Oracle ASAP™ Cartridge 1.1 for
Vodafone MLR 3.4

Vodafone MLR Cartridge Guide

Second Edition
August 2008

ORACLE®

Copyright and Trademark Information

Contents

1

Cartridge Overview

ASAP cartridges are discrete software components that are developed for the ASAP product. An ASAP cartridge offers specific domain behavior on top of the core ASAP software, and provides the configuration that supports a set of services on a network element (NE).

An ASAP cartridge is not a stand-alone component, but operates in conjunction with the ASAP core product. ASAP cartridges offer the following benefits:

- **Reduced Time to Market**—time to market of new services is reduced through simplified development, implementation, and extension of cartridges on customer sites.
- **Extendable**—cartridges can be extended to include additional services and components that deliver business value, without requiring changes to the original cartridge.
- **Simplified Effort**—the effort and technical knowledge that is required to perform customizations is reduced.
- **Ease of Installation**—cartridges can be installed into an ASAP environment without interfering with the existing install base.

An ASAP cartridge can be used to configure ASAP to provision the following:

- NEs from a specific vendor, such as Nortel or Lucent.
- Technologies, such as Asynchronous Transfer Mode (ATM) and Frame Relay switches, or Internet Protocol (IP) routers.
- Services that are supported on the NE, such as ATM, IP Virtual Private Networks (VPN), Wireless, or Optical.

Cartridges are designed for a specific technology, software load, and service.

An ASAP cartridge supports a particular set of services on an NE. These services are independent of customer-specific service definitions. Professional Services or systems integrators can perform extensions to the cartridge to support customer-specific requirements.

For more information on extending a cartridge, refer to the *ASAP Cartridge Development Guide for Service Activation*.

Cartridge content

An ASAP cartridge contains the following:

- An interface to the NE
- A set of scripts, such as State Tables or Java methods
- A set of atomic actions in the form of Atomic Service Description Layer (ASDL) commands
- A set of Common Service Description Layer (CSDL) commands that form meaningful services
- Sample work orders
- Installation scripts

Prerequisites

This manual is a reference for system integrators, including managers, designers, programmers, and testers who are responsible for the adaptation and integration of ASAP-based solutions. It assumes that readers possess the following:

- A knowledge of ASAP programming concepts
- A good working knowledge of the UNIX operating system
- A thorough understanding of service and network provisioning
- Familiarity with telecommunications

About this guide

This guide provides a detailed description of the Vodafone MLR cartridge. It contains overview and technical information to assist with extending and integrating the cartridge into a customer environment.

The scope of this guide includes ASAP as it pertains to this cartridge. It is not a complete ASAP reference guide.

For additional ASAP information when using this cartridge, refer to the following supporting documentation:

- **ASAP documentation set**—for detailed information on the ASAP core product.
- **ASAP Cartridge Development Guide for Service Activation**—for information on how to extend a cartridge.

The Vodafone MLR cartridge provides the ASAP service configuration and network element (NE) interface to activate MLR services on Vodafone MLR NEs.

Services, features, and options

This cartridge supports the following services:

- Create MBX
- Delete MBX
- Update MBX
- Update MBX-ALL
- Create MSNGR
- View MBX
- Add MEMBER
- Remove MEMBER

Hardware and software requirements

The following sections contain the high-level software and hardware environment requirements for provisioning MLR services using this cartridge, including:

- Network element (NE) interface
- ASAP version
- Operating environment

Network element (NE) interface

This cartridge operates with the following:

- Vodafone MLR NEs
- MLR v3.4 MML commands

ASAP version

This cartridge was developed and tested using ASAP 4.6.2.

For information on the operating environment, refer to the ASAP Release Record.

Connecting to the NE

The MLR (Message Locator Register) is associated with the HLR (Home Location Register) in a GSM or UMTS network.

Provisioning of the Vodafone MLR can be either via DECNET protocol, TCP/IP socket-based protocol, or TCP/IP telnet-based protocol. This cartridge is developed for telnet-based

protocol, but is also available for TCP/IP socket-based protocol. The messaging format conforms to Vodafone proprietary MIP format (Message Interface Protocol).

2

Installing and Testing the Cartridge

This chapter describes the following procedures related to installing and testing the cartridge:

- Downloading the cartridge
- Starting ASAP
- Installing the cartridge
- Uninstalling the cartridge
- Testing the cartridge installation

Downloading the cartridge

Before you can install the cartridge, you must use the internet to download the cartridge's tar file from Oracle's Customer Portal.

Use the following instructions to download, then untar the tar file.

To download the tar file

1. Login to Oracle MetaLink internet home page (http://www.metalink.oracle.com).
2. Download the cartridge patch to your workstation.

To untar the tar file

1. On your workstation, create a repository directory—you may call it anything you want.

   ```
   mkdir <repository dir>
   ```

   

   If there are other cartridges on the workstation, there might already be a repository directory, if there is, you can use that one instead.

2. Untar VodafoneMLR.R1_1.tar.

   ```
   tar xvf VodafoneMLR.R1_1.tar
   ```

3. Copy the resulting /Vodafone_MLR_V3_4 directory and its contents to the repository directory.

   ```
   cp -rf /Vodafone_MLR_V3_4 <repository_dir>
   ```

The directory structure in the repository directory should look like the following illustration. (this illustration describes the minimum required structure; you can enhance this directory structure with additional directories based on your requirements and deliverables).

```
<repository_directory>
   Vodafone_MLR_V3_4
      /README
      /installCartridge
      /uninstallCartridge
      /VODAFONE_MLR_V_3-4_MLR_SERVICES.sar
```

Starting ASAP

Before installing the cartridge, ensure that ASAP is running.

To start ASAP

1. Check whether the WebLogic instance for this ASAP environment is running. If not, start the WebLogic instance.
2. To start ASAP, execute the following script:

   ```
   start_asap_sys
   ```

3. Ensure the ASAP Daemon (DAM_$ENV_ID) is running by checking the ASAP status using the ASAP script “status”.

The *ASAP System Configuration and Management Guide* contains more information on starting ASAP, the ASAP Daemon, and WebLogic.

Installing the cartridge

Run the installation script installCartridge to install the cartridge. This script is located under Vodafone_MLR_V3_4. The script executes the following tasks:

- Configures the Vodafone MLR-specific NE using the SACT.
- Deploys the Vodafone MLR cartridge service model (only if the Vodafone MLR service model is not yet deployed) using the Service Activation Deployment Tool (SADT).
- Copies the Vodafone MLR-specific jar files and the cpp library file to the ASAP environment.
- Load the sample work orders to the SRP database and the user error types to the SARM database, table tbl_user_err.

For information on the SACT and the SADT, refer to the *ASAP System Configuration and Management Guide*.

To install the cartridge

1. Run the installCartridge script from /Vodafone_MLR_V3_4. At the prompt, type:

```
installCartridge VODAFONE_MLR_V_3-4_MLR_SERVICES.sar
```

2. The script prompts you for the values of the following WebLogic login parameters:
   - WebLogic Hostname
   - WebLogic HTTP Port
   - WebLogic Login User ID
   - WebLogic Login Password

   The script loads the NEP-NE configuration and the CSDL-ASDL configuration to the SARM database, and loads sample work orders to the SRP database. The script also copies the cartridge-specific jar files and cpp library file to the ASAP environment.
3. Restart ASAP to upload the cartridge configuration into ASAP.

Uninstalling the cartridge

Run the uninstallation script uninstallCartridge to uninstall the Vodafone MLR cartridge. This script is located under Vodafone_MLR_V3_4. The script executes the following tasks:

- Unconfigures Vodafone MLR-specific NEs using the SACT.
- Undeploys the Vodafone MLR cartridge service model (only if the Vodafone MLR service model is already deployed) using the SADT.
- Removes the Vodafone MLR-specific jar files and cpp library file from the ASAP environment.

For more information on the SACT and the SADT, refer to the *ASAP System Configuration and Management Guide*.

To uninstall the cartridge

1. Run the uninstallCartridge script from /Vodafone_MLR_V3_4. At the prompt, type

```
uninstallCartridge VODAFONE_MLR_V_3-4_MLR_SERVICES.sar
```

2. The script prompts you for the values of the following parameters:
   - WebLogic Hostname
   - WebLogic HTTP Port
   - WebLogic Login User ID
   - WebLogic Login Password

The script unloads the NEP-NE configuration and CSDL-ASDL configuration from SARM database. It also removes the cartridge specific jar files and cpp library file from the ASAP environment.

Testing the cartridge installation

To test this cartridge installation, you require knowledge of the network element (NE), services, and basic ASAP configuration. You may need to perform adjustments to provision a service for a specific NE, network, or connectivity configuration.

You can test the cartridge installation using one of the following methods:

- Loopback mode—does not actually connect to or send commands to the NE.
- Live mode—connects to and sends commands to a live NE.

Configuring loopback and live mode parameters

The following sections tell you which variables you must configure in ASAP.cfg to use the loopback and live testing modes.

Loopback mode

You must set the following communication parameters to test the cartridge in loopback mode.

Table 1: Loopback Mode Parameter Settings

Configuration Variable	Parameter Settings	Location
LOOPBACK_ON	1 (default setting)	ASAP.cfg

Live mode

You must set the following communication parameters to test the cartridge in live mode.

Table 2: Live Mode Parameter Settings

Configuration Variable	Parameter Settings	Location
LOOPBACK_ON	0	ASAP.cfg

Modifying vf_mlr_v34_activation_configuration.xml

When you install the cartridge, it contains an example of the NE configuration file. You must, however, create a new NE configuration file in the ASAP system to install and deploy the cartridge for your environment. These instructions give you an overview of what you need to do to create the new NE configuration file. For more detailed information on creating a new NE Configuration file, refer to the *ASAP System Configuration and Management Guide*.

To modify vf_mlr_v34_activation_configuration.xml

1. Create a new directory under /Vodafone_MLR_V3_4.

```
mkdir <new_source_dir>
```

2. Copy VODAFONE_MLR_V_3-4_MLR_SERVICES.sar to this new directory.

```
cp VODAFONE_MLR_V_3-4_MLR_SERVICES.sar ./<new_source_dir>
```

3. Change the directory to <new_source_directory>.

```
cd <new_source_directory>
```

4. Un-jar VODAFONE_MLR_V_3-4_MLR_SERVICES.sar. This extracts the contents of the sar file (see Figure 1 on page 11 for an example of the resulting file structure).

```
jar xvf VODAFONE_MLR_V_3-4_MLR_SERVICES.sar
```

5. Edit <new_source_directory>/Vodafone/MLR_V3_4/common/application_config/vf_mlr_v34_activation_configuration.xml in with the appropriate changes.

   If a user uses a connection which does not require HOST_USERID and HOST_PASSWORD, then from application_config file remove HOST_USERID communication parameter.

6. Create a new sar file at the <new_source_directory> level.

```
CreateSar $PWD
```

7. Uninstall the cartridge using VODAFONE_MLR_V_3-4_MLR_SERVICES.sar in /Vodafone_MLR_V3_4. (That is, use the original sar file that you copied in Step 2 above—see "Uninstalling the cartridge" on page 8 for uninstallation instructions).
8. After you uninstall the cartridge, rename the sar file in /Vodafone_MLR_V3_4 so you have a backup copy of it.
9. Copy the new sar file from <new_source_directory> to /Vodafone_MLR_V3_4.
10. Reinstall the cartridge (see "Installing the cartridge" on page 7 for installation instructions).

```
META-INF/activation-model.xml
Vodafone/
   MLR/
      MLR_SERVICES
         sample_wo/
         sarm/
            ne_progs/
            PLSQL/
         control/
            PLSQL/
         nep/
            PLSQL/
         java/
            lib/
         cpp/
            lib/
         service_model/{at least one .xml file}
      common/
         sarm/
            ne_progs/
            PLSQL/
         control/
            PLSQL/
         nep/
            PLSQL/
         java/
            lib/
         cpp/
            lib/
         service_model/
         application_config/
         scripts/
```

Figure 1: Example file structure of an unjared .sar file

Testing the installation

The following procedure describes the steps required to test the cartridge installation in loopback mode. We recommend that you perform the initial cartridge installation test in loopback mode.

To test in loopback mode

1. Stop ASAP by typing the following command at the UNIX prompt:

   ```
   stop_asap_sys
   ```

2. Set the loopback parameter in ASAP.cfg to 1.

3. Start ASAP by typing:

   ```
   start_asap_sys
   ```

4. Send the sample work orders through the SRP Emulator by typing:

   ```
   run_suite $SRP <ctrl_password> <suite name>
   ```

   You can locate the suite names in /Vodafone_MLR_V3_4/MLR_SERVICES/service pack/sample_wo by typing:

   ```
   grep   SUITE * | grep -v END
   ```

   A list of all available suites appears.

   See "Viewing the sample work orders", below, to see the sample work orders.

   For more information on the SRP Emulator, refer to the *ASAP System Configuration and Management Guide*.

5. Verify the status of the sample work orders by typing:

   ```
   asap_utils l
   ```

   All successful work orders return the 104 state.

   To view the sample work orders provided with this cartridge, refer to the Vodafone MLR cartridge source.

Viewing the sample work orders

You find the sample work orders under the sample_wo directory in the sar file. The following procedure describes how to view the sample work orders.

To view the sample work orders

1. If necessary, create a repository directory under /Vodafone_MLR_V3_4, copy the sar file to the new directory and un-jar the sar file, as described by Step 1 through Step 4 in "Modifying vf_mlr_v34_activation_configuration.xml" on page 9.

2. Locate and view the sample work order files under Vodafone_MLR_V3_4/MLR_SERVICES/service pack/sample_wo.

3

Atomic Service Description Layer (ASDL) Commands

ASDL commands represent a set of atomic actions that ASAP can perform on a network element (NE). ASAP can combine ASDLs to create meaningful services (CSDLs) within a cartridge.

This chapter presents detailed information on the ASDL parameters that we provide with this cartridge. The following table lists and describes the type of parameter information that is included.

Table 3: ASDL parameter information

Item	Description
Parameter Name	Identifies the parameter that is configured for the stated service.
Description	Describes the parameter.
Range	Describes or lists the range of values that can be used to satisfy this parameter.
Default Value	Configures a default value for the parameter so that it is not mandatory for the upstream system to provide a value.
Type	Indicates one of the following parameter types: ◆ S—Scalar, specifies the parameter label transmitted on the ASDL command. ◆ C—Compound, specifies the base name of the compound parameter transmitted on the ASDL command. ◆ I—Indexed, specifies the base name of the ASDL command transmitted on the ASDL command

Table 3: ASDL parameter information

Item	Description
Class	Indicates one of the following parameter classifications: ◆ R—Required scalar parameter ◆ O—Optional scalar parameter ◆ C—Required compound parameter ◆ N—Optional compound parameter ◆ M—Mandatory indexed parameter ◆ I—Optional indexed parameter ◆ S—Parameter count

For a detailed description of the Required and Optional parameter classifications, refer to the *ASAP Developer's Reference.*

MLR Services

This cartridge provides the following ASDL commands:

- A_VF-MLR_V3-4_ADD_MEMBER
- A_VF-MLR_V3-4_CREATE_MBX
- A_VF-MLR_V3-4_CREATE_MSNGR
- A_VF-MLR_V3-4_DELETE_MBX
- A_VF-MLR_V3-4_DELETE_MBX-NOCLRDIVS
- A_VF-MLR_V3-4_DELETE_MBX-NODEPERSON
- A_VF-MLR_V3-4_REMOVE_MEMBER
- A_VF-MLR_V3-4_UPDATE_MBX
- A_VF-MLR_V3-4_UPDATE_MBX-INDEX
- A_VF-MLR_V3-4_VIEW_MBX

A_VF-MLR_V3-4_ADD_MEMBER

Adds the subscriber to a group voice mail that has already been created on the MLR. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.addMember.**

Table 4: A_VF-MLR_V3-4_ADD_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depends on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
ATTRIBUTE_NAME	The name of the attribute to change.	MSISDN	MSISDN	S	R
NEW_ATTRIBUTE_VALUE	The new number to add to the group.			S	R
IMSI	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O

Table 4: A_VF-MLR_V3-4_ADD_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
NOSETDIVS	If set to NO, this parameter enables diverts. If set to YES, this parameter stops the MLR from setting diverts on the HLR for the given number. ASAP interprets any other value in this parameter as NO.	YES or NO	NO	S	O

A_VF-MLR_V3-4_CREATE_MBX

Assigns a mailbox to the subscriber in the MLR database. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.createMBX.**

Table 5: A_VF-MLR_V3-4_CREATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
CLASS	This parameter is an ASCII text field indicating the class of the subscriber’s mailbox.	NORMAL, GROUP (that is, MultiSim) or PSTN.		S	R
DN	A number that identifies the subscriber's directory number. The number depends on the mailbox class. MSISDN = NORMAL, Published MSISDN = GROUP and PSTN number = PSTN.			S	R

Table 5: A_VF-MLR_V3-4_CREATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
VASP	An integer that identifies Value Added Service Provider (for example, 1 for VVAS).			S	R
SUB_TYPE	Indicates the mailbox subscription type.	SUB, NON_SUB, CALLMINDER or UM.		S	R
ASSOC_KEY	Consists of ASCII text and indicates the key used to locate the record that the command is associated with.	MBX or DN		S	O
ASSOC_VALUE	A numeric field that contains either the mailbox or a directory number, depending on the key specified.	Published MSISDN or PSTN		S	O

A_VF-MLR_V3-4_CREATE_MSNGR

Assigns a mailbox to the subscriber in the MLR database. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.createMSNGR.**

Table 6: A_VF-MLR_V3-4_CREATE_MSNGR

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
MBX	Contains a number that identifies the mailbox in the database.			S	R
MSISDN	Contains a number that identifies the subscriber's MSISDN.			S	R

Table 6: A_VF-MLR_V3-4_CREATE_MSNGR

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
PERSON	If set to YES, this parameter forces mailbox personalization on the VM. If the parameter contains any other value, ASAP interprets the value as NO.	YES or NO	NO	S	O
SETDIVS	If this parameter is set to YES, it forces diverts to the mailbox to be set on the HLR. If this parameter contains any other value, the parameter interprets the parameter as NO.	YES or NO	NO	S	O

A_VF-MLR_V3-4_DELETE_MBX

Deletes an existing mailbox from MLR database. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.deleteMBX.**

Table 7: A_VF-MLR_V3-4_DELETE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
NODEPERSON	Controls depersonalization of the subscriber’s mailbox. If set to YES, it prevents depersonalization. If set to NO, it allows depersonalization. If the parameter contains any other value, ASAP interprets that as NO.	YES or NO	NO	S	O

Table 7: A_VF-MLR_V3-4_DELETE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
NOCLRDIVS	Controls the clearing of diverts on the HLR (for NORMAL mailboxes, only). If the parameter is set to YES, it prevents clearing of diverts. If the parameter is set to NO it allows clearing of diverts. ASAP interprets any other value as NO.	YES NO	NO	S	O
NOCLRDT	If set to YES, this parameter prevents the MLR from setting the dial tone to normal (for PSTN mailboxes only). If set to NO, this parameter allows the MLR to set the dial tone to normal. ASAP interprets any other value as NO.	YES NO	NO	S	O

A_VF-MLR_V3-4_DELETE_MBX-NOCLRDIVS

Forces the deletion of an existing mailbox from the MLR database with a setting option of NOCLRDIVS. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.deleteMBXNoclrdivs.**

Table 8: A_VF-MLR_V3-4_DELETE_MBX-NOCLRDIVS

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R

Table 8: A_VF-MLR_V3-4_DELETE_MBX-NOCLRDIVS

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
NOCLRDIVS	Controls the clearing of diverts on the HLR (for NORMAL mailboxes, only). If the parameter is set to YES, it prevents clearing of diverts. If the parameter is set to NO it allows clearing of diverts. ASAP interprets any other value as NO.	YES NO	YES	S	O

A_VF-MLR_V3-4_DELETE_MBX-NODEPERSON

Forces the deletion of an existing mailbox from the MLR database with a setting option of NODEPERSON. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.deleteMBXNodeperson.**

Table 9: A_VF-MLR_V3-4_DELETE_MBX-NODEPERSON

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R

Table 9: A_VF-MLR_V3-4_DELETE_MBX-NODEPERSON

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
NODEPERSON	Controls depersonalization of the subscriber's mailbox. If set to YES, it prevents depersonalization. If set to NO, it allows depersonalization. ASAP interprets any other value as NO.	YES or NO	YES	S	O

A_VF-MLR_V3-4_REMOVE_MEMBER

Removes the subscriber from an existing group voice mail. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.removeMember.**

Table 10: A_VF-MLR_V3-4_REMOVE_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
MSISDN	The number to be removed from the group.			S	R

Table 10: A_VF-MLR_V3-4_REMOVE_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
NOCLRDIVS	Controls the clearing of diverts on the HLR (for NORMAL mailboxes, only) If the parameter is set to YES, it prevents clearing of diverts. If the parameter is set to NO it allows clearing of diverts. ASAP interprets any other value as NO.	YES NO	NO	S	O

A_VF-MLR_V3-4_UPDATE_MBX

Updates the attributes associated with a mailbox or an MSISDN. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.updateMBX.**

Table 11: A_VF-MLR_V3-4_UPDATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depends on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R

Table 11: A_VF-MLR_V3-4_UPDATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
ATTRIBUTE_NAME	The name of the attribute to change.	MSISDN	MSISDN	S	R
ATTRIBUTE_VALUE	The new attribute value.			S	R
DOWNLOAD	This parameter controls whether the MLR initiates updates on NEs. If set to YES and used with an attribute that requires DOWNLAOD (DIALTONE and RTNR), the MLR initiates the update on the relevant network entities. If set to NO, it prevents the updates from taking place. ASAP interprets any other value as NO.	YES NO	NO	S	O

A_VF-MLR_V3-4_UPDATE_MBX-INDEX

Updates the attributes associated with a mailbox or an MSISDN. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.updateMbx.**

Table 12: A_VF-MLR_V3-4_UPDATE_MBX-INDEX

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depends on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
ATTRIBUTE_NAME	The attribute name to change.			I	R

Table 12: A_VF-MLR_V3-4_UPDATE_MBX-INDEX

Parameter Name	Description	Range	Default Value	Type	Class
ATTRIBUTE_VALUE	The new attribute value.			I	R
DOWNLOAD	This parameter controls whether the MLR initiates updates on NEs. If set to YES and used with an attribute that requires DOWNLAOD (DIALTONE and RTNR), the MLR initiates the update on the relevant network entities. If set to NO, it prevents the updates from taking place. ASAP interprets any other value as NO.	YES NO	NO	S	O

A_VF-MLR_V3-4_VIEW_MBX

Displays the attributes of a specified mailbox in the MLR database. It is implemented by the Java method **com.metasolv.cartridge.oss.vf_mlr_v34.prov.MLRProvisioning.viewMBX.**

Table 13: A_VF-MLR_V3-4_VIEW_MBX

Parameter Name	Description	Range	Default Value	Type	Class
MCLI	The name of the host NE.			S	R
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depends on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R

Table 13: A_VF-MLR_V3-4_VIEW_MBX

Parameter Name	Description	Range	Default Value	Type	Class
ENQUIRE	A text parameter that tells the MLR whether or not to initiate an Enquire on Mailbox messages to the MXE. YES allows the ENQUIRE. NO prevents the ENQUIRE. ASAP interprets any value other than YES as NO.	YES NO	NO	S	O

Customizing error handling

You can customize the cartridge's error handling behavior by updating the SARM database table tbl_user_err.

For more information on this table, refer to the tbl_user_err section of Chapter 3 in the ASAP Developer's Guide.

Through this static table, you can remap any user-type exit code (USER_TYPE) to a different base exit type (BASE_TYPE). For example, if on a given NE you want a particular ASDL to return a SOFT_FAIL instead of FAIL (hard fail) when it detects a specific error, you change the BASE_TYPE associated with the appropriate USER_TYPE from FAIL to SOFT_FAIL (the ASDL is mapped to the USER_TYPE by way of the ASDL's script).

Before

USER_TYPE	BASE_TYPE	DESCRIPTION
*User_TypeCode*17	FAIL	NE fault code 17

After

USER_TYPE	BASE_TYPE	DESCRIPTION
*User_TypeCode*17	SOFT_FAIL	NE fault code 17

ASAP base exit types

- SUCCEED — successful ASDL execution.

- FAIL — hard error.
- SOFT_FAIL — a soft error occured, but processing will be allowed to continue.
- RETRY — the ASDL was not provisioned, but will be retried again.
- MAINTENANCE — the ASDL detected the NE is in maintenance mode.
- DELAYED_FAIL — the ASDL failed; but processing will continue.

For a complete description of the ASAP base-error types, refer to the *ASAP Developer's Reference*.

The following table contains the tbl_user_err entries for the Vodafone MLR cartridge.

Table 14: tbl_user_err — section containing entries for the Vodafone MLR

USER_TYPE	BASE_TYPE	DESCRIPTION
VF_MLR_SUCCEED	SUCCEED	Successful provisioning C1:00000,00000
VF_MLR_LOOPBACK	SUCCEED	Successful provisioning LOOPBACK
VF_MLR_00002,00042	FAIL	Invalid command for platform configuration-00042
VF_MLR_00002,00071	FAIL	Invalid mailbox-00071
VF_MLR_00002,00072	FAIL	Invalid DN-00072
VF_MLR_00002,00075	FAIL	Mailbox range not allocated
VF_MLR_00002,00077	FAIL	Mailbox already in use
VF_MLR_00002,00078	FAIL	DN already has a mailbox
VF_MLR_00002,00080	FAIL	Unable to allocate a mailbox
VF_MLR_00002,00081	FAIL	Mailbox not in use
VF_MLR_00002,00083	FAIL	DN has no mailbox
VF_MLR_00002,00084	FAIL	Invalid status change
VF_MLR_00002,00085	FAIL	Unable to obtain SP information
VF_MLR_00002,00086	FAIL	Personalise failure
VF_MLR_00002,00087	SOFT_FAIL	Depersonalise failure
VF_MLR_00002,00088	FAIL	Set divert failure
VF_MLR_00002,00089	SOFT_FAIL	Clear divert failure

Table 14: tbl_user_err — section containing entries for the Vodafone MLR

USER_TYPE	BASE_TYPE	DESCRIPTION
VF_MLR_00002,00091	FAIL	Clear divert failure
VF_MLR_00002,00092	FAIL	Not a group recall mailbox
VF_MLR_00002,00093	FAIL	Invalid published DN
VF_MLR_00002,00094	FAIL	Not a group recall member
VF_MLR_00002,00095	FAIL	Not a normal mailbox
VF_MLR_00002,00096	FAIL	Group mailbox still has members
VF_MLR_00002,00097	FAIL	Published DN has no mailbox
VF_MLR_00002,00098	FAIL	Not the main DN
VF_MLR_00002,00099	FAIL	Internal software error
VF_MLR_00002,00100	FAIL	Cannot remove published DN
VF_MLR_00002,00101	FAIL	Invalid parameter value
VF_MLR_00002,00103	FAIL	Not a PSTN mailbox
VF_MLR_00002,00104	FAIL	Unable to set alternate dial tone
VF_MLR_00002,00105	FAIL	Unable to set normal dial tone
VF_MLR_00002,00106	FAIL	Unable to set RTNR
VF_MLR_00002,00107	FAIL	Invalid alert type for mailbox
VF_MLR_00002,00108	FAIL	PSTN NNG no recognized by the ML
VF_MLR_00009,00042	FAIL	Invalid command for platform configuration-00042
VF_MLR_00009,00071	FAIL	Invalid mailbox-00071
VF_MLR_00009,00072	FAIL	Invalid DN-00072
VF_MLR_00009,00075	FAIL	Mailbox range not allocated
VF_MLR_00009,00077	FAIL	Mailbox already in use
VF_MLR_00009,00078	FAIL	DN already has a mailbox
VF_MLR_00009,00080	FAIL	Unable to allocate a mailbox

Table 14: tbl_user_err — section containing entries for the Vodafone MLR

USER_TYPE	BASE_TYPE	DESCRIPTION
VF_MLR_00009,00081	FAIL	Mailbox not in use
VF_MLR_00009,00083	FAIL	DN has no mailbox
VF_MLR_00009,00084	FAIL	Invalid status change
VF_MLR_00009,00085	FAIL	Unable to obtain SP information
VF_MLR_00009,00086	FAIL	Personalise failure
VF_MLR_00009,00087	SOFT_FAIL	Depersonalise failure
VF_MLR_00009,00088	FAIL	Set divert failure
VF_MLR_00009,00089	SOFT_FAIL	Clear divert failure
VF_MLR_00009,00091	FAIL	Clear divert failure
VF_MLR_00009,00092	FAIL	Not a group recall mailbox
VF_MLR_00009,00093	FAIL	Invalid published DN
VF_MLR_00009,00094	FAIL	Not a group recall member
VF_MLR_00009,00095	FAIL	Not a normal mailbox
VF_MLR_00009,00096	FAIL	Group mailbox still has members
VF_MLR_00009,00097	FAIL	Published DN has no mailbox
VF_MLR_00009,00098	FAIL	Not the main DN
VF_MLR_00009,00099	FAIL	Internal software error
VF_MLR_00009,00100	FAIL	Cannot remove published DN
VF_MLR_00009,00101	FAIL	Invalid parameter value
VF_MLR_00009,00103	FAIL	Not a PSTN mailbox
VF_MLR_00009,00104	FAIL	Unable to set alternate dial tone
VF_MLR_00009,00105	FAIL	Unable to set normal dial tone
VF_MLR_00009,00106	FAIL	Unable to set RTNR
VF_MLR_00009,00107	FAIL	Invalid alert type for mailbox

Table 14: tbl_user_err — section containing entries for the Vodafone MLR

USER_TYPE	BASE_TYPE	DESCRIPTION
VF_MLR_00009,00108	FAIL	PSTN NNG no recognized by the ML
VF_MLR_C2:00021	SUCCEED	Display attributes of a mailbox
VF_MLR_C2:00022	SUCCEED	Display each DN associated with a mailbox
VF_MLR_C2:00025	SUCCEED	Display person DN
VF_MLR_C2:00026	SUCCEED	Display each call minder mailbox
VF_MLR_C2:00027	SUCCEED	Unable to communicate with MXE
VF_MLR_C2:00034	FAIL	Facility not registered
VF_MLR_C2:00035	FAIL	Number unobtainable
VF_MLR_C2:00036	FAIL	Service unobtainable
VF_MLR_C2:00037	FAIL	Service temporarily unobtainable
VF_MLR_C2:00038	FAIL	Network termination
VF_MLR_C2:00039	FAIL	Unknown error
VF_MLR_TELEXCEPTION	RETRY	Telnet exception
VF_MLR_IOEXCEPTION	RETRY	IOException exception
VF_MLR_EXCEPTION	FAIL	General exception
VF_MLR_00003,00001	FAIL	Syntax violation
VF_MLR_00004,00001	FAIL	Unknown command
VF_MLR_00005,00001	FAIL	Invalid command for this user type
VF_MLR_00006,00004	FAIL	Incorrect number of parameters
VF_MLR_00007,00001	FAIL	Invalid parameter value
VF_MLR_00007,00002	FAIL	Invalid parameter value
VF_MLR_00007,00003	FAIL	Invalid parameter value
VF_MLR_00007,00004	FAIL	Invalid parameter value

4

Service Definition

The Vodafone MLR cartridge contains a set of CSDLs that map to one or more ASDL commands. You can also create additional CSDLs that map to existing and newly-created ASDLs. An upstream system can assemble any of these CSDL commands onto a work order for provisioning.

This chapter presents detailed information on the CSDL parameters that we provide in this cartridge. The following table lists and describes the type of parameter information that is included.

Table 15: CSDL parameter information

Item	Description
Parameter Name	Identifies the parameter that is configured for the stated service.
Description	Describes the parameter.
Range	Describes or lists the range of values that can be used to satisfy this parameter.
Default Value	Configures a default value for the parameter so that it is not mandatory for the upstream system to provide a value.
Type	Indicates one of the following parameter types: ◆ S—Scalar, specifies the parameter label transmitted on the CSDL command. ◆ C—Compound, specifies the base name of the compound parameter transmitted on the CSDL command. ◆ I—Indexed, specifies the base name of the CSDL command transmitted on the CSDL command.

Table 15: CSDL parameter information

Item	Description
Class	Indicates one of the following parameter classifications: ◆ R—Required scalar parameter ◆ O—Optional scalar parameter ◆ C—Required compound parameter ◆ N—Optional compound parameter ◆ M—Mandatory indexed parameter ◆ I—Optional indexed parameter ◆ S—Parameter count

For a detailed description of the Required and Optional parameter classifications, refer to the *ASAP Developer's Reference*.

Common Service Description Layer (CSDL) commands

This cartridge provides the following CSDL Commands:

- C_VF-MLR_V3-4_ADD_MEMBER
- C_VF-MLR_V3-4_CREATE_MBX
- C_VF-MLR_V3-4_CREATE_MSNGR
- C_VF-MLR_V3-4_DELETE_MBX
- C_VF-MLR_V3-4_REMOVE_MEMBER
- C_VF-MLR_V3-4_UPDATE_MBX
- C_VF-MLR_V3-4_UPDATE_MBX-INDEX
- C_VF-MLR_V3-4_VIEW_MBX

C_VF-MLR_V3-4_ADD_MEMBER

Adds the subscriber to a group voice mail that has already been created on the MLR.

Table 16: C_VF-MLR_V3-4_ADD_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
ATTRIBUTE_NAME	The name of the attribute to change.	MSISDN	MSISDN	S	R
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
NEW_ATTRIBUTE_VALUE	The new number to add to the group.			S	R
NE_ID_VF-MLR	The name of the host NE.			S	R
NOSETDIVS	If set to NO, this parameter enables diverts. If set to YES, this parameter stops the MLR from setting diverts on the HLR for the given number. ASAP interprets any other value in this parameter as NO.	Yes No	NO	S	O

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 17: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_ADD_MEMBER	A_VF-MLR_V3-4_ADD_MEMBER

C_VF-MLR_V3-4_CREATE_MBX

Assigns a mailbox to the subscriber in the MLR database.

Table 18: C_VF-MLR_V3-4_CREATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
ASSOC_KEY	ASCII text that indicates the key used to locate the record with which the command will associate.	MBX or DN		S	O
ASSOC_VALUE	A numeric field that contains either the mailbox, or a directory number, depending on the key specified.	Published MSISDN or PSTN		S	O
CLASS	An ASCII text field indicating the class of the subscriber’s mailbox.	NORMAL, GROUP (that is, MultiSim) or PSTN.		S	R
DN	A number that identifies the subscriber's directory number. The number depends on the mailbox class. MSISDN = NORMAL, Published MSISDN = GROUP and PSTN number = PSTN.			S	R
IMSI	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
NE_ID_VF-MLR	The name of the host NE.			S	R

Table 18: C_VF-MLR_V3-4_CREATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
SUB_TYPE	Indicates the mailbox subscription type.	SUB, NON_SUB, CALLMINDER or UM.		S	R
VASP	An integer that identifies Value Added Service Provider (for example, 1 for VVAS).			S	R

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 19: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_CREATE_MBX	A_VF-MLR_V3-4_CREATE_MBX

C_VF-MLR_V3-4_CREATE_MSNGR

Assigns a mailbox to the subscriber in the MLR database.

Table 20: C_VF-MLR_V3-4_CREATE_MSNGR

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
MBX	Contains a number that identifies the mailbox in the database.			S	R
MSISDN	Contains a number that identifies the subscriber's MSISDN.			S	R
NE_ID_VF-MLR	The name of the host NE.			S	R

Table 20: C_VF-MLR_V3-4_CREATE_MSNGR

Parameter Name	Description	Range	Default Value	Type	Class
PERSON	If set to YES, this parameter forces mailbox personalization on the VM. ASAP interprets any other value as NO.	YES NO	NO	S	O
SETDIVS	If this parameter is set to YES, it forces diverts to the mailbox to be set on the HLR. ASAP interprets any other value as NO.	YES NO	NO	S	O

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 21: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_CREATE_MSNGR	A_VF-MLR_V3-4_CREATE_MSNGR

C_VF-MLR_V3-4_DELETE_MBX

Deletes an existing mailbox from the MLR database.

Table 22: C_VF-MLR_V3-4_DELETE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R

Table 22: C_VF-MLR_V3-4_DELETE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
NE_ID_VF-MLR	The name of the host NE.			S	R
NOCLRDIVS	Controls the clearing of diverts on the HLR (for NORMAL mailboxes, only) If the parameter is set to YES, it prevents clearing of diverts. If the parameter is set to NO it allows clearing of diverts. ASAP interprets any other value as NO.	YES or NO	NO	S	O
NOCLRDT	If set to YES, this parameter prevents the MLR from setting the dial tone to normal (for PSTN mailboxes only). If set to NO, this parameter allows the MLR to set the dial tone to normal. ASAP interprets any other value as NO.	YES or NO	NO	S	O
NODEPERSON	Controls depersonalization of the subscriber's mailbox. If set to YES, it prevents depersonalization. If set to NO, it allows depersonalization. ASAP interprets any other value as NO.	YES or NO	NO	S	O

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 23: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_DELETE_MBX	A_VF-MLR_V3-4_DELETE_MBX
	A_VF-MLR_V3-4_DELETE_MBX-NODEPERSON
	A_VF-MLR_V3-4_DELETE_MBX-NOCLRDIVS

C_VF-MLR_V3-4_REMOVE_MEMBER

Removes the subscriber from an existing group voice mail.

Table 24: C_VF-MLR_V3-4_REMOVE_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
IMSI	An optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).			S	O
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
MSISDN	Contains the number to be removed from the group.			S	R
NE_ID_VF-MLR	The name of the host NE.			S	R

Table 24: C_VF-MLR_V3-4_REMOVE_MEMBER

Parameter Name	Description	Range	Default Value	Type	Class
NOCLRDIVS	Controls the clearing of diverts on the HLR (for NORMAL mailboxes, only) If the parameter is set to YES, it prevents clearing of diverts. If the parameter is set to NO it allows clearing of diverts. ASAP interprets any other value as NO.	YES NO	NO	S	O

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 25: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_REMOVE_MEMBER	A_VF-MLR_V3-4_REMOVE_MEMBER

C_VF-MLR_V3-4_UPDATE_MBX

Updates an attribute associated with a mailbox or an MSISDN.

Table 26: C_VF-MLR_V3-4_UPDATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
ATTRIBUTE_NAME	The attribute name to change.			S	R
ATTRIBUTE_VALUE	The new attribute value.			S	R

Table 26: C_VF-MLR_V3-4_UPDATE_MBX

Parameter Name	Description	Range	Default Value	Type	Class
DOWNLOAD	Controls whether the MLR initiates updates on NEs. If set to YES and used with an attribute that requires DOWNLAOD (DIALTONE and RTNR), the MLR initiates the update on the relevant network entities. If set to NO, it prevents the updates from taking place. ASAP interprets any other value as NO.	YES NO	NO	S	O
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
NE_ID_VF-MLR	The name of the host NE.			S	R

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 27: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_UPDATE_MBX	A_VF-MLR_V3-4_UPDATE_MBX

C_VF-MLR_V3-4_UPDATE_MBX-INDEX

Updates attributes associated with a mailbox or an MSISDN.

Table 28: C_VF-MLR_V3-4_UPDATE_MBX-INDEX

Parameter Name	Description	Range	Default Value	Type	Class
ATTRIBUTE_NAMEn	The attribute name to change. Here n = 1....n.			I	R
ATTRIBUTE_VALUEn	The new attribute value. Here n = 1....n.			I	R
DOWNLOAD	Controls whether the MLR initiates updates on NEs. If set to YES and used with an attribute that requires DOWNLAOD (DIALTONE and RTNR), the MLR initiates the update on the relevant network entities. If set to NO, it prevents the updates from taking place. ASAP interprets any other value as NO.	YES NO	NO	S	O
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
NE_ID_VF-MLR	The name of the host NE.			S	R

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 29: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_UPDATE_MBX-INDEX	A_VF-MLR_V3-4_UPDATE_MBX-INDEX

C_VF-MLR_V3-4_VIEW_MBX

Displays the attributes of a specified mailbox in the MLR database.

Table 30: C_VF-MLR_V3-4_VIEW_MBX

Parameter Name	Description	Range	Default Value	Type	Class
ENQUIRE	A text parameter that tells the MLR whether or not to initiate an Enquire on Mailbox messages to the MXE. YES allows the ENQUIRE. NO prevents the ENQUIRE. ASAP interprets any value other than YES as NO.	YES NO	NO	S	O
KEY	The key used to locate the subscriber record.	ASCII text indicating either MBX, MSISDN, or DN,		S	R
KEY_VALUE	A numeric field. The contents of this field depend on the key used to locate the subscriber record.	MBX, MSISDN, or DN		S	R
NE_ID_VF-MLR	The name of the host NE.			S	R

Mapping to ASDLs

The following table illustrates the CSDL to ASDL mapping for this service.

Table 31: CSDL to ASDL Mapping

CSDL	ASDL
C_VF-MLR_V3-4_VIEW_MBX	A_VF-MLR_V3-4_VIEW_MBX

5

Configuring ASAP to Support Additional NE Instances

You can configure ASAP to support the Vodafone MLR - NEP configuration using the Service Activation Configuration Tool (SACT). Refer to the *ASAP System Configuration and Management Guide* fore more information.

Below is an example of Activation Configuration XML configuration file for Vodafone MLR cartridge.

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XML Spy v4.3 U (http://www.xmlspy.com) by Tvrtko Meler
  -->
<!--Sample XML file generated by XML Spy v4.3 U (http://www.xml-
  spy.com)-->
<activationConfig xmlns="http://www.metasolv.com/ServiceActivation/
  2003/ActivationConfig" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
  instance" xsi:schemaLocation="http://www.metasolv.com/ServiceActi-
  vation/2003/ActivationConfig
C:\ASAP4.6\ActivationConfig.xsd">
   <connectionPool name="MLRPOOL">
      <device name="vfmlr_dev1">
         <environment>MY_ASAP_SYS</environment>
         <lineType>TELNET_CONNECTION</lineType>
      </device>
   </connectionPool>
   <element name="VFMLR34">
      <technology>VF-MLR</technology>
      <softwareLoad>V3-4</softwareLoad>
      <nepServerName>$NEP</nepServerName>
      <primaryPool>MLRPOOL</primaryPool>
      <maximumConnections>1</maximumConnections>
      <dropTimeout>2</dropTimeout>
      <spawnThreshold>3</spawnThreshold>
      <killThreshold>2</killThreshold>
      <routingElement name="VFMLR34">
         <atomicService/>
      </routingElement>
      <communicationParameter>
         <label>HOST_IPADDR</label>
         <value>
            <value>127.0.0.1</value>
         </value>
         <description>The IP Address for the remote NE host</descrip-
```

```
tion>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>PORT</label>
       <value>
          <value>23</value>
       </value>
       <description>Port number to connect on remote NE host</de-
scription>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>HOST_USERID</label>
       <value>
          <value>MLR_ID</value>
       </value>
       <description>MLR User ID to login</description>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>HOST_PASSWORD</label>
       <value>
          <value>MLR_PASSWD</value>
       </value>
       <description>MLR Password to login</description>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
                      <label>OPEN_TIMEOUT</label>
                      <value>
                              <value>5</value>
                      </value>
                      <description>Connect timeout in seconds</
description>
                      <deviceName>COMMON_DEVICE_CFG</deviceName>
                      <lineType>TELNET_CONNECTION</lineType>
                </communicationParameter>
                <communicationParameter>
                      <label>READ_TIMEOUT</label>
                      <value>
                              <value>5</value>
                      </value>
                   <description>Read timeout in seconds</description>
                      <deviceName>COMMON_DEVICE_CFG</deviceName>
                      <lineType>TELNET_CONNECTION</lineType>
                </communicationParameter>
    <communicationParameter>
       <label>PROMPT</label>
       <value>
          <value>LOOPBACK&amp;lt;</value>
       </value>
       <description>MLR Prompt default value is (LOOPBACK)</descrip-
```

```
tion>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>LOGIN_PROMPT</label>
       <value>
          <value>Username:</value>
       </value>
       <description>Login prompt default value is Username:</de-
scription>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>PASSWORD_PROMPT</label>
       <value>
          <value>Password:</value>
       </value>
       <description>Login prompt default value is Password:</de-
scription>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>ADM_INTREFACE</label>
       <value>
          <value>ADMP</value>
       </value>
       <description>String to access the Administration interface</
description>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
       <label>NODE_PROMPT</label>
       <value>
          <value>ADM&amp;gt;</value>
       </value>
       <description>Administration command prompt</description>
       <deviceName>COMMON_DEVICE_CFG</deviceName>
       <lineType>TELNET_CONNECTION</lineType>
    </communicationParameter>
    <communicationParameter>
                      <label>RESPONSELOG</label>
                      <value>
                              <value>TRUE</value>
                      </value>
                      <description>Flag to turn on or off response
logging</description>
                      <deviceName>COMMON_DEVICE_CFG</deviceName>
                      <lineType>TELNET_CONNECTION</lineType>
              </communicationParameter>
    <communicationParameter>
                      <label>LOGIN_SLEEP</label>
                      <value>
                              <value>2</value>
```

```
                        </value>
                       <description>Sleep in seconds during login to
  AUC before getting prompt</description>
                        <deviceName>COMMON_DEVICE_CFG</deviceName>
                        <lineType>TELNET_CONNECTION</lineType>
                  </communicationParameter>
   </element>
</activationConfig>
```

Extracting source files

Before you can access an XML file to modify it, you must extract it from the sar file. Use the following procedure to extract source files from the sar file.

To extract source files

1. If necessary, create a repository directory under /Vodafone_MLR_V3_4, copy the .sar file to the new directory and un-jar the sar file, as described by Step 1 through Step 4 in “Modifying vf_mlr_v34_activation_configuration.xml” on page 9.
2. After you un-jar the sar file, you can access the XML files.

Loading a new XML file

When you finish modifying an XML, you must create a new sar file, then restart the cartridge using the new file.

Follow the instructions in “Modifying vf_mlr_v34_activation_configuration.xml” on page 9 for directions on how to load a new XML file.

6

MML Commands

This chapter provides you with a list of the MML commands that this cartridge uses.

MML command execution overview

The following describes how the Java method executes the MML command.

1. The Java method retrieves the ASDL parameters.
2. Using the parameters, the method builds the MML command.
3. If the NE is in live mode, the method sends the MML to the remote host, then waits for the response.
4. The method checks the response from the NE for errors.
   - If the response is error free, the method returns a SUCCEED message to the upstream system.
   - If an error occurs, the method returns an error message to the SARM.

MML command descriptions

This section describes the MML commands and lists them by their associated Java method.

createMBX

MML Command

CREATE:MBX,*<class>*,*<dn>*,*(<imsi>)*,*<vasp>*,*<sub_type>*,*(<assoc.key>)*,
(<assoc. value>);

Table 32:

Parameter	Description
<class>	This parameter is an ASCII text field indicating the class of the subscriber's mailbox. The range of legal values is as follows: NORMAL, GROUP (that is, MultiSim) or PSTN.
<dn>	A number that identifies the subscriber's directory number. The number depends on the mailbox class. MSISDN = NORMAL, Published MSISDN = GROUP and PSTN number = PSTN.
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
<vasp>	Integer identifying the Value Added Service Provider (e.g. 1 for VVAS).
<sub_type>	Mailbox subscription type. Either SUB, NON_SUB, CALLMINDER or UM.
<assoc. key>	This parameter consists of ASCII text and indicates the key used to locate the record with which the command will associate.
<assoc. value>	This parameter is a numeric field that contains either the mailbox, or a directory number, depending on the key specified.

Output parameters

If work order exit status is SUCCEED (C1:00000,00000), then method is returning:

CSDL parameter - MBX, MLR_ADD_MBX_ERR_CODE=00000

INFO parm MBX.

If work order exit status is different then C1:00000,00000 then method

is returning CSDL parameter MLR_ADD_MBX_ERR_CODE=<error code>

deleteMBX

MML Command

```
DELETE:MBX,<key>,<key value>,(<imsi>),(<option>),(<option>);
```

Table 33:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
<option>	This parameter specifies up to two optional parameters that tell the MLR what it should do when deleting a mailbox. Inappropriate options are ignored. The optional parameters are: NODEPERSON—Prevents depersonalisation of the mailbox. NOCLRDIVS—Prevents clearing of diverts on the HLR (only for NORMAL mailboxes). NOCLRDT—Prevents the MLR from setting the dial tone to normal (only for PSTNmailboxes).

Output parameters

If work order exit status is SUCCEED (C1:00000,00000), then method is returning:

INFO parameter MBX and CSDL parameters MLR_DEL_MBX_ERR_CODE=00000, NODEPERSON=NO, NOCLRDIVS=NO

If work order exit status is different then C1:00000,00000 then method is returning

CSDL parameter MLR_DEL_MBX_ERR_CODE=<error code> and NODEPERSON, NOCLRDIVS

If error is 00087 NODEPERSON=YES, NOCLRDIVS=NO

If error is 00089 NODEPERSON=NO, NOCLRDIVS=YES

deleteMBXNodeperson

MML Commands

```
DELETE:MBX,<key>,<key value>,(<imsi>),option;
```

Table 34:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
<option>	If you specify NOCLRDIVS here, it prevents clearing of diverts on the HLR (only for NORMAL mailboxes).

Output parameters

If work order exit status is SUCCEED (C1:00000,00000), then method is returning:

INFO parameter - MBX, CSDL parameter MLR_DEL_MBX_NODEP_ERR_CODE=00000.

If fail CSDL - parameter MLR_DEL_MBX_NODEP_ERR_CODE=<error code>.

deleteMBXNoclrdivs

MML Commands

```
DELETE:MBX,<key>,<key value>,(<imsi>),option;
```

Table 35:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
<option>	If you specify NOCLRDIVS here, it prevents clearing of diverts on the HLR (only for NORMAL mailboxes).

Output parameters

If work order exit status is SUCCEED (C1:00000,00000), then method is returning:

INFO parameter - MBX, CSDL parameter MLR_DEL_MBX_NOCLR_ERR_CODE=00000.

If fail CSDL - parameter MLR_DEL_MBX_NOCLR_ERR_CODE=<error code>.

updateMBX

MML Commands

```
UPDATE:MBX,<key>,<key value>,<attribute name>, <new attribute value>,
(<DOWNLOAD>);
```

Table 36:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<attribute name>	The name of the attribute to change.
<new attribute value>	The new attribute value.
<DOWNLOAD>	This is an optional parameter. If you use it with an attribute that requires it (DIALTONE and RTNR) the MLR initiates updates on the relevant network entities.

Output parameters

INFO parameter - MBX if SUCCEED.

CSDL parameter - MLR_MOD_MBX_ERR_CODE=00000, or <error_code>.

createMSNGR

MML Commands

```
CREATE:MSNGR,<mbx>,<msisdn>,(<imsi>),(<option>),(<option>);
```

Table 37:

Parameter	Description
<mbx>	This parameter contains a number that identifies the mailbox in the database.
<msisdn>	This parameter contains a number that identifies the subscriber's MSISDN.
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
<option>	This parameter specifies up to two optional parameters that tell the MLR what it should do when deleting a mailbox. Inappropriate options are ignored. The optional parameters are: PERSON—Forces personalization of the mailbox on the VM. SETDIVS—Forces diverts to the mailbox to be set on the HLR.

Output parameters

CSDL parameter - MLR_ADD_MSNGR_ERR_CODE=00000 or <error code>.

viewMBX

MML Commands

```
VIEW:MBX,<key>,<key value>,(<ENQUIRE>);
```

Table 38:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<enquire>	This is a text parameter that tells the MLR whether or not to initiate an Enquire on Mailbox messages to the MXE. The values are: NOENQUIRE (default). ENQUIRE.

Output parameters

CSDL - parameter MLR_QRY_MBX_ERR_CODE=00000 or <error code>

- If response code is C2:00021 info parameters are:

MBX, STATUS, TIME, MW, RETRIES, RETRY REASON, RETRY STATE, VASP, SUB TYPE, ALERT TYPE, CLASS, VMID, RTNR, HOST_NODE, GROUP_NOTIFY.

- If response code is C2:00022 info parameters are:

DN, DN TYPE, DN STATUS

- If response code is C2:00025 info parameters are:

PERSON STATE, PERSON DN, UNREAD MSGS, RETENTION TIME, ALERT STATE

- If response code is C2:00026 info parameters are:

CM_DN, CM_MBX, CM_CLASSS

- If response code is C2:00027 info parameter is:

MSG

addMember

MML Commands

ADD:MEMBER,<key>,<key value>,<attribute name>,<new attributevalue>,(<imsi>), (NOSETDIVS);

Table 39:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<attribute name>	The name of the attribute to change.
<new attribute value>	The new attribute value.
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
(NOSETDIVS)	If set to NO (default), this parameter enables diverts. If set to YES, this parameter stops the MLR from setting diverts on the HLR for the given number. ASAP interprets any other value in this parameter as NO.

Output parameters

INFO parameters MBX, PMSISDN and MSISDN if work order SUCCEED.

CSDL parameter - MLR_ADD_MEMB_ERR_CODE=00000 or error code.

removeMember

MML Commands

```
REMOVE:MEMBER,<key>,<key value>,<msisdn>, (<imsi>), (NOCLRDIVS);
```

Table 40:

Parameter	Description
<key>	The key used to locate the subscriber record. The range of valid values for this parameter includes: ASCII text indicating either MBX, MSISDN, or DN,
<key value>	A numeric field. The contents of this field depend on the key used to locate the subscriber record. The range of valid values for this parameter includes: MBX, MSISDN, or DN
<msisdn>	This parameter contains a number that identifies the subscriber's MSISDN.
<imsi>	This is an optional number that identifies the subscriber's IMSI or overlapping IMSI. If you choose to omit this parameter, the MLR performs an SRI to the HLR to obtain an IMSI, but only if one is required for the setting of diverts (Note: this behavior only works predictably on a Vodafone HLR).
(NOCLRDIVS)	NOCLRDIVS—Prevents clearing of diverts on the HLR (only for NORMAL mailboxes). The default setting is to allow clearing of diverts.

Output parameters

INFO parameters MBX, PMSISDN and MSISDN if work order SUCCEED.

CSDL parameter - MLR_DEL_MEMB_ERR_CODE=00000 or error code.