
HP OpenView Service Quality Manager



HP OpenView TeMIP Alarm Service Adapter

Installation, Configuration and User's Guide

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Preface

This document describes how to install and configure the HP OpenView Fault Statistics Service Adapter integrated with HP OpenView TeMIP for HP OpenView Service Quality Manager (SQM). The Service Adapter is the application that provides SQM with the performance data used to measure the Quality of Service (QoS).

This document describes how to:

- Install the Service Adapter (and associated subsets)
- Set up the Service Adapter
- Start and Stop the Service Adapter
- Customize the Service Adapter

Intended audience

This document is intended for Service Quality Manager Administrators.

Required knowledge

It is assumed that the reader is familiar with the functionality of Service Quality Manager and has previous experience of the following:

- System administration
- HP OpenView TeMIP
- HP OpenView SQM
- Acanthis Extended Archiving
- Service Level Management
- Network & Fault Management

It is assumed that the reader is familiar with the concepts described in the following books:

- *HP OpenView Service Quality Manager Overview*
- *HP OpenView Service Quality Manager Service Adapter User's Guide*
- *HP OpenView Service Quality Manager Administration Guide*
- *Acanthis Extended Archiving User's Guide*

Software versions

The software versions referred to in this document are specified in chapter 2.1.1, "Software requirements".

Typographical conventions

The following typographical conventions have been used throughout this document.

Courier font:

- Source code and examples of file contents
- Commands that you enter on the screen
- Pathnames

Italic text:

- Filenames, programs and parameters in the text
- The names of other documents referred to in this guide

Bold text:

- New terms
- Emphasized words
- Keyboard key names

Associated documents

The following documents contain useful reference information:

- *HP OpenView SQM – SQL Service Adapter Toolkit Installation, Configuration and User's Guide*
- *HP OpenView TeMIP Alarm Handling User's Guide*
- *Acanthis Extended Archiving User's Guide*

For a full list of SQM user documentation, see the *HP OpenView Service Quality Manager Product Family Introduction*.

Support

Please visit our HP OpenView web site at: openview.hp.com/

There you will find contact information as well as details about the products, services, and support HP OpenView has to offer.

The OpenView Support area of the HP OpenView web site includes:

- Downloadable documentation
- Troubleshooting information
- Patches and updates
- Problem reporting
- Training information
- Support program information

Chapter 1

Introduction

The HP OpenView Service Quality Manager (SQM) uses a Service Adapter to collect data from HP OpenView TeMIP (TeMIP) and feed that data to SQM. The data consists of fault statistics information about entities that TeMIP manages. The Service Adapter provides a common interface through which SQM works with external components.

This section provides a brief overview of SQM and the Service Adapter. It also describes the different elements the Service Adapter uses to collect data.

For a detailed description of SQM, see the *HP OpenView Service Quality Manager Overview*.

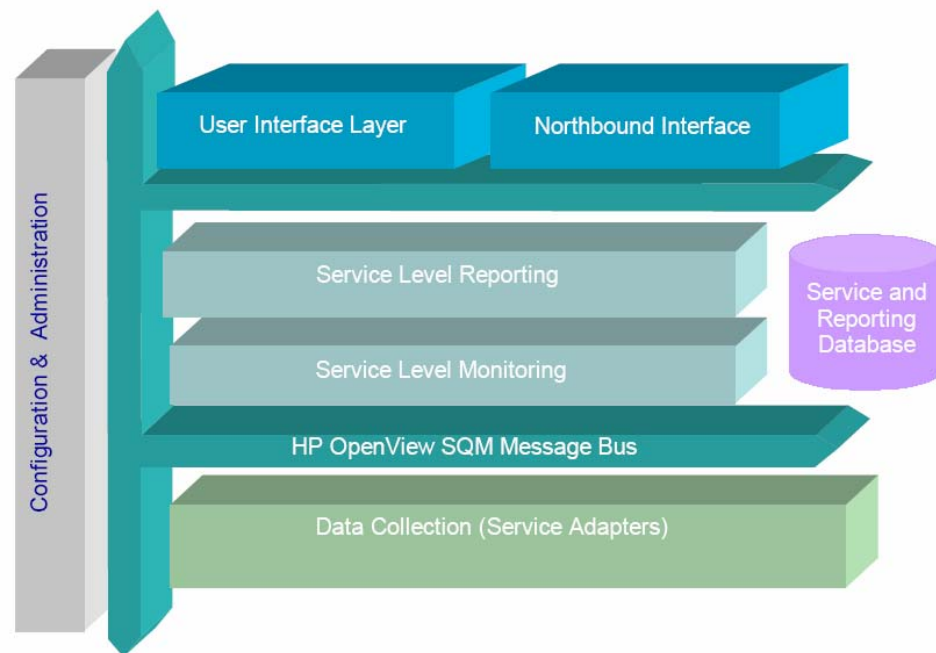
For a detailed description of Service Adapters, see the *HP OpenView Service Quality Manager Service Adapter User's Guide*.

1.1 Service Quality Manager

SQM provides a complete service quality management solution running under the HP implementation of UNIX®, HP-UX. HP-UX, which is compatible with the major industry standards, is based on the UNIX System V Release 4 operating system and includes important features from the Fourth Berkeley Software Distribution. SQM consolidates quality indicators across all domains—telecom, IT networks, servers, and applications—providing end-to-end visibility on service quality. It links service quality degradations to potential impacts on business, allowing network support personnel to address problems and prioritize actions proactively.

SQM monitors the service quality by aggregating information coming from all data sources, such as the network, the IT infrastructure, and the service provider's business processes. Using this information, service operators can pinpoint infrastructure problems and identify their potential effect on customers, services, and service level agreements (SLAs).

Figure 1 Service Quality Manager main components



Service Adapters have two main interfaces to SQM:

- An interface to the Configuration and Administration layer
- An interface to the Service Level Monitoring (SLM) layer

The Configuration & Administration layer contains the configuration repository. This repository stores information on how to connect to OpenView TeMIP and how to map the raw data from TeMIP to the SQM parameter format.

The Service and Reporting Database contains the SQM Service Repository, which notably stores the parameters that the Service Adapter must collect.

The layer receives all measurement data from the Service Adapter. It then calculates the each service's status to determine whether that service has failed to meet a service level (SL).

1.2 Service Adapter

The Service Adapter connects to TeMIP and collects relevant data. It serves as a bridge between SQM and TeMIP, collecting data from TeMIP, calculating quality indicators, and then feeding them to SQM.

1.2.1 What the Service Adapter does

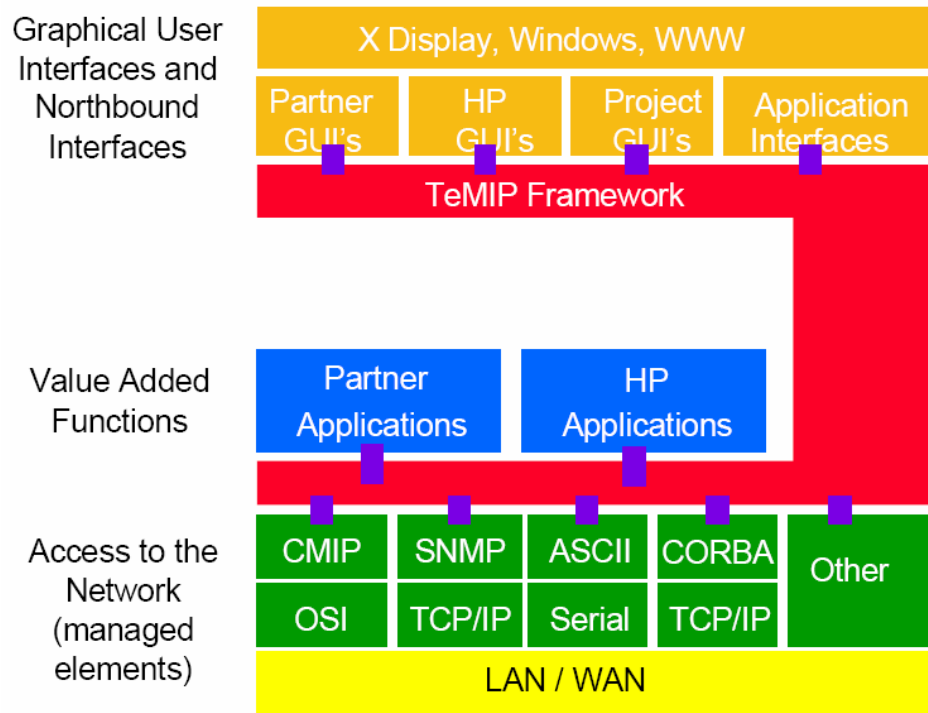
The TeMIP Alarm Service Adapter provides fault statistic indicators deduced from the data stored in the TeMIP database. With TeMIP, the customer can detect faults occurring on a network or a system. This Service Adapter calculates statistical indicators for faults occurring on elements managed by TeMIP.

1.2.2 OpenView TeMIP overview

The TeMIP environment is extremely flexible and allows you to create custom solutions that use TeMIP in a way that suits your particular requirements.

TeMIP consists of a suite of components that together form a Telecommunications Network Management System. These components offer a solid, modular, distributed architecture and an open development environment, and answer the need for off-the-shelf integrated network management. Some of the non-core components, such as data warehousing, are developed by partner companies.

The relationship between the TeMIP components is shown in the following diagram.



TeMIP's multi-tiered architecture means that TeMIP solutions can distribute client access transparently through TeMIP Presentation Module servers on UNIX systems, and core functions through TeMIP Full Server on UNIX systems. TeMIP user interfaces (UIs) can run on either Windows or UNIX operating systems.

The TeMIP distribution meets the scalability and geographical span needs of telecommunication or corporate networks by spreading the communication traffic and CPU load over multiple, geographically distributed systems. TeMIP Presentation Module servers and TeMIP Full Servers both provide TeMIP Framework facilities and off-the-shelf generic key applications. A TeMIP Presentation Module server, on the other hand, is dedicated to TeMIP northbound interfaces and/or TeMIP user interfaces, whereas the TeMIP Full Server can run all types of TeMIP applications.

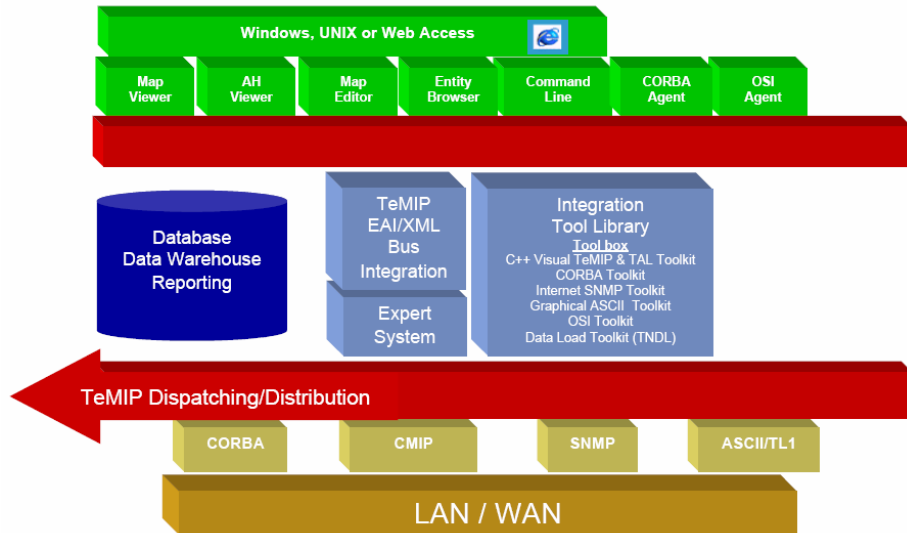
TeMIP Presentation server and TeMIP Full Server offer:

- The openness and flexibility of an object oriented architecture combining plug-in, generic dictionary-based OpenView TeMIP applications with integration of third-party or user-developed applications
- The robustness, reliability and flexibility of self-management capabilities
- Easy-to-use deployment, administration, monitoring and troubleshooting tools
- The scalability, reliability and flexibility of a sophisticated, distributed and optimized event flow and notification mechanism
- Configuration features for registering, naming, creating synonyms for and grouping objects (using the domain concept)

- Security features for access control and logging
- TeMIP Client server applications for optimizing Graphical User Interface (GUI) applications displaying Maps, Alarms and States (client-server architecture)

TeMIP Full Server provides the TeMIP kernel (called the ‘Framework’) and value-added functions, and includes off-the-shelf generic applications such as schedulers, state mapping, alarm rules and collectors.

The TeMIP architecture is shown in the following figure.



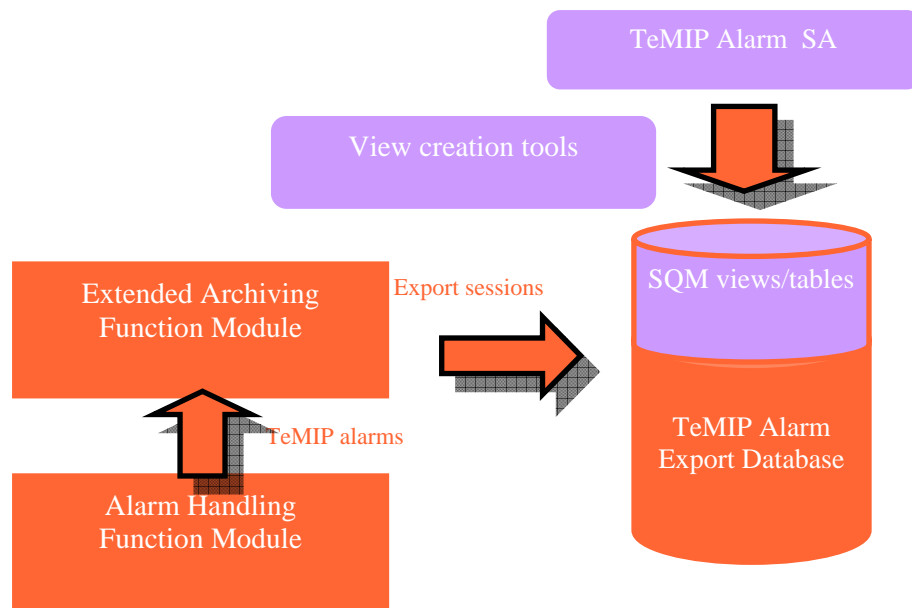
1.2.3 TeMIP Alarm as a data source for SQM

Integration is achieved through an SQM SQL Service Adapter, called the TeMIP Alarm Service Adapter. This Service Adapter collects the fault statistics from a dedicated SQL view that computes statistics on the TeMIP alarms exported to the TeMIP SQL database.

Note that the integration concentrates only on the snapshot of TeMIP active alarms and not on the historical data. It therefore reflects the status of current TeMIP entities only.

This integration is illustrated in the following figure, “TeMIP/SQM integration”.

Figure 2 TeMIP/SQM integration



The TeMIP SQL database is provided and fed by a partner product, the Acanthis Extended Archiving Function Module, which exports the TeMIP alarms to an Oracle database and also archives the exported TeMIP alarms.

The SQL view *TEMIPAHARCHI.DISCOVERY_VIEW* contains the list of all TeMIP managed entities discovered through a separate discovery mechanism on the TeMIP director.

The SQL view *TEMIPAHARCHI.COLLECTION_VIEW* computes the following statistics on the alarms discovered for each TeMIP managed entity:

- Worst severity
- Severity of the last alarm
- Number of alarms for each level of severity
- Number of outstanding alarms
- Problem duration

1.2.4 Product deployment

You must firstly install the TeMIP platform with its associated Oracle database, the alarm exporter, and the Acanthis Extended Archiving Function Module. The TeMIP Entities Discovery Module for SQM based on TeMIP Domains must then be installed on the TeMIP director.

On the SQM platform, you must install and configure the Service Adapter with all of its prerequisites, which include the SQM Kernel, Service Adapter Common layer, and the SQL Service Adapter.

See the Acanthis Extended Archiving User's Guide for more information on how to install and configure the Acanthis Extended Archiving Function Module. See the Acanthis Database Tool documentation for instructions on how to create the associated database.

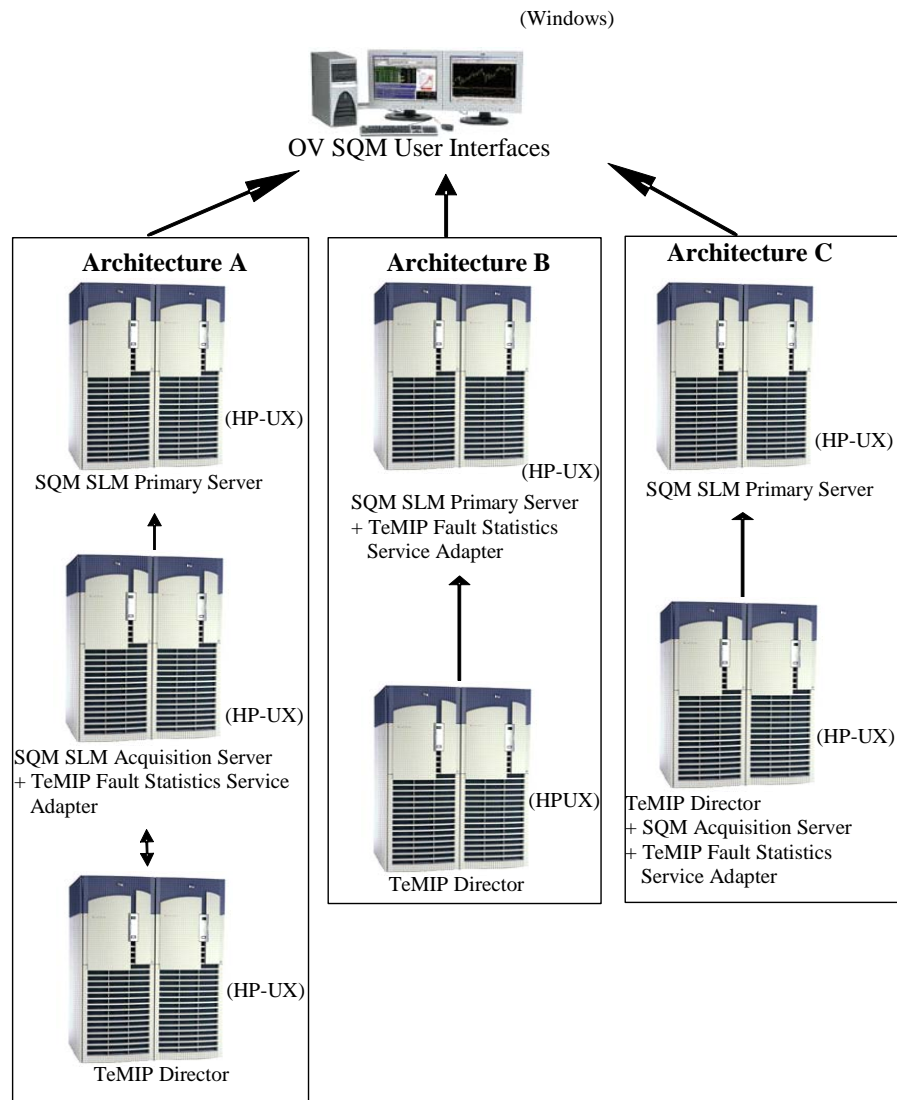
Once the Service Adapter has been configured and started, it begins to collect the specified quality indicators for SQM. The Service Adapter functions as an independent unit.

Each configured installation is called a Service Adapter Application. The Service Adapter Application connects to the TeMIP database using Java Database Connectivity (JDBC), and then collects data from the database.

You can install the Service Adapter on a computer that is not part of the TeMIP environment if you wish. This might be useful if you want to balance network load or have dedicated computers for specific tasks, for example. The Service Adapter Application can also connect across a firewall, providing greater flexibility in secure environments.

Figure 3 below shows how the Service Adapter works with SQM and TeMIP.

Figure 3 Service Adapter deployments



1.2.5 TeMIP data collection

The Service Adapter uses data feeders to collect data. A data feeder is therefore a source of data for SQM. Each data feeder is defined by a Data Feeder Definition (DFD).

Some DFD related terms are explained below.

- **DFD**

A data structure which defines the source data collected from TeMIP; it is stored both in the SQM Service Repository Manager and in the SQM Central Repository.

- **DFD parameters**

Parameters that define what measurement data the Service Adapter sends to SQM; it is stored in the SQM Service Repository Manager repository.

- **DFD properties**

These properties further identify the TeMIP managed entity whose data is collected. The properties are stored in the SQM Service Repository Manager's repository.

- **Measurement Reference Point**

The Measurement Reference Point (MRP) identifies the source of the data that is to be collected.

The following tables show the DFD configuration of the TeMIP Alarm Service Adapter.

1.2.6 Generic DFD configuration

Table 1 DFD configuration

Name	Type	Description	Value
<i>DfdName</i>	String	DFD's name, used to uniquely identify the DFD within SQM. This name does not exceed 16 characters.	<i>TeMIPFaultStats</i>
<i>DfdLabel</i>	String	DFD's name, used for display purposes	<i>TeMIPFaultStatisticsDFD</i>
<i>Descr</i>	String	Description of the Data Feeder	The TeMIP Fault Statistics DFD collects fault statistics parameters on TeMIP managed entities, based on the alarms collected in the TeMIP Operation Context monitored and integrated with the Service Quality Manager platform
<i>DfdVersion</i>	String	Version of the Data Feeder	"v1_0" by default for the first version of this SA
<i>SaName</i>	String	Service Adapter name	<i>TeMIPFaultStats</i>
<i>SaLabel</i>	String	Service Adapter's name, used for display purposes	Equal to <i>SaName</i> by default
<i>SaVersion</i>	String	Version of the Service Adapter	"v1_0" by default for the first version of this SA

Name	Type	Description	Value
<i>Parameter Defs</i>	List	List of parameters for this DFD. Each parameter is composed of characteristics described below.	See table 2, “DFD parameters”, below.
<i>Property Defs</i>	List	List of property names filled at Data Feeder instantiation time. Each property name is a string.	See table 3, “DFD properties”, below.
<i>MRP Naming Schema</i>	List	Sub-list of Data Feeder “Instance properties” that are used to construct the MRP (Measurement Reference Point). MRP properties must be chosen from among the DFI properties so that uniqueness of a given DFI relative to all DFIs in the DF can be guaranteed. Each property name is a string. The order of the property names in this list is used to construct the MRP.	See “Measurement Reference Point” on page 16.

1.2.7 DFD parameters

Note: The default values shown in the table below are displayed when the parameter concerned cannot be retrieved from the database. For instance, when there is no TeMIP message for a given TeMIP managed node, the *LAST_SEV* parameter is set to *Normal*.

Table 2 DFD parameters

Parameter Name	Parameter Label	Data type	Description	Default value
<i>NbOutstanding</i>	Number of outstanding alarms	Counter	Number of outstanding TeMIP alarms on the managed entity	0
<i>MaxPbDuration</i>	Problem duration	RelativeTime	Elapsed time between the oldest TeMIP alarm and the latest one	0
<i>WorstSev</i>	Worst Severity	Enum: Clear=0 Indeterminate=1 Warning=2 Minor=3 Major =4 Critical=5	Worst severity in all of the entity’s active alarms	1 (Indeterminate)
<i>WorstAddTxt</i>	Worst severity	String	TeMIP Alarm	No default

Parameter Name	Parameter Label	Data type	Description	Default value
	alarm text		text for the alarm with the worst severity	value
LastSev	Last alarm's severity	Enum: Clear=0 Indeterminate=1 Warning=2 Minor=3 Major =4 Critical=5	Severity of the last alarm	No default value
<i>LastTime</i>	Last alarm creation time	AbsTime	Creation time of last received alarm (in GMT)	No default value
<i>LastAddTxt</i>	Last alarm's text	String	Text associated with the last received alarm	No default value
<i>NbClear</i>	Number of clear alarms	Int	Number of clear active alarms	0
<i>NbInd</i>	Number of Indeterminate alarms	Int	Number of Indeterminate active alarms	0
<i>NbWar</i>	Number of warning alarms	Int	Number of Warning active alarms	0
<i>NbMin</i>	Number of minor alarms	Int	Number of Minor active alarms	0
<i>NbMaj</i>	Number of major alarms	Int	Number of Major active alarms	0
<i>NbCrit</i>	Number of critical alarms	Int	Number of Critical active alarms	0

1.2.8 DFD properties

Table 3 DFD properties

Property Name	Property Label	Description	Data type
<i>EntityName</i>	TeMIP entity's name	TeMIP managed entity's name	String
<i>DomainName</i>	TeMIP domain's name	Domain that directly contains the managed entity; may be either a domain or a subdomain	String

Property Name	Property Label	Description	Data type
<i>OcName</i>	TeMIP Operation Context's name	Operation Context that collects alarms in the associated domain containing the managed entity	String
<i>EntityScope</i>	TeMIP Entity's scope	Scope defined for the entity (Specific, wildcard, or wholetree)	String

1.2.9 Measurement Reference Point

The Service Adapter collects performance measurements for a set of DFIs. Each set of measurements sent is uniquely identified through its Measurement Reference Point (MRP).

An MRP serves as an identifier for a Data Feeder Instance (DFI). It is constructed by assembling a subset of the properties according to a pattern defined in the Data Feeder Definition.

It is used to distinguish between two Data Feeder Instances of the same Data Feeder Definition (DFD) and version.

In the raw information discovery phase, the DFI identifiers are constructed from the MRP, and the DFD name and version.

A DFI's MRP is included in every performance measurement message when measurements are collected.

The TeMIP Service Adapter uses the MRP as a Unique Identifier. It builds it from the TeMIP Entity name, TeMIP Domain name, and Operation Context name. An example of such an MRP is:

BSS helios_ns:.bss5helios_ns:.sqm.alarms_statistics_operDomain helios_ns:.dept2_domain

Chapter 2

Installing the Service Adapter

This chapter explains how to install the Service Adapter on HP-UX. Once you have completed the installation, you must follow the instructions in the next chapter to configure the Service Adapter.

2.1 Software and Hardware requirements

2.1.1 Software requirements

- HP-UX V11.11
- HP OpenView TeMIP V5.X
- Oracle 9.2.0.6
- HP OpenView Service Quality Manager V1.2 (Kernel subset)
- HP OpenView SA Common V1.2 (SQMSAGTWCOMMON)
- HP OpenView SQL Service Adapter Runtime V1.2 (SQMSASQL)
- Oracle JDBC driver 9.0.2 (the driver is provided in the TeMIP Alarm SA subset)

2.1.2 Hardware requirements

For the complete hardware requirements, see the *HP OpenView Service Quality Manager Installation Guide*.

For the Service Adapter:

- 5 MB of available hard disk space (10 MB recommended)

2.2 Installing the TeMIP Alarm SA

If the OV SQM Kernel has not been installed already, you must install it before you install the Service Adaptor, by following the instructions in “Installing the OV SQM Kernel” below.

If the OV SQM Kernel has already been installed, go directly to “Installing the SA Common subset” on page 18.

2.2.1 Installing the OV SQM Kernel

The SQM Core Kernel subset is a prerequisite for installation of the TeMIP Alarm SA.

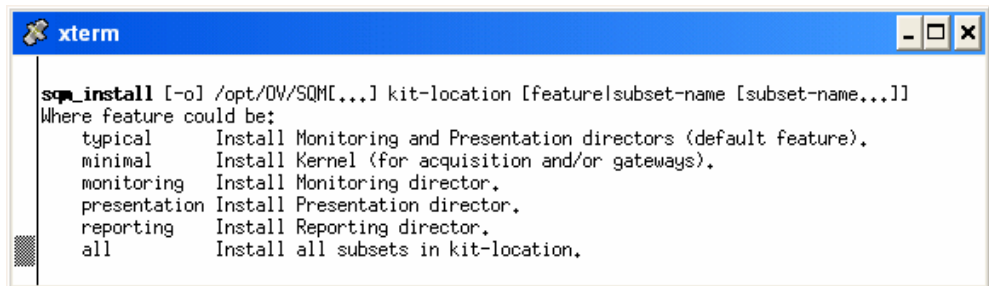
To install the Kernel, do the following.

1. Create the SQM home directory, if it does not already exist.
2. Under the **root** account, enter the following command:

```
# mkdir /opt/OV/SQM<xxx>
```

where <xxx> is the label you want to assign to the current release.

3. Mount the SQM Core CD-ROM on your system.
4. Go to <mounted directory>/SQM-1.20.00
where <mounted directory> is the name of your mounted directory.
5. Run the *sqm_install* tool under the root account.



```
xterm
sqm_install [-o] /opt/OV/SQM[...] kit-location [feature|subset-name [subset-name,...]]
Where feature could be:
  typical    Install Monitoring and Presentation directors (default feature).
  minimal    Install Kernel (for acquisition and/or gateways).
  monitoring  Install Monitoring director.
  presentation Install Presentation director.
  reporting   Install Reporting director.
  all         Install all subsets in kit-location.
```

6. Select the *minimal* feature by entering the following command:

```
# sqm_install /opt/OV/SQM<xxx> <mount directory>/SQM-1.20.00/HP
UX/KIT
```

7. Press **Enter** to install the Kernel.

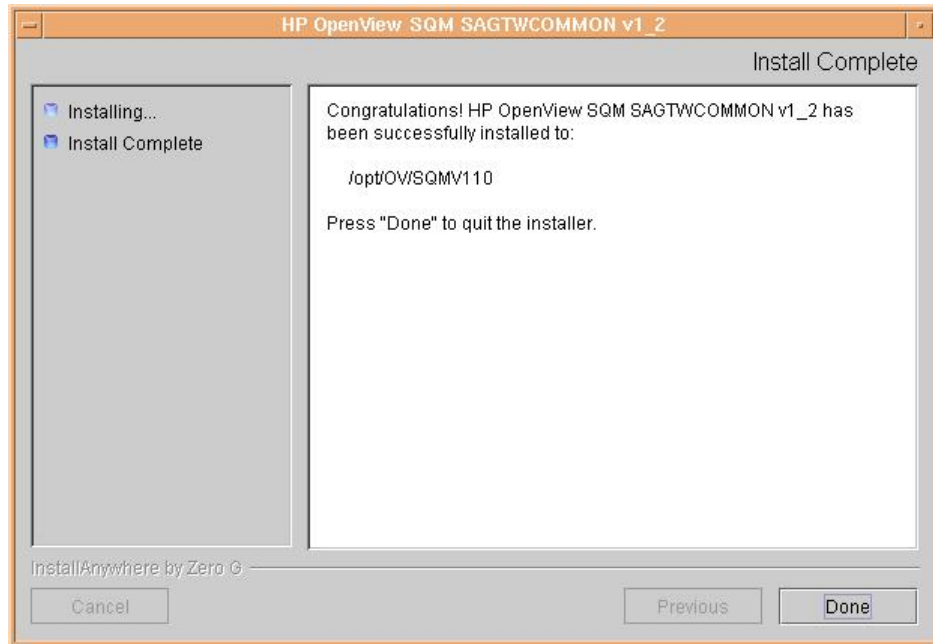
2.2.2 Installing the SA Common subset

If necessary, install the SA Common component by doing the following. If this has already been done, go directly to “Installing SQL Service Adapter Runtime” on page 19.

1. First, log on to the system as **root** user.
2. Mount the HP OpenView Service Adapters and Gateways CD-ROM on your system.
3. Go to <mount directory>/SQM-1.20.00
and execute the following command:

```
# ./SQMSAGTWCCOMMON-1.20.00.bin
```

The software is installed and the **Install Complete** window is displayed.



2.2.3 Installing SQL Service Adapter Runtime

If necessary, install the SQL Service Adapter Runtime component by doing the following. If this has already been done, go directly to “Installing the TeMIP Alarm Service Adapter” below.

1. First, log on to the system as **root** user.
2. Mount the HP OpenView SQM Service Adapters and Gateways CD-ROM on your system.
3. Go to `<mount directory>/SQM-1.20.00` where `<mount directory>` is your mount directory.
4. Run the installer by entering the following command:

```
# ./SQMSASQL-1.20.00.bin
```

The software is installed and the **Install Complete** window is displayed as shown below.



5. To finish, click **Done**.

2.2.4 Installing the TeMIP Alarm Service Adapter

To install the TeMIP Alarm SA on HP-UX, do the following.

1. Log on as root user.
2. Mount the HP OpenView SQM Service Adapters and Gateways CD-ROM.
3. Go to `<mount directory>/SQM-1.20.00` where `<mount directory>` is your mount directory.
4. Run the installer by entering the following command:

```
# ./ SQMSATEMIPFAULTSTATISTICS-1.20.00.bin
```

The software is installed and the **Install Complete** window is displayed as shown below.



5. To end the installation process, click **Done**.
6. Execute the installation script to set the correct access rights to the installed files by entering the following commands:

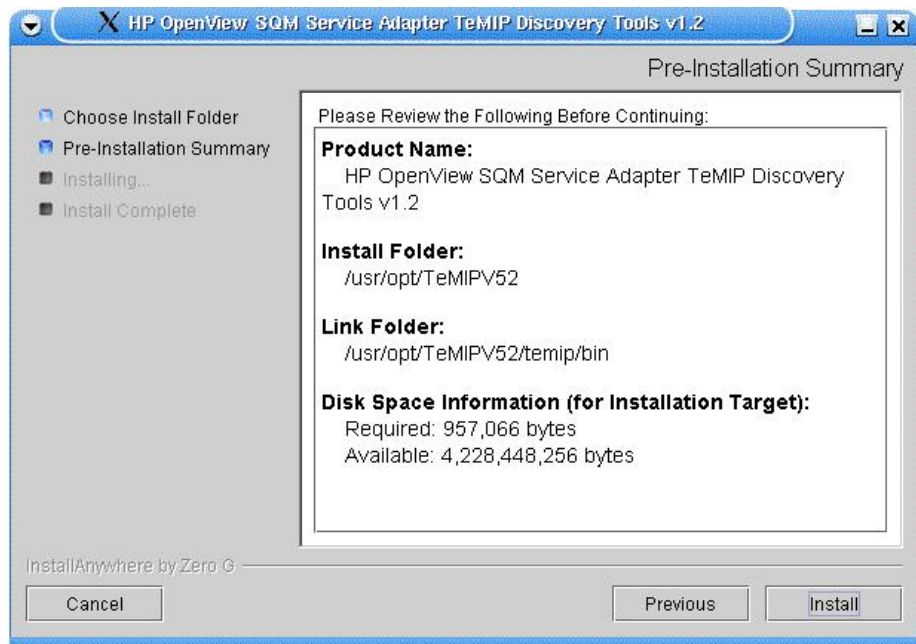
```
# cd $TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin  
# sh temip_sc_complete_install.sh
```

2.2.5 Installing the TeMIP Alarm Discovery Tools

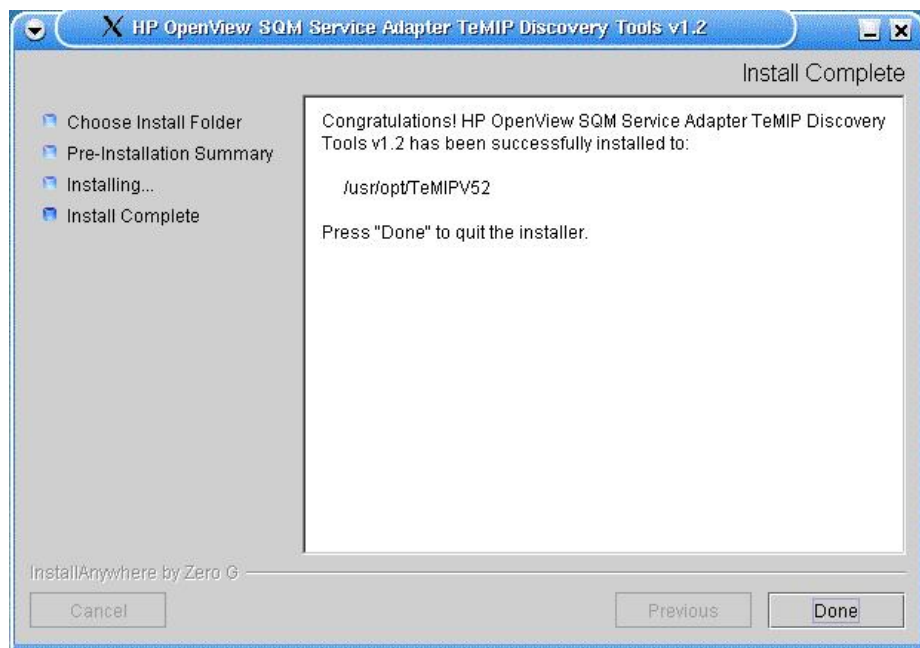
To install the TeMIP Alarm Discovery Tools on HP-UX, do the following on the TeMIP director:

7. Log on as root user.
8. Mount the HP OpenView SQM Service Adapters and Gateways CD-ROM.
9. Go to `<mount directory>/SQM-1.20.00` where `<mount directory>` is your mount directory.
10. Run the installer by entering the following command:

```
# ./SQMSATEMIPDISCOVERYTOOLS-1.20.00.bin
```



The software is installed and the **Install Complete** window is displayed as shown below.



11. To end the installation process, click **Done**.

2.2.6 Installing Patches

To install Patches, do the following.

1. Log on as **root** user.
2. Go to `<mount directory>/SQM-1.20.00` where `<mount directory>` is your mount directory.
3. Run the `sqm_install` tool with the `-p` option and the `minimal` feature by entering the following command:

```
# sqm_install -p /opt/OV/SQM<xxx> /SQM-1.20.00/HPUX/Patches minimal
```

This will install all Patches for the Kernel component.

4. Run the *sqm_install* tool with the *-p* option and the *SAGTWCCOMMON* feature by entering the following command:

```
# sqm_install -p /opt/OV/SQM<xxx> /SQM-1.20.00/HPUX/Patches SAGTWCCOMMON
```

This will install all Patches for the *SAGTWCCOMMON* component.

5. Run the *sqm_install* tool with the *-p* option and the *SQMSASQL* feature by entering the following command:

```
# sqm_install -p /opt/OV/SQM<xxx> /SQM-1.20.00/HPUX/Patches SQMSASQL
```

This will install all Patches for the *SQMSASQL* component.

6. Run the *sqm_install* tool with the *-p* option and the *SQMSASQL* feature by entering the following command:

```
# sqm_install -p /opt/OV/SQM<xxx> /SQM-1.20.00/HPUX/Patches SATeMIP
```

This will install all Patches for the TeMIP component.

The installation on UNIX is now complete. Next, you must configure the Service Adapter by following the instructions in the chapter “Setting up and configuring the Service Adapter” on page 29.

2.2.7 Uninstalling the software

To uninstall the TeMIP Alarm SA software, do the following.

1. Log on as **root** user.
2. Load the SQM environment variables
`$TEMIP_SC_VAR_HOME/temip_sc_env.sh`
3. Enter the following two commands on the SQM platform where the TeMIP Alarm SA has been installed:

```
# cd $TEMIP_SC_HOME  
#  
./ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/UninstallerData  
TeMIPFaultStats/Uninstall_TeMIPFaultStats
```

4. The **Uninstall** window is displayed. If no additional SQL Service Adapters are running on your system, uninstall the SQL SA v1_2 Runtime kit by entering the following two commands:

```
# cd $TEMIP_SC_HOME  
# ./ServiceAdapters/Sql/v1_2/UninstallerDataSql/Uninstall_Sql
```

5. If no Service Adapters or Gateways are running on your system, uninstall the SA Common v1_2 kit by entering the following two commands:

```
# cd $TEMIP_SC_HOME  
#  
./ServiceAdapters/Common/v1_2/Uninstaller_SAGTWCCOMMON/Uninstall  
_SAGTWCCOMMON
```


Chapter 3

Configuring Extended Archiving

The TeMIP Alarm Service Adapter uses Extended Archiving Contexts to control how the Extended Archiving FM exports the content of alarms to the database. You must configure these for your specific environment.

3.1 Configuring the database tables

You do not need to configure the Oracle database because the required environment (the user, tablespace, tables and PL/SQL functions, for example) is configured automatically when the database is created.

3.2 Configuring the export context

The only configuration required consists in defining which operation contexts must be used in an Extended Archiving Context. To add new operation contexts, you can add them as members of the Extended Archiving Context if they have a similar export policy. If not, you must create another Extended Archiving Context for them.

```
> manage

TeMIP> register ORACLE_EAC .sqm.eac_alarms_statistics -
          Operation = plan, -
          Managing Director = -
          .temip.directorname_director
TeMIP> create ORACLE_EAC .sqm.eac_alarms_statistics
Description = "ORACLE_EAC Alarms Statistics example", -
Scheduling Flag = True, -
Begin Time = Wed Sep 1 11:07:18 2004, -
Interval = +0-00:10:00.000, -
Archiving Flag = True, -
Archive Database Name = "KNWASTAG", -
Extended Archive AO Creation Time = All, -
Extended Archive SA Processing Flag = False, -
Export AlarmObject0 Only Flag = True, -
Clean Extended Alarms Flag = True, -
Extended Archive AO State = Outstanding, -
Extended Archive Oracle Transaction Size = 10000, -
KnowledgeWare Flag = False
TeMIP> register ORACLE_EAC .sqm.eac_alarms_statistics
TeMIP> create ORACLE_EAC .sqm.eac_alarms_statistics -
          MEMBER -
          "OPERATION_CONTEXT local_ns:.sqm.alarms_statistics_oper"
```

These attributes contain the following information:

- *Scheduling Flag*: Specifies whether alarms are exported every *Interval* starting from *Begin Time* according to a schedule, or not.
- *Begin Time*: Specifies when the alarm data is first exported.
- *End Time*: This is not set in the example above, so the alarm data is exported indefinitely every *Interval*.
- *Interval*: Specifies the time interval between each export session. You must choose this value carefully to ensure it is not too low for the number of alarms.
- *Archiving Flag*: Activates the archiving function (mandatory).
- *Archive Database Name*: Specifies the name of the database in which the exported alarms are stored.
- *Extended Archive AO Creation Time*: Specifies whether all alarm objects to date are handled, or not.
- *Extended Archive SA Processing Flag*: Specifies whether OpenView SQM currently processes only alarm objects to calculate statistics, or not.
- *Export AlarmObject0 Flag*: Specifies whether alarm data is exported only to the main alarm table without filling further tables, because all the information needed to calculate statistics is stored there, or not.
- *Clean Extended Alarms Flag*: Specifies whether each export begins by deleting previously exported alarms, or not.
- *Extended Archive AO State*: Specifies whether only outstanding alarms are exported (exporting a data ‘snapshot’ rather than exporting the mean over time), or not.
- *Extended Archive Oracle Transaction Size*: To improve performance, increase the value from the default (1). Alternatively, to obtain a valid snapshot of current alarms, set this value to the maximum number of alarms the system can theoretically handle. (If you do so, you may lose all exported data if the export operation fails for some reason.)
- *KnowledgeWare Flag*: If the KnowledgeWare FM is available in the customer’s environment (by default, it is not), you can use this attribute as a flag mechanism. You can use this flag to ensure that the data the Service Adapter collects has not been already processed and that the new set of alarm data used to calculate statistics is available, for example.

Once you have created the Extended Archiving Context, you can add the operation contexts as members of the Extended Archiving Context.

HP recommends that you have a different Extended Archiving Context for each set of operation contexts, and that an operator is responsible for each Extended Archiving Context.

The Extended Archiving Context is handled similarly to an operation context. It provides standard instructions such as *suspend*, *resume*, *activate*, *show*, and *resetcounters* to control it and show its attributes to check whether it is working correctly.

```
> manage  
  
TeMIP> show ORACLE_EAC .sqm.eac_alarms_statistics all attributes
```

The following partitions of attribute values are of especial interest:

- *status* to check the status of the alarm data collection and export processes;
- *counters* to display validation data on processed alarm information

3.3 Processing the export context

The Extended Archiving Context covers a list of operation contexts within the archiving context.

To ensure database consistency, the TeMIP Alarm SA deletes all rows for operation contexts within the Extended Archiving Context in previous archiving sessions before it begins its standard processing and stores unarchived Alarm Objects. This ensures that rows stored by the Archive instruction are never modified or deleted.

All unarchived Alarm Objects are then read, translated into export format and stored in the same ORACLE database and SQL tables as when the standard OpenView TeMIP archiving function is used.

Setting up and configuring the Service Adapter

A set of tools are provided with the TeMIP Alarm Service Adapter to make it easier to install, set up and configure the product. These are used to create the application and upload the Data Feeder Definition (DFD) and connection settings into the central repository. They are also used to execute SQL view creation scripts on the TeMIP database server, as well as to discover Data Feeder instances from the TeMIP director automatically.

Figure 4 on page 30 shows you each step in the process of configuring the Service Adapter.

The TeMIP Service Adapter is set up and configured in four steps:

1. Setting up the application by declaring the TeMIP Alarm SA application in the SQM Central Repository and creating the TeMIP Alarm SA application data tree in `TEMIP_SC_VAR_HOME`
2. Configuring the application by replying to user prompts requesting the TeMIP database's connection settings, and loading the connection and Data Feeder definitions into the SQM Central Repository.
3. Creating the database views by executing the SQM SQL view creation files supplied in the TeMIP Alarm SA directory
`$TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/ TeMIPFaultStats_v1_2/database`
4. Discovering and loading DFIs. DFI discovery is an important feature provided by the TeMIP Service Adapter. This feature is used to discover and load the Data Feeder Instances that will be managed by the TeMIP Alarm SA application, completely automatically.
This is done by querying the TeMIP database and loading into SQM a DFI for each entity managed by TeMIP. This SQL query is based on a view of the `TEMI PAHARCHI .MANAGEDOBJECTS` table. Before you execute this query to discover the DFIs, you must run a separate TeMIP discovery query on the TeMIP director to feed the `TEMI PAHARCHI .MANAGEDOBJECTS` table with data; if not, the query will not discover any DFIs.

Figure 4 TeMIP Alarm SA configuration overview

4.1 Creating the application

If your Kernel is not yet set up, you must configure it by doing the following. If your Kernel is set up already, go directly to “Setting up the required environment” on page 31.

Caution

A Service Adapter application name has to be unique cross platform and director!

4.1.1 Configuring the SQM Kernel

You must set up the SQM Kernel before the TeMIP Alarm SA can be configured and run. You can set up the SQM Kernel in any of the following configurations:

- If the TeMIP Alarm SA is installed on the HP-UX SQM SLM Primary Server:
In this case, see the *HP OpenView SQM Installation Guide* for instructions on how to set up the SQM Server.
- If the TeMIP Alarm SA is installed on a HP-UX system separate from the SQM SLM Primary Server on which the SQM Kernel has not yet been configured.
In this case, you must retrieve the SLM Server platform description file by doing the following.
 1. Create the **sqmadm** administration user on the target Unix system. (For instructions on how to create the user account, see the *HP OpenView SQM Installation Guide*.)
 2. From the SQM SLM Primary Server, retrieve the file `$TEMIP_SC_VAR_HOME/setupconfig/platform_desc.cfg` and copy it to the SQL SA customization HP-UX system in `$TEMIP_SC_HOME/tmp`
 3. Log on as **root** user, and then enter the following commands:

```
# export TEMIP_SC_HOME=<SQM installation directory>
# cd $TEMIP_SC_HOME/setup/bin
# temip_sc_setup -all -NI
```

4.1.2 Setting up the required environment

To set up the required environment, you must do the following.

1. Create the **Sqmadm** group and user. The **sqmadm** group and user are used to set up and manage the kernel and application. See the *HP OpenView Service Quality Manager Installation Guide* for instructions on how to create the **sqmadm** group and user.
2. Set up the environment variables. If the kernel has been set up already, you must source the `temip_sc_env.sh` file contained in the `$TEMIP_SC_VAR_HOME` directory by entering the following command:

```
# . $TEMIP_SC_VAR_HOME/temip_sc_env.sh
```

4.1.3 Creating the TeMIP Alarm SA Application

This phase consists in creating a TeMIP Alarm SA application on the SQM platform (on a specified director). To create the TeMIP Alarm SA application, do the following.

1. Log on as **root** user.

2. Enter the following commands:

```
# cd $TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
#temip_sc_configure.sh -setup -dirName <director name> <application name>
```

where:

- *<director name>* is the director on which the application will be created. (By default, the director name is **acquisition**)
- *<application name>* is the application name provided by the user.

This command declares the TeMIP Alarm Service Adapter application to the SQM Central Repository and creates the application's data tree in:

```
$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2
```

The following output is displayed:

```
[sqmadm_hotel]/opt/OV/SQM/v120/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin>temip_sc_configure.sh -setup TeMIPFaultStats

Setup the "TeMIPFaultStats" application ...
Create the application (this may take several minutes).
Create the data tree.
/var/opt/OV/SQM/slmv12/ServiceAdapters (already exist)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql (already exist)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2 (already exist)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2 (already exist)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/config (already exist)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/filter (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/filter/slmv12_acquisition_TeMIPFaultStatsSA_filter.sh (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/inventory (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/inventory/raw (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/inventory/filtered (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/repository (created)
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository (created)
Initializing Discovery Tracing and Logging ...
Setup succeed.

Update the access permissions on the data tree... succeed
```

4.2 Configuring the application

The application must be configured by defining the TeMIP Alarm SA connection parameters and loading the connection and Data Feeder configuration into the SQM Central Repository.

To configure the application, do the following.

1. Log on as **sqmadm** user.
2. Load the SQM environment variables by entering the following command:

```
# . $TEMIP_SC_VAR_HOME/temip_sc_env.sh
```

3. Enter the following commands:

```
# cd $TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
#temip_sc_configure.sh -configure <application name>
```

where *<application name>* is the application name entered in the setup command.

4. Enter the appropriate SQL database connection information (login, password, database URL, and JDBC driver), and then load the SQL Service Adapter's Data Feeder definitions and connector definition into the SQM Central Repository.

You must provide the following default connection parameters for the TeMIP database:

- URL: jdbc:oracle:thin:@<TeMIP database hostname>:1521:KNWA
- Username: temipaharchi
- Default Password: temipaharchi
- JDBC Driver: oracle.jdbc.driver.OracleDriver

The following output is displayed:

```
[sqmadm_hotel]/opt/OV/SQMv120/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin>temip_sc_configure.sh -configure TeMIPFaultStats

Configure the "TeMIPFaultStats" application ...
Please enter the database URL [jdbc:oracle:thin:@helios.vbe.cpqcorp.net:1521:KNWA]:
Please enter the database username [temipaharchi]:
Please enter the database password [*****]:
Please enter the database JDBC Driver [oracle.jdbc.driver.OracleDriver]:
Load the Connector in the Tibco Repository
Backup written at the following location: /var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/connectors_data.exp.2004_8_5_17_27_53
/var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/connectors_data.exp has been imported into the Repository
Load the Data Feeder Definitions in the SRM
load DFD: TeMIPFaultStats - v1_0 (../repository/NewDFDReq_TeMIPFaultStats.v1_0.xml) ... succeed.
Load the Data Feeder Definitions in the Tibco Repository
Backup written at the following location: /var/opt/OV/SQM/slmv12/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/FaultStats_dfds_data.exp.2004_8_5_17_28_18
../repository/FaultStats_dfds_data.exp has been imported into the Repository
Configuration succeed.

Update the access permissions on the datatree... succeed
```

4.3 Creating the SQL view

This step must only be performed once, when you create the first instance in the TeMIP database, even if multiple TeMIP Service Adapter instances are created. This is because all TeMIP Alarm SA instances connected to a TeMIP database use the same SQL view.

TeMIP alarm statistics are computed through an SQL view and PL/SQL scripts which must be deployed in the TeMIP database. These scripts are located in the following directory:

```
/opt/OV/SQMV120/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/d
atabase
```

To deploy these scripts, enter the following two commands:

```
# cd $TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
# temp_sc_configure.sh -view <application name>
```

where *<application name>* is the application name entered at the setup command.

Enter the appropriate SQL database connection information (login, password, database URL, and JDBC driver). You must log in as a user with creation privileges on the TeMIP database to execute these scripts. By default, the **system** user has these privileges.

You must provide the following default connection parameters for the TeMIP database:

- Username: system
- Default Password: manager

The database URL and JDBC Driver information are not requested here, because the values specified to enable the TeMIP Alarm SA to connect to the database are reused.

The following output is displayed:

```
[sqmadm hotel]/opt/OV/SQMV120/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin>temp_sc_configure.sh -view TeMIPFaultStats

Create the view ...
=====
Executing SQL Script on remote SQL database.
=====
=> Please enter the database username: system
=> Please enter the database password: manager
INFO: Executing SQL scripts on jdbc:oracle:thin:@helios.vbe.cpq
corp.net:1521:KNWA ...
INFO: Executing script './database/sqm temp sa 01 managedobjects
table drop.sql' ...
INFO: Script execution succeed.

INFO: Executing script './database/sqm temp sa 02 faultstatistics
table drop.sql ' ...
INFO: Script execution succeed.

INFO: Executing script './database/sqm temp sa 03 statistics
record def.sql' ...
INFO: Script execution succeed.

INFO: Executing script './database/sqm temp sa 04 managedobjects
table_def.sql ' ...
INFO: Script execution succeed.
```

```
INFO: Executing script '../database/sqm_temip_sa_05_statistics_
table_def.sql' ...
INFO: Script execution succeed.

INFO: Executing script '../database/sqm_temip_sa_06_statitics_p
ackage_declare.sql' ...
INFO: Script execution succeed.

INFO: Executing script '../database/sqm_temip_sa_07_statistics_
package_body.sql ' ...
INFO: Script execution succeed.

INFO: Executing script '../database/sqm_temip_sa_08_managedobje
cts_discovery.sql' ...
INFO: Script execution succeed.

INFO: Executing script '../database/ sqm_temip_sa_09_statistics
_collection_view.sql' ...
INFO: Script execution succeed.

View creation succeed.
```

Possible error

When the SQL View creation tool is run for the first time, the following error is displayed.

```
Failed to process request:--
=====
-----
-- Drop the definition of the statistic table type
--
=====
=====
DROP TYPE TEMIPAHARCHI.MANAGEDOBJECTS. Error:java.sql.SQLExcept
ion: ORA-04043: object TEMIPAHARCHI.MANAGEDOBJECTS does not exi
st
.
ERROR: Script execution failed.      (4)
```

This error does not affect the SQL View creation process and can be ignored.

4.4 Discovering and loading DFIs

The discovery process execution should not be related to what TeMIP alarm is available on the TeMIP director. Instead, it is driven by the content of the TeMIP domains. The discovery process is therefore performed by two separate discovery mechanisms.

The SQM DFI discovery is performed by the TeMIP Service Adapter. This function is used to discover and load all the Data Feeder Instances that will be managed by the TeMIP Alarm SA application, completely automatically. This is done by retrieving the MRP properties from an SQL table in the target database.

The TeMIP MO entity discovery process generates a list of entities for SQM and feeds the table upon which automatic DFI discovery is based. This tool is supplied separately from the Service Adapter, as a separate kit for installation on the TeMIP director. You must check that the TeMIP director sees the Oracle database; if it does not, you must copy the generated SQL scripts to the Oracle database server to fill the TEMIPAHARCHI.MANAGEDOBJECTS table.

Discovery script

1. On the SQM director, the discovery is activated with the following script:

PATH:

\$TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin

FILE: temip_sc_discovery.sh

2. On the TeMIP director, the discovery is activated with one of the following script depending on the input arguments available:

PATH:

/usr/opt/TeMIPVXX/SQM/discovery/

FILE:

- temip_export_discovery.sh
- temip_operation_discovery.sh
- temip_domain_discovery.sh

Note

temip_export_discovery.sh takes no argument and doesn't provide a help as it is interactive; other scripts provide a help usage and require an argument

General processing

There are four phases in the discovery process:

- **TeMIP discovery phase**, in which the TeMIP entities managed by the TeMIP director are discovered and the table used for the SQL discovery is filled.
- **SQM discovery phase**
 - **Raw discovery phase**, in which the SQL discovery query is executed and details of all discovered DFIs are recorded in a raw (unprocessed) inventory file.
 - **Filtering phase**, in which a script is executed to filter the DFIs declared in the raw inventory file. A new filtered inventory file is generated containing only the DFIs selected for management. By default, the script does not apply any filtering. You must therefore modify it to filter the details contained in the raw inventory file as required.
 - **Loading phase**, in which the details of the filtered DFIs are loaded into the SQM repository, according to one of the following algorithms:
 - *-diff no*
All of the filtered Data Feeder Instances are loaded into the SQM Central Repository if you select this option.
 - *-diff offline*
The list of all discovered/filtered Data Feeder Instances is compared with a reference discovery file (provided by you) if you select this option.
If a Data Feeder Instance exists in the inventory file but it does not exist in the reference file, the Data Feeder Instance is created.
If the Data Feeder Instance does not exist in the inventory file but it exists in the reference file, the Data Feeder

Instance is deleted from the SQM Central Repository.
If the Data Feeder Instance exists in the inventory file and the reference file, it is not reloaded.

- *-diff online*
The same Data Feeder Instance comparisons are performed as those carried out in offline mode if you select this option. Instead of checking the DFIs against a reference file, however, whether DFI is declared depends only on whether the Data Feeder Instance exists in the SQM Central Repository in this case.

Note

The next chapters provide details of each of the above phases.

The same processing can be performed by executing a single command (by default, all filtered Data Feeder Instances are then loaded, through the *-diff no* switch). For details of this command, see “One-shot discovery and loading” on page 43.

4.4.1 TeMIP discovery phase

The TeMIP discovery phase consists in listing the TeMIP managed entities contained in a collection domain. It retrieves the contextual details associated to the entities such as the operational context, domain (or sub-domain) and scope of the entities concerned (default to *WHOLE*). It then generates a SQL script containing an *INSERT* statement for each entity.

These generated scripts are executed automatically if the database can be reached from the TeMIP director as long as the *ORACLE_HOME*, *ORACLE_SID* and *TNS_ADMIN* environment variables are defined and *sqlplus* tool is available.

If it cannot, it indicates the problem (variable not set, *sqlplus* not available...) and leaves the SQL files in the working directory. You then simply need to copy them to the Oracle database server and run them locally. By default, the working directory is the local directory.

These scripts populate the *TEMI PAHARCHI . MANAGEDOBJECTS* target table which serves as the basis for the SQM SQL SA discovery.

Although these scripts must be run once to initialize DFI discovery, it is recommended to schedule regular discovery execution in a *cron* table.

Command

To execute the discovery script, do the following.

1. Log on as **temip** user
2. Set the *ORACLE* environment variables as appropriate

```
# export ORACLE_HOME=/usr/ORACLE/u01/app/oracle/product/9.2.0
# export ORACLE_SID=KNWA
# export TNS_ADMIN=/var/opt/temip/conf
```

3. Make sure that your *PATH* is up to date with access to TeMIP executables such as *manage* (*/usr/opt/temip/bin* is in your path)
4. Enter the following command and follow the instructions

```
# mkdir /tmp/TeMIPDiscovery
# cd /tmp/TeMIPDiscovery
# /usr/opt/TeMIPV50/SQM/discovery/temip_export_discovery.sh
```

The script lists the Acanthis Extended Archiving contexts available and proposes to select one. Alternatively, if you know the operation context or directly the domain where are grouped your entities, the administrator may call directly the associated script *temip_operation_discovery.sh* or *temip_domain_discovery.sh*.

These scripts generate some temporary files locally and remove them upon completion. Only the SQL files are left in the local directory for further execution on the database server. Additionally, the RAW files of the discovery are left for validation (list of elements and subdomains).

```
Info: List of extended archiving contexts

helios_ns:.sqm_mds helios_ns:.sqm.eac_alarms_statistics

=> Select an extended archiving context name (quit to leave)
helios_ns:.sqm.eac_alarms_statistics

Info: Discovering elements covered by extended archiving
context helios_ns:.sqm.eac_alarms_statistics
Info: Validating the extended archiving context
helios_ns:.sqm.eac_alarms_statistics availability...
=> Extended archiving context
helios_ns:.sqm.eac_alarms_statistics in namespace exists on
TeMIP director
Info: Getting the associated operation contexts...
Info: List of operation contexts, members of the extended
archiving context

helios_ns:.sqm.alarms_statistics_oper

=> Select & enter an operation context name for the discovery
of its managed entities (quit to leave)
helios_ns:.sqm.alarms_statistics_oper

Info: Performing the discovery of the elements in the
associated domain of the operation context
Info: Validating operation context
helios_ns:.sqm.alarms_statistics_oper availability...
=> Operation context helios_ns:.sqm.alarms_statistics_oper in
namespace helios_ns exists on TeMIP director
Info: Getting operation context
helios_ns:.sqm.alarms_statistics_oper associated domain...
Info: Validating domain helios_ns:.sqm.alarms_statistics_domain
availability...
=> Domain helios_ns:.sqm.alarms_statistics_domain in namespace
helios_ns exists on TeMIP director
```

If the user has its Oracle environment variables (ORACLE_HOME, ORACLE_SID, TNS_ADMIN) correctly set, the script will attempt to execute the generated SQL script and thus load the managed entities discovered into the dedicated table.

Otherwise, it is the responsibility of the integrator to copy the files on the target system and execute the scripts there.

```
=> ORACLE_SID KNWA defined in /var/opt/temip/conf/tnsnames.ora
Info Validating sqlplus availability
Info: Loading elements into Oracle database

SQL*Plus: Release 9.2.0.5.0 - Production on Wed Jan 5 15:13:30
2005
```

```
Copyright (c) 1982, 2002, Oracle Corporation. All rights reserved.

Connected to:
Oracle9i Enterprise Edition Release 9.2.0.5.0 - 64bit
Production
With the Partitioning, OLAP and Oracle Data Mining options
JServer Release 9.2.0.5.0 - Production

0 rows deleted.

1 row created.
...

Commit complete.

Disconnected from Oracle9i Enterprise Edition Release 9.2.0.5.0
- 64bit Production
With the Partitioning, OLAP and Oracle Data Mining options
JServer Release 9.2.0.5.0 - Production
Info: Loading domains into Oracle database
/usr/ORACLE/u01/app/oracle/product/9.2.0/bin/sqlplus
temipaharchi/temipaharchi@KNWA
@temip_operation_sqm.alarms_statistics_oper_manageddomains.sql
quit
Leaving extended archiving operation contexts discovery
```

4.4.2 Raw discovery phase

In this phase, the TeMIP Server loads the discovery query definition file and executes the discovery query to retrieve all TeMIP Alarm SA Instance definitions.

A dedicated SQL view was deployed on the TeMIP Server when you created the SQL view. This view, called `TEMIPAHARCHI.DISCOVERY_VIEW`, joins the TeMIP configuration SQL tables `TEMIPAHARCHI.MANAGEDOBJECTS` and `TEMIPAHARCHI.MANAGEDDOMAINS` to retrieve information such as the TeMIP entity name, domain name and operation context name, etc.

The raw data is discovered in this view through the following SQL query:

```
select distinct MANAGEDOBJECT, SCOPE, OPERATIONCONTEXT, DOMAIN
from TEMIPAHARCHI.DISCOVERY_VIEW
```

This query is defined in the following file:

```
$TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/pr
operties/TeSCSqlDiscovery.xml
```

Tips

A simple way to perform filtering is to update the SQL script defining the discovery view by adding further conditions to the default SQL query's 'WHERE' clause, rather than using a filtering script. You must ensure that you filter out only the appropriate TeMIP entities when you modify this script, however. See "Customizing the Discovery view" on page 49 for an explanation of how to modify this script.

Command

To execute the discovery query, do the following.

1. Log on as **sqmadm** user.
2. Load the SQM environment variables by entering the following command:

```
# . $TEMIP_SC_VAR_HOME/temip_sc_env.sh
```

3. Enter the following commands:

```
# cd $TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
# temip_sc_discovery.sh -platform <platform name> -director <director name> -application <application name> -discover
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up and can be read from the variable *\$KERNEL_ID*
- *<director name>* is the director on which the application was created during the setup phase. (By default, the director name is **acquisition**)
- *<application name>* is the name that was defined when the application was set up.

The following files are generated in the raw discovery phase.

- The discovered DFI inventory file:
`$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/inventory/raw/<platform name>_<director name>_<application name>.xml`
- The DFI declaration and deletion XML files:
 - `$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/repository/DeclareDFIReq_TeMIPSTATDFD.v1_1.<DFIID>.xml`
 - `$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/repository/DeclareDFIReq_TeMIPSTATDFD.v1_1.<DFIID>.xml`

4.4.3 Filtering phase

In the discovery filtering phase, the discovery tool executes a filtering script.

This script parses the raw discovery file that the previous command generates. Its function is to remove any DFI definitions not managed by the TeMIP Alarm SA application. The script can be used to select only TeMIP managed entities that belong to a specific TeMIP entity class, for example.

This filtering is mainly used for load balancing purposes (to share the DFI load over several TeMIP Alarm SA applications).

The script generates a new DFI inventory file containing only DFIs that are managed by the TeMIP Alarm SA application.

A filtering script is provided with the TeMIP Alarm SA. This default script simply copies the input raw inventory file to the filtered inventory file without performing any filtering.

You must adapt this script according to your needs.

The filtering script is contained in the following file:

```
$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/filter/<platform name>_<director name>_<application name>_filter.sh
```


Note

You can customize this filtering script. It accepts two input arguments:

- Full pathname of the raw inventory file
- Full pathname of the filtered inventory file generated

An example filtering script is provided in the following directory:

```
$STEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/examples
```

The raw DFI inventory file's pathname is:

```
$STEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/inventory/raw/<platform name>_<director name>_<application name>.xml
```

Command

To filter the discovery file, do the following.

1. Log on as **squadm** user.
2. Load the SQM environment variables by entering the following command:

```
# . /var/opt/OV/SQM/slmv12/temip_sc_env.sh
```

3. Execute the following commands:

```
# cd $STEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
# temip_sc_discovery.sh -platform <platform name> -director <director name> -application <application name> -filter
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up, and can be read from the variable *\$KERNEL_ID*
- *<director name>* is the director on which the application was created during the setup phase. (By default, the director name is **acquisition**)
- *<application name>* is the name that was defined when the application was set up.

Output

When the raw DFI discovery file has been filtered, the script generates a filtered inventory file with the following pathname:

```
$STEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/discovery/inventory/filtered/<platform name>_<director name>_<application name>.xml
```

4.4.4 Loading phase

Depending on which *-diff* option is selected when the discovery script is launched, the following actions are performed (by default, the *-diff no* option is used to load all filtered Data Feeder Instances):

- **-diff no**

This option loads all the filtered Data Feeder Instances into the SQM Central Repository.

- **-diff offline**

This option compares the list of discovered/filtered Data Feeder Instances against a DFI reference file.

- If a Data Feeder Instance exists in the inventory file but it does not exist in the reference file, the Data Feeder Instance is created.
- If the Data Feeder Instance does not exist in the inventory file but it exists in the reference file, the Data Feeder Instance is deleted from the SQM Central Repository.
- If the Data Feeder Instance exists in both the inventory file and the reference file, it is not reloaded.

- **-diff online**

The same Data Feeder Instance comparisons are performed as those carried out in offline mode if you select this option. Instead of checking the DFIs against a reference file, however, whether DFI is declared depends only on whether the Data Feeder Instance exists in the SQM Central Repository in this case.

Input

- The DFI filtered inventory file output by the previous command is required as input for this phase.

Its pathname is:

```
$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/TeMIPFaultStats_v1_2/discovery/inventory/filtered/<platform name>_<director name>_<application name>.xml
```

- The inventory reference file is needed for the *-diff offline* loading option.

The file must be stored and named as follows:

```
$TEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/repository/<platform name>_<director name>_<application name>_discovery_reference.xml
```

Command

To run the discovery loading query, do the following.

1. Log on as **sqmadm** user.
2. Load the SQM environment variables by entering the following command:

```
# . /var/opt/OV/SQM/slmv12/temip_sc_env.sh
```

3. Enter the following two commands:

```
# cd $TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
# temip_sc_discovery.sh -platform <platform name> -director <director name> -application <application name> -load -diff [no|offline|online]
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up, and can be read from the variable *\$KERNEL_ID*
- *<director name>* is the director on which the application was created during the setup phase. (By default, the director name is **acquisition**)
- *<application name>* is the name that was defined when the application was set up.

Output

- The loading status for each DFI (Successful, Failure, or Partial) is logged. The discovery loading procedure logs the result of each DFI declaration in the following file:
`$STEMIP_SC_VAR_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/discovery/repository/<platform name>_<director name>_<application name>_discovery_cmds.log`
- If the script fails, you can restart the DFI loading process by executing the following script manually:
`$STEMIP_SC_VAR_HOME/ServiceAdapters/Sql/TeMIPFaultStats_v1_2/discovery/repository/<platform name>_<director name>_<application name>_discovery_cmds.sh`

4.4.5 One-shot discovery and loading

If you do not want to call each step in the DFI discovery process described above (discovery, filtering, and loading), you can perform DFI discovery by executing a single command as described below.

Command

1. Log on as **sqmadm** user.
2. Load the SQM environment variables by entering the following command:

```
#. $STEMIP_SC_VAR_HOME/temip_sc_env.sh
```

3. Execute the following commands:

```
# cd $STEMIP_SC_HOME/ServiceAdapters/Sql/v1_1/TeMIPFaultStats_v1_2/bin
#temip_sc discovery.sh -platform <platform name> -director <director name> -application <application name> -all
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up, and can be read from the variable `$KERNEL_ID`
- *<director name>* is the director on which the application was created during the setup phase. (By default, the director name is **acquisition**)
- *<application name>* is the name that was defined when the application was set up.

Output

The one-shot discovery process performs the following tasks:

- Requesting discovery of all DFI and creating a raw discovery file
- Filtering all discovered DFIs by applying the appropriate filters
- If the default load option *-diff no* is selected, loading all discovered DFIs into the SQM Service Repository Manager's repository

4.4.6 Scheduling DFI discovery

The TeMIP Alarm Service Adapter can be deployed in TeMIP environments in which the TeMIP configuration changes daily (when new TeMIP entities are added, for example). HP recommends scheduling automatic discovery by running special scripts containing all of the DFI discovery commands as a *crontab* in such situations.

Scheduled DFI discovery is run in batch mode, and loads newly discovered DFIs automatically from the TeMIP director.

4.5 Advanced configuration

See chapter 4.2.5 of the *SQL Service Adapter Toolkit Installation, Configuration and User's Guide*.

Chapter 5

Service Adapter operation

5.1 Starting and Stopping TeMIP Alarm SA

Starting and stopping a TeMIP Alarm Service Adapter application is done through the standard SQM management commands described in the *HP OpenView SQM Administration Guide*.

To start the application

To start the application, do the following.

1. Log on as **sqmadm** user.
2. Load the SQM environment variables by entering the following command:

```
# . $TEMIP_SC_VAR_HOME/temip_sc_env.sh
```

3. Enter the following command:

```
# temip_sc start_application -platform <platform name> -director <director name> -application <application name>
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up and can be read from the variable `%KERNEL_ID%`
- *<director name>* is the director on which the application was created in the setup phase. (By default, the director's name is **acquisition**)
- *<application name>* is the name that was entered when the application was set up

To stop the application

To stop the application, do the following.

1. Enter the following command:

```
# temip_sc stop application -platform <platform name> -director <director name> -application <application name>
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up, and can be read from the variable `%KERNEL_ID%`
- *<director name>* is the director on which the application was created during the setup phase. (By default, the director name is **acquisition**)
- *<application name>* is the name that was defined when the application was set up.

5.2 Starting and Stopping collection by the Service Adapter

Collection of TeMIP data starts only when the Service Adapter Application is instructed to do so by the SQM Service Repository Manager. This is controlled by the SQM SLA Admin User Interface. For more information, see the *HP OpenView SQM SLA Admin User Interface User's Guide*.

5.3 Maintenance

5.3.1 Creating a new application

To create a new TeMIP Alarm SA Application, do the following.

1. Create the SA application. For details, see “Creating the TeMIP Alarm SA Application” on page 31.
2. Configure the SA Application. For details, see “
3. Configuring the application” on page 32.
4. Create the SQL view. This step is necessary if the new application must be connected to a TeMIP Server that is not already linked to a TeMIP Alarm SA. For details, see “Creating the SQL view” on page 34.
5. Discover and load the DFIs. For details, see “Discovering and loading DFIs” on page 35.
6. Start the SA application. For details, see “Starting and Stopping TeMIP Alarm SA” on page 45.

5.3.2 Deleting an existing application

To delete the Service Adapter application, do the following.

1. Execute the following command:

```
# temip_sc delete_application -platform <platform name> -director <director name> -application <application name>
```

where:

- *<platform name>* is the name that was defined when the SQM Server was set up, and can be read from the variable `%KERNEL_ID%`
- *<director name>* is the director on which the application was created during the setup phase. (By default, the director name is **acquisition**)
- *<application name>* is the name that was entered when the application was set up.

Service Adapter advanced customization

Because an intermediate SQL view is used between the TeMIP Server and the TeMIP Alarm Service Adapter, you can customize the PL/SQL scripts to:

- Perform special filtering when discovering which entities TeMIP manages
- Filter out TeMIP alarms that should not be included in statistic calculations

Both these aspects are described in this chapter.

6.1 Customizing the Discovery view

The TeMIP Alarm Service Adapter Discovery tool uses an SQL query running in a dedicated SQL view called `TEMIPAHARCHI.DISCOVERY_VIEW` to discover which entities are managed by TeMIP. This view is created by the SQL script located in `$TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_temip_sa_08_managedobjects_discovery_view.sql`

The view obtains its data from the `TEMIPAHARCHI.MANAGEDOBJECTS` TeMIP table. This table contains details of all entities discovered in the TeMIP independent discovery phase. By default, this view discovers all nodes that TeMIP manages. To filter out certain TeMIP entities, do the following.

- Edit the SQL query to modify the *WHERE* clause so that the filter excludes the appropriate TeMIP entities.
- Reload the script on the TeMIP database as described in “Processing the export context” on page 27.
- Perform the DFI discovery process as described in “Discovering and loading DFIs” on page 35.

For instance, if you require fault statistics on a limited number of nodes, HP recommends that you create a TeMIP domain specifically for this purpose, put the targeted TeMIP entity into this domain, and then modify the SQL script to select only TeMIP entities belonging to this domain.

6.2 Customizing the Statistics view

In standard implementations, the TeMIP Alarm Service Adapter calculates fault statistics based on all TeMIP alarms exported to the TeMIP database. These statistics relate to all TeMIP managed entities listed in the managed objects table. Since these statistics include irrelevant alarms, the statistics may be invalid. This is prevented by filtering the TeMIP alarms from which the statistics are computed. The fault statistics are computed by a PL/SQL function called *compute_statistics* defined in SQL script in the following file:

```
$TEMIP_SC_HOME/ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/da  
tabase/sqm_temip_sa_07_statistics_package_body.sql
```

The default SQL function that defines which TeMIP alarms are included in statistical calculations is as follows:

```
CURSOR c1 IS  
  SELECT *  
  FROM TEMIPAHARCHI.ALARMOBJECT0  
  WHERE TEMIPAHARCHI.ALARMOBJECT0.managedobject = mo_name  
  and TEMIPAHARCHI.ALARMOBJECT0.domain = dom_name  
  and TEMIPAHARCHI.ALARMOBJECT0.ocname = oc_name  
  and TEMIPAHARCHI.ALARMOBJECT0.state = 'Outstanding'  
  and TEMIPAHARCHI.ALARMOBJECT0.clearancetimestamp is NULL;
```

To filter out alarms from the statistic calculations, do the following.

1. Modify the SQL query defined at the beginning of the *compute_statistics* PL/SQL function.
2. Reload the script on the TeMIP database as described in “Processing the export context” on page 27.

To filter out any alarms generated in the **helios_ns::CPE_Routers_dom** TeMIP domain, for example, you must modify the SQL request to the following:

```
CURSOR c1 IS  
  SELECT *  
  FROM TEMIPAHARCHI.ALARMOBJECT0  
  WHERE TEMIPAHARCHI.ALARMOBJECT0.managedobject = mo_name  
  and TEMIPAHARCHI.ALARMOBJECT0.domain = 'Domain helios_ns::  
CPE_Routers_dom'  
  and TEMIPAHARCHI.ALARMOBJECT0.ocname = oc_name  
  and TEMIPAHARCHI.ALARMOBJECT0.state = 'Outstanding'  
  and TEMIPAHARCHI.ALARMOBJECT0.clearancetimestamp is NULL;
```

Appendix A

Installation directory structure

```
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/UninstallerDataTeMIP
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/UninstallerDataTeMIP/Uninstall_TeMIP
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/UninstallerDataTeMIP/Uninstall_TeMIP.lax
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/UninstallerDataTeMIP/uninstaller.jar
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/TeMIP_v1_2_launch.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_create_db_view.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_complete_install.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_discovery.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_configure.pl
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_discovery_filter_template.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_configure.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_setup_connector.pl
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_setup_connector.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_create_datatree.pl
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_create_datatree.sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/bin/temip_sc_update_datatree_access_rights.
sh
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/config
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/config/SCPlatform_SCDirector_SCApplcation.
properties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/config/SaSqlDiscoveryTraceLogging.propertie
s
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/config/SaSqlDiscoveryMtLogging.properties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_TeMIP_sa_01_drop_table_def.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_TeMIP_sa_02_record_def.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_TeMIP_sa_03_table_def.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_TeMIP_sa_04_declare.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_TeMIP_sa_05_body.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/qm_TeMIP_sa_06_discovery_view.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/sqm_TeMIP_sa_07_statistic_view.sql
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/jar
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/jarTeSCSATEMIP.jar
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/lib
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/lib/ojdbc14.jar
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/properties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/properties/TeSCTeMIP.properties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/properties/TeSCTeMIP_Version.prope
rties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/properties/TeSCSql_Version.propert
ies
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/properties/TeSCTeMIP_Alarms.proper
ties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/properties/TeSCSqlDiscovery.xml
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/database/propertyessaname.properties
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/DelDFDReq_TeMIPSTATDFD.v1_0.xml
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/TeMIP_Connectors_data.exp
```

```
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/TeMIP_v1_2_setup.cfg  
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/NewDFDReq_TeMIPSTATDFD.v1_0.xml  
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/TeMIP_dfds_data.exp  
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/repository/TeMIP_v1_2_template.exp  
ServiceAdapters/Sql/v1_2/TeMIPFaultStats_v1_2/util
```

Glossary

The following table lists the acronyms commonly used in this document.

Term	Description
API	Application programming interface
DFD	Data feeder definition
DFI	Data feeder instance
MRP	Measurement reference point
SAI	Service Adapter Application Name (or Service Adapter instance)
SLA	Service level agreement
SLM	Service level management
SLO	Service level objective
SRM	Service Repository Manager
TeMIP	OpenView Operation
XML	eXtensible Mark-up Language

