92
Prerequisites 92
Supported AD versions 93
Security 93
Secure Socket Layer (SSL) 93
Certificates 93
Server Certificate 93
Root Certificate 93
Generating Certificate Signing Request (CSR) and Creating Keystore 94
Creating Certificate by Signing Request File 94
Creating the Key Store by using Signed Certificate 97
Importing Certificates for PM and SNM 102
Users 103
Configuration 103
Configure Web Protocol 103
Configuring Web from HTTP to HTTPS with Self-Signed Certificate 103

Configuring from HTTP to HTTPS with Uploaded Server Certificate 104
Turning SSL off and back on again 104
Configure SNM authentication method 104
Certificate Management for AD Authentication 105
Root Certificate or Signed Server Certificate 105
Alternative to Root Certificates 106
Search and Delete root certificates 106
Configure AD Authentication 107
AD Authentication Maintenance 107
Modifying AD Authentication Configuration 108
Turning AD Authentication Off 108
Turning AD Authentication Back on 108
AD Authentication Scenarios 108
Scenario 1: PM Login 110
Scenario 2: SNM Login 111
Scenario 3: SNM Login over HTTP 111
Scenario 4: PM Login + use case 'Add Extension' 112
Scenario 5: In PM "click on subsystem" 113
Fault Cases / Exceptions 114

Chapter: 7 Configuration of AD LDS, User Guide 115

Introduction 115
General Introduction to AD LDS in MiVoice MX-ONE 6.x 115
About this guide 115
Requirements 115
Steps for Getting Started with AD LDS 115
Prerequisite 116
Enabling AD LDS in Windows Server 116
Creating AD LDS Instance 124
Creating the Custom LDF File to suit for AD LDS Setup 134
Restarting the AD LDS Instance 138
Creating an Admin User in AD LDS 139
Checking User Authentication 147
Adding Attributes to UserProxyFull Class 149
Editing Object (UserProxyFull) Class as User Object Class . . . 154
Modifying MS-AdamSyncConf File 158
Synchronizing Users from Active Directory to AD LDS Instance 159
Checking Synchronized Users in AD LDS 159
Enabling LDAPS (SSL) for AD LDS in Window Server 160
Using AD LDS as a User Repository in PM Application 167
Enabling SSL for PM Application 170
Enabling AD Authentication in PM Located Server 170
Uninstalling AD LDS Instance and AD LDS Roles from Server . . 171

Chapter: 8 Quick Reference Instructions 173

Create a User with IP Extension and Optional Mailbox 173
Log in to PM 173
Create a user 173
Add an IP extension 173
Add a new IP extension 174
Assign an Existing Extension 174
Add a mailbox 174
Add a new Mailbox 174
. 175
Import a CSV file with user information using PM 175
Log in to PM 175
Preparation before the import of the CSV file 176
Log in to CMG 176
Enter Company structure in CMG 176
Add a New Unit in CMG 176
Import the CSV file in PM 177
If something went wrong 177
Check list 177
Check the Organization Structure in PM 177
Check the Structure in CMG 177
Search for a User without a Unit in CMG 178
Add a User to a Unit in CMG 178
Add a new unit in CMG after a CSV File Import 178
Edit CSV file 179
Create an Extra Directory Number (EDN) 179
Log in to PM 179
Create an extra IP Extension 180
View an Extension 180
Add an Extra Directory Number (EDN) 180
Set Group Hunting 181
Log in to PM 181
Set Group Hunting 181
Add Group Hunting Information 181
Select Group Hunting Members 182
Set Multiple Name Selection (MNS) 182
Log in to PM 182
View Extension 183
Set Multiple Name Selection 183
Save the Settings 183
Set Personal Number (PN) 183
Log in to PM 184
View User 184
Set Personal Number (PN) 184
Set Profile 1 - In Office 184
Set profile 1 - In Office 184
Enter Number List Information 185

Set profile 2 – On a business trip 185
Enter Number List Information 185
Save the Settings 185
Set Boss-secretary 186
Login to PM 186
View the Extension of the Boss 186
Set Personal Number Lists 186
Set Profile 1 for the Boss 186
Set Profile 2 for the Secretary 187
Select Key with Boss-secretary Function 187
Save the Settings 188
Set Telephone Name Selection (TNS) 188
Log in to PM 188
View Extension 188
Set Telephone Name Selection Information 188
Save the Settings 189
Delete a User 189
Log in to PM 189
Delete a User 189
Take a Backup of PM/SNM 190
Log in to PM 190
Take a backup of MP 190
Take a Backup SNM 191

Chapter: 9 Service Node Manager User Instructions 192

Introduction 192
Scope 192
System Requirements 192
Prerequisites 192
MX-ONE Service Node Manager Overview 193
Configuration Areas and Tasks in MX-ONE Service Node Manager 193
Using MX-ONE Service Node Manager 193
Logging in and Logging Out 194
Navigating in MX-ONE Service Node Manager 194
Enabling the Automatic Logout Indicator 198
Actions 199
System and Error Messages 208
Logs 209

MX-ONE Provisioning Manager, End User Portal Description

Introduction

Provisioning Manager is a MiVoice MX-ONE tool, which is used to provision users. This has an end user portal, which is used for self-management of user configurations, such as display name, add TNS keys, change Authorization Code, define and activate Personal Number List, and so on.

From Provisioning Manager 6.2 SP2 a new Graphical User Interface (GUI) is introduced. This is developed to be compatible with accessibility requirements according to the Web Content Accessibility Guidelines (WCAG) 2.0.

“Web Content Accessibility Guidelines (WCAG) 2.0 covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photo sensitivity and combinations of these. Following these guidelines will also often make your Web content more usable to users in general.”

The main changes in the End User Portal are:

- Accessibility work to support WCAG 2.0.
- Function flow review and correction (e.g. tab function in the keyboard).
- Re-work of the functions as well as the GUI.
- More sub-items created in order to make the GUI as clean as possible.
- The pages are now simplified and they present the essential end user information.
- Functions that are not required daily are now under General tab.
- The new implementation is validated by an independent third party company as compliant according the relevant WCAG 2.0 guidelines.

New End User Portal GUI

The new end user portal GUI presents a new look and feel, some colors are changed to keep compatible with the color contrast required by the WCAG 2.0.

For example, the apply button with dark blue as background and white as foreground has a contrast ratio of 12,7:1.

Figure 1.1: End User Portal Page

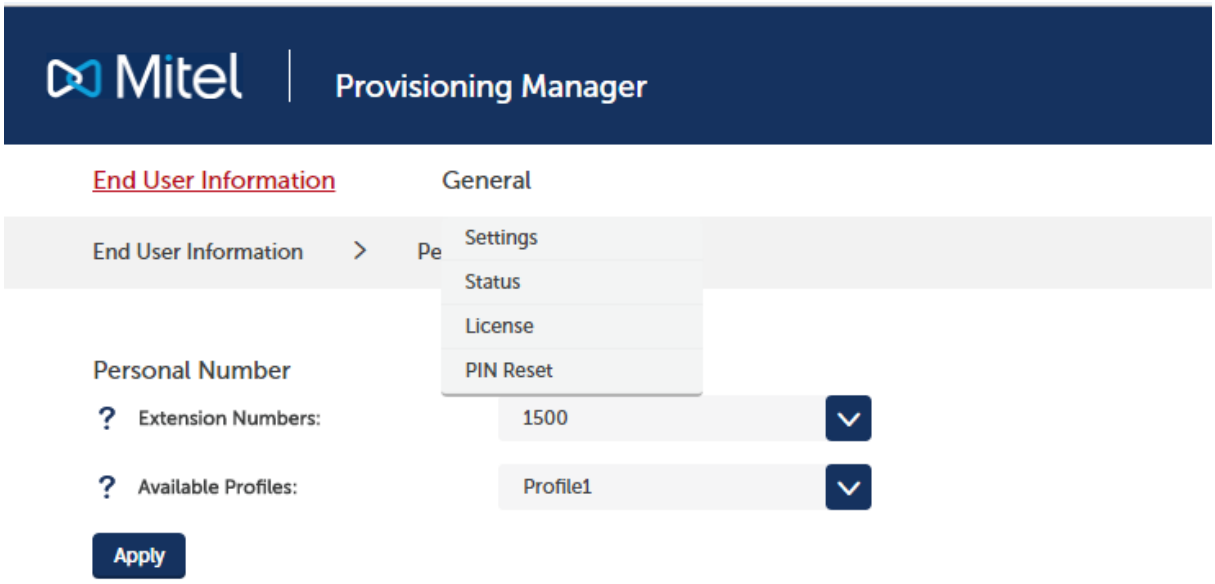
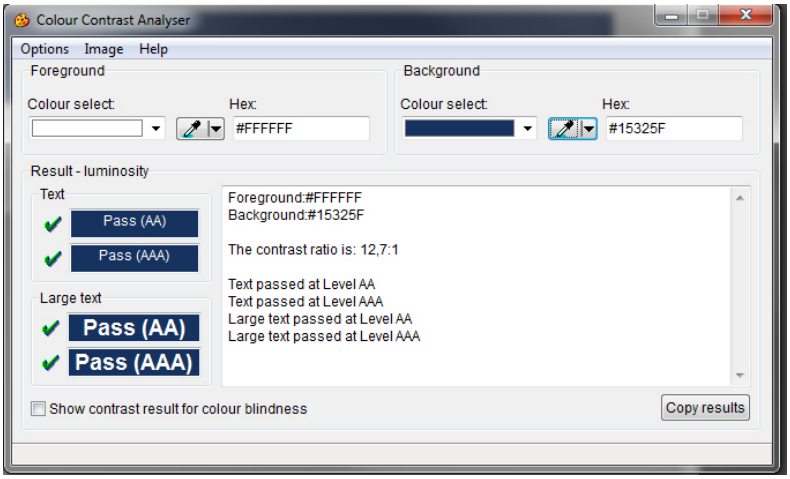


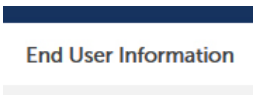
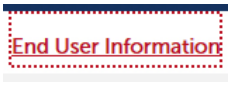
Figure 1.2: Color Contrast Result



The menu is also modified and present different colors of the items depending if it is in focus, hovered over or if the drop-down list is shown.

The menu and its items are modified and presented in different colors when it is in focus, hovered over or any drop-down list is shown/selected.

The table below shows different types colors used in the Menu of the pages.

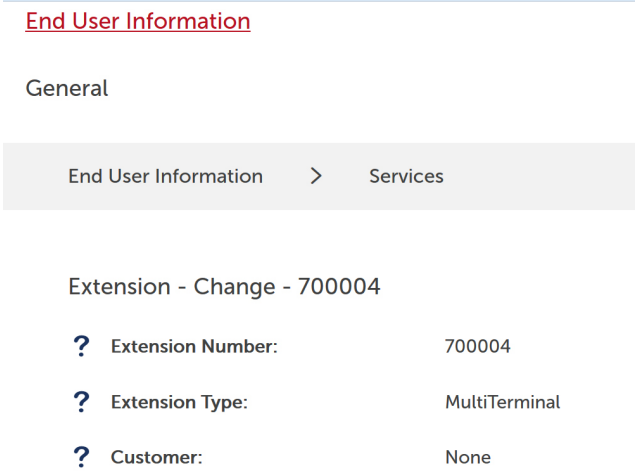
Image	Page Area	Background Color	Foreground Color
	Menu	#FFFFFF	#404141
	Menu (hover)	#FFFFFF	#BB1122

End User Information	Menu (focus)	#FFFFFF	#15325F

The used icons is implemented by a PNG (Portable Network Graphics) image and now is being implemented by a SVG (Scalable Vector Graphics) image, which means that image in the computer screen can be increased in the browser without distortion.

The below shows the page with 240% of zoom.

Figure 1.3: Zoom with 240%



New Sub-Menus

Now the end user page has two menus, each of them with 3 sub-items.

The menus are divided in two parts to separate between day-to-day tasks that are commonly accessed and managed by the user themselves (End User Information) versus tasks that are more informational and rarely changed by the user (General).

Figure 1.4: Menu End User Information

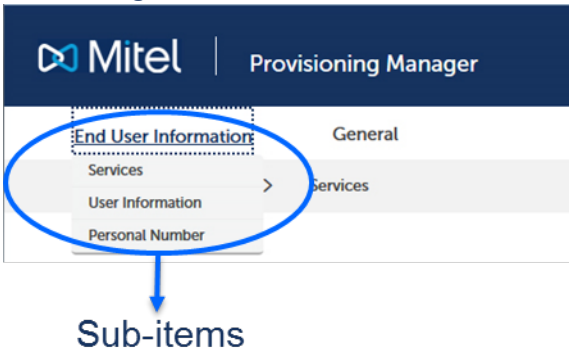
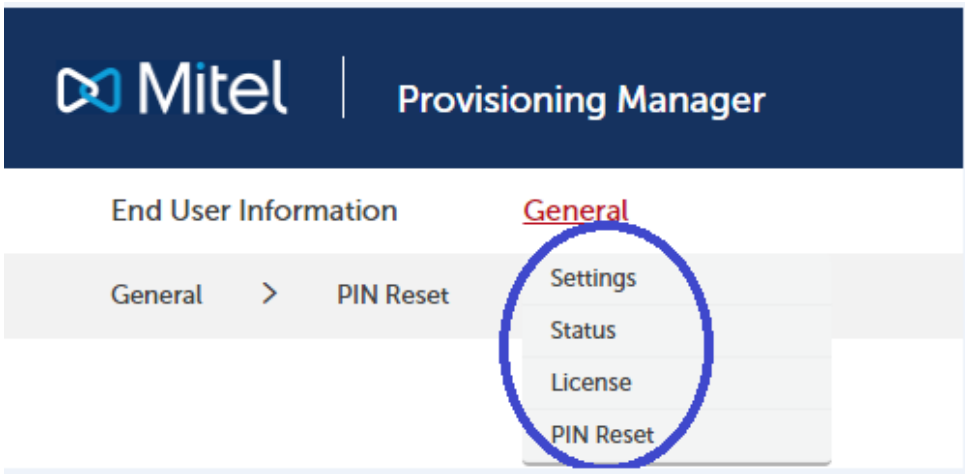


Figure 1.5: Menu General



Menu Description

The End User portal has two menus:

- The End User Information menu, which presents the tasks that are typically managed by the end-user.
- The General menu, that provides general information about the extension.

The End User Information menu contains the following 3 sub-items:

- Services
  The extension/extensions call manager feature or services belonging to that user are shown in this task.
- User Information
  User information such as first name, last name, and change password are shown in this task.
- Personal Number (Activation/Deactivation)
  Information regarding the configured Personal Number list are shown in this task.

The General menu contains the following 3 sub-items:

- Settings
  Additional information regarding the extension is shown in this task, for example the MiVoice MX-ONE that the extension belongs to and other features that are setup by the admin, which are not so relevant to the end user, but are required in some cases when the user needs support for his phone configuration.
- Status
  The extension status is shown in this task (Line, Diversion and Traffic status). The status feature varies according to the type of extension.
- Licenses
  The licenses used by the extension/extensions are shown in this task.
- Pin Reset
  The Pin Reset is used to update the pin number for extension and mailbox.

End User Information Menu

The End User Information menu is composed of tasks that are most often managed by end users. The end-user will be able to access the features they would be most likely to modify on a day to day basis. Most of the relevant end-user features are grouped under the Services subtask, which starts with a simplified view mode page.

To make changes in the Services subtask, do the following:

1. Click Change This button at the bottom to bring up a new page that offers the possibility to modify one or several options on the page.
2. Click on the relevant Change button associated with that option to open up a dialog box and do the required changes before moving to next step.
3. Click on Apply to ensure the changes are saved before going to the next task. The following sections will go through each of the sub-tasks and associated menus for each feature.

Services

The Service task is presented below showing the default page when a user login to the end user portal. A list of extensions is also presented if the user has more than one extension (in the example below the user has two extensions). The user can switch between extensions by clicking the view followed by the extension number (View 700001).

Figure 1.6: Extension Service Page

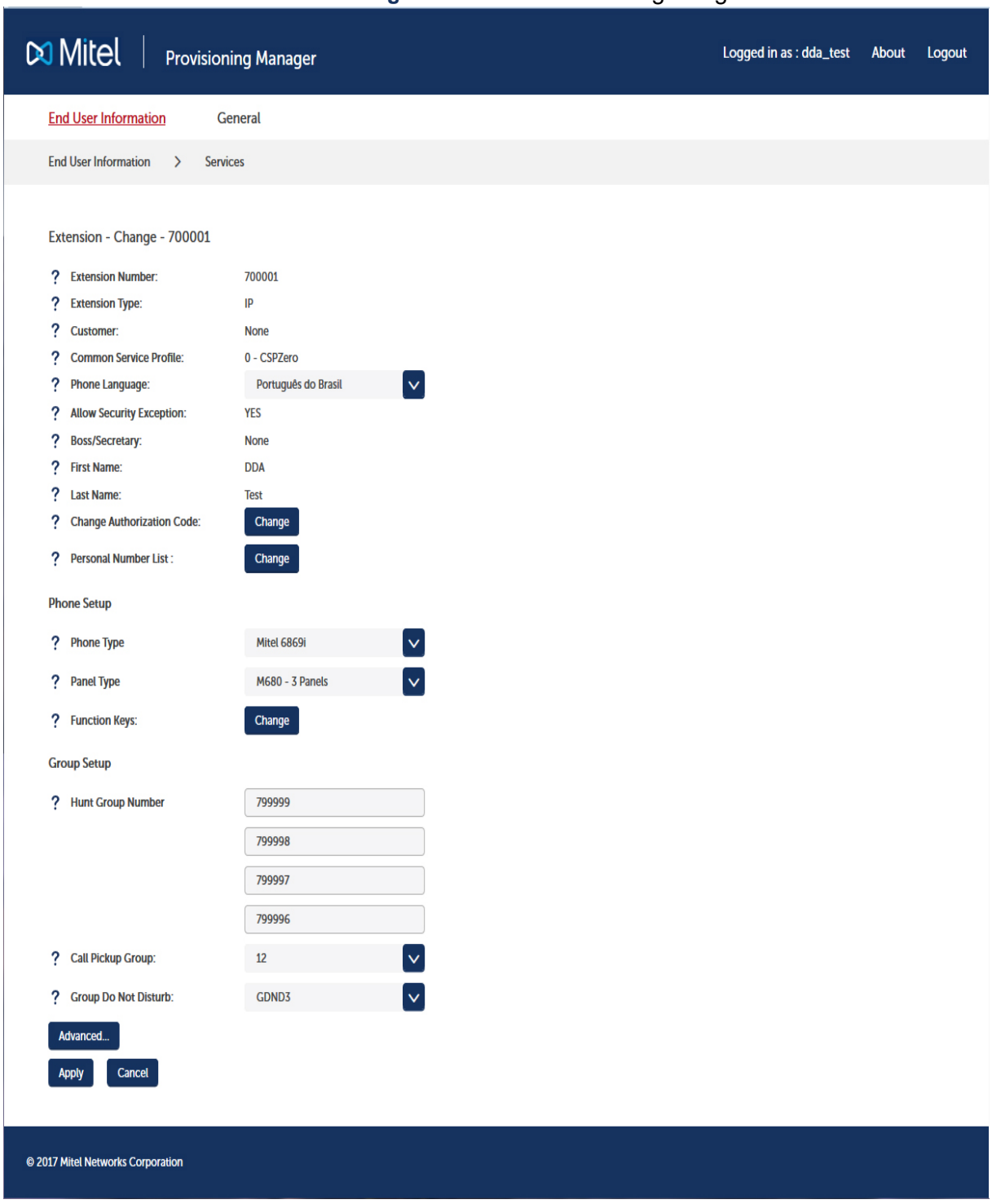
Change Extension

To make changes to the extension, the user needs to click on the Change This button.

The user can change the following options:

- Phone Language
- Authorization Code
- Personal List
- Phone type
- Phone panel
- Function Keys
- Hunt Group Number
- Pickup Group Number
- Group Do Not Disturb

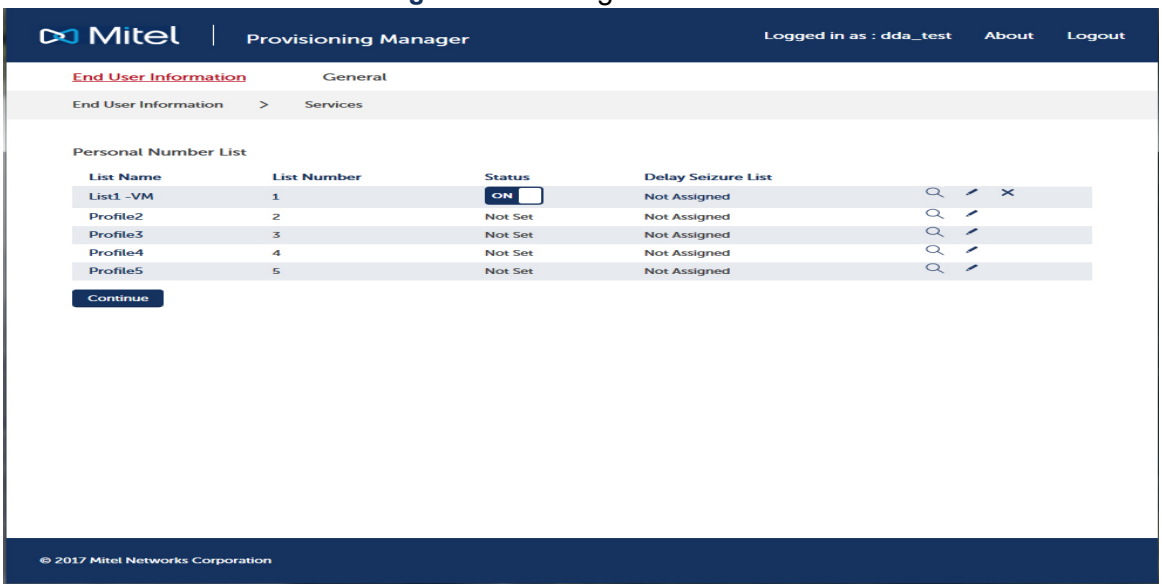
Figure 1.7: Extension Change Page



Personal Number List

The user can add/change/delete the extension Personal Number List as part of the extension change. The personal number page is shown below.

Figure 1.8: Change Personal Number List

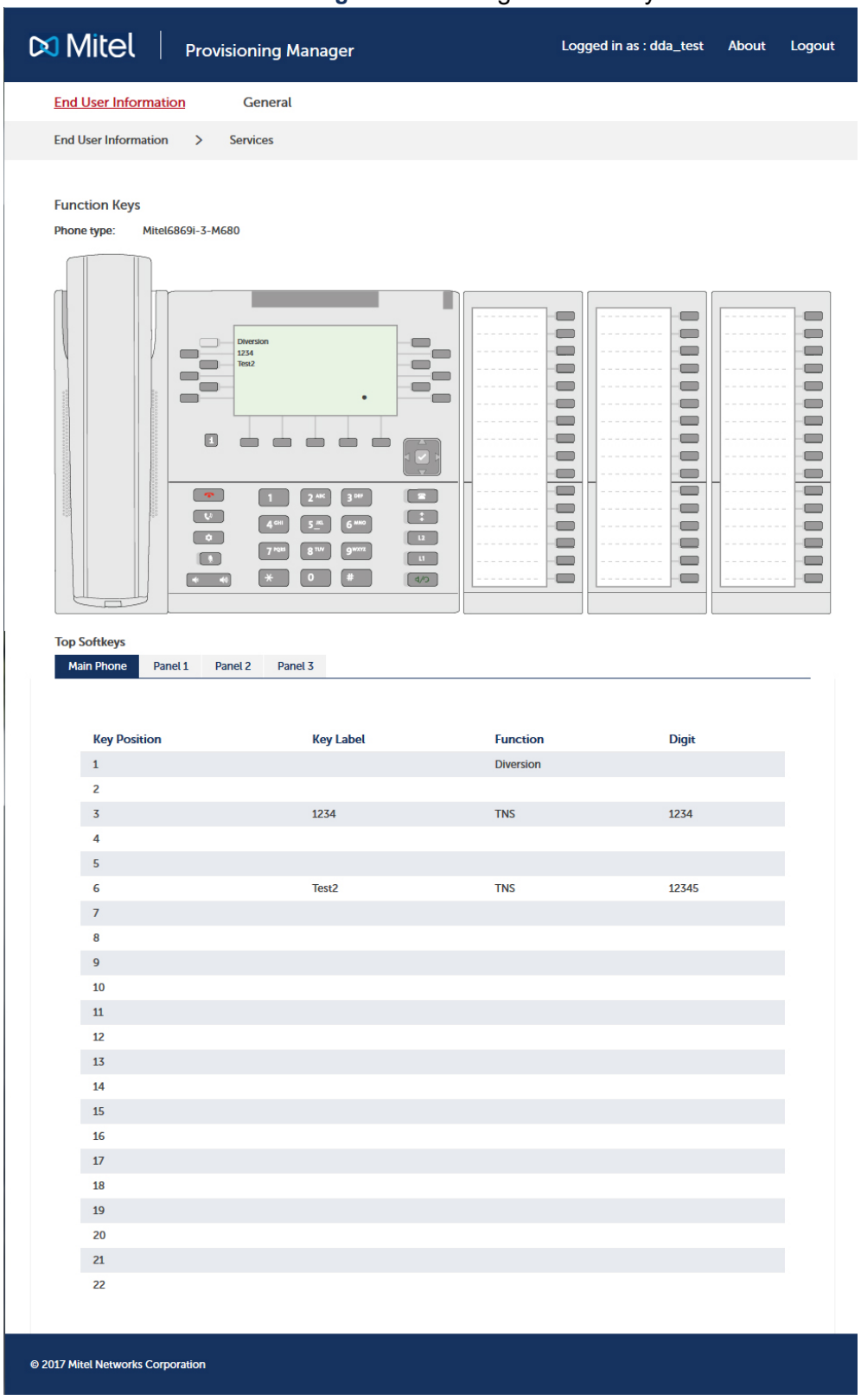


Function Keys

The end user can change the setup of TNS keys.

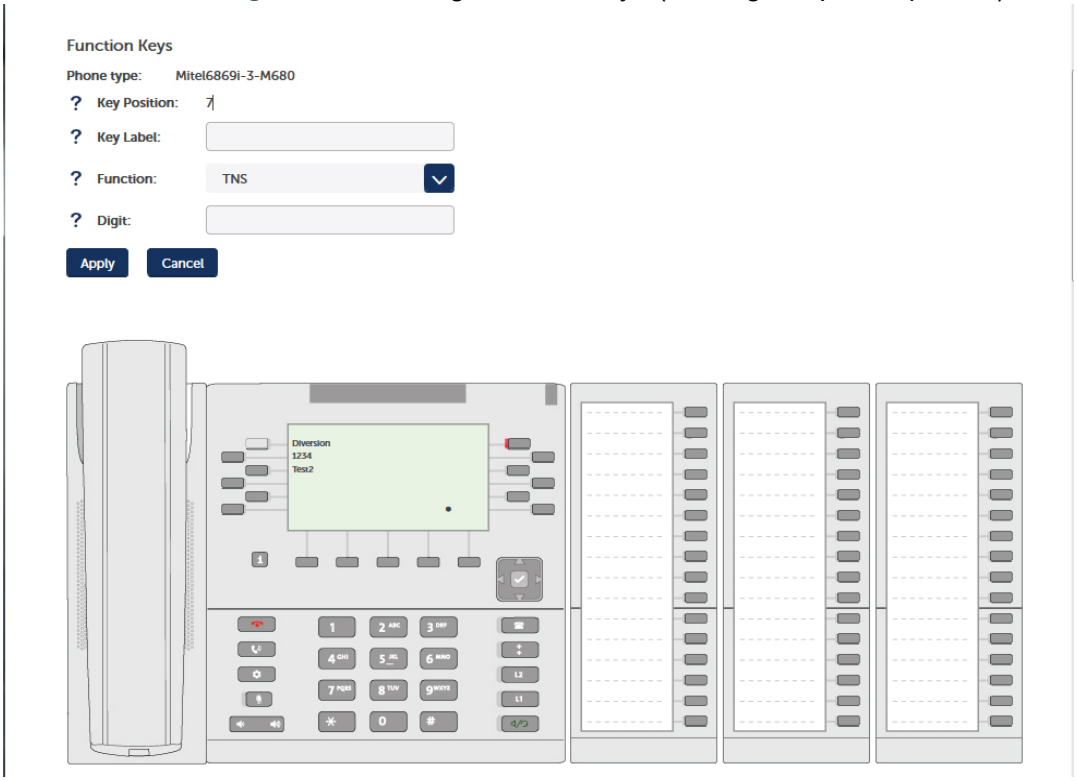
The function keys pages are shown below.

Figure 1.9: Change Phone Keys



The user can do the key selection in two places.

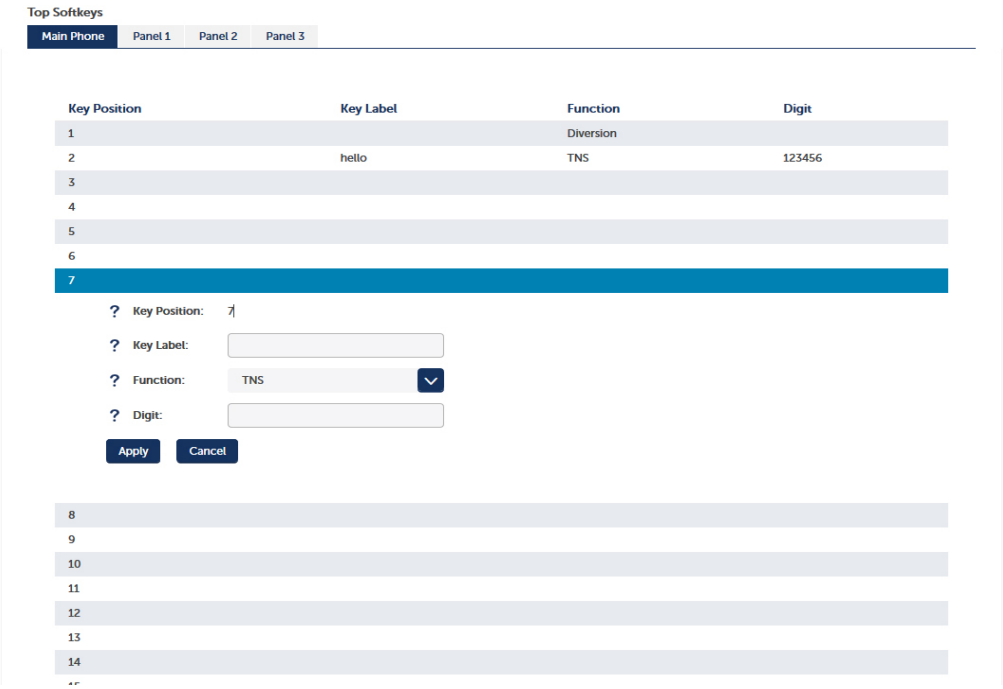
Figure 1.10: Change Phone Keys (clicking the phone picture)



Select the required key on the phone screen displayed; or,

Select the required key from the keys list and the task is presented below the row.

Figure 1.11: Change Phone Keys (clicking the key list)



User Information

In the User information task, the user can change the following information:

- First name
- Last name
- Password
- Alternate First Name
- Alternate Last Name
- Keywords

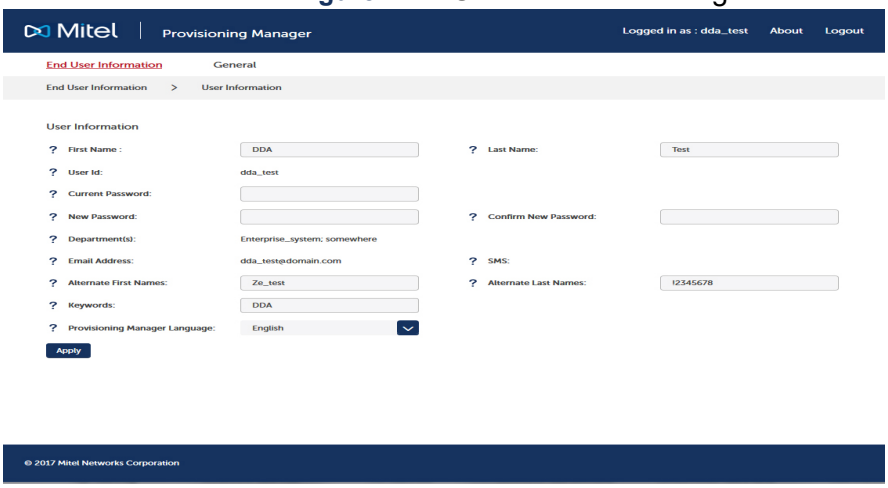
Select the end user portal language from the ones available in Provisioning Manager End User Portal

The available languages are:

- English
- German
- Polish
- French
- Russian
- Spanish
- Dutch

The User Information task is presented below.

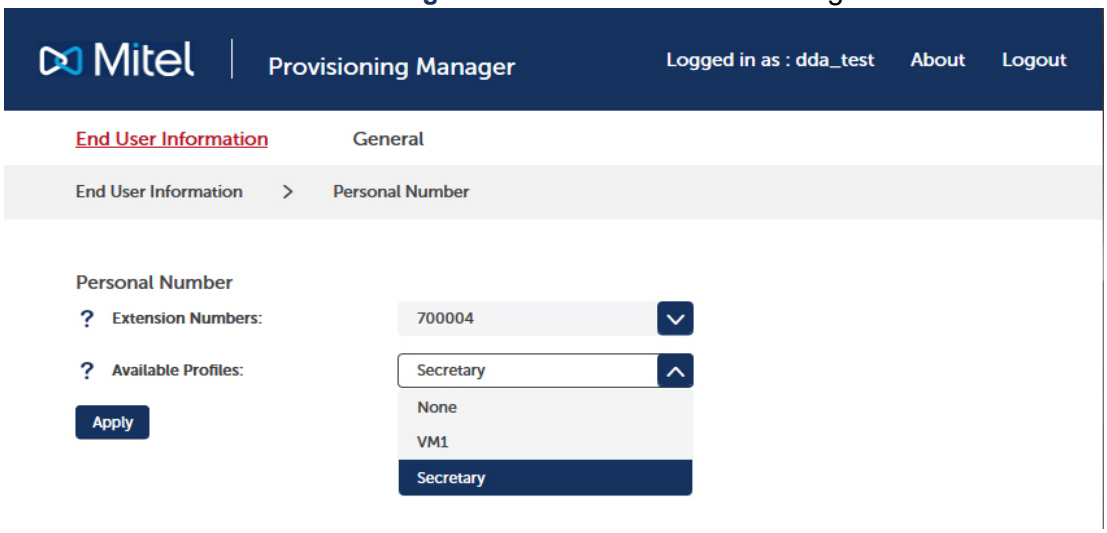
Figure 1.12: User Information Page



Personal Number

If the user has personal number defined for his/her extension/extensions, they can select the active profile in the personal number task. When any one of the profile is selected, the current one is deactivated.

Figure 1.13: Personal Number Page



General Menu

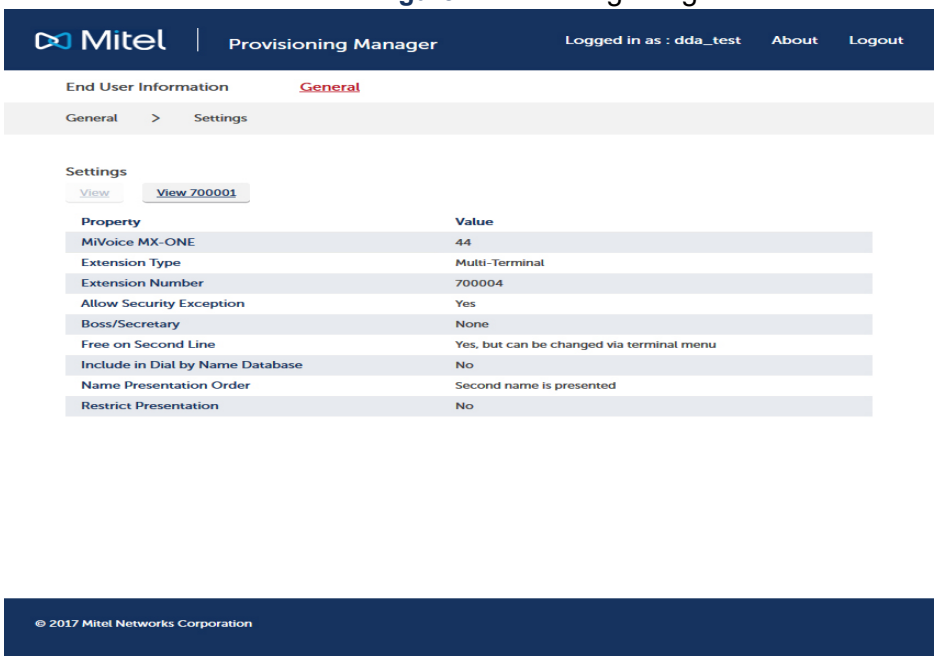
The General Menu is where system wide functions related to the extension/extensions are presented.

If the user has more than one extension, all extensions are shown in a sequence and the user is able to switch between them by clicking in the View + number of the extension (for example, View 7000001).

Settings

In the Settings, some additional information regarding the extension is presented.

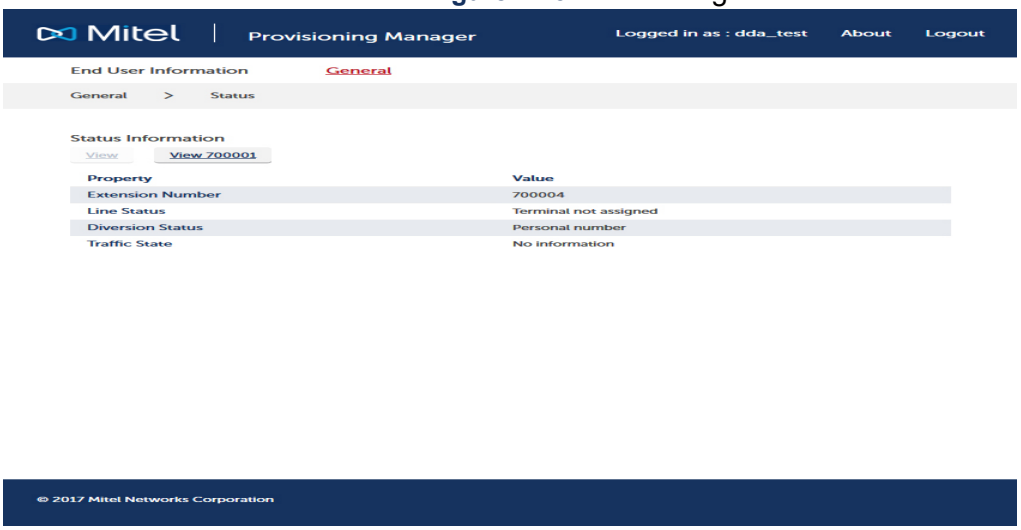
Figure 1.14: Settings Page



Status

In the Status task, the extension's current status is shown.

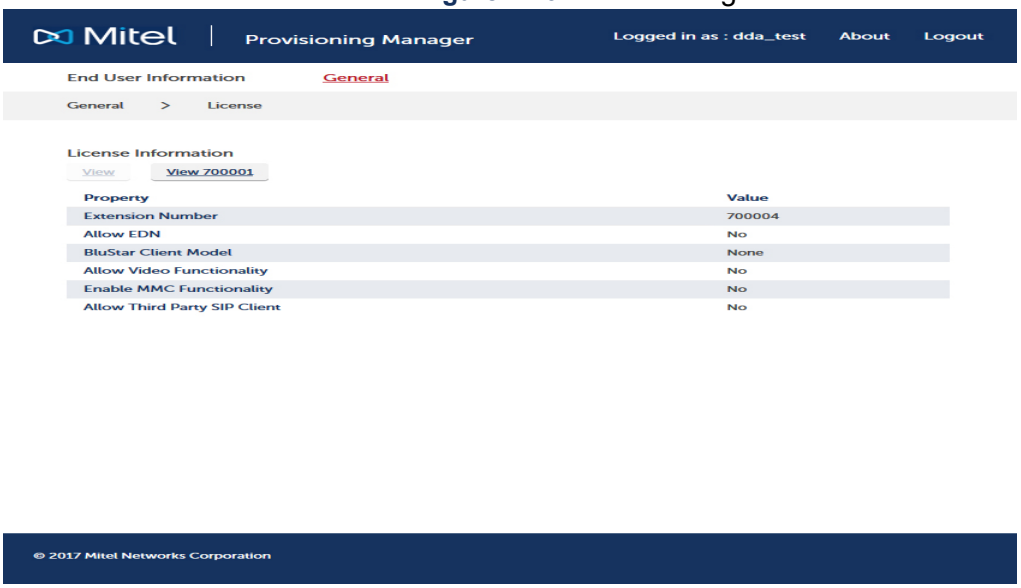
Figure 1.15: Status Page



License

In the License task, the extension license is shown.

Figure 1.16: License Page



PIN Reset

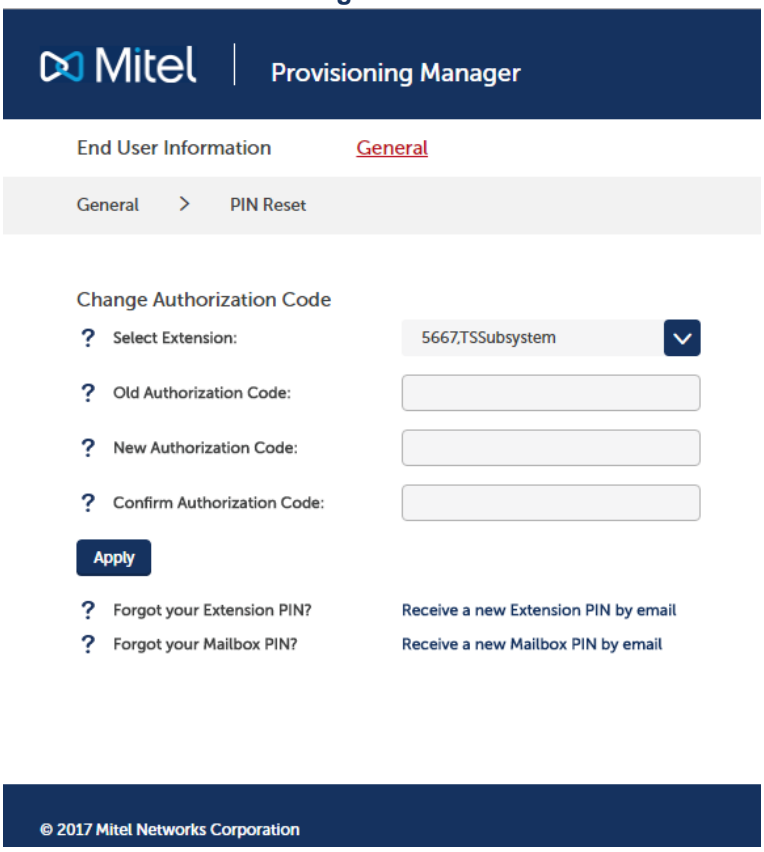
The end user can change the authorization code for an extension. Enter valid Old Authorization Code to update it with a new authorization code for the selected extension.

Use Forgot PIN links to reset the extension and Mailbox PIN numbers.

Note: These links appear only if Mail server is configured in Provisioning Manager and email ID is assigned to the end user.

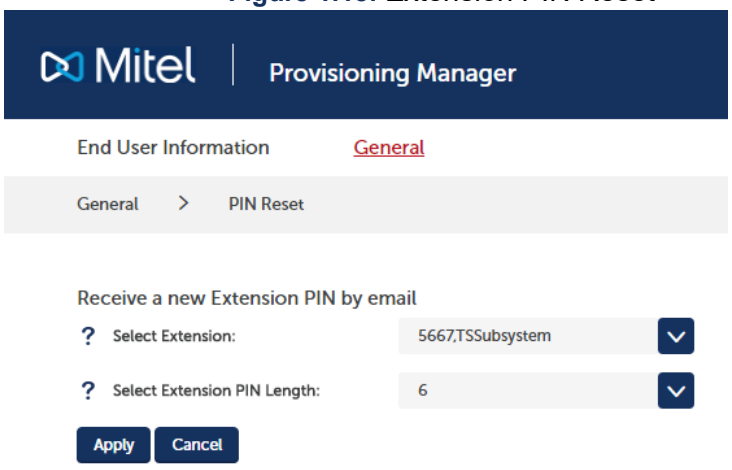
If no extensions (with authorization codes) and Mailboxes are assigned to the user, a pop up message gets displayed stating that “No PIN numbers assigned to extensions/ mailbox available for the user”.

Figure 1.17: PIN Reset



A random authorization code of selected PIN length will be generated for the selected extension in MiVoice MX-ONE and an email will be sent out to the user with the generated PIN number. The PIN number will be updated in MiCollab Server if the user exists in MiCollab Subsystem.

Figure 1.18: Extension PIN Reset

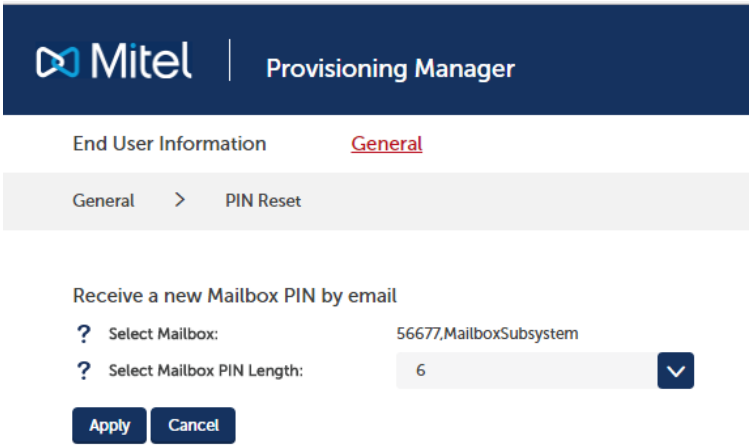


A random password of selected PIN length is generated for the selected mailbox number in MiCollab Advanced Messaging Server and an email is sent to the user with the generated PIN number.

NOTE: If only one Mailbox is assigned to the user, then selected Mailbox field changes to non-editable mode.

If multiple mailboxes are assigned to user, a drop down field will be displayed.

Figure 1.19: Mailbox PIN Reset



Installing MX-ONE Provisioning Manager, Installation Instruction

Introduction

This document describes the installation and configuration procedure of MX-ONE Provisioning Manager (PM). There are different installation scenarios for MX-ONE Provisioning Manager available. It can either be installed as a standalone application, or together with a MX-ONE Service Node on one of the included servers.

Installation Scenarios

There are two installation scenarios to consider:

- Coexistence with MX-ONE Service Node Manager (SNM).
  This applies when MX-ONE Provisioning Manager is installed on LIM1 (server 1) in a single or multiple server installation.
- Standalone
  This applies when MX-ONE Provisioning Manager is installed on any other server, including a MX-ONE Service Node that is not LIM1 (server 1).

In case MX-ONE Provisioning Manager shall co-exist on the same server as e.g. LIM2 (MX-ONE Service Node 2), the Service Node software must have been installed prior to MX-ONE Provisioning Manager.

Installation Using mxone_maintenance Script

It is recommended to install MX-ONE Provisioning Manager on a server that is part of the MX-ONE. Either it could be a server installed as Standalone Management Server, or on any of the LIM's.

The MX-ONE Provisioning Manager install binary is distributed with the MX-ONE package on the master LIM, and can easily be installed on selected server through the MX-ONE Maintenance Utility. Log-in as user **mxone_admin**, and run the `sudo -H /opt/mxone_install/bin/mxone_maintenance` command and select **addon_software** and follow the instructions on screen.

When another server than the master server is selected as target machine for the installation, the software will first be downloaded from the master server with the function rsync. To avoid interference with any possible live traffic, the bandwidth in this process is limited to 10 Mbit/s.

Prerequisites

The prerequisites depends on the installation type.

StandAlone Installation

The Operating System (OS) SLES12 needs to be installed and configured on the customer's server.

For information on how to install SLES12, see the installation instruction for *INSTALLING AND CONFIGURING MIVOICE MX-ONE*.

Follow the instructions during the installation. When running `net_setup` command, choose to configure the server for Other Server.

Coexistence Installations on Server 1

The MX-ONE Service Node software must be installed. MX-ONE Provisioning Manager must have the same software version (for example, 7.0 SP0) as MX-ONE Service Node Manager and the MX-ONE Service Node.

For more information, see *INSTALLING AND CONFIGURING MIVOICE MX-ONE*.

Considerations

When MX-ONE Provisioning Manager or MX-ONE Service Node Manager is installed a software package for configuration of the web server is also installed.

This configuration package provides a command – `webserver_config` –that is used to configure the protocol (HTTP/HTTPS) the web server shall run. When HTTPS is chosen, it will also handle certificate management.

It is important to be aware that when MX-ONE Provisioning Manager and MX-ONE Service Node Manager co-exist on the same server, it is always the web server configuration that rules. That is, it is not possible to run one application in HTTP and the other in HTTPS on the same server.

When the web server is configured for HTTPS, it will do a redirect (302) to HTTPS on any call to HTTP.

If it is configured for HTTP, it will not reply on calls to HTTPS.

Preparations

Before starting the installation, some preparations, described in this chapter, needs to be done.

Obtaining a Digital Certificate

MX-ONE Provisioning Manager can be configured to use either standard HTTP or HTTPS. With HTTPS, it is necessary to configure a private key and a digital certificate, to be used in the system. The digital certificate can either be generated as a self-signed certificate after the installation or bought from a commercial certificate supplier.

In both cases the certificate is applied by using the `webserver_config` command and then chooses to modify web server protocol + HTTPS.

Installation

1. To start the installation of MX-ONE Provisioning Manager, log-in as user *mxone_admin*.
2. Run the command `sudo -H /opt/mxone_install/bin/mxone_maintenance` and select option **addon_software** and follow the instructions on screen.
3. During the installation a number of dialogue boxes will appear on the screen. Select **Yes** to continue the installation, or select **No** to exit the installation.
4. Wait until the software is installed.
5. Follow the progress according to on-screen instructions
6. Enter **name**, **last name** and **user id** for the System Setup Admin.
7. Enter a password for the System Setup Admin.
8. Confirm the password.
9. Enter **Main Department Name**, **Main Department Location** and **Main Location Description**.

   NOTE: These settings can be changed later.
10. Select **Yes** to do a restart, select **No** to take the restart later.
11. To configure protocol (HTTP/HTTPS + certificate) run the `webserver_config` command when the installation is complete.

Accessing MX-ONE Provisioning Manager

If MX-ONE Provisioning Manager and MX-ONE Service Node Manager coexist on the same server, the default application to be accessed on the web server root is MX-ONE Provisioning Manager.

Pm can be accessed by only IP or <IP>/mp and <IP>/pm

Example, 192.168.100.50 or 192.168.100.50/mp or 192.168.100.50/pm

MX-ONE Service Node Manager can be accessed by adding *"/mts"* or *"/snm"* or *"/wbm"* at the end of the address, for example, 192.168.100.50/mts or 192.168.100.50/wbm or 192.168.100.50/snm

MX-ONE Provisioning Manager Start and Stop

MX-ONE Provisioning Manager is running as an application under Jboss web server. To start/stop/restart the MX-ONE Provisioning Manager it is effectively the Jboss service that must be started/stopped/restarted. When this is done, other applications running under Jboss will also be affected. This concerns MX-ONE Service Node Manager and CSTAPhaseIII.

To restart the web server (Jboss) run the `webserver_config` command and select **Re-start webserver**.

To check the status, start or stop Jboss, run the following commands:

1. `systemctl status mxone_jboss.service`
2. `systemctl start mxone_jboss.service`
3. `systemctl stop mxone_jboss.service`

Upgrade

When you run the installation file, it will automatically detect if there is an earlier version of MX-ONE Provisioning Manager installed and perform an upgrade. If the installation file is the same as the installed version, the installation/upgrade will stop.

Before starting the upgrade:

1. Go to the Scheduling task in MX-ONE Provisioning Manager and print all scheduled events. The scheduled events will not be kept during upgrade since the stored commands may not work any longer in the upgraded version.
2. Before performing an upgrade, create a backup of current database from a linux shell.
   - Run the `mp_config`command and select **Database backup**. Press **Enter**.
   - When finished, copy the latest file from directory `/var/opt/eri_mp_config` to a safe storage. The dump files are named **mpManagerPostgres-Dump.<date+time>-<rpm-version>**.

     This measure is only as a precaution in case something fails during the upgrade. In normal circumstances the data will automatically be restored.

     NOTE: When PM and SNM are running on the same server, this backup should be done before upgrading the MX-ONE Service Node.
3. Log out from the MX-ONE Provisioning Manager Graphical User Interface before performing an upgrade.

   Run the installation file as described in *Installation* and follow the on-screen instructions.

Migrating 5.x or 6.x Manager Provisioning Data to 7.x PM

For more information, refer to the *MiVoice MX-ONE Upgrading or Updating MX-ONE 7.X - Installation Instruction* guide.

Migrating from D.N.A. to MX-ONE Provisioning Manager

D.N.A. is not supported in MX-ONE 7.x. Migrating from D.N.A. to MX-ONE Provisioning Manager means that user and department data in MX-ONE, and the management of this data, is transferred from D.N.A. to MX-ONE Provisioning Manager.

Migration Scenarios

A migration is performed according to one of following scenarios:

- Migration from D.N.A. directly to MX-ONE Provisioning Manager, as described in *Migrating from D.N.A. to MX-ONE Provisioning Manager on page 12* .
  This scenario is used for environments where CMG is not included.
- Migration from D.N.A. to an environment including both MX-ONE Provisioning Manager and CMG, as described in *Migrating from D.N.A. to MX-ONE Provisioning Manager*.
- Migration from an environment including D.N.A's EMG (extension management) and CMG (user management) to an environment including MX-ONE Provisioning Manager and CMG.

Migrating from D.N.A. to MX-ONE Provisioning Manager

NOTE: This migration scenario does not apply for environments including both MX-ONE Provisioning Manager and CMG.

Migration from D.N.A to MX-ONE Provisioning Manager comprises the following steps:

1. Exporting user and department data from D.N.A.
2. Backing up data in MX-ONE Provisioning Manager
3. Importing D.N.A. data to MX-ONE Provisioning Manager
4. Backing up data in MX-ONE Provisioning Manager (now including D.N.A. data).

Exporting User and Department Data in D.N.A.

The following D.N.A. data is required when migrating from D.N.A. to MX-ONE Provisioning Manager:

- User data
- Department data
- A definition (.def) file, defining the user data structure in D.N.A.
- A definition (.def) file, defining the department data structure in D.N.A.

NOTE: Department names in MX-ONE Provisioning Manager must **not** contain the following characters: ", *, ?, \, <>, ', and ,

Departments containing any of there characters must be renamed before exporting data from D.N.A.

Follow the steps below to export data from D.N.A:

1. On the D.N.A. server, open the **export.exe** application. The application is normally found in the `DNA_S\DMG\BIN` folder.
2. Click **Application** and then **Export**.
3. In the **Export Data Status** dialog, select **Person File** and **Department File** and set the file names as desired. Unselect the other export options.
4. Click **Apply**.
5. Exit the application.
6. On the D.N.A. server, open the `DNA_S\DMG\BIN` folder and move the following files to a USB memory or similar:
   - user.def
   - user.txt
   - dept.def
   - dept.txt

Backing Up Data in MX-ONE Provisioning Manager

Before D.N.A. data is imported to MX-ONE Provisioning Manager, a data backup must be performed in MX-ONE Provisioning Manager by following the steps below:

1. In MX-ONE Provisioning Manager, go to the **Backup & Restore task** on the **System** tab.
2. Click **Backup**.

Importing D.N.A. Data in MX-ONE Provisioning Manager

After backing up data in MX-ONE Provisioning Manager, D.N.A data can be imported. Follow the steps below to import D.N.A. data:

1. In MX-ONE Provisioning Manager, go to the **Import** task on the **System** tab.
2. Click **Import...**.
3. Select **D.N.A.** and click **Next**.
4. Select **Department**.
5. In the **Definition File [.def]** field of the **Department** section, specify the **dept.def** file created during the export in D.N.A.
6. In the **Data File [.txt]** field of the **Department** section, specify the **dept.txt** file created during the export in D.N.A.
7. Click **Next** and then **Apply**.
8. Click **Import...**.
9. Select **D.N.A.** and click **Next**.
10. Select **User**.
11. In the **Definition File [.def]** field of the **User** section, specify the **user.def** file created during the export in D.N.A.
12. In the **Data File [.txt]** field of the **User** section, specify the **user.txt** file created during the export in D.N.A.
13. Click **Next** and then **Apply**.

    The exported D.N.A. users and departments are now available in MX-ONE Provisioning Manager.
14. Perform a data backup in MX-ONE Provisioning Manager according to*Backing Up Data in MX-ONE Provisioning Manager*.

Migrating from D.N.A. to MX-ONE PM in Environments

Migration from D.N.A to MX-ONE Provisioning Manager in environments including both MX-ONE Provisioning Manager and CMG comprises the following steps:

1. Exporting user and department data from D.N.A.
2. Importing D.N.A. data to CMG.
3. Backing up data in MX-ONE Provisioning Manager.
4. Adding CMG as a subsystem in MX-ONE Provisioning Manager.
5. Verifying that the root department in MX-ONE Provisioning Manager corresponds to the root department in CMG.
6. Importing CMG data in MX-ONE Provisioning Manager.
7. Backing up data in MX-ONE Provisioning Manager.

Exporting User and Department Data from D.N.A.

The following D.N.A. data is required when migrating from D.N.A. to MX-ONE Provisioning Manager and CMG:

- User data
- Department data
- A definition (.def) file, defining the user data structure in D.N.A.
- A definition (.def) file, defining the department data structure in D.N.A.

NOTE: Department names in MX-ONE Provisioning Manager must **not** contain the following characters: ", *, ?, \, <>, ', and ,

Departments containing any of there characters must be renamed before exporting data from D.N.A.

For information on how to export data from D.N.A., see *Exporting User and Depart-ment Data in D.N.A. on page 12*

Importing D.N.A. Data to CMG

When migrating D.N.A. data in an environment including MX-ONE Provisioning Manager and CMG, data must be imported in each system separately. MX-ONE Provisioning Manager contains functionality for importing CMG data, and it is recommended that D.N.A. data is imported to CMG first. By then importing the CMG data (now also containing D.N.A. data, if following this procedure) to MX-ONE Provisioning Manager, the CMG and MX-ONE Provisioning Manager databases will be identical (a prerequisite for environments using MX-ONE Provisioning Manager and CMG). For information on how to import D.N.A. data to CMG, see *CMG General Installation Guide*.

NOTE: After import, verify that the D.N.A. data is available in CMG.

Downloading and Installing the CMG Export Registry File

Before exporting data from CMG, a registry file defining how to format CMG data so that it can be imported to MX-ONE Provisioning Manager must be installed on the CMG server. Follow the steps below to download the file using MX-ONE Provisioning Manager:

1. In MX-ONE Provisioning Manager, go to the **Data Management** task on the **System** tab and click **Import...**.
2. In the **Import Source** section, select **CMG** and click **Next**.
3. Click in the **Download Registry File [.reg]** section and save the file to a USB memory or similar. The

   file name is **CMG_export_setup.reg**.
4. On the CMG server, create a backup of the registry. For information on how to back up a registry, refer to *Microsoft's* documentation.
5. Move the **CMG_export_setup.reg** file to the CMG server and install it by double-clicking it.
6. After successful installation of the registry file, delete the file.

Exporting Data from CMG

The CMG application **Spman** is used for exporting data from CMG. The application extracts user data from the CMG database and stores it to an ASCII file with one row per user. The registry on the CMG server (updated in the previous chapter) defines the following parameters for the file:

- File name
- Data format
- Extracted fields
- Selected users
- Sort order

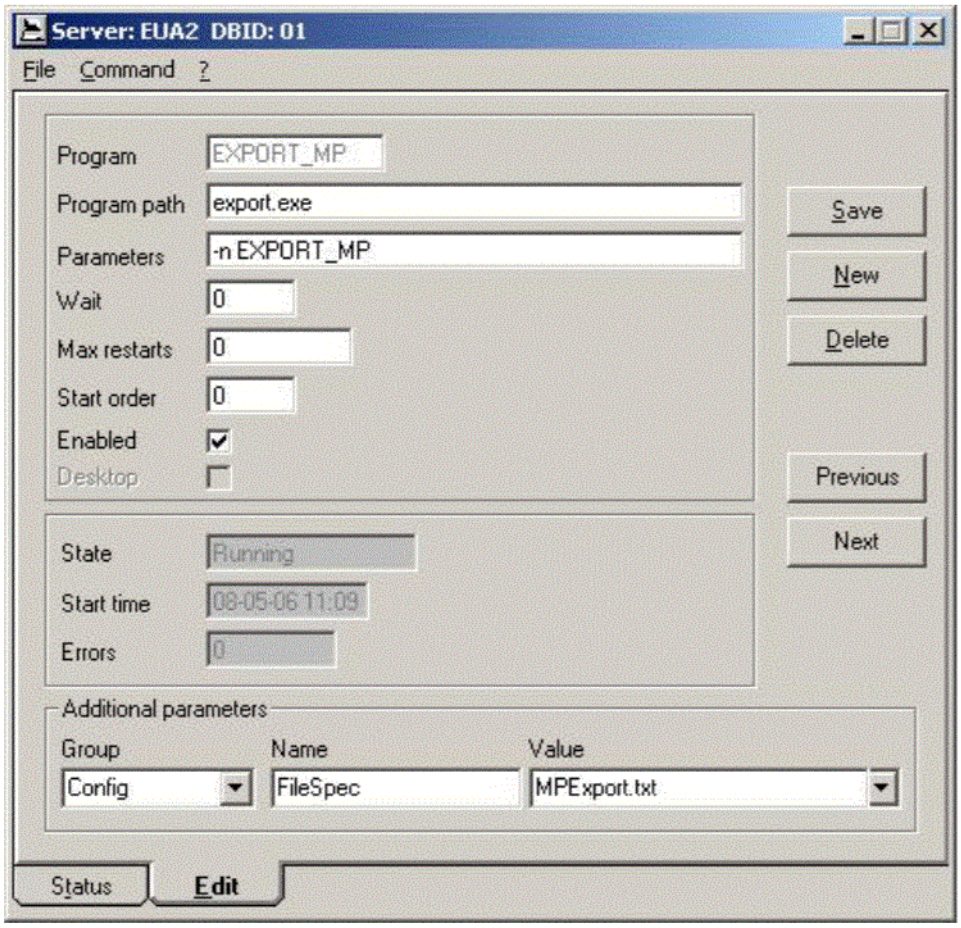
NOTE: Do not change any settings or the order of the settings in the export setup registry file, otherwise the import of the extracted data will fail.

Follow the steps below to export data from CMG:

1. Click **Start**, **Programs**, **Mitel** and then **Spman**.
2. Select **Export_MP**.
3. On the **Edit** tab, select **Enabled** and click **Save**.

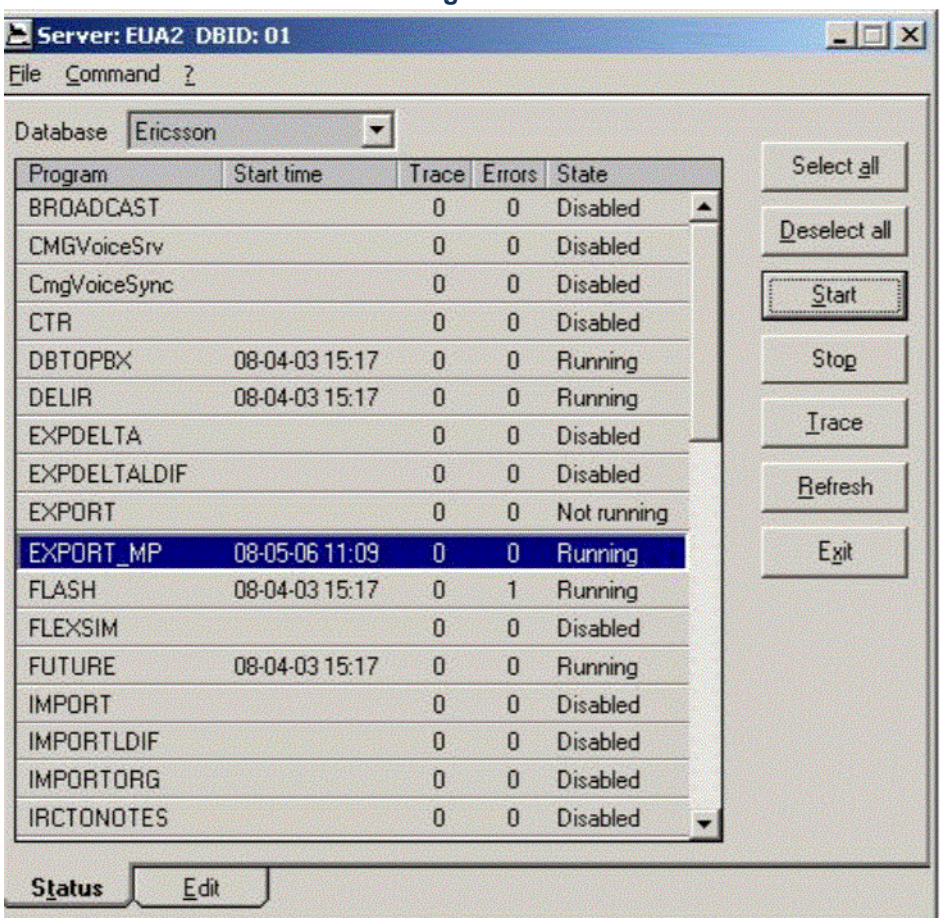
NOTE: On this tab, the registry settings installed earlier are displayed. The settings are installed as *HKEY_LOCAL_MACHINE\SOFTWARE\Netwise\Nice<dbid>\Programs\EXPORT_MP*.

Figure 2.1: Edit tab



4. On the **Status** tab, initiate the export by clicking **Start**.

Figure 2.2: Status tab



5. After approximately one minute, the state of EXPORT_MP changes from **Running** to **Not running**, indicating that the export is finished. If state is not changed automatically, click **Command** and **Refresh**.

Normally, the export is only performed once. If it is necessary to redo the export, repeat the export procedure, starting from step 5 above.

The exported file **MPExport.txt** is stored in the CMG log directory, usually `C:\NiceServ\log`.

NOTE: It is not recommended to import more than 500 users at a time in MX-ONE Provisioning Manager. If the exported file contains more than 500 users, divide it into multiple files with a maximum of 500 users in each file.

Backing Up Data in MX-ONE Provisioning Manager

Before CMG data (also containing D.N.A. data, if following this procedure) can be imported to MX-ONE Provisioning Manager, a data backup must be performed by following the steps below:

1. In MX-ONE Provisioning Manager, go to the **Backup and Restore** task on the **System** tab.
2. Click **Backup**.

Adding CMG as a Subsystem in MX-ONE Provisioning Manager

In environments comprising MX-ONE Provisioning Manager and CMG, MX-ONE Provisioning Manager is the single point of entry for managing user and extension data. To achieve this, CMG must be added as a subsytem in MX-ONE Provisioning Manager. This means that changes performed to a user in MX-ONE Provisioning Manager automatically applies to the user's settings in CMG.

Follow the steps below to add CMG as a subsystem in MX-ONE Provisioning Manager:

1. In Provisioning Manager, go to the **Subsystem** task on the **System** tab and click **Add**.
2. In the **Subsystem Type** field, select **CMG Server** and specify the settings of the CMG server.

Creating Locations for CMG Customer Groups in MX-ONE PM

There must be a location created in MX-ONE Provisioning Manager for each CMG customer group. If a CMG customer group is not mapped to a location, a new location for the CMG customer group is created in MX-ONE Provisioning Manager during the import. Follow the steps below for each customer group in CMG:

1. In MX-ONE Provisioning Manager, go to the **Location** task on the **System** tab and click **Add**.
2. In the **Location Name** field, specify a name for the location.
3. In the **CMG Customer Group** field, specify the customer group in CMG to which the location will correspond.
4. Click **Add.**

Importing CMG Data in MX-ONE Provisioning Manager

When CMG is added as a subsystem in MX-ONE Provisioning Manager and locations that corresponds to the customer groups in CMG are created, CMG data can be imported to MX-ONE Provisioning Manager.

The CMG data does not include user ID fields. If a misc field contains the user ID you can map that field during import. If not, the exported CMG data can be manually edited and user ID data can be entered into one of the unused misc fields to be mapped during the import.

Follow the steps below to import CMG data:

1. In MX-ONE Provisioning Manager, go to **System** tab and **Data Management** tab. Then select task **Import**.
2. Click **Import...**.
3. Select **CMG** and click **Next**.
4. In the **Data File [.txt]** field, select the **MPExport.txt** file created during the CMG export procedure.
5. If the user data in CMG contains a misc field defining a mailbox number, this data can be mapped to the MX-ONE Provisioning Manager mailbox settings. To import the mailbox data, select **Import Mailbox Info**.
6. Click **Next**.
7. In the **Map imported UDF(s) to MX-ONE Provisioning Manager UDF(s)** section, specify how to map the adaptable fields in CMG (found below the Keywords section on the Main Form tab in CMG Directory Manager) with the User Defined Fields (UDFs) in MX-ONE Provisioning Manager.

   – **NOTE:** If importing mailbox info was selected in the previous step, do the mailbox mapping.

- If a misc field holds the user ID, do the user ID mapping.

8. Click **Next**.
9. In the **Map imported PBX ID(s) to Subsystem(s)** section, specify how to map PBX IDs in CMG with subsystems in MX-ONE Provisioning Manager.
10. Click **Apply**.
11. On the **Result** page, click **Done**.
12. Verify that the imported CMG data is available in MX-ONE Provisioning Manager.
13. Perform a data backup in MX-ONE Provisioning Manager according to *Backing Up Data in MX-ONE Provisioning Manager*.

    NOTE: See *Important Post-Migration Considerations*on page 16 for important information on how to manage user data in environments including MX-ONE Provisioning Manager and CMG.

Migrating to MX-ONE PM from Environments

Migration to MX-ONE Provisioning Manager from environments using D.N.A.'s Extension Manager (EMG) for extension management and CMG for user management follows the procedure described with the following exceptions:

- The procedure starts at *Downloading and Installing the CMG Export Registry File on page 15*
- The CMG data referred to in *Backing Up Data in MX-ONE Provisioning Manager on page 17* does already include D.N.A. data since user data is already.

NOTE: See *Important Post-Migration Considerations on page 19* for important information on how to manage user data in environments including MX-ONE Provisioning Manager and CMG.

Backing Up Data in CMG

Data backup in CMG is performed automatically, on a daily basis. To be able to restore CMG data in case of a failed import of D.N.A. data, it is recommended that the most recent backup is located and made available before importing data from D.N.A.

For information on how to access and restore data backup files in CMG, see *CMG General Installation Guide*.

Important Post-Migration Considerations

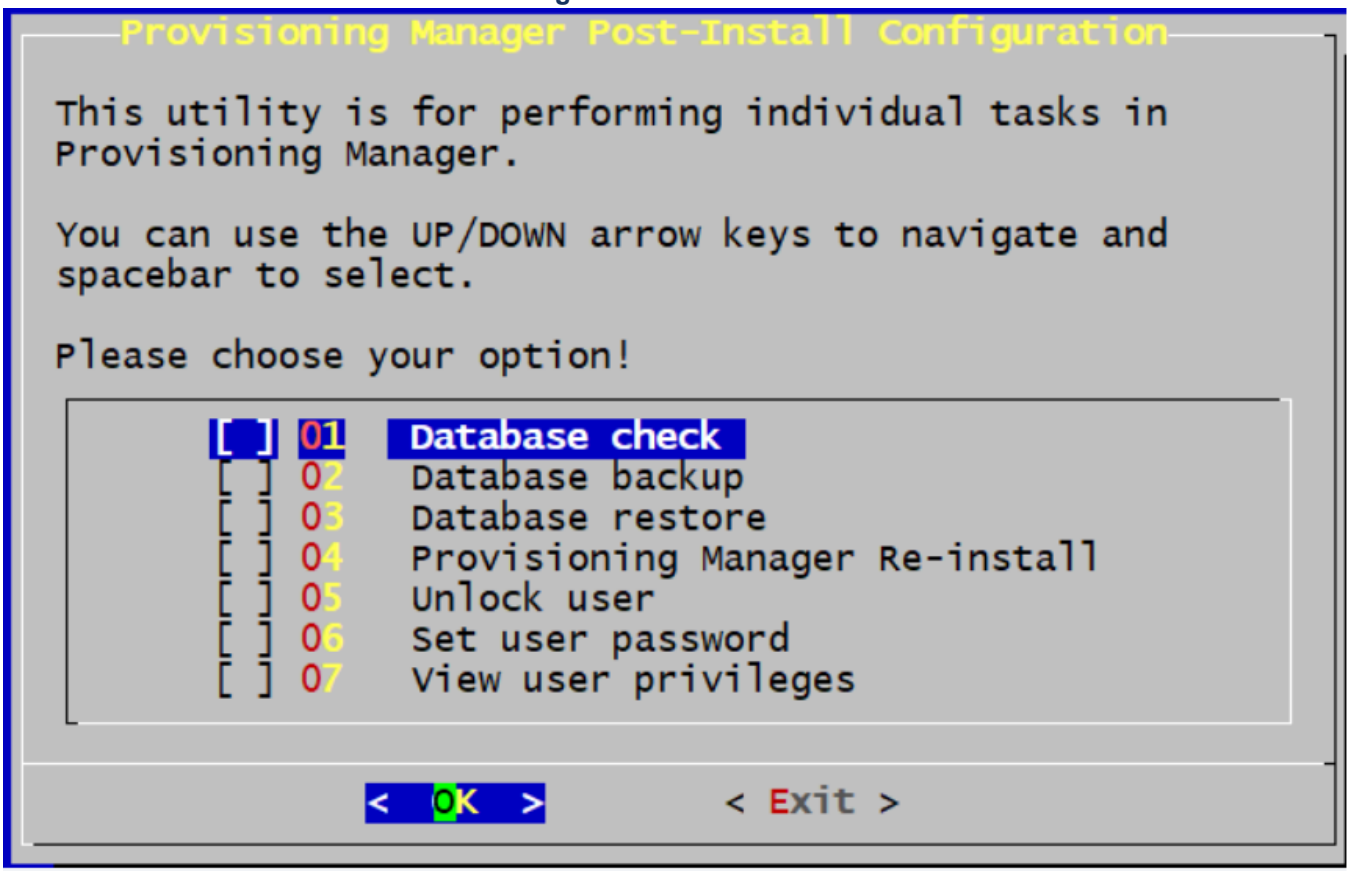
After the migration of CMG and D.N.A. data, MX-ONE Provisioning Manager is the single point of entry for user and extension management in MX-ONE. When changing user and extension data in MX-ONE Provisioning Manager, the corresponding data in CMG is automatically updated accordingly. Changing user data in CMG will cause unsynchronized databases.

Import from CMG to MX-ONE Provisioning Manager should only be performed once, during the migration. If MX-ONE Provisioning Manager is used correctly (that is, the application is used for all user management in MX-ONE), there will be no need for additional imports of CMG data.

For more information on user and extension data in MX-ONE Provisioning Manager and its subsystems, see *MX-ONE Provisioning Manager, Description*.

Post Installation

Figure 2.3: Post-Installation menu



To access the post install menu, log in as **mxone_admin** and enter the following command:

```
sudo mp_config
```

Select one of the options:

- **Database check**, to verify some basic but important settings in the database
- **Database backup**, to create a backup of the database
- **Database restore**, to choose from a list of backups and restore it to the database
- **MX-ONE Provisioning Manager Re-install**, to re-install current version of MX-ONE Provisioning Manager and then choose from a backup list which data to restore
- **Unlock user**, to unlock a user specified by user id
- **Set user password**, to set a new password for an existing user specified by user id
- **View user privileges**, to list the subset of privileges that is assigned to a user specified by user id

Additional configuration (common for the system) can be found through the command (`webserver_-config`); Run as **root**.

Uninstallation

To uninstall MX-ONE Provisioning Manager, login as **mxone_admin** and run the following command:

```
sudo mp_uninstall
```

Log Files

Log files are created automatically and can be found in directory `/var/log/mxon-e_pm/eri_mp`.

Installation/Upgrade:

- mp_install.log
- mx-one_pm_rpm_<version>-<release>.log

Un-installation:

- mp_uninstall.log
- mx-one_pm_rpm_<version>-<release>.log

Additional information can be found in log files for Webserver Configuration (directory `/var/log/mxone/webserver`):

- webserver_config.log
- application_log.log

Runtime information can be found in directory `/opt/jboss/standalone/log`:

- server.log

Fault Recovery

If the installation is unsuccessful, see *Fault Handling* for a solution.

Increasing Heap Memory Size in Jboss Configuration File

Follow the steps below for increasing the heap memory size in Jboss configuration:

1. Login to Provisioning Manager server with root user credentials.
2. Go to path: `cd /opt/jboss/bin/`
3. Edit **standalone.conf**file and change the options Xms512m and Xmx512m to the desired values. In the example below, options are changed to 2048m

   JAVA_OPTS="-Xms2048m -Xmx2048m -XX:MaxPermSize=256m -Djava.net.preferIPv4Stack=false -Djava.net.preferIPv6Addresses=true"
   JAVA_OPTS="$JAVA_OPTS -Djboss.modules.system.pkgs=$JBOSS_MOD-ULES_SYSTEM_P-KGS -Djava.awt.headless=true"
   JAVA_OPTS="$JAVA_OPTS -Djboss.modules.policy-permissions=true"
   JAVA_OPTS="$JAVA_OPTS -Djboss.as.management.blocking.timeout=600"
4. Save the changes.

5. Restart PM server.

NOTE: For restarting PM server, log in as **mxone_admin** and run command: `sudo webserver_config` and select **restart web server**.

MX-ONE Provisioning Manager Deployment

Introduction

MX-ONE Provisioning Manager is a web-based management tool for management of MX-ONE™ extensions through a Graphical User Interface (GUI).

MX-ONE Service Node Manager is a web-based management tool used for configuration of the MX-ONE through a Graphical User Interface (GUI). MX-ONE Service Node Manager is also used for creation and updates of configuration files for the IP phones.

MX-ONE Service Node Manager must always be deployed on Service Node 1 (LIM1) in the MX-ONE.

The purpose with this document is to describe the alternatives available for deployment of MX-ONE Provisioning Manager and provide recommendations for different scenarios.

NOTE: Both MX-ONE Service Node Manager and MX-ONE Provisioning Manager must be deployed on Linux based servers.

MX-ONE PM Deployment Alternatives

General

MX-ONE Provisioning Manager can be deployed:

- on the same server as MX-ONE Service Node Manager
- on another MX-ONE Service Node
- on a separate, Linux based server

There are several factors considered before taking a decision such as:

- Company strategies
- System size
- Server type (s)
- Networked or one stand-alone system

The user must follow the general guidelines when planning the deployment of the management applications in the MX-ONE system and/or network:

- Communication protocol used between MX-ONE Service Node Manager and MX-ONE Provisioning Manager is the only functional difference between deployment of MX-ONE Provisioning Manager on the same server or on a different server as MX-ONE Service Node Manager.
- Web services communication is used when the applications are deployed on different servers. This communication occurs in large systems with many users, which can result in longer response times (for example, requesting printouts of all extensions). The network stability/quality also has an impact on this communication, which is in an unstable network situation (means communication is disturbed or interrupted).

- MX-ONE Provisioning Manager's communication with MX-ONE is done through MX-ONE Service Node Manager, which means if MX-ONE Service Node Manager is not running; MX-ONE Provisioning Manager cannot access the MX-ONE system that MX-ONE Service Node Manager is running on. So, during network configuration, MX-ONE Provisioning Manager interfacing many MX-ONE systems is recommended to have MX-ONE Provisioning Manager on a separate server.
- Connection with the different MX-ONE Service Node Manager applications takes place by using of web services.
- MX-ONE Service Node Manager and MX-ONE Provisioning Manager must have the same SW version when deployed on the same server, which must be upgraded at the same time.
- When deployed on different servers, MX-ONE Provisioning Manager must have the same or higher SW version than MX-ONE Service Node Manager.

MX-ONE SNM and PM on the same SN

This is the most common alternative and the recommended deployment for a 1 server (LIM) system.

The following are the industrial standard servers and virtualized server requirements for MX-ONE:

Figure 3.1: Single deployment - same server

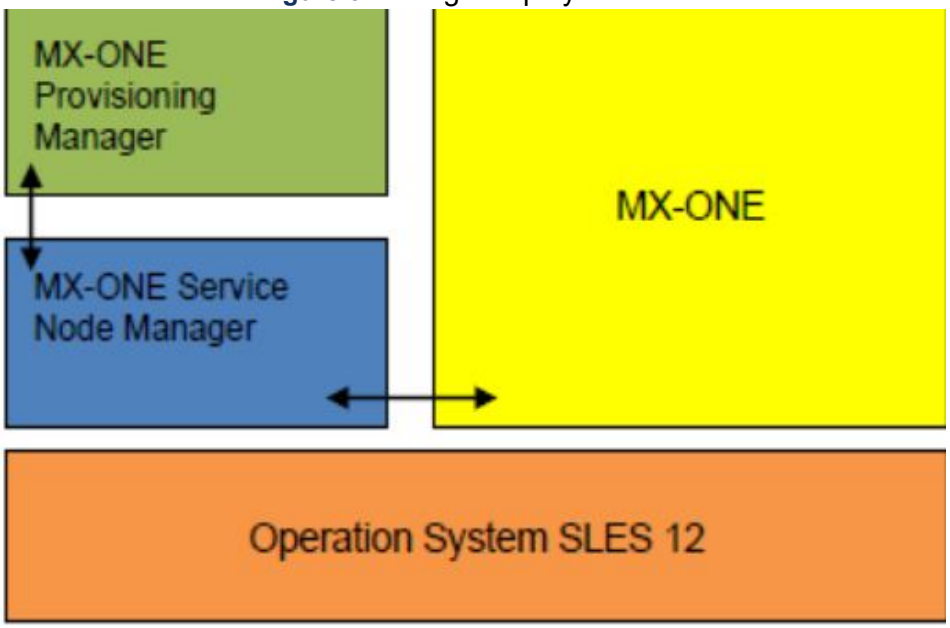


Table 3.1: MX-ONE 7.0 - Server Requirements - Industrial Standard Servers (Sheet 1 of 2)

Provisioning Manager Standalone					
Physical Server (Bare metal)					
Number of Users	**Memory (GB)**	**Number of CPUs**	**Disk (GB)**	**Application (GB)**	**Type of Server**
500	4	2	100	100	Provisioning Manager Standalone

Table 3.1: MX-ONE 7.0 - Server Requirements - Industrial Standard Servers (Continued) (Sheet 2 of 2)

Provisioning Manager Standalone					
Physical Server (Bare metal)					
Number of Users	**Memory (GB)**	**Number of CPUs**	**Disk (GB)**	**Application (GB)**	**Type of Server**
1000	4	2	100	100	Provisioning Manager Standalone
2500	6	2	100	100	Provisioning Manager Standalone
5000	6	4	100	100	Provisioning Manager Standalone
7500	6	4	100	100	Provisioning Manager Standalone
10000	8	4	100	100	Provisioning Manager Standalone
15000	8	4	100	100	Provisioning Manager Standalone
30000	12	6	100	100	Provisioning Manager Standalone
50000	16	6	100	100	Provisioning Manager Standalone
70000	20	6	100	100	Provisioning Manager Standalone
100000	24	6	100	100	Provisioning Manager Standalone

Table 3.2: MX-ONE 7.0 - Server Requirements - Industrial Standard Servers (Sheet 1 of 2)

Provisioning Manager Standalone							
Physical Server (Bare metal)							
Number of Users	**Memory (GB)**		**CPU**			**Disk (GB)**	**Application (GB)**
Number of managed users	**Minimum (GB) required Memory**	**Reservation (GB)**	**Minimum number of vCPU required**	**Minimum MHZ required**	**Minimum MHZ reservation**	**Disk size (GB)**	**Type of Application**
500	4	2	2	1000	500	100	Provisioning Manager Standalone
1000	4	2	2	1000	500	100	Provisioning Manager Standalone
2500	6	2	2	1000	500	100	Provisioning Manager Standalone
5000	6	3	4	3500	2000	100	Provisioning Manager Standalone
7500	8	3	4	3500	2000	100	Provisioning Manager Standalone
10000	8	4	4	3500	2000	100	Provisioning Manager Standalone
15000	8	4	4	3500	2000	100	Provisioning Manager Standalone
30000	12	6	6	4000	2000	100	Provisioning Manager Standalone
50000	16	6	6	4000	2000	100	Provisioning Manager Standalone

Table 3.2: MX-ONE 7.0 - Server Requirements - Industrial Standard Servers (Continued) (Sheet 2 of 2)

Provisioning Manager Standalone							
Physical Server (Bare metal)							
Number of Users	**Memory (GB)**		**CPU**			**Disk (GB)**	**Application (GB)**
Number of managed users	**Minimum (GB) required Memory**	**Reservation (GB)**	**Minimum number of vCPU required**	**Minimum MHZ required**	**Minimum MHZ reservation**	**Disk size (GB)**	**Type of Application**
70000	20	6	6	4000	2000	100	Provisioning Manager Standalone
100000	24	8	6	4000	2000	100	Provisioning Manager Standalone

It is mandatory to change the heap memory size in JBoss configuration for Provisioning Manager and Service Node Manager as mentioned below. The memory requirements are in addition to the memory required by Service Node.

- 2048 MB (2GB) or more recommended for up to 2000 users
- 4096 MB (4GB) or more recommended for more than 2000 users

NOTE: The default value of 512 MB in JBoss configuration support is up to 1000 users.

For instructions on how to change heap size, contact Mitel Support team or refer to *Installing MX-ONE Provisioning Manager* document or *NSTALLING AND CONFIGURING MIVOICE MX-ONE*l document.

Also, it is recommended to run Provisioning Manager on a standalone system for more than 2000 users.

MX-ONE SNM and PM on different Service Nodes

This alternative is recommended for a multi-server (LIM) system, that is more than one server and more than 2000 users using either with industrial standard servers or virtualized server. In this situation, the master LIM server has MX-ONE Service Node Manager installed and MX-ONE Provisioning Manager is placed on any of the LIM in the system. This is done to offload the master server.

This is recommended as an alternative during configurations, where it is foreseen that the processing in server one (master server) becomes heavy due to specific functionality/interfaces.

It is mandatory to change the heap memory size in JBoss configuration for Provisioning Manager and Service Node Manager as mentioned below:

- 4096 MB (4GB) for PM system (for more than 2000 users).Note! If a large number of users are managed by Provisioning Manager, you may need to increase the heap memory size to a higher value.

- 4096 MB (4GB) for Service Node Manager (4GB). This memory requirement is on top of memory needed by Service Node.

For instructions on how to change heap size, contact Mitel Support team or refer to *Installing MX-ONE Provisioning Manager* document or *INSTALLING AND CONFIGURING MIVOICE MX-ONE* document.

NOTE: This deployment mode is that, even if MX-ONE Service Node Manager is the MX-ONE Provisioning Manager communication link to the MX-ONE Service Node, it is the server that MX-ONE Provisioning Manager is deployed on that absorbs the Java CPU load.

The communication between MX-ONE Service Node Manager and MX-ONE Provisioning Manager takes place through web services (with or without security enabled).

MX-ONE PM on Separate Server

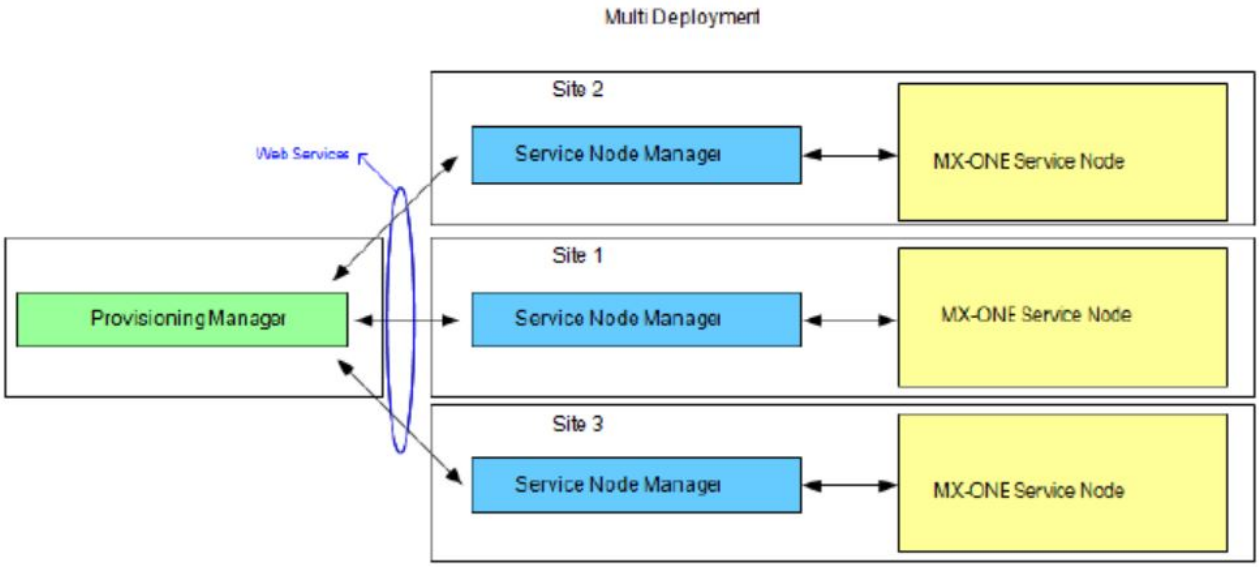
In a network where there may be several MX-ONE systems, networked together, it may be advantageous to place the MX-ONE Provisioning Manager on its own server, independent of any MX-ONE system. This is the recommended alternative for a networked set-up as MX-ONE Provisioning Manager can access all operational MX-ONE systems.

By placing the MX-ONE Provisioning Manager on a separate server, user can avoid loss of communication to all other MX-ONE systems; which is unavoidable during upgrading of the MX-ONE system where MX-ONE Provisioning Manager typically resides.

The server that MX-ONE Provisioning Manager is deployed on should be equipped with minimum 4 GB of RAM.

The communication between MX-ONE Service Node Manager and MX-ONE Provisioning Manager takes place through web services (with or without security enabled).

Figure 3.2: Communication between MX-ONE Node Manager and Provisioning Manager



MX-ONE Provisioning Manager, User Instructions

Introduction

This section discusses MX-ONE Provisioning Manager.

Scope

The user guide contains:

- A workflow describing in which order to add data into PM
- A description of the navigation and the user interface in PM
- An overview of how to perform actions in PM
- Additional information for some tasks
- PM system messages and error handling

Target Group

This document is intended for users of MX-ONE Provisioning Manager and support personnel.

Internet Browser Settings

There are a few settings and aspects that needs to be considered to optimize function and performance:

- Javascript must be enabled in the browser in order to use PM.
- The browser must be configured to refresh pages on every visit. For information about browser configuration, see help and documentation specific for your browser.
- Installing many plug-ins in the browser may affect the rendering performance of the browser and may lead to longer lead time to display the web pages. PM does not require any browser plug-ins.

Target Group

This document is intended for users of MX-ONE Provisioning Manager and support personnel.

Internet Browser Settings

There are a few settings and aspects that needs to be considered to optimize function and performance:

- Javascript must be enabled in the browser in order to use PM.

- The browser must be configured to refresh pages on every visit. For information about browser configuration, see help and documentation specific for your browser.
- Installing many plug-ins in the browser may affect the rendering performance of the browser and may lead to longer lead time to display the web pages. PM does not require any browser plug-ins.

MX-ONE Provisioning Manager Overview

MX-ONE Provisioning Manager is a management tool for MX-ONE that is used to configure users and assign services to the users. It is also used to configure administrators with different access privileges for both MX-ONE and PM.

Subsystems can be connected to PM. A subsystem is a component of MX-ONE, for example, a MX-ONE. Any combination of subsystems is allowed. The subsystems provide services to the users.

For more information about PM, see the description for MX-ONE PROVISIONING MANAGER.

MX-ONE Provisioning Manager can be connected to MS Active Directory. User changes in AD can automatically trigger changes in PM and its subsystems. For more information, see the document MX-ONE PROVISIONING MANAGER INTEGRATION WITH MS ACTIVE DIRECTORY.

MX-ONE Provisioning Manager is part of the MX-ONE Manager concept that consists of several operation and maintenance applications providing management functions for MX-ONE. For more information about PM in MX-ONE, see the system description for MIVOICE MX-ONE.

System Requirements

MX-ONE Provisioning Manager can be accessed from anywhere using a commercially available browser. The browser requirements are:

- Microsoft Internet Explorer 8 (or later versions)
- Mozilla Firefox 18 (or later versions)
- Google Chrome (latest version)
- Microsoft Edge 80.0.361.48 (Official build) (64-bit)

Both HTTP (TCP Port 80) and HTTPS (TCP Port 443) are supported. If HTTPS is used, it must be configured. For higher security, it is recommended to use a commercial digital certificate issued by a commercial Certification Authority (CA). For more information about PM security, see the description for MX-ONE PROVISIONING MANAGER.

Key Features of MX-ONE Provisioning Manager

The key features of MX-ONE Provisioning Manager are:

- Location access restriction
- Import and export functions of user and department data
- Assignment of services to users
- Support of the following phone types:

– Analog phones

– CAS phones

– Fax

– Digital phones

– IP phones

– Cordless phones (DECT)

– Mobile phones/remote extensions.

- Backup functions
- MS Active Directory integration
- Comparison of PM data and subsystem data
- End user interface
- Efficiency enhancing features
- Web Service interface for external applications
- Configuration of Least Cost Routing for mobile extensions
- Assignment of function keys for digital and IP phones
- Configuration of personal number lists
- Configuration of parallel ringing
- Configuration of group membership

For more information about key features, see the description for MX-ONE PROVI-SIONING MANAGER.

Preferred Language

The language used in MX-ONE Provisioning Manager can be set per user in the User task under the Advanced settings. The default language is English.

The sorting of the text columns in PM are by default done after the servers default language (en-US). To sort after another language, the preferred language setting must be set in the web browser.

Getting Started

There are two ways to set up MX-ONE Provisioning Manager.

- Using the Wizard for Express and Express SAAS installation. A single page of entry fields helps you to quickly set up the system. This is possible since the system is predefined.
- Manual set up for all other installation setups. You are forwarded to the start page where you can access any task in the system to perform your configuration. See the Manual Workflow When Getting Started section below for further details.

Manual Workflow When Getting Started

After installing MX-ONE Provisioning Manager it is recommended to add data into the system, for example to add departments, administrators, subsystems and so on, in the following order:

1. Optionally add additional locations in the Location task.
2. Optionally modify User Defined Fields (UDFs) for users and departments in the UDF Mapping task.
3. Optionally add additional departments in the Departments task. Alternatively the Import task can be used.

4. Optionally add or modify security profiles in the Security Profiles task.
5. Optionally add users to promote to administrators with different security profiles. Use the User and Administrator tasks.
6. Register subsystems
7. Add users and configure services such as extensions and mailboxes for the users using the User task. Alternatively the Import task can be used.

NOTE: To quickly find the location in the menu for the different tasks, a tip is to use the site map available at the top of MX-ONE Provisioning Manager.

NOTE: After installation it is recommended to create an extra super user to keep as backup if something happens to the original super user account, for example if the password is lost, otherwise the whole system must be reinstalled.

Integrating With MITEL CMG

The following settings are needed to get the integration with CMG in place:

1. The CMG Server shall be registered in the Subsystem task. Note the setting for CMG Department Structure.
2. Each registered MX-ONE (subsystem task) shall be mapped to a “CMG PBX ID” which is the CMG’s own setting for the same MX-ONE.
3. Each registered location (Location task) shall be mapped to a “CMG Customer Group” which is the CMG’s own corresponding geographical or logical group number.
4. Users and departments can be imported from CMG in a migration scenario. The UDF (User Defined Fields) fields in PM can be defined during the import proce-dure.
5. The UDF field mapping to the CMG “Miscellaneous” fields can be managed in the UDF Mapping task when a CMG subsystem has been registered.
6. Make sure that the CMG Connection task in MX-ONE Service Node has been configured to set up the telephony connection between the MX-ONE and CMG Server.

When the above settings are in place, operations in the User task and renaming or changing parent department task will update the CMG.

Note: To open up the communication between the MX-ONE Provisioning Manager and the CMG Server, the AnA and CWI interfaces on the CMG Server must be enabled and activated and access given to the CMG user that was entered when registering CMG in the PM Subsystem task.

Note: In PM, you can create a department structure, and populate this department structure in CMG during PM/CMG synchronization. To do this, you need to make a change in the config file on the CMG server, for which you must have administrator rights.

Default path:

C:\ inetpub \ wwwroot \ CMGUserInformationService

Note that If you use Notepad or Notepad++ to change in the file, then you must start them with "run as administrator" or similar.

The default values are mentioned as below:

<add key="CreateOrg" value="False"/>

<add key="DeleteOrg" value="False"/>

You must change to:

<add key="CreateOrg" value="True"/>

<add key="DeleteOrg" value="True"/>

To make the parameter change to take effect, either you need to stop and start the application pool in IIS, that is running the application "CMGUserInformationService" or perform a iisrestin cmd.

Note: If CMG version is 8.2 and CMG speech is installed, then CMG speech shall have web services interface enabled and following files should be configured.

In CMGUserInformationService under Application Settings "SpeechProvisionin-gEnabled" parameter should be set to TRUE.

..\Aastra\Aastra Speech Service\SpeechServiceConfig.xml the Provisioning Port should be set to 8006

Integration With MiCollab Advanced Messaging

The following settings are needed to get the integration with Mitel MiCollab Advanced Messaging (AM) in place:

- The MiCollab AM Server shall be registered in the Subsystem task.

When the above configuration is in place the MiCollab AM mailboxes can be configured either through the User task or directory in the Mailbox task.

Note:Operations in the Mailbox task will not update PM user accounts that are tied to the targeted mailbox

Note:To open up the communication between the PM and the Mitel MiCollab AM Server, the web services interface on the Mitel MiCollab AM Server must be enabled and activated.

Note:The Mitel MiCollab AM shall NOT be set to use the “Windows login credentials”, because PM will not be able to login into Mitel MiCollab AM in that case.

Note:The user account defined in MiCollab AM, which PM will use for its communication with MiCollab AM, shall have local admin rights in MiCollab AM.

Integration With MS Active Directory

Please see the document MX-ONE PROVISIONING MANAGER INTEGRATION WITH MS ACTIVE DIRECTORY for detailed information on how to update MX-ONE automatically from AD.

Integration With SIP-DECT OMM

MX-ONE Provisioning Manager integrates with the SIP DECT system through the OMM, which is its point of management. An OMM is defined as a subsystem. One OMM is connected to one MX-ONE Service Node. Reversely, an MX-ONE Service Node is connected to one OMM. A resiliency OMM is invisible to the PM, and cannot be separately administrated.

Once Manager Provisioning has the definition of an OMM, it can configure an end users’ SIP-DECT service in it, and connect this service as an IP Terminal to a single- or multi-terminal Extension in the MX-ONE Service Node.

Please see the document “SIP-DECT OM SYSTEM MANUAL; INSTALLATION, ADMINISTRATION AND MAINTENANCE” for information on how to set up the OMM for use with PM.

Integration With MiCollab Server

Please see the MiCollab Platform Integration Guide document for detailed information on how to integrate PM with MiCollab Server.

Using MX-ONE Provisioning Manager

In MX-ONE Provisioning Manager (PM) there is a number of configuration areas, for example, Users and System. Each configuration area contains a number of configuration tasks, for example, Departments and Subsystem. The configuration tasks are used to set up users, administrators, and their services.

This section describes the user interface and navigation in PM. How to use each task is explained in the online help, see Using the Help.

For information about troubleshooting, see FAULT HANDLING OF MX-ONE PROVI-SIONING MANAGER.

Logging In and Logging Out

Browse to the login screen of MX-ONE Provisioning Manager. Enter User Id and password provided by the administrator to log in to the application, the User Id and password are case sensitive. After three failed login attempts the user is locked and must be unlocked by an administrator assigned the privilege to unlock users. A user assigned the privilege Auto Unlock, for example the System Setup Admin User, will be automatically unlocked every 20 minutes time interval.

Click Logout in the upper right corner to log out from PM. If the browser window is closed, the user is automatically logged out.

The application has a time limit after which an inactive user is automatically logged out. The time limit is 45 minutes by default, the time left before automatic logout is indicated in the browser status bar (lower left corner).

To be enable to see this indicator, the browser must be configured for allowing status bar updates using Java Script.

For more information, see Enabling the Automatic Logout Indicator.

Navigating in MX-ONE Provisioning Manager

The user interface is divided into menu tabs and submenus containing different configuration tasks. For most of the tasks it is possible to view, add, change or remove configuration items. How to perform different actions is found in chapter 4, Actions.

Figure 4.1: MX-ONE Provisioning Manager User Interface

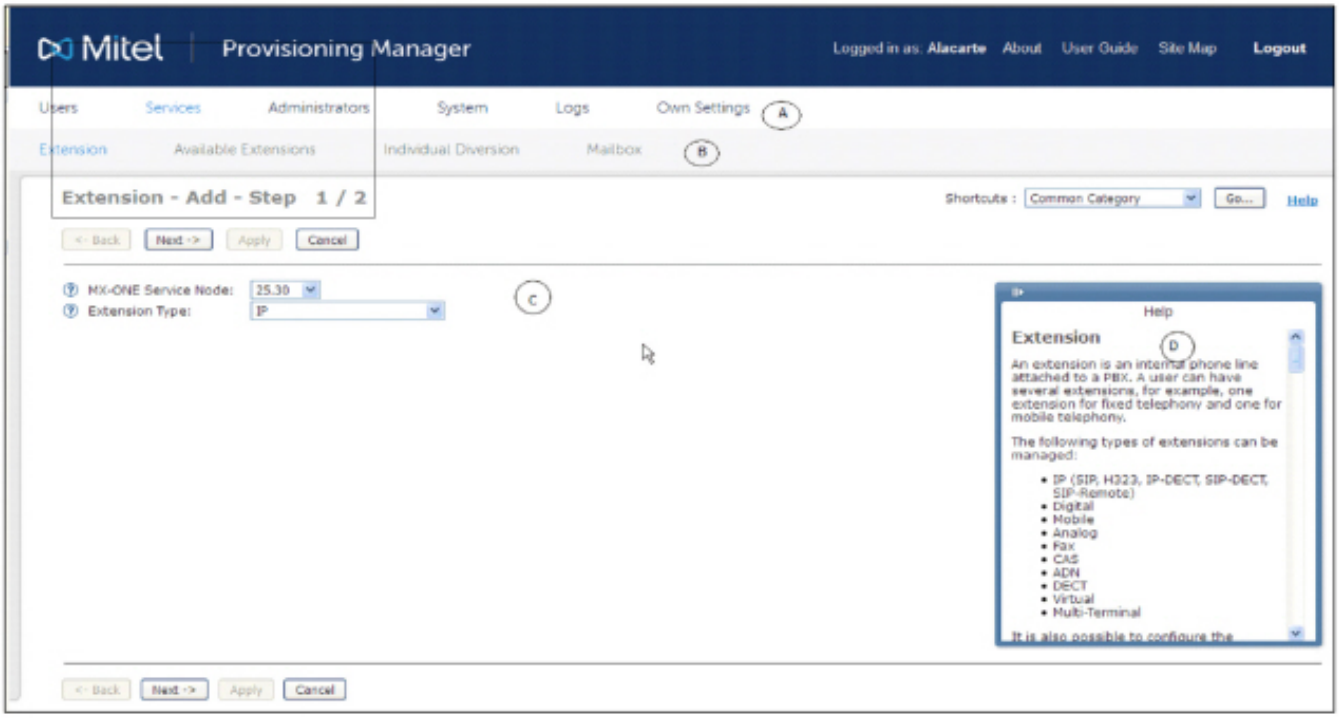


Table 4.1: User interface items

Item	Description
A	Main menu
B	Submenu
C	Work area
D	Help frame

NOTE: *Do not use the Back and Forward buttons in the browser. Using these buttons will result in an error message. Reload the page to go back to MX-ONE Provisioning Manager.* Note:

Icons, Symbols and other Graphical Elements

The following icons and symbols are used in MX-ONE Provisioning Manager:

Table 4.2: Icons and Symbols in MX-ONE Provisioning Manager (Sheet 1 of 4)

Symbol	Function	Description
	Help	Displays information about the property and how to configure it.

Table 4.2: Icons and Symbols in MX-ONE Provisioning Manager (Continued) (Sheet 2 of 4)

Symbol	Function	Description
	Change	Change the properties for an existing configuration item.
	View Details	View the details of a configuration item.
	Remove	Remove the configuration item.
	Add new using this as template	Add a new configuration item using an existing item as a template.
	Create template from this	Create a template with the values in the existing configuration item.
	Filter	Display or hide the fields used to filter the list.
	Sort the list	Sort the list in ascending or descending order. The arrow pointing in both directions indicates that the column is unsorted.
	Mandatory	It is mandatory to set a value for this property.
	Undo changes	Restore the value to the previously saved value
	Edit field	Enable the field for editing.
	Information	Information exclamation mark followed by system information.

Table 4.2: Icons and Symbols in MX-ONE Provisioning Manager (Continued) (Sheet 3 of 4)

Symbol	Function	Description
	Restore	Restore the system to a previous state.
	Backup	Keeps the Backup of the current system state.
	Download	Download a template in .xml format.
	Unlock	Unlock a locked user.
	Run	Run a selected batch operation.
	Multi terminal conversion	Conversion of single terminal (Generic extension) to multi terminal.
	Activate	Activate the set personal number list, that is, change status from Set to Active.
	Deactivate	Deactivate the active personal number list, that is, change status from Active to Set.
	Not Set	The status of the personal number list is Not Set that is, the list has no defined call sequences.
	Set	The status of the personal number list is Set that is, the list has defined call sequences but it is not active.

Table 4.2: Icons and Symbols in MX-ONE Provisioning Manager (Continued) (Sheet 4 of 4)

Symbol	Function	Description
	Active	The status of the personal number list is Active, that is, the list deflects incoming calls according to the defined call sequences.

Using the Help

There are several levels of Help in MX-ONE Provisioning Manager:

- User Guide: This user guide, which is found in the upper right corner of the application.
- Help: Online help for a specific task that provides information needed to complete the task. The help is displayed in a pop-up window or in the Help frame.
- : Online context help that is displayed in a pop-up window for a specific property. The context help describes the property's usage, options and if special conditions must be considered.

Basic or Advanced Settings

Property settings that are not often used and not mandatory are grouped in advanced settings for a task. Some fields in advanced settings have default values. The advanced settings are displayed by clicking Advanced. Basic settings are displayed by clicking Basic.

Enabling the Automatic Logout Indicator

MX-ONE Provisioning Manager comprises a function for displaying the remaining time until an automatic logout due to inactivity is performed. The information is displayed in the status bar of the browser.

Figure 4.2: Automatic logout indicator

To be able to see this information, the browser must be configured for allowing status bar updates using Java Script. For information on how to enable this function in the browser, see the browser documentation.

Actions

This section describes the actions that can be performed in the different tasks. Most of the actions can be performed at different stages, for example from a result screen or from a list view.

Figure 4.3: List view

Self Services

The Forgot your password link on the login page of the GUI, makes it possible for users to get a new password. This is useful if the user has forgotten the password or if the user's account has been locked.

The following steps must be done to get a new password:

1. Click on the Forgot your password link. The Forgot Password screen is opened.
2. Enter a valid user id and press Submit.
3. A confirmation message are shown and a new password has been sent to the user's e-mail address.

NOTE: The Forgot your password link is only shown when a mail server is connected to the system.

Adding Data

Data can be added to a new configuration item in the following ways:

1. Click Add .... System default values are displayed for the new configuration item.
   To create a configuration item without using a template, the value <No Template> must be selected in the Using Template drop-down list before clicking the button. To create a configuration item using a template, see 4.10.3 Using a Template to Create a Configuration Item on page 19.
2. From a result screen or a view details screen, click Add from this.... The previously added configuration item is used as a template.
3. From a list view, click (Add new using this as template). The selected configuration item is used as
   a template.

Some configuration tasks have predefined values and can only be changed.

NOTE: When a user is added in the User task, it is automatically assigned the security profile End User. An end user can be promoted to administrator by assigning the user a different security profile and defining access to departments and locations in the Administrator task.

Viewing Data

Configuration items can be viewed in the following ways:

- For some tasks the list view is displayed by clicking View. The list displays the existing configuration items with a subset of the property values or all property values.
- From a list view, click (View details). The details of the configuration item are displayed. Click on the
  arrows to view the previous or the next configuration item.
- From a list view, select one or more configuration items, by clicking their check boxes, and then click View. The details of the selected configuration items are displayed simultaneously.

Data for selected configuration items can also be compared, see Comparing data.

Filtering Data in List Views

In some tasks, for example the User task, it is possible to filter the list in the list view to find specific configuration items. To display or hide the fields to enter the search criteria in, click (Filter).

To filter the list, enter the search criteria in one or more fields and click Filter. Wildcards can be used in the search criteria, a question mark (?) to replace one character or an asterisk (*) to replace zero or more characters.

Sorting Listviews

The list in the listview can be sorted by clicking the arrows displayed for the columns:

- (Sort by <column name>): the column is unsorted, clicking it sorts the list by the items in that column

  in ascending order
- (Sort descending): the column is sorted in ascending order, clicking it sorts the list by the items in that

  column in descending order
- (Sort ascending): the column is sorted in descending order, clicking it sorts the list by the items in that

  column in ascending order

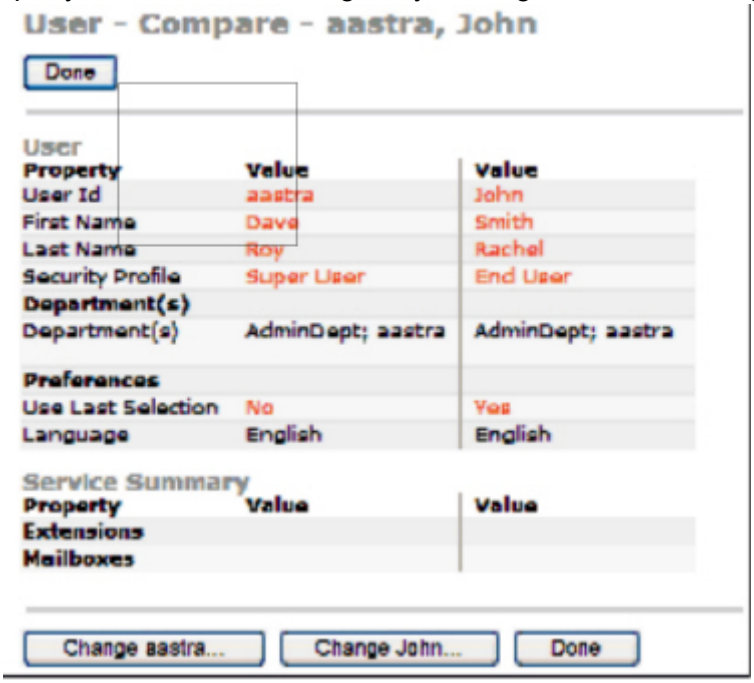
Comparing Data

Configuration item properties can be compared with the compare function. The compare function is available in list views.

Perform the following steps to compare two configuration items:

1. Select two items to compare in the list.
2. Click Compare.

A new screen with the result of the comparison is displayed. Property values that differ in the comparison are highlighted. The property values can be changed by clicking one of the Change <item> ... buttons.



Searching for Users

In the User task list view and when adding an administrator, it is possible to search for particular users. In the field, enter All to view a list of all users, User Id, first name, last name, a combination of last name and first name (in that order), extension number or department and click View or Search. Searching for users by only entering the first part of the name is possible. To search on first name only, enter space and then first name. Wildcards can be used, a question mark (?) to replace one character or an asterisk (*) to replace zero or more characters.

Changing Data

Configuration items can be changed in the following ways:

- From a list view, click (Change). The configuration item is opened and the set values can be edited.

- From a list view, select one or more configuration items and click Change.... Makes it possible to change values for all selected configuration items at the same time. If changing values for more than one configuration item, (Change) enables the field.

- From a result screen, click Change This.... The configuration item is opened and the set values can be edited.

To restore the previously saved value in a field, that is to undo the change, click (Undo Change). Click Apply to save and apply the changes.

Removing Data

Configuration items can be removed in the following ways:

- From a list view, click (Remove).

- From a list view, select one or more configuration items and click Remove.
- From a result screen, click Remove This.

A pop-up confirmation window is displayed before a configuration item is removed.

Printing Data

Configuration data can be printed in the following ways:

- From a list view, click Print.... Prints the properties of selected configuration items.
- From a list view, click the Print All link. Prints the properties of all existing configuration items.
- From a view details screen, click the Print link. Prints the properties of the configuration item.

Clicking Print..., Print All or Print opens a pop-up window that displays the print preview.

Example:

Printing Security Profile

1. Go to the Administrators tab and then Security Profile.
2. Select items to print.

   Note:Select less then ten (10) items.
3. Click the Print link.
4. A pop-up window opens that displays the print preview.
5. Click Print to open the browser print dialog box, make desired selections and print the page.

Swapping Equipment Positions

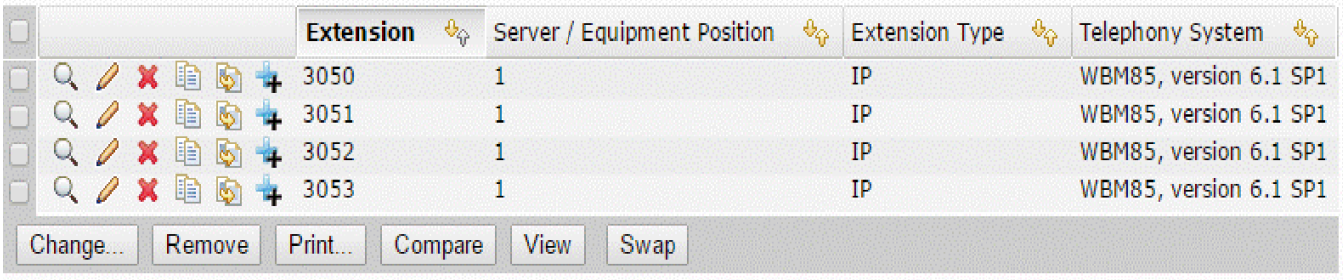


Figure 4: List-view, including the Swap button

To swap two Equipment Positions, perform the following steps:

1. Select two extensions of the same type from the list.
2. Click on Swap.

Handling Templates

A template is a set of predefined values that can be used when a new configuration item is added. Templates are used to simplify the process of adding many configuration items with similar property values. Only property values that can be identical for several configuration items can be set in the template. Property values set in templates will not be set in MX-ONE.

Click the Manage Templates link in a task to display the list view with the existing templates for that task. In the list view, the templates are displayed with the defined name, the type, the user that created it, and the date when it was created, for example,

Digital extension_DigitalExtension (by jsmith, 15/02/08)

Creating a Template for a Configuration Item

There are two ways to create a template:

- Create a new template, that is, a template with no predefined values:
  a. Click the Manage Templates link.
  b. Click Add New... and enter property values in the configuration task where applicable.
  c. Enter a template name and click Apply to save the template.
- Create a template based on an existing configuration item:
  a. Click in the list view

  b. Enter a template name and click Apply to save the template.

NOTE: Creating a template will not alter any data in MX-ONE.

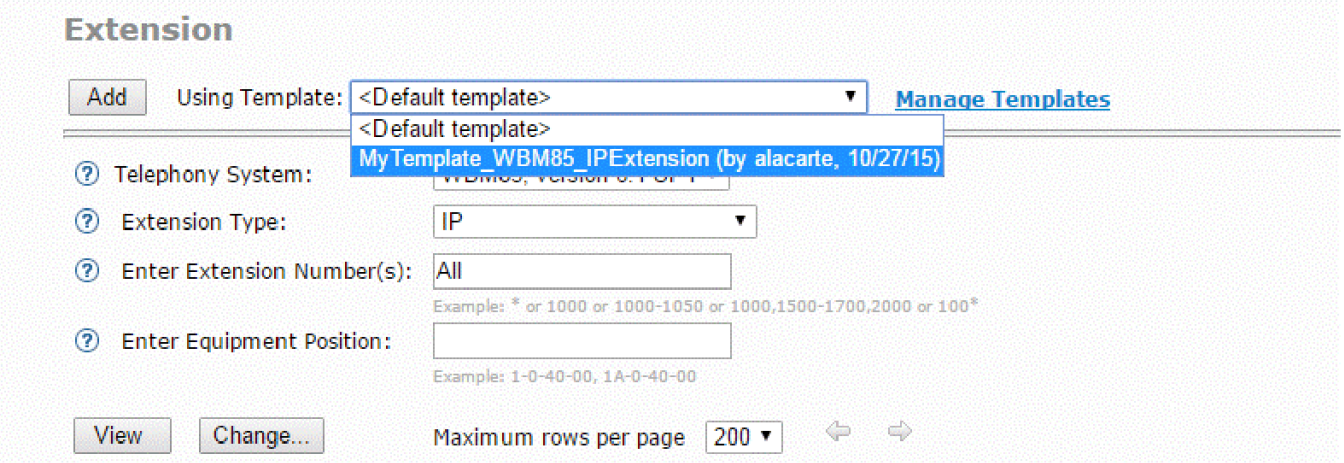
Uploading or Downloading a Template

Templates can be created in one system and transferred to another. To upload a template, click Upload.... To download a template, click (Download). Templates are saved in .xml format.

Using a Template to Create a Configuration Item

To use a template to create a configuration item, perform the following:

1. Select a template from the list.



2. Click Add New... and enter property values for the configuration item where applicable.
3. Click Apply to save the new configuration item.

Using a Multistep Button

Multistep buttons are used to make a detour from task A to task B to add or change configuration items in task B before continuing the configuration of an item in task A. Multistep buttons are used when values in a list are configuration items set in another task.

1. To make a detour from task A to task B to edit the values in the drop-down list, click Edit....

2. Click Add New... to add a new configuration item, click (Change)

to edit an existing one, or click (Remove) to remove an existing one.

3. Click Continue or <- Back to return to task A.

Using Shortcuts

In the Add and Change pages of the Extension task there is a shortcut dropdown at the top that quickly will take you to the selected task in MX-ONE to which the managed extension belongs. You will get automatically logged in and navigated to the selected task.

Using Backup & Restore

To avoid loosing system data it is recommended to back up system data regularly. Then, if data has been accidentally deleted or corrupted, it is possible to restore the system to the state it was in when the backup was made. All data except subsystem data is backed up. The data is stored on the server that MX-ONE Provisioning Manager (PM) is installed on.

The system can store an unlimited number of backup directories. Each backup directory is identified by a time stamp and the system release version.

When restoring the system, the backup directory must have the same system release version as the installed version of PM. That is, if PM 1.2 is installed it is not possible to use backup directories with version 1.0 or 1.1. Backup directories can still be used to restore the system when a service pack for PM has been installed. That is, if PM 1.0.2 has been installed, backup directories with system release version 1.0, 1.0.1, and 1.0.2 can be used.

All stored backup directories are displayed in a list, including those with system release versions older than the installed version of Provisioning Manager The icon (Restore) is only displayed for the backup

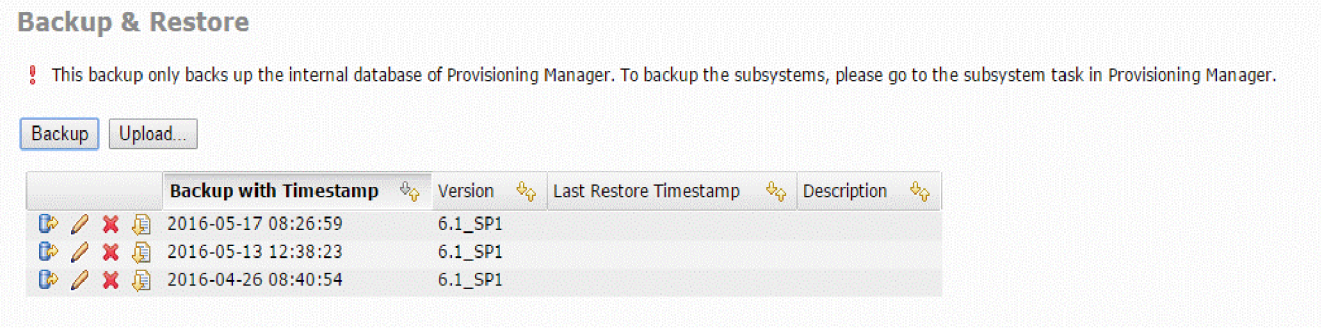
directories that can be used to restore the system.

The process of saving system data during a backup and the process of restoring data during a restore may take a few minutes.

Note:It is not possible to alter system data during a backup or restore.

A backup or restore is performed in the following way:

1. Go to the System tab and then Backup & Restore.
2. Click Backup to start a backup or click (Restore) to restore the system.



Subsystem Backup

Enables to take the backup of MiVoice MX-ONE subsystem and Service Node Manager data.

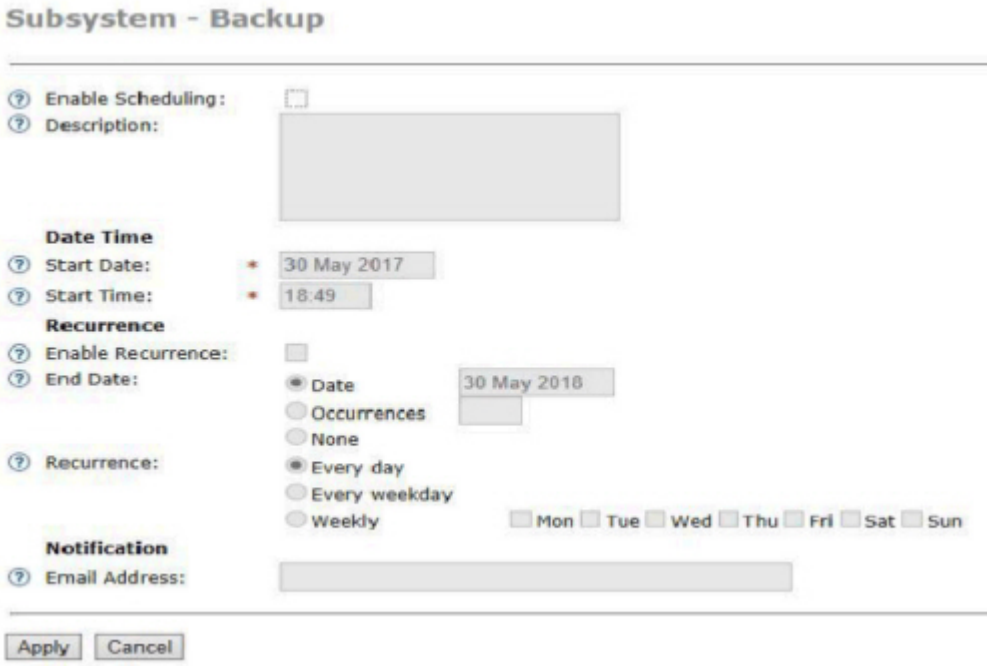
The icon (Restore) is only displayed for the backup directories, which is used to restore the system.

The process of saving system data during a backup and the process of restoring data during a restore may take a few minutes.

NOTE: It is not possible to alter system data during a backup or restore.

The backup of the Subsystem is performed in the following way:

1. Go to the System tab> Subsystem.
2. Click Backup icon start a backup of the system. The following Scheduling page is displayed to schedule the backup.
3. Select the Enable Scheduling check box to start the schedule backup. Immediate backup of the subsystem is triggered if the check box is not selected.



The created backup files are stored in the /var/opt/eri_sn folder on the MiVoice MX-ONE and are used when restoring the MiVoice MX-ONE database. You can restore MiVoice MX-ONE and Service Node Manager using the Backup and Restore task in Service Node Manager.

Using Compare with Subsystem

Data inconsistencies can also be caused by subsystem data being modified directly in MX-ONE. Examples:

- extensions are added or removed in MX-ONE but not in MX-ONE Provisioning Manager
- mailboxes are added or removed on the Messaging Server but not in MX-ONE Provisioning Manager
- one of the extensions associated to a user is deleted in MX-ONE while the user's profile in MX-ONE Provisioning Manager is unchanged.

The Compare with Subsystem task is used to compare the PM data with the subsystem data to find data inconsistencies. The result is displayed in a list. Based on the list, the administrator decides what to add or remove in the system, using the corresponding tasks, to synchronize PM and subsystem data.

1. Go to the System tab and then Data Management.
2. Select which subsystem to compare the PM data with, and maximum number of rows to be displayed per result page. Click View.
3.

4. Click on a post in the Differences column to view the result.

Importing Data to MX-ONE Provisioning Manager

The import function in MX-ONE Provisioning Manager is used to add users and departments to the system in two scenarios:

- When migrating existing users and departments from D.N.A or CMG to MX-ONE Provisioning Manager.

Note: For detailed information on how to migrate to MX-ONE Provisioning Manager from D.N.A. and CMG, see Installing MX-ONE Provisioning Manager (9/1531-ANF 901 15).

- When adding new users and departments.

Importing from D.N.A. and CMG

This is only to be used in when initially setting MX-ONE Provisioning Manager. For details, see Installing MX-ONE Provisioning Manager (9/1531-ANF 901 15).

Importing from CSV

User and department data can be imported from CSV files, where CSV is the common acronym for Comma Separated Values. This typically allows for batch input data to conveniently be edited with spreadsheet software. Templates and examples can be downloaded from the CSV import web pages. There is a CSV import option (option CSV file) that can very flexibly process and import much data for each user record. It allows you to connect a column in a CSV to one of many attributes of an PM user. For more information and step by step instructions, see MX-ONE Provisioning Manager Online help.

Exporting Data from MX-ONE Provisioning Manager

Data in MX-ONE Provisioning Manager can be exported for call accounting purposes or for usage in, for example, CMG or other PM installations.

Follow the steps below to export data from PM:

1. In MX-ONE Provisioning Manager, click System, Data Managementand then Export. The Export Data page is displayed.
2. Click Export....
3. Select an export type and click Next.
4. In step 2/2, select the data to include in the export, then click Next.
5. For exports using CMG data format, specify a definition file (this file is required for correct format of the exported data). Then click Apply to initiate export.
6. On the Result page, click Done.

Exporting Data for CMG

NOTE: You may export user data from MX-ONE Provisioning Manager and import it to the CMG if you want to transfer data without enabling the automatic integration between PM and the CMG

The purpose of exporting data in CMG format is if you want to restore CMG with PM data after loosing all CMG data without having backed up CMG.

Normally when operating in PM, CMG will automatically be updated. To synchronize PM with CMG, use the Compare with Subsystem task to find the differences and then update the systems with your corrections.

Data exported for CMG is stored using CSV format. The following PM data is included when exporting data for CMG:

- Department data
- User data.

A user can be associated with several extensions in PM, but only one extension in CMG. For users associated with more than one extension in PM, the export file will contain a separate record for each extension in PM.

For correct export file format, definition files for department and user data are required when exporting data for CMG.

Exporting General Data

The purpose of exporting data in XML format is if you want to post process MX-ONE Provisioning Manager data in another system.

Data exported as general data is stored using XML format. The following MX-ONE Provisioning Manager data is included when exporting general data:

- Complete department data
- Complete user data
- System data: administrators, security profiles, locations, and subsystems.

Exporting Call Accounting Data

The purpose of exporting data in CAAPI format is if you want to reuse post processing tools as used together with D.N.A. The format of CAAPI is the same as it was for D.N.A. For a more extensive export, please use the XML export format instead.

Call accounting data such as account code data can be exported from MX-ONE Provisioning Manager. The following data files are created when exporting call accounting data:

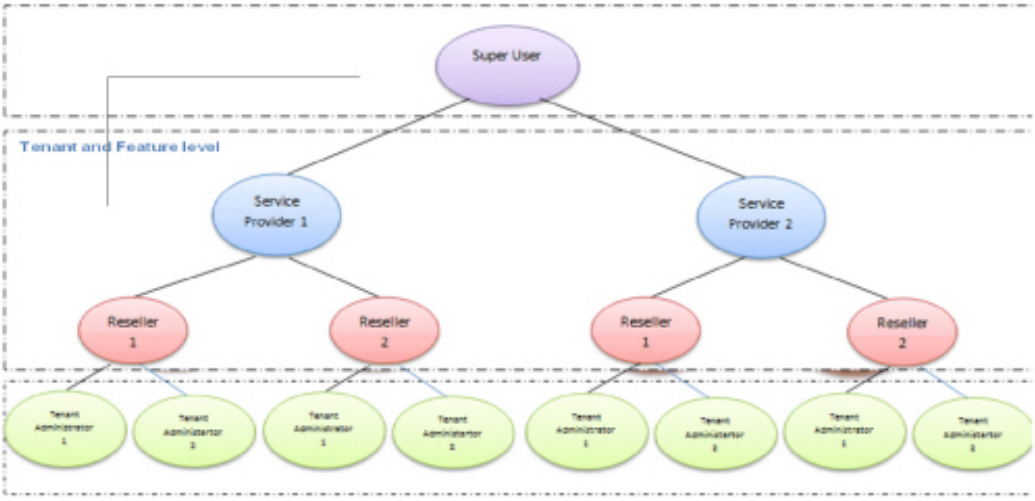
- Account codes
- Authorization codes
- Cost centers
- Departments
- Extensions
- Voice Line Service.

NOTE: To get the cost center data into the COSTCEN.DAT file you need to set the UDF Field Type to "COST CENTER" for the applicable UDF in the UDF Mapping task.

The exported files are stored in a .zip file, available for download on the first page of the Export Data task.

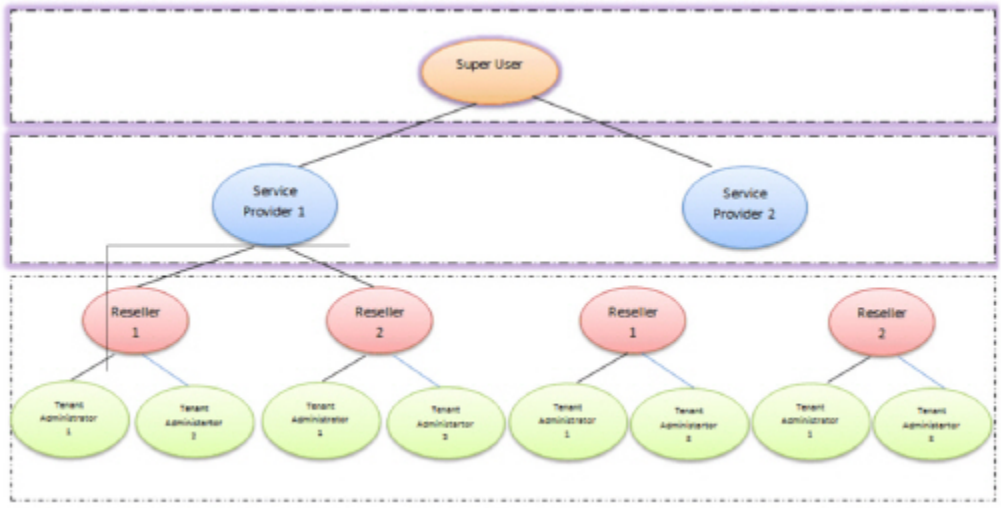
Tenant and Feature Configuration

Figure 4.4: User hierarchy

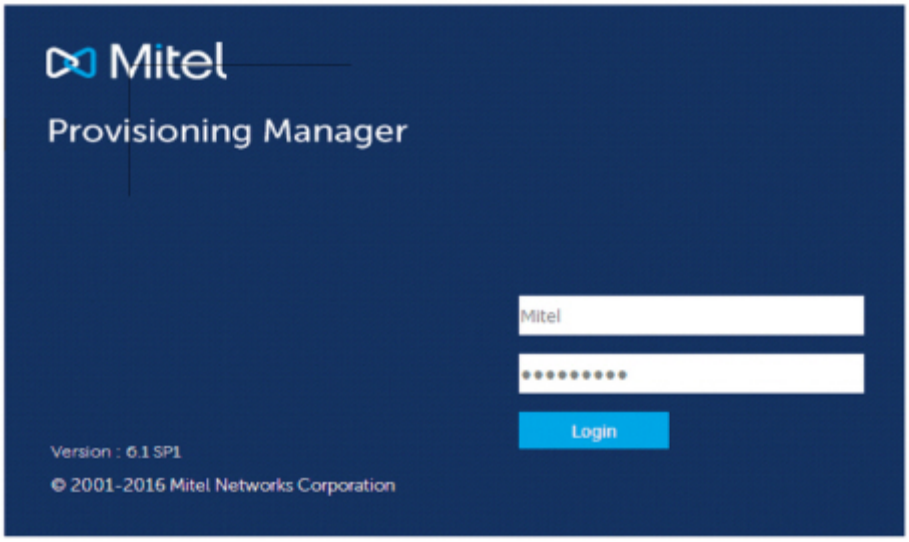


Create a Service Provider

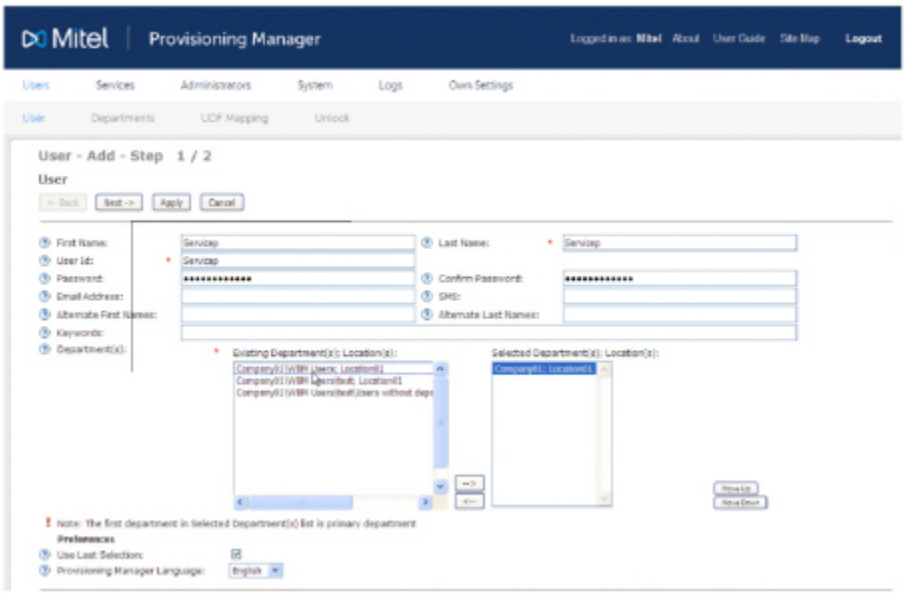
Figure 4.5: Create Service Provider



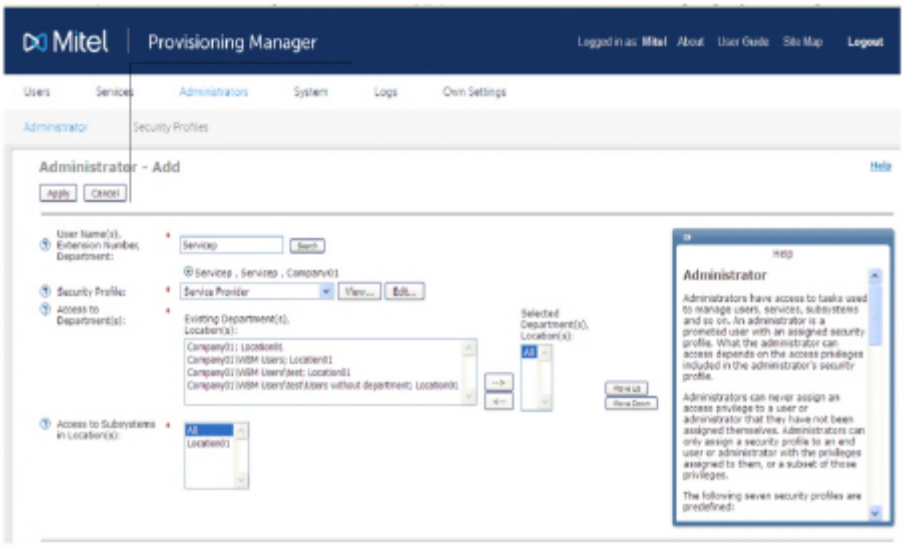
1. Use the user created in the MX-ONE Provisioning Manager setup, i.e. System Setup Admin, to login to the application.



2. Go to Users -> User -> Add a new User.



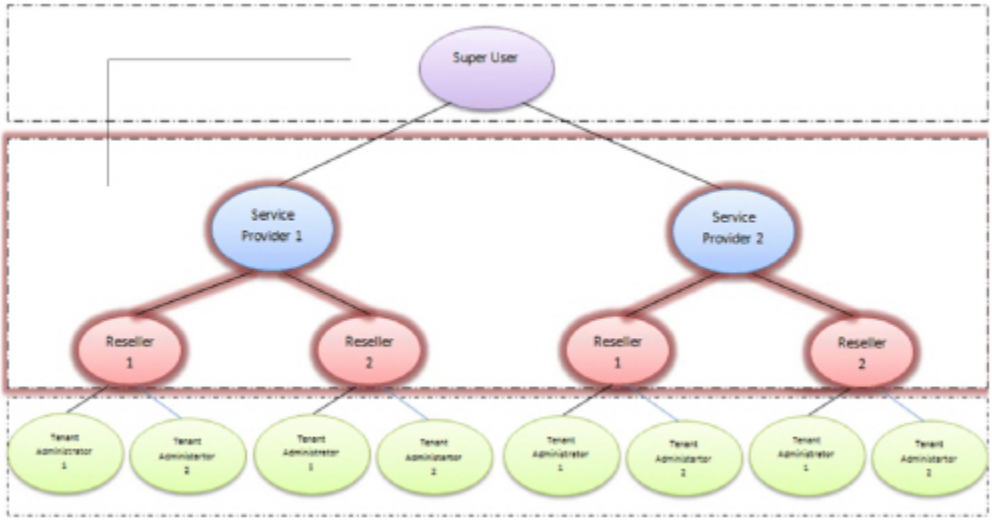
3. Check the result.
4. Go to Administrators -> Administrator.
5. Select the Security Profile "Service Provider" and promote the user to Service Provider.



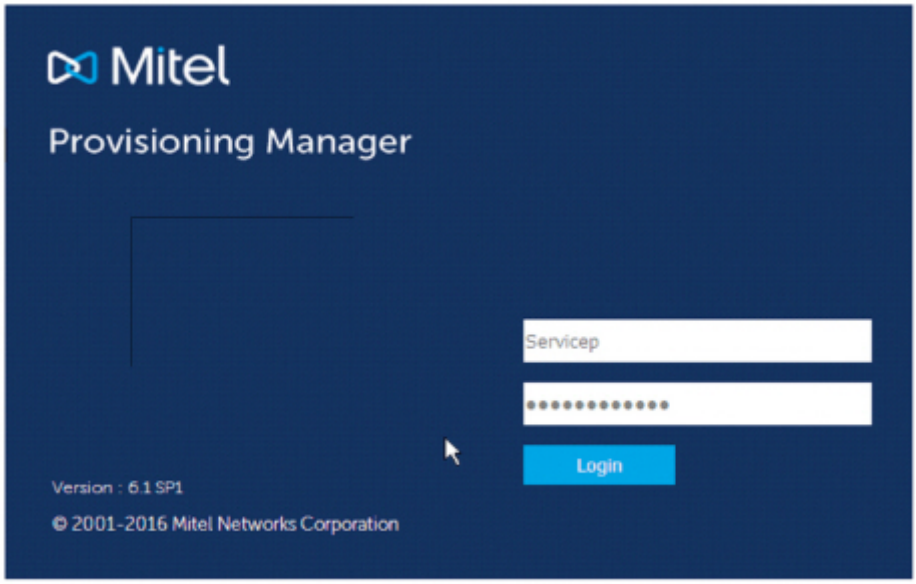
6. Check the result.
7. Repeat the earlier operations in order to create new Service Provider.

Create a Reseller

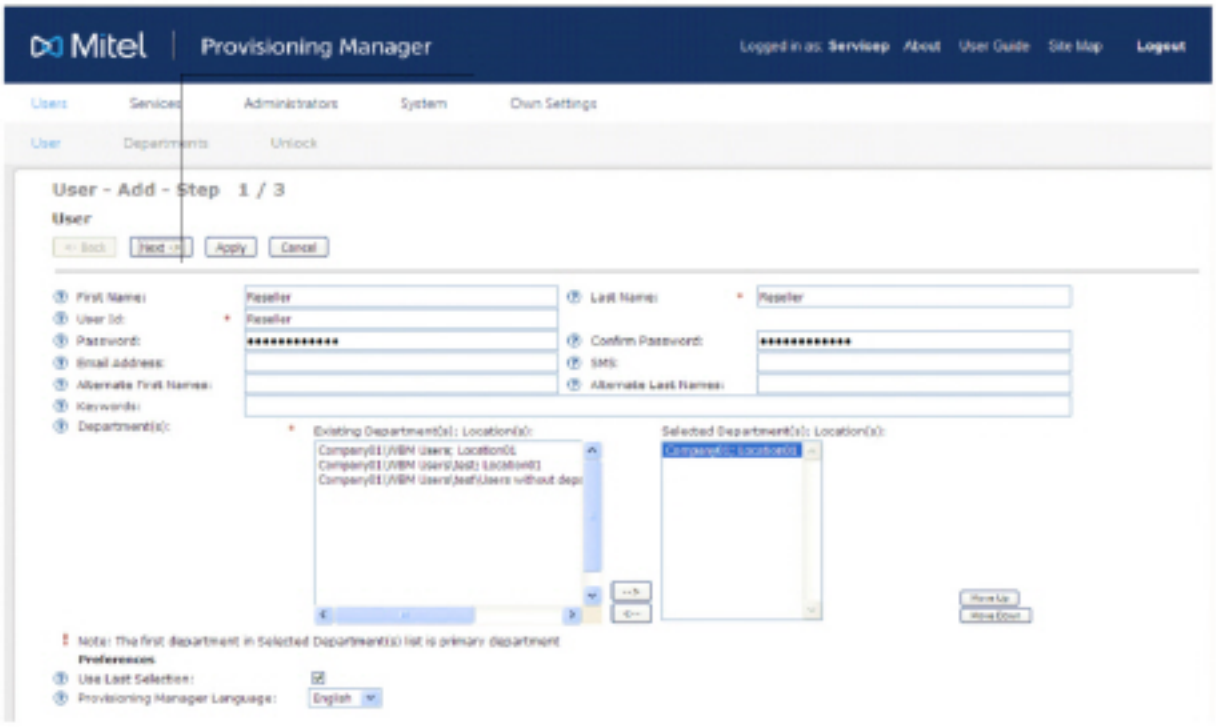
Figure 4.6: Create Reseller



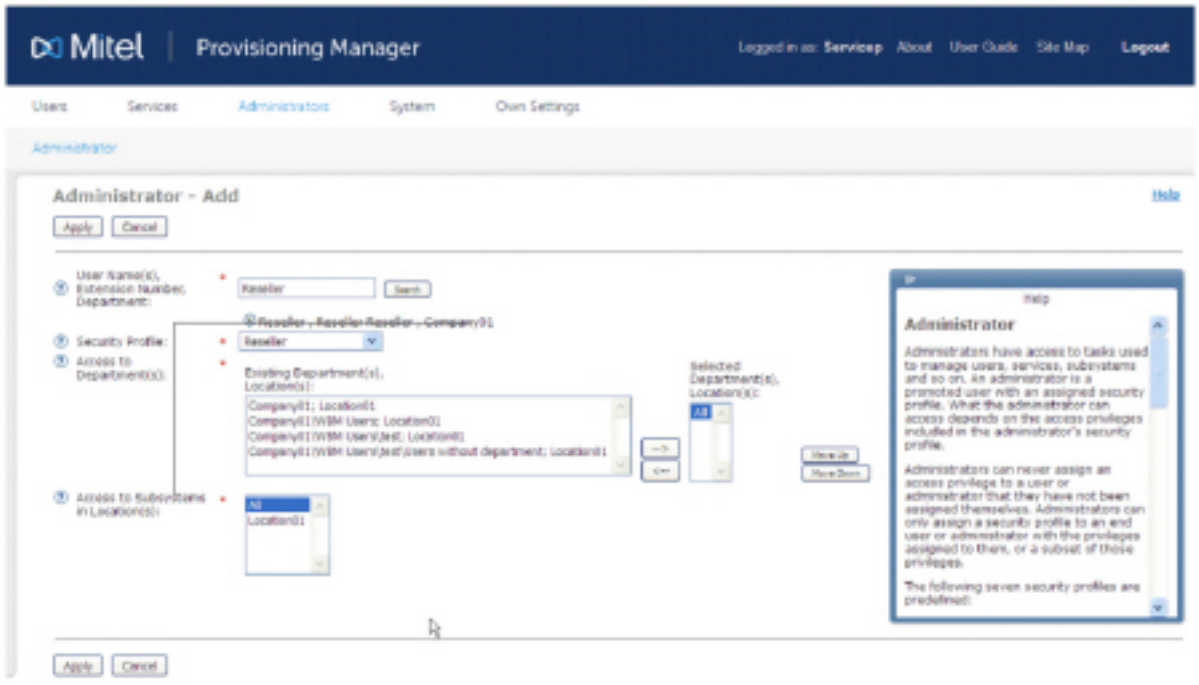
1. Logon with one of the Service provider Credentials.



2. Go to Users -> User -> Add a new User.



3. Check the result.
4. Go to Administrators -> Administrator.
5. Select the Security Profile Reseller and promote the user to Reseller.

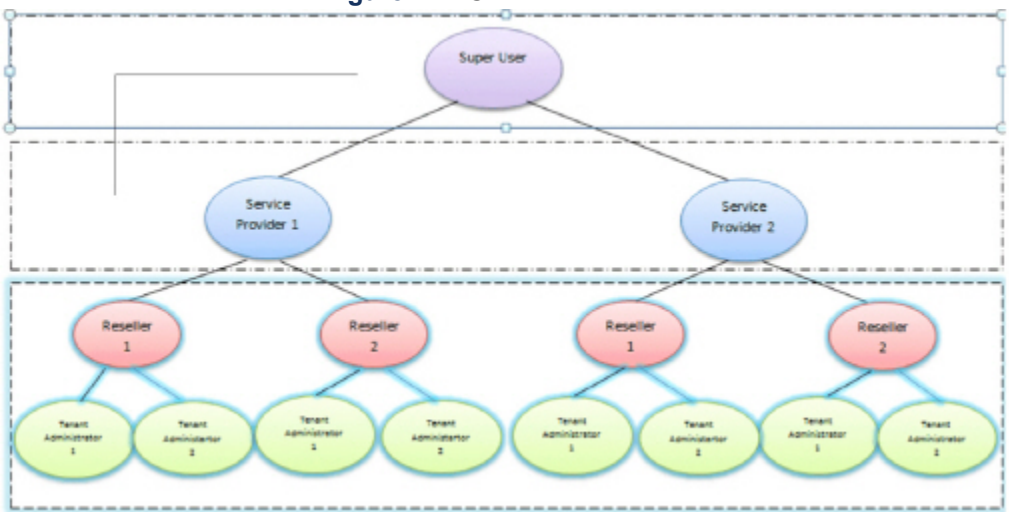


6. Check the result.
7. Repeat the earlier operations in order to create another Reseller.

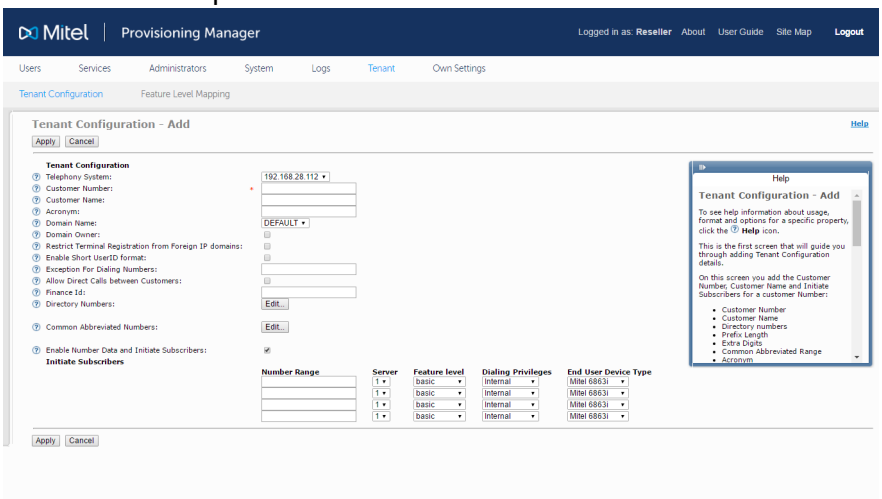
NOTE: One Reseller data cannot be seen by other resellers.
Parent can view all the child's data

Create a Tenant Administrator

Figure 4.7: Create Tenant Administrator

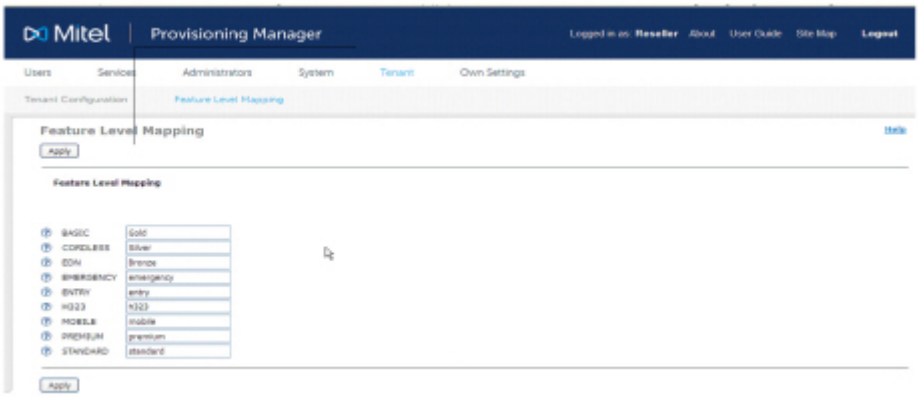


1. Logon with one of the Reseller Credentials.
2. Create the tenants and the respective number series.



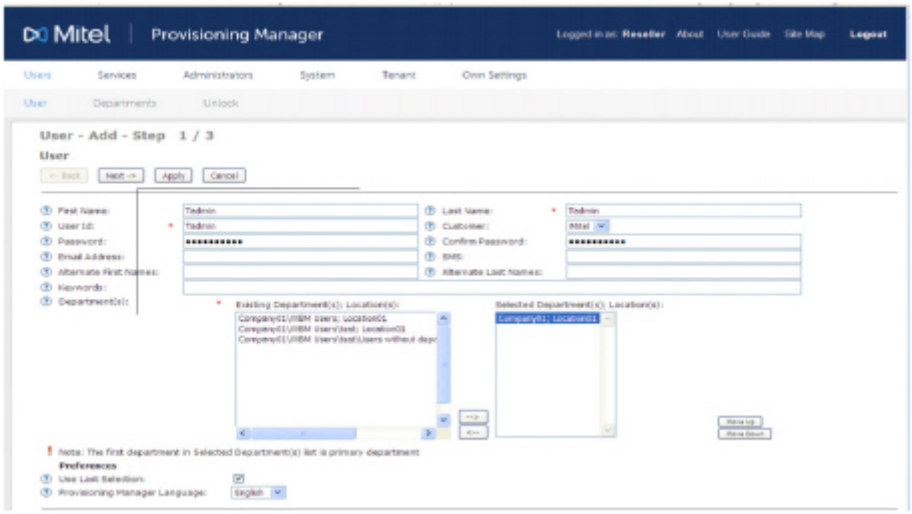
3. Configure feature levels.

Reseller can provide alias names for the feature level licenses defined in MX-ONE.



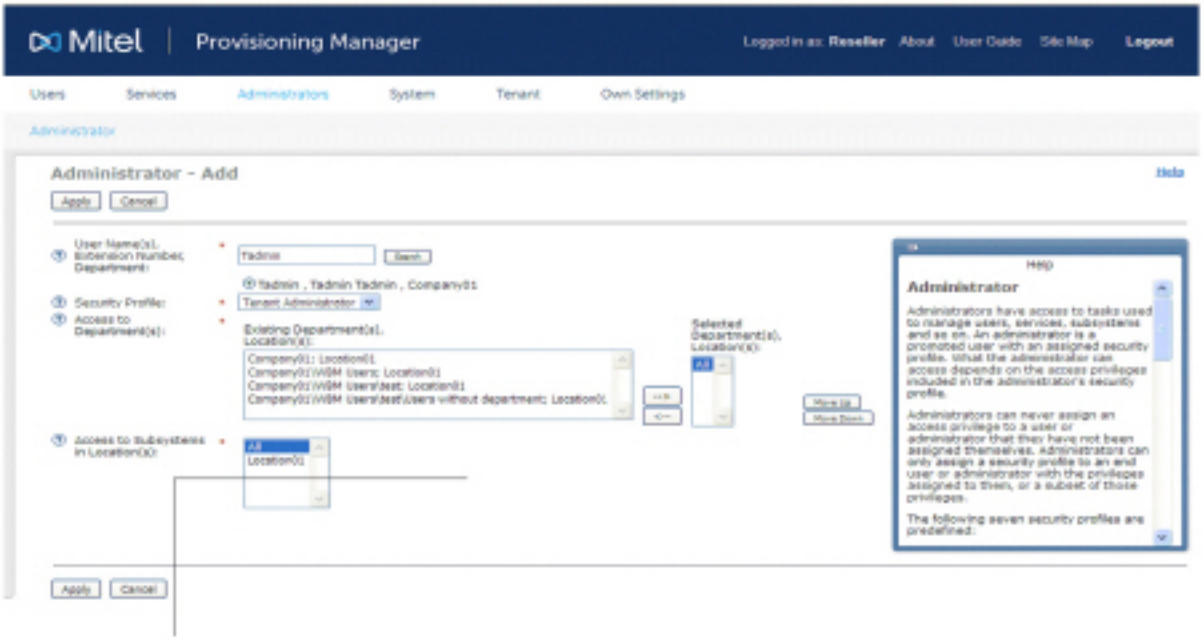
4. Go to User -> Add a new User.

   Tenant created by the reseller in the tenant configuration page will appear in the User page.



5. Check the result.
6. Go to Administrators -> Administrator.

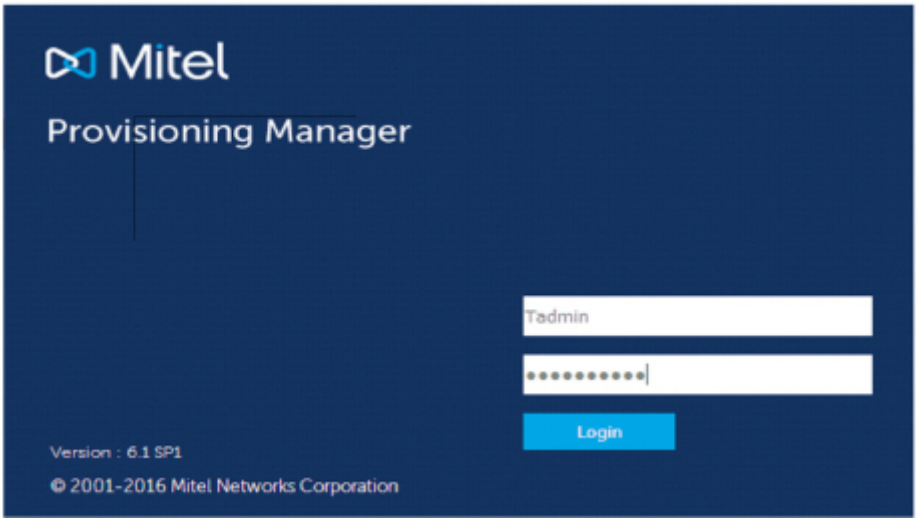
Select the Security Profile as Tenant Administrator and promote the User as Tenant Administrator



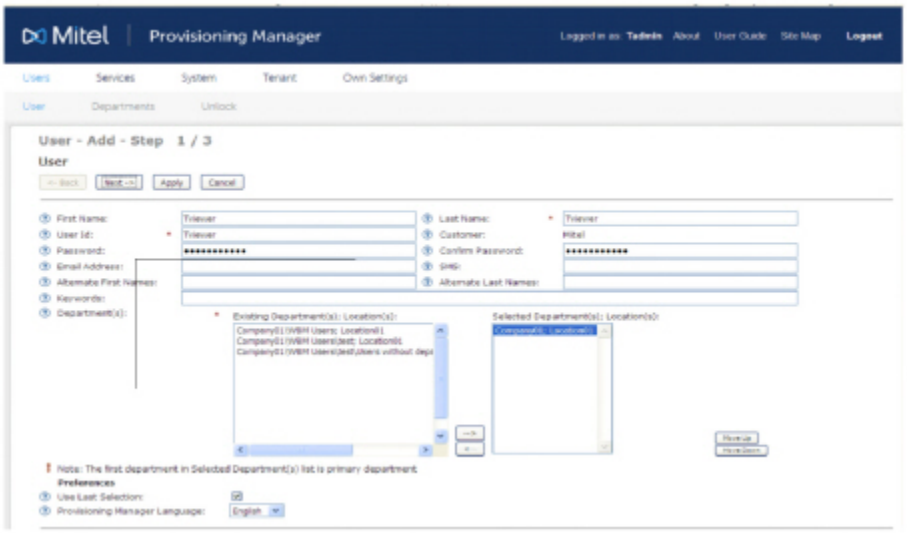
7. Check the result.
8. Repeat the earlier operations to create another Tenant Administrator.

Create a Tenant

1. Login with one of the Tenant Administrator Credentials.

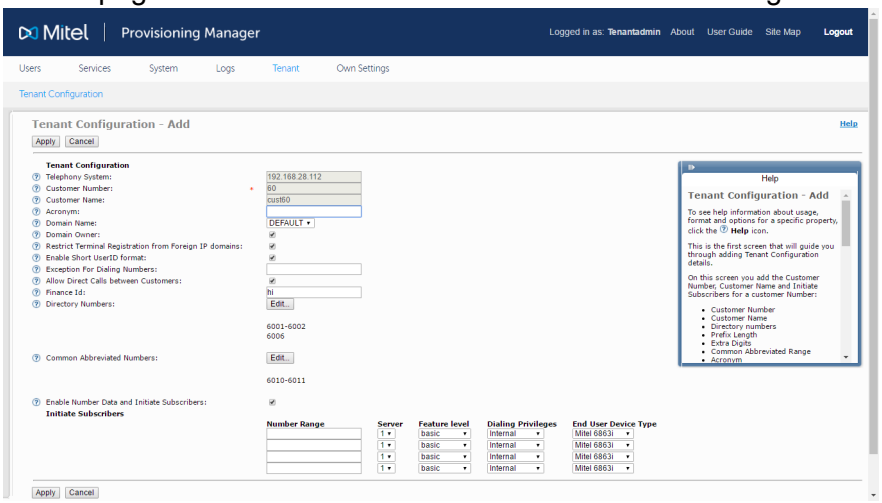


2. Go to Users -> User -> Add a new User.

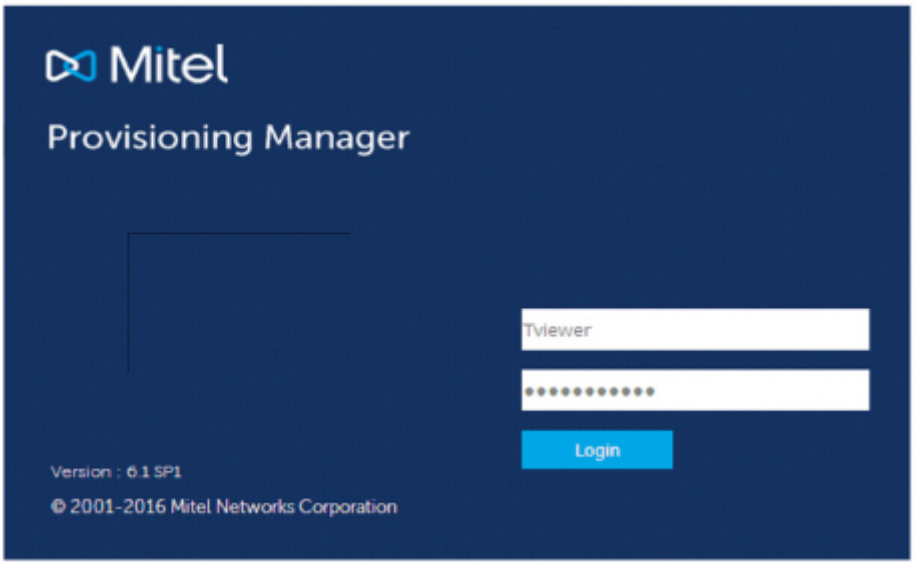


3. Configure the tenant.

Tenant Configuration page is used to create the number series for the single customer.



4. Logout the Tenant Administrator login and logon with Tenant Viewer [End User] Credentials.



Setup a New MX-ONE PM to Monitor Different Sites

The MX-ONE Provisioning Manager Admin users shall be given either the cloud or CPE rights.

PM in cloud mode allows Service Providers and Reseller to setup systems that are using feature level model.

PM in CPE model is the same as in the previous versions of PM, except that a new user needs to be created to manage the system.

The new user hierarchy is composed by several levels and they are divided basically in the two types of MX-ONE business models, Cloud or CPE (á la carte). A main user is created during the installation of PM and this user is used to create new users and assign the current service profile that fits the system type.

For example, a customer that is running MX-ONE in CPE license model will assign a user as AlaCarte Service Provider.

Figure 4.8: User Hierarchy

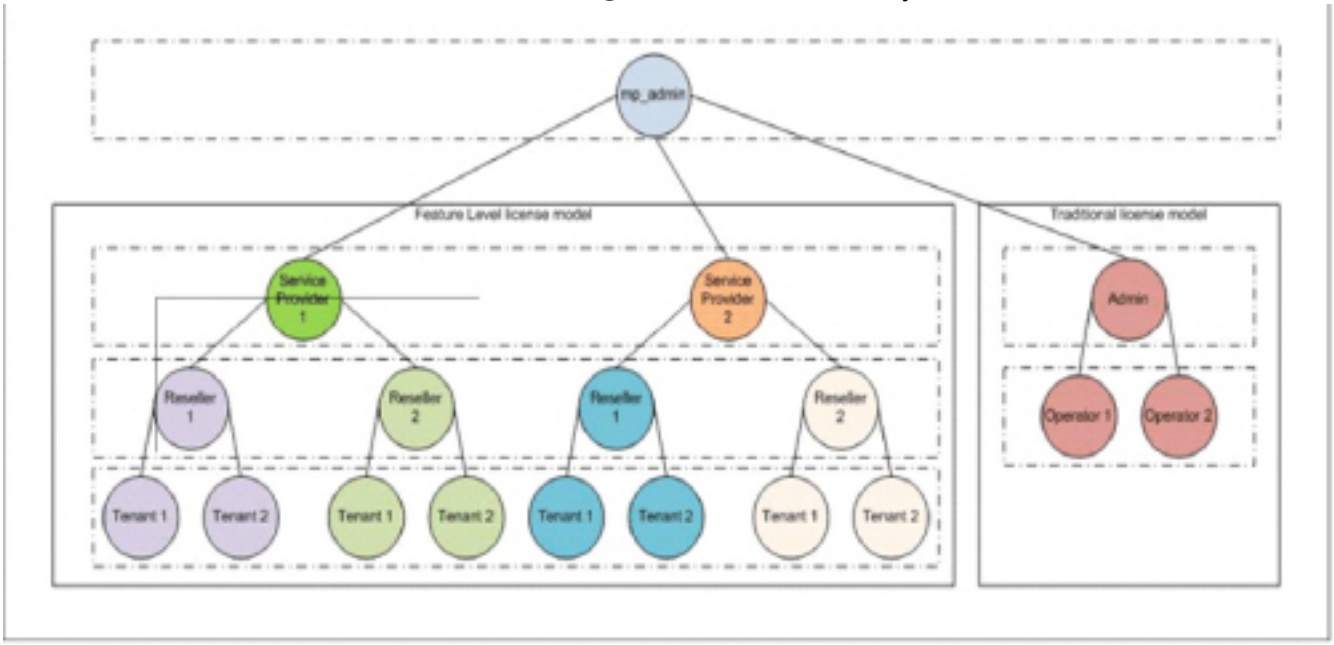
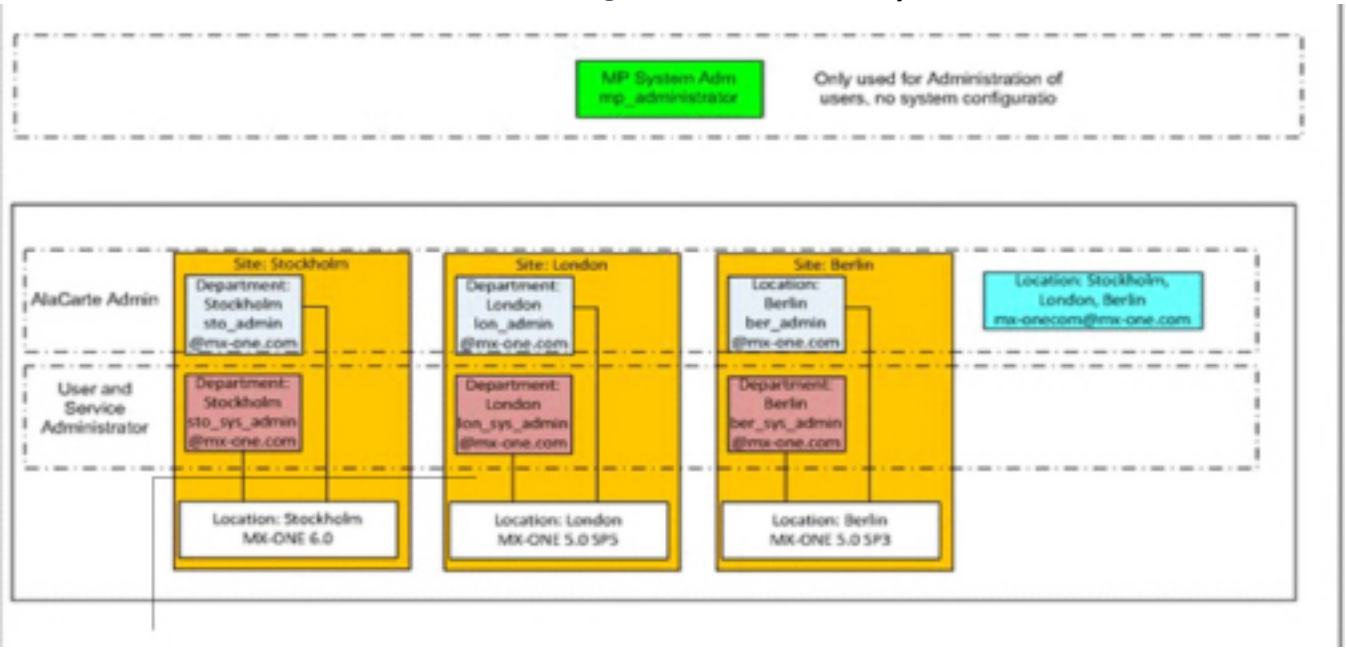


Figure 4.9: User hierarchy



CPE Mode Setup

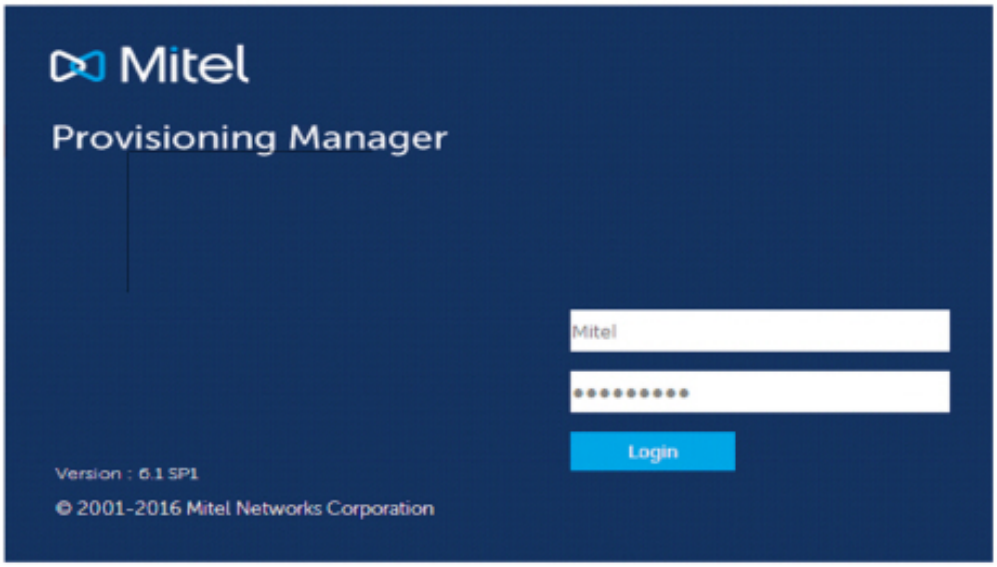
Assumptions:

- New PM
- 3 sites
- Users local in the site only see information of their own site

- A corporate admin, can see information from all 3 sites

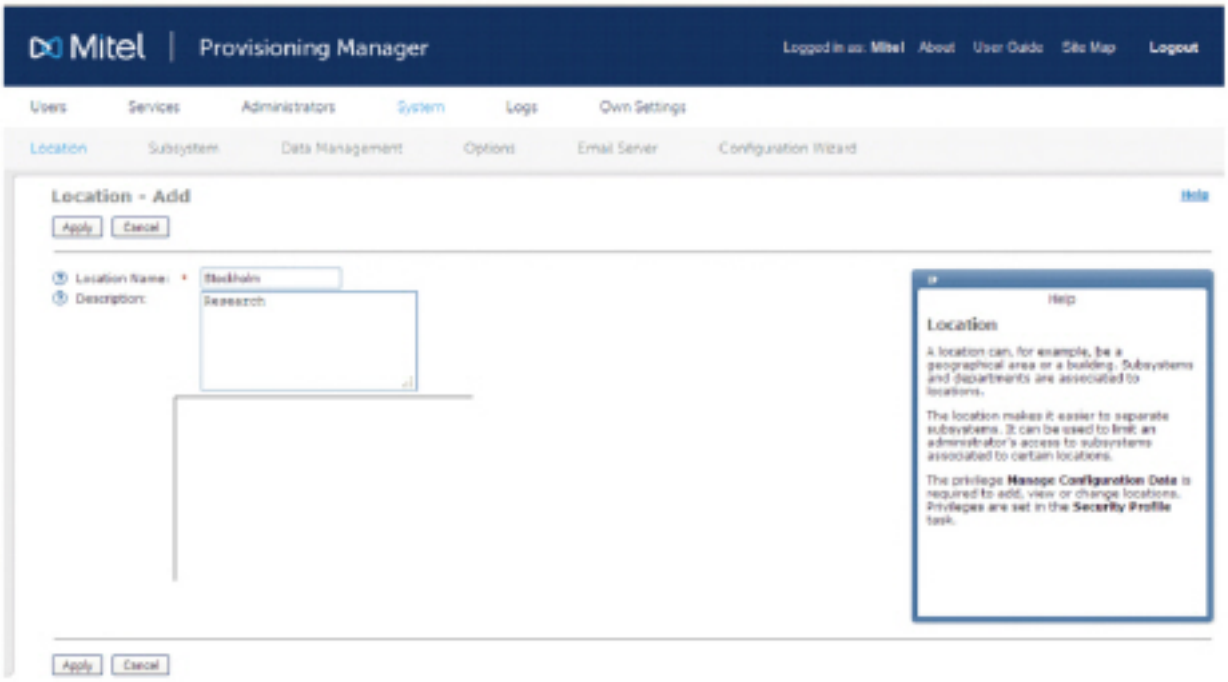
1. Use the user created in the MX-ONE Provisioning Manager setup, i.e. System Setup Admin User, to login to the application.

Figure 4.10: Login page



2. Go to System, Location and define the locations.

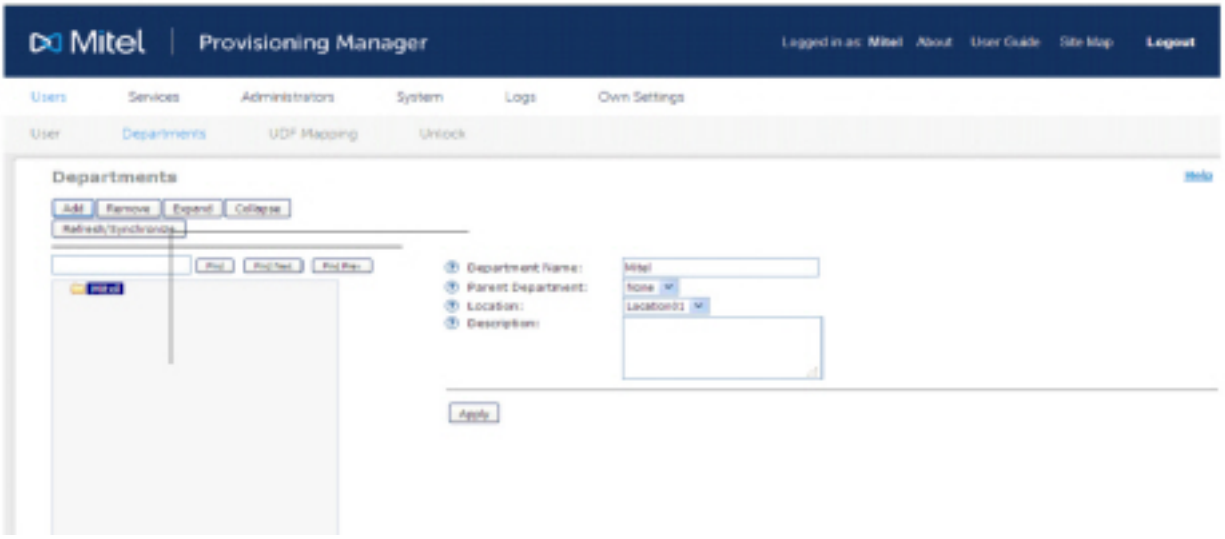
Figure 4.11: Location



3. Check the result.

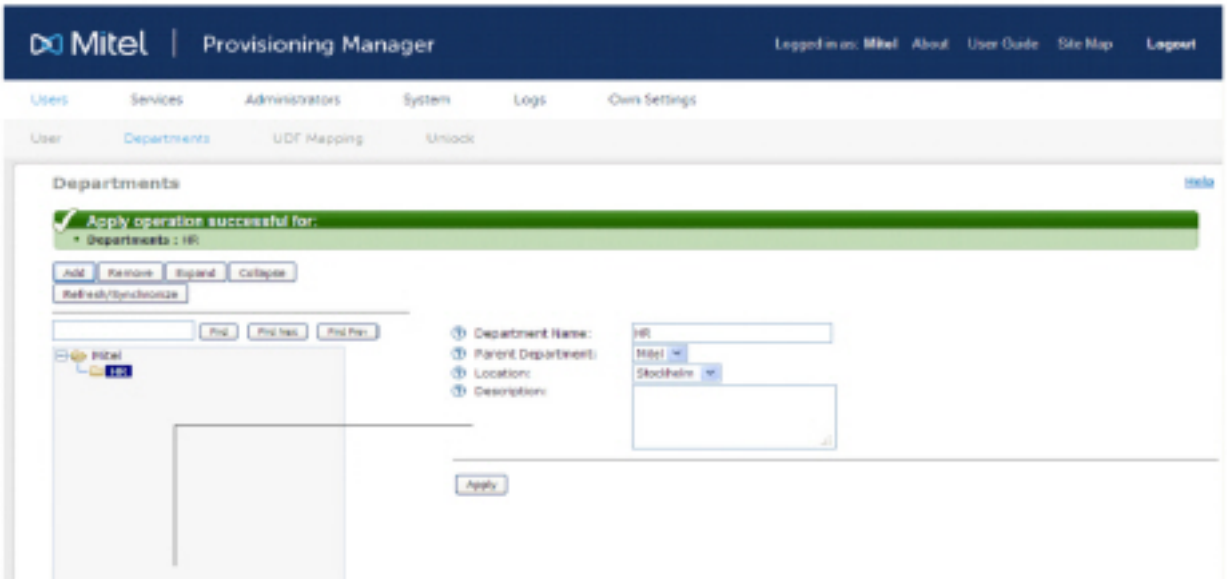
4. Go to Users, Departments and define the Departments.

Repeated for each location.

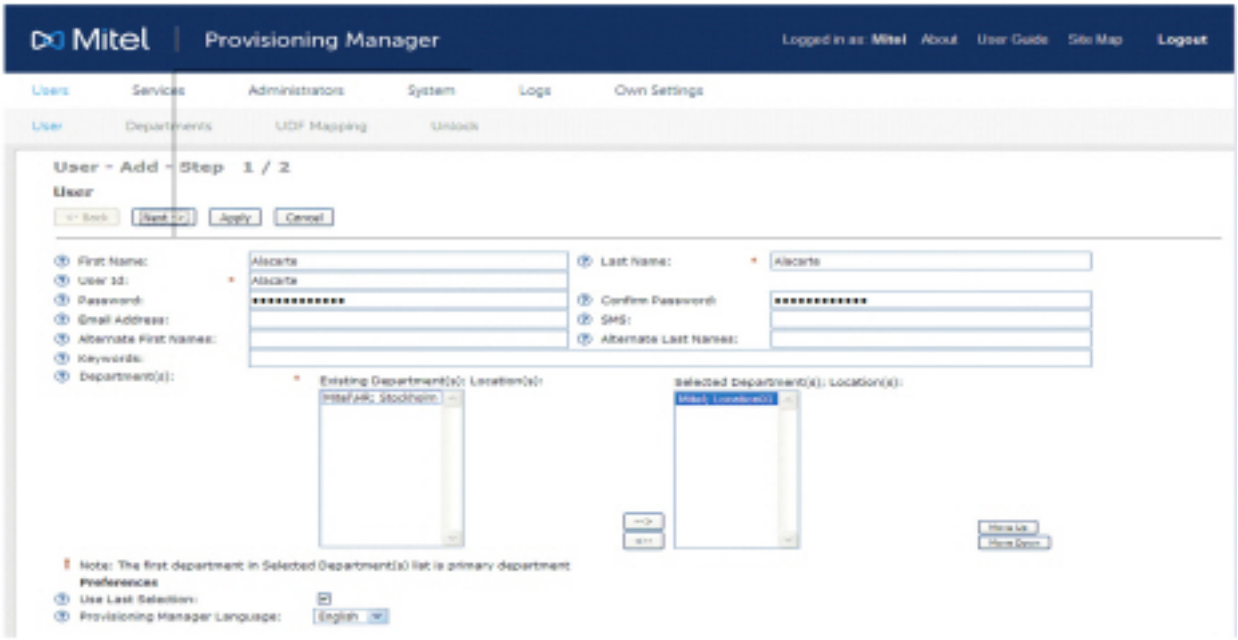


NOTE: *The Department Name can now hold up to 64 alphanumerical and special characters both. But, the characters such as ", *, ?, \, < and > are not allowed.*

1. Check the result.

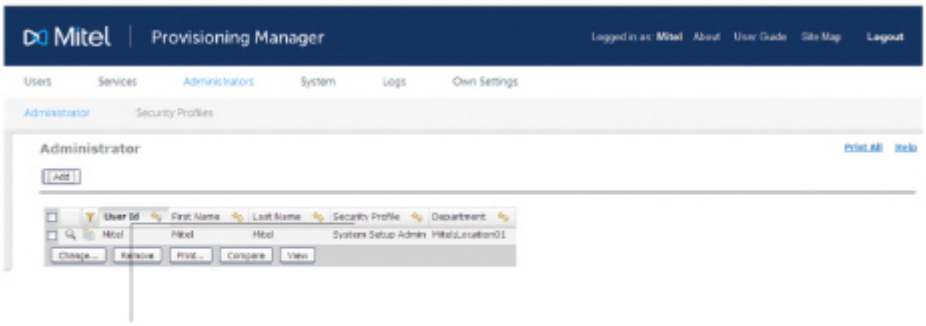


2. Go to Users, Users and add a new user, select the correct department.

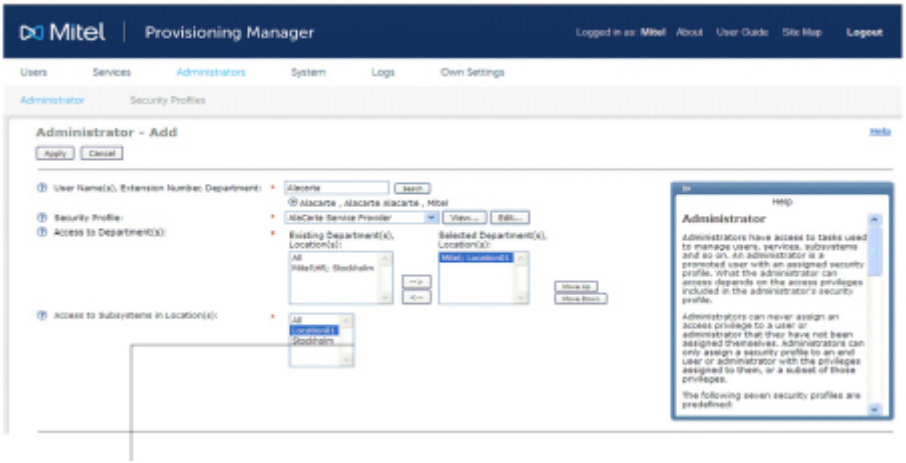


3. Check the result.

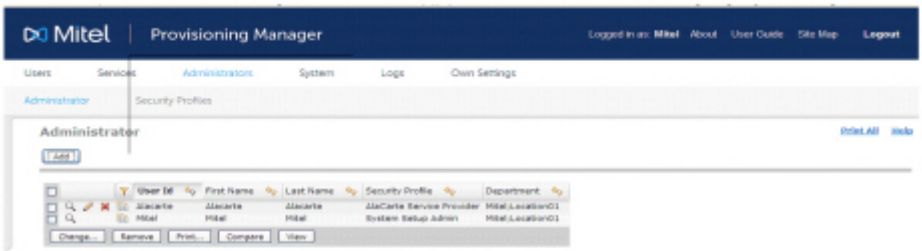
4. Go to Administrator Menu, Administrator and add the create user to a service profile.



5. Select the Security Profile, Access to Departments and Access to Subsystems in Locations.

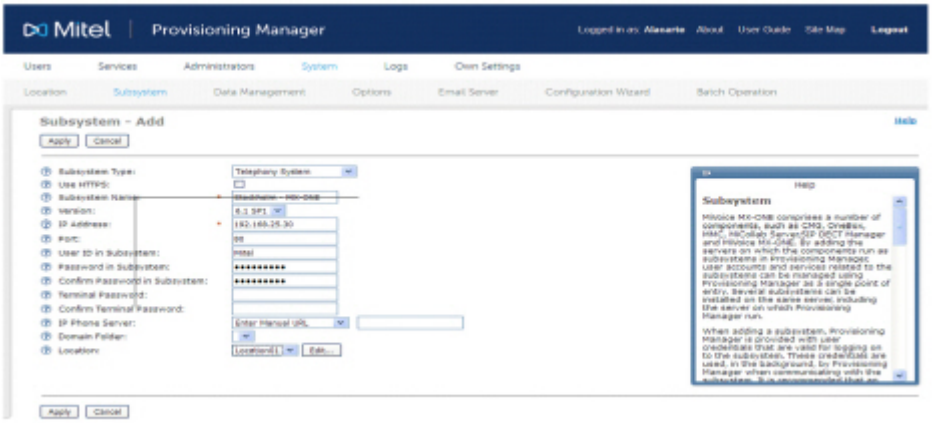


6. Check the result.

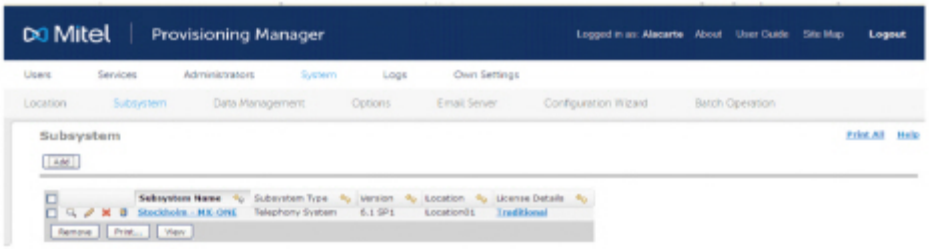


7. Logout Administrator and do logon with new user.

8. Add the subsystem and select the location, if the setup is correct, only one appears.



9. Check the result.
10. Check the result by clicking the subsystem link (Stockholm - MX-ONE).



11. Access the subsystem that you created on the previous slide and logout.

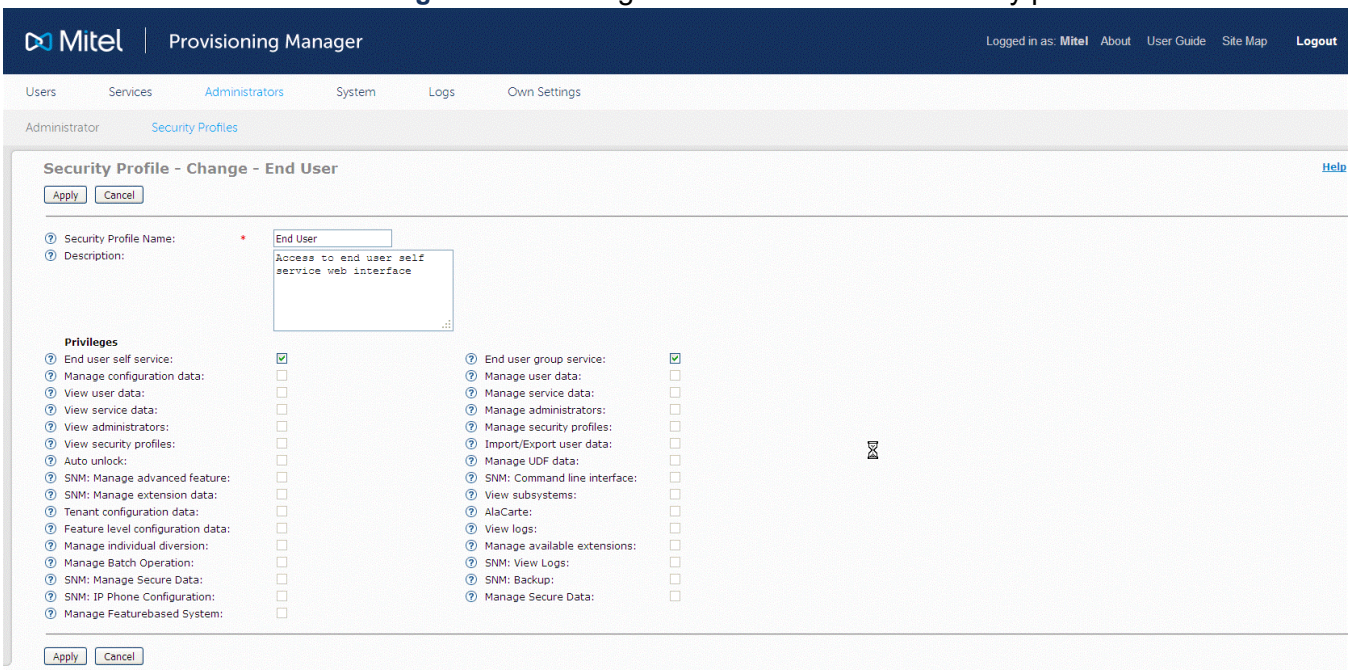
12. Repeat the operations for all users and sub-systems

    Check if everything is correct and that the 3 users cannot see the others systems.
13. Using the "local admin" account create a new user and select the correct department
14. Check the result.
15. Select the Security Profile, Access to Departments and Access to Subsystems in Locations
16. Check the result.

End User Profile Settings to Monitor Group Data

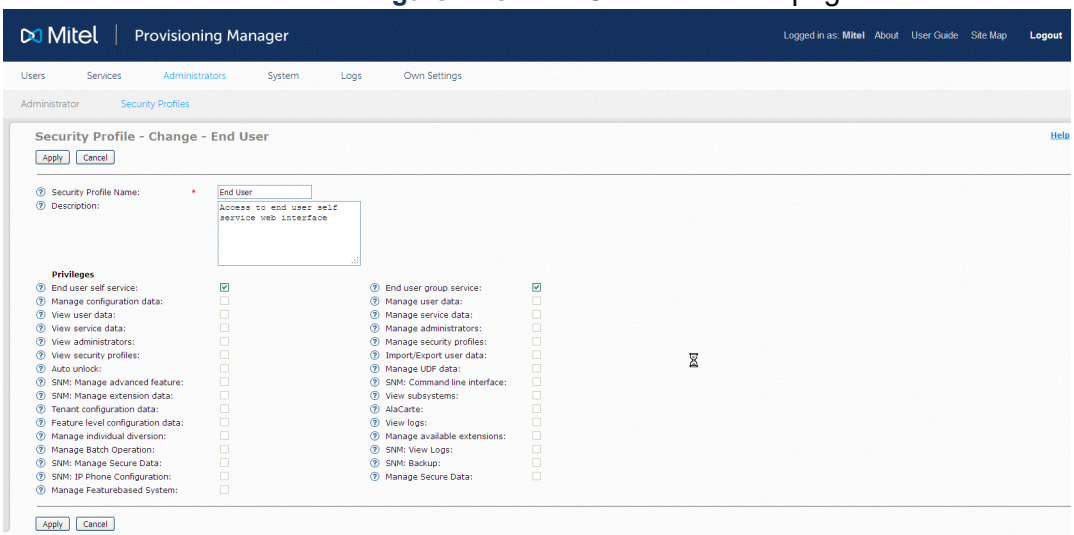
Log in to PM with system setup admin privileges, change the End user profile, and assign “End user group service role” to monitor group handling for end users.

Figure 4.12: Change screen for End user security profile



Log in to PM with end user privilege. The features under group setup heading shown in the figure below, can be configured by the end user.

Figure 4.13: End User Extension page



System and Error Messages

MX-ONE Provisioning Manager provides system messages and error messages directly or when a configuration item is submitted. An icon is displayed together with the system information.

Figure 4.14: Error messages

Figure 4.15: Information messages

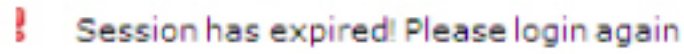
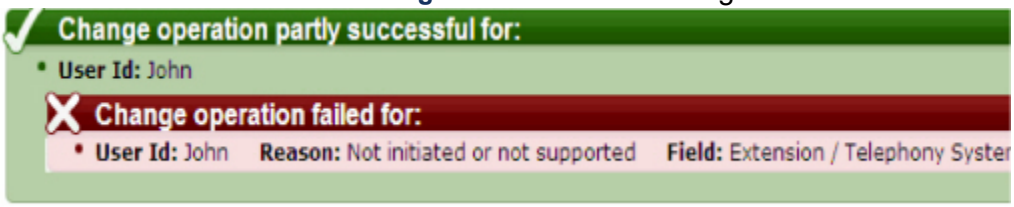


Figure 4.16: Acknowledge messages

This message type can be displayed for procedures including several sub-procedures, where one or more sub-procedures might be non-successful. Rollbacks are performed for non-successful sub-procedures

Figure 4.17: Other messages



For certain operations a pop-up window is displayed, please see the following example for invalid template name.

Figure 4.18: Pop-up message

Logs

MX-ONE Provisioning Manager provides three logs with different information level:

- Audit trail: Information about all changes made by a user in the system
- Event Log: System log information useful for fault tracing
- Security Log: Information about successful and unsuccessful login attempts

Log files are created every day even if no data is logged. Logs older than 90 days are overwritten.

Changing the Log Level

If not enough or too much information is displayed in the logs in the Logs task, the wrong level for the logging is set in the configuration file jboss-log4j.xml. The configuration file is stored on the server that MX-ONE Provisioning Manager is installed on.

The following log levels are available:

- DEBUG
- INFO
- WARN
- ERROR
- FATAL

To change the log level, follow these steps:

1. Go to opt/jboss/server/default/conf and open the file jboss-log4j.xml.
2. Edit the log level in the following row: <category name="se.ericsson.ebc.mp"><priority value="INFO" class="se.ericsson.ebc.emtsn.util.log.XLevelTrace"/> <appender-ref ref="MP"><category>
3. Save the file. After approximately one minute the new log level configuration is applied.

Post-Installation Configuration Tool

To start the tool, enter one of the following commands in a shell connected to the server:

- If logged in as root, enter the command mp_config.
- If logged in as eri_sn_admin, enter the command sudo -H mp_config.

MX-ONE Provisioning Manager Interface with WebSEAL

General

The Provisioning Manager is used to manage and administer the Mitel MX-ONE communication system. This enables you to connect the IBM WebSEAL to the Provisioning Manager for having a centralized access management.

Requirements

IBM Tivoli Access Manager WebSEAL can be used for SSO authentication to log on to applications. The purpose is to register with the PM via WebSEAL.

WebSEAL

WebSEAL is a high-performance, multi-threaded web server that applies a fine-grained security policy to the Tivoli Access Manager protected Web object area. WebSEAL can provide SSO solutions and incorporate resources from a back-end web application server into its security policy.

To get more information on IBM Tivoli Access Manager and WebSEAL, click the following link:

https://publib.boulder.ibm.com/tividd/td/ITAME/SC32-1134-01/en_US/HTML/amweb41_admin04.htm

Connection to the Provisioning Manager

WebSEAL connects to the PM with the establishment of a junction. A junction enables WebSEAL to provide the services (PM) used to the client protected.

To get more information on IBM Tivoli Access Manager and WebSEAL, click the following link:

https://publib.boulder.ibm.com/tividd/td/ITAME/SC32-1359-00/en_US/HTML/am51_webseal_guide16.htm

To create the junction for the PM, use the following values from the table in WebSEAL.

Name of the Junction	**/mp**
Junction Type	Transparent path
Scripting Support	No
Back-end Server	
Server Type	Apache
Connection Type	Mutual ssl
Host-name and IP	Host-name and IP of the PM
Port	443
Transfer Parameters	
iv-user	Yes
LTPA2-Token	No

Host name and IP refer to the service to be protected (PM). The IV-User Header is used as transfer parameter for the service PM. The service (PM) evaluates the IV user header and determines the login data from this.

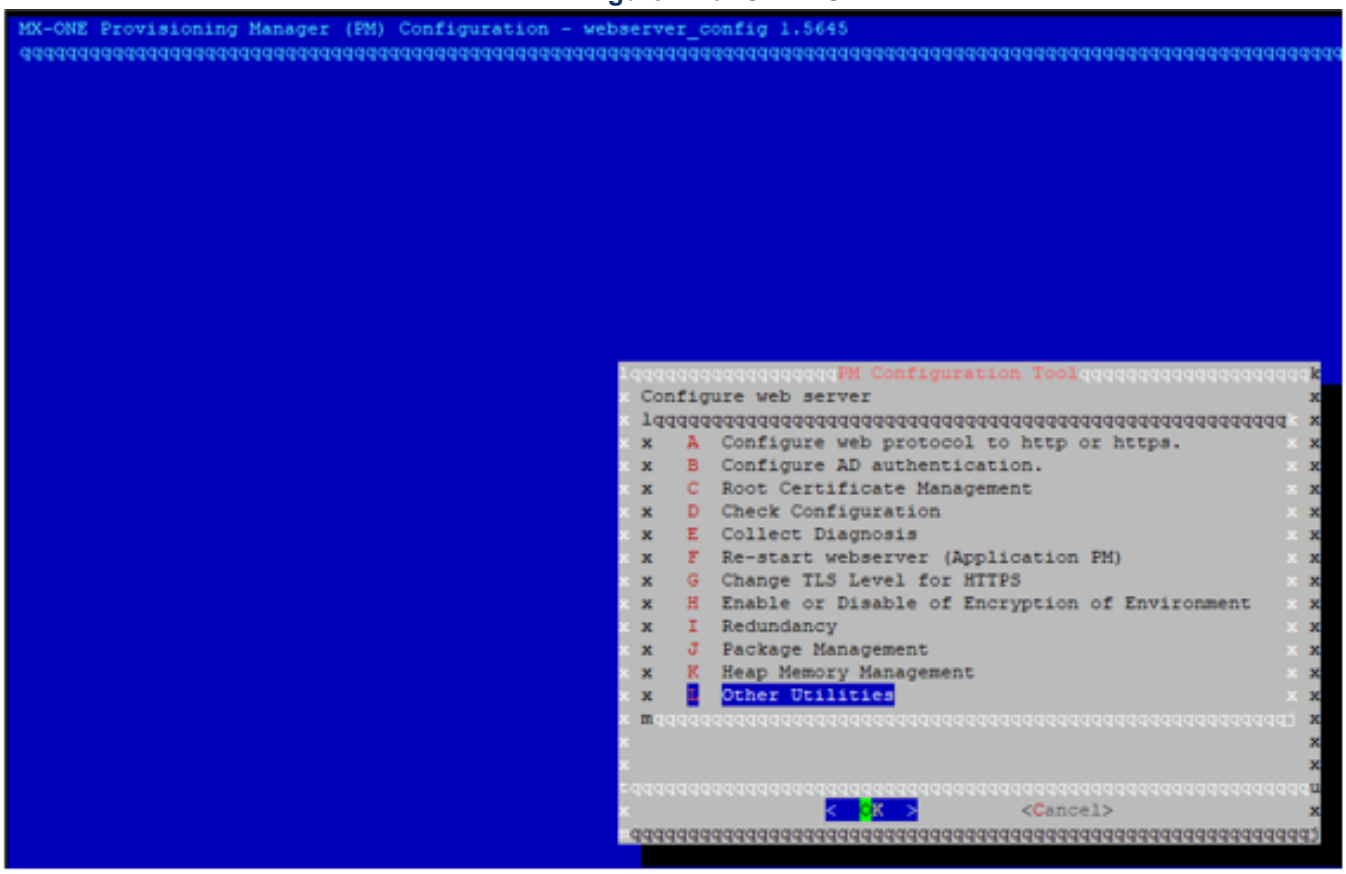
PM webserver_configuration for login via WebSEAL

For protection against misuse, the FQDN of the WebSEAL server is stored in the PM. The configuration is done by webserver_config tool.

To login via WebSEAL, do the following:

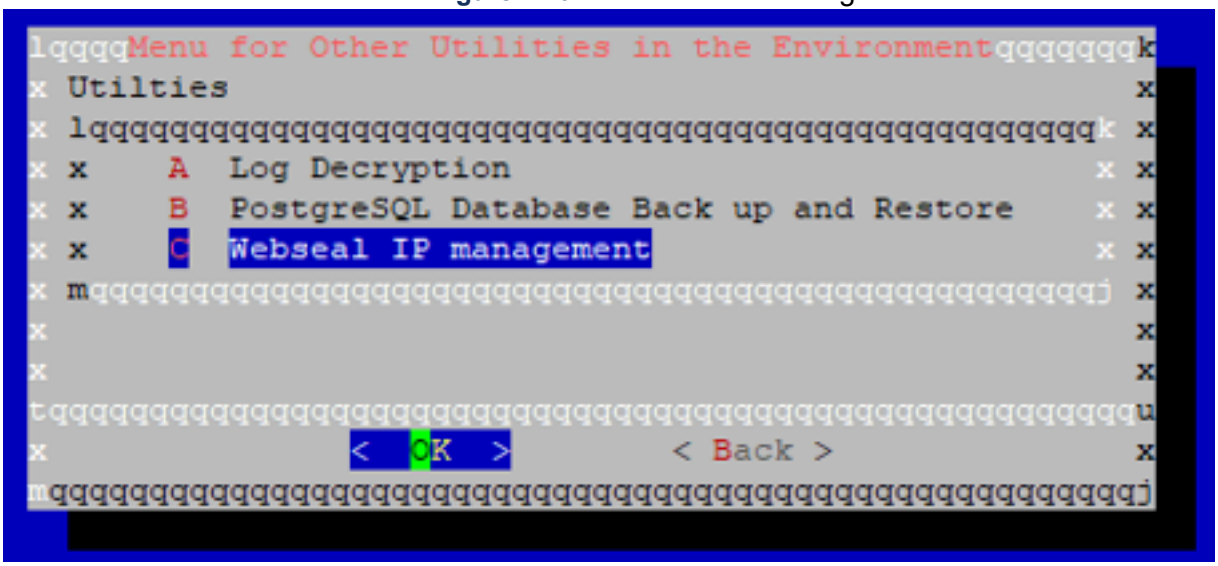
1. Enter the command `sudo -H webserver_config`. The following screen appears.

Figure 4.19: Other Utilities



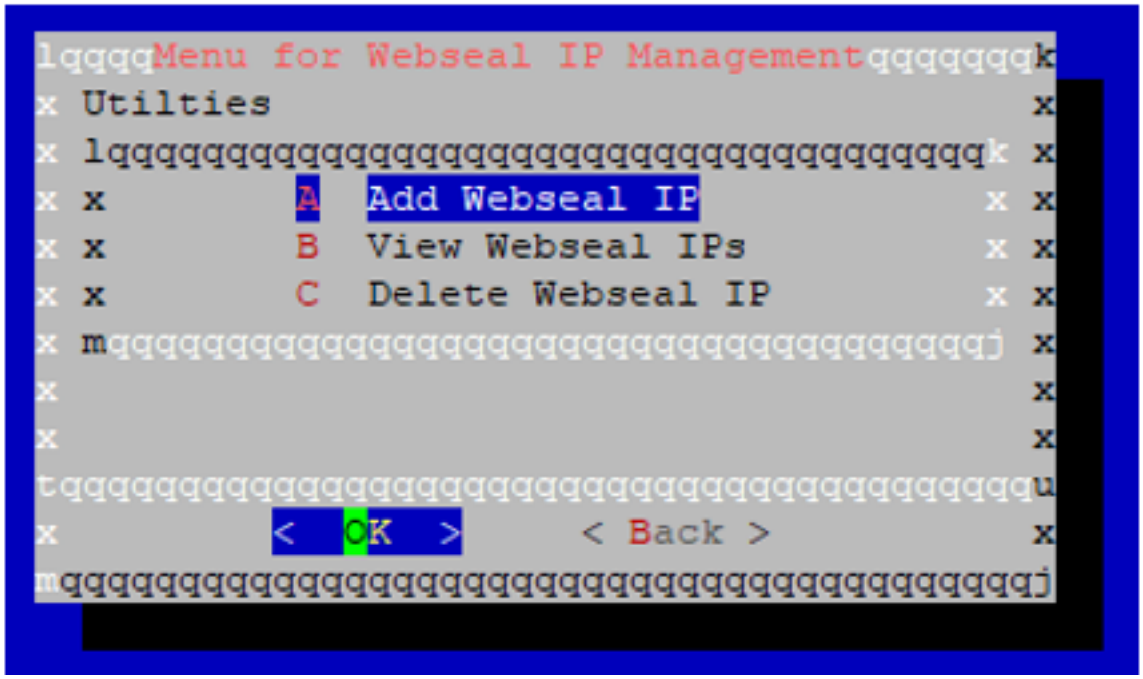
2. Select **J** for **Other Utilities** and Click **OK**. The following screen appears.

Figure 4.20: WebSEAL IP Management



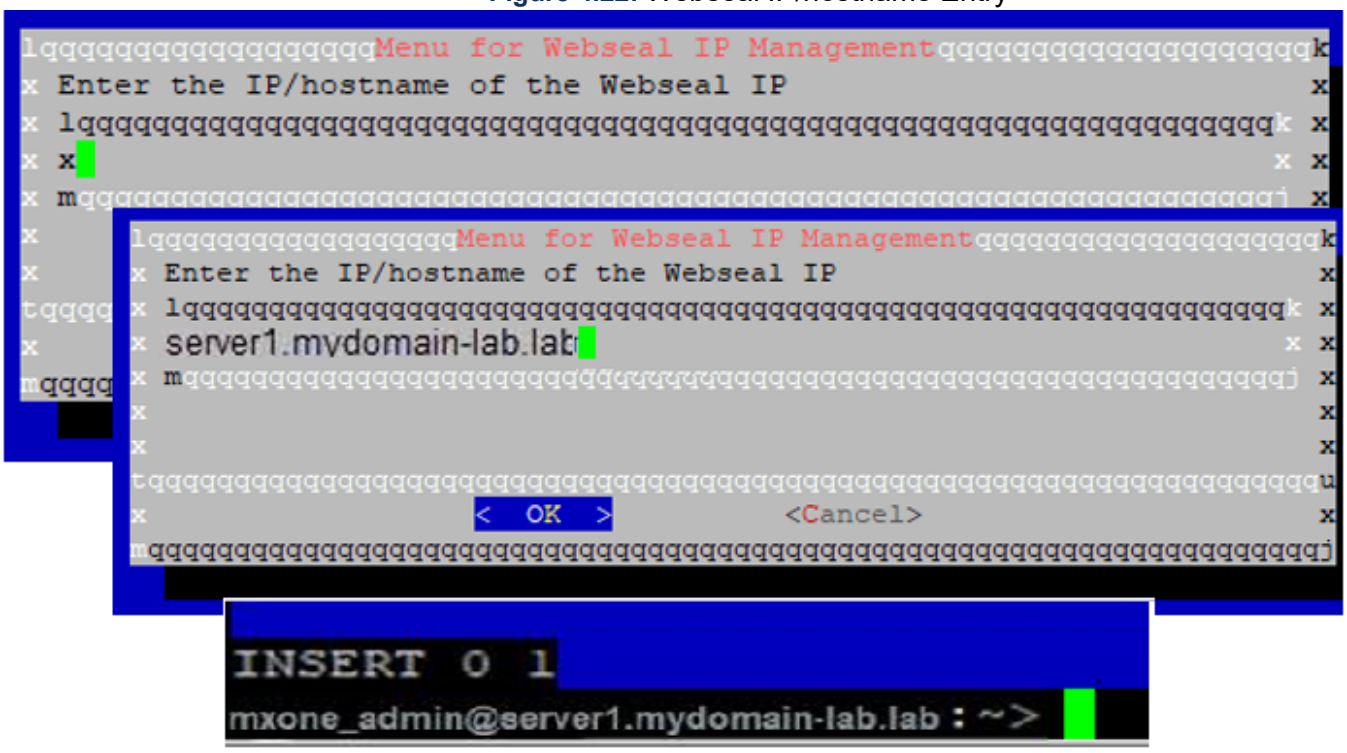
3. Select **(C)** for **Webseal IP management**. Click **OK**. The following screen appears.

Figure 4.21: Add WebSEAL IP



4. Select **(A)** to enter the address of **Add Webseal IP** and click **OK**. The following subsequent screen appears.

Figure 4.22: Webseal IP/hostname Entry

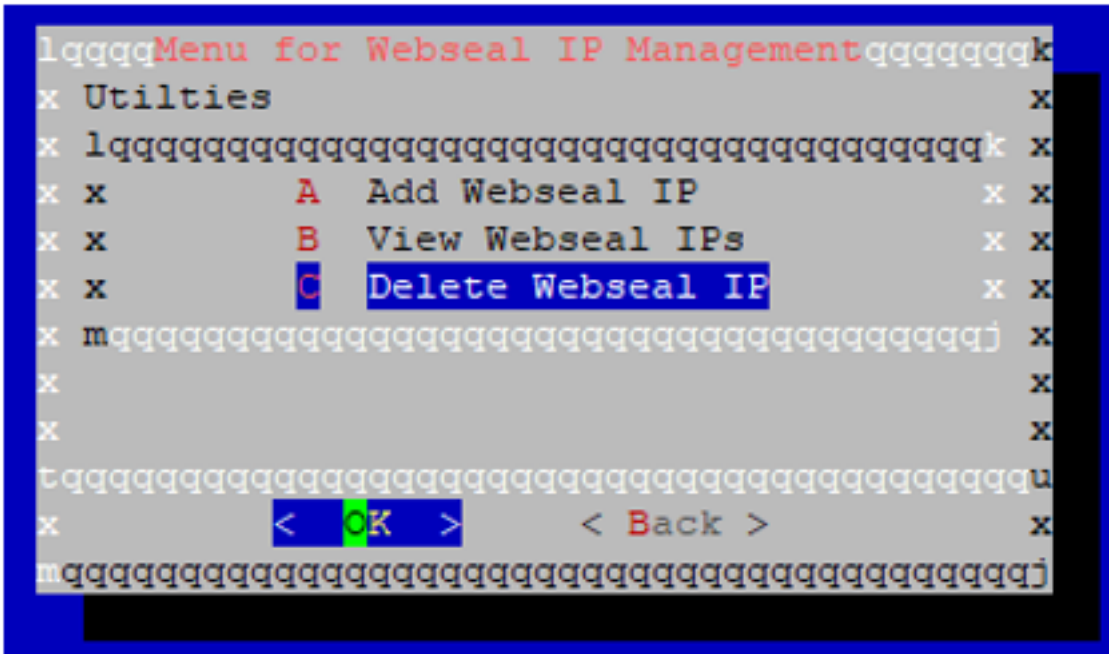


5. Enter the required IP address or the FQDN details.

   The webserver_config tool acknowledges the entry with **INSERT 0 1**, the tool webserver_config is closed. A check for validity of the entered values does not take place.

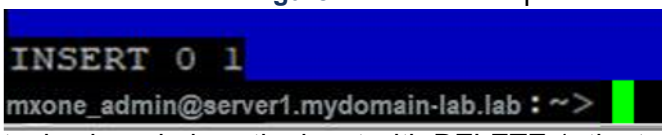
6. Click **OK**. The following screen appears.

Figure 4.23: Delete WebSEAL IP



7. Select **(C) Delete WebSEAL IP** to delete the existing configuration IP details.
8. Click **OK**. The following screen appears acknowledging that the deletion takes place without inquiry.

Figure 4.24: Delete Input



The webserver_config tool acknowledges the input with DELETE 1, the tool webserver_config is closed.

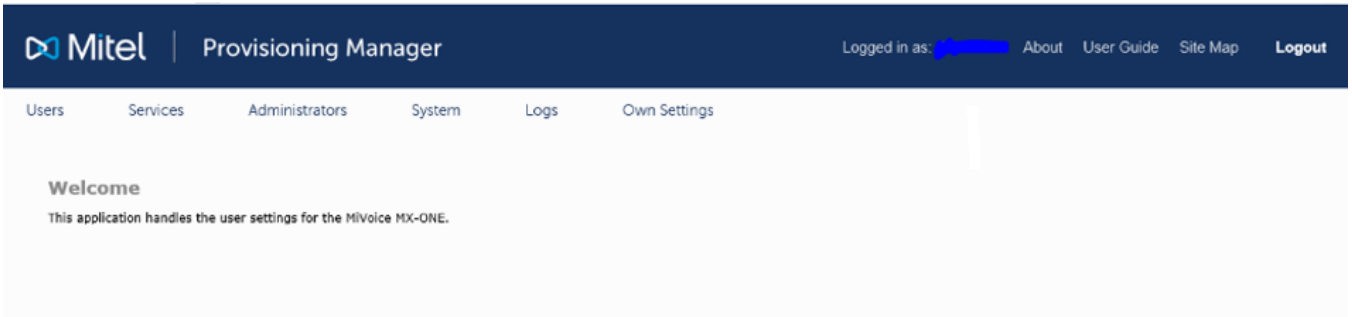
Registration via WebSEAL

To log in to the PM via WebSEAL, do the following:

1. Open the Corporate WebSEAL URL in a browser. The Corporate log in page will be displayed. The use must type the credentials.

After successful authentication, if the user is known in PM, the login takes place. The PM only allows login via the IV user header if the FQDN of the WebSEAL server is stored in the PM.

Figure 4.25: PM Welcome Page after Successful WebSEAL Registration



MX-ONE Provisioning Manager integration with MS Active Directory

Introduction

The purpose with this document is to describe the integration between Provisioning Manager (PM) and Microsoft Active Directory, (AD) in MX-ONE 7.0.

When a user is added, changed or removed in the AD by the system administrator, PM will be automatically notified to update the MX-ONE System accordingly. PM can be set to only handle user accounts in PM and CMG, or to also handle extensions and mailboxes in the MX-ONE System and MiCollab Advanced Messaging (AM) servers.

The integration with AD is a one way communication. AD notifies and passes data to PM. PM does not operate on AD. There are no schema changes or extensions/additions required in AD. AD is the master except for extensions.

Extensions can be added and updated but removal of extensions can only be done from PM for a specific user.

Only default fields in AD will be used by PM to create, update and remove user accounts.Additional AD fields can be mapped as User Defined Fields (UDF) in PM and hence extend the number of fields to import.

A PM template can be assigned to one of 4 telephony fields in AD so as to enable IP extensions to be created for a user according to the rules defined in the associated template. See *AD – PM Field Mapping* for more details.

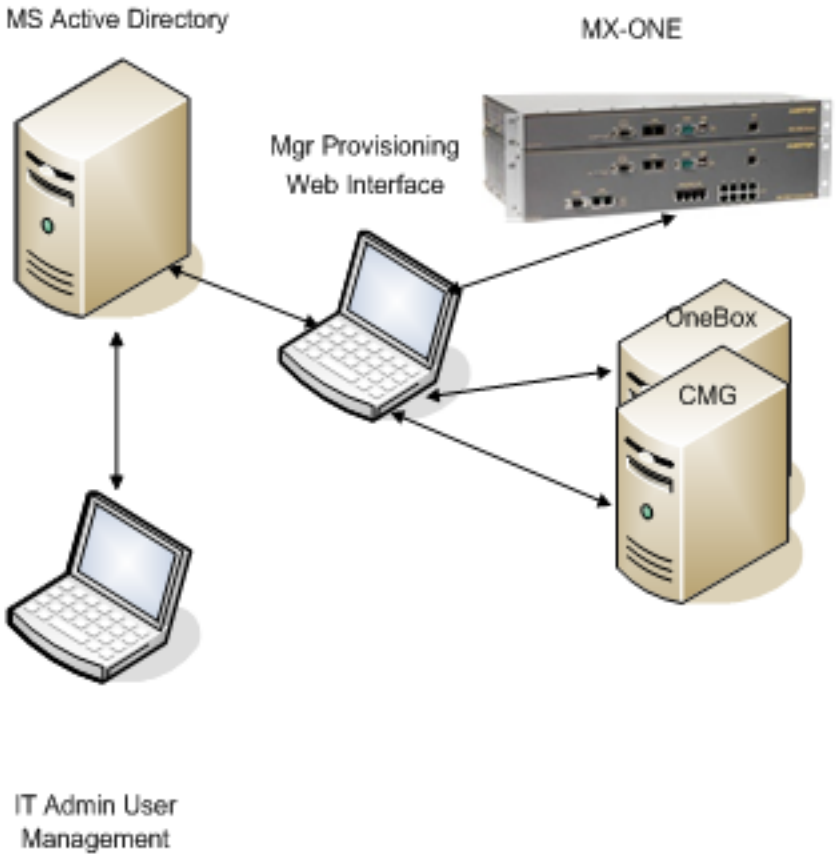
Multiple IP templates can be used to extend the number of MiVoice MX-ONE for one AD server.

An optional way to determine which MiVoice MX-ONE the extensions are created in is to use the Telephony System Mapping.

Only IP extensions can be created and managed from AD since the other extension types requires additional data that don’t have corresponding fields in the default setup of AD, such as equipment positions, IPEI numbers etc. To handle IP extensions, IP extension templates and Multi terminals templates need to be defined in PM and configured in the AD task in PM, please see the PM Active Directory configuration section below.

The figure below shows the connections between AD/PM and MiVoice MX-ONE/MiCollab AM/CMG

Figure 5.1: Connections between AD/PM and MiVoice MX-ONE/MiCollab AM/CMG



Scope

The document describes the following:

- AD Integration setup
- Functionality
- Limitations

Target Groups

This document is intended as an overview of the Provisioning Manager integration possibilities with Microsoft Active Directory and is targeted towards the system administrators of both the MiVoice MX-ONE and the Microsoft Active Directory system.

Functionality

Overview

There are two modes of integration:

- Manually triggered synchronization
- Automatic notification

The manual synchronization is used to initially move all existing AD users to PM, or to update PM if there has been a malfunction in the AD – PM connection.

The automatic notification is the normal mode of operation. When AD is updated PM gets notified and will act according to its setup.

In the PM User task, you can see if a user has been created from AD or through PM locally.

In the PM Active Directory task, you define the connection to AD, rules for operations and which parts of AD to synchronize with.

The search domains and IP number templates can be configured from the Active Directory task by selecting the **Configure Domains** tab.

The online help provides details to the **input** fields as well as a general overview.

Certain tasks need to be done in a specific order for the AD integration to work correctly. The recommended work flow to set up AD is as follows:

1. Create user in AD. See *Active Directory Connection Setup* for more details.
2. Create IP extension templates in the PM Extension task to be used when creating IP extensions, if automatic creation of extensions is desired in the Telephony System.
3. Ensure that the number series are set up in the Telephony System through Service Node Manager.
4. Configure the PM Active Directory task. See *Active Directory Connection Setup* and *PM Active Directory Task* for more details.
5. Execute a manual synchronization on each defined Search Domain.
6. Activate the automatic notification function for each Search Domain.
7. To find information about the synchronization, see the audit trail log and the event log.The logs will be automatically updated in case of an event from AD. It is therefore strongly recommended to frequently read the logs.

Active Directory Connection Setup

A user must be created in AD that is a member of Administrators and Domain Users. This user with its password shall be entered in the AD task together with the AD IP address and port to set up the AD connection.

AD can be organized to group its users in different domains defined by their distinguished names, usually according to geographical locations. In PM they are referred to as Search Domains, i.e. the AD areas where PM shall be updated from. In PM you can define multiple Search Domains and manually synchronize them individually as well as enable and disable the automatic notification function.

Each AD domain can be configured to support multiple MX-ONE systems.

AD – PM Field Mapping

AD fields to be used in PM for setting up extensions:

Table 5.1: General User Information with fixed mapping

AD FIELD	PM FIELD
Given-Name (givenName)	First Name
Surname (sn)	Last Name
SAM-Account-Name (sAMAccountName)	User Id

Table 5.2: AD Number Field information mapped to a specific field in a PM Template

AD FIELD	PM FIELD
Telephone-Number (telephoneNumber)	Extension data based on selected template
Telephone-Number-Other (otherTelePhone)	Extension data based on selected template
Phone-IP-Primary (ipPhone)	Extension data based on selected template
Phone-Ip-Other (otherIpPhone	Extension data based on selected template

Table 5.3: AD Number Field information mapped to a specific field in a PM Template (Sheet 1 of 2)

AD FIELD	AD ATTRIBUTES
Initials	Initials
Display Name	displayName
Description	description
Office Location	location
Web Page Address	wWWHomePage
Web Page Address (Others)	url
Street	streetAddress
Post Office Box	postOfficeBox
City	l [Locality-Name]
State/Province	st
ZIP/Postal Code	postalCode
Country	C [Country-Name]
User Logon Name	userPrincipalName
Phone Number (Others)	otherPhoneNumber
Account is Disabled	UserAccountDisabled

Table 5.3: AD Number Field information mapped to a specific field in a PM Template (Continued) (Sheet

User Must Password Change at Next Logon	Pwd-Last-Set **
User Cannot Change Password	UserAccountControl
Account Never Expires	UserDontExpirePassword
Account Expires (Use same data format as server)	accountExpires
Profile Path	profilePath
Logon Script	scriptPath
Title	title
Department	department
Company	company
Manager	manager
Fax	facsimileTelephoneNumber
Fax (Others)	otherFacsimileTelephoneNumber
IP Phone Number	ipPhone
IP Phone Number (Others)	otherIpPhone
Room Number	roomNumber
Secretary	secretary
Assistant Name	assistantName
Mobile Number	mobile
Mobile Number (Others)	otherMobile
Notes	info
Employee ID	employeeID
Employee Number	employeeNumber
Home Phone Number	homePhoneNumber
Home Phone Number (Others)	otherhomePhoneNumber
Telephone Number	telephoneNumber

The above table indicates that up to four different AD number fields can be associated to the same template or each of the four AD number fields could be used with different templates. In most situations, only one PM template is used and it is associated to ‘Telephone-Number” field in AD. The other three AD number fields would be optional fields used to define additional numbers to the primary number for that user.

Associating a different template to any of the other AD number fields can be used to differentiate between users in different MX-ONE systems in the same PM. In this case, then only the corresponding AD number

fields associated to a given template must be filled in. If you fill in two AD number fields associated to different templates, this would result in creating extensions for the same user in two different systems.

A PM template dictates the detailed settings for the extension when creating it in the MX-ONE Service Node. The number entered in an AD number field will be attributed the settings from the mapped template when PM then creates the extension in the MX-ONE Service Node.

An optional way to determine which Telephony System the extensions are created in is to use the Telephony System Mapping which will overwrite the Telephony System specified by the template with the mapped system.

The received AD record will be mapped to the Telephony System matching the **Active Directory Values** of the selected **Active Directory Field**.

Rules must be set in PM for how the AD synchronization shall be handled when changes are done in AD and one of the following situations occurs:

- An extension defined for a user already exists in PM.
- An existing user changes extension numbers.
- A user is deleted in AD.
- Users are configured with shared extensions in PM.

Refer to the *PM Active Directory task online help* for setting up the synchronization rules.

The AD fields will not provide any information about the creation of a mailbox, therefore the same number as for the extension will be used to set up a mailbox.

If no template has been mapped to an AD number field, no extension or mailbox will be created, even if the AD number field is filled in.

Below are some screens shots showing the *"Active Directory Users and Computers"* GUI, which is used to administer the AD, and the available AD fields for a standard AD installation.

Figure 5.2: Active Directory Users and Computers GUI - 1

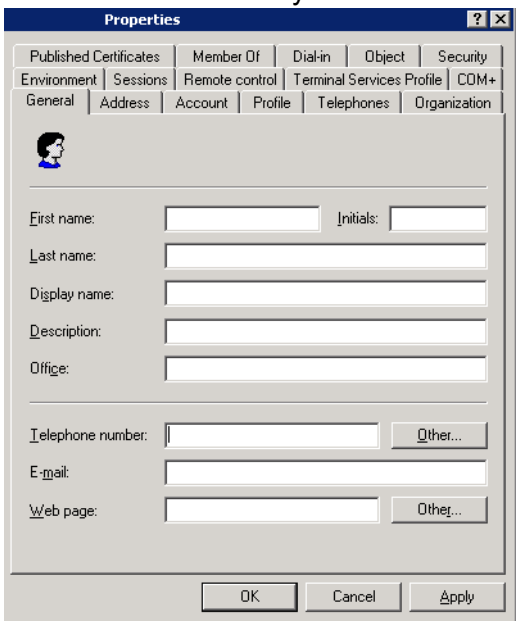
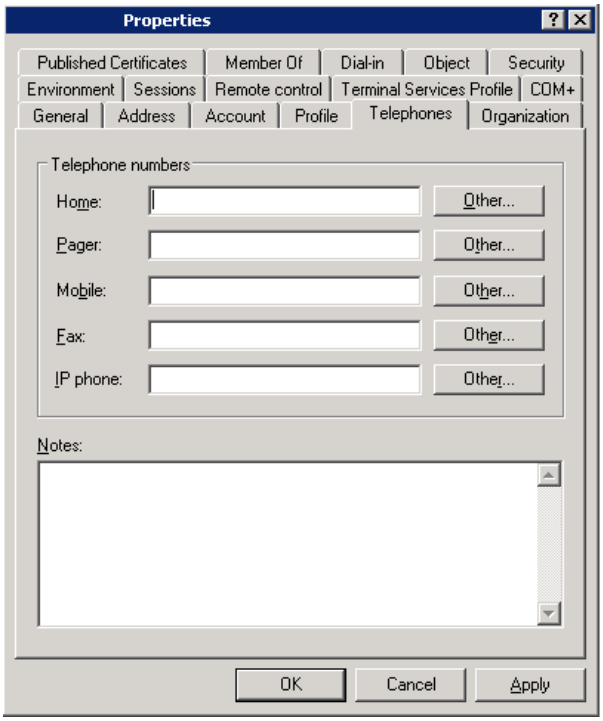


Figure 5.3: Active Directory Users and Computers GUI - 2



PM Active Directory Task

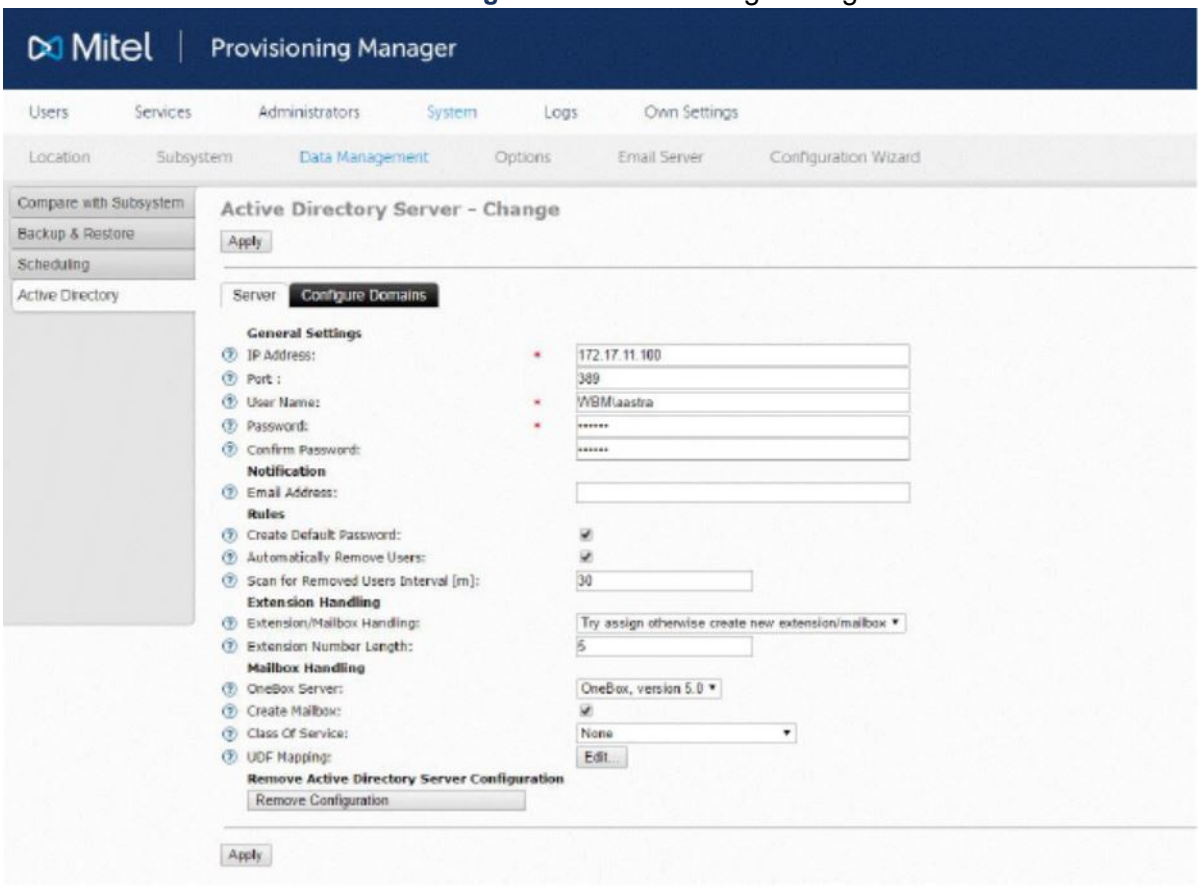
The set-up required in PM is done in the Active Directory task found a level below the System tab and Data Management sub tab.

Fill first in the **IP Address**, **Port**, **User Name** and **Password** to the AD server. Change the rest of the fields according to your preferences.

Email notification of connection failure to AD can be configured.

NOTE: PM Email Server task needs to be configured first.

Figure 5.4: Provisioning Manager



Select the **Configure Domains** tab and add a new Search Domain.

Fill in the Search Domains, the easiest way is to copy the **distinguishedName** field in the AD server.

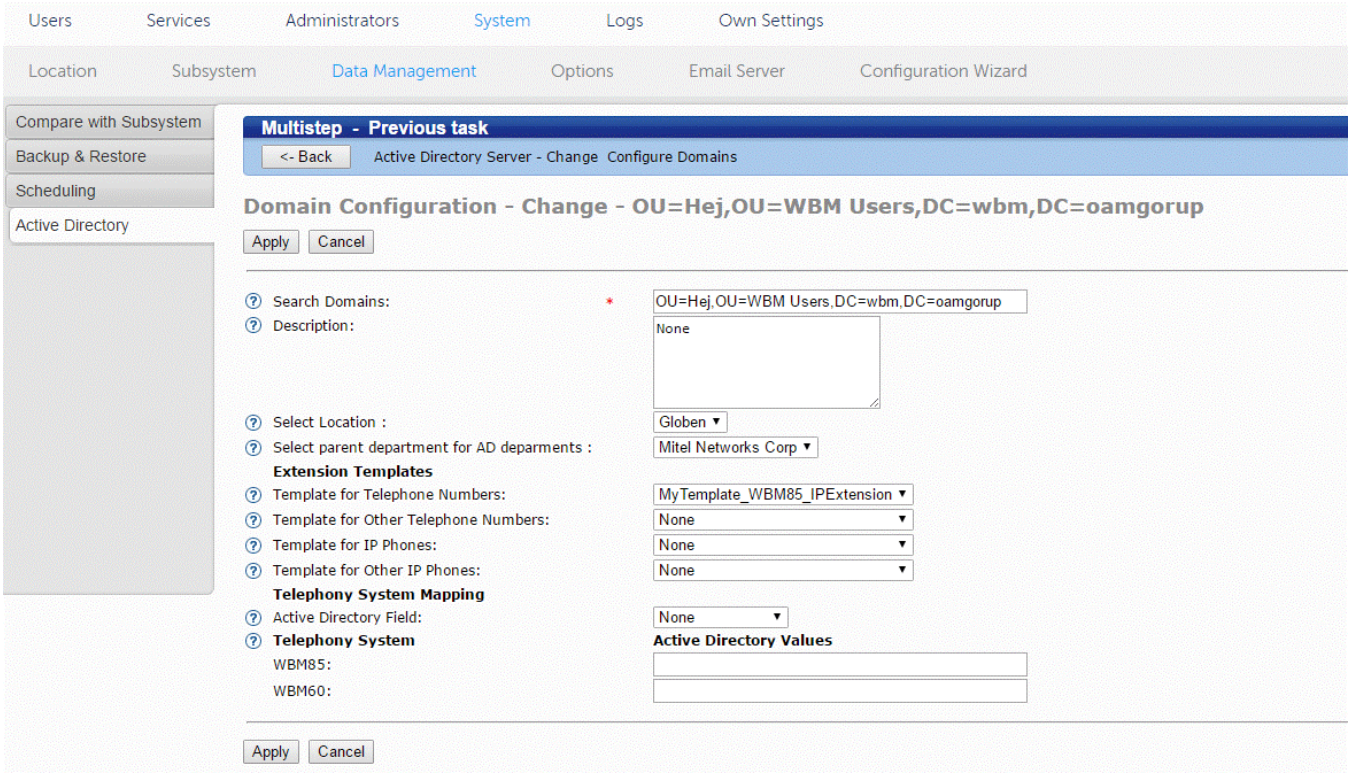
It can be selected if a received telephone number shall be made into extensions and mailboxes and how and when to assign them to the received user. New extensions will use the selected extension template. The mailboxes will get the same number as the extensions. The IP Extension Templates are defined in the PM Extension task.

An optional way to determine which MX-ONE the extensions are created in is to use the **Telephony System Mapping**.

Select the **Active Directory** field that will be used when mapping the MX-ONE used when creating an extension. The mapped MX-ONE will overwrite the system read from the templates.

Enter the **Active Directory Values** that will be used then mapping the MX-ONE towards the received Active Directory record

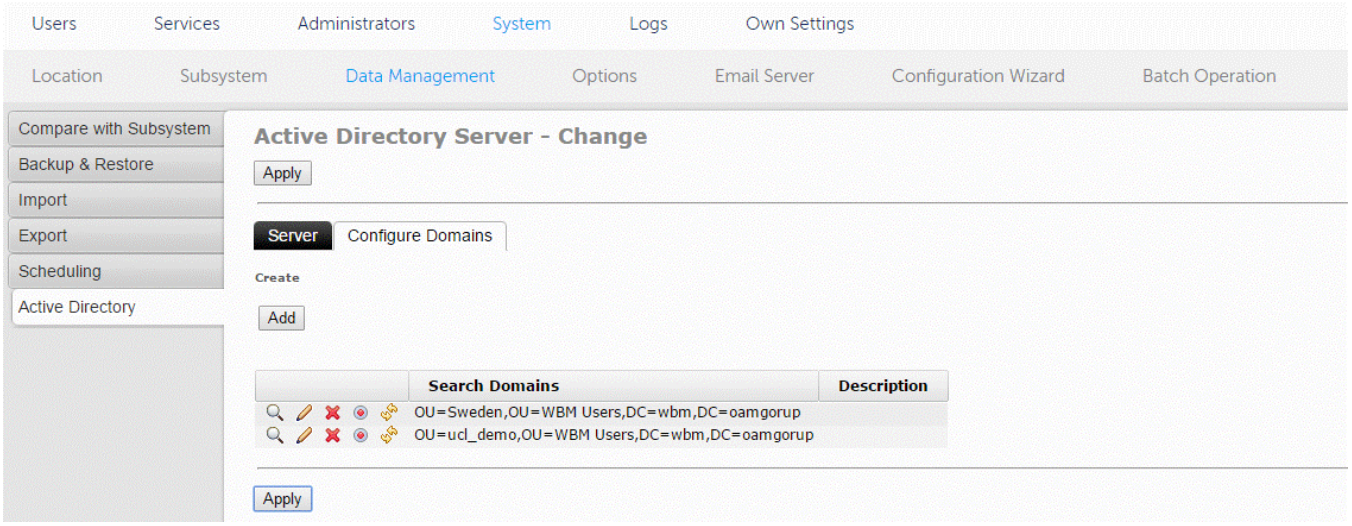
Figure 5.5: Active Directory Values



Synchronization is done when performing an initial setup of PM, to quickly port all users from Active Directory to PM. The manual synchronization can be used in case of a connection failure to AD and it is required to get the systems back in synch. The manual synchronization is triggered by clicking on the **Refresh** icon for the desired Search Domain as shown in the picture below.

The **Automatic notification** option is used when a change in AD shall be automatically transferred to PM. The notification is enabled or disabled by clicking the **Activate/Deactivate** icon for the desired Search Domain.

Figure 5.6: Enabling/disabling automatic notification



Users will be sent and updated to CMG if a CMG system is registered. When users are added, users will be placed in the same department that they belong to in AD. If the department does not exist, it will be

automatically created. For PM to be able to add user to CMG, the directory must map the Organization Unit structure. You must manually create it in CMG before synchronization. If you remove a department from AD, then it reflects Department in PM as **User without Department**. If you rename the department, then the same gets reflected in PM after the sync between AD to PM.

When user gets moved between departments in AD, it gets reflected in PM after the sync is done between the AD and PM.

Extension Handling Details

If the extension already exists, an option in the PM Active Directory task will decide if the request shall fail or if it shall assign the existing extension as a shared extension to the new user. By the term fail, it is meant that the extension part of the request will not go through. The user as such will still be added.

As Active Directory only automatic sends notifications for user additions and changes, not for removal of users, Provisioning Manager will have to check for removed users with a specified interval.

If PM is set to not remove extensions when a user is removed in AD, then, potentially, shared extension setting must be set to enable the user to be assigned to already existing extensions. The same logic applies for mailboxes.

If a user is removed from AD, the PM setting for removing or keeping mailboxes must be adhered to. If the user has been assigned with extensions, these extensions will not be removed.

The phone numbers listed in AD may be listed in international format. They will be cut to the specified number length when used to add a new extension. Non-digit characters will also be stripped. If the number is not a number, then no action shall be made.

Example of numbers:

+46 8 56867074

+46 8 568 xxxxx

+1 905-760-1234

+46 (0)8 1234567

NOTE: AD administrator must have the master list for extension numbers and is responsible for the allocation of numbers as no list of available numbers will be available in the AD Users and Computers tool.

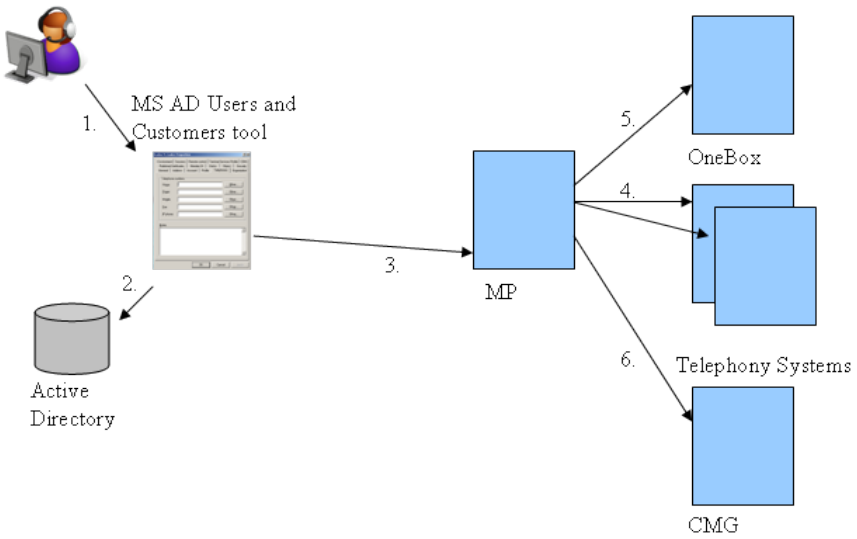
There is an option to add *"Other"* numbers for each telephony field, that is, additional numbers, in the AD GUI. Because these are not tagged separately, it will not be possible to handle them separately and they will therefore become additional numbers of the same extension type and based on the same template.

Name Handling

A changed name will be propagated to all extensions associated with the user, assuming it is not a shared extension. In the case of a shared extension, the name will be added to this extension on CMG and MiCollab Advanced Messaging, but will not be changed or added in MX-ONE Service Node. If the name is too long for the name field for the extensions, it will be truncated.

Execution Flow

Figure 5.7: Exceution flow



The execution flow is as follows:

1. The AD administrator logs on to the **Active Directory Users and Computers** tool.
2. The administrator configures the users and submits the request. The standard AD settings are stored in AD.
3. The data is sent through notification to PM where a predefined template is mapped to the submitted phone numbers. The user is created or modified.
4. PM sends a web services request to the selected MX-ONE to configure extensions.
5. PM sends a web services request to the selected MiCollab AM to configure a mailbox.
6. PM sends a web services request to the CMG to configure/modify a user.

Limitations

The following limitations apply:

- In a system with legacy extensions, these extensions will not be automatically provisioned from AD. Only the user will be set up in PM providing that no template has been mapped to the AD number fields. If a template has been defined, IP extensions will be created.
- PM supports provisioning of maximum 75000 users from AD.
- If a CMG is connected to Provisioning Manager, Active Directory cannot have a user with the same *“last name”* and *“first name”* due to CMG that don't have an unique id (like user id). If Provisioning Manager doesn’t have any CMG connected, it will work with same name but with different user id.
- Only four AD number fields can be mapped to PM IP extension templates. This means up to 4 templates can be used to create IP extensions, each mapped to a specific AD number field. In this case, only AD number fields associated to the same template should be filled in for a given user. Filling in 2 AD number fields that are associated to different templates for the same user will result in creating 2 different IP extensions for this user. A template contains detailed settings as well as in which Telephony System the IP extension shall be created in. That means that you can create IP extensions with the same settings in four different systems, or four different types of IP extensions in the same Telephony System or a combination thereof.

- Number handling is not included in PM; this will have to be handled by the MX-ONE administrator.
- Only 1 AD is currently supported.

NOTE: For very large systems (for example, above 15000 users) with multiple servers in the same logical system, the AD synchronization with PM and the subsequent creation/update of users/extensions in the MX-ONE system and its associated applications can be taken anywhere from a few hours up to a day or longer.

NOTE: There is a limitation in AD, it allows only to have five subscriptions for automatic change notifications. AD synchronization in PM does not work with more than five active domains. If you activate more than five domains (green icon), the automatic synchronization will not work anymore.

Additional Info

For larger systems with many users, there will be a lot of notifications coming from AD to PM. Every computer login that a user performs triggers an update of AD and thereby a notification to PM. This will most likely not have an impact on the network performance, but it is worth mentioning.

NOTE: It is **NOT** recommended to use the System Setup Admin for Active Directory synchronization, as the users created by System Setup Admin during AD sync are not visible to other administrators.

AD Authentication, Description

Introduction

Description of AD Authentication

AD authentication refers to the possibility to configure Provisioning Manager (PM) to authenticate user passwords in Active Directory (AD) instead of in the PM user database.

The concept is not a true *"Single Sign On"*, but it will be possible to log in to PM and Service Node Manager (SNM) with the same user name/alias and password as when logging in to the corporate or department domain, as defined in AD.

When the PM server is configured for AD authentication, it will still be possible to log in with currently stored passwords in PM user database. This implies that if the AD server for some reason is out of service users who know the PM specific passwords will be able to continue working as normal.

AD authentication is only available when the PM web server is running in SSL mode. It is also required that SNM sub systems configured for PM authentication shall run in SSL mode.

Prerequisites

- The authentication towards AD is performed over protocol LDAPS. The AD server must therefore be enabled for LDAPS.
- AD authentication is implemented with LDAP authentication method 'Simple authentication' (see: http://msdn.microsoft.com/en-us/library/cc223499.aspx). As this requires that the user password is sent in clear text, AD authentication is only allowed when the entire web server PM is running on is configured for SSL (HTTPS).
- The AD server must be configured for SSL on the LDAP(S) interface.
- An SNM defined as subsystem for PM configured for AD authentication will also use the AD authentication feature when it is configured for PM authentication method (that is, not *"Linux"*). See *Scenario 2: SNM Login* for more details.
- Subsystems configured with PM authentication method must also be configured for SSL.
- Subsystems not configured for SSL must use Linux authentication method. That is, all users that need access must be provided with an own Linux account. Note that this is a high security risk if users get used to log in with AD credentials. See *Scenario 3: SNM Login over HTTP* for more details.
- Auto-login in SNM is disabled when you select **click on subsystem** in PM. Instead the user needs to be authenticated again, but as long as the SNM server is configured for SSL and PM authentication method, the same user name and password as for the domain (and PM login) will be used.
- All users that should be able to log in to PM and SNM must still be defined as users in the PM database. However, the password associated with each user is not in use as long as AD authentication is enabled.

- The user name or alias used when logging in to PM or SNM with AD authentication must match the one defined and stored in the PM database.

Example:

A user is defined as jdoe in PM and as jdoe@mydomain.com in AD.

The “Principal DNS Suffix” is configured as mydomain.com.

PM server will build the complete User-Principal-Name as jdoe@mydomain.com and it is possible to log in to PM with jdoe, only.

The login name or alias must have a perfect match in the PM database to read validate the users’ privileges, even if the password is validated in AD.

See *Configure AD Authentication* for more details.

Supported AD versions

- Windows Server 2008 R2 (64 bit)
- Windows Server 2012 (64 bit)

Security

Secure Socket Layer (SSL)

The server, on which PM is installed, needs to be configured for SSL (HTTPS). End users will be using HTTPS when accessing the application web page. The same applies for web services between PM and SNM. Also the AD communication with LDAP shall be encrypted over SSL.To configure SSL/HTTPS, use the `webserver_config` command. See *Configuration* for more details.

Certificates

The use of certificates is all about trust. We need to be able to trust the other party we connect to and communicate with. Due to this, two different kinds of certificates are required when running AD authentication:

- **Server Certificate:** As a server to run the web application over HTTPS
- **Root Certificate:** As a client when we connect to the AD server.

Server Certificate

The server certificate is used for the purpose of other (clients) to trust the PM when connecting over HTTPS. This could either be a self-signed certificate or a certificate signed by a Certificate Authority (CA). See *Configure Web Protocol* for more details.

Root Certificate

PM and SNM are running as Java driven applications under Jboss.

When connecting to an AD server over SSL, it is required that the Java application can verify the AD server as a trustful source. To make this functioning, a proper certificate must be imported and stored in the Java trust store.

The certificate could be the AD server's own server certificate that is distributed when connecting to it over SSL. This will work perfectly as long as the AD connection is defined as a fixed host name or IP address representing the AD server.

However, in a more complex environment, it is more common that the AD connection is made through a broadcast through the domain controller or by addressing a sub domain or even the entire domain. In this situation, it would be inconvenient to store the server certificates for all possible transfer servers the connection will need to verify as trustworthy. Instead, a proper root certificate that can verify the signature on each server's server certificate should be imported. See *Certificate Management for AD Authentication* for more details.

Generating Certificate Signing Request (CSR) and Creating Keystore

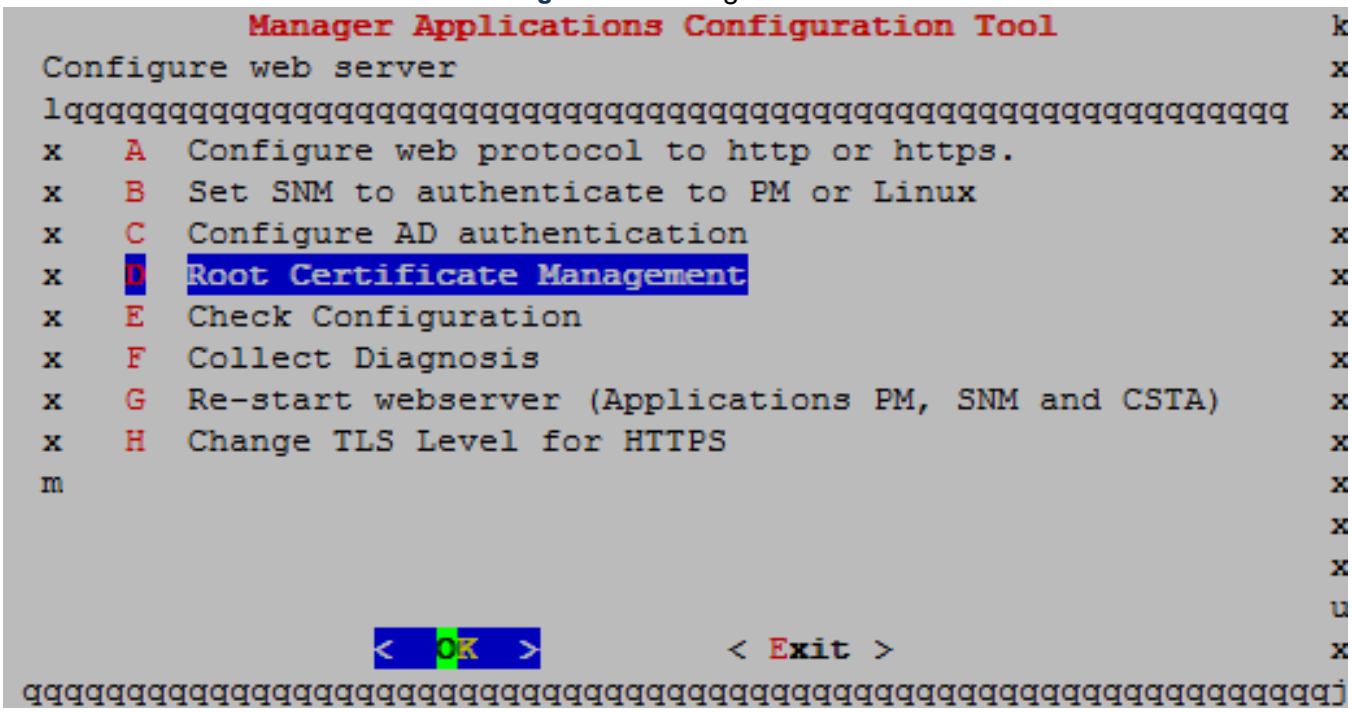
This section explains how to use the webserver_config utility to generate the Certificate Signing Request (CSR).

Once you receive the Signed Certificate from the Certificate Authority, the section also describes how to create the Keystore.

Creating Certificate by Signing Request File

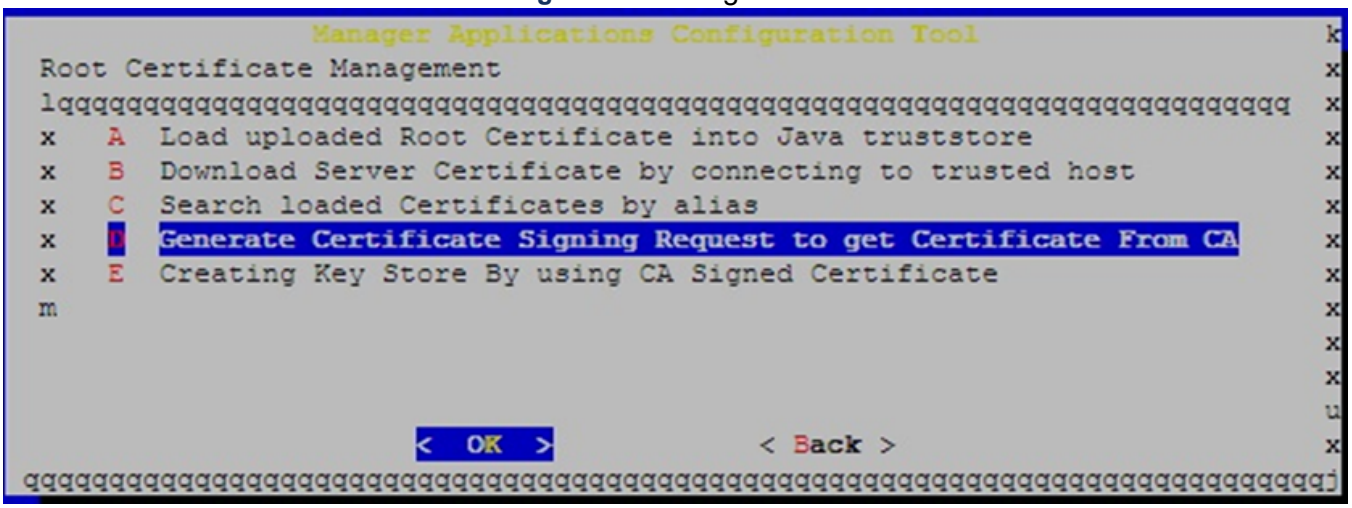
1. Open the webserver_config utility. Select **D - Root Certificate Management**.

Figure 6.1: Configure web Server - 1



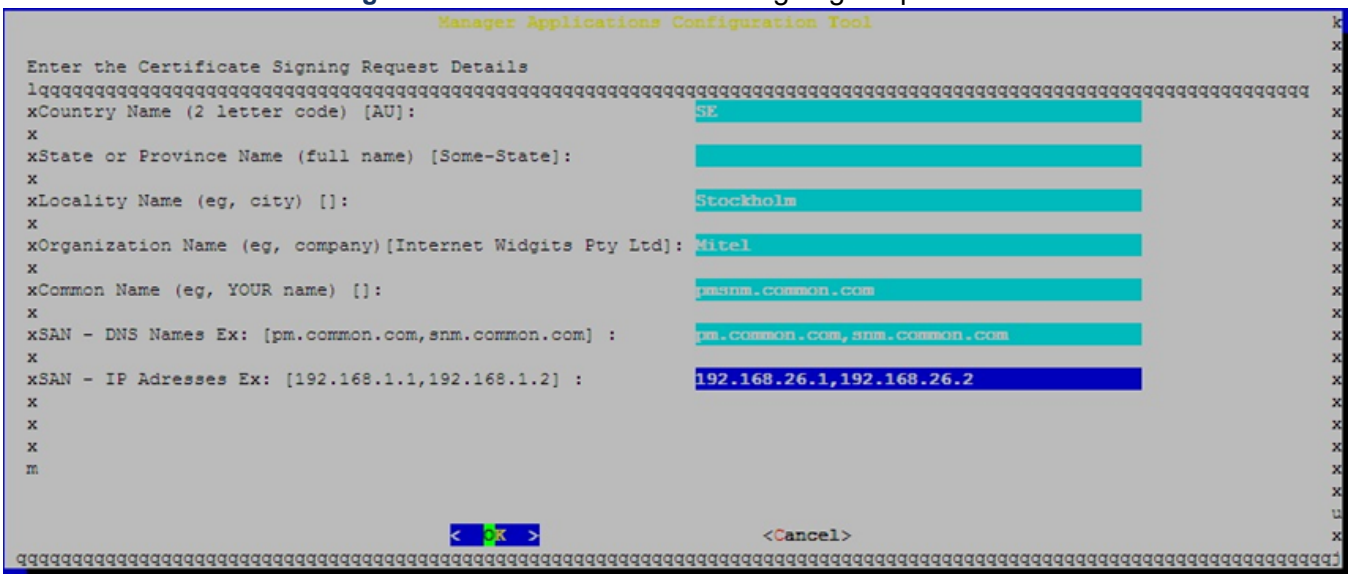
2. Select **D – Generate Certificate Signing Request to get Certificate from CA**.

Figure 6.2: Configure web Server - 2



3. Fill in the below form with the below details:

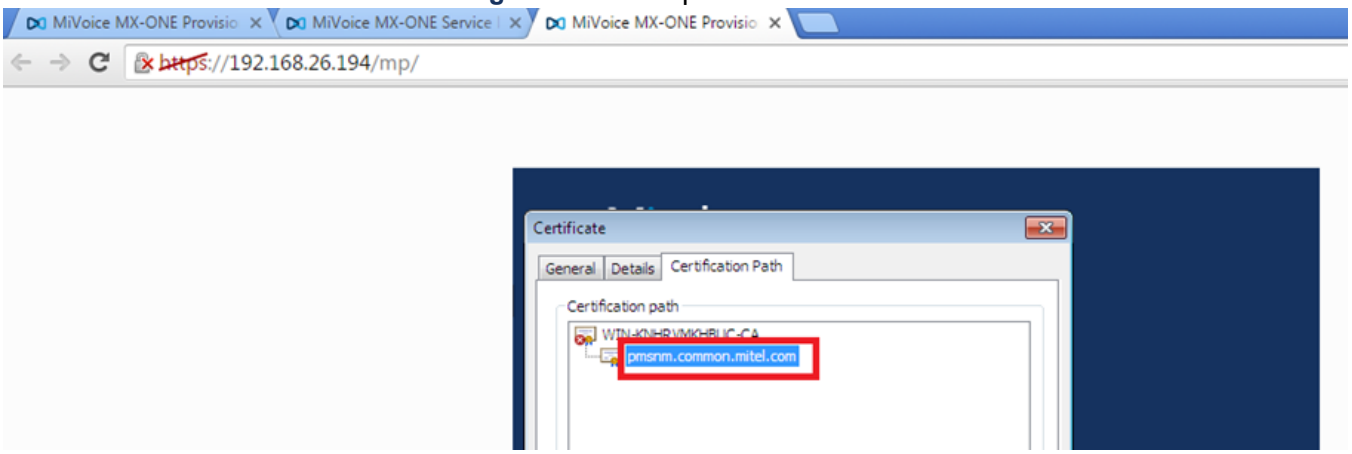
Figure 6.3: Enter the Certificate Signing Request Details screen



NOTE: Common Name is like Domain Name which we want to display in the Certificate.

In the above screenshot *"pmsnm.common.mitel.com"* is common name, which can be anything based on the organization.

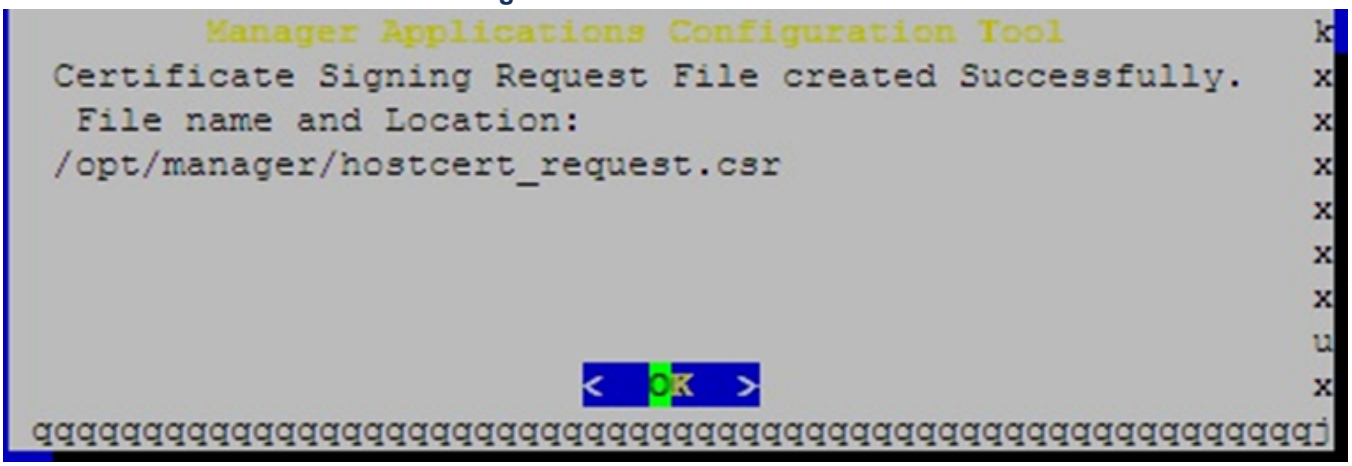
Figure 6.4: Example of Common Name field



a. SAN – DNS Names: Subject Alternate DNS Names
b. Ex: pm.common.com,snm.common.com
c. SAN – IP Addresses: Subject Alternate IP Addresses. Ex: 192.168.2.1, 192.168.2.3
d. After you have filled the form click **OK**. The system will generate the Certificate Signing Request (CSR) File and locate it at `/opt/manager/hostcert_request.csr`.

4. You must copy this file to the local system and share it with Certificate Authority (CA) for them to provide the Signed Certificate.

Figure 6.5: Successful creation of CSR file

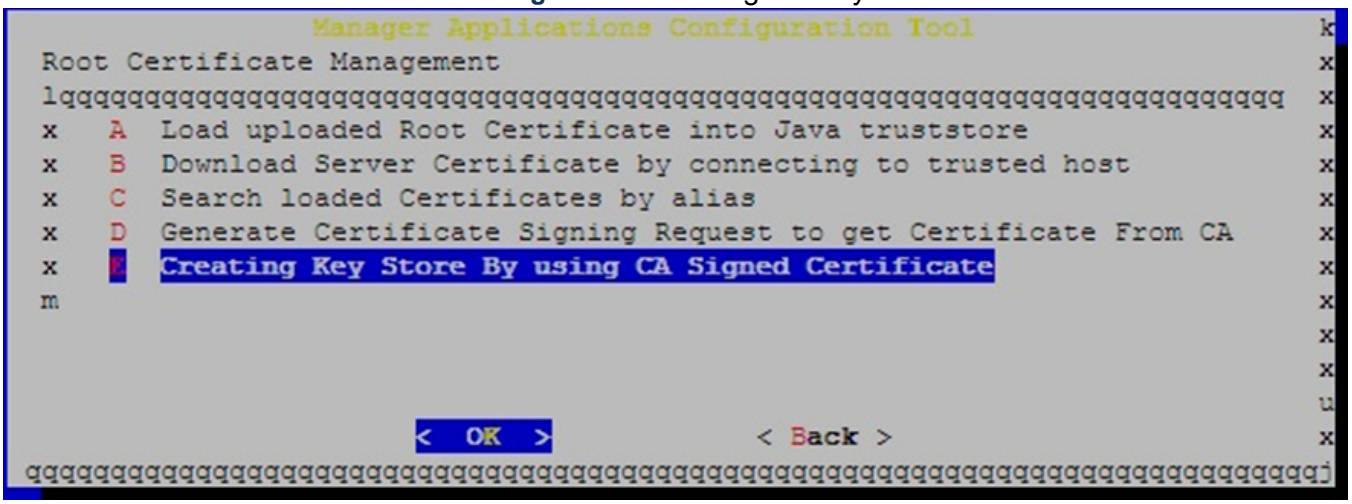


Creating the Key Store by using Signed Certificate

Once you receive the Signed Certificate from the Certificate Authority, you must copy that certificate to the server where you want to enable the HTTPS.

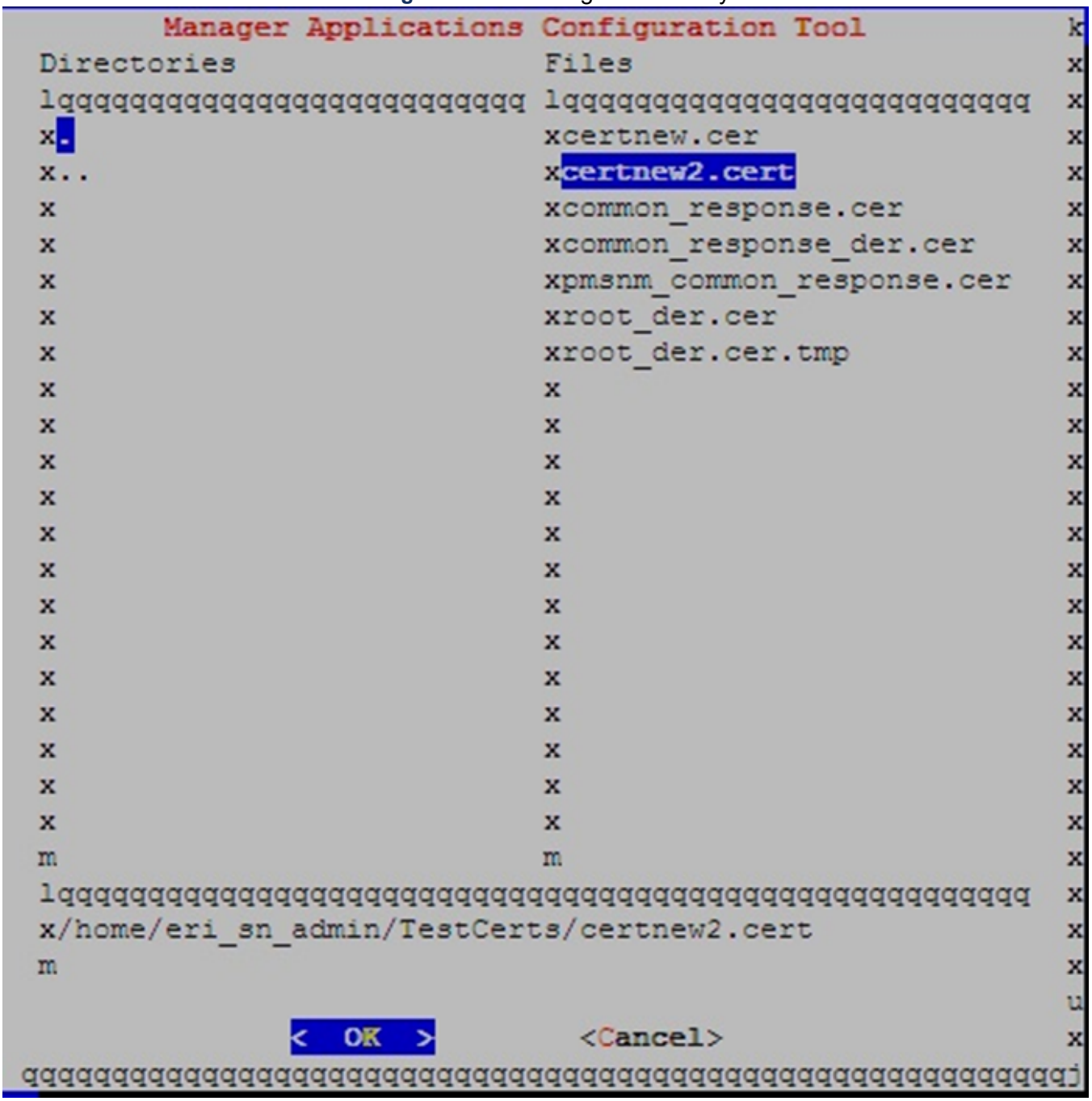
1. Open webserver_config utility.

Figure 6.6: Creating the Key Store - 1



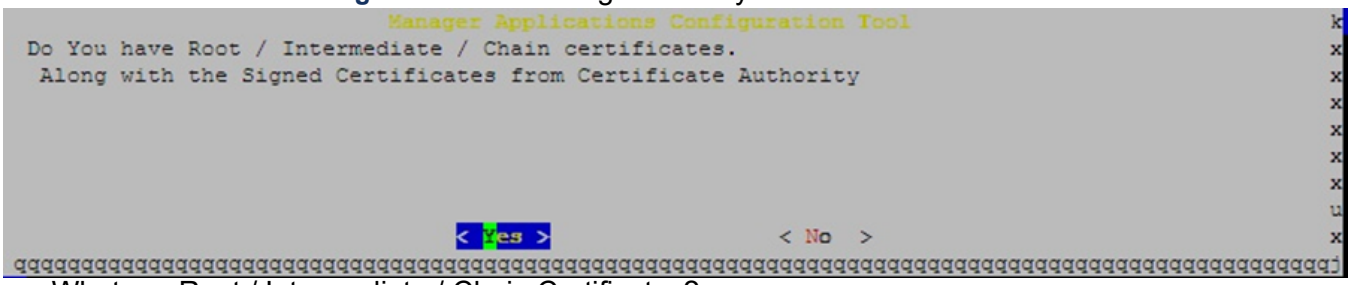
2. Then **E – Creating Key Store By using CA Signed Certificate**.
3. Then select the path of the Signed Certificate in the system.
4. Press **TAB** to move between Directories, Files and Buttons sections
5. Press **Space** and select the Directory and Files

Figure 6.7: Selecting the directory and files



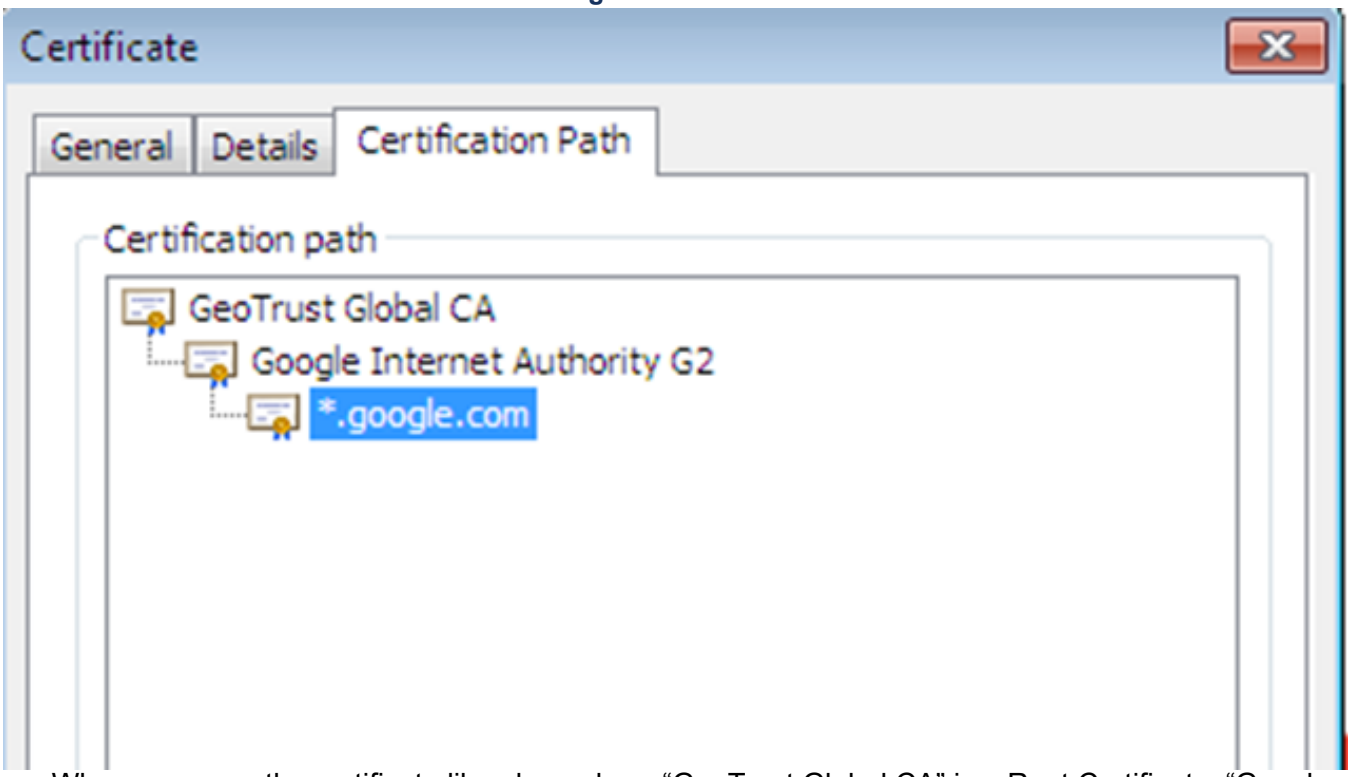
6. Confirm whether you have any Root / Chain Certificates available with our CA Signed Certificate

Figure 6.8: Confirming whether you have Root/Chain Certificates



What are Root / Intermediate / Chain Certificates?

Figure 6.9: Certification Path



When you open the certificate like above, here “GeoTrust Global CA” is a Root Certificate, “Google Internet Authority G2” is Chain / Intermediate Certificate, “*.google.com” is a Signed Certificate. These Root and Signed Certificates will be provided by the Certificate Authority or can be downloaded from their sites.

If there is only Root Certificate, you can use that file directly and ignore the below section otherwise merge all these Root and Chain Certificates into one file

When you open these Root / Chain Certificates in the notepad, the content might look like below:

-----BEGIN CERTIFICATE-----
-----END CERTIFICATE-----

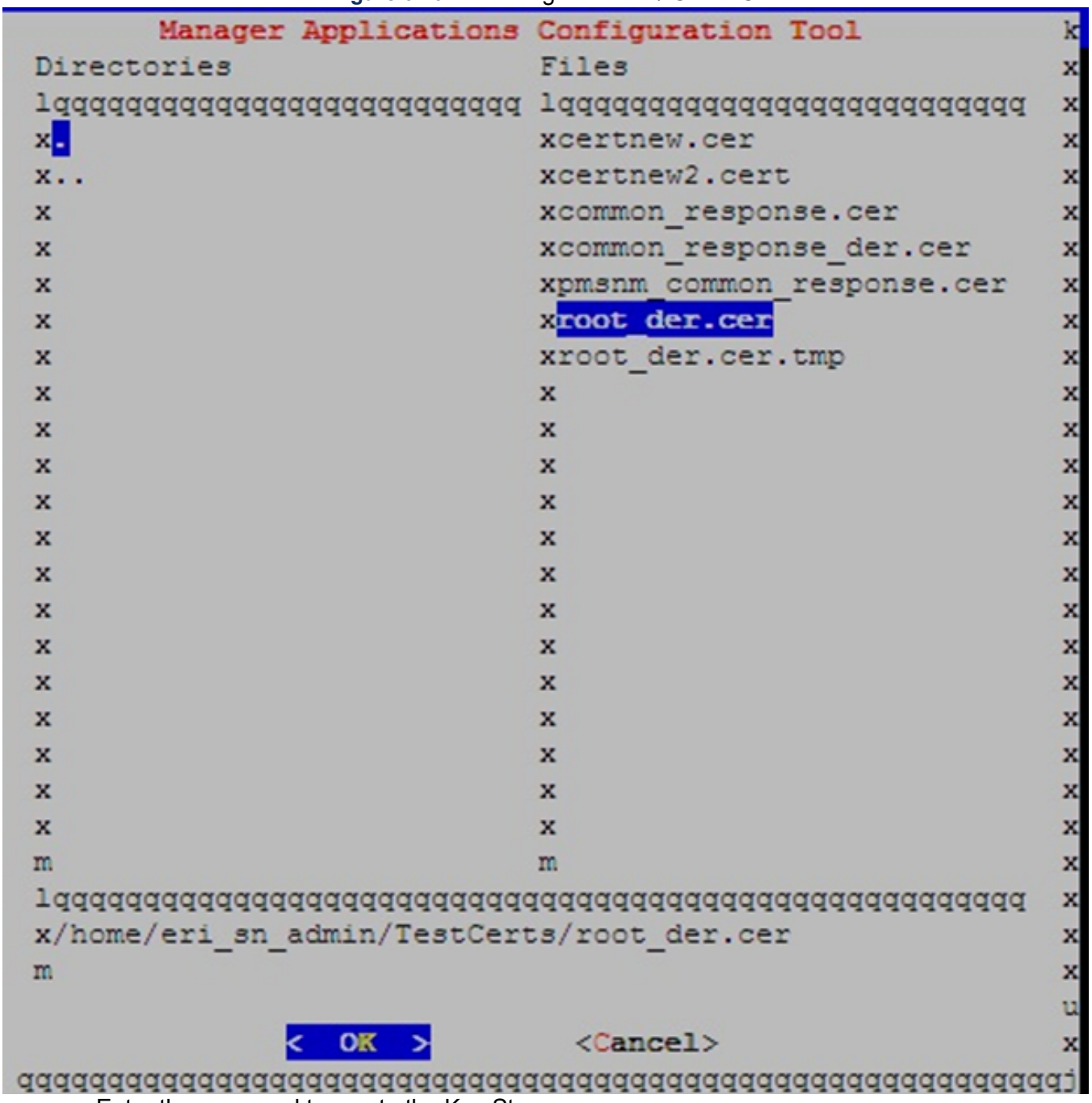
7. Merge the content like below in the file First Root Certificate, then Chain Certificate:

-----BEGIN CERTIFICATE-----
Root Certificate Information
-----END CERTIFICATE-----
-----BEGIN CERTIFICATE-----
Chain Certificate Information

8. Select the Root / Chain Certificate file:

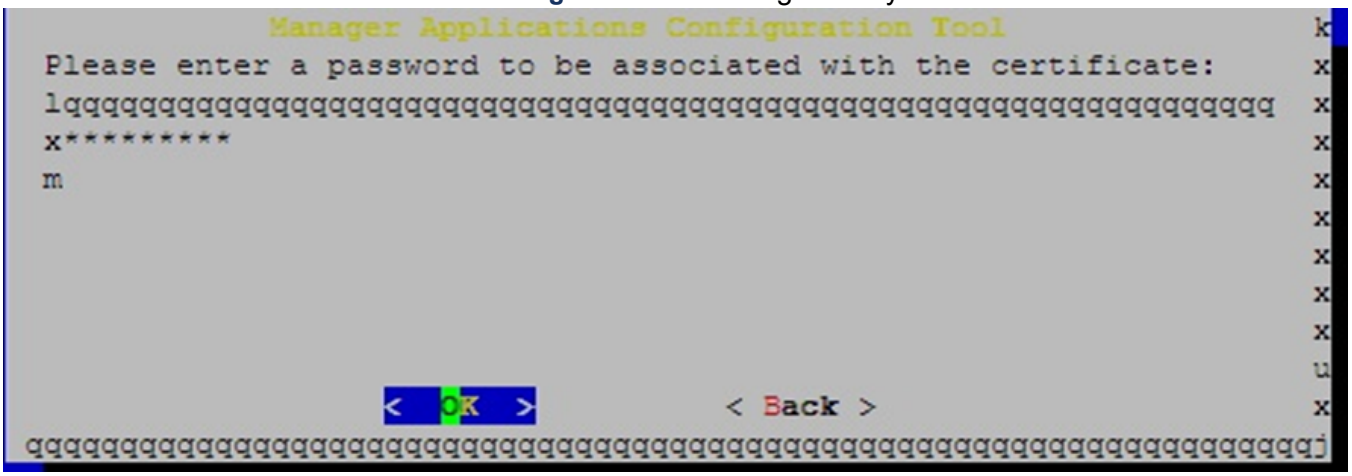
   a. Select **TAB** to move between Directories, Files and Buttons sections
   b. Press **Space** and select the Directory and Files.

Figure 6.10: Selecting the Root / Chain Certificate file



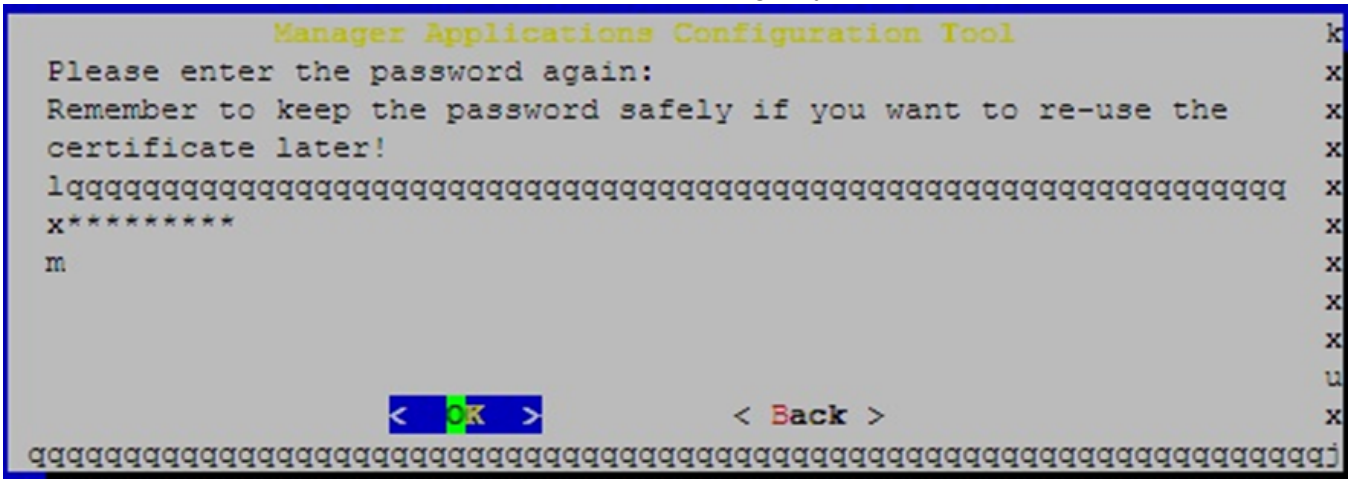
   c. Enter the password to create the Key Store

Figure 6.11: Creating the Key Store



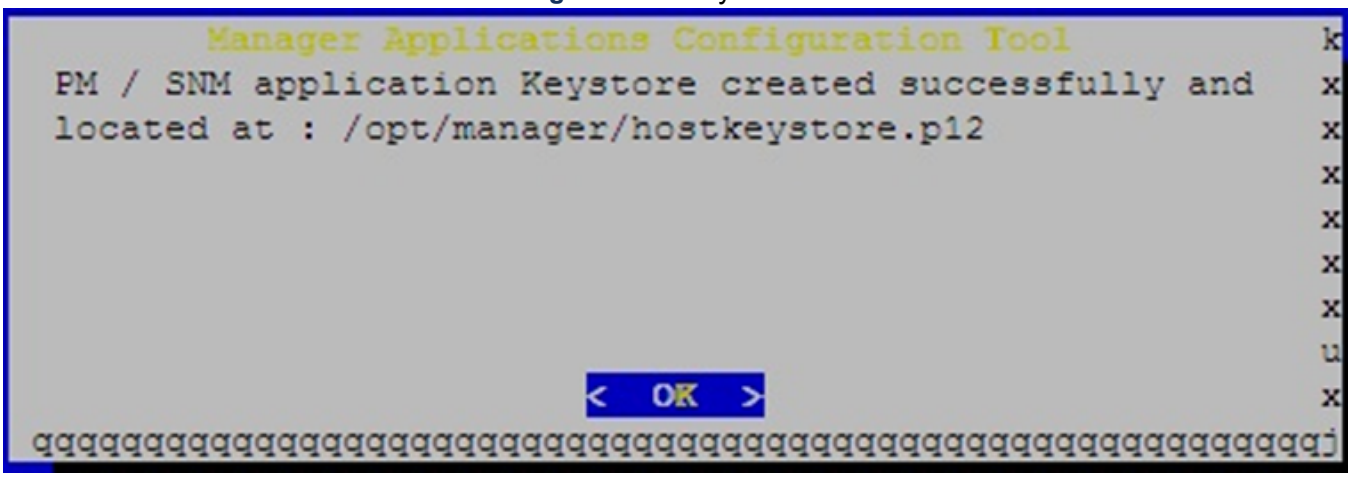
d. Re-Enter the same password for Validation

Figure 6.12: Validating Key Store creation



e. Then System creates the Key Store File and locates at `/opt/manager/hostkeystore.p12`

Figure 6.13: Key Store File creation



f. You can use this file and enable the HTTPS.

Webserver_config ? Configure web protocol to enable HTTP or HTTPS? Change to HTTPS / Keep HTTPS? Certificate is uploaded to file System? select the created Key Store file from `/opt/manager/hostkeystore.p12`.

Importing Certificates for PM and SNM

Follow the steps below to generate and import certificates for PM and SNM by using local Windows Server as Certificate Authority.

1. Generate certificate requests by using IIS for PM and SNM.
2. Upload the certificate request to *"certsrv"*application.
3. Issue the certificates by using Microsoft Management Console (MMC).
4. Download the Issued certificates from *"certsrv"* application.
5. Complete the certificate request by using IIS.
6. Generate the PFX files for PM and SNM with private key to use as a keystore.
7. Follow below steps to enable SSL for PM and SNM applications.
    a. Open Webserver_config utility
    b. Select **Configure web protocol to HTTPS**
    c. Select **Change to HTTPS**
    d. Select **Certificate is uploaded to file system**
    e. Select the *"PFX"* file which was generated in Step 6.
8. Follow below steps to exchange the certificates between PM, SNM, AD and CMG
    a. Open Webserver_config utility
    b. Select **Root Certificate Management**
    c. Select **Load Upload Root Certificate into Java truststore**.
    d. Select the certificate of other system and provide the alias name. For example, if you are executing above steps in PM, then you must select the certificate of SNM that you have downloaded from Step 4
    e. In case if the Other system is AD or CMG, then you must get the AD or CMG certificates from AD or CMG servers by using Microsoft Management Console (MMC) tool.
    f. Importing the certificate of PM/SNM, AD and or CMG is applicable for Co-Existing system (PM/SNM are in same server) also.
    g. You can import the certificate by connecting to other system directly by selecting **webserver_config** > **Root Certificate Management**> **Download Certificate by connecting to trusted host** > **Enter the Other Server Name / IP, Port and alias names**.
9. At AD or CMG side, have to import the server Certificate of PM by using Microsoft Management Console (MMC) tool to the *"trusted people"* section.
10. Import the Root Certificate of PM to AD or CMG by using Microsoft Management Console (MMC) tool to *"trusted Certificate Authority"* Section.

NOTE: Certificates that is generated in the steps above is a self-signed certificate using Microsoft IIS and there are also other ways of doing that. It is recommended to use the company´s certificate.

Users

There are two types of users that shall be considered in PM.

The first user type is *"end user"* which is the user that logs on to PM and/or SNM web page. This user may have different levels of privileges, from a *"plain"* end user in PM up to an administrator defined as *"Super User"*.

The second user type is *"service account"* which is the account used when PM and SNM communicate in the background through web services. This account is set up as any *"end user"* account and should be provided with enough privileges to serve all actions needed to be performed (independently of who is performing them).

The *"service account"* is the user defined as "User ID in Subsystem" when adding SNM as subsystem in PM. Whenever an action that requires access to SNM is performed in PM this account's privileges are checked.

See example of how 'end user' versus 'service account' is used: *Scenario 4: PM Login + use case 'Add Extension'*.

Configuration

All configuration of AD authentication is done through the configuration utility for the web server, which is provided with each installation of PM or SNM. It is only when PM is installed that the configuration of AD authentication is available.

All necessary configuration scripts are available through the following command:

`webserver_config`.

Configure Web Protocol

To set the server in SSL mode, choose to configure the web server protocol and then choose HTTPS.

In SSL mode the PM server must have its own server certificate. This may be a self-signed root certificate, or a properly signed certificate from a Certification Authority (CA). The latter will be considered as 'safe' for visitors of the PM web as long as the CA's root certificate is included in the clients' browser. All modern web browsers are provided with a subset of root certificates from trusted CA's.

A self-signed certificate is from a technical point of view like a signed certificate from a CA. The main, but important, difference is that the self-signed certificate cannot be verified as trustworthy by other servers or clients. The clients web browser will show a warning when the page is visited.

If a server certificate is to be imported to the PM server, it must first be uploaded to the Linux file system. Use any kind of SFTP (Secure File Transfer Protocol) client, like e.g. WinSCP to connect and upload the certificate file. The certificate should be in the format PKCS#12.

Configuring Web from HTTP to HTTPS with Self-Signed Certificate

Follow the procedure below to configure the Web portal from HTTP to HTTPS with Self-Signed Certificate:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Configure web protocol to http or https**.

3. Select **[CHANGE TO/KEEP] HTTPS**.
4. Confirm the next two windows by pressing the **Type** key.
5. Select **Create a self-signed certificate**.
6. Type the password to be associated with the certificate.

   NOTE: This step is required in case the certificate shall be re-used later on.
7. Re-type the password.
8. Accept a restart of the web server. The configuration will not take effect before a restart of the web server is done.

Configuring from HTTP to HTTPS with Uploaded Server Certificate

Follow the procedure below to configure the Web portal from HTTP to HTTPS with uploaded server Certificate:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Configure web protocol to http or https**.
3. Select **[CHANGE TO/KEEP] HTTPS**.
4. Confirm the next two dialogs by pressing the **Type** key.
5. Select **Certificate is uploaded to file system**.
6. Use the Up/Down key, and Enter on the keyboard, to navigate to your certificate file, mark it and press **Enter**.
7. Accept that it is the correct file to be used.
8. Provide the password associated with the certificate.

   NOTE: If an incorrect password is used, the certificate will not function.
9. Accept a restart of the web server. The configuration will not take effect before a restart of the web server is done.

Turning SSL off and back on again

When the server has been configured in SSL mode, it means a server certificate already is available. In case the SSL is turned off and should be turned on again, the configuration script will identify the previously used certificate which could be re-used.

The procedure looks exactly like the one for an uploaded server certificate, with the difference that you already at step 5 can choose to re-use the found certificate instead.

As for the case with the uploaded server certificate, it is an absolute must that the password matches the one associated with the certificate.

Configure SNM authentication method

The SNM authentication method refers to in which way a user that logs in to SNM is authenticated. It could be either of *“Linux authentication”* or *“PM authentication”*.

For Linux authentication it is required that the user has a Linux account. This is to be created according to standard Linux procedures via command or using mxone_maintenance utitily. Log-in as user mxone_admin, and key the command `sudo -H /opt/mxone_install/bin/mxone_maintenance` and select option user and follow the instructions on screen.

For PM authentication, SNM will instead send a (SOAP) request to the configured PM server to verify user credentials and privileges (authenticate and authorize).

NOTE: If the SNM server is not running SSL (HTTPS) and PM is configured for AD authentication, the SNM authentication method must be set to Linux authentication. This means that administrators that need to log in to SNM must be provided with a separate Linux account. This account will not be authenticated towards AD. Note that this is a security risk if users get used to log in with AD credentials. See further *Scenario 3: SNM Login over HTTP*.

If PM and SNM are running on the same server, that is, MX-ONE Service Node 1 (LIM 1), the SNM authentication method will automatically be set to PM authentication method as soon as AD authentication is enabled.

To set PM authentication method when PM is running on a standalone server, log in to the SNM server and do the following:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Set SNM to authenticate to PM or Linux**.
3. Select **[CHANGE TO/KEEP] PM authentication**.
4. Enter the required information in fields in the window.
5. Accept a restart of the web server. The configuration will not take effect before a restart of the web server is done.

Certificate Management for AD Authentication

This topic provides information on how to obtain and manage root certificates for AD authentication.

Root Certificate or Signed Server Certificate

To import a root certificate or a server certificate from another server that should be trusted.

Do as follows:

1. Connect to the Linux server with a SFTP client such as WinSCP and upload the root certificate to the file system.
2. As root, or with sudo privileges, run command webserver_config.
3. Select **Root certificate management**.
4. Select **Load uploaded Root Certificate into Java trust store**.
5. Use the Up/Down on the keyboard, to navigate through the file system and find the uploaded certificate.
6. Select the certificate file and press **Enter**.
7. Select **Yes**, and press **Enter**.
8. Assign an alias (as identifier) to the certificate. This will be the only way to easily search and – when applicable – delete the certificate from trust store.

9. Press **Enter**
10. Confirm (on command line) with yes or y, to trust the certificate.

Alternative to Root Certificates

It is for practical reasons not usual to have properly signed root certificates in lab environments, but it might still be necessary to verify AD authentication functionality. As long as the AD server can be directly accessed through either IP address or host name the following procedure can be used.

Do as follows:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Root certificate management**.
3. Select **Download Server Certificate by connecting to trusted host**.
4. Type server IP address or host name.
5. Type SSL port (commonly used is 636 for LDAPS).
6. Type an alias (as identifier) to the certificate. This will be the only way to easily search and – when applicable – delete the certificate from trust store.
7. Press **Enter**.
8. Follow the progress on the screen. If the connection takes very long time, e.g. because of faulty inserted IP address, you may have to press ctrl-c to interrupt. In that case the process needs to be started over again.
9. Repeat the steps from Step 3 to Step 8 for PM/SNM machine also, to download the certificate of PM/SNM local certificate to Java Trust Store.
10. Confirm (on command line) with yes or y to accept the certificate.

Search and Delete root certificates

There might be good reasons for finding root certificates in the Java trust store. If e.g. a certificate was trusted added by mistake or if in general find out what's already stored. All certificates in trust store are identified through a unique alias.

To search Java trust store and optionally delete a certificate, perform the following steps:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Root certificate management**
3. Select **Search loaded Certificates by alias**.
4. Type the full or partial alias – or all to view all stored certificates. All aliases are in lower case.
5. If any hits a result list appears.
6. To view details, select **View** and press **Type**.
7. To go back, press **Type**.
8. To delete a certificate from trust store, select **Delete**and press **Type**.
9. To confirm deletion, select **Yes** and press **Type**, or select **No**.

Configure AD Authentication

The following must be considered before AD authentication is configured:

- How shall the AD server be addressed:
  - IP address
  - Host name
  - Domain name
- Which port number is applicable for LDAPS on the AD server (default is 636)
- Is there a need to define the Base Context DN (Distinguished Name) for AD? This is equal to defining in which part of the AD the user shall be sought. Example:
  CN=Users,DC=mysubdomain,DC=mydomain,DC=org
  To search the entire AD, leave the field blank.

  NOTE: Base Context DN must have a perfect match, and it cannot be verified by any means by the PM configuration tool.
- How the user credentials shall be typed:
  - a useralias only
  - useralias@domain (also commonly known as User-Principal-Name)
- All users belong to the same domain, ourdomain.com.
- The AD server uses User-Principal-Name when authorizing users, i.e. by default the user e-mail address, e.g. jdoe@ourdomain.com.
- In the AD authentication configuration, define the Principal DN suffix as ourdomain.com.
- The users will now use the alias only, e.g. jdoe when logging in to PM.

  NOTE: If a user tries to login with jdoe@ourdomain.com, it will still be suffixed and the entire string jdoe@ourdomain.com@ourdomain.com will be sent to AD. The login will fail. The same applies if there are users with different domain names in their User-Principal-Name.
- Type the Principal DN suffix.
- Do never Type the character @. It will automatically be appended.

Do as follows:

- As root, or with sudo privileges, run the `webserver_config` command.
- Select **Configure AD authentication**.
- If AD authentication already is configured, you will be asked if you'd like to turn it off, select **No**.
- Type host name, IP address or domain name to address the AD server.
- Type the port for LDAPS on the AD server (default 636).
- Type the Base Context DN, if desired (leave blank if not).
- Type the Principal DN suffix.
- Acknowledge restart of the web server. The configuration will not take effect before a restart of the web server is done.

  NOTE: If the server not is configured for SSL/HTTPS, the AD configuration wizard will be interrupted.

AD Authentication Maintenance

This topic provides information on the managing the AD authentication settings.

Modifying AD Authentication Configuration

To modify any settings in the AD authentication configuration, such as AD server host name and port or Principal DN suffix, the procedure is basically the same as when activating it the first time.

Do as follows:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Configure AD authentication**.
3. On question Do you want to turn AD authentication off?, select **No**.
4. Modify applicable settings.
5. Accept restart of the web server. The modified configuration will not take effect before a restart of the web server is finished.

Turning AD Authentication Off

The AD authentication service can be temporarily or permanently turned off. In any case the previous settings are saved in case the service should be turned on again later.

Do as follows:

1. As root, or with sudo privileges, run the `webserver_config` command.
2. Select **Configure AD authentication**.
3. On question Do you want to turn AD authentication off? select **Yes**.
4. Accept restart of the web server. The modified configuration will not take effect before a restart of the web server is done.

Turning AD Authentication Back on

An already existing configuration of AD authentication service can be turned back on. The procedure to do this is exactly the same as when configuring AD authentication the first time, with the difference that the fields are pre-filled with previous settings. If applicable, modify the settings.

The modified configuration will not take effect before a restart of the web server is finished.

AD Authentication Scenarios

AD authentication is performed on the server where PM is installed. If no PM is in use in the MX-ONE system, only Linux accounts can be used to access SNM.

For each login attempt it is checked whether the user is:

1. Authenticated - a match between user alias and Typed password is found.
2. Authorized - the authenticated user has enough privileges.

At each login attempt it is first checked if the user can be authenticated in the PM user database. If not, an AD authentication attempt is made and if this is successful the user is authorized from PM user database.

Through this sequence it will always be possible to log in with an administrative service account in PM also if for some reason the connectivity with the AD server is lost. It is also possible to log in with a password stored in PM user database or a password connected to the user account in AD.

Figure 6.14: User authenticated and authorized in PM user database

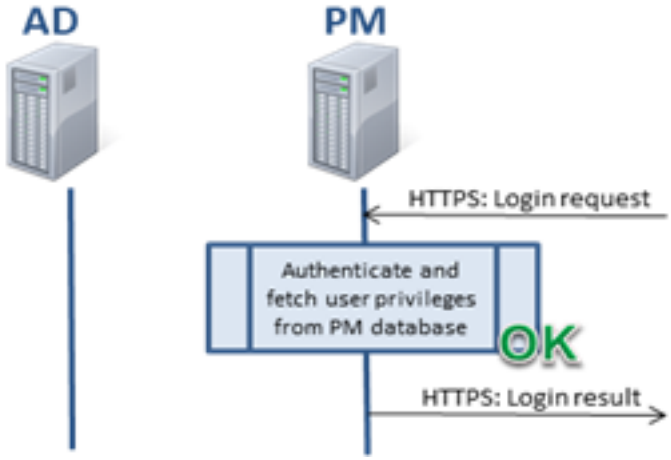


Figure 6.15: User authenticated in AD and authorized in PM user database

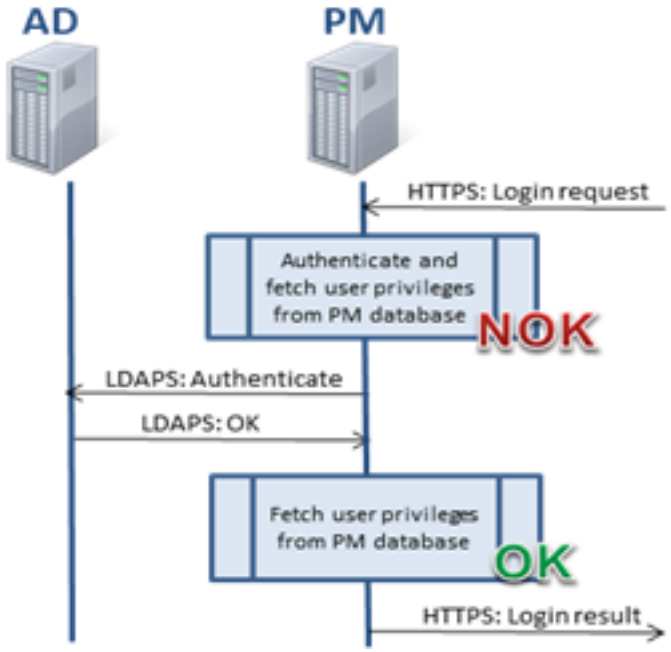
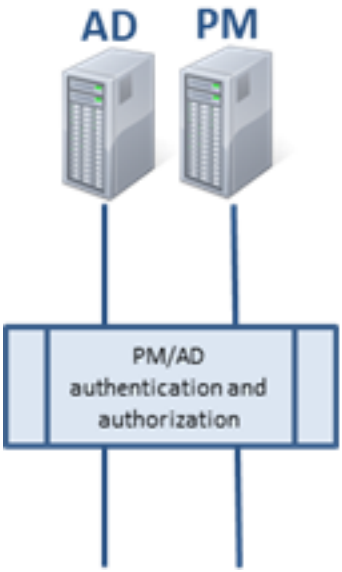
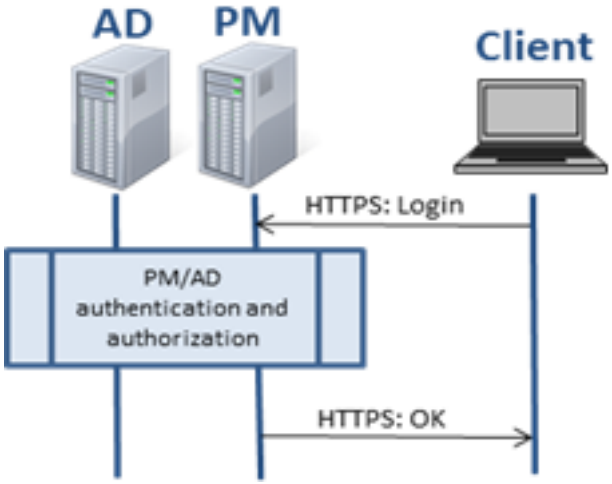


Figure 6.16: The examples above are in the following scenarios referred to as



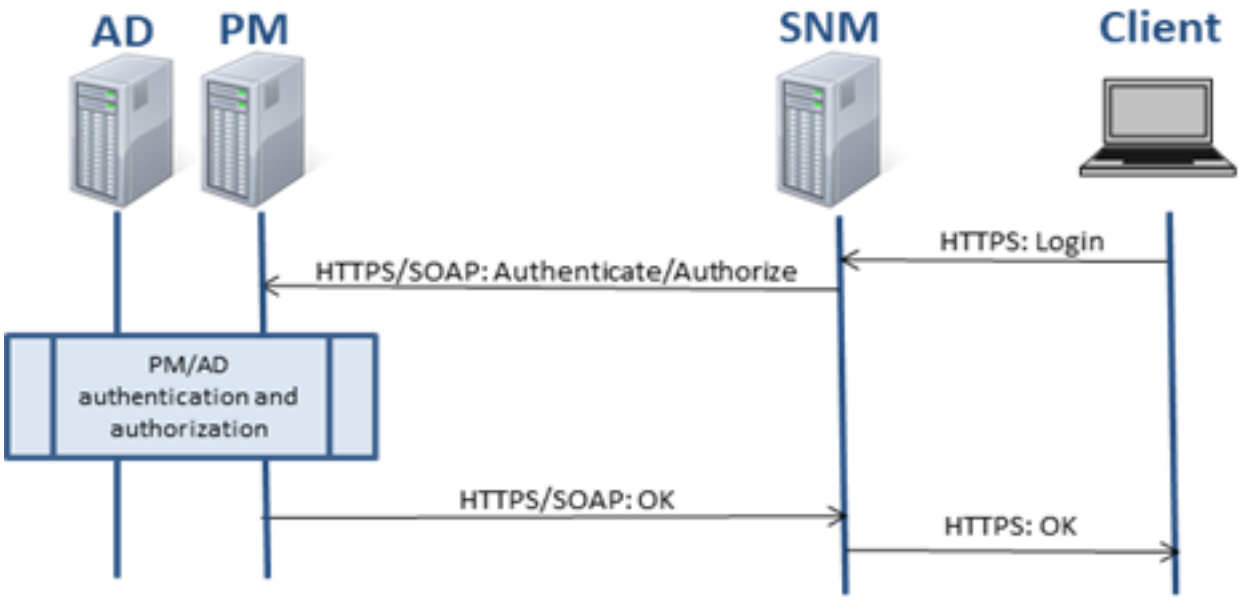
Scenario 1: PM Login

Figure 6.17: Scenario 1: PM Login



Scenario 2: SNM Login

Figure 6.18: Scenario 2: SNM Login



Scenario 3: SNM Login over HTTP

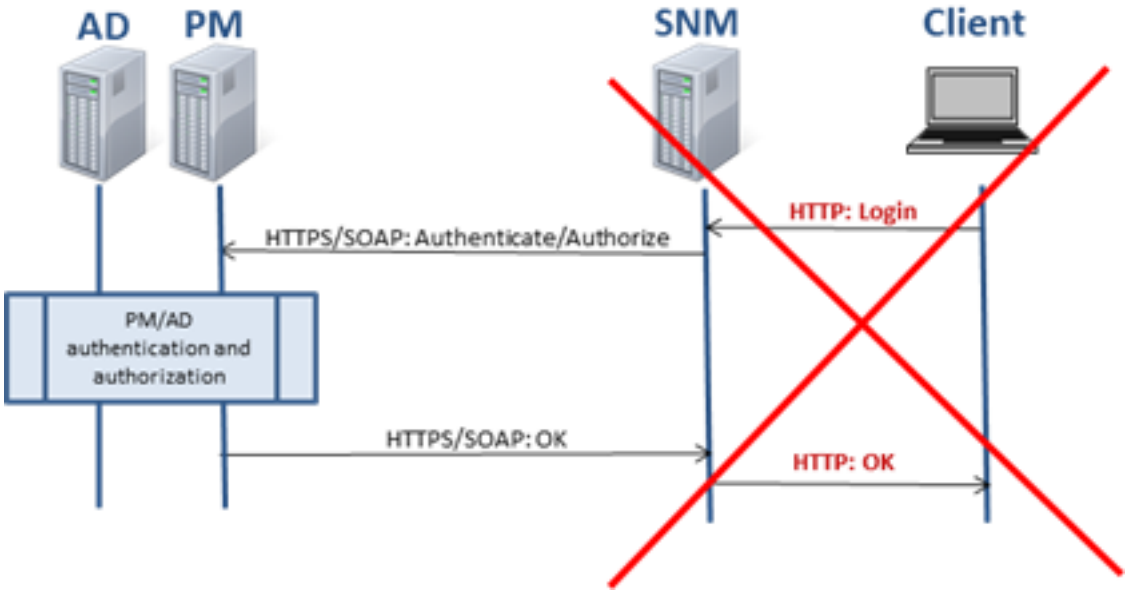
Warning! This scenario shall be avoided!

1. PM server is configured for AD authentication.
2. SNM server is configured for PM authentication.
3. SNM server is not configured for SSL.

There is no built in mechanisms to control that SNM systems have been configured to use an PM as authentication server. Therefore it is important that the system administrator makes sure to configure all involved components in the network homogeneously.

The risk is that users get used to log in with AD credentials which basically requires SSL. If the user now connects directly to an SNM system without SSL, it is highly possible that the user still types AD credentials and the user alias and password may be exposed in the network.

Figure 6.19: Scenario 3: SNM Login over HTTP



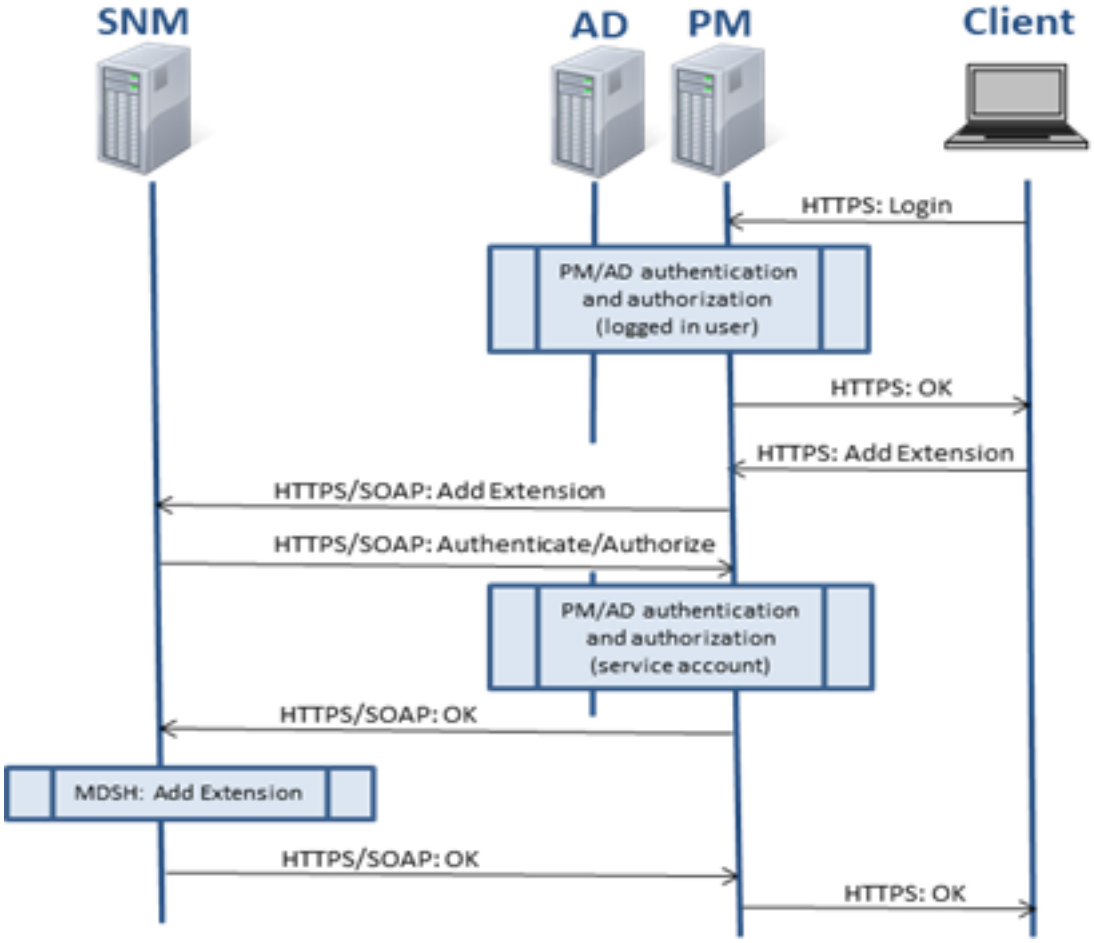
Scenario 4: PM Login + use case 'Add Extension'

A user that logs in to PM will get the privileges he/she is entitled according to the configuration. However, when executing things that requires access to the connected subsystem (SNM server) another account will be used for authentication in the background web services involved. This is referred to as the subsystem "service account".

The service account is the one defined when the subsystem was created. It is a separate account and should not be mixed up with normal accounts. The privileges for the service account must be set "high enough" to serve all end users and administrators.

- **NOTE:** Despite that the "service account" is configured with privileges on a high level, it will not enable any extra features for the logged in PM user.
- It is recommended that the "service account" is created for PM authentication only, and not as an AD user account. Implicit actions in the PM application that require use of the subsystem "service account" will render a lot of authentication requests. It is therefore more efficient to avoid AD authentication.

Figure 6.20: Scenario 4: PM Login + use case 'Add Extension'

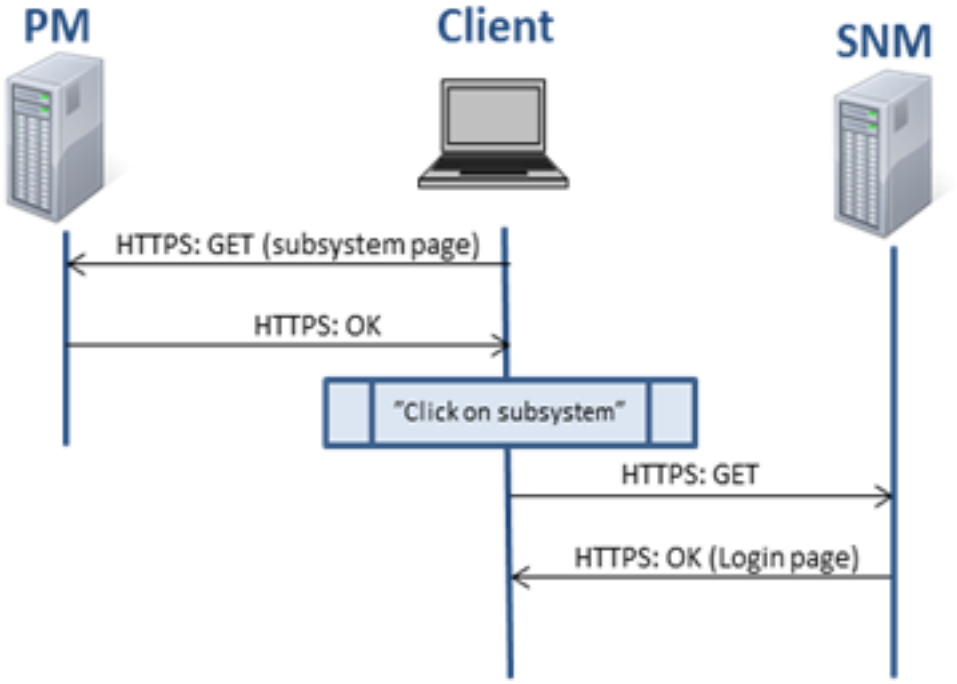


Scenario 5: In PM "click on subsystem"

PM holds a list of connected "subsystems". It is possible to click on the hyper links to log in to each subsystem. This may result in an automatic log in depending on the configuration.

The behavior for click on subsystem of type SNM is changed when using AD authentication. The automatic login is disabled. Instead the login page for the SNM will be launched. If the SNM server is configured for PM authentication, the same credentials can be used as when logging in to PM.

Figure 6.21: Scenario 5: In PM “click on subsystem”



Fault Cases / Exceptions

Table 6.1: Fault Cases / Exceptions

Fault / Exception	Resulting in	Comments
Server is configured for HTTP (no SSL)	AD authentication will be automatically disabled	Administrator will be notified during the configuration
Wrong password is used in existing or uploaded server certificate	SSL traffic will not work Not possible to even load the web page	The reason will be seen in Jboss server.log as: Error starting endpointjava.io.IOException: failed to decrypt safe contents entry
Root certificate for AD server or (when applicable) domain is missing	All communication over LDAPS with AD server will fail Not possible to log in	The reason will be seen in Jboss server.log as: Message: Exception caught during login: Password Incorrect/Password Required

Configuration of AD LDS, User Guide

Introduction

General Introduction to AD LDS in MiVoice MX-ONE 6.x

Active Directory Lightweight Directory Services (AD LDS) role, is formerly known as Active Directory Application Mode (ADAM). Any user can provide directory services for directory-enabled applications without incurring the overhead of domains and forests and the requirements of a single schema throughout a forest.

It is a Lightweight Directory Access Protocol (LDAP) directory service that provides data storage and retrieval support for directory-enabled applications, without the dependencies that are required for the Active Directory Domain Services (AD DS). You can run multiple instances of AD LDS concurrently on a single computer, with an independently managed schema for each AD LDS instance.

About this guide

This guide describes the processes for setting up AD LDS and getting it running. You can use the procedures in this guide to configure AD LDS on servers that are running the Windows Server® 2012 operating system.

Requirements

Before you start using the procedures in this guide, do the following:

1. Check the availability of at least one test computer on which you can install AD LDS.
2. Log on to Windows Server 2008 with an administrator account.

Steps for Getting Started with AD LDS

The following sections provide step-by-step instructions for setting up AD LDS. These sections provide both graphical user interface (GUI) and command-line methods for configuration setup of AD LDS.

1. Enabling AD LDS in Windows Server
2. Creating AD LDS Instance
3. Restarting the AD LDS Instance
4. Creating an Admin User in AD LDS
5. Checking User authentication
6. Adding Attributes to UserProxyFull Class
7. Editing UserProxyFull Object Class as User Object class

8. Modifying MS-AdamSyncConf File
9. Synchronizing Users from Active Directory to AD LDS Instance
10. Checking Synchronized Users in ADLDS
11. Enabling LDAPS (SSL) for AD LDS
12. Using AD LDS as a User repository in Provisioning Manager (PM) Application
13. Uninstalling of AD LDS Instance and AD LDS Roles from Server

NOTE: To maximize your chances of successfully completing the objectives of this guide, it is important that you follow the steps in this guide in the order in which they are presented.

Prerequisite

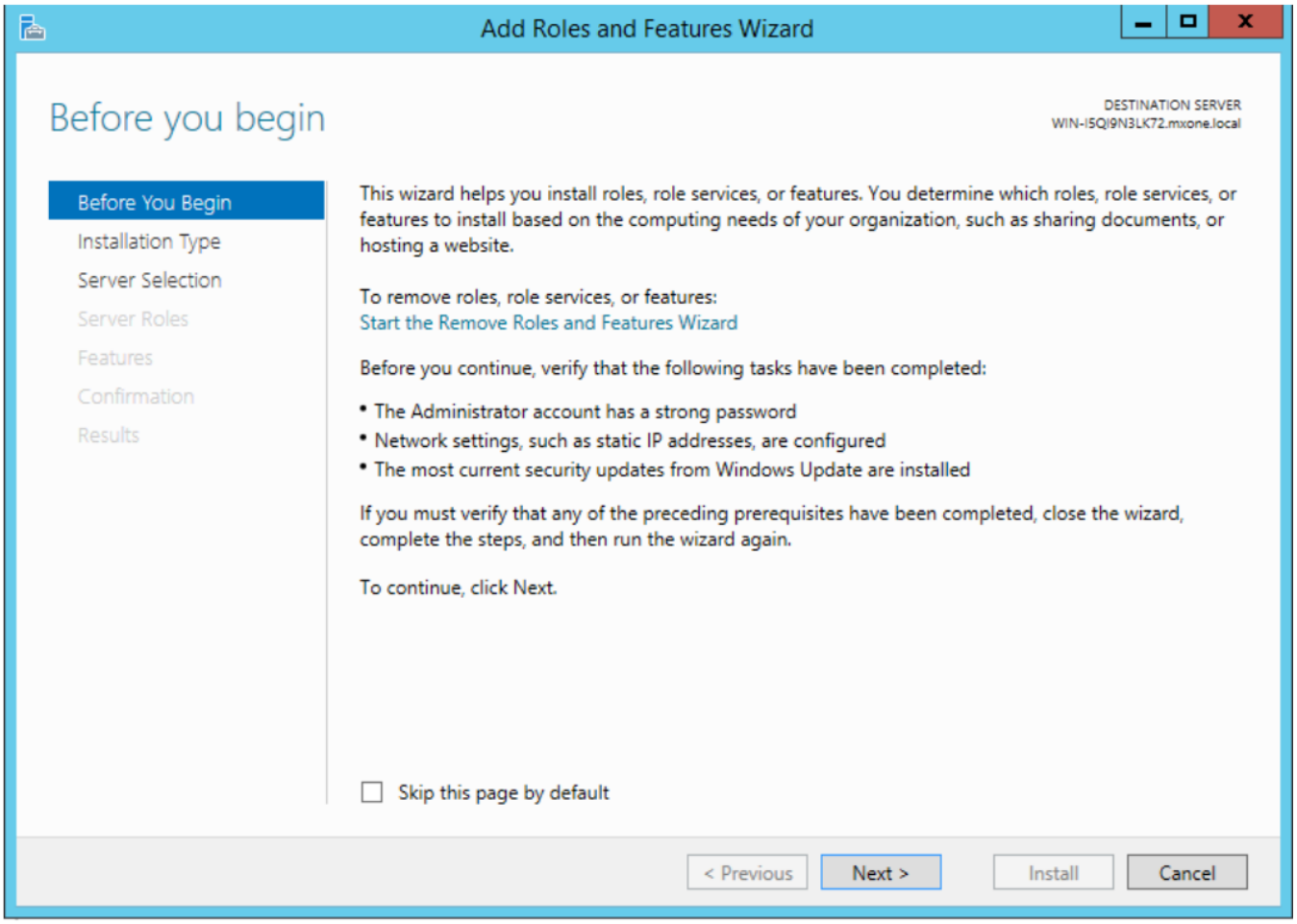
AD LDS server should be a part of Active Directory Domain, so that users can login into AD LDS server using their respective User IDs and Passwords from active directory. User display name and User ID must be same in Active Directory created for all users.

Enabling AD LDS in Windows Server

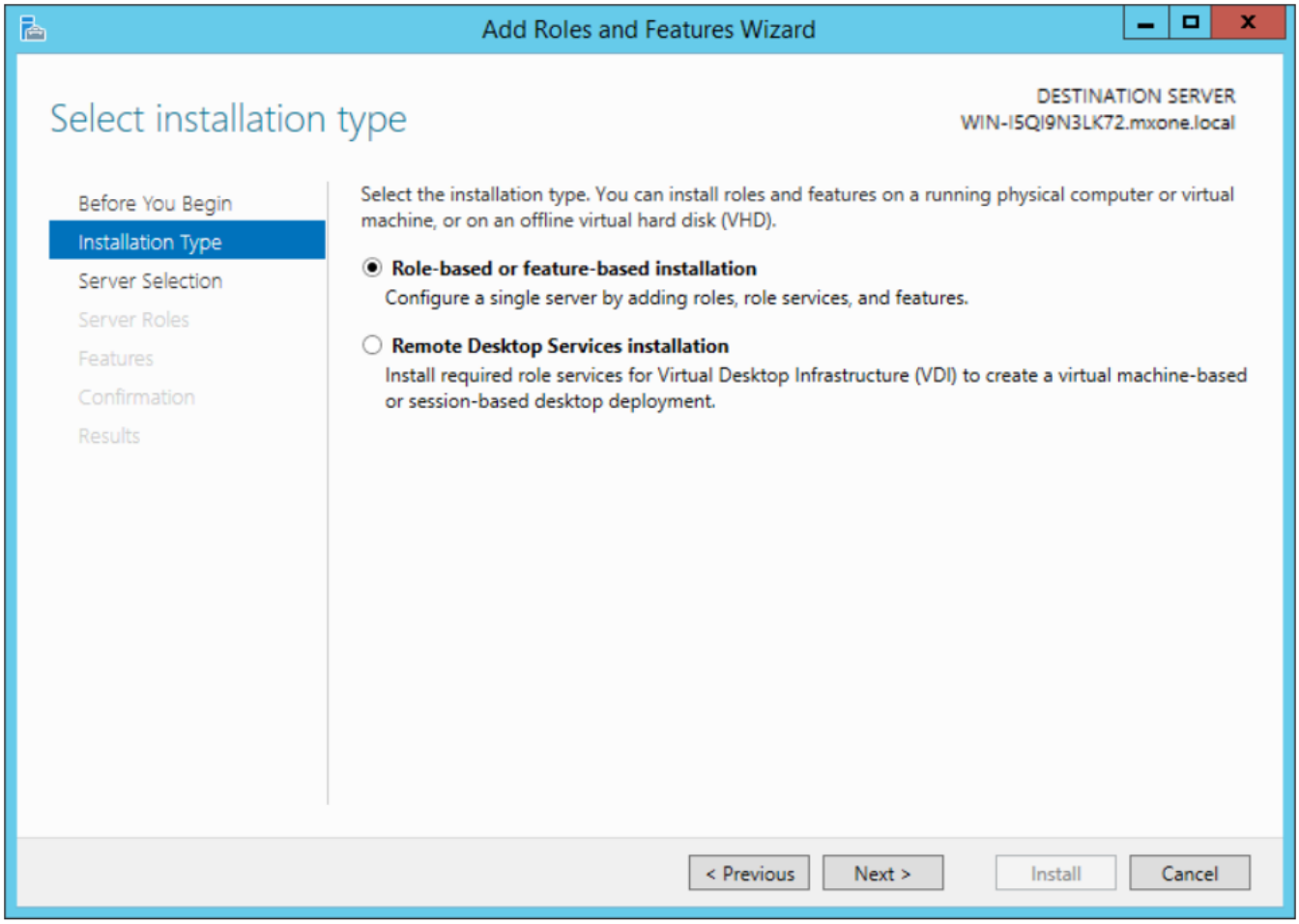
If any of the organization wants to use AD LDS as a proxy to AD Server, then they can follow this document to enable AD LDS as a proxy server.

To enable AD LDS in Window Server, do the following:

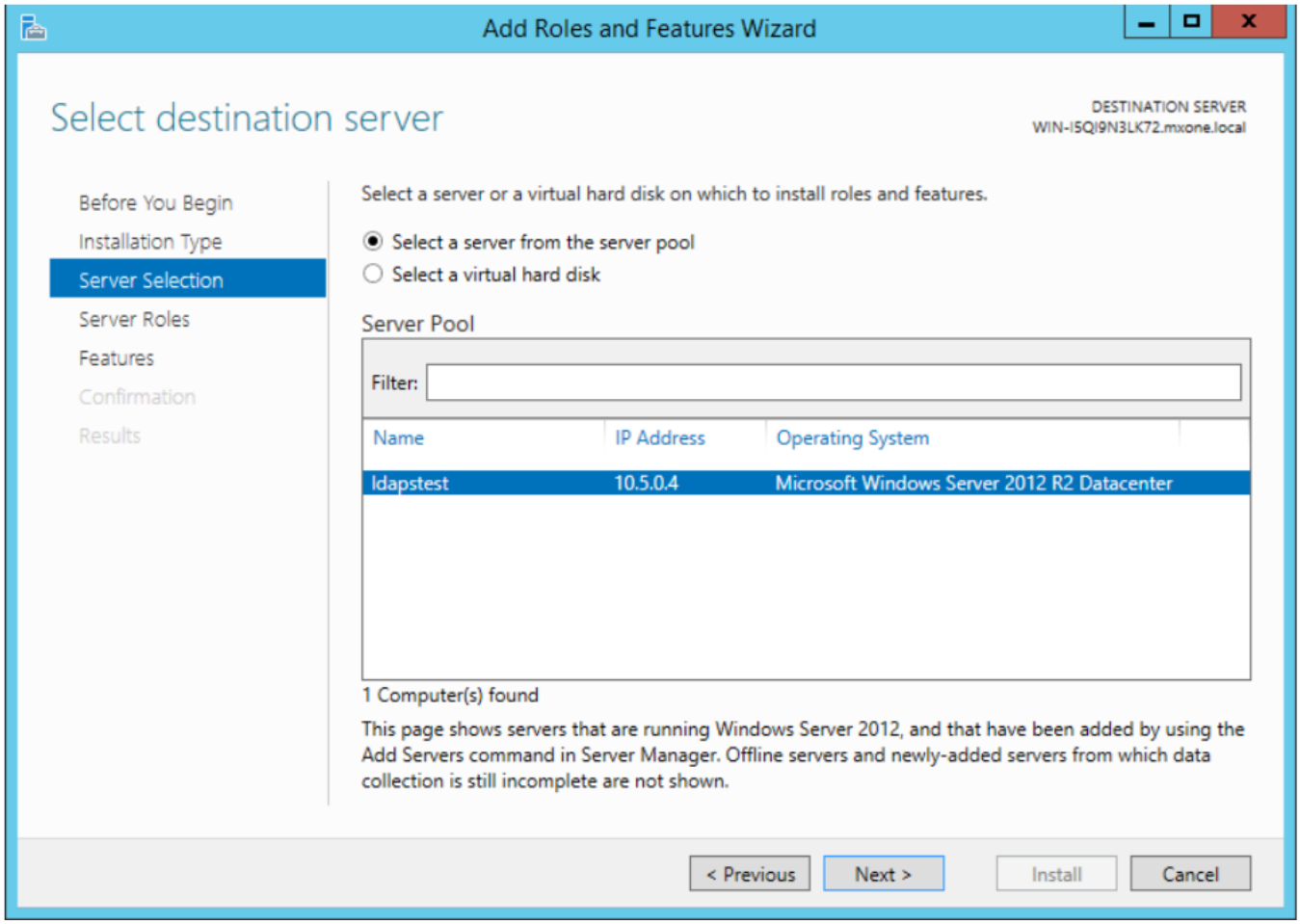
1. Click **Start**, and then click **Server Manager**. You can do this from Task Bar or from **Start**/ **Administrative Tools** menu.
2. Select the **Server Manager**> **Add Roles and Features**. Click **Next**. The following screen appears.



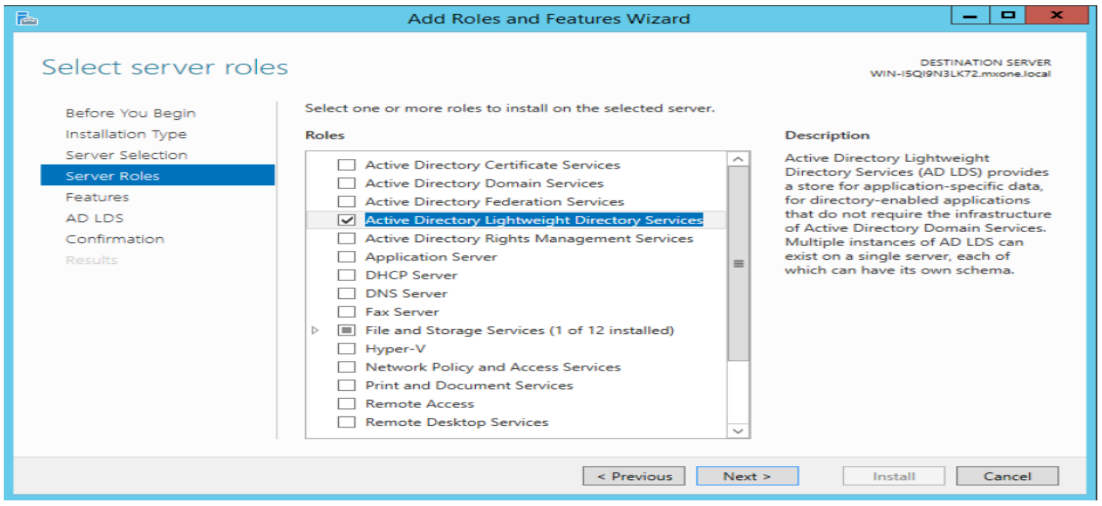
3. Choose**Role-based or feature-based installation**. Click **Next**.


Add Roles and Features Wizard
Select installation type
DESTINATION SERVER
WIN-I5QI9N3LK72.mxone.local
Before You Begin
Installation Type
Server Selection
Server Roles
Features
Confirmation
Results
Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).
Role-based or feature-based installation
Configure a single server by adding roles, role services, and features.
Remote Desktop Services installation
Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.
< Previous
Next >
Install
Cancel

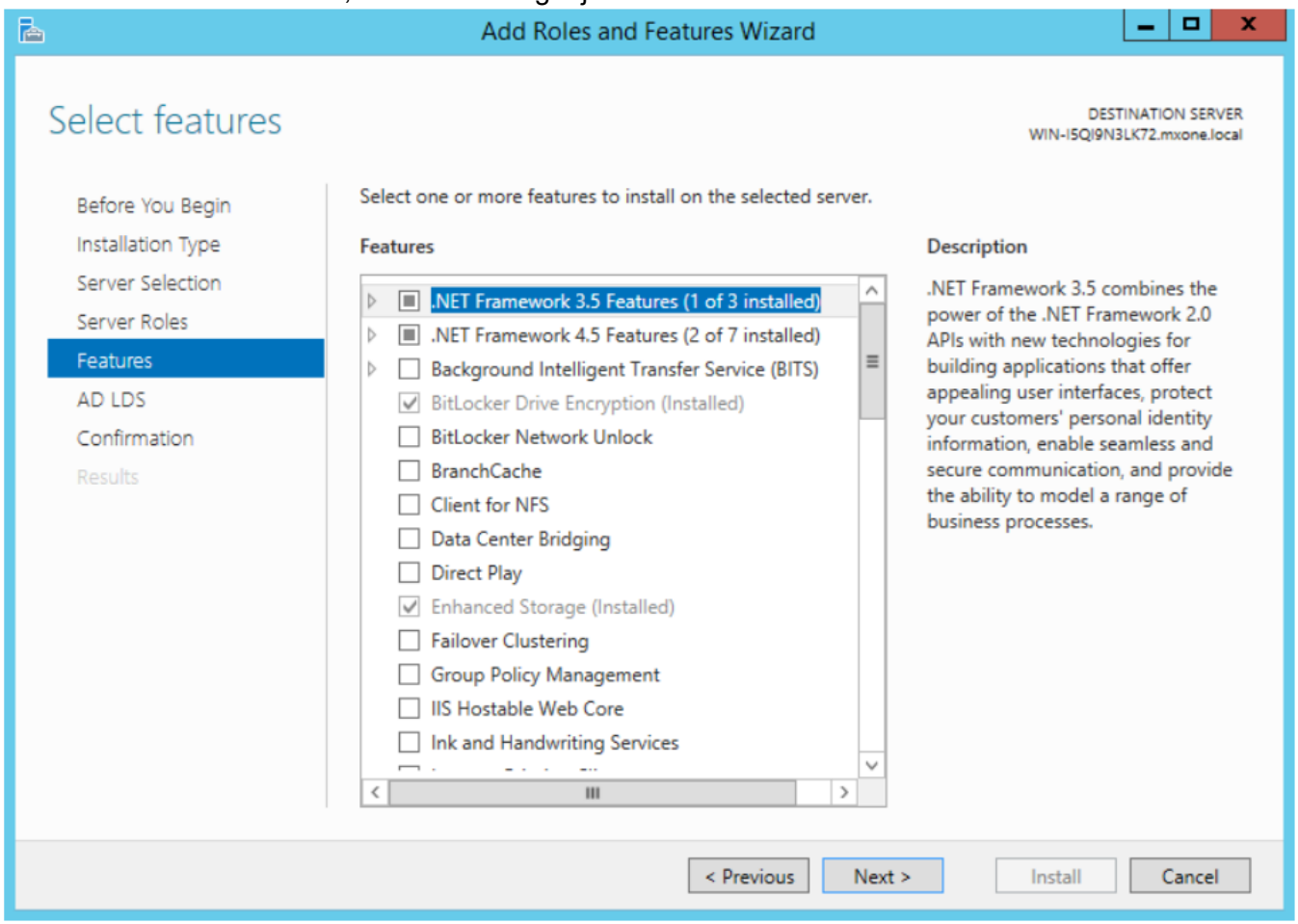
4. Select **ldapstest** server from the server pool. Click **Next**



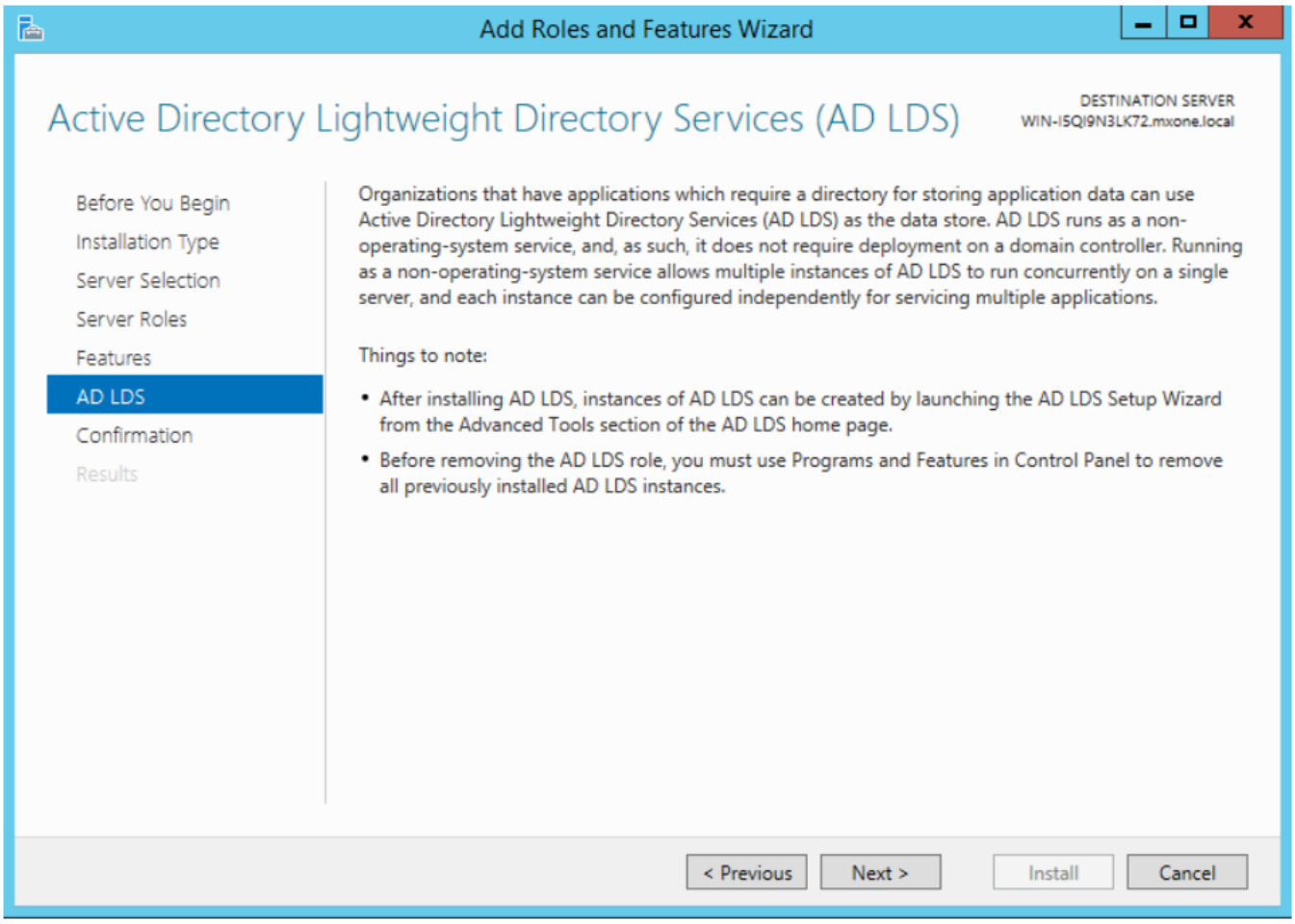
5. Mark **Active Directory Lightweight Directory Services** from the list of roles and click **Next**.



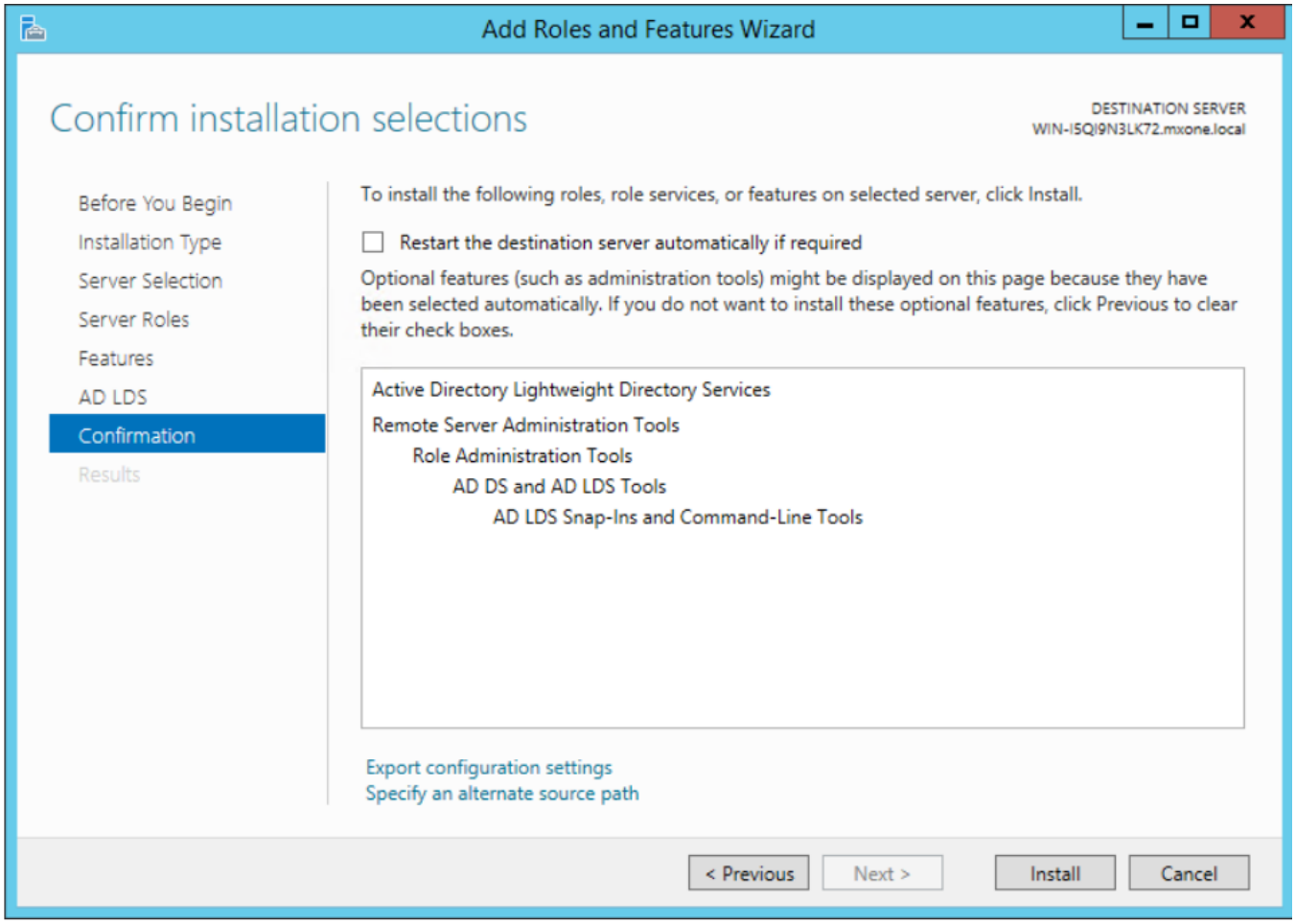
6. From the list of features, choose nothing – just click **Next**



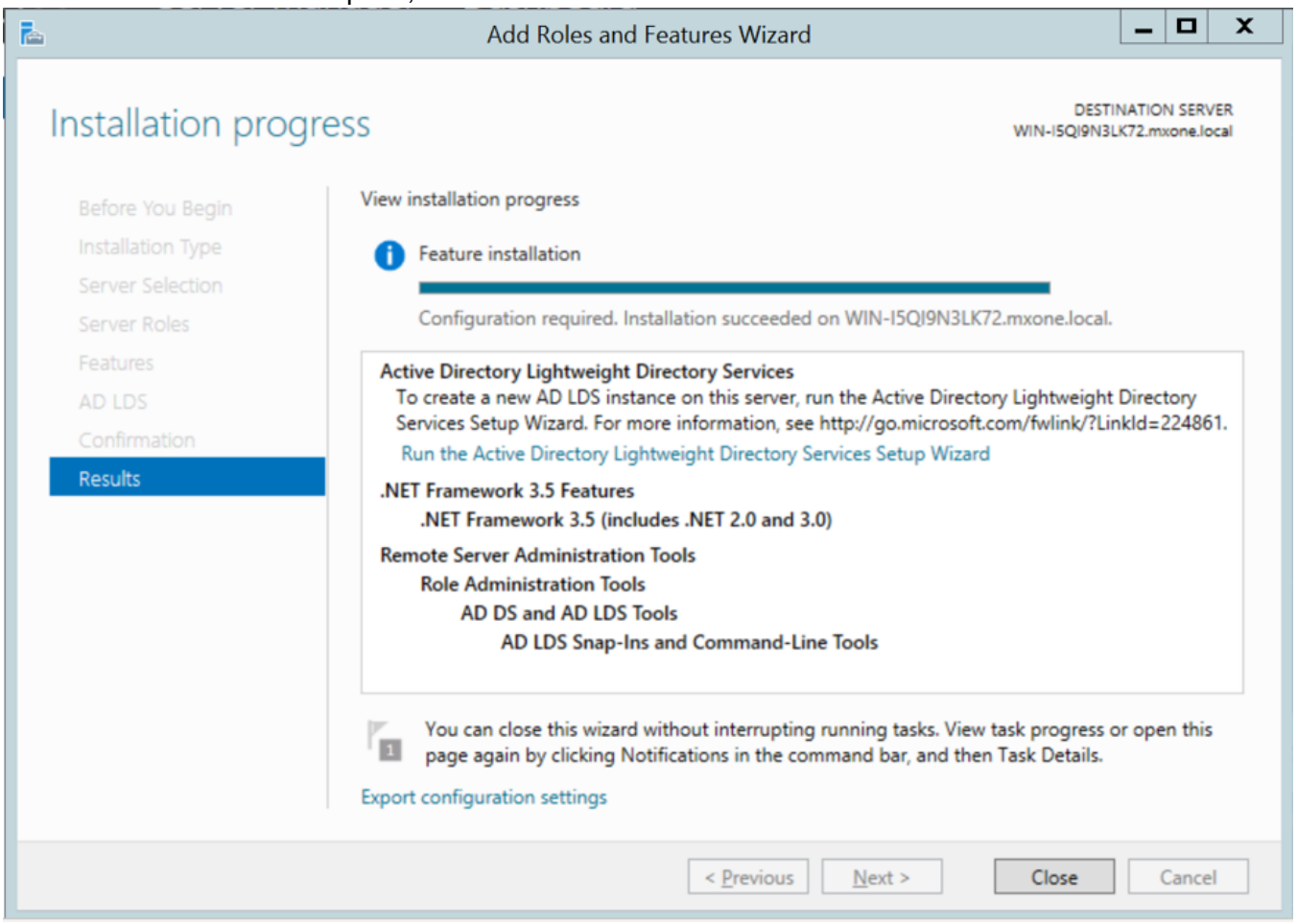
7. click **Next**.


Add Roles and Features Wizard
Active Directory Lightweight Directory Services (AD LDS)
DESTINATION SERVER
WIN-I5QI9N3LK72.mxone.local
Before You Begin
Installation Type
Server Selection
Server Roles
Features
AD LDS
Confirmation
Results
Organizations that have applications which require a directory for storing application data can use Active Directory Lightweight Directory Services (AD LDS) as the data store. AD LDS runs as a non-operating-system service, and, as such, it does not require deployment on a domain controller. Running as a non-operating-system service allows multiple instances of AD LDS to run concurrently on a single server, and each instance can be configured independently for servicing multiple applications.
Things to note:
After installing AD LDS, instances of AD LDS can be created by launching the AD LDS Setup Wizard from the Advanced Tools section of the AD LDS home page.
Before removing the AD LDS role, you must use Programs and Features in Control Panel to remove all previously installed AD LDS instances.
< Previous
Next >
Install
Cancel

8. Click **Install** to start installation.

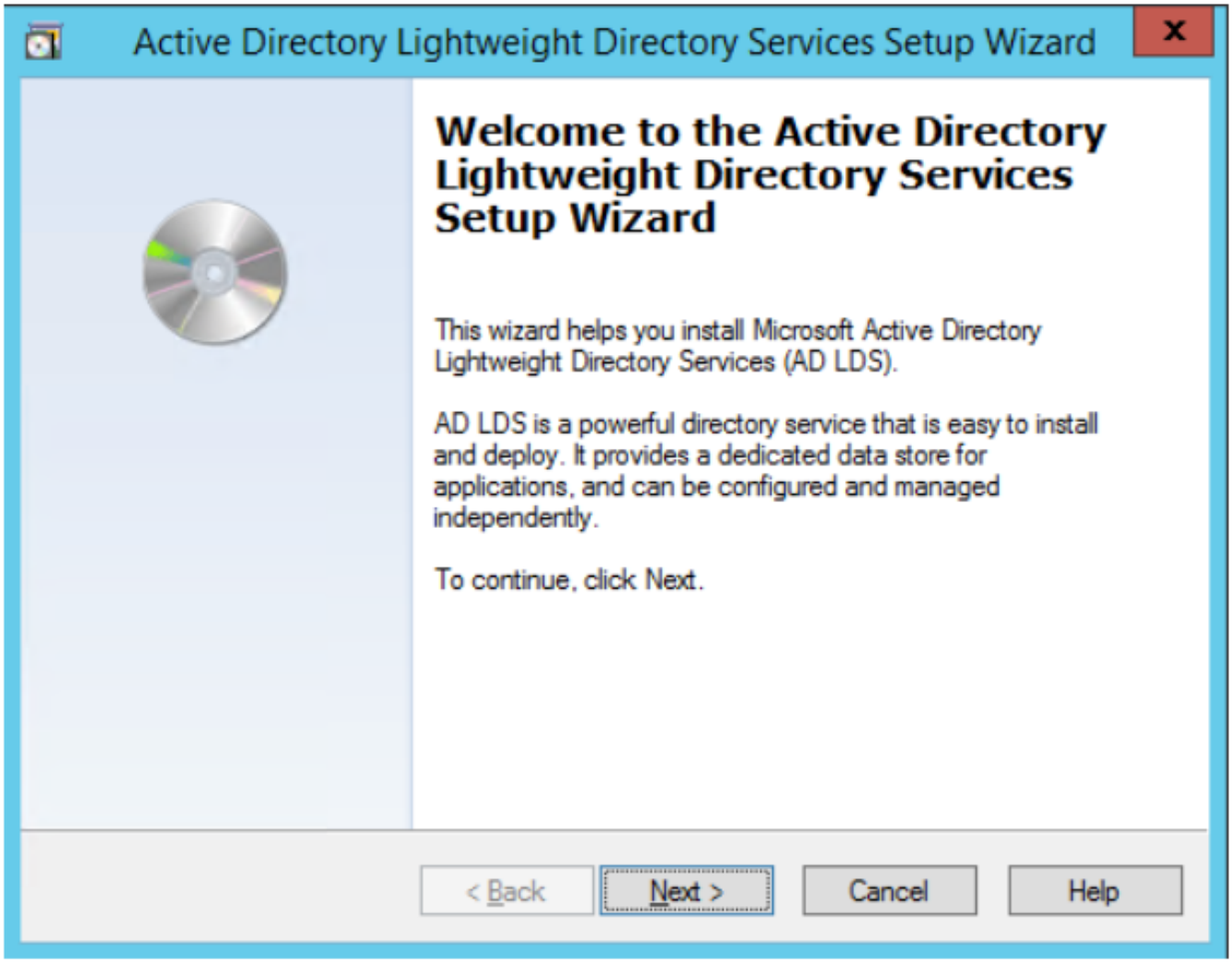


9. Once installation is complete, click **Close**.



10. **NOTE:** AD LDS Role is successfully set up. Create a new AD LDS Instance as “Instance1” using the wizard.

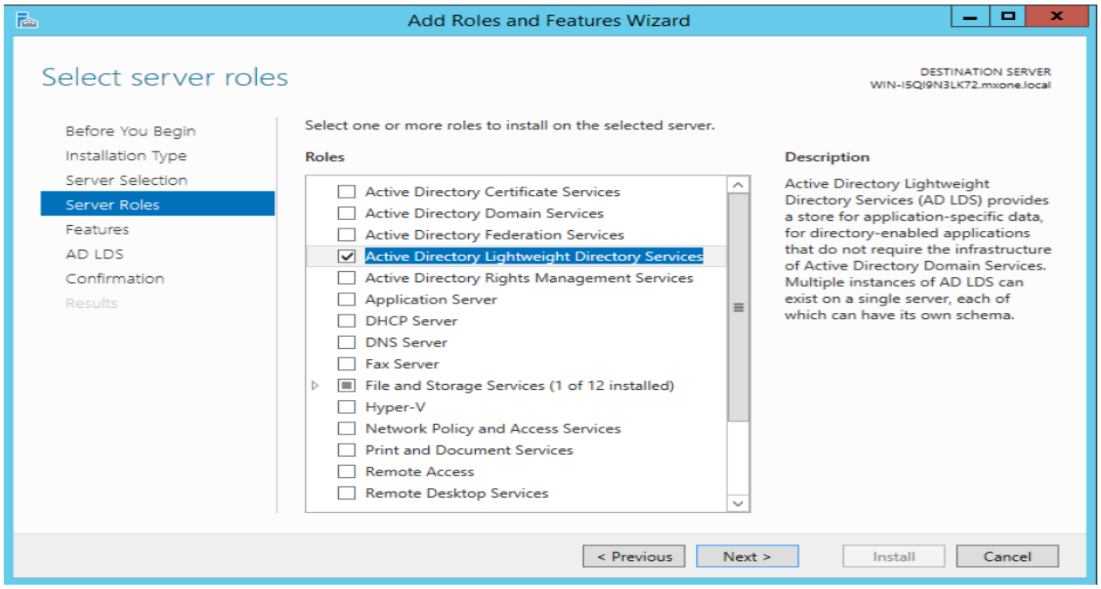
11. Click the Run the **Active Directory Lightweight Directory Services Setup Wizard** shown in the above screen. And then click **Close**.



NOTE: This entire procedure implemented and documented based on Windows 2012 edition.

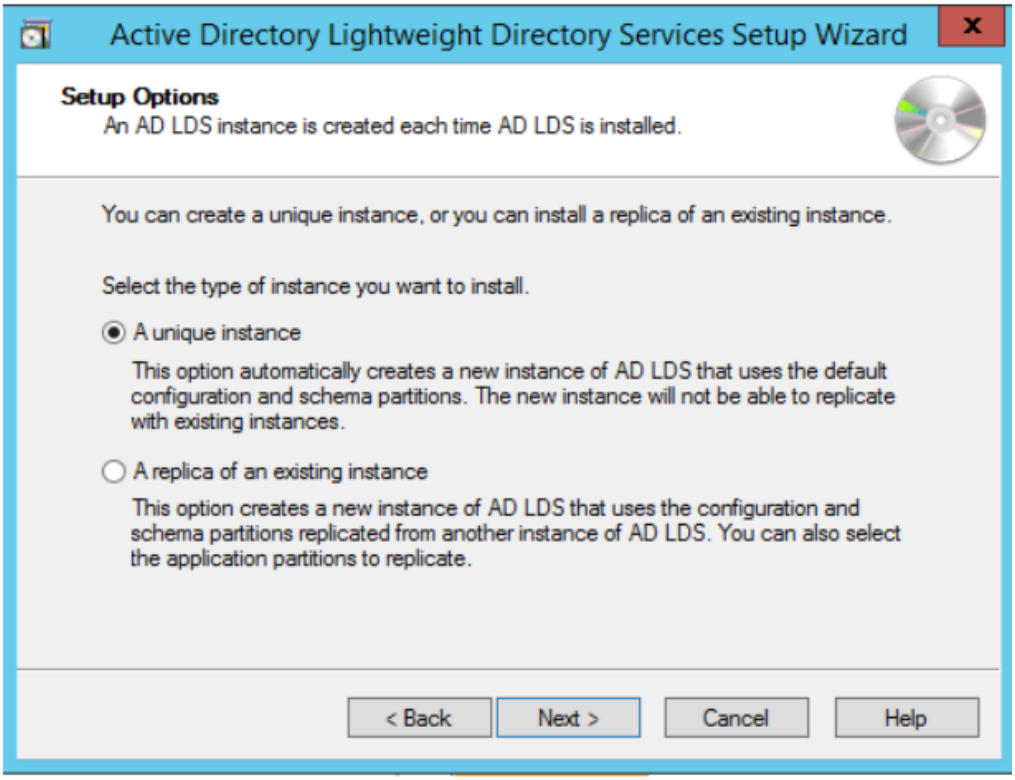
Creating AD LDS Instance

1. Open **Server Manager**.
2. In the Console tree, select **Roles**> select **Active Directory Lightweight Directory Services** from **Roles Summary** section.

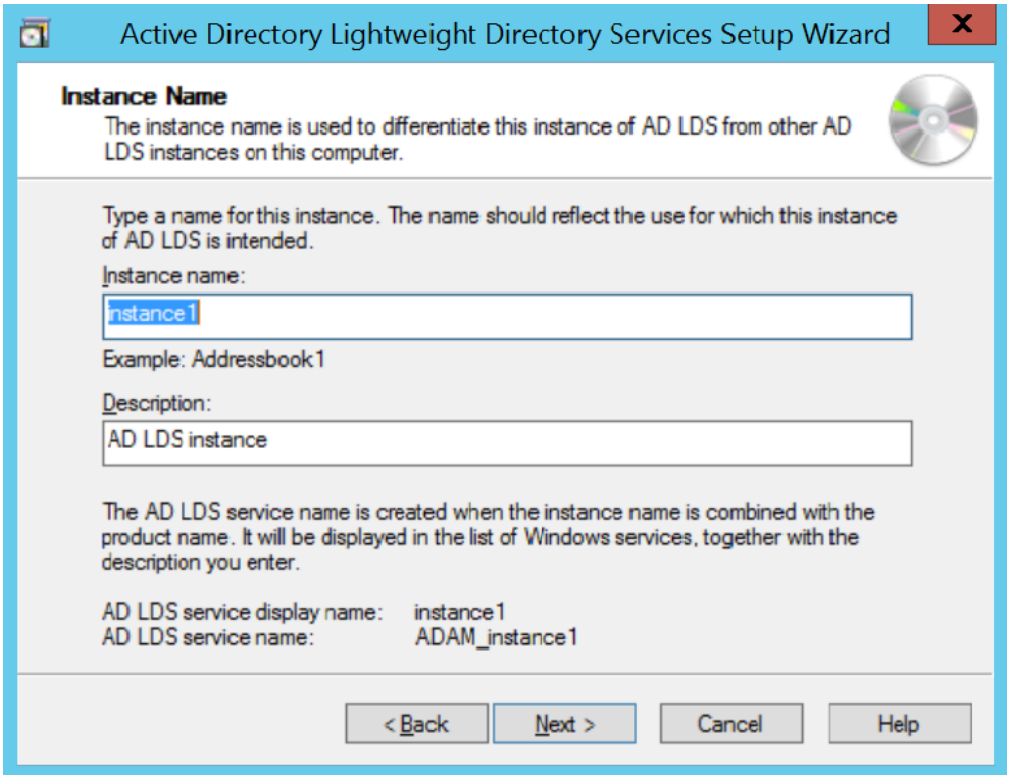


3. Click **Next**> **Next**...until the AD LDS Role is successfully setup. Refer the step 10 and 11 of Enabling AD LDS in Windows Server.

4. Select A unique instance displayed in the **Setup Options**. Click **Next**.

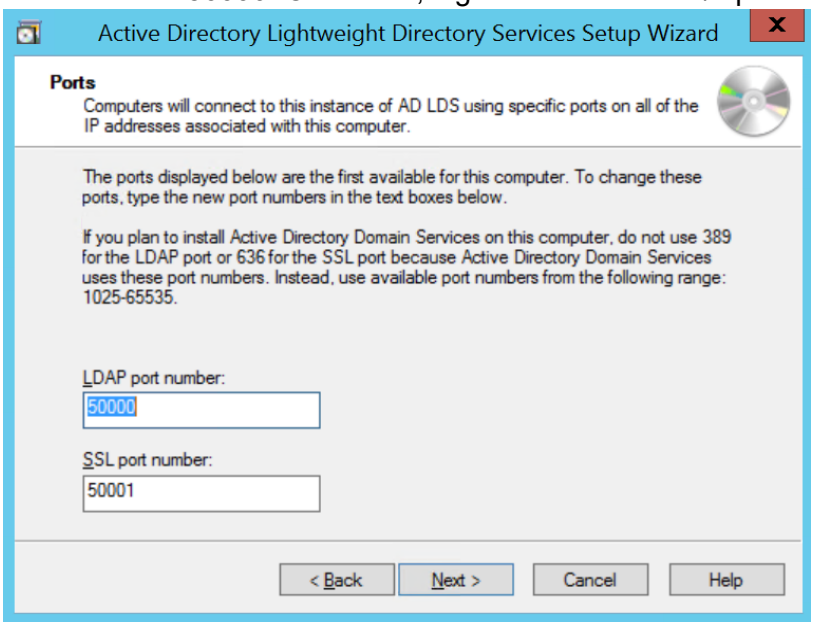


5. Enter the **Instance name** and **Description**. Click **Next**.

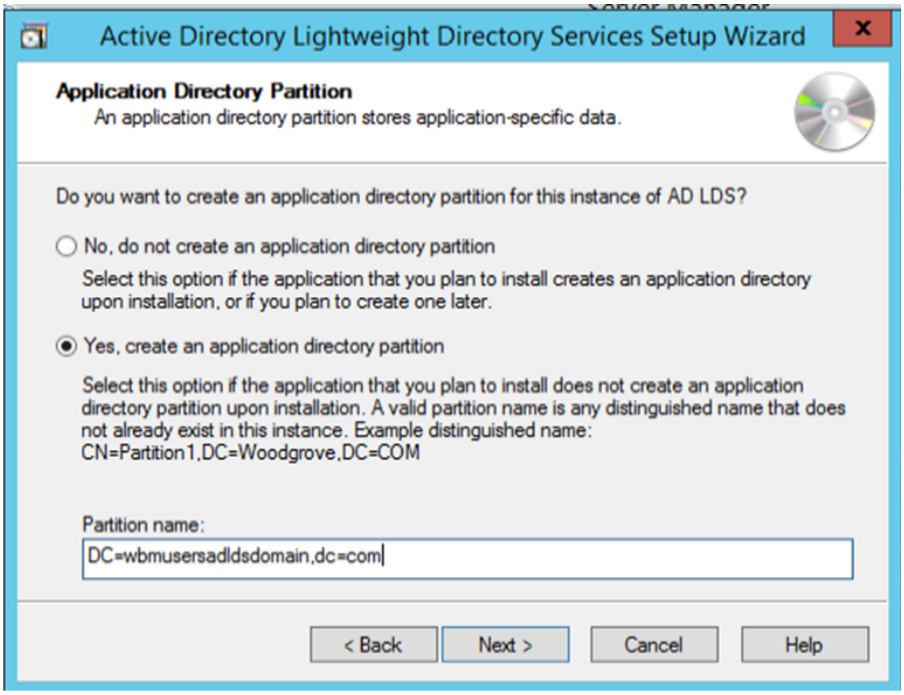


6. Enter the **LDAP port number** and LDAPS **SSL port number** that should be accessed from other applications to AD LDS; Or,
7. Click Next and continue with default ports.

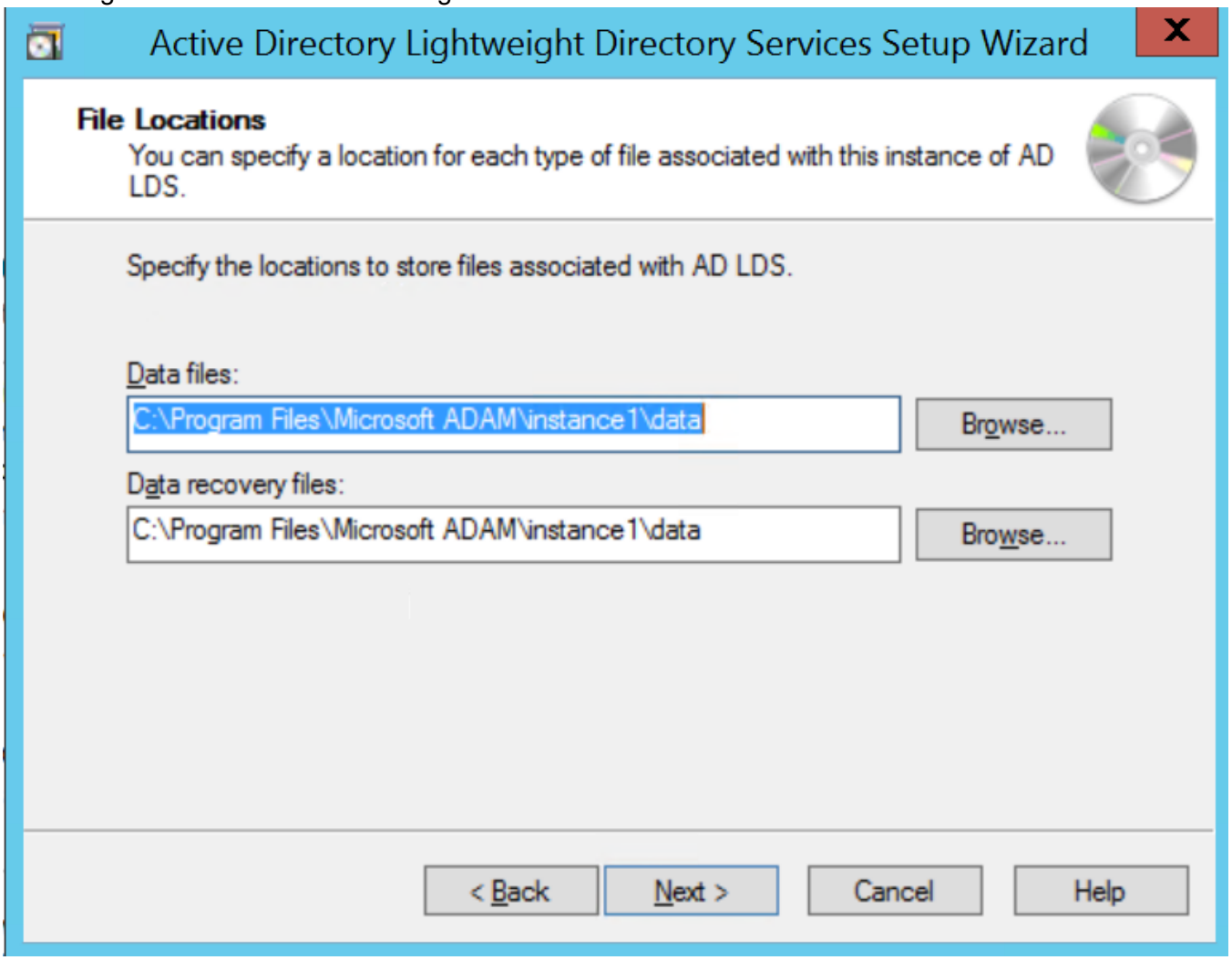
   NOTE: If you are installing AD LDS in the same server where Active Directory is installed, then it changes the port series from 50000. Otherwise, it gives default LDAP/s port such as 389, 636.



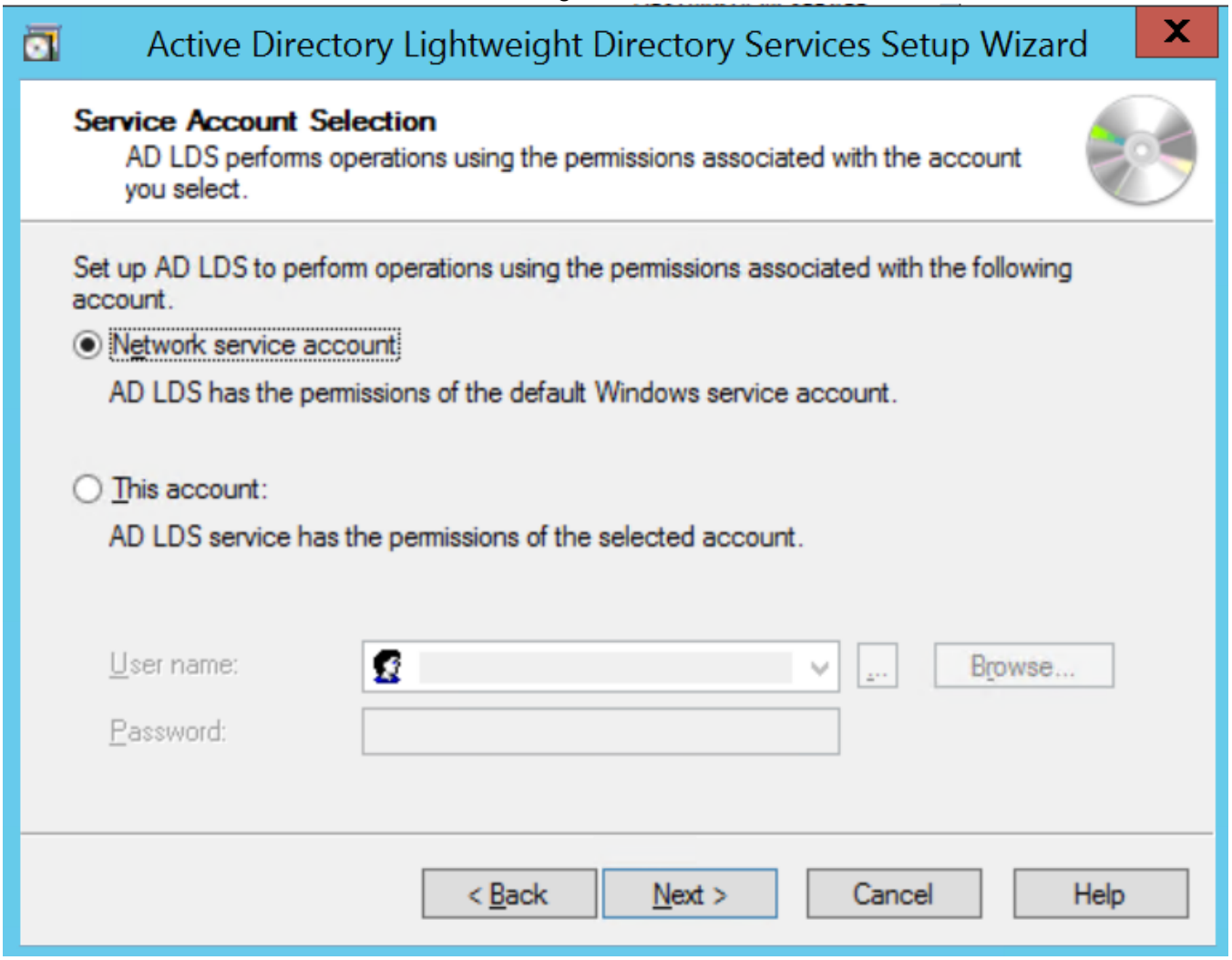
8. Select **Yes**, create and application directory partition and enter the Partition name. Click **Next**.


Active Directory Lightweight Directory Services Setup Wizard
Application Directory Partition
An application directory partition stores application-specific data.
Do you want to create an application directory partition for this instance of AD LDS?
No, do not create an application directory partition
Select this option if the application that you plan to install creates an application directory upon installation, or if you plan to create one later.
Yes, create an application directory partition
Select this option if the application that you plan to install does not create an application directory partition upon installation. A valid partition name is any distinguished name that does not already exist in this instance. Example distinguished name:
CN=Partition1,DC=Woodgrove,DC=COM
Partition name:
DC=wbmusersadldsdomain,dc=com
< Back
Next >
Cancel
Help

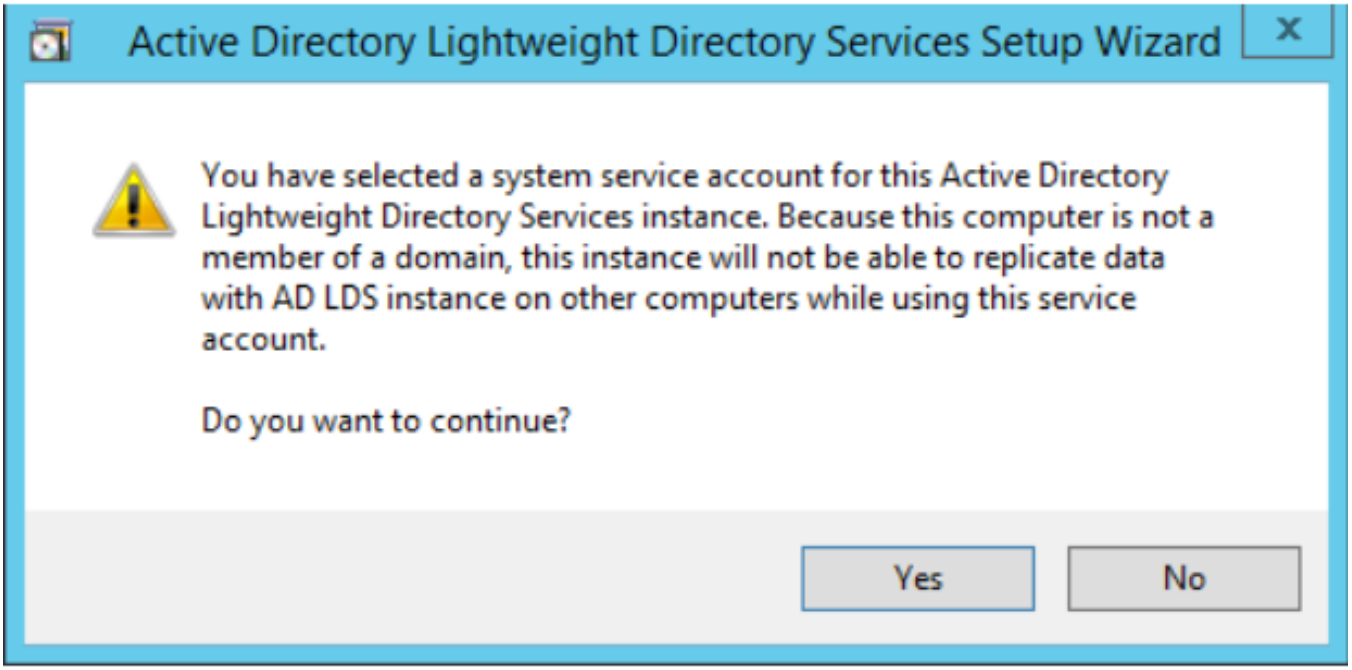
9. Using the default values for storage location of ADLDS files. Click **Next**.



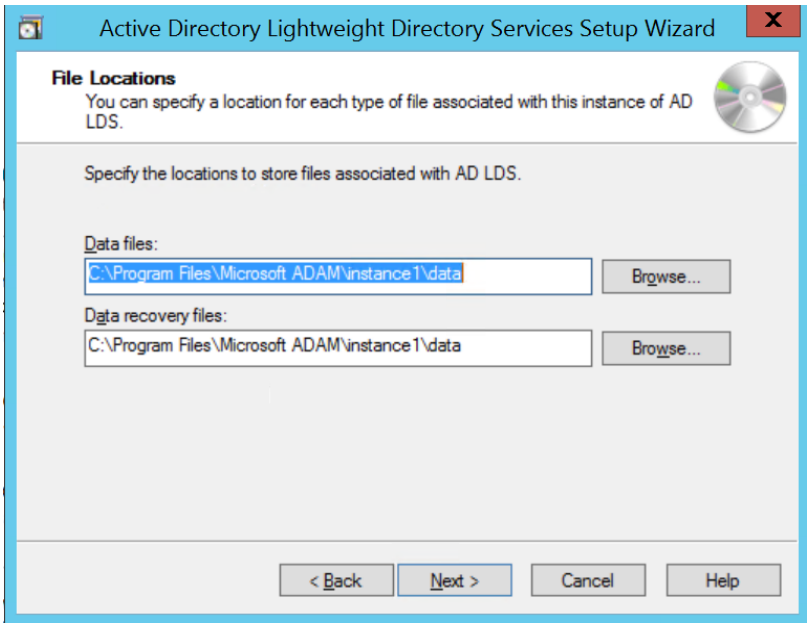
10. Choose Network service account for running the AD LDS Service.



11. You will receive a prompt warning about data replication. Since you are using a single LDAP Server, click **Yes**.

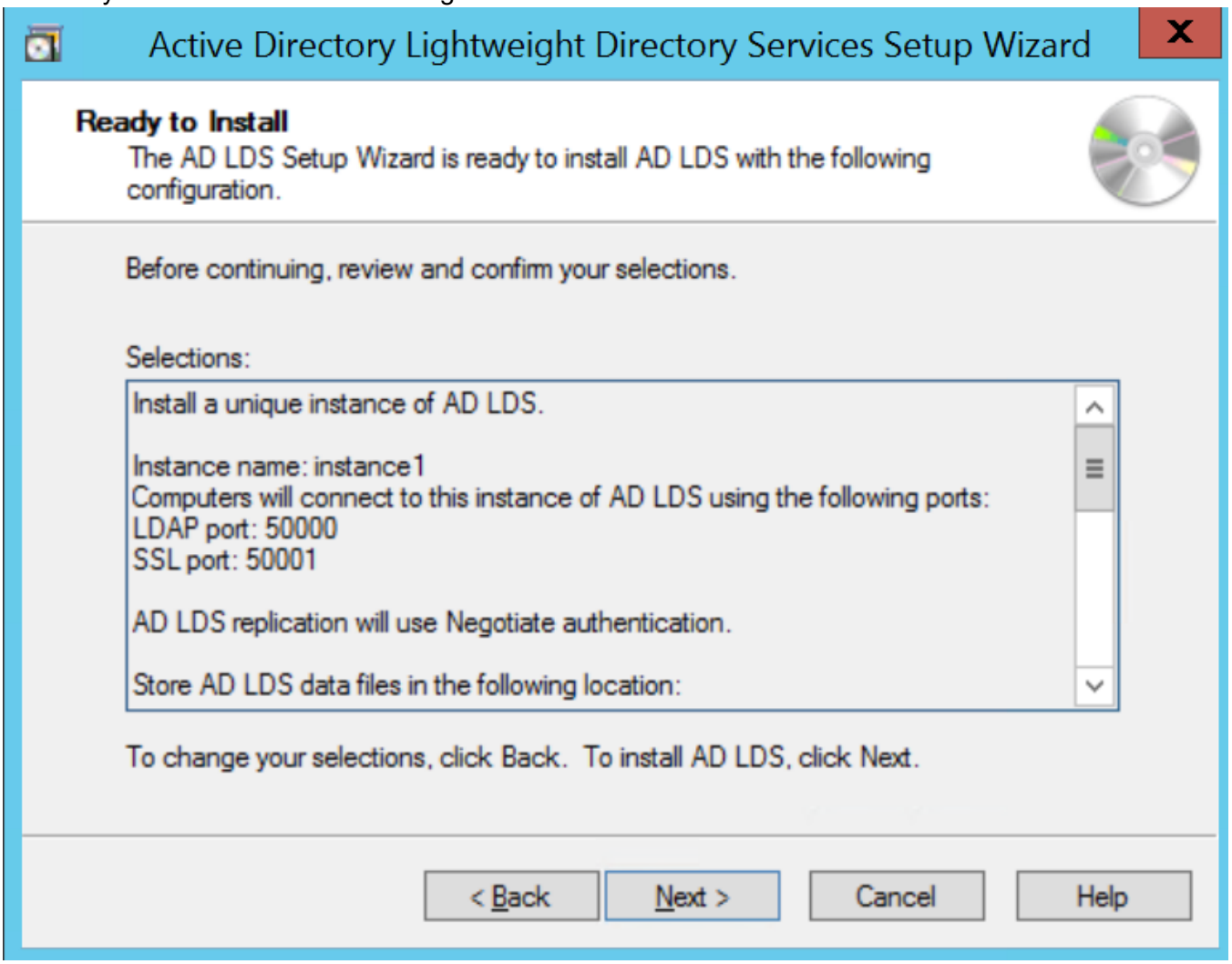


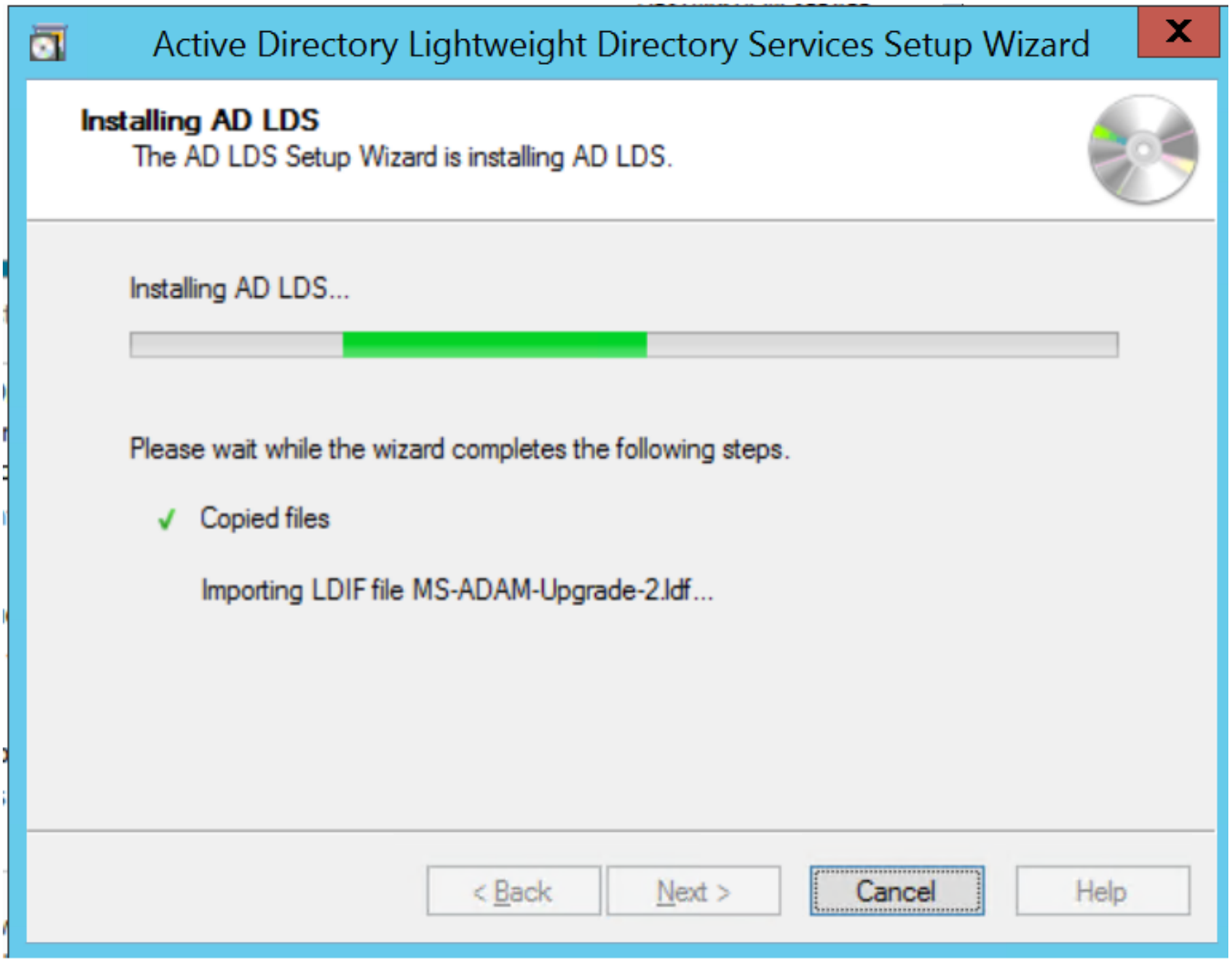
12. Select the below 3 LDF files from the Importing LDIF Files window.



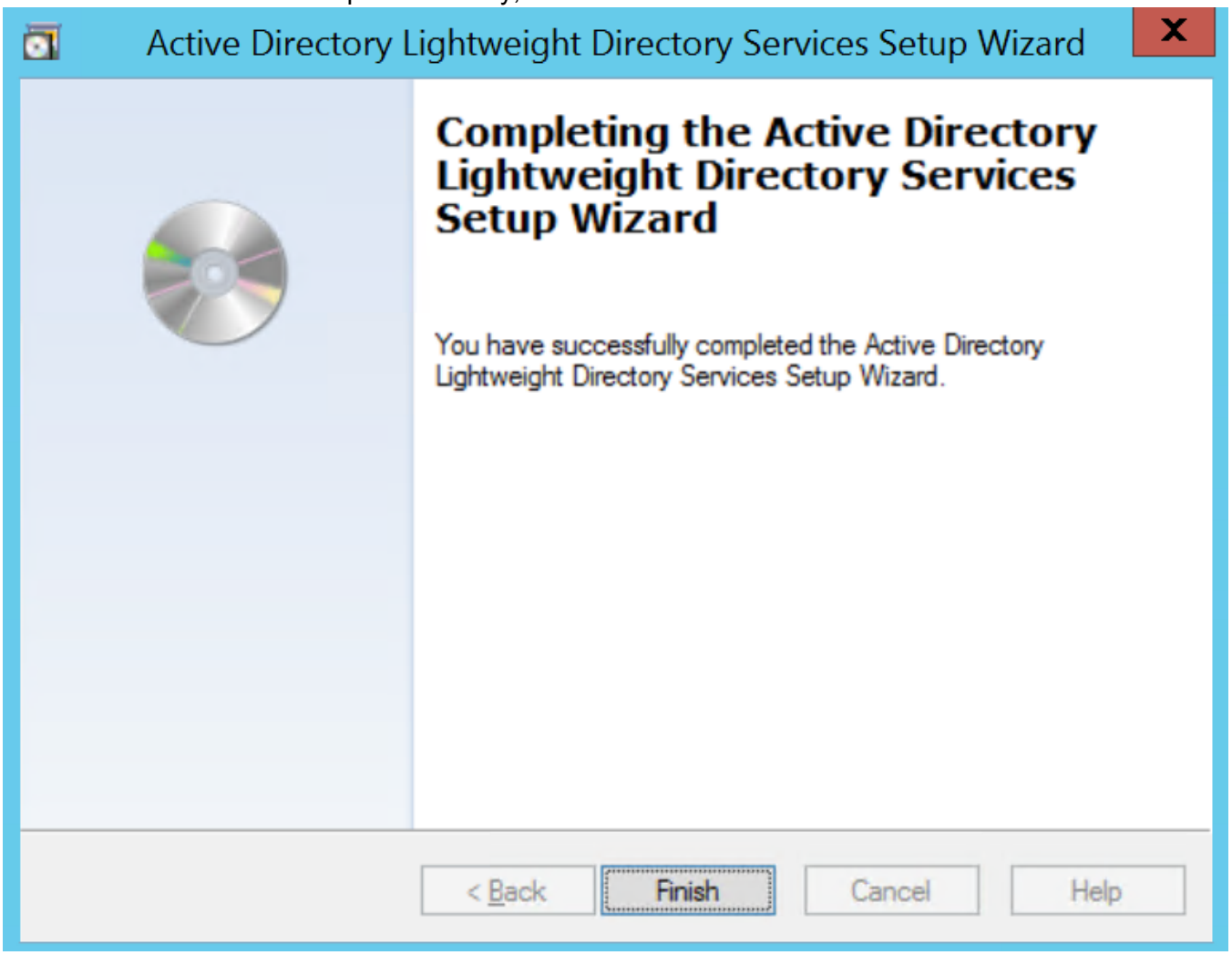
a. **MS-InetOrgPerson.LDF**
b. **MS-User.LDF**
c. **MS-UserProxyFull.LDF**

13. Verify that all the selections are right and then Click **Next** to confirm Installation.

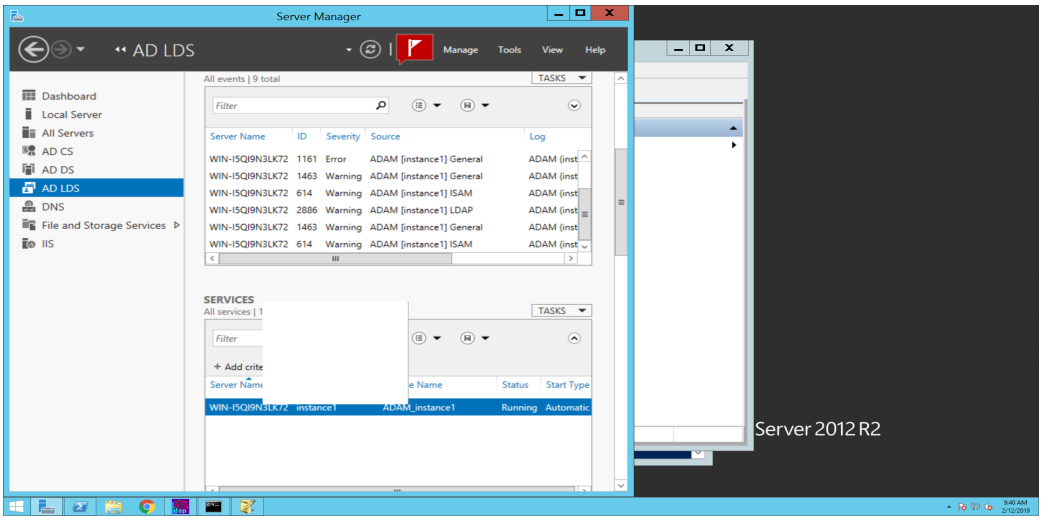



Active Directory Lightweight Directory Services Setup Wizard
Installing AD LDS
The AD LDS Setup Wizard is installing AD LDS.
Installing AD LDS...
Please wait while the wizard completes the following steps.
Copied files
Importing LDIF file MS-ADAM-Upgrade-2.ldf...
< Back
Next >
Cancel
Help

14. Once the instance is setup successfully, click **Finish**.

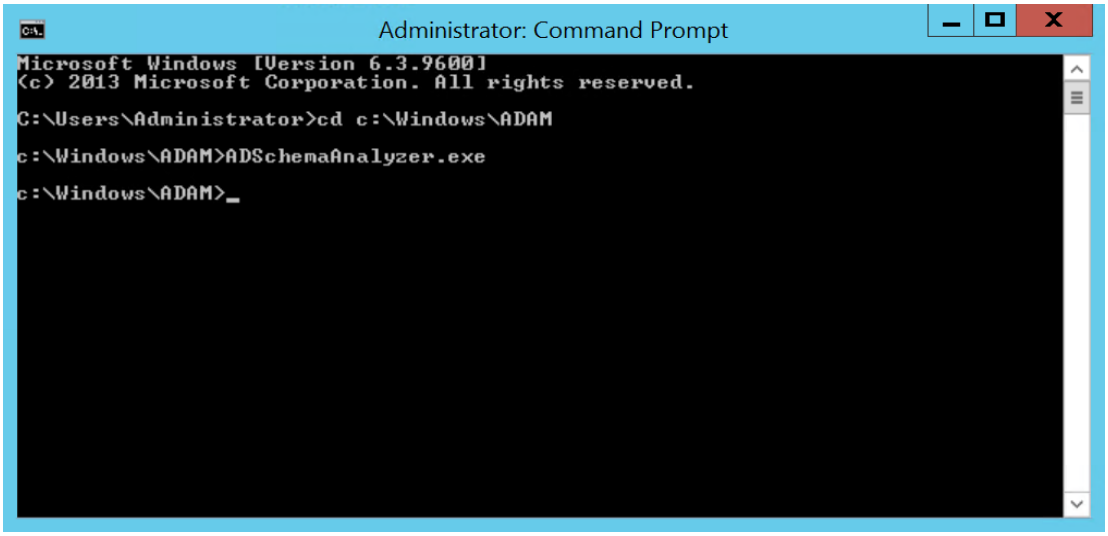


15. The AD LDS Instance is created showing the System Services under the Summary section.

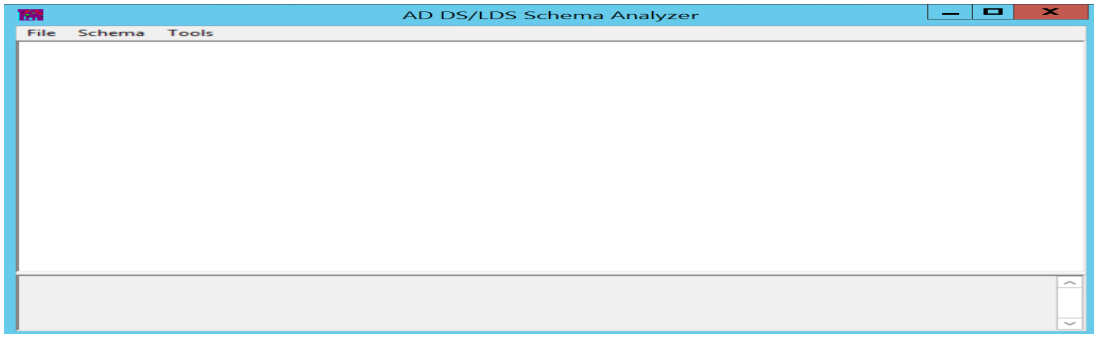


Creating the Custom LDF File to suit for AD LDS Setup

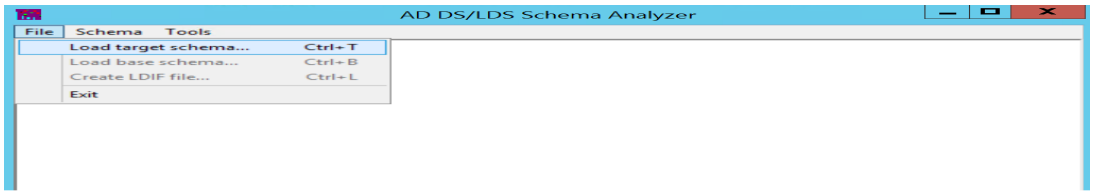
1. Open **Command Prompt** and then Go to `C:\Windows\ADAM`.



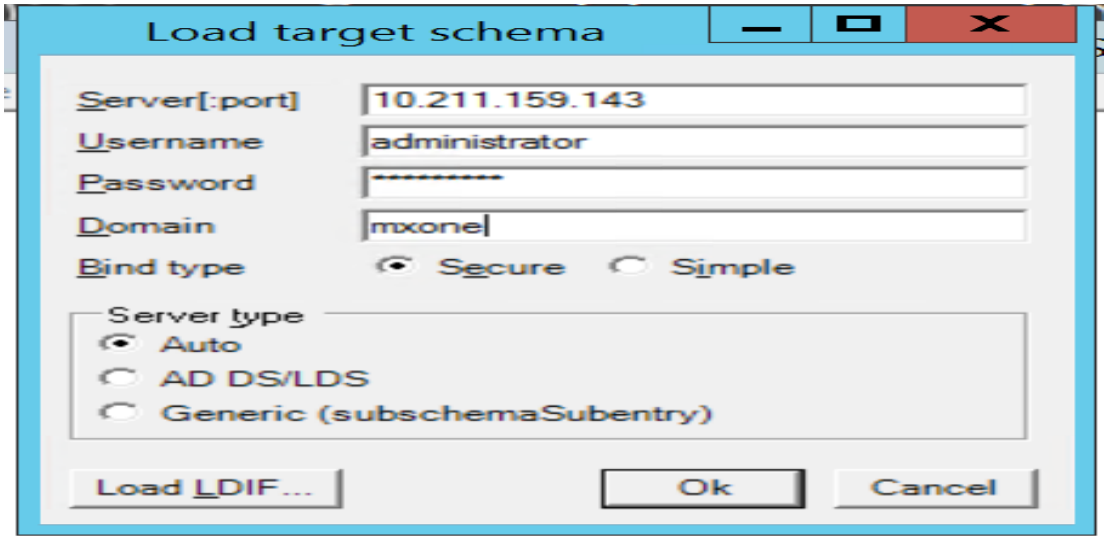
2. Execute ADSchemaAnalyzer.exe that displays a new window **AD DS / LDS Schema Analyzer**.



3. In **Schema Analyzer** window, go to **File** Menu and then select **Load Target Schema**.

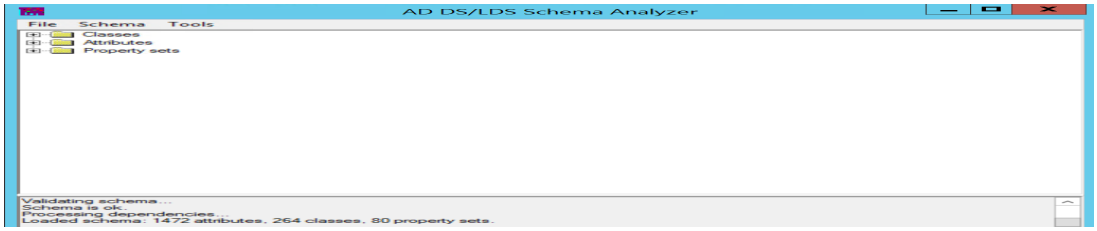


4. In **Load Target Schema**dialog box, provide the following details:
   a. **Server[:port]**: [Give IP address of Active Directory Server]:[Active Directory port]
   b. **Username**: [Username to connect to Active Directory]
   c. **Password**: [Password of above username of Active Directory]
   d. **Domain**: [Domain of Active Directory which contains above user]

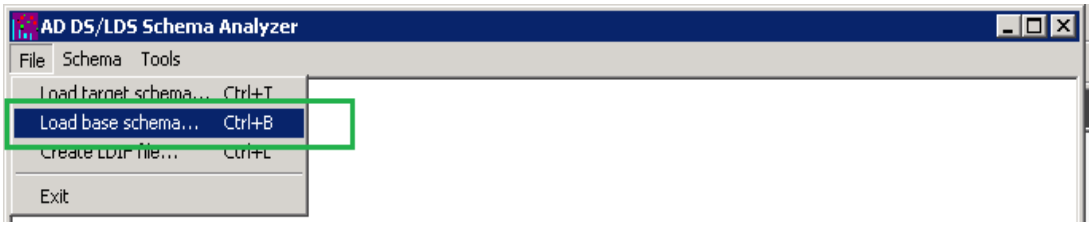


NOTE: If you do not provide port number after server IP/DNS Name, it takes default LDAP port that is 389.

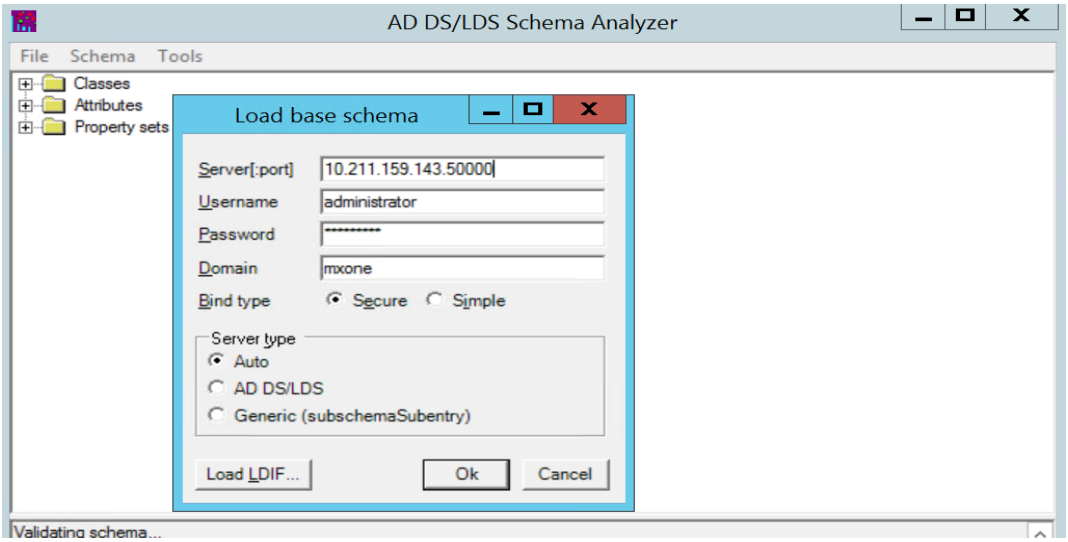
5. Click **Ok**.
6. **AD DS/LDS Schema Analyzer** screen shows the following folder structure. Once it is connected to Active Directory Server.



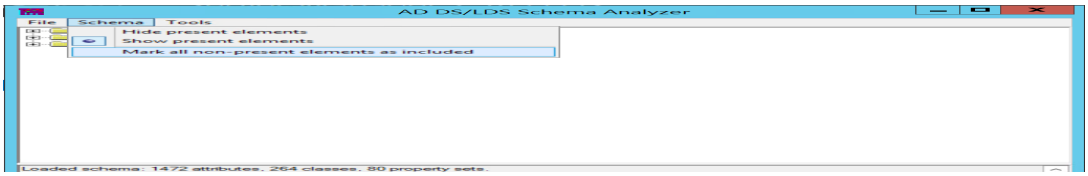
7. Go to **File** Menu and then select **Load base schema**.



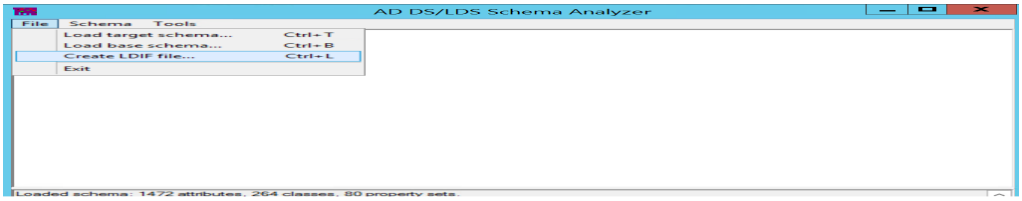
8. The **Load base schema** dialog box appears to enter the following details:
   a. **Server[:Port]**: [Give IP address of AD LDS]:[AD LDS port]
   b. **Username**: [Administrator Username of the local server]
   c. **Password**: [Password of Administrator]
   d. **Domain**: [Domain of Active Directory which contains above user]



9. Click **Ok**.
10. Go to **Schema** Menu and then select **Mark all non-present elements as included**.



11. Click **Ok**.
12. Go to **File** Menu and then select **Create LDIF file**.

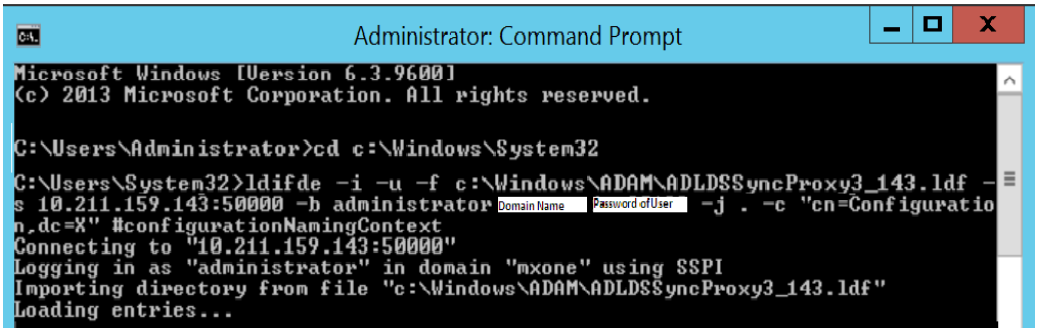


13. In the File Dialog box provide the path of LDIF file to store.
14. By default, it shows `C:\Windows\ADAM Path`.
15. Enter name of the file and click **Save**.
16. Open Command Prompt and then Go to `C:\Windows\System32`.
17. Execute the following 3 commands as mentioned below:

    - `ldifde -i -u -f [Path of LDIF File which is created by using Schema Analyzer] -s [IP address of AD LDS]:[Port of AD LDS] -b [Administrator Username of the local server] [Domain of Active Directory which contains above user] [Password of Administrator] -j . -c "cn=Configuration,dc=X" #configurationNamingContext`

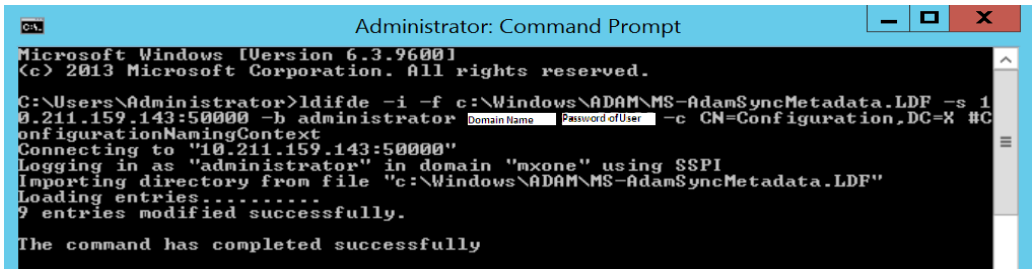
      For example,

```
ldifde -i -u -f c:\windows\adam\ADLDSSyncProxy3_129.ldf -s
192.168.26.129:50000 -b administrator pmsnmdomain XXXXXXXXXXXXXX -j .
-c "cn=Configuration,dc=X" #configurationNamingContext
```



- `ldifde -i -f c:\windows\adam\MS-AdamSyncMetadata.ldf -s [IP address of AD LDS]:[Port of AD LDS] -b [Administrator Username of the local server ] [Domain of Active Directory which contains above user] [Password of Administrator] -c CN=Configuration,DC=X #ConfigurationNamingContext`

  For example,`ldifde -i -f c:\windows\adam\MS-AdamSyncMetadata.ldf -s 192.168.26.129:50000 -b administrator pmsnmdomain XXXXXXXXXXXXXX -c CN=Configuration,DC=X #ConfigurationNamingContext`



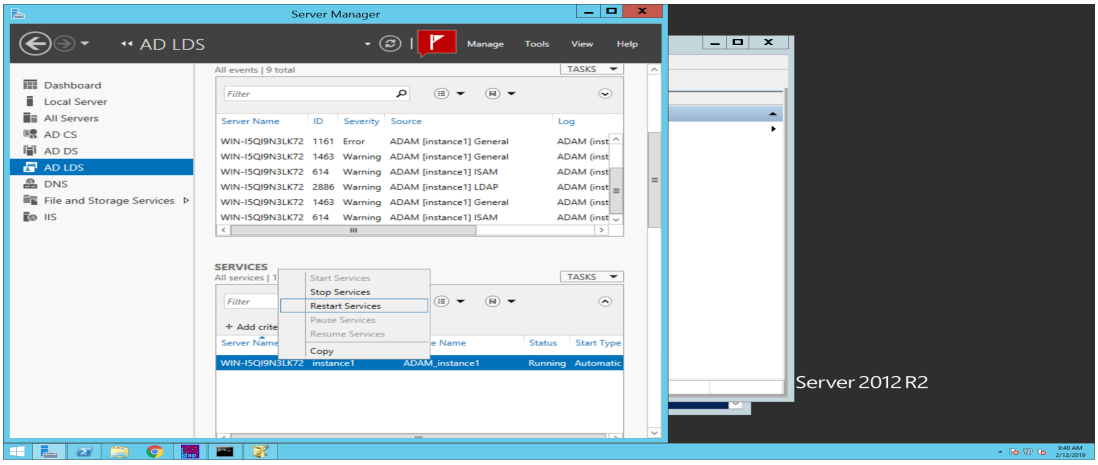
- `ldifde -i -f c:\windows\adam\MS-adamschemaw2k8.ldf -s [IP address of AD LDS]:[Port of AD LDS] -b [Administrator Username of the local server ] [Domain of Active Directory which contains above user] [Password of Administrator] -c CN=Configuration,DC=X#ConfigurationNamingContext`

  For example,`ldifde -i -f c:\windows\adam\MS-adamschemaw2k8.ldf -s 192.168.26.129:50000 -b administrator pmsnmdomain XXXXXXXXXXXX -c CN=Configuration,DC=X#ConfigurationNamingContext`

```
C:\Users\Administrator>cd c:\Windows\System32

c:\Windows\System32>ldifde -i -f c:\Windows\ADAM\MS-AdamSyncMetadata.LDF -s 10.2
11.159.143:50000 -b administrator mxone Mitel@123 -c CN=Configuration,DC=X #Conf
igurationNamingContext
Connecting to "10.211.159.143:50000"
Logging in as "administrator" in domain "mxone" using SSPI
Importing directory from file "c:\Windows\ADAM\MS-AdamSyncMetadata.LDF"
Loading entries.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................
.....................................................................

.....................
1208 entries modified successfully.

The command has completed successfully

c:\Windows\System32>_
```

Restarting the AD LDS Instance

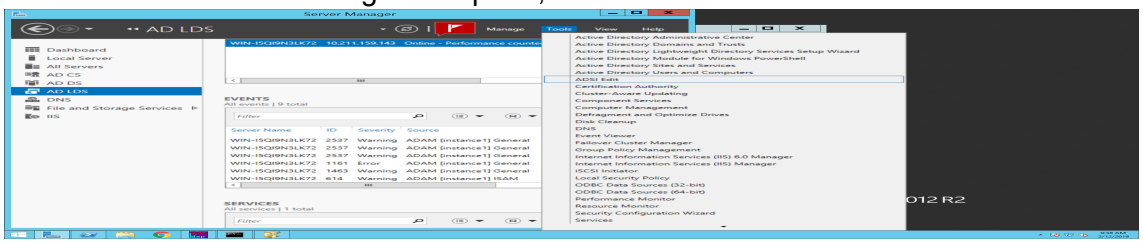
1. Select **Server Manager** > **Roles** > **Active Directory Lightweight Directory Services**.
2. Check for **System Services** section that is displayed in the right side pane.



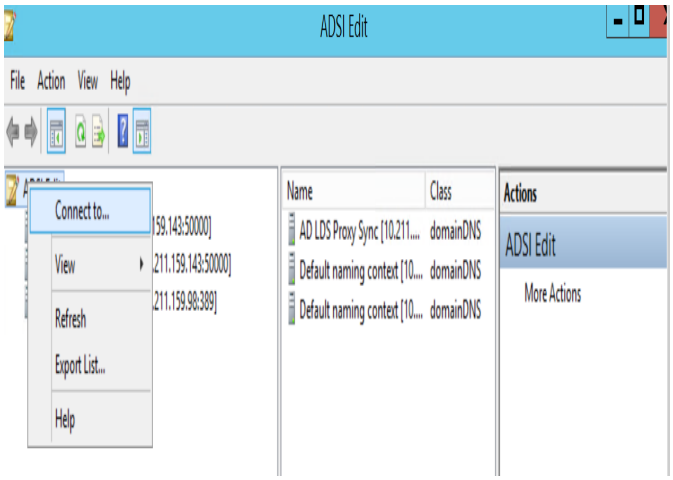
3. Select the AD LDS Instance Name and right click on the AD LDS instance, select **Restart/Stop – Start**.

Creating an Admin User in AD LDS

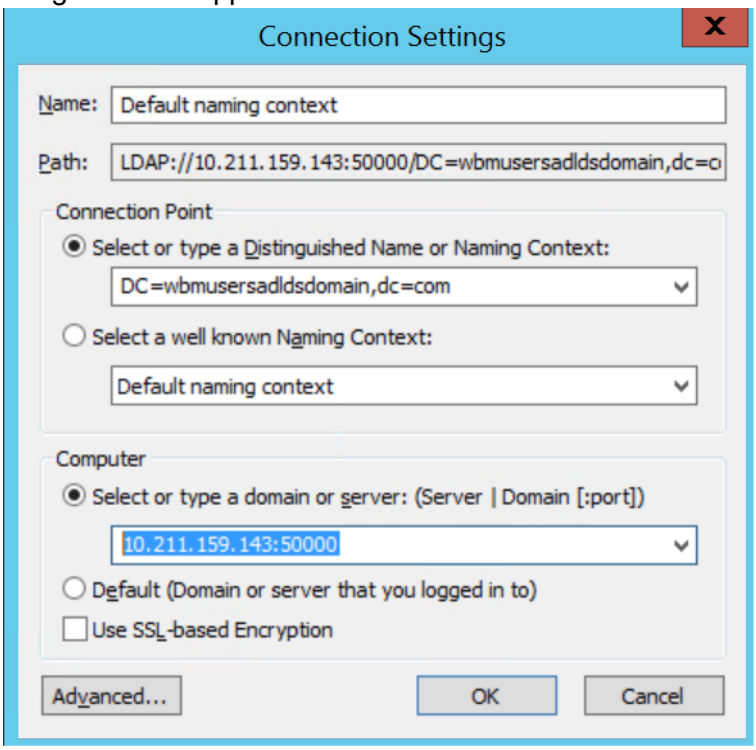
1. Select Server Manager > Roles > Active Directory Lightweight Directory Services.
2. Select ADSI Edit shown in the right side pane, under the Advance Tools section.



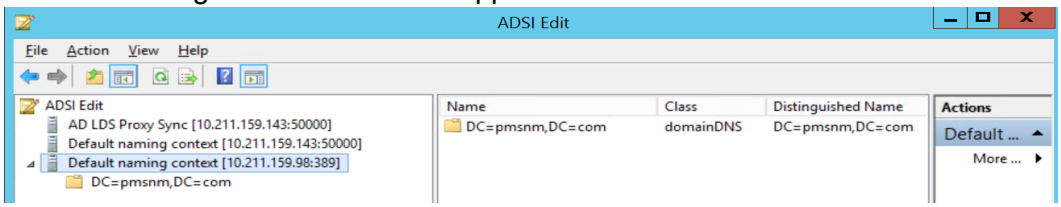
3. In ADSI Edit window, go to Action Menu, select Connect to… option, or right click on ADSI Edit in the left side pane.



4. The Connection Settings window appears to fill the below details.

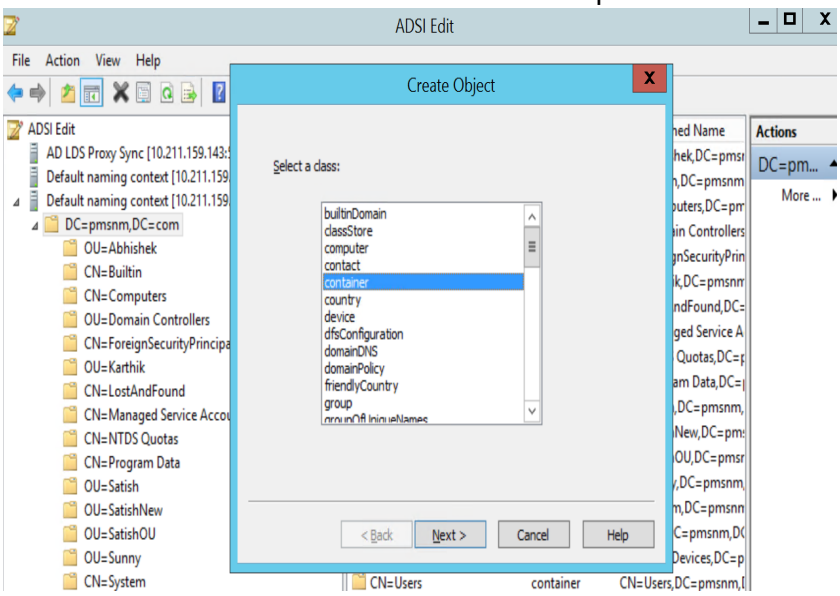


5. Enter Name to identify this AD LDS Instance.
6. In the Connection Point section, Select or type Distinguished Name or Naming Context and enter the Partition Name in AD LDS instance.
7. In the Computer section, Select or type a domain or server: (Server | Domain[:Port]) and enter the server IP of AD LDS and port details.
8. Click OK. The following ADSI Edit window appears.



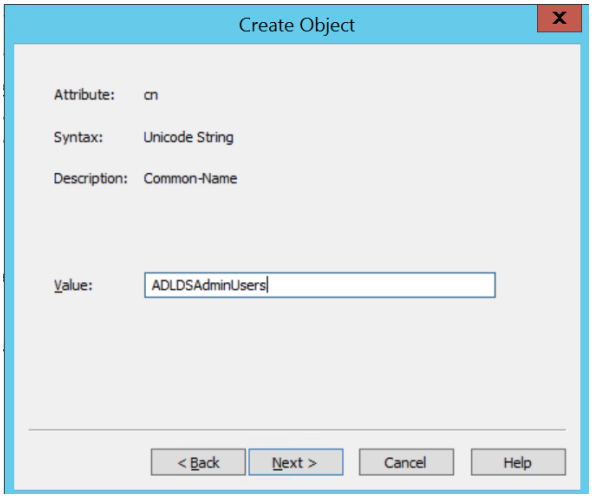
9. Right click on Partition/ Distinguished Name > select New > Object.
10. In ADSI Edit window, you can expand the right side pane to check Name and Distinguished Name.

11. In Create Object window > select container from the class list provided below.



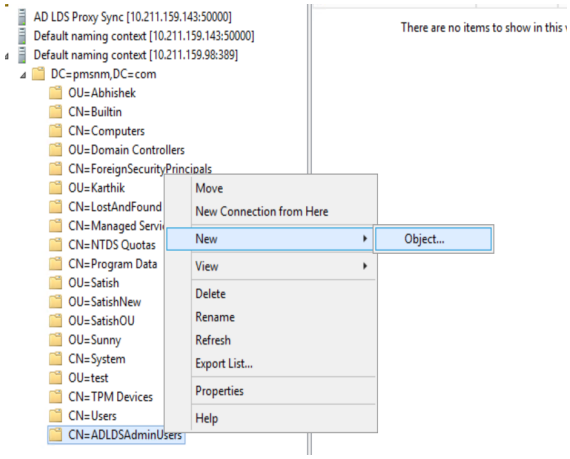
12. Click Next. The Create Object window appears to add value.

13. Enter name of the container in the Value box. For example, ADLDSAdminUsers and click Next.

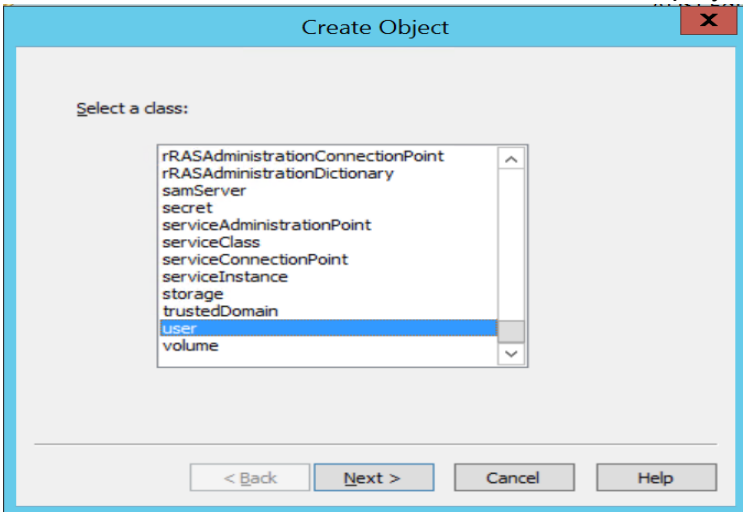


14. Click Finish.

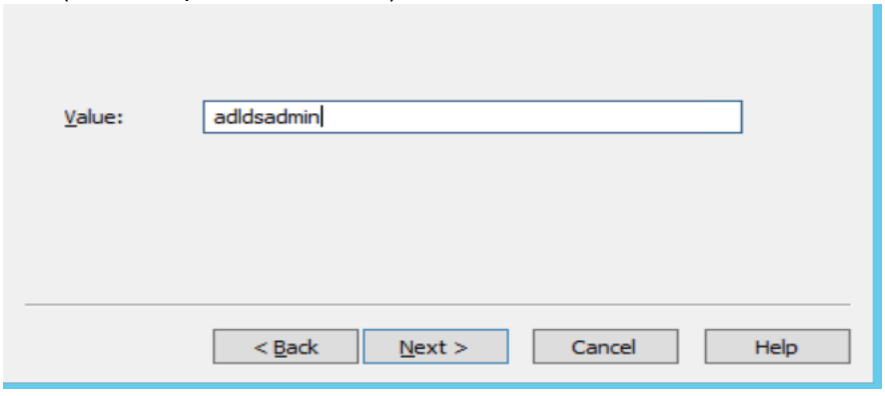
15. Right-click on the newly created container which is added under the Partition Name and select New > Object.



16. In the Create Object window, select user from the list of Class items displayed. Click Next.

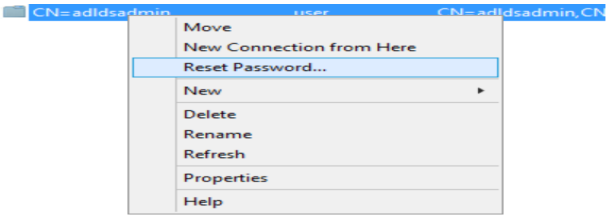


17. Enter a username (for example, adldsadmin) in the Value box.

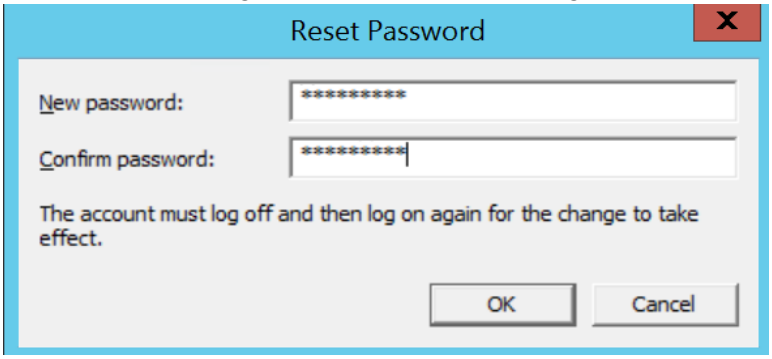


18. Click Next ? click Finish.

19. Expand newly created container and right click on the newly created user. The following window appears to Reset Password.

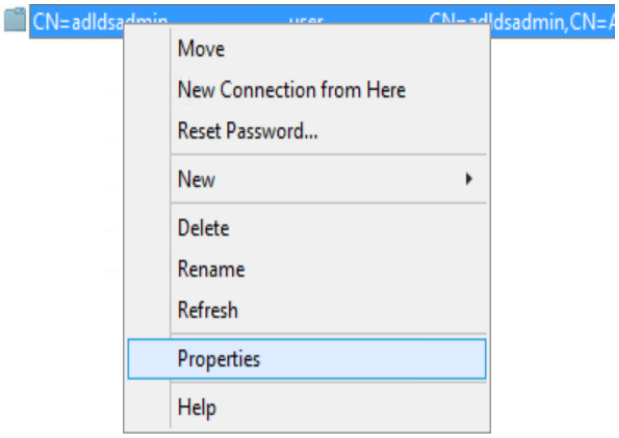


20. Select Reset Password. The following window appears to assign a new password for user.

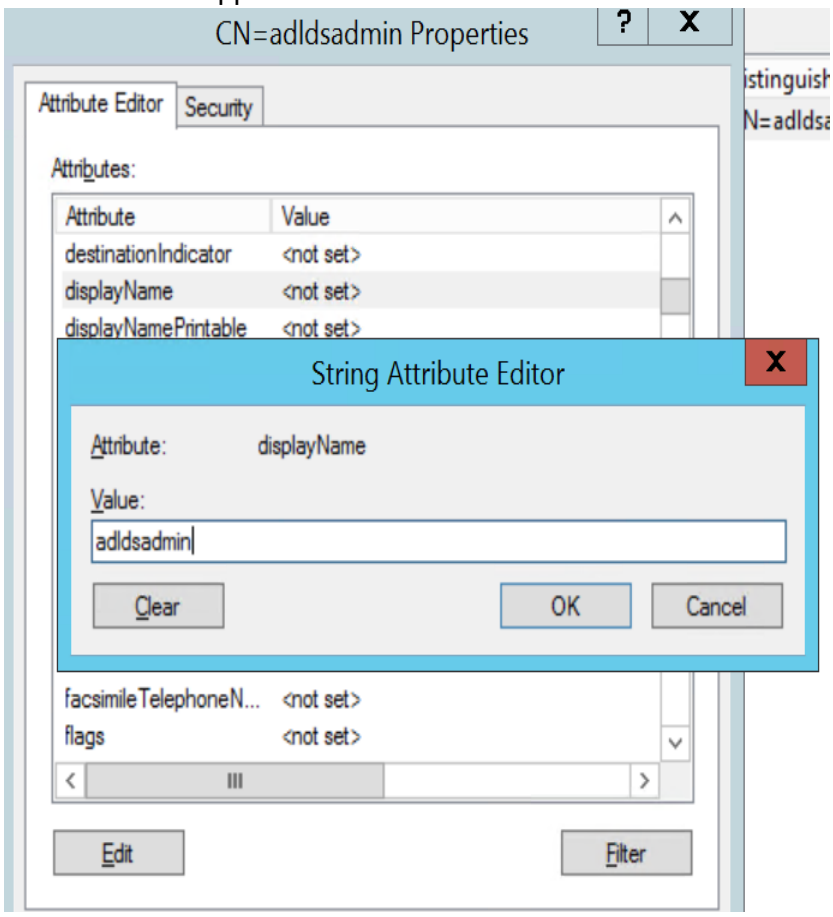


21. Enter the New password and Confirm password. Click OK.

22. Right click on the newly created user and select Properties.



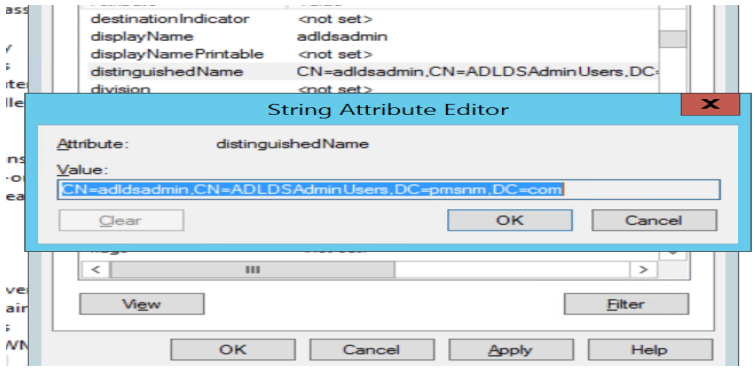
23. Right click on the newly created user properties dialog, select displayName and double click on it. The following String Attribute Editor appears.



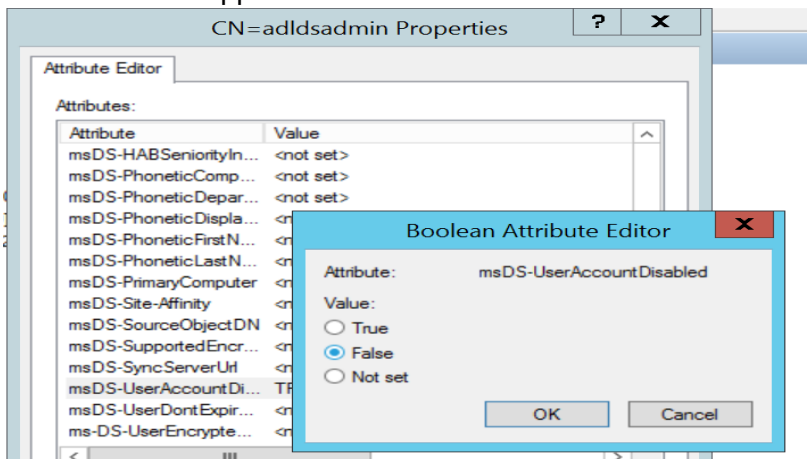
24. Enter the same username while resetting the password.

25. Select distinguishedName ? double click on it to copy the distinguishedName value.

26. Click OK.



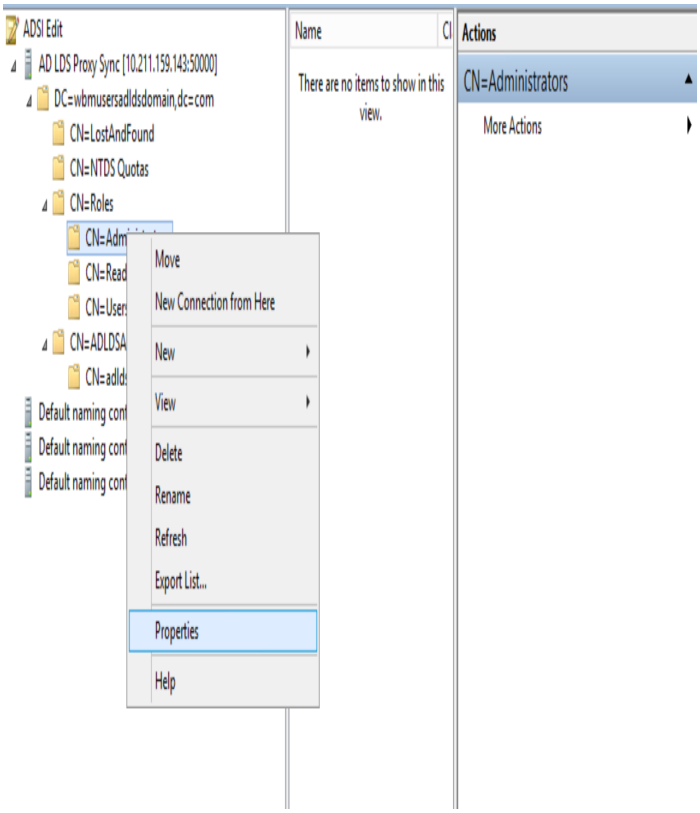
27. In the same attribute editor Select msDS-UserAccountDisabled and double click on it. The following Boolean Attribute Editor window appears.



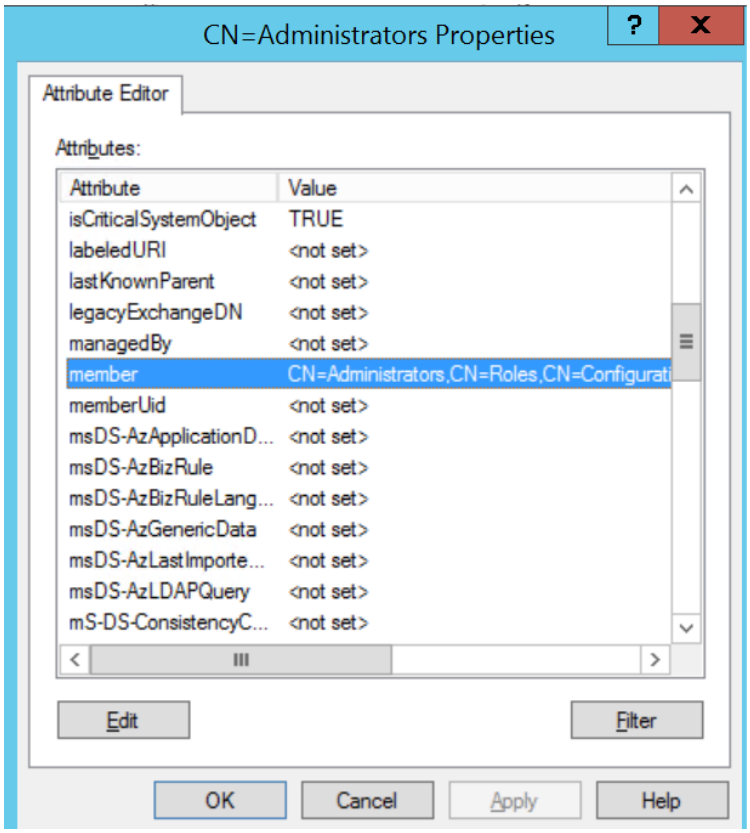
28. Select False and click OK.

29. Click Apply > OK.

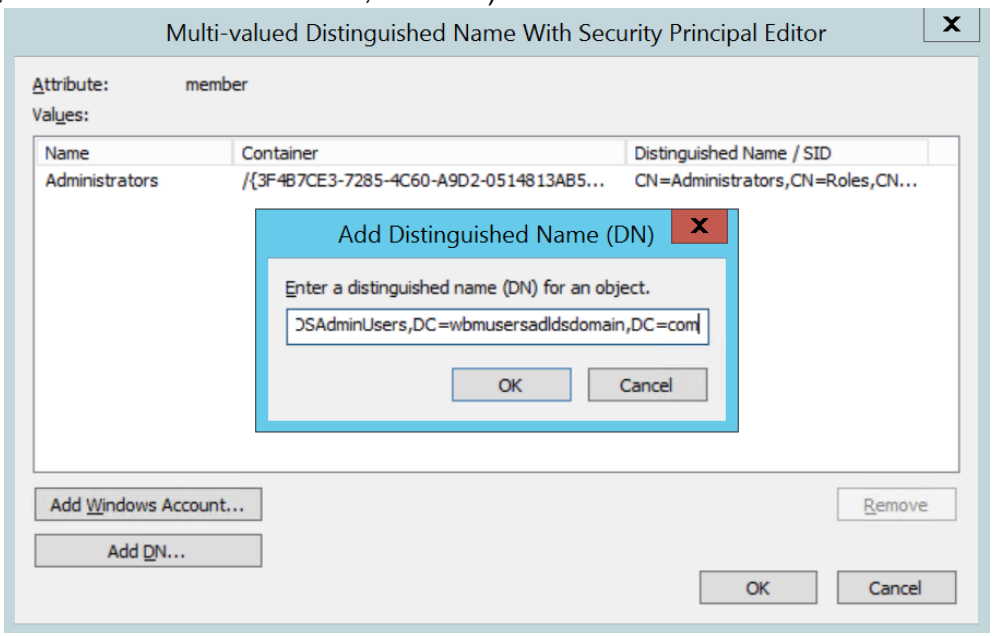
30. Expand the newly created partition name and CN=Roles. Right click on CN=Administrators?Properties to view the Attribute Editor.



31. In the Attribute Editor, select member and click Edit.



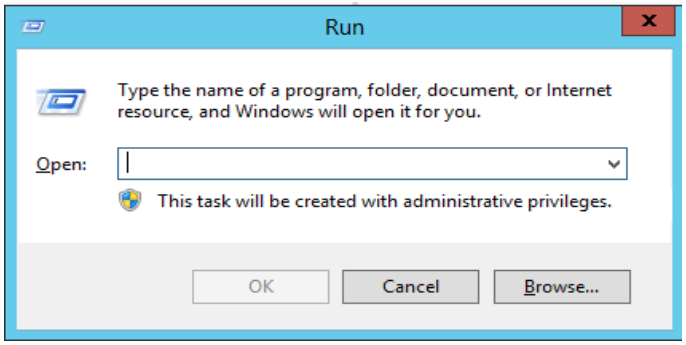
32. Click Add DN button > Enter DN of user created above (for example, CN=adldsadmin,CN=ADLDSAdminUsers,DC=wbmusersadldsdomain,DC=com) ? click OK.



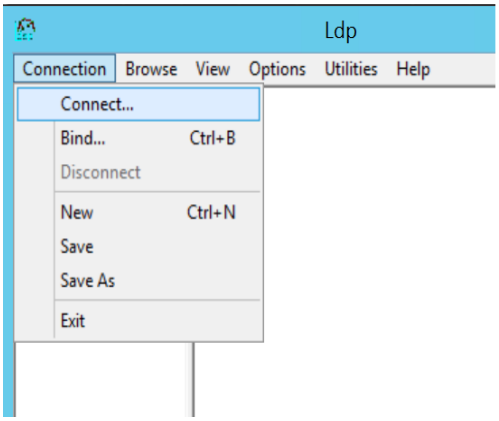
33. Click OK > click Apply > click OK.

Checking User Authentication

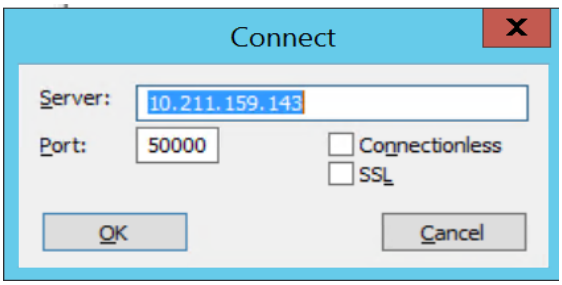
1. On the **Start** Menu, click **Run**. The following **Run** program window appears.



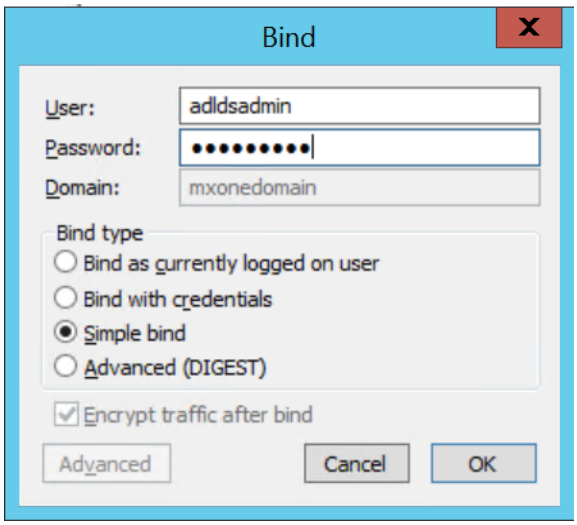
2. Type ldp.exe (**Label Distribution Protocol**) in the **Run** box and click **OK** to open Ldp.exe window.
3. In **LDP** window, Go to **Connection** and click **Connect**.



4. Enter the IP **Server** address and **Port** number of AD LDS Instance and click **OK**.



5. Go to **Connection** and click **Bind**. The following Bind window appears.

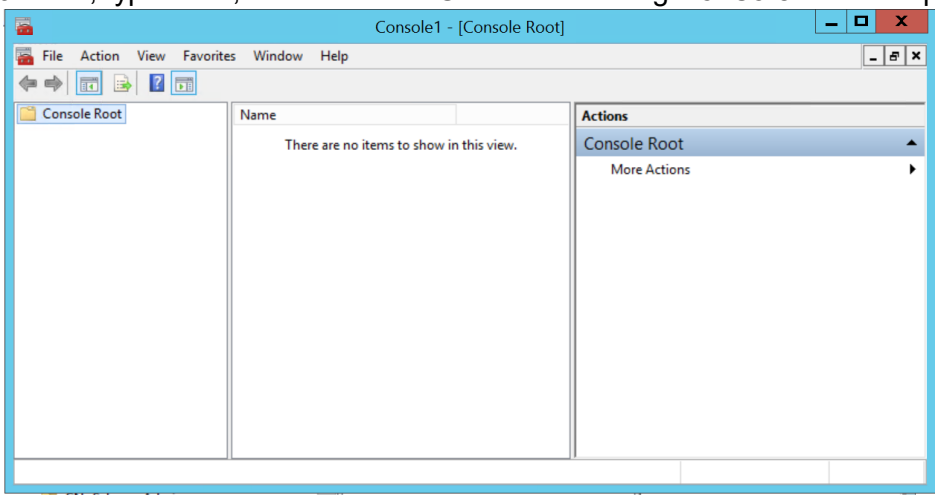


6. To connect and bind the server that hosts the forest root domain of your AD DS environment. Enter the following details:
   a. **User**: [username which is created above]
   b. **Password**: [Password of the above user]
   c. **Domain**: By default, remains in deactivate mode
   d. **Bind Type**: [select Simple bind]
   e. Click **OK**.
      NOTE: The user must be an authenticated user as mentioned in the above screen.
   f. An example of successful authentication is given below.

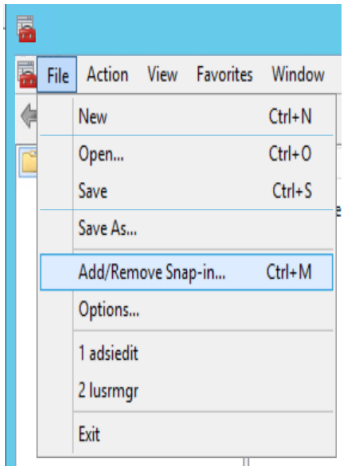
```
-----------
res = ldap_simple_bind_s(ld, 'adldsadmin', <unavailable>); // v.3
Authenticated as: 'CN=adldsadmin,CN=ADLDSAdminUsers,DC=wbmusersadldsdomain,DC=com'.
-----------
```

Adding Attributes to UserProxyFull Class

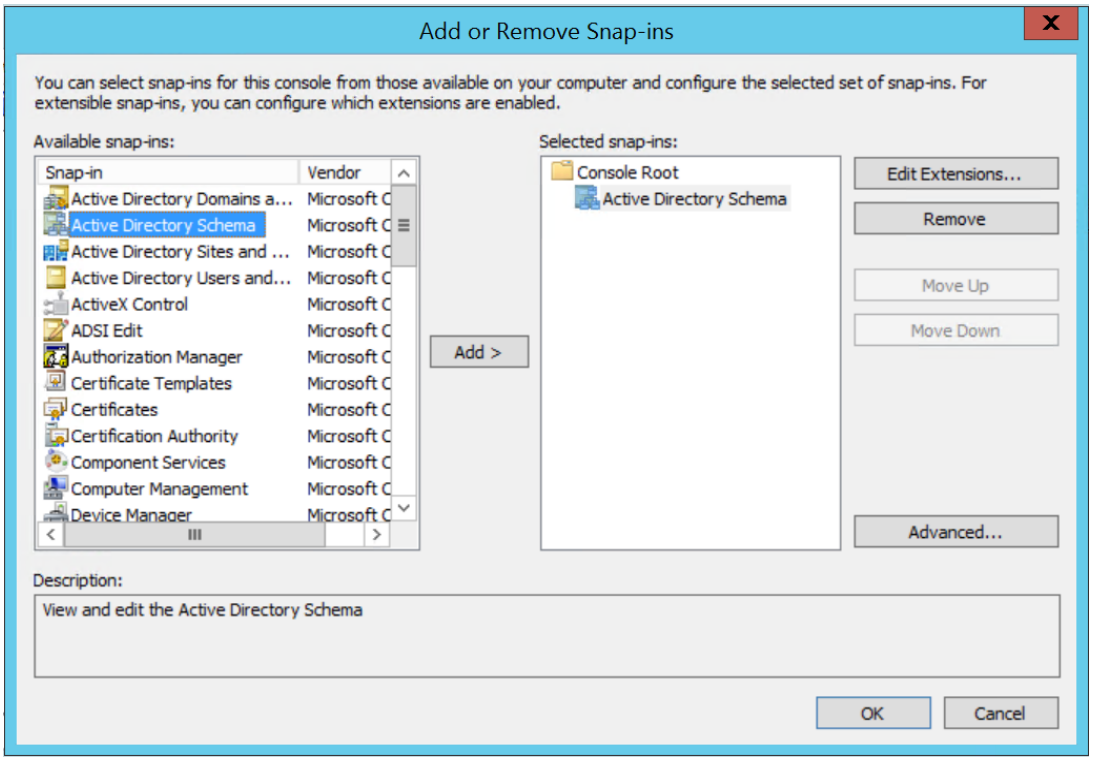
1. On the **Start** Menu, type **FMC**, and then click **OK**. The following **Console** window appears.



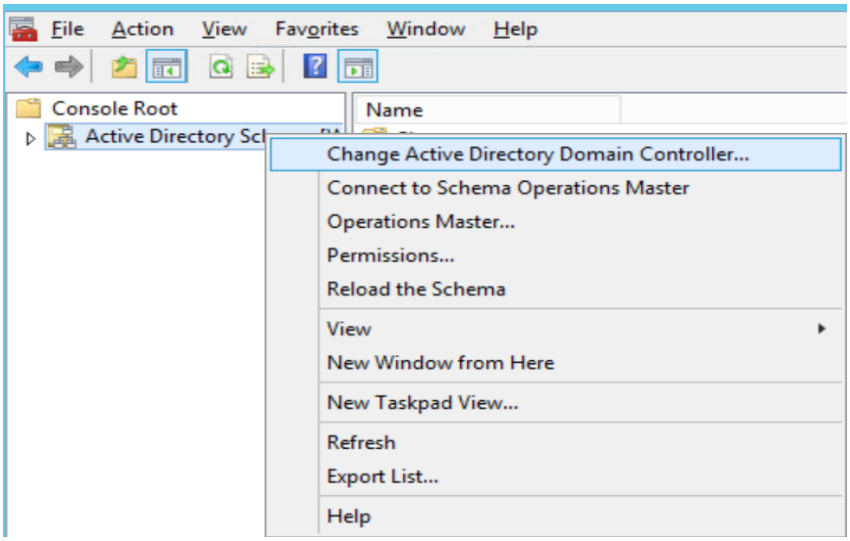
2. Go to **File** menu > click **Add/Remove Snap-in**.



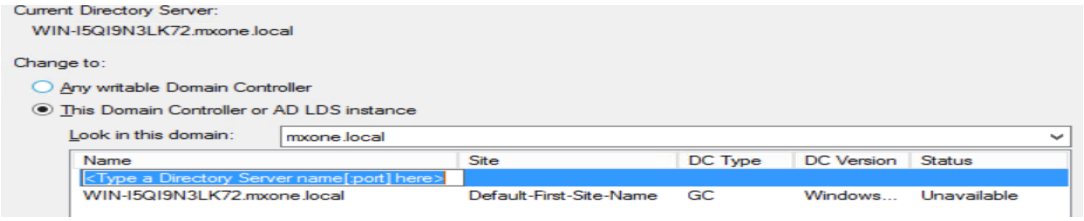
3. Select **Active Directory Schema**, click **Add** and then click **OK**.



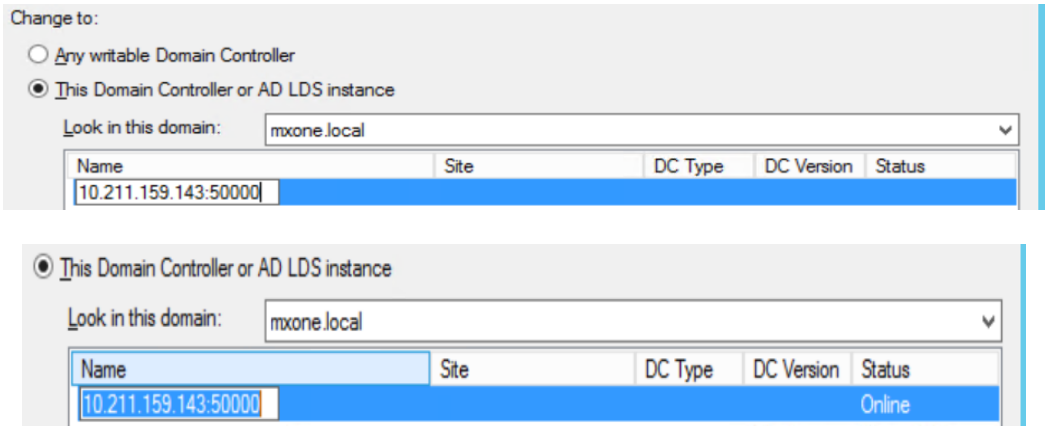
4. Right click on **Active Directory Schema** and select **Change Active Directory Domain Controller**.



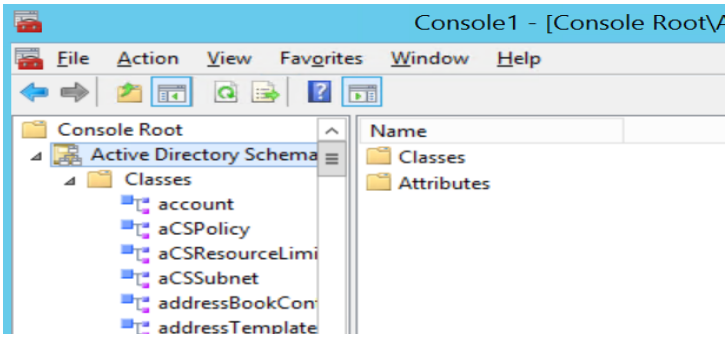
5. Select **This Domain Controller or AD LDS instance**.



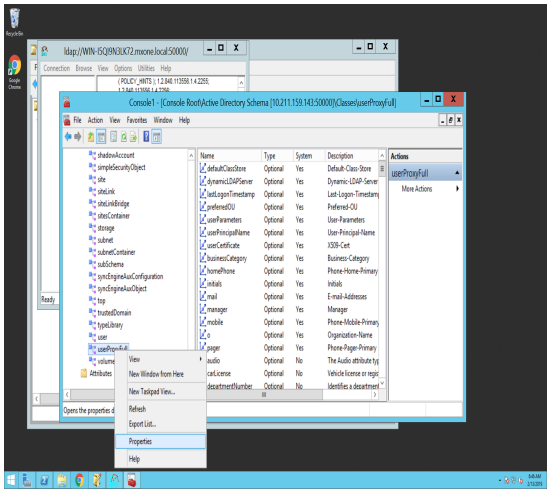
6. Enter IP Address of the **AD LDS Instance** with port number and click outside of the highlighted edit area. The **Status** column value changes to **Online**.



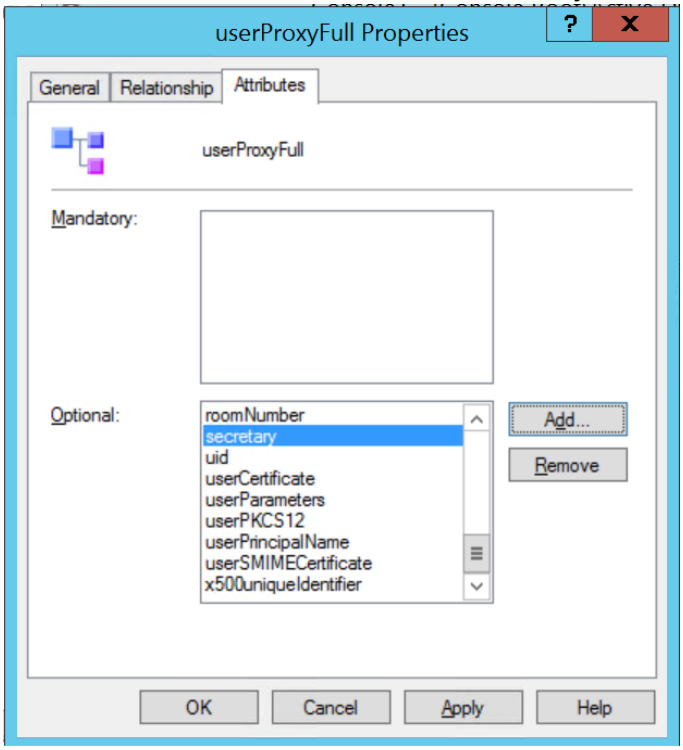
7. Select this entry (that is, anywhere outside from the edit section) > click **OK** > click **Yes**.
8. Expand **Classes** to select the required attributes displayed in the **Classes** list.



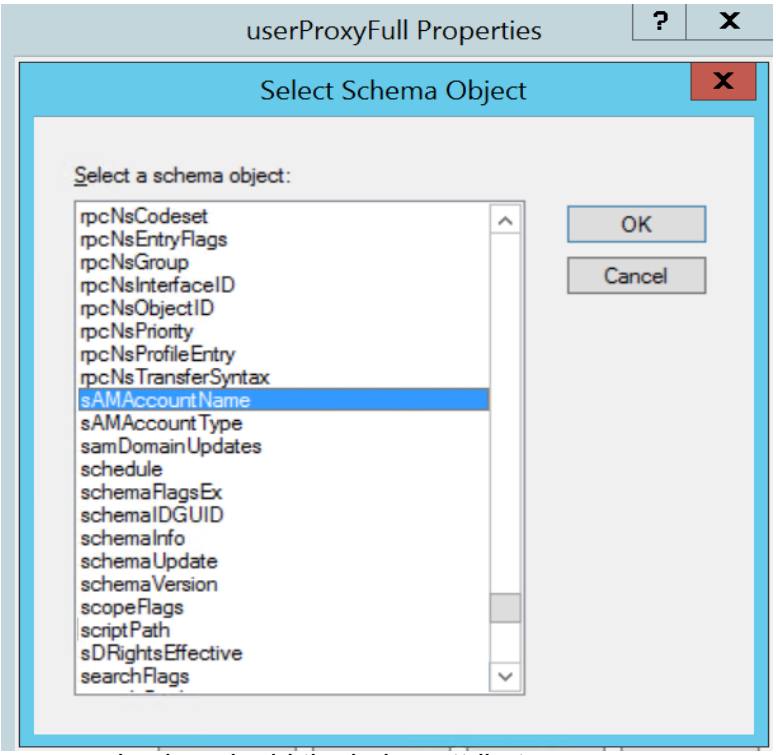
9. Select **userProxyFull** from the Classes list and right click on it to select **Properties**.



10. Go to **Attributes** tab and check for the **sAMAcountName** attribute. If **sAMAcountName** attribute is not available, then click **Add** button to include it to the Schema Object list.



11. Select **sAMAccountName** > click **OK** > click **Apply** > click **OK**.



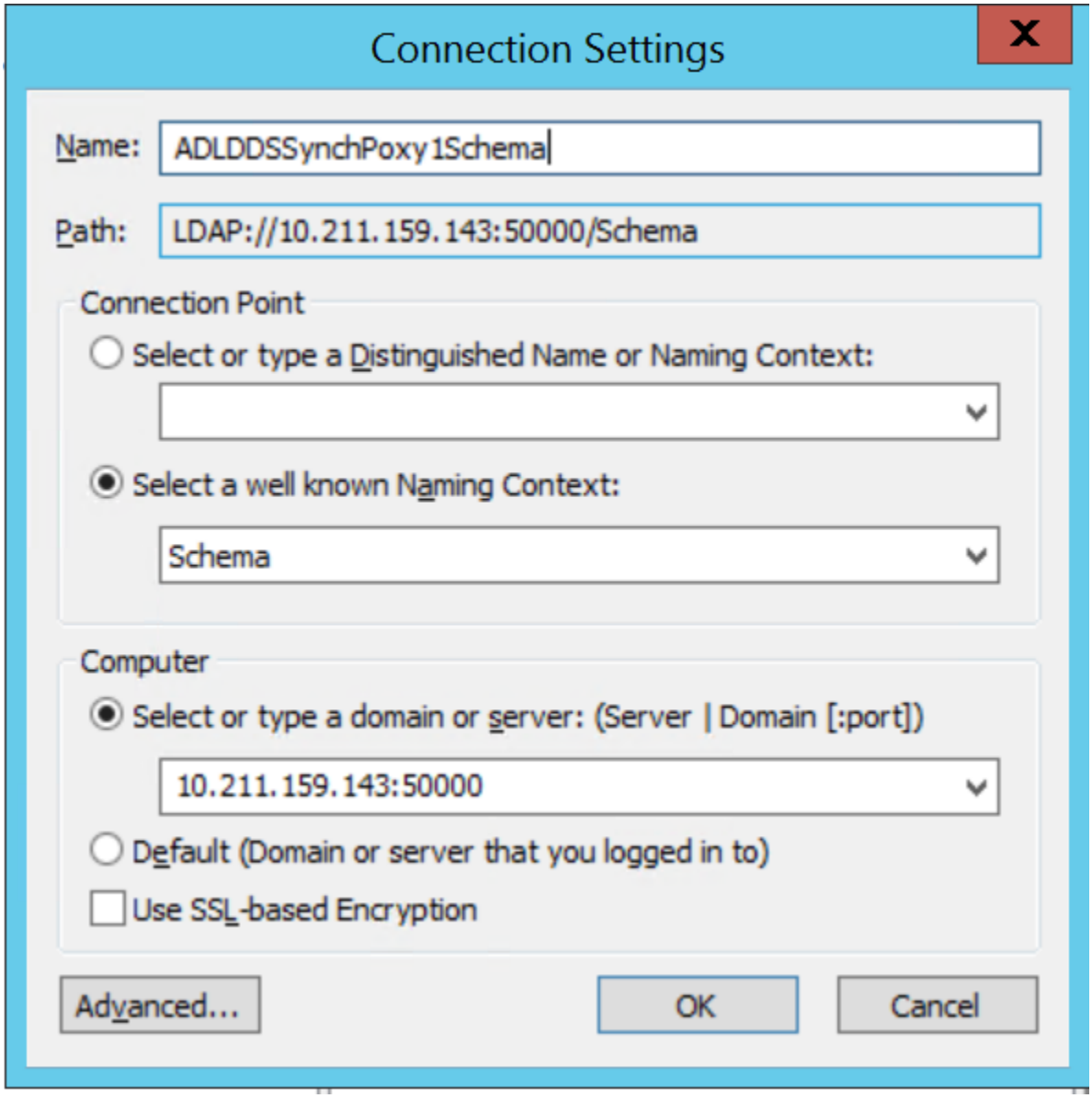
In the same way, you can check and add the below attributes:

- objectSID
- sn
- department
- location
- whenChanged
- telephoneNumber
- wWWHomePage
- description
- physicalDeliveryOfficeName
- url
- streetAddress
- postOfficeBox
- l[Locality-Name]
- st
- postalCode
- c[Country-Name]
- profilePath
- scriptPath
- title
- company
- facsimileTelephoneNumber
- otherFacsimileTelephoneNumber
- msExchAssistantName
- roomNumber
- ipPhone
- objectClass
- objectCategory
- lastAgedChange

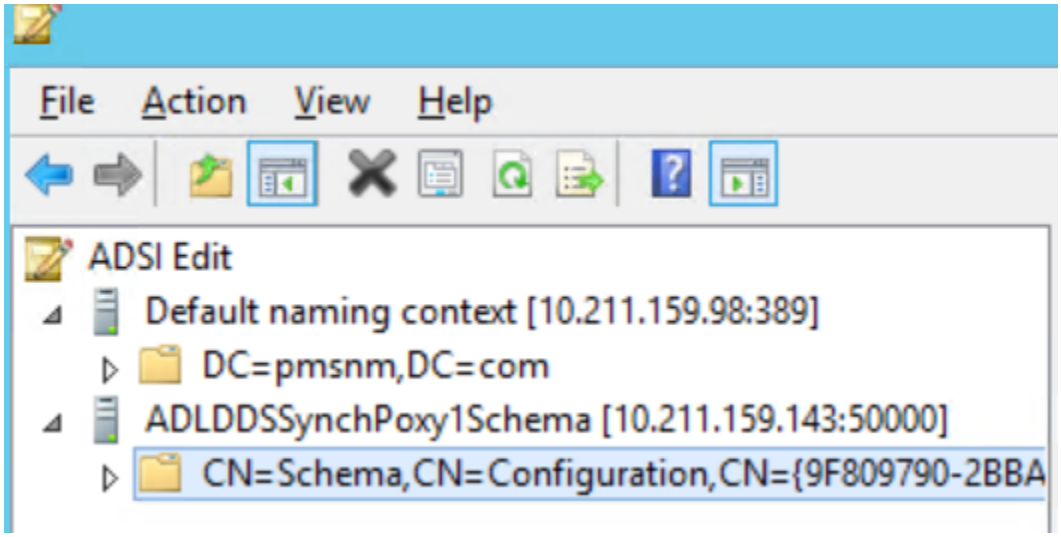
12. Restart AD LDS Instance when all the required attributes are added and checked.

Editing Object (UserProxyFull) Class as User Object Class

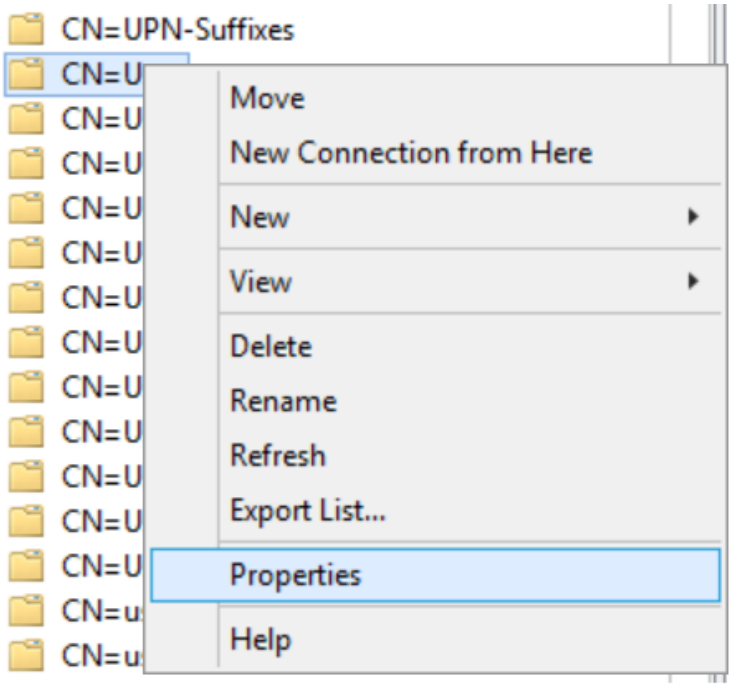
1. In the **ADSI Edit** Console tree, click **ADSI Edit** node and then click the **Action** menu. Select **Connect to**. The **Connection Settings** dialog box appears.



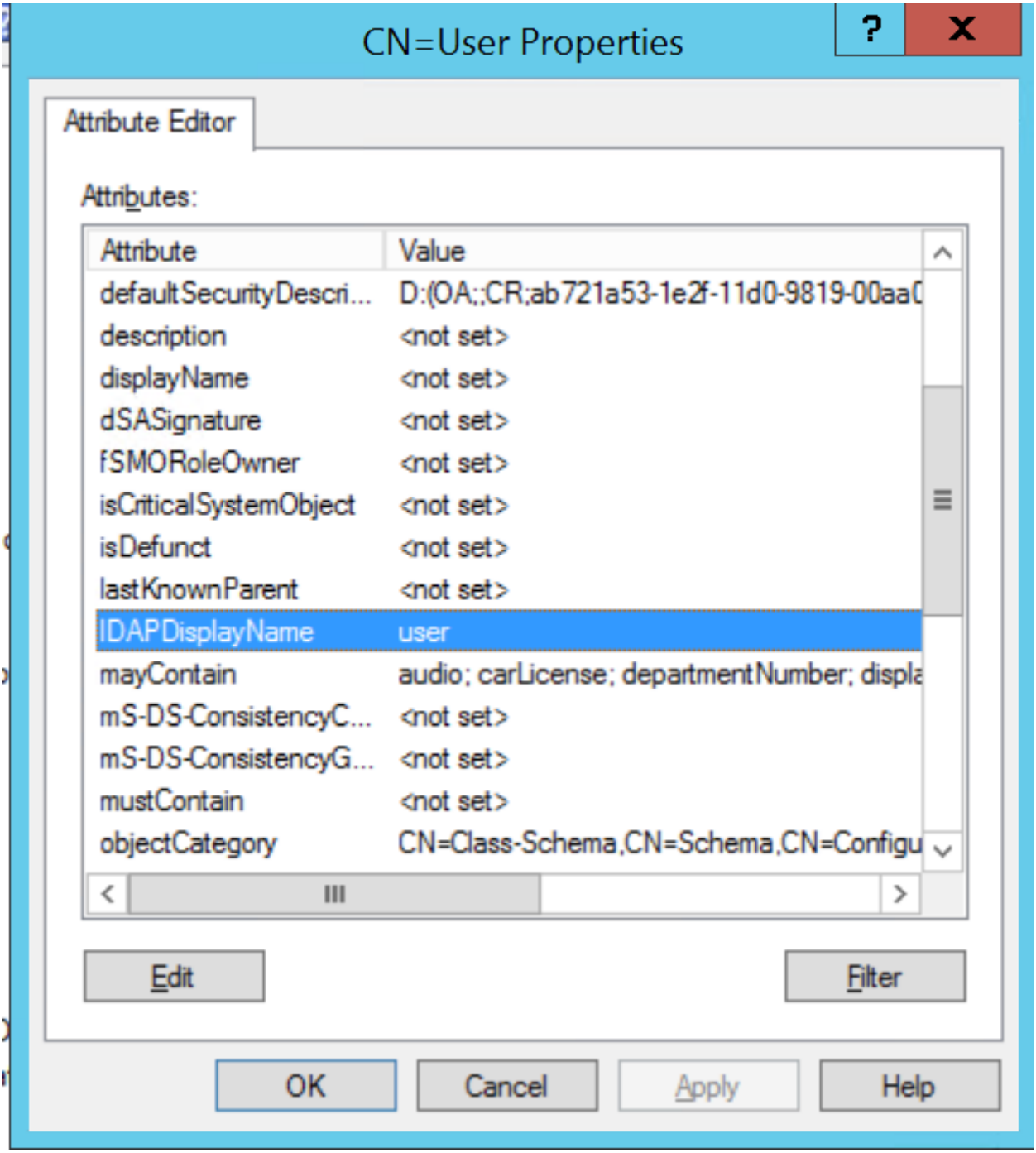
2. In **Connection Point section**, click **Select a well known Naming Context** radio button.
3. In **Computer** section, **select or type a domain or server: (Server | Domain [:port])** of AD LDS Instance.
4. Select **Schema** from the drop-down list.
5. Expand **Schema** from left side pane > expand `CN=Shema,CN=Configuration,CN={XXXXXXX}`.



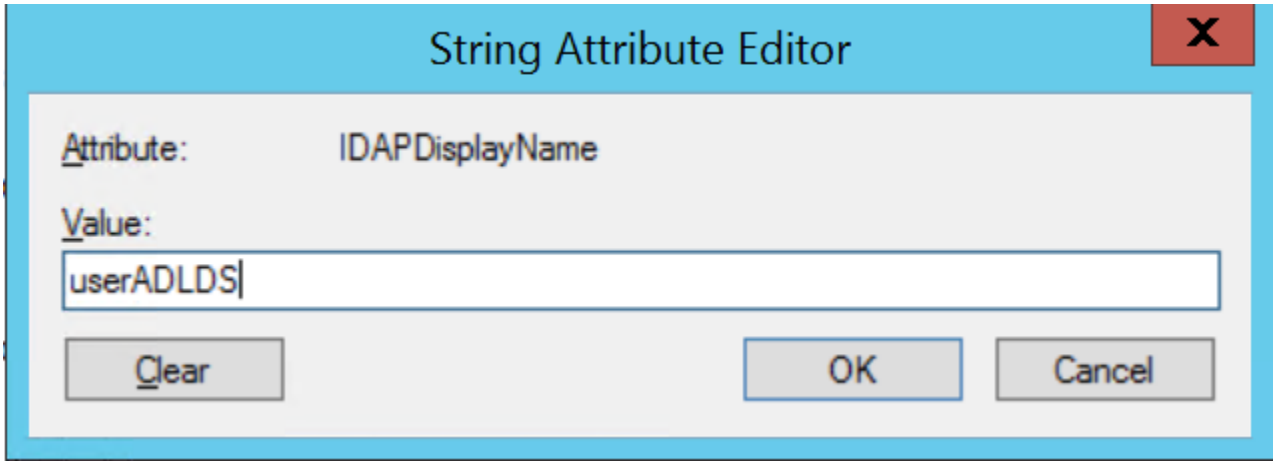
6. Select **CN=User**, and then right-click on it and select **Properties**.



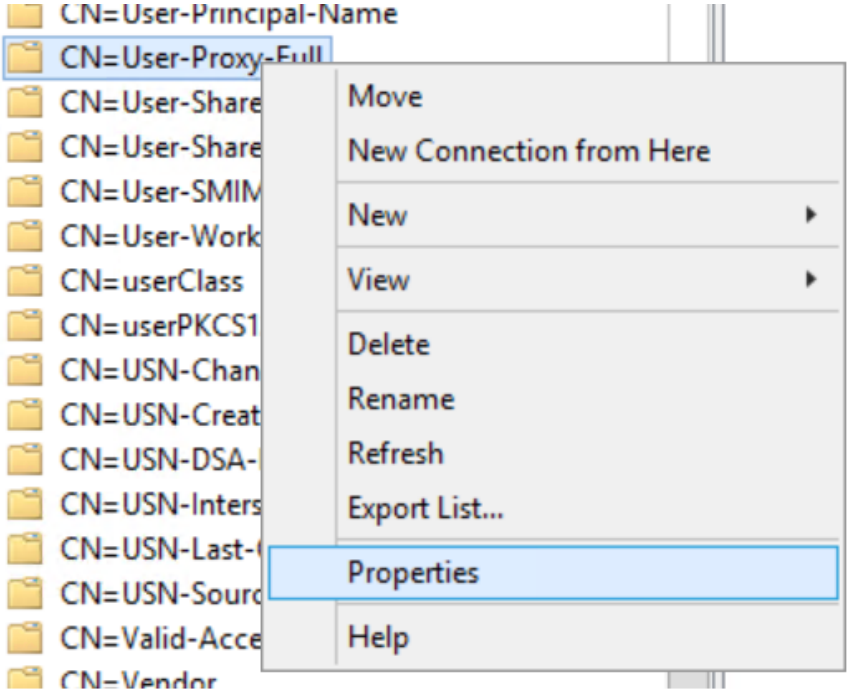
7. Select **IDAPDisplayName** and double click on it to modify the selected attribute value.



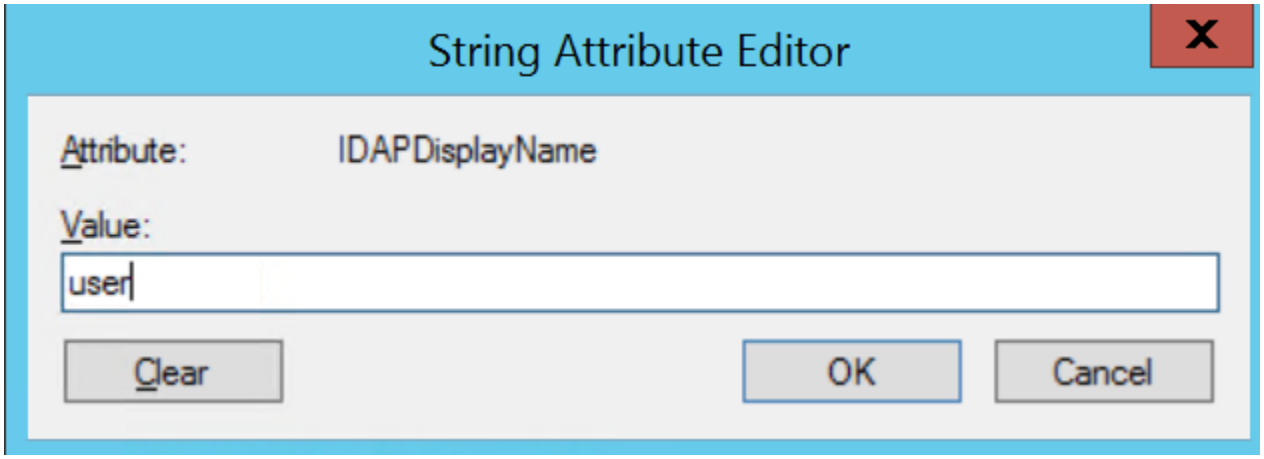
8. Change value to **userADLDS** (this is just a dummy name), then click **Apply**, and click **OK**.



9. In the same way, you can change the **IDAPDisplayName** value of **user-Proxy-Full** to user. Once the changed attribute value is applied, you must restart **AD LDS Instance**.

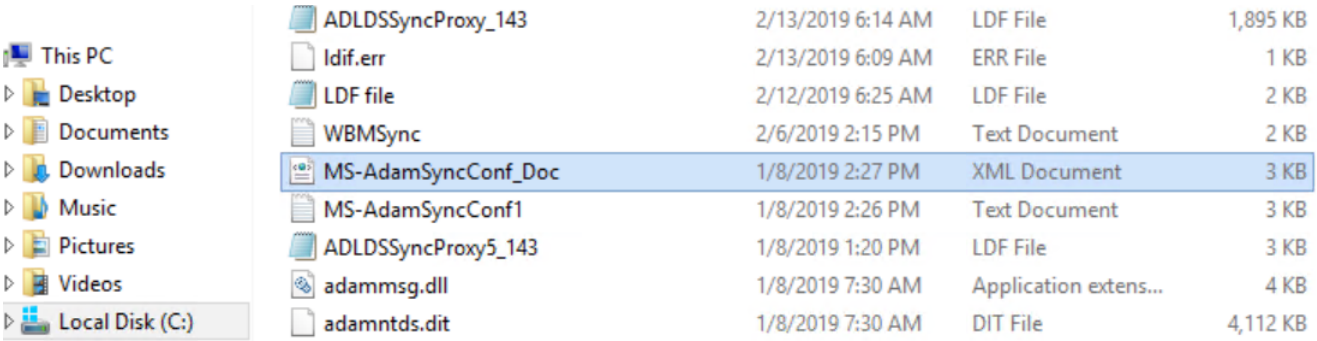


10. Change it to **user**. Click **OK**. Click **Apply** and then click **OK**.



Modifying MS-AdamSyncConf File

1. Go to `C:\Windows\ADAM Directory` in windows. Copy and Paste *MS-AdamSyncConf.xml* file. Rename the newly created file (for example, *MS-AdamSyncConf_Document.xml*).



2. Open the file in Edit mode (using Notepad) and modify below fields.

   <source-ad-name>Domain Name of Active Directory</source-ad-name>
   <source-ad-partition>Partition Name of Active Directory</source-ad-partition>
   <source-ad-account>[user name of Active Directory Admin]</source-ad-account>
   <account-domain>[Above Username Account Domain]</account-domain>
   <target-dn>[DN/Partition in AD LDS]</target-dn>
   <base-dn>[DN of users from which we want to synchronize from Active Directory]</base-dn>
   For Example:
   <source-ad-name>pmsnmdomain.com</source-ad-name>
   <source-ad-partition>dc=pmsnmdomain,dc=com</source-ad-partition>
   <source-ad-account>administrator</source-ad-account>
   <account-domain>pmsnmdomain</account-domain>
   <target-dn>DC=wbmusersadldsdomain,dc=com</target-dn>
   <base-dn>OU=WBMUSers,DC=pmsnmdomain,DC=com</base-dn>

3. Save the modified file.

Synchronizing Users from Active Directory to AD LDS Instance

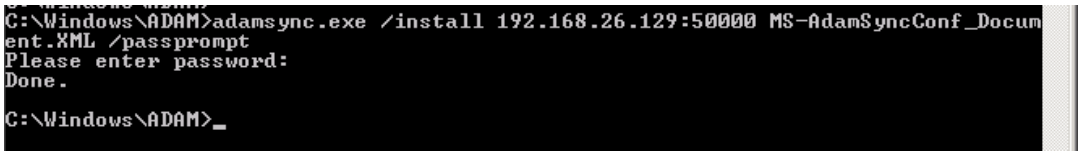
1. Open Command Prompt. Go to `C:\Windows\ADAM`.
2. Execute the following 2 commands as mentioned below.

   a. `adamsync.exe /install [AD LDS Instance IP:Port] [MS-ADAMSyncConf.xml File Name] /passprompt`

   For example: `adamsync.exe /install 192.168.26.129:53986 MS-AdamSyncConf_Docuent.xml /passprompt`

   NOTE: To synchronize users from Active Directory to AD LDS Instance, you must run the Adamsync.exe utility.

   Enter the password of Active Directory user which is mentioned in the XML file.



   b. `adamsync.exe /sync [AD LDS Instance IP:Port] "[DN/Partition Name of AD LDS]" /log [Log File Name]`

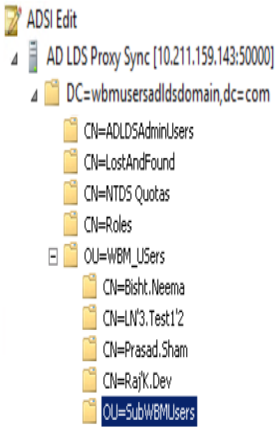
   For example: `adamsync.exe /sync 192.168.26.129:53986 "DC=wbmusersadldsdomain,dc=com" /log WBMSync.log`

   NOTE: WBMSync.log contains the user synchronization information from Active Directory to AD LDS. If any issues occurred while synchronization, it gets recorded in this log. All the users get synchronized from the Container to AD LDS except their passwords. So, you need to wait until the user synchronization process is completed.

Checking Synchronized Users in AD LDS

1. Open **Server Manager** > expand **Roles** > select **Active Directory Lightweight Directory Services**.
2. In **Advanced Tools** section, select **ADSI Edit** that is displayed in the right side pane.
3. In **ADSI Edit** window, go to **Action** menu and select **Connect to**, then provide the below details.
4. In **Connection Point** section, click **Select or Type Distinguished Name or Naming Context** and enter **Partition Name**.
5. In **Computer** section, click **Select or type domain or server: (Server | Domain [:Port])** of AD LDS Instance.

6. (Enter the IP address of AD LDS server with port number, for example: 192.168.26.129:50000).



7. All the Active Directory Users of that particular container and sub-containers gets synchronized and visible under the **ADSI Edit** Console tree.

Enabling LDAPS (SSL) for AD LDS in Window Server

1. Create a separate directory in the user location in the system.
2. Create a file *adlds_request.inf* (file name can be anything with .inf extension).
3. Copy the below highlighted content in that file and change the required value in pink color.

   NOTE: Remember that ";" is a comment in this file.

```
;----------------- request.inf -----------------[Version]
Signature="$Windows NT$"
[NewRequest]
Subject = "Fully Qualified name of AD LDS server" ; replace with the FQDN
of the DCKeySpec = 1KeyLength = bitsize can be any value from below line
values; Can be 1024, 2048, 4096, 8192, or 16384.; Larger key sizes are
more secure, but have; a greater impact on performance.Exportable =
TRUEMachineKeySet = TRUESMIME = FalsePrivateKeyArchive =
FALSEUserProtected = FALSEUseExistingKeySet = FALSEProviderName =
"Microsoft RSA SChannel Cryptographic Provider"ProviderType =
12RequestType = PKCS10KeyUsage =
0xa0[EnhancedKeyUsageExtension]OID=1.3.6.1.5.5.7.3.1 ; this is for Server
Authentication;----------------------------------------------
```

4. Execute the below command in directory to create a certificate request.`certreq -new <.inf file name> <certificate request file name>`

   An example of the command is mentioned below.

```
c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir>certreq -new Certificate_request_details.inf ADLDS_Request_file.req

c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir>
```

5. A new file is created in the same directory.

```
c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir>dir
 Volume in drive C has no label.
 Volume Serial Number is 3AC0-320A

 Directory of c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir

11/11/2016  05:40 AM    <DIR>          .
11/11/2016  05:40 AM    <DIR>          ..
11/11/2016  05:40 AM             1,380 ADLDS_Request_file.req
11/11/2016  02:19 AM               763 Certificate_request_details.inf
               2 File(s)          2,143 bytes
               2 Dir(s)   6,052,823,040 bytes free

c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir>
```

6. Share the file with Certificate Authority to provide the signed certificate.
7. Copy the file in the same directory (with preferred extension of .cer / .crt).

   For example, the sample AD LDS Server Signed Certificate (in this **pmsnmdomain.com** is root certificate), which is certificate of Issuer who has issued certificate to AD LDS Instance. **Adldsserver.pmsnmdomain.com** – is the Signed Certificate of AD LDS Instance.

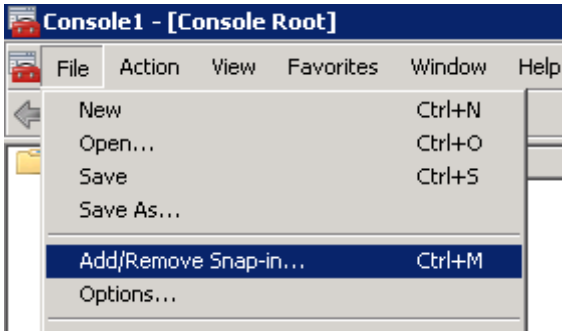
8. Once you receive the signed certificate from Certificate Authority. Type the below mentioned command.`certreq -accept <received signed certificate file name>`

   An example of the command is mentioned below.

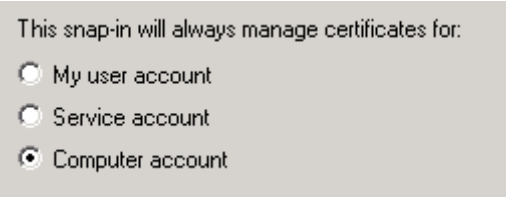
```
c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir>certreq -accept ADLDS_Cert_Response.cer

c:\Certificates\ADLDS_Certs\ADLDS_Keystore_Dir>
```

9. Open **Command Prompt** and **Run as Administrator**.
10. In the command prompt, execute *mmc* command that opens a new mmc window.

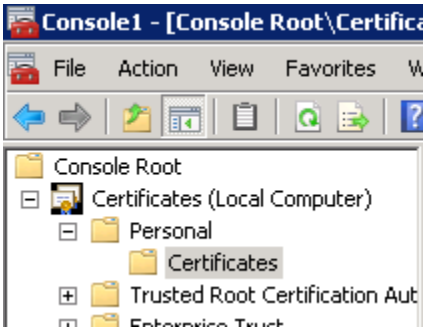
11. In the *mmc* window, go to **File** and select **Add/Remove Snap-in** option.



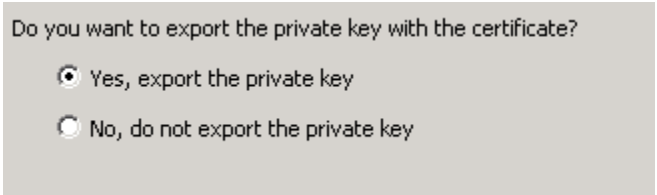
12. In the **Add or Remove Snap Ins** window, select **Certificates** from the left side pane and click on **Add** button.
13. Select **Computer Account** and click **Next**. Select **Local Computer**. Click **Finish** and then click **OK**.



14. Extract **Certificates** > **Personal** > **Certificates** from the left side pane. All the certificates get listed in the right side pane.

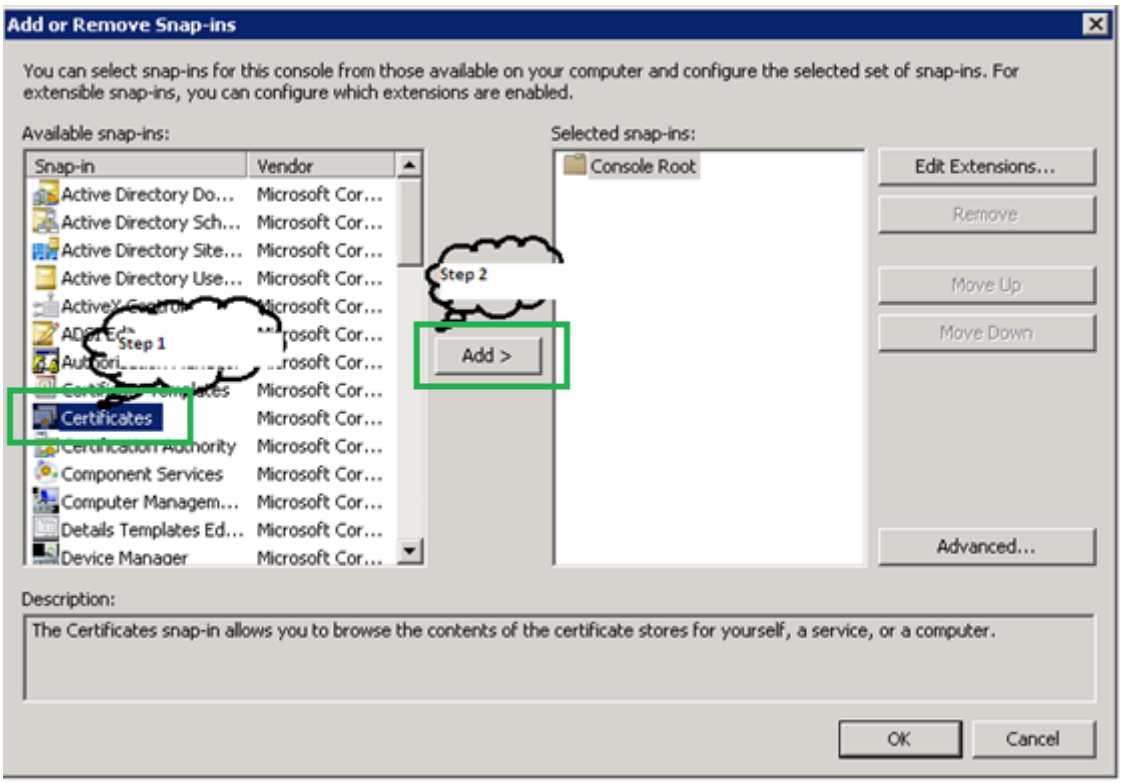


15. Open the Signed certificate which you have received from Certificate Authority.
16. Once the certificate is opened, go to **Details** tab and click on **Copy to File** button.
17. Click **Next** and select **Yes, export the private key option**.

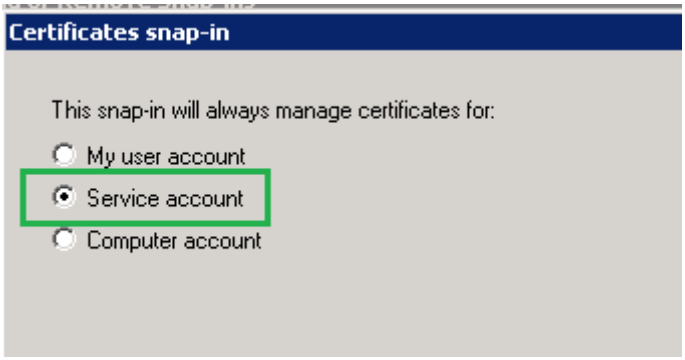


18. Click **Next**.

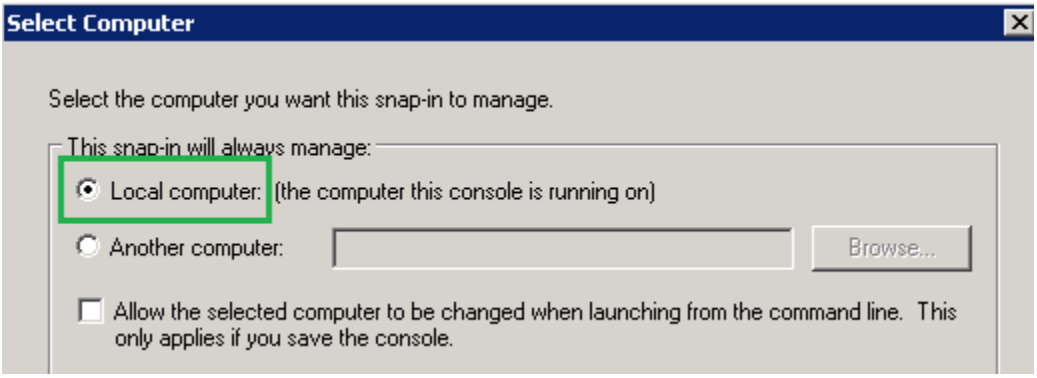
19. Enter your password (double time) to assign to the Keystore and click **Next**.
20. Save the .pfx file in the system in the same location where certificate request is created for easy identification.
21. Click **Next** and click **Finish**.
22. In the same *mmc* window, open **File** menu and select **Add/Remove Snap-In** option
23. Select **Certificates** and click **Add**.



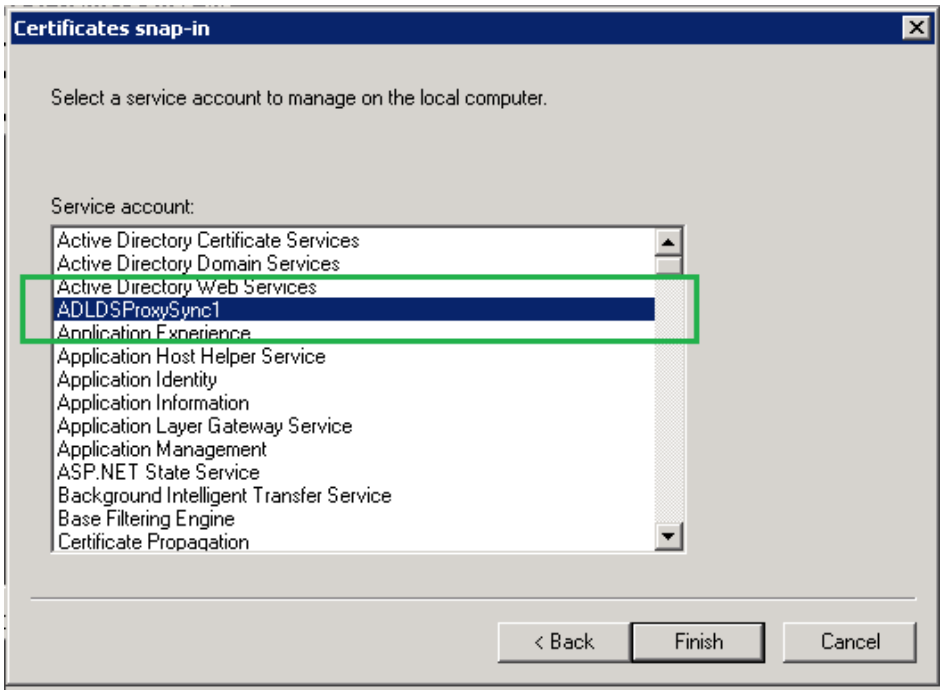
24. Select **Service Account**.



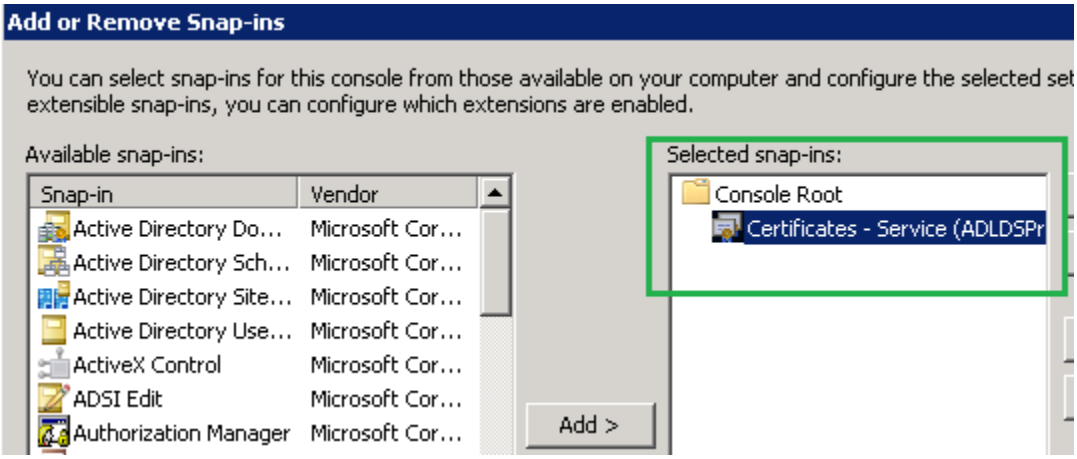
25. Select **Local Computer**, click **Next**.



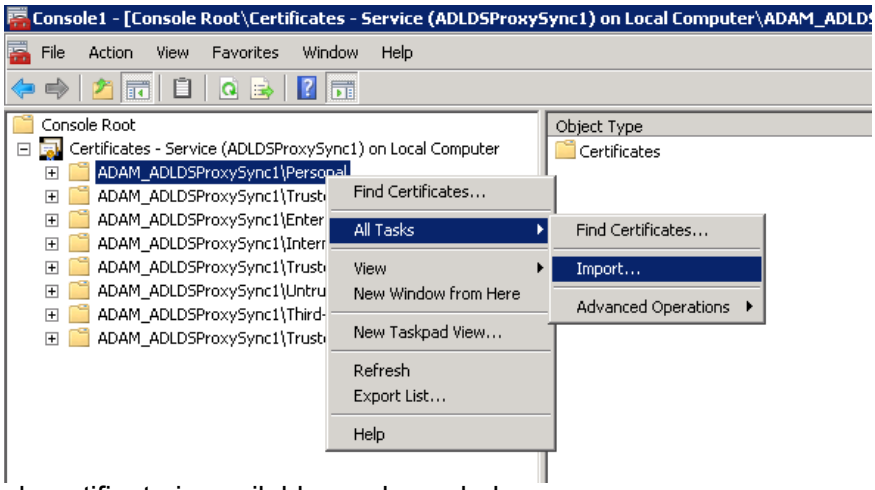
26. Select the Service Name / AD LDS Instance Name.



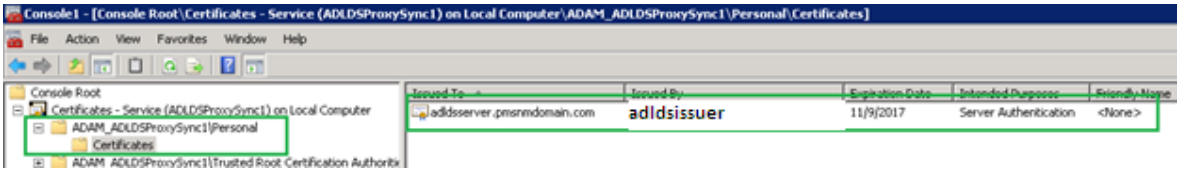
27. Click **Finish** and then click **OK**. The following **Add or Remove Snap-ins** window appears.



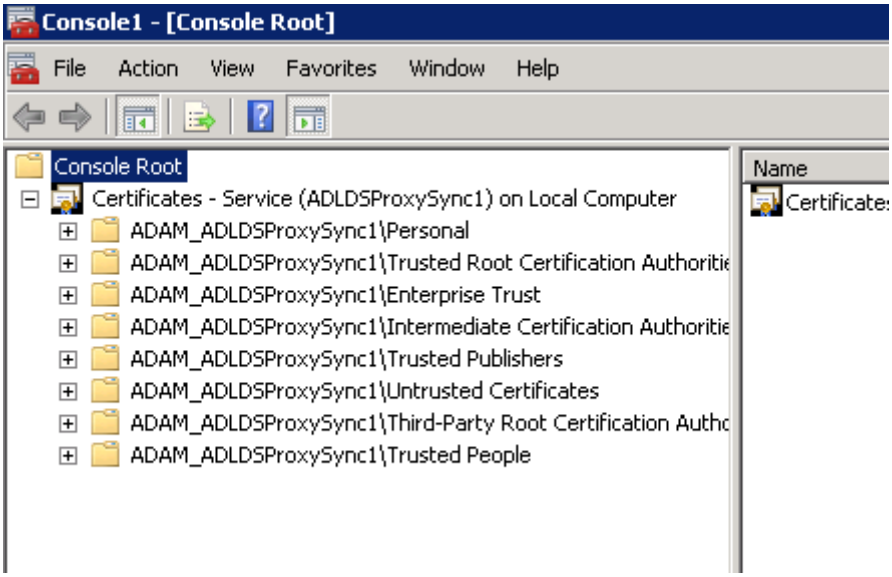
28. In mmc **Certificates** window, expand **Certificates** – Service (AD LDS Instance Name) on Local Computer. Add the **AD LDS Signed Certificate** in **AD LDS Instance Name/Personal** section.
29. Click **Next** > **Browse**. Select the key store that you have created in previous step (file extension is .pfx) in File browser.
30. Click **Next**. Enter the password of key store (entered while creating .pfx file).
31. Click **Next** > **Next** > **Finish**.



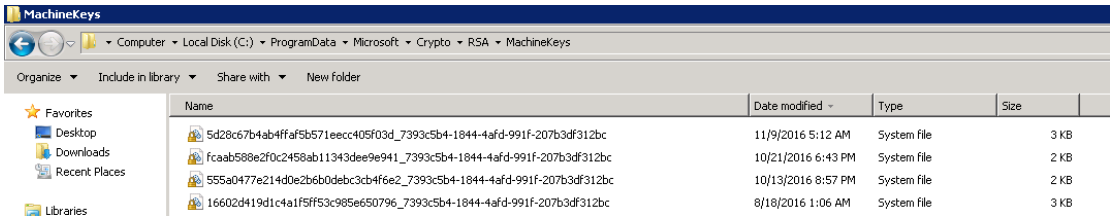
Once it is added, certificate is available as shown below.



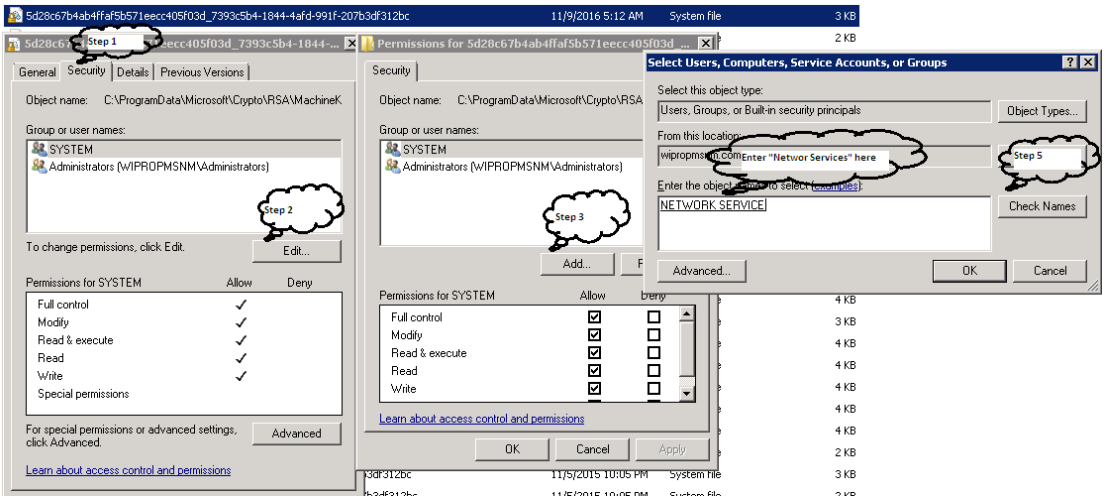
32. In the same way, add the **AD LDS certificate's Root certificate** (for example, **pmsnmdomain.com**) in **AD LDS Instance Name/Trusted Root Certificate Authorities**.
33. Add the **AD LDS certificate's Root certificate** in **AD LDS Instance Name/Trusted Publishers**.
34. Add the other end certificate (for example, Provisioning Manager application certificate) in **AD LDS Instance Name/Trusted People**. An example is shown below.



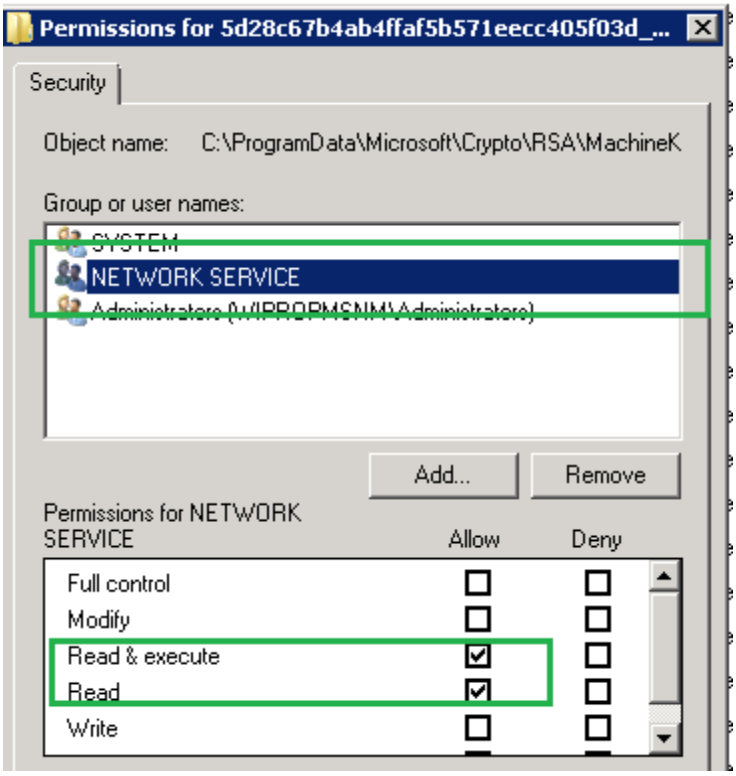
35. Add the ownership to the added certificates to **Network Service**.
36. Go to `C:\ProgramData\Microsoft\Crypto\RSA\MachineKeys`.
37. Right click on each certificate where **Lock** like icon appears on the files.



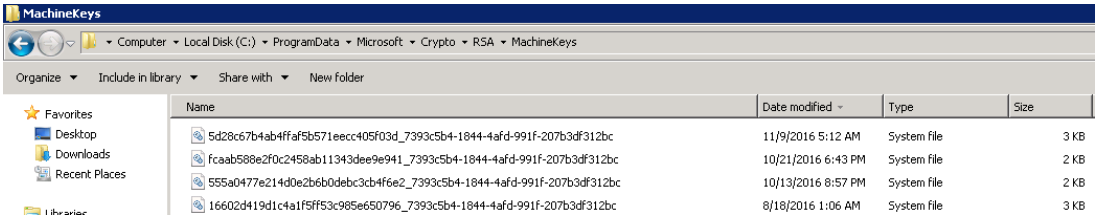
38. Open **Properties** and go to **Security** tab. Click **Edit** and then click **Add**. Enter **Network Service**.



39. Enter the **Network Service** and select **Users, Computer, and Service Accounts or Groups** window.
40. Give **Read, Read & Execute** permission > click **OK** > **OK**.



41. In the same way, provide permissions to all certificates for **Network Service** user. When you give the permissions, all the **Lock** icons get disappeared.



42. Restart **AD LDS Instance**. Test LDAPS for AD LDS by using the below command from **PM installed** server.

```
openssl s_client -connect IPAddress of AD LDS:LDAPS port
```

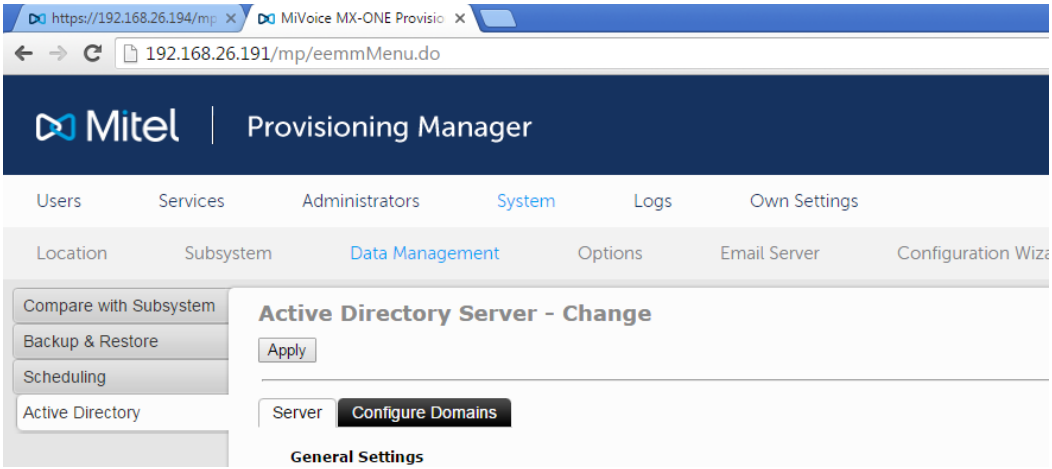
For example:

```
openssl s_client -connect 192.168.26.129:53994
```

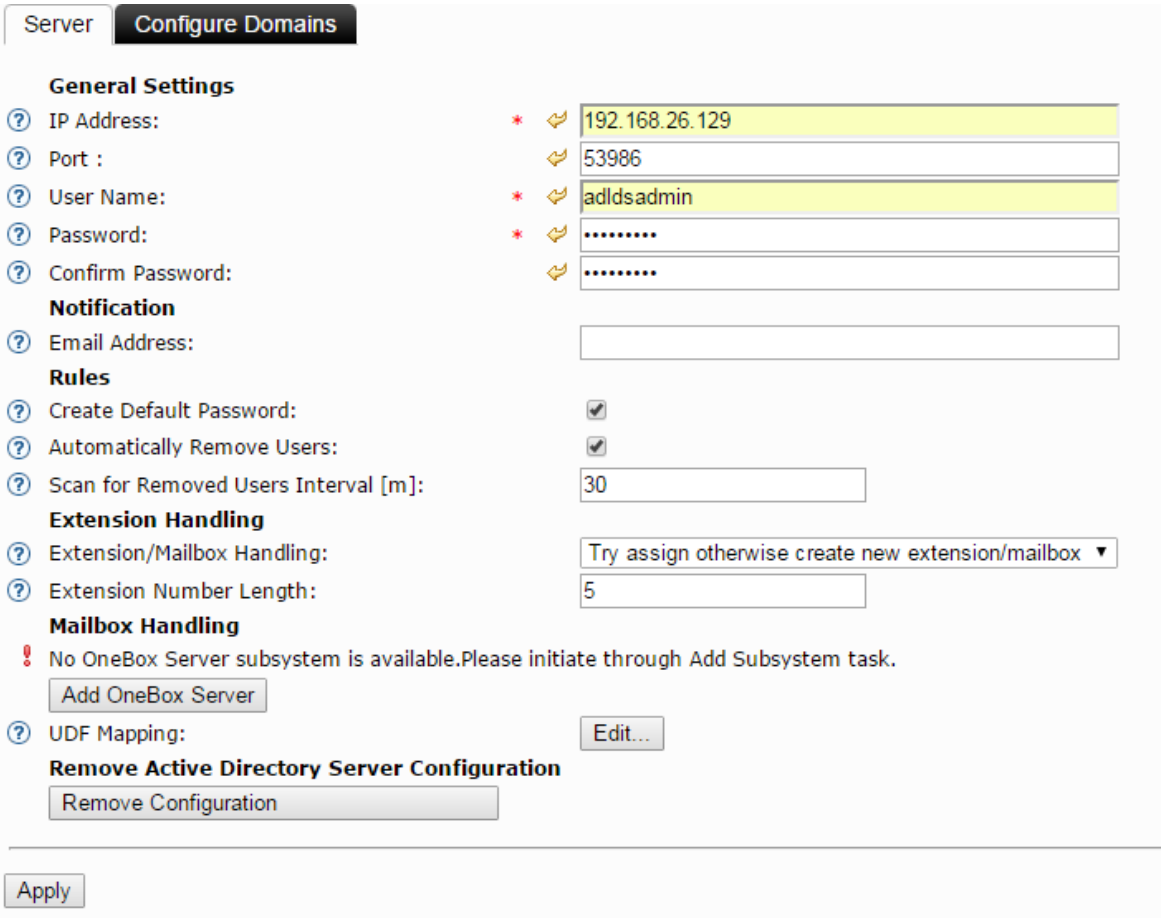
Using AD LDS as a User Repository in PM Application

To Import Users into PM, do the following:

1. Login to **PM** application.
2. Select **System** menu > select **Data Management** sub menu > select **Active Directory**.



3. Enter the following fields details.

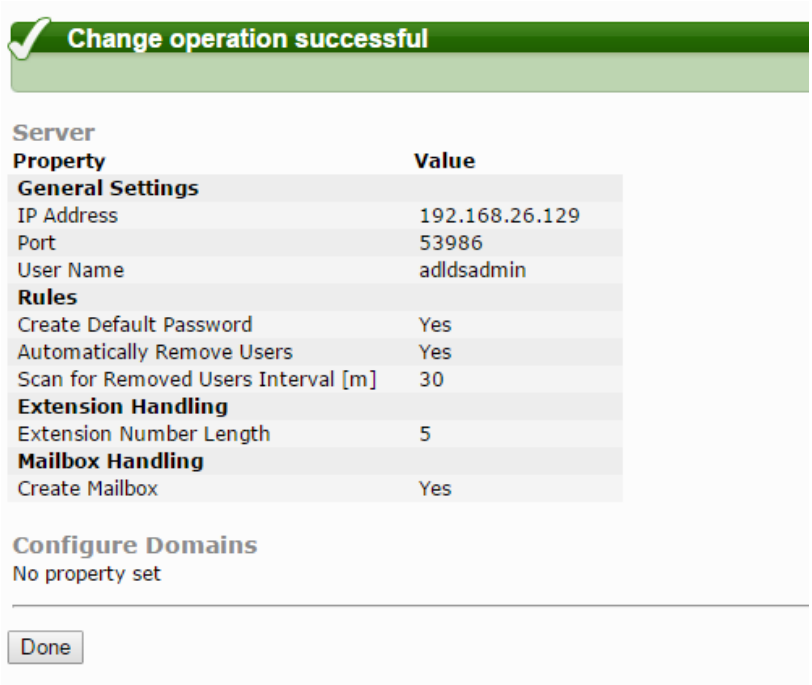


For example,

- **IP Address**: [IP address of AD LDS Instance located server]
- **Port**: [Normal LDAP port of AD LDS]
- **User Name**: [administrative user created in AD LDS in “Step V”]
- **Password**: [Password of above administrative user]

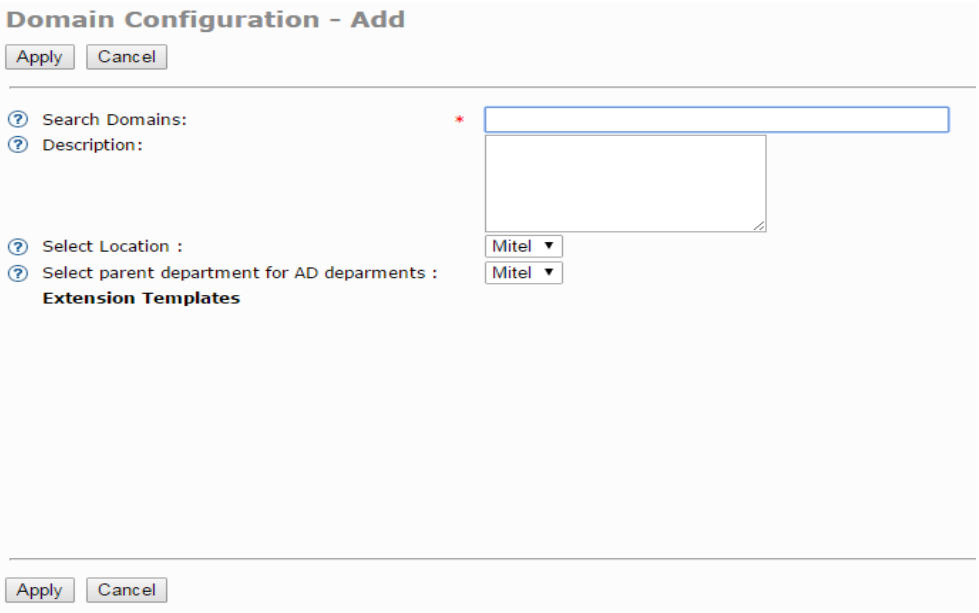
– **Confirm Password**: [Type the same password as entered in “Password” field]

4. Click on **Apply**. Authentication is Successful is displayed.



5. Click **Done**.

6. Go to **Configure Domains** tab and click **Add**.

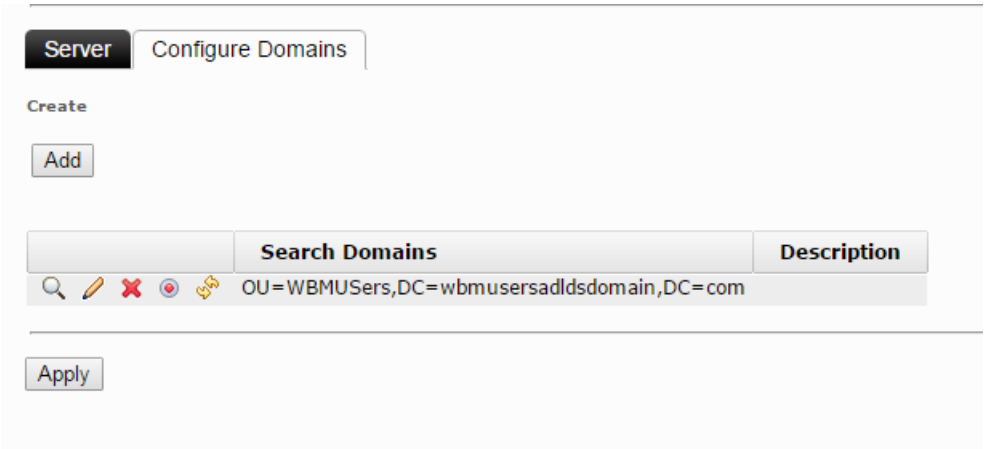


Add the following details.

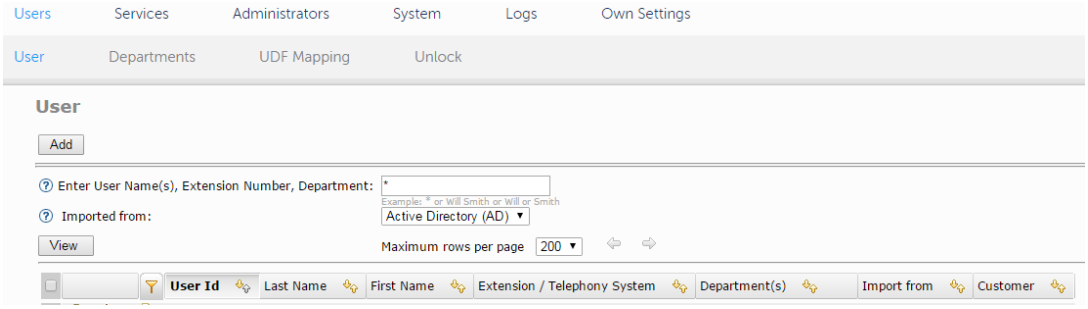
– Search Domains: [The Domain which is created at AD LDS Side After Step X]

For example, OU=WBMUSers,DC=wbmusersadldsdomain,DC=com

7. Click **Apply** and then click **Done**.
8. Configure the AD LDS Instance details as mentioned below.
9. Click **Apply** and then click **Done**.



10. Go to **Configure Domains** tab and click on **Synchronization** icon [5th icon from left side].
11. Go to **Users** menu and select **User**. Once, the synchronization completed.



12. Enter "*" in **Enter User Name(s)**, **Extension Number**, and **Department** field.
13. Select **Active Directory (AD)** in **Imported from** drop-down list.
14. Select **View** to view the list of users who are synchronized from AD LDS.

Enabling SSL for PM Application

1. For the **AD Authentication, Description** refer to the file number *18/1551-ANF 901 15, Section 4 of the CPI Document*.
2. Place the certificates of PM at AD LDS side as mentioned in **step XII**.

Enabling AD Authentication in PM Located Server

For the **AD Authentication, Description** refer to the file number *18/1551-ANF 901 15, Section 4.4* of the CPI Document.

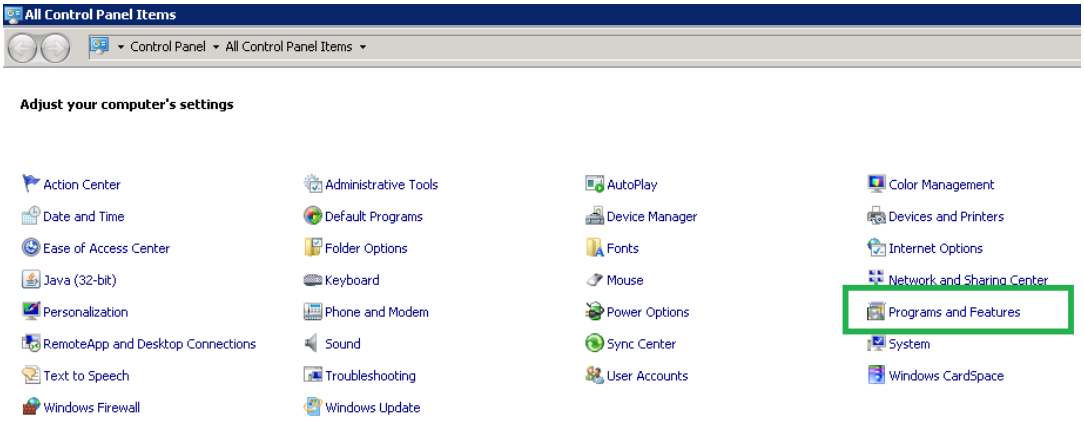
To do this, do as follows:

1. Leave the **Principal DN Suffix** field empty.
2. Enter LDAPS port of AD LDS in the port field.
3. Except this everything is same as we do for Active Directory.
4. After this configuration, restart of PM application and try to login with the synchronized users from AD LDS.

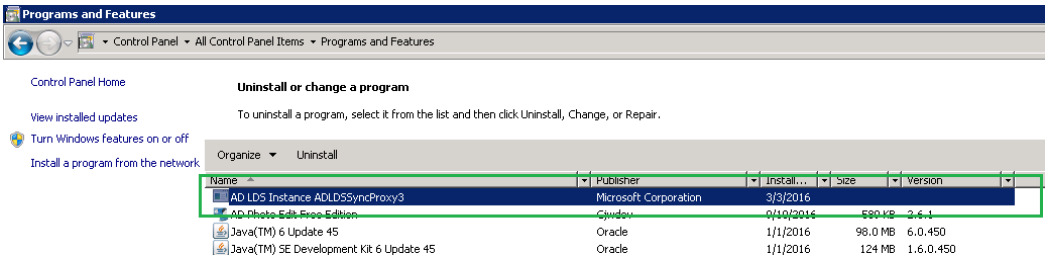
Uninstalling AD LDS Instance and AD LDS Roles from Server

To uninstall AD LDS Instance from the system, do the following:

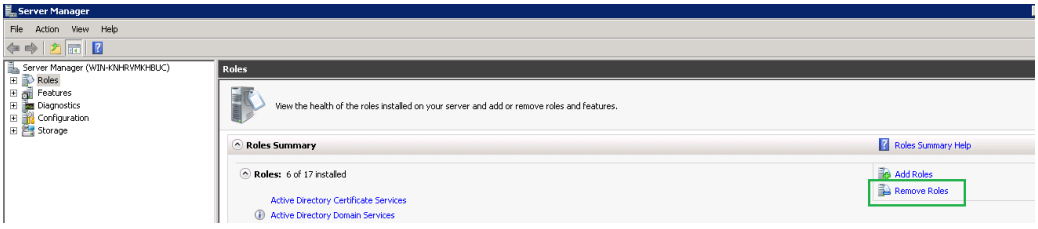
1. Go to **Control Panel** and select **Programs and Features**.



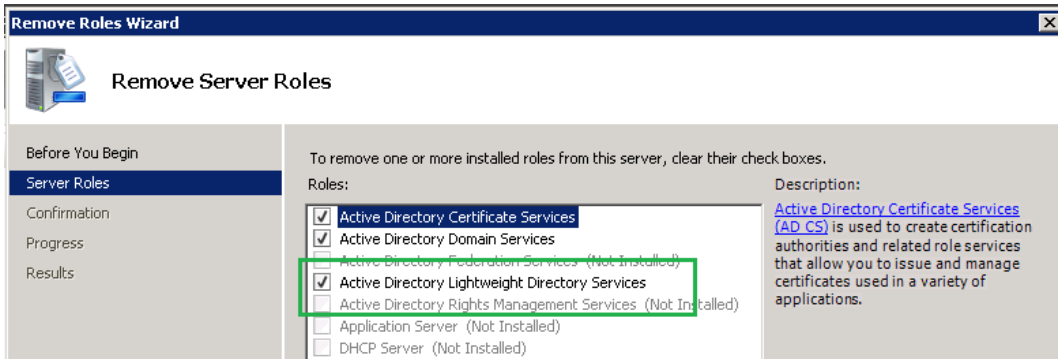
2. Select the **AD LDS Instance Name** > select **Uninstall**.



3. Remove AD LDS Roles from server.
4. Open **Server Manager** and select **Remove Roles**. Click **Next** button in the opened new dialog window.



5. Unselect **Active Directory Lightweight Directory Services** check box.



6. Click **Next** and then click **Remove** in the next dialog windows.
7. Click **Close** when it is removed successfully.

Quick Reference Instructions

Create a User with IP Extension and Optional Mailbox

When you create a user in MX-ONE Provisioning Manager (PM) you can also add an IP extension with or without a mailbox.

This step-by-step instruction guides you how to set up a user with an IP extension and a mailbox. You can combine how you will set your user information. First you can create a new user, or import user information. Second you add a new extension, and third you add a new mailbox or use an existing mailbox.

NOTE: If you want to add more settings then this guide describe, please see the PM online help.

Log in to PM

Do as follows:

Open Provisioning Manager (PM). The start page is displayed.

Type the User name in the field User.

Type the Password in the field Password.

Click Login. The main page is displayed.

Create a user

Do as follows:

Click Users and then User. The User page is displayed.

Click Add. The step Add User – Step 1/3 is displayed.

Type the last name of the user in the field Last Name.

Type the user ID in the field User ID.

It is optional to enter a password, but Mitel recommend you to select a password, minimum 6 characters. Enter needed information.

Select one or more options in the list Existing Department(s); Location(s) and then click on the right-arrow. Under Selected Department(s) Location(s) you will see the selected option. Sort the list with the button Move Up and Move Down.

Click Next. The step User - Add – step 2/3 is displayed. Next step is to add an IP extension.

Add an IP extension

You can add an IP extension in two ways:

Add a new IP extension.

Use an existing extension.

Add a new IP extension

Do as follows:

Click the tab Service Summary.

Click Add to the right of the field Add New Extension. The page Extension - Add - Step 1 / 2 is displayed.

Select IP from the list Extension Type.

Click Next. The page Extension - Add - Step 2 / 2 IP is displayed.

Select if the user allows dialing internal, regional, national or international phone calls, from the list Common Service Profile. (Note! This is depending on how the system was configured in the startup.) Enter needed information.

Click Continue. The page User –Change is displayed again.

Click Apply. The page User - Change –Result is displayed.

Click Done.

Assign an Existing Extension

Do as follows:

Click the tab Service Summary.

Type the extension number under Extension Number.

Click Apply. The page User - Change –Result is displayed.

Click Done.

Add a mailbox

If the user needs a mailbox you can add an existing mailbox number or add a new mailbox. Note! Add a mailbox is optional.

Do as follows:

Add a new Mailbox

Click Add to the right of the field Add New Mailbox. The page Mailbox - Add - Step 1 / 2 is displayed.

Click Next. The page Mailbox - Add - Step 2 / 2 is displayed.

Type the name of the user in the field Subscriber Name.

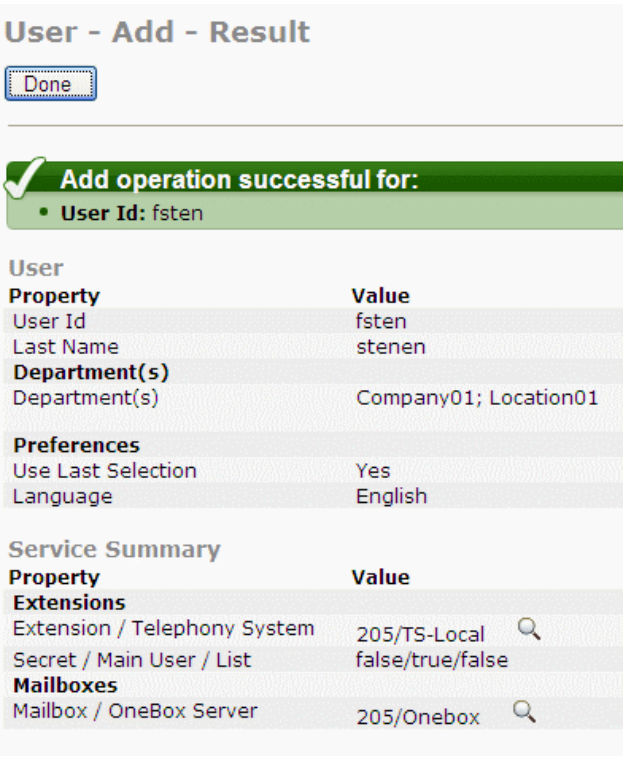
If required, enter needed information in the other fields.

Click Continue. The page User - Add - Step 2 / 3 is displayed again. The mailbox number is displayed in the field Assigned Mailboxes.

Click Next. The page User- Add - Step 3 Scheduling is displayed.

If required, enter schedule information. Note! This optional.

Click Apply. The User – Add –Result page is displayed. If the settings were successful, you will get an information notice, see the following figure.



Click Done, to close the page.

Import a CSV file with user information using PM

You can import users, extensions and mailboxes via a CSV file using PM and the subsystem CMG. For more information of the contents in CSV file, see QRG Edit CSV file.

Note! The PM and CMG use different term for the same meaning, department or unit.

Log in to PM

Do as follows:

Open Provisioning Manager (PM). The start page is displayed.

Type the User name in the field User.

Type the Password in the field Password.

Click Login. The main page is displayed.

Preparation before the import of the CSV file

You have to enter information about the company and the units before you can import the information in the CSV file. You have to enter the company name in PM and the company (organization) structure in CMG. Note! The structure in CMG has to be exactly as the structures in the CSV file and the usage of capitals have to be the same.

Do as follows:

Click Users and then Departments. The Departments page is displayed.

Change the name in the field Department Name.

Click Apply.

Log in to CMG

Do as follows:

Click System, Subsystem and then CMG DM. The Start page is displayed.

Type the user name in the field User name.

Type the password in the field Password.

Click Log in. The CMG Directory Manager page is displayed.

Enter Company structure in CMG

It is important that a valid company structure is entered in CMG before you import a CSV file! When you enter information in CMG you have to end all setting with a click on the Save button.

Do as follows:

Select All COMPANY01 from the list Select Directory.

Under Organization select Company01. The Manage Organization page is displayed.

Under Organization type the new organization name.

Click Save.

Add a New Unit in CMG

Do as follows:

Select the new organization under Organization. The Manage Organization page is displayed.

Click New Unit. The New unit page is displayed.

Type the name of the unit in the field Organization.

Click OK, and then click Save. The new name is inserted in the structure.

Continue to enter all the other units to the structure. Note! It is important that the structure is the same as the information in the CSV file!

Import the CSV file in PM

Do as follows:

Select System, Data Management and then Import. The Import Data page is displayed.

Click Import. The Import Data -Step 1/4 is displayed.

Select CSV file on A700 format for Aastra 700, and CSV file for MX-ONE.

Click Next. The Import Data -Step 2/4 is displayed.

Click Browse. The Choose File to Upload page is displayed.

Select the file you want to import and click Open.

From the list Character encoding of CSV file select ISO 8859-1.

Click Apply. The file is now imported. Note! This can take a while.

Click Done. The Import Data page is displayed again. If the import was successful, you will get an information notice.

To check if all values are imported, click Successful Items. A list is displayed. Please read the whole list.

If something went wrong

If something went wrong with the import, please check the list below.

Check list

Check the user information.

Check the structure of the organization in PM and CMG.

Check user information in CMG.

Check the use of uppercase and lowercase letters in the structure of the organization. It must be the same in PM and CMG.

Check the Organization Structure in PM

Do as follows:

Click Users, User and then Departments. The Departments page is displayed.

Check the structure.

Check the Structure in CMG

Do as follows:

Click System, Subsystem and then CMG DM. The Start window is displayed.

Type the user name in the field User name.

Type the password in the field Password.

Click Log in. The CMG Directory Manager window is displayed.

Under Organization select the organization.

The structure is displayed to the right.

5. Check the structure.

Search for a User without a Unit in CMG

Do as follows:

Open CMG. Click Advanced Search under Records. The Advanced Search page is displayed.

From the list First criteria select Last name.

Click Search. The Record list page is displayed.

Click Organization to sort the list.

Select the user. The user information is displayed. All users without a unit are displayed first in the list. You can now add users to the right unit.

Add a User to a Unit in CMG

Do as follows:

Select a user. (Please see previous step-by-step-instruction Search for a user without a unit in CMG.)

Click the tab Organization and then Add. A page is displayed with the structure.

Expand the list.

Select a unit.

Click OK. The selected unit is displayed in yellow.

Click Save.

Add a new unit in CMG after a CSV File Import

If you find out that a unit is missing, you can add a new one in CMG.

Do as follows:

Under Organization select the organization. The Manage Organization with the structure page is displayed.

Select were in the structure the new unit shall be added.

Click New Unit. The New Unit page is displayed.

Type the required information of the unit in the fields.

Click OK.

Click Save.

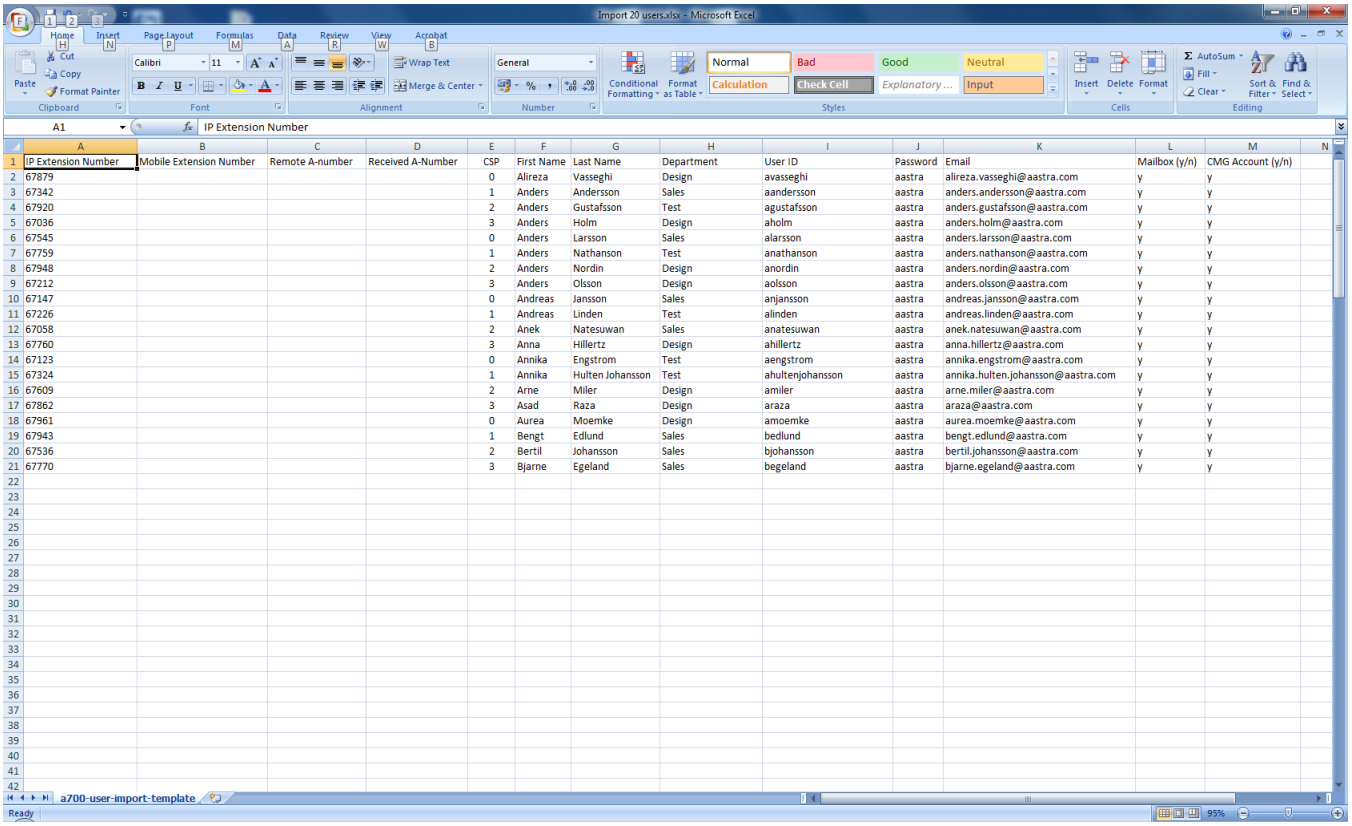
Add users to the unit, see step-by-step-instruction Add a User to a Unit in CMG.

Edit CSV file

Do as follows:

The figure below shows an example of a CSV file, in .xlsx format.

To edit a CSV file, follow the syntax below.



IP Extension Number	Mobile Extension Number	Remote A-number	Received A-Number	CSP	First Name	Last Name	Department	User ID	Password	Email	Mailbox (y/n)	CMG Account (y/n)
67879				0	Alireza	Vasseghi	Design	avasseghi	aastra	alireza.vasseghi@aastra.com	y	y
67342				1	Anders	Andersson	Sales	aandersson	aastra	anders.andersson@aastra.com	y	y
67920				2	Anders	Gustafsson	Test	agustafsson	aastra	anders.gustafsson@aastra.com	y	y
67036				3	Anders	Holm	Design	aholm	aastra	anders.holm@aastra.com	y	y
67545				0	Anders	Larsson	Sales	alarsson	aastra	anders.larsson@aastra.com	y	y
67759				1	Anders	Nathanson	Test	anathanson	aastra	anders.nathanson@aastra.com	y	y
67948				2	Anders	Nordin	Design	anordin	aastra	anders.nordin@aastra.com	y	y
67212				3	Anders	Olsson	Design	aolsson	aastra	anders.olsson@aastra.com	y	y
67147				0	Andreas	Jansson	Sales	anjansson	aastra	andreas.jansson@aastra.com	y	y
67226				1	Andreas	Linden	Test	alinden	aastra	andreas.linden@aastra.com	y	y
67058				2	Anek	Natesuwan	Sales	anatesuwan	aastra	anek.natesuwan@aastra.com	y	y
67760				3	Anna	Hillertz	Design	ahillertz	aastra	anna.hillertz@aastra.com	y	y
67123				0	Annika	Engstrom	Test	aengstrom	aastra	annika.engstrom@aastra.com	y	y
67324				1	Annika	Hulten Johansson	Test	ahultenjohansson	aastra	annika.hulten.johansson@aastra.com	y	y
67609				2	Arne	Miler	Design	amiler	aastra	arne.miler@aastra.com	y	y
67862				3	Asad	Raza	Design	araza	aastra	araza@aastra.com	y	y
67961				0	Aurea	Moemke	Design	amoemke	aastra	aurea.moemke@aastra.com	y	y
67943				1	Bengt	Edlund	Sales	bedlund	aastra	bengt.edlund@aastra.com	y	y
67536				2	Bertil	Johansson	Sales	bjohansson	aastra	bertil.johansson@aastra.com	y	y
67770				3	Bjarne	Egeland	Sales	begeland	aastra	bjarne.egeland@aastra.com	y	y

Create an Extra Directory Number (EDN)

Before you can create an Extra Directory Number, a user must exist with one IP extension.

Log in to PM

Do as follows:

1. Open MX-ONE Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

Create an extra IP Extension

Do as follows:

1. Click Services and then Extension. The Extension page is displayed.
2. Click Add. The Extension – Add – step 1/2 is displayed.
3. Select IP from the list Extension Type.
4. Click Next. The Extension – Add – step 2/2 IP is displayed.
5. Select a range from the list Extension Number Range.
6. Select an option from the list Common Service Profile.
7. Click Apply. The Extension – Add – Result is displayed. An information notice is displayed about the operation.
8. Click Done. The Extension page is displayed.

View an Extension

Do as follows:

Type the extension number or type * to view all in the field Enter Extension Number(s). A list is displayed below.

Add an Extra Directory Number (EDN)

Do as follows:

1. Click Change, before the extension number you want to add an extra directory number for. The page Extension – Change – Extension number is displayed.
2. Under Function Keys, select the phone type from the list Phone Type.
3. Click Change. The page Function Keys is displayed. All the phone´s keys are displayed.
4. Select one of the key numbers, and click to the left of the number. A field to the right is displayed.
5. Select EDN – Extra directory number from the list Function.
6. Type the name of the extra directory number in the field Key Label. Note! This is optional.
7. Type the extra number you created in the step Create an extra IP Extension, in the field EDN Number.

   NOTE: This number is reliable of the user´s settings, if the user is allowed to dial local, national or international.
8. Click Ok. The Function Keys page is displayed again. Now is the information about the selected key displayed to the right of the key.
9. Click Continue. The Extension - Change page is displayed. Now is the information about the selected key displayed in the field Function Keys.
10. Click Apply. The page Extension - Change – Result is displayed.
11. Click Done.

Set Group Hunting

Group Hunting (Internal) group means that a number of extensions are assigned a common call number. When this number is called one of the extensions (members) is selected. The call is signaled on the telephone of the selected member. The call will be queued if no free member exists.

Log in to PM

Do as follows:

1. Open Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

Set Group Hunting

Do as follows:

1. Select System, Subsystem, and then click on the link for the Telephony system. A Manager Telephony System page is displayed.
2. Select Telephony, and then Groups. A menu to the left is displayed.
3. Select Hunt Group. The Hunt Group page is displayed.
4. Click Add. The Hunt Group - Add - Step 1 / 3 is displayed.
5. Select an interval from the list Available Directory Number Intervals.
6. Click Next. The Hunt Group - Add - Step 2 / 3 is displayed.

Add Group Hunting Information

Do as follows:

1. Select a number from the list Direct Number.
2. Select an option from the list Direct In-dialing.
3. Select an option from the list Display of Called Number.
4. If required select options from the list:
    a. Music on Wait
    b. Allow Collect Call
    c. Permit Automatic Extending.
5. Select 15 from the list Traffic Connection Class.
6. Select an option from the lists:
    a. Member Selection Or.
    b. Queue Internal Calls.

c. Diversion.
d. Diversion Number.

7. Click Next. The Hunt Group - Add - Step 3 / 3 is displayed.
8. Type the first name in the field First Name.
9. Type the last name in the field Last Name.
10. Click Apply. An information notice if the operation is displayed.
11. Click Done.

Select Group Hunting Members

Do as follows:

1. Select System, Subsystem, and then click on the link for the Telephony system. A Manager Telephony System page is displayed.
2. Select Telephony, and then Groups. A menu to the left is displayed.
3. Select Hunt Group Member. The page Hunt Group Member is displayed.
4. Select the group you created before, and click Change,. The Hunt Group Members page is displayed.

5. Type one or more extension number, separated with a comma.
6. Click Apply. An information notice of the operation is displayed.
7. Click Done.

Set Multiple Name Selection (MNS)

Before you can create a Multiple Name Selection, you have to create one user, with one mail box and one IP extension.

Log in to PM

Do as follows:

1. Open MX-ONE Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

View Extension

Do as follows:

1. Click Services and then Extension in the start page. The Extension page is displayed.
2. Type the extension number or type * to view all in the field Enter Extension Number(s).
3. Click View. A list is displayed below.
4. Click Change,, before the extension number you want to set Multiple Name Selection for. The page
   Extension – Change – Extension number is displayed.

Set Multiple Name Selection

Do as follows:

1. Click Service Summary Tab.
2. Under Function Keys, select the phone model from the list Phone Type.
3. Click Change. The page Function Keys is displayed. All the phone´s keys are displayed.
4. Select one of the key numbers, and click to the left of the number. A field to the right is displayed.
5. Select MNS – Multiple name selection from the list Function.
6. Type the name of the key in the field Key Label. Note! This is optional.
7. Type the extension number in the field MNS Number. (Note! Please see your number plan.).
8. Click Ok. The Function Keys page is displayed again. The information about the selected key is displayed to the right of the key.

Save the Settings

Do as follows:

1. Click Continue. The page Extension - Change is displayed. The information about the selected key is displayed in the field Function Keys.
2. Click Apply. The page Extension - Change – Extension number – Result is displayed.
3. Click Done.

Set Personal Number (PN)

The Personal Number function allows you or the end-user, to handles incoming calls and route them, for example to the mobile or to the desk phone.

This step-by-step instruction gives you examples how you can set the function Personal Number, when you are:

- In the office
- On a business trip.

Log in to PM

Do as follows:

1. Open Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

View User

Do as follows:

1. Click Users and then User. The User page is displayed.
2. Type the name of the user in the field Enter User Name(s), Extension Number, Department.
3. Click View. The User ID table is displayed below.
4. Select the user, and click Change. The User – Change page is displayed.

Set Personal Number (PN)

You start to enter the settings on the page User – Change. You can set up to 5 PN for an extension. The following step-by-step-instruction describes how you set 2 PN.

Do as follows:

Set Profile 1 - In Office

1. Click the tab Service Summary. The tab Service Summary is displayed.
2. Select an extension under Extension number, and click Change, . The Extension – Change page is

displayed.

3. Click Edit to the right of the field Personal Number List. The Number list page is displayed.
4. Select Profile 1, and click Change, . The page Personal Number List – Change 1 is displayed.

Set profile 1 - In Office

Click the tab Service Summary. The tab Service Summary is displayed.

Select an extension under Extension number, and click Change, . The Extension – Change page is

displayed.

Click Edit to the right of the field Personal Number List. The Number list page is displayed.

Select Profile 1, and click Change, . The page Personal Number List – Change 1 is displayed.

Enter Number List Information

Do as follows:

1. Type for example In Office, in the field List Name. Note! The limit of the list name is 10 characters.
2. Under Call Sequence 1 type your extension number in the field Number.
3. Select ring durations in seconds, for example 30 seconds, type 30 in the field Ring Duration [s].
4. Under Call Sequence 2 type for example the voice mail number in the field Number.
5. Select ring durations in seconds, for example 15 seconds, type 15 in the field Ring Duration [s].
6. Click Continue. The page Personal number List is displayed. You see the new PN in the table with the status active. Note! Now you can continue to add more PN, or save the settings and go back to the main page.

Set profile 2 – On a business trip

Do as follows:

Click Edit to the right of the field Personal Number List. The page Number list is displayed.

Select Profile 2, and click Change, . The page Personal Number List is displayed.

Enter Number List Information

Do as follows:

1. Type for example Business (for business trip) in the field List Name. Note! The limit of the list name is 10 characters.
2. Under Call Sequence 1 type your mobile number in the field Number.
3. Select ring durations in seconds, for example 15 seconds, type 15 in the field Ring Duration [s].
4. Under Call Sequence 2 type for example the voice mail number in the field Number.
5. Select ring durations in seconds, for example 15 seconds, type 15 in the field Ring Duration [s].
6. Click Continue. The page Personal number List is displayed. You see the new PN in the table with the status active.

Save the Settings

Do as follows:

1. Click Continue. The page Extension – Change is displayed. The PN is displayed under the button Edit in the field Personal Number List.
2. Click Continue. The tab Service Summary is displayed.

3. Click Apply. The page User - Change - Result is displayed. An information notice of the operation is displayed.
4. Click Done.

Set Boss-secretary

The Boss-secretary function is to allow the boss and the secretaries to control the diversion of incoming calls for the boss telephone. Both the boss and the secretaries can activate the function by pressing a predefined key on the phone.

Login to PM

Do as follows:

1. Open Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

View the Extension of the Boss

Do as follows:

1. Click Users and then User. The User page is displayed.
2. Type the name or the extension number of the boss in the field Enter User Name(s), Extension Number, Department.
3. Click View. The User ID table is displayed below.
4. Click Change, . The User – Change page is displayed.
5. Click the Service Summary tab.

Set Personal Number Lists

You have to create two personal number lists and two profiles, one for the boss (profile 1) and one for the secretary (profile 2).

Set Profile 1 for the Boss

Do as follows:

1. Click Change, under Extension Number. The Extension Change page is displayed.
2. Click Edit under Personal Number. The Personal Number List page is displayed.

3. Click Change, to the left of Profile 1. The Personal Number List Change page is displayed.
4. Under Call Sequence 1 type the number of the Secretary.
5. The option Individual Repeated Distribution Bypass is default. Do not change.
6. Click Continue. The Personal Number List page is displayed.

Set Profile 2 for the Secretary

Do as follows:

1. Click Change, to the left of Profile 2. The Personal Number List Change page is displayed.
2. Under Call Sequence 1 type the number of the Boss.
3. The option Individual Repeated Distribution Bypass is default. Do not change.
4. Click Continue. The Personal Number List page is displayed.
5. Click Continue. The Extension – Change page is displayed.
6. Click Continue. The User – Change is displayed.
7. Click Apply. The User – Change - Result is displayed.
8. Click Done. The User page is displayed.

Select Key with Boss-secretary Function

Do as follows:

1. Click Change, to the left of the extension of the Secretary. The User – Change page is displayed.
2. Select the Service Summary tab.
3. Click Change, under Extension Number.
4. Click Change. The page Function Keys is displayed. All the phone´s keys are displayed.
5. Select one of the key numbers, and click to the left of the number. A field to the right is displayed.
6. Select PEN – Personal Number.
7. Type the name of the boss in the field Key Label. Note! This is optional.
8. Type the extension number of the boss in the field Monitored Number.
9. Profile 1 is default in Active Number List. Do not change.
10. Select Profile 2 from the list Passive Number List.
11. Click Ok. The Function Keys page is displayed. The information about the selected key is displayed to the right of the key.

Save the Settings

Do as follows:

1. Click Continue. The Extension - Change page is displayed. The information about the selected key is displayed in the field Function Keys.
2. Click Continue. The tab Service Summary is displayed.
3. Click Apply. The page User – Change – Result is displayed. An information notice of the operation is displayed.
4. Click Done.

Set Telephone Name Selection (TNS)

Before you can create a Telephony Name Selection you have to create one user, with one mail box and one IP extension.

Log in to PM

Do as follows:

1. Open Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

View Extension

Do as follows:

1. Click Services and then Extension in the start page. The Extension page is displayed.
2. Type the extension number in the field Enter Extension Number(s).
3. Click View. The User ID table is displayed below.
4. Click Change, . The Extension – Change page is displayed.

Set Telephone Name Selection Information

Do as follows:

1. Under Function Keys, select the phone model from the list Phone Type.
2. Click Change. The page Function Keys is displayed. All the phone´s keys are displayed.
3. Select one of the key numbers, and click to the left of the number. A field to the right is displayed.
4. Select TNS – Telephony Name Selection from the list Function.

5. Type the name of the key in the field Key Label. Note! This is optional.
6. Type the whole number (incl. access code) in the field Digit. (Note! Please see your number plan.).
7. Click Ok. The Function Keys page is displayed again. The information about the selected key is displayed to the right of the key.

Save the Settings

Do as follows:

1. Click Continue. The Extension - Change page is displayed. The information about the selected key is displayed in the field Function Keys.
2. Click Apply. The page Extension - Change – Extension number – Result is displayed.
3. A information notice of the operation is displayed.
4. Click Done.

Delete a User

When you delete a user you also delete the extension and the mailbox.

Log in to PM

Do as follows:

1. Open MX-ONE Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

Delete a User

Do as follows:

1. Click Users and then User. The User page is displayed.
2. Type the name of the user in the field Enter User Name(s), Extension Number, Department.
3. Click View. The User ID table is displayed below.
4. Click Remove, on the same row as the user name. An information window is displayed with a question if you want to remove the user and related extensions and mailboxes.

5. Click OK. The User page is displayed. If the operation went well you will get the following message.

Take a Backup of PM/SNM

When you have performed the installation and after making changes in PM and SNM, it is a good idea to take a backup of the settings.

Log in to PM

Do as follows:

1. Open MX-ONE Provisioning Manager (PM). The start page is displayed.
2. Type the User name in the field User.
3. Type the Password in the field Password.
4. Click Login. The main page is displayed.

Take a backup of MP

Do as follows:

1. Click System and then Data Management. A menu to the left is displayed.
2. Click Backup & Restore. The Backup & Restore page is displayed.
3. Click Backup. The Backup & Restore – Backup page is displayed.
4. Click Apply.
5. To save the backup, click Download, . The File download page is displayed.

6. Click Save. The Save as window is displayed.
7. Select location from the list Save in.
8. Click Save.

Take a Backup SNM

Do as follows:

1. Click System and then Subsystem. The Subsystem page is displayed.
2. Click SN. The MX-ONE Service Node Manager (SNM) page is displayed.
3. Click System and then Backup & Restore. The Backup & Restore page is displayed.
4. Click Backup.
5. If the backup was successful, you get the following message:

Service Node Manager User Instructions

This topic discusses the installation and configuration information for SNM.

Introduction

This user guide describes how to use MX-ONE Service Node Manager (SNM), which is a web-based management tool used to configure MiVoice MX-ONE.

Scope

The user guide contains:

- A description of the navigation and the user interface in MX-ONE Service Node Manager
- An overview of how to work using MX-ONE Service Node Manager.
- An overview of system messages and error handling within MX-ONE Service Node Manager

System Requirements

MX-ONE Service Node Manager can be accessed from anywhere using a commercially available browser. The browser requirements are:

- Microsoft Internet Explorer 8.0 (or later versions)
- Mozilla Firefox 18 (or later versions)
- Microsoft Edge 80.0.361.48 (Official build) (64-bit)
- Google Chrome (latest version)

Both HTTP (TCP Port 80) and HTTPS (TCP Port 443) are supported. If HTTPS is used, this needs to be configured. For higher security, it is recommended to use a commercial digital certificate issued by a commercial Certification Authority (CA).

Prerequisites

To be able to use MX-ONE Service Node Manager, user accounts must be defined. Users can be defined in MX-ONE Provisioning Manager, that is used to manage users and administrators for MX-ONE. For more information about MX-ONE Provisioning Manager, see the description for MX-ONE PROVISIONING MANAGER. One user is defined during the installation of the MX-ONE Service Node, for more information see INSTALLING AND CONFIGURING MIVOICE MX-ONE. Javascript must be enabled in the browser in order use MX-ONE Service Node Manager. The browser must be configured to refresh pages on every visit. For information on how to configure, refer to help and documentation specific to your browser.

MX-ONE Service Node Manager Overview

MX-ONE Service Node Manager is part of the MX-ONE Manager concept that consists of several operation and maintenance applications providing management functions for MX-ONE. For more information about MX-ONE Service Node Manager, see the description for MX-ONE SERVICE NODE MANAGER. For more information about MX-ONE Service Node Manager in MX-ONE, see the system description, MIVOICE MX-ONE.

Configuration Areas and Tasks in MX-ONE Service Node Manager

The configuration areas in MX-ONE Service Node Manager are the following:

- Initial Setup
- Number Analysis
- Telephony
- Services
- System
- Tools
- Logs

Each configuration area handles a number of tasks and subtasks. For example:

Figure 9.1: Tasks in Number Analysis

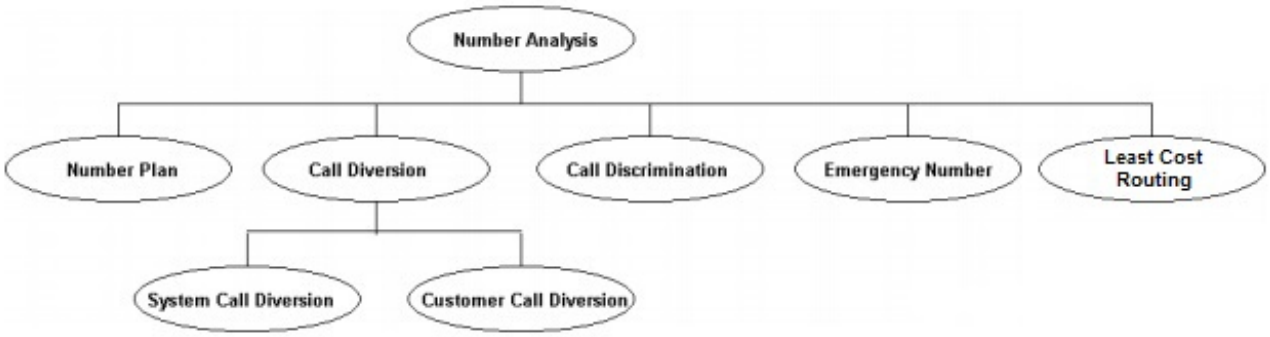


Figure 1: Tasks in Number Analysis

NOTE: Which configuration tasks for each area that are displayed, depends on system configuration and user privileges.

For a complete list of the tasks available in MX-ONE Service Node Manager, see the Site Map. A link to the site map can be found in the upper right corner.

Using MX-ONE Service Node Manager

This section describes the user interface and navigation in MX-ONE Service Node Manager. How to use each task is explained in the online help, see Using the Help.

Logging in and Logging Out

Browse to the login screen of MX-ONE Service Node Manager (SNM) and enter username and password provided by the administrator to log in to the application. The password is case sensitive.

NOTE: If MX-ONE Service Node Manager and MX-ONE Provisioning Manager server is configured for AD Authentication, the user password will not be provided by the administrator, but instead be the same as defined for the domain.

Click Logout in the upper right corner to log out from SNM. Closing the browser window will also log you out from the application.

The application has a time limit, after which an inactive user is automatically logged out. The time limit is by default set to 45 minutes and the time left, before automatic logout, is indicated in the browser status bar (lower left corner).

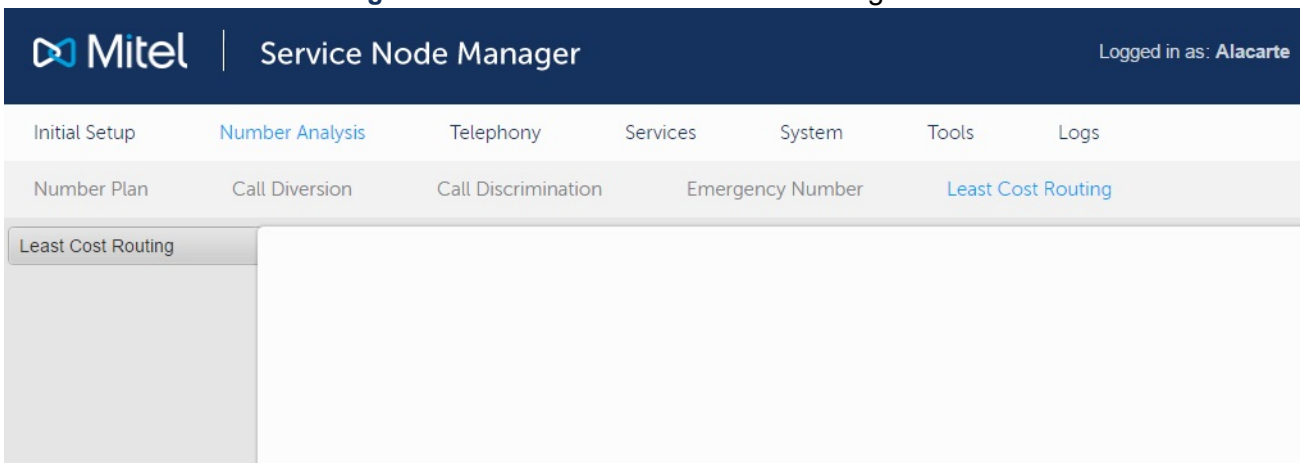
To be enable to see this indicator, the browser must be configured for allowing status bar updates using JavaScript. For more information, see Enabling the Automatic Logout Indicator on page 9.

Application ID: When using the SNM it is advisable to set the basic application information in order to recognize the site and application. Settings for the Application ID can be found by selecting Initial Setup and then Application ID. The Site name is displayed in the upper right corner and on the login screen.

Navigating in MX-ONE Service Node Manager

The user interface is divided into menu tabs and sub menus relating to different configuration tasks in the system. For most of the tasks it is possible to add, change, view or remove configuration properties. How to use the different functions can be found in Actions on page 10.

Figure 9.2: MX-ONE Service Node Manager User Interface



Item	Description
A	Main menu
B	Submenu
C	Task menu
D	Work area

Item	Description
E	Summary and Help frame

NOTE: Do not use the back and forward buttons in the browser when you are working in MX-ONE Service Node Manager.

Using back or forward buttons will result in an error message. Reload the page to go back to MX-ONE Service Node Manager

Icons, Symbols and other Graphical Elements

The following icons and symbols can be found in MX-ONE Service Node Manager:

Table 9.1: Icons and Symbols in the GUI (Sheet 1 of 3)

Symbol	Name/Function	Description
	Help	Information on how to set properties for the field.
	Change	Change the properties for an existing configuration.
	View Details	View details for a configuration.
	Remove	Remove the selected configuration.
	Add new using this as template	Add a new configuration using an existing as a template.
	Create template from this	Create a template with the values in the existing configuration item.
	Information	Information exclamation mark followed by system information.
	Update field	Update a specific field.

Table 9.1: Icons and Symbols in the GUI (Continued) (Sheet 2 of 3)

Symbol	Name/Function	Description
	Restore	Restore the system to a previous state.
	Mandatory	The field is required and mandatory to fill in.
	Undo changes	Undo the changes just made for a specific field.
	Change	Open the field for editing.
	Play the message	Plays a recorded soundfile.
	Sort the list	Sort the list in ascending or descending order. The arrow pointing in both directions indicates that the column is unsorted.
	Run	Run a selected batch operation.
	Download	Download a template or a batch operation as an xml file.
	Reset	Reset the configuration.
	Block	Block the board.

Table 9.1: Icons and Symbols in the GUI (Continued) (Sheet 3 of 3)

Symbol	Name/Function	Description
	Deblock	Deblock the board.
	Logged on	The IP phone is logged on to the system.
	Logged off	The IP phone has logged of from the system.
	Unknown	The IP phone has not reported anything to the exchange in the last 48 hours.
	Not used	Initial mode after the IP phone is registered, but no log on attempt to the system has been done.
	Log on rejected	The IP phone has attempted to log on, but has been rejected by the system.

Using the Help

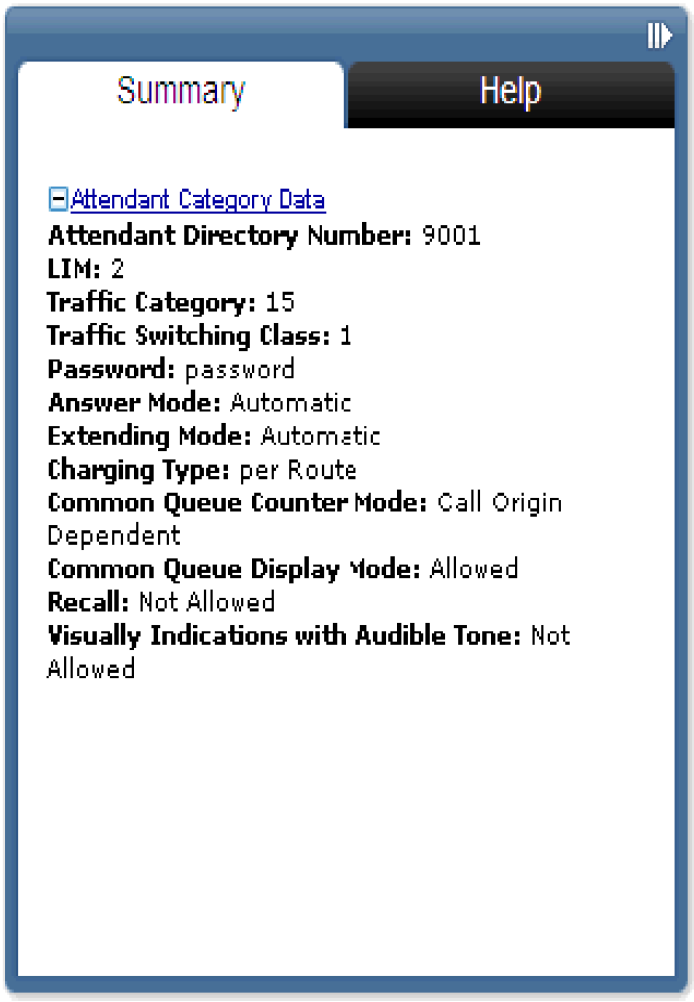
There are several levels of Help in the MX-ONE Service Node Manager:

- User Guide: This User Guide, which can be found in the upper right corner of the application.
- Help: Online help for a specific task. There are three different types of help, overview of the task, help for adding a task (step by step instruction), and help for changing a task. The online help is opened in a pop-up window or the Help frame. See also Summary and Help frame on page 8
- : Context help for a specific property. The context help describes the property usage, options and if special conditions are to be considered.
- Walkthrough Help: Help for a specific walkthrough. Each step in the walkthrough, and the purpose of it, is explained.

Summary and Help frame

For some configuration tasks that contain several steps, a frame with summary and help information is displayed. The summary shows configuration information for all properties that have been configured in the task. Help shows step by step instructions related to the task. The summary and help frame can be minimized by clicking the arrow, below or on top of the frame.

Figure 9.3: Summary and Help frame



Basic or Advanced Settings

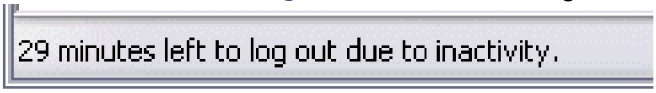
Property settings that are not often used and not mandatory are grouped in advanced settings for a task. Some fields in advanced settings have default values. The advanced settings are displayed by clicking Advanced. Basic settings are displayed by clicking Basic.

Enabling the Automatic Logout Indicator

To be able to see this information, the browser must be configured for allowing status bar updates using JavaScript. For information on how to enable this function in the browser, see the browser documentation.

MX-ONE Service Node Manager comprises a function for displaying the remaining time until an automatic logout due to inactivity is performed. The information is displayed in the status bar of the browser.

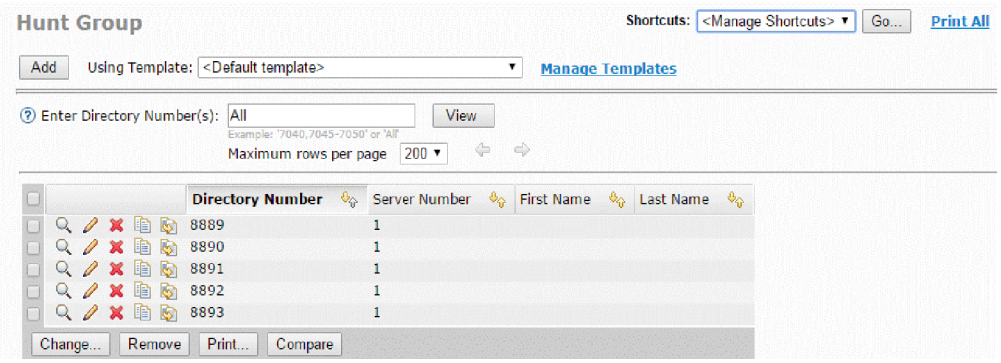
Figure 9.4: Automatic logout indicator



This section describes the actions that can be performed in the different tasks. Most of the actions can be performed at different stages, for example from a result screen or from a list view.

Actions

Figure 9.5: List viewData can be added to a new configuration item in the following ways:



- Click Add. System default values are displayed for the new configuration item.
  To create a configuration item without using a template, the value <Default template> must be selected in the Using Template drop-down list before clicking the button. To create a configuration item using a template, see Using a Template for a Configuration Task on page 14.
- From a result screen or a view details screen, click Add from this.... The previously added configuration item is used as a template.
- From a list view, click (Add new using this as template). The selected configuration item is used as a

  template.

Some configuration tasks have predefined values and can only be changed.

Viewing Data

Configuration items can be viewed in the following ways:

- For some tasks the list view is displayed by clicking View. The list displays the existing configuration items with a subset of the property values or all property values.
- From a list view, click (View details). The details of the configuration item are displayed. Click on the

  arrows to view the previous or the next configuration item.
  Data for selected configuration items can also be compared, see 4.3 Comparing dataon page 11.

The list in the listview can be sorted by the items in the column clicking

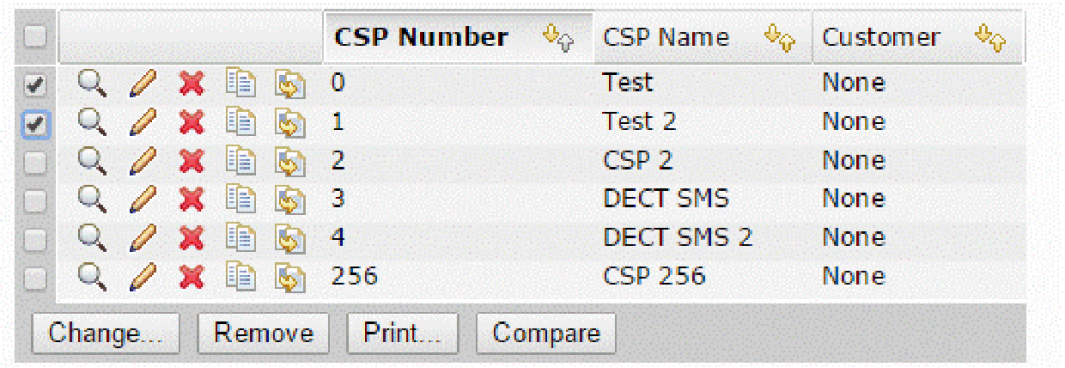
(Sort by <column name>), (Sort descending), or (Sort ascending).

Comparing data

Configuration item properties can be compared with the compare function. The compare function is available in list views.

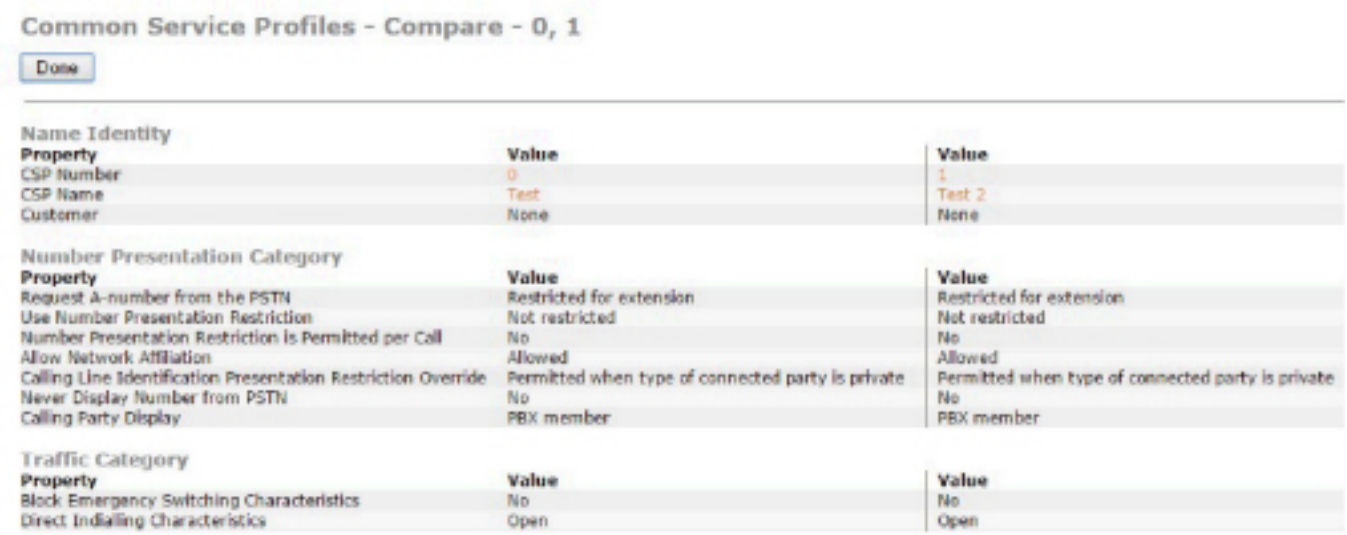
Perform the following steps to compare two configuration items:

1. Select two items to compare in the list.



2. Click Compare.

   A new screen with the result of the comparison is displayed. Property values that differ in the comparison are displayed in orange. The property values can be changed by clicking one of the Change <item> ... buttons.



Changing Data

Configuration items can be changed in the following ways:

- From a list view, click (Change). The configuration item is opened and the set values can be edited.

- From a list view, select one or more configuration items and click Change.... Makes it possible to change values for all selected configuration items at the same time. If changing values for more than one configuration item, (Change) enables the field.

- From a result screen, click Change This.... The configuration item is opened and the set values can be edited.

To restore the previously saved value in a field, that is to undo the change, click (Undo Change). Click Apply to save and apply the changes.

Removing Data

Configuration items can be removed in the following ways:

- From a list view, click (Remove).

- From a list view, select one or more configuration items and click Remove.
- From a result screen, click Remove This.

A pop-up confirmation window is displayed before a configuration item is removed.

Printing Data

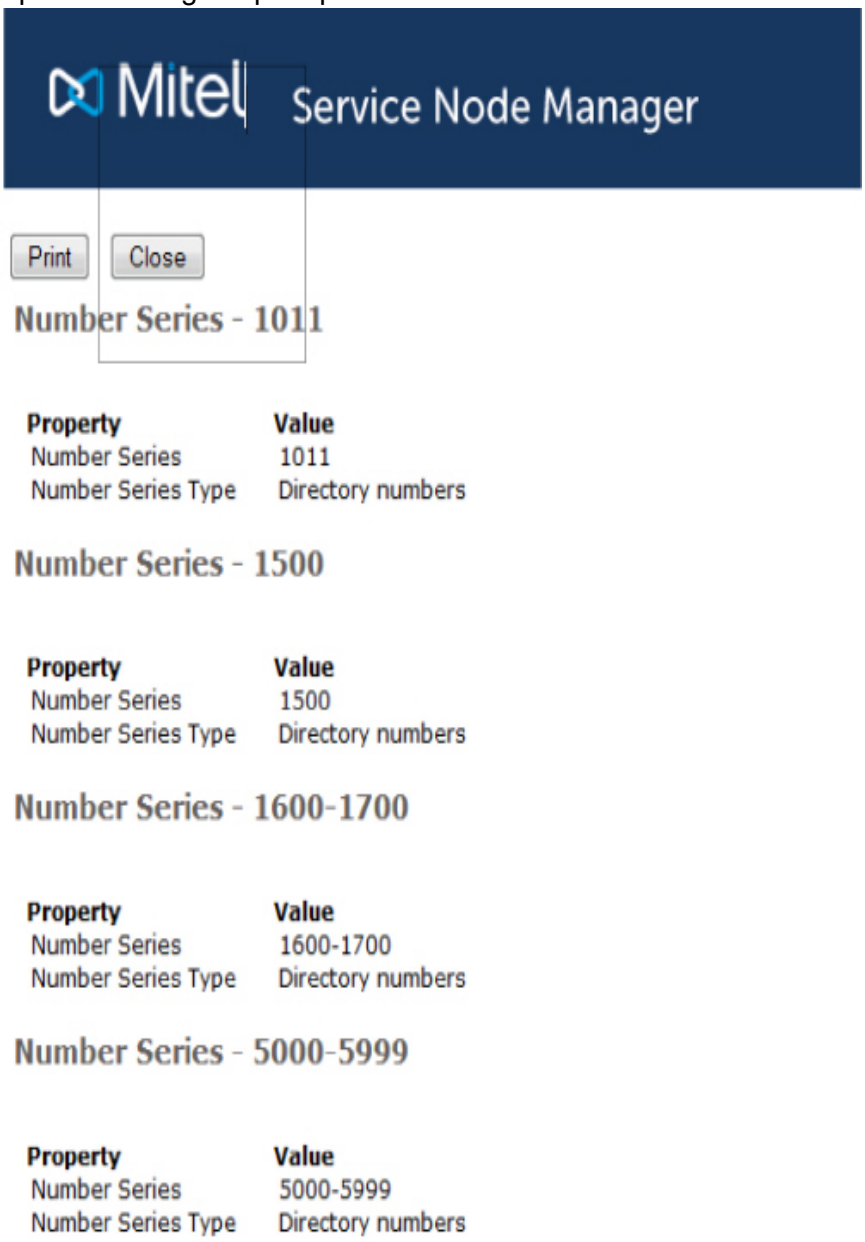
Configuration data can be printed in the following ways:

- From a list view, click Print.... Prints the properties of selected configuration items.
- From a list view, click the Print All link. Prints the properties of all existing configuration items.
- Clicking Print..., Print All or Print opens a pop-up window that displays the print preview.
- From a view details screen, click the Print link. Prints the properties of the configuration item.

Example: Printing External Number Series

1. Click Number Analysis, Number Plan and then Number Series.
2. Select External Numbers from the Number Series Type list and click Print All.

3. A new window opens showing the print preview.



4. Click Print. The browser print dialog box is opened, make desired selections and print the page.

Handling Templates

A template is a set of predefined values that can be used when a new configuration item is added. Templates are used to simplify the process of adding many configuration items with similar property values. Only property values that can be identical for several configuration items can be set in the template. Property values set in templates will not be set in the MX-ONE.

Click the Manage Templates link in a task to display the list view with the existing templates for that task. In the list view, the templates are displayed with the defined name, the type, the user that created it, and the date when it was created, for example, Template name(by Username, 12/30/06)

Creating a Template for a Configuration Item

There are two ways to create a template:

- Create a new template, that is, a template with no predefined values:
  - Click the Manage Templates link.
  - Click Add and enter property values in the configuration task where applicable.
  - Enter a template name and click Apply to save the template
- Create a template based on an existing configuration item:
  - Click (Create template from this) in the list view.

  - Enter a template name and click Apply to save the template.

NOTE: Creating a template will not alter any data on the MX-ONE Service Node.

Uploading or Downloading a Template

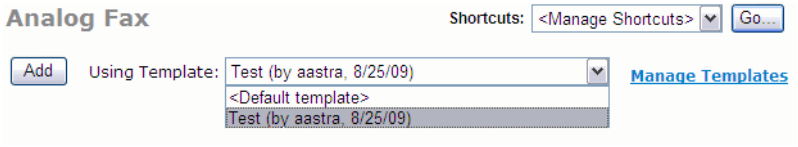
Templates can be created in one system and transferred to another. To upload a template, click Upload.... To download a template, click (Download). Templates are saved in

.xml format.

Using a Template for a Configuration Task

Perform the following steps to use a predefined template for a configuration task:

1. Select a template from the list.



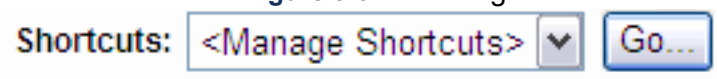
2. Click Add and enter property values in the configuration task where applicable.
3. Click Apply to save the new configuration item.

Using Shortcuts

Shortcuts can be used when you want to create or use a shortcut to another configuration task. For example, after adding an Operator Group, a shortcut to a related task could be to add members to the Operator Group.

Select desired shortcut from the list and click Go... to go to the task directly.

Figure 9.6: Selecting Shortcut



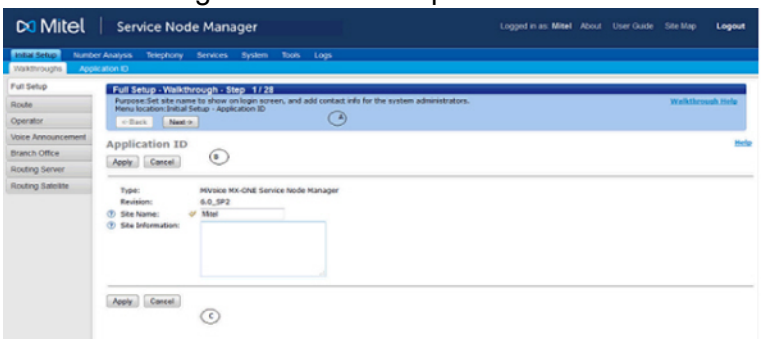
Creating Shortcuts

1. Select <Manage Shortcuts>and click Go... to create a new shortcut.
2. Select the desired shortcuts from the list of available configuration tasks.
3. Click Apply.

NOTE: The shortcuts must be defined for each configuration task. When adding a shortcut from task A to task B, task B does not automatically get the shortcut to task A.

Using Walkthroughs

Walkthroughs can be used for guidance with a setup of several tasks. Walkthroughs are predefined, ordered flows from A to B, for example the setup of recorded voice announcements. It is possible to step forward or backward in a walkthrough, but in order to set the configuration, the property values for each task must be applied before continuing with the next step. Each task in the walkthrough is optional.



Item	Description
A	Walkthrough field
B	Task field
C	Apply for a task

Starting a Walkthrough

The following steps are general and applies to all walkthroughs.

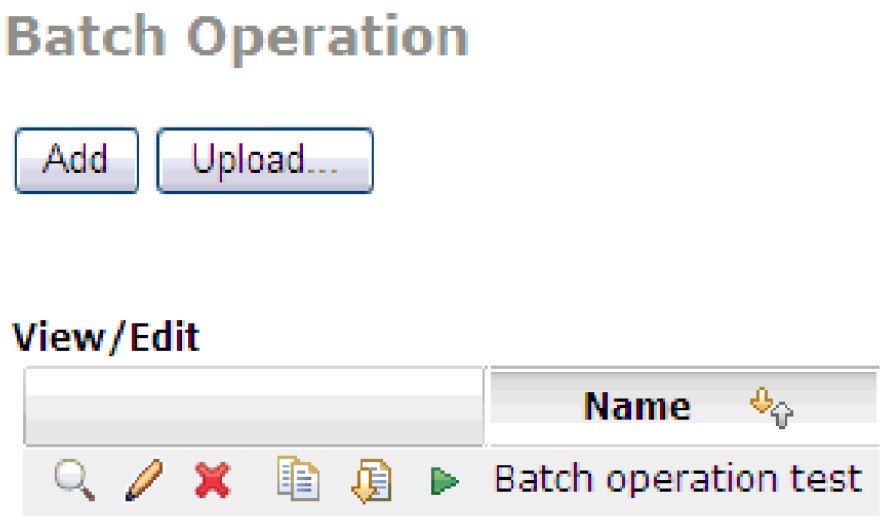
1. Select Initial Setup and then Walkthroughs.
2. Select a walkthrough from the task menu.
3. Click appropriate button in the task, for example Add.
4. Enter desired property values for the task and click Apply.

   NOTE: A task within the walkthrough may consist of several steps.
5. Click Next-> in the walkthrough field to go to the next configuration task.
6. Repeat Step 4 (Enter desired property values for the task and click Apply) to Step 5 (Click Next->in the walkthrough field to go to the next configuration task) until the last step of the walkthrough.

Using Batch Operations

Batch operations can be used when you want to create several configuration tasks in a batch, for repeated or frequent operations that are time consuming to do manually. It is possible to record several configuration tasks into one batch operation and change the order of the operations.

Figure 9.7: Batch Operation



The following options are available in Batch Operation:

- Add new
- Upload or Download a previously defined batch operation.
- View, Change, Add from this
- Run a previously defined batch operation.

The batch operations are saved in xml format. Batch Operations can be created in one system and transferred to another.

Adding a new Batch Operation

1. Select System, then Batch Operation and click Add.
2. Add a name for the Batch Operation and click Next->.
3. Click Record to add the configuration item and Stop to end the recording.
4. Click Apply to save the Batch Operation or Record to add a new instruction to the batch operation

NOTE: Configuration properties set during the recording are not sent to the MX-ONE Service Node.

Running a Batch Operation

1. Select System, and then Batch Operation.
2. Click Run to execute the batch operation.

Using Command Line Interface

The Command Line Interface (CLI) in MX-ONE Service Node Manager is used to execute commands that cannot be handled using the web based interface of MX-ONE Service Node Manager. To have access to the CLI, the user must be logged in to an account with the privilege Command line interface included in the security profile.

Select Tools and then Command Line to open the CLI.

Figure 9.8: Command Line Interface

The following types of commands can be used:

- UNIX-style commands, which are separate executable files in the UNIX™/Linux™ environment outside the shell of the MX-ONE Service Node; mdsh. Some of these commands are standard UNIX tools, like the commands less and emacs, while other files belong to the MX-ONE Service Node service system software. The parameters of these commands deviate from standard unix commands in the aspect that they cannot be concatenated. Each parameter must be separate.
- Built-in commands, which are UNIX/Linux commands that are executed by mdsh as an integrated part of the shell. Examples are the commands cd and threads.
- MML commands, which comply with the CCITT MML format familiar to, for example, the MD110 user. These commands are sent by mdsh to a program (CIOR), which finds the appropriate command handler (for example GEH) to execute the command.

NOTE: Interactive commands cannot be used.

NOTE: No confirmation questions are provided for dangerous commands.

For an overview of command handling see the command description COMMANDS IN MX-ONE SERVICE NODE.

The latest 20 commands are stored in the system, and any of them can be executed in the following way:

1. Select the command in 20 Latest Commands. The command is copied into Command.
2. To execute the command, click Apply.

Instead of entering each command separately it is possible to upload a file containing a number of commands to be executed:

1. Enter the search path of the file to upload, or click Browse to search for the file.
2. Click Execute.

The upper window displays the results of the operation. Executed commands are highlighted by an arrow (-->), preceding the output.

The results of the operation can be downloaded as a .txt file:

1. Click the Download link.
2. Select where to store the log file and click Save.

The log file can contain a maximum of 10 000 lines. When the number of lines is exceeded, the oldest lines are removed from the log so that new operations can be added.

To clear the list of 20 Latest Commands, click Clear List.

To clear the display window, click Clear Window.

To close the CLI window, click Close Window.

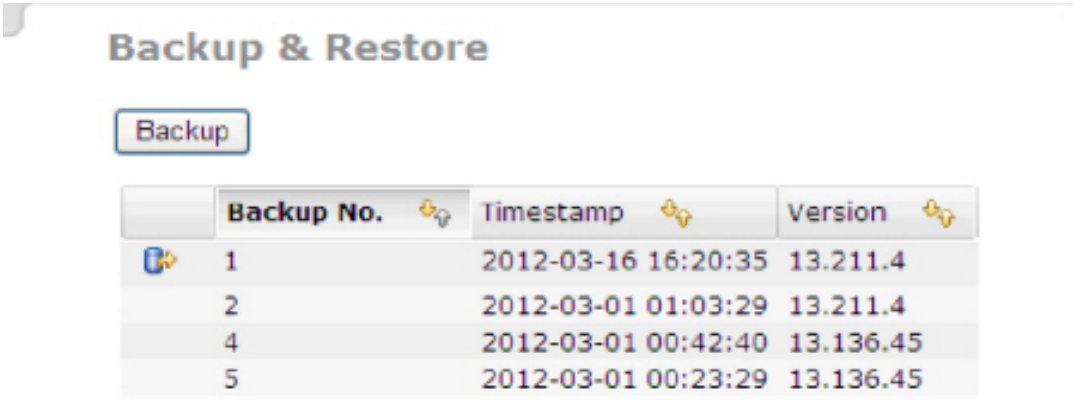
NOTE: Using the CLI to alter data on the MX-ONE Service Node (SN) may lead to data inconsistencies between MX-ONE Provisioning Manager (PM) data and SN data.

Using Backup & Restore

It is possible to back up and restore MX-ONE data. Each backup file is identified by a backup number, a time stamp and the system release version number. MX-ONE Service Node Manager stores exchange data on the MX-ONE Service Node and data concerning for example names of routes and common service profiles in an SQL Database. The exchange data and the SQL database are both included in a backup or restore session.

Select System and Backup & Restoreto start using the functions for Backup & Restore.

Figure 9.9: Backup and Restore



Click Backup to start a backup.

Click (Restore) to restore the system.

1 Restoring data can result in user and extension data inconsistencies.

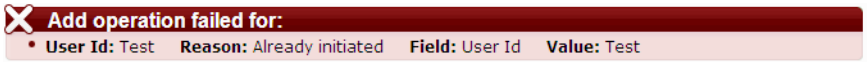
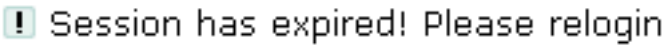
2 The backups are possible to take from the Provisioning Manager subsystem task. The backups, thus performed are listed here and restored.

System and Error Messages

MX-ONE Service Node Manager provides system messages and error messages directly or when a configuration item is submitted.

Icons are displayed together with system information.

Table 9.2: System and Error Messages

Type	Icon
Error Message	
Information Message	
System Message	

For some operations a pop-up window is displayed. For example when entering invalid or too many characters in a field.

Logs

MX-ONE Service Node Manager provides three logs with different information level:

- Audit trail: information about all changes made by a user in the system.
- Event Log: system log information useful for fault tracing.
- Security Log: information about successful and unsuccessful login attempts.

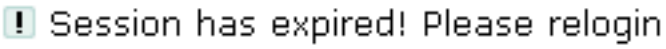
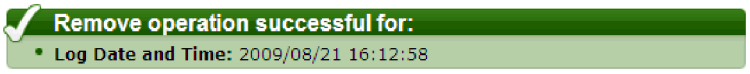
MDSH log: Information about commands send from SNM to the Service Node.

NOTE: Log files are created every day even if no data is logged. Logs older than 90 days will be overwritten

System and Error Messages

MX-ONE Service Node Manager provides system messages and error messages directly or when a configuration item is submitted. Icons are displayed together with system information.

Table 9.3: System and Error Messages

Type	Icon
Error Message	
Information Message	
System Message	

For some operations a pop-up window is displayed. For example when entering invalid or too many characters in a field.

Logs

MX-ONE Service Node Manager provides three logs with different information level:

- Audit trail: information about all changes made by a user in the system
- Event Log: system log information useful for fault tracing.
- Security Log: information about successful and unsuccessful login attemps

MDSH log: Information about commands send from SNM to the Service Node.

NOTE: Log files are created every day even if no data is logged. Logs older than 90 days will be overwritten

Mitel
Powering connections
mitel.com

© Copyright 2020, Mitel Networks Corporation. All Rights Reserved. The Mitel word and logo are trademarks of Mitel Networks Corporation, including itself and subsidiaries and authorized entities. Any reference to third party trademarks are for reference only and Mitel makes no representation of ownership of these marks.

Delete WebSEAL IP 78
Delete Input 78
PM Welcome Page after Successful WebSEAL Registration 79
Connections between AD/PM and MiVoice MX-ONE/MiCollab AM/CMG 81
Active Directory Users and Computers GUI - 1 85
Active Directory Users and Computers GUI - 2 85
Provisioning Manager 87
Active Directory Values 88
Enabling/disabling automatic notification 88
Exceution flow 89
Configure web Server - 1 94
Configure web Server - 2 95
Enter the Certificate Signing Request Details screen 95
Example of Common Name field 96
Successful creation of CSR file 96
Creating the Key Store - 1 97
Selecting the directory and files 98
Confirming whether you have Root/Chain Certificates 99
Certification Path 99
Selecting the Root / Chain Certificate file 100
Creating the Key Store 101
Validating Key Store creation 101
Key Store File creation 101
User authenticated and authorized in PM user database 109
User authenticated in AD and authorized in PM user database 109
The examples above are in the following scenarios referred to as 110
Scenario 1: PM Login 110
Scenario 2: SNM Login 111
Scenario 3: SNM Login over HTTP 112
Scenario 4: PM Login + use case ‘Add Extension’ 113
Scenario 5: In PM “click on subsystem” 114
Tasks in Number Analysis 193
MX-ONE Service Node Manager User Interface 194
Summary and Help frame 198
Automatic logout indicator 198
List viewData can be added to a new configuration item in the following ways: 199
Selecting Shortcut 203
Batch Operation 205
Command Line Interface 206
Backup and Restore 207