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# OpenView Service Quality Manager



## Mobile Subscriber Experience Value Pack User's Guide

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# Preface

This document describes the Mobile Subscriber Experience Value Pack for OpenView Service Quality Manager.

## Intended Audience

This document is intended for OpenView SQM integrators, users and administrators.

## Required Knowledge

It is assumed that the reader is familiar with the functionality of OpenView SQM and has previous experience of the following:

- System administration and operations
- Service level 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 Administrators Guide.
- HP OpenView Service Quality Manager Information Modeling Reference Guide.

Goal of this document is not to describe Mobile Device Management domain; it is assumed that the reader is familiar with this domain.

## Software Versions

The software versions referred to in this document are specified in Section [#Software and hardware requirement](#).

## Typographical Conventions

The following typographical conventions are used in this book:

<b>Bold</b>	New terms and to emphasize important words.
<i>Italic</i>	File names, programs, and parameters. The names of other documents referenced in this manual.
Monospace	Source code and examples of file contents. Commands that you enter on the screen. Pathnames. Keyboard key names.

## Associated Documents

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

## Support

Please visit our HP OpenView web site at:

<http://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 HP OpenView support area of the HP OpenView web site includes:

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

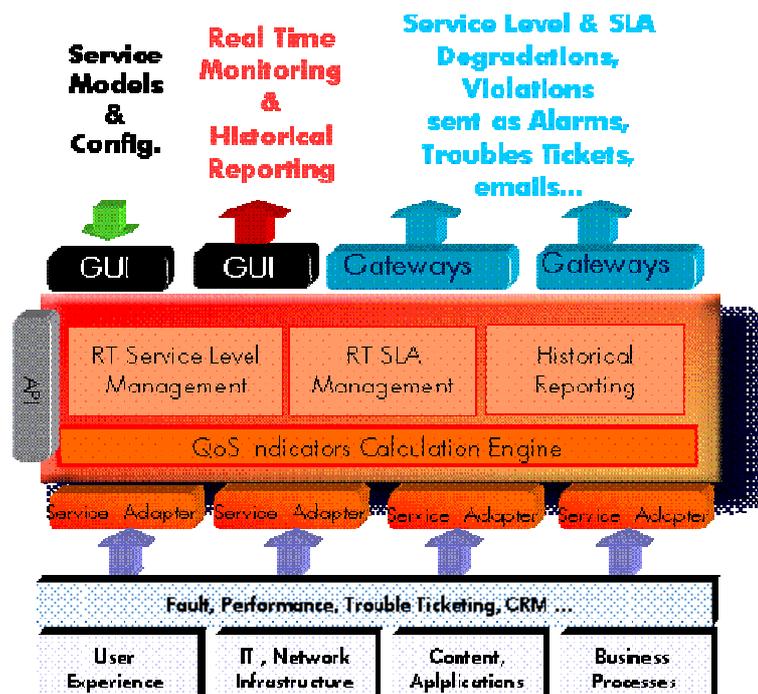
## OV SQM MSE Value Pack description

### 1.1 OpenView Service Quality Manager

OpenView SQM provides a complete service quality management solution. It consolidates quality indicators across all domains — telecom, IT networks, servers, and applications — providing end-to-end visibility on service quality. OpenView SQM links service quality degradations to potential effects on business, allowing network support personnel to address problems and prioritize actions proactively.

OpenView 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 affect on customers, services, and Service Level Agreements (SLAs).

Figure 1 - OpenView SQM Main Components



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

## 1.2 What is a value pack

### 1.2.1 Objective

The HP OpenView Service Quality Manager Value Pack software extends the value and benefits of the HP OpenView Service Quality Manager.

The objective of such value packs is to:

- Provide quick time to value with pre-configured platforms
  - Pre-implemented best practices to improve time to deploy
  - Facilitate integration with customer environment
- Leverage from projects, partners and industry standards
  - Include subject matter experts know-how and recommendations in Service Management into the product
- Improve the value delivered by the OV SQM product
  - Enrich engine capabilities with pre-defined specialized added value with customer focus
  - Provide an operational foundation for a solution that can easily be customized and extended to map customer contexts
- Secure cost of operations
  - Multi-technology / vendor catalogue of solutions and components that keep developing in line with new services.

### 1.2.2 OV SQM Value Pack approach

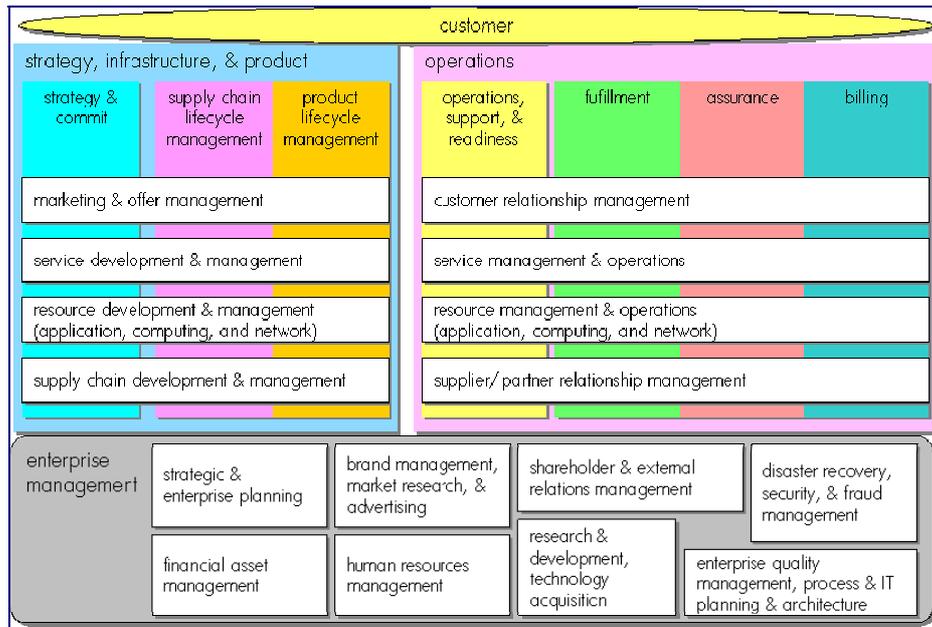
#### 1.2.2.1 Defining Service model and KQIs

The methodology that is being used in general to develop SLA and service management solutions involves the following steps that will be re-iterated as a life-cycle to keep improving a solution:

1. Define the scope of the requirements by looking at the different use cases. For example, key operational processes as described in the eTOM (Enhanced Telecom Operation Map) from the Telemangement Forum ([www.tmfcentral.com](http://www.tmfcentral.com)) can be used as a reference to analyze what would be the right metrics that best characterize those processes.

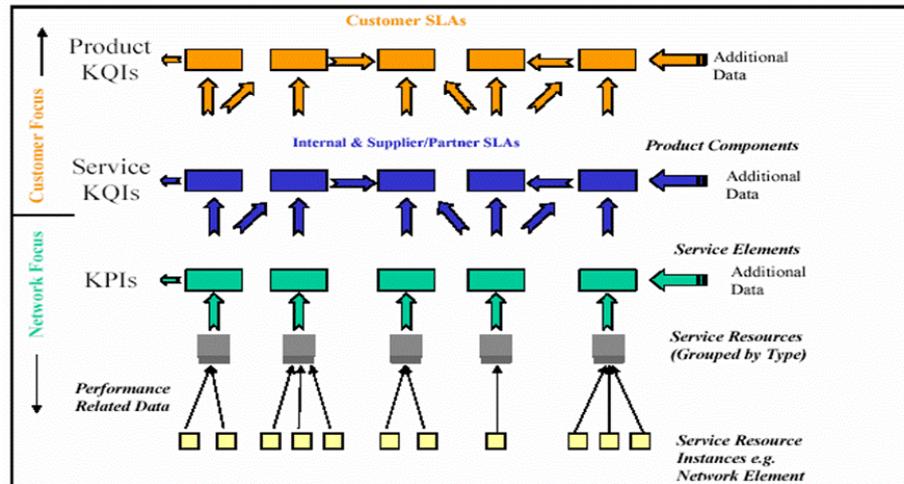
A use case would then be about:

- Describing standard activities of the people or group of people that will use the system
- Identifying the key metrics and policy that describe the activity of that operator (process oriented) but also that describe the behavior of the domain is operating (technology oriented).
- Defining a set of KQIs (Key Quality Indicators) that would keep giving the current and historical status of those metrics.
- Defining how those KQIs will be used by which other system(s).



**Figure 2 - eTOM – TeleManagement Forum**

2. As suggested by the figure below that represents how KQIs can be defined at the top of a hierarchy of indicators, the second step is about analyzing all available data sources and defining how KQIs will be computed and / or aggregated from raw data.



**Figure 3 – Key Indicator Hierarchy (from TeleManagement Forum)**

3. The 3<sup>rd</sup> step is about designing a service model that will structure the KQIs around service components into a service to provide a consistent and comprehensive view of that service.

The purpose of a service model is to accommodate many different domains, from access devices, service access points, transport networks, applications to activation and maintenance processes that all contribute to a service and its management. A service model ensures consistency between all possible views that will be provided to various interested groups or parties.

4. From the model that has been designed, the last step is about:
  - Deploying real services as individual instances of the service model
  - Defining service levels (“class of service”) that will correspond to the objectives of the different types of users (Customer facing people, planning people, partner managers, service managers...)
  - Defining SLAs as contracts binding a particular service instance, a particular Service Level for a customer.
  - Defining reports as particular and specific views about services, service availability, SLA status...
  - Deploying data collection and integration to third party applications.

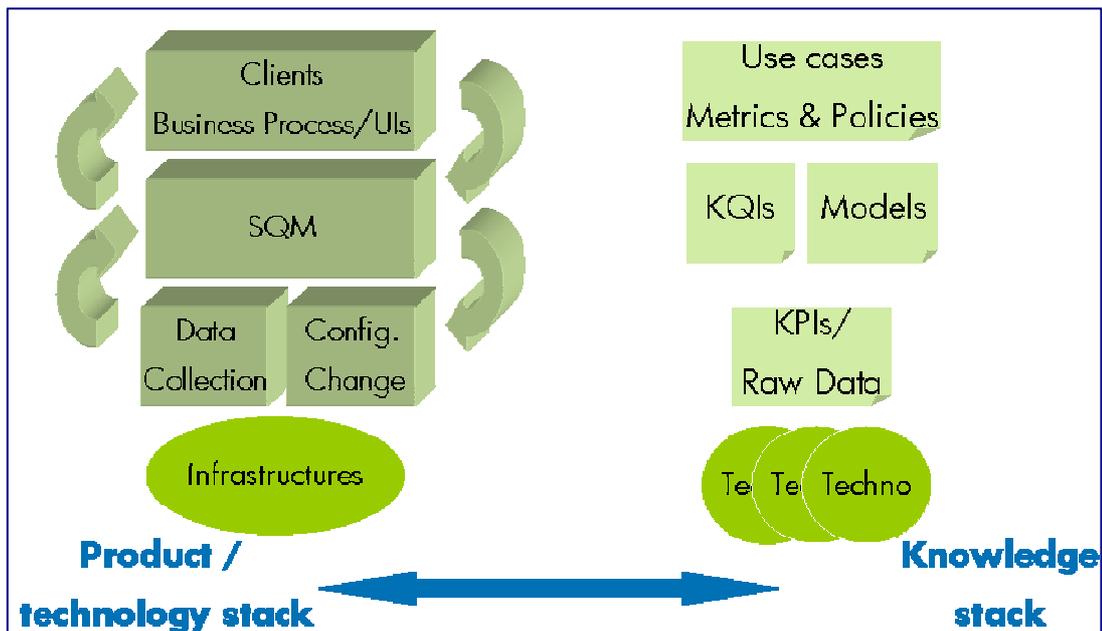


Figure 4 – OV SQM Value Pack solution analysis

### 1.2.2.2 Analysis of Data sources

There are many types of data sources that can be consider to provide raw data from which KQIs can be computed. Those data sources with typical raw data can be categorized as follows:

- Fault Management systems
  - Statistics on faults against (group of) Network Elements and Service Resources, based on severity, ages ...
  - State, state changes of Network Elements and Service Resources
- Performance management systems
  - Performance data from all domains involved in service delivery
  - Delivered performance against committed performance
- Mediation / usage systems
  - Information about traffic / volumes, based on users, applications and services profiles
- Probes

- End to end performance metrics from active probes (user simulation)
- Detailed user experience (service access and utilization) from passive probes (decoding signaling protocols)
- Applications log files
  - Information about application sessions and service consumption (error codes, volumes)
- Trouble Ticketing systems
  - Information about customer outages, problem resolution delays to further compute services MTTRs, MTBFs...
- Service Provisioning systems
  - Information about service ordering and activation to further compute Mean Time To Deliver ...

The purpose of Data Source Analysis is to elect, combine and aggregate the most significant and economical metrics that are needed to compute the required KQIs.

### 1.2.2.3 Data collection

Integration to data sources to collect service related metrics always being a complex issue, one of the objectives of the OV SQM value pack is to provide a quick and easy way to facilitate that integration by:

- Normalizing the interfaces through a mediation database that is included in the OV SQM core product
- Providing a set of tables to load the pre-defined collected metrics.
- Providing the appropriate dedicated Service Adapters that will connect to the mediation DB and retrieve the pre-defined metrics to feed the service model.

In some cases, additional tools are included in the OV SQM value pack to help loading data from well known third party product.

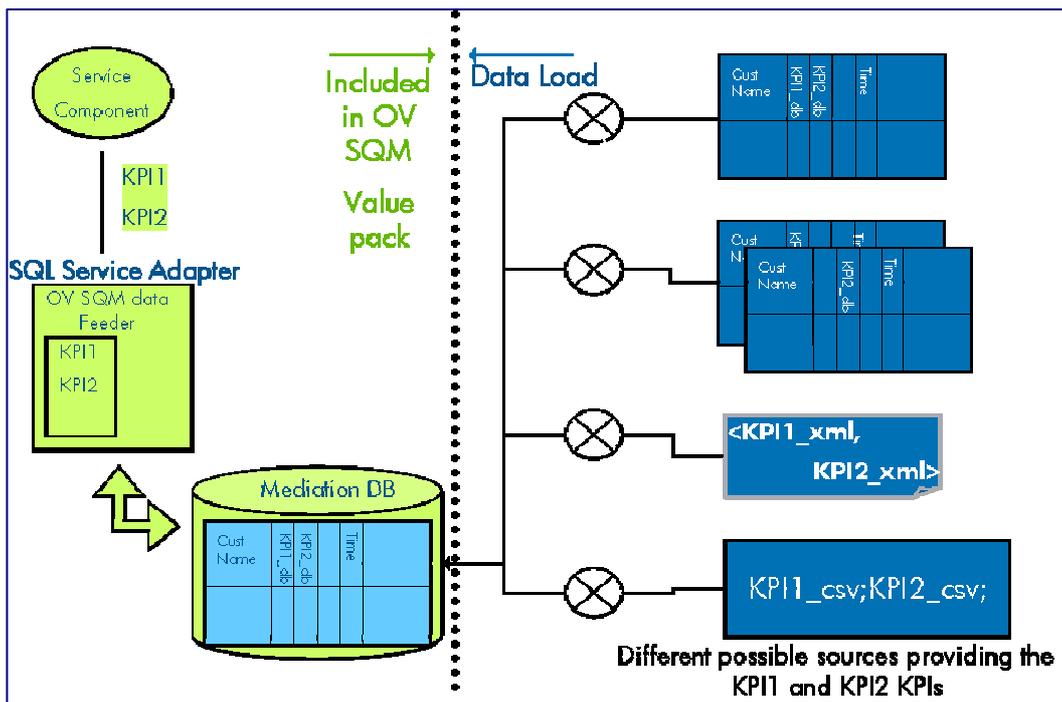


Figure 5 – OV SQM Value Pack: data collection through a mediation database

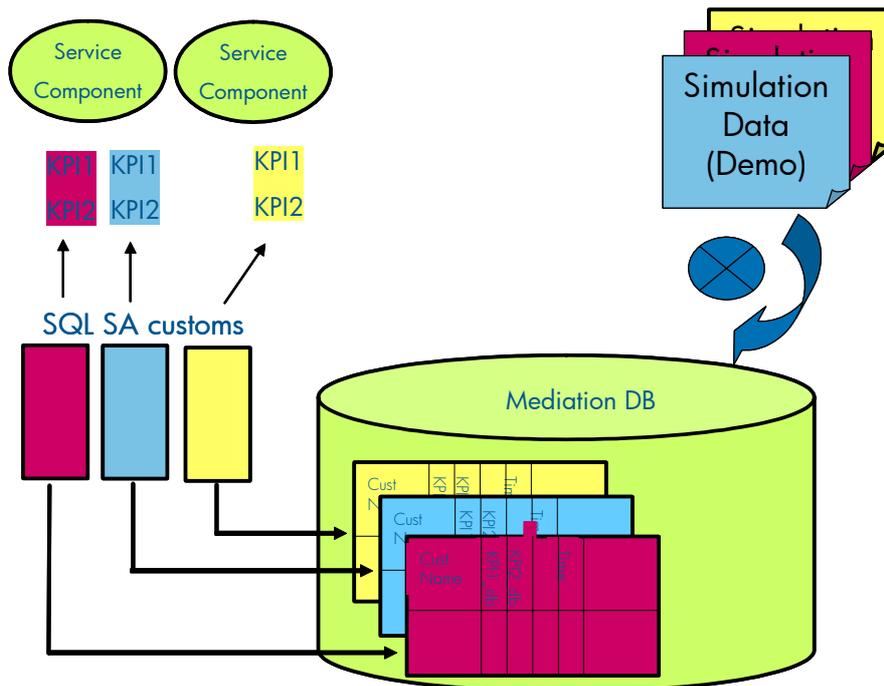
### 1.2.2.4 Validation / simulation data

Once the OV SQM value pack has been installed, a set of parameter values can be loaded in the different tables of the mediation database.

Those parameter values representing one day of likely data and will help:

- Validating the installation and showing live screens and reports.
- Demonstrating the product for education or training purposes

Figure 6 – OV SQM Value Pack: quick data integration



### 1.2.2.5 Pre-defined reports

OpenView SQM produces a variety of reports on service quality, service metrics, trends, and SLA status. OpenView SQM uses Business Objects to report the service quality information.

OpenView SQM contains a collection of predefined reports, including:

- Reports on OpenView SQM data, such as service definitions, SLAs, and service levels.
- Reports representing the mean time between faults, the mean time to repair the faults, service degradation and the availability of each service and service component.

### 1.2.3 Value pack typical content

An OV SQM value pack contains:

- Software add-ons to the OV SQM core products,
- Tools to install and run the value pack on top of a running OV SQM system,
- Documentation to help customers understanding the content of a value pack and augmenting the solution when needed.

### 1.2.3.1 Software Add-ons

- Service Model and KQIs with calculation expressions
- Service Levels and basic SLAs
- BO Universe/Reports (Optional). These are provided as examples for development of additional customized reports.
- SQL Service Adapters Customs

### 1.2.3.2 Tools

- Scripts and 1 day of data to populate the mediation DB
- Scripts to setup the Solution Set and to load the sample in the OV SQM repository

### 1.2.3.3 Documentation

- Value Pack user guide (this document)
- Service Model reference manual (HTML)
- Value Pack release notes

## 1.2.4 An open solution

The OV SQM value packs provide a quick way to deploy a solution in the context of a specific use case. Nevertheless, it can also be considered as a starter for a customer willing to deploy a more comprehensive and specialized solution. The solution has been design to facilitate different ways to expand the provided packaged by leveraging standard OV SQM features.

Among others, the customer will be able to:

- create new service instances, new service levels based on the pre-defined service model and KQIs to address different use cases, thanks to the graphical administration user interface,
- easily add new KQIs based on the pre-defined collected data thanks to the graphical OV SQM service designer,
- add new tables with new raw data from a new source in the mediation database and create a new Service Adapter thanks to the OV SQL SA toolkit. From this new raw parameters, new KQIs for existing or new service components can be defined,
- load real data or collection similar raw data but from another source of data by modifying the data load scripts,
- deploy new ad-hoc service adapters directly connecting to a data source, removing the mediation tables and replacing the SQL Service Adapter.
- create new reports

## 1.3 Introduction to the OV SQM Mobile Subscriber Experience Value Pack

### 1.3.1 HP Mobile Device Management Solution

The mobile industry continues to evolve presenting a number of opportunities and challenges to mobile operators. A wide range of new devices with new functionalities, such as mobile messaging service (MMS), video streaming or Push-to-Talk (PTT), are being launched and made available with new end-user devices. These new devices hold the potential for substantial revenue increases, but only if mobile operators can implement effective strategies for managing them at minimal cost, and at the same time, making them easy for consumers to use.

#### **New content, personalized services require best-in-class tools to manage mobile devices**

As operators introduce new devices and launch new services, their primary challenge is to identify provisioning and monitoring tools that allow the remote management of end-user devices and services or make it possible for customers to manage those devices and services with minimal or no call center contact. By minimizing contact with the call center, operators maintain a higher profit margin on new devices and services.

The **HP Mobile Device Management** (HP MDM) solution helps mobile operators to increase revenue by enabling the delivery of value-added content and services while decreasing the operational expenses associated with providing new services. Providing fully personalized mobile services on a personalized device results in greatly enhanced user satisfaction and increased network usage, and can increase the average revenue per user (ARPU). Solution features include device self-activation, user self-provisioning, and flexible device controls. Operational costs are decreased by allowing operators to automate business processes, fully utilize network services and optimize client capabilities. Teaming with world-class partners, HP enables mobile operators to capture the revenue opportunities presented by a wide range of new mobile devices with new functionalities by providing a complete suite of device management solutions.

One of the aspects of the MDM solution is the **Mobile Service Quality management**, to ensure adherence to service level agreements (SLAs) by allowing operators to activate agents/probes on the mobile devices to retrieve service quality information from an end-user perspective. By using an agent on the (U)SIM or on the terminal itself, operators are now able to retrieve a whole set of real-time data related to either end-user interactions or radio network quality. This information can then be processed through back-end tools, and fed through HP Service Quality Manager to enable operators to spot any quality issues. This new source of information nicely complements the traditional network-based information.

### 1.3.2 Mobile Subscriber Experience management challenges

#### 1.3.2.1 Key Business objectives

The MSE Value Pack is addressing the following key business objectives:

- Reduce customer churn
- Improve Quality of Service as seen by the customer

- Reduce costs
- Create potential new revenue streams
- Increase positive churn
- Provide 'qualified' business and marketing data

These objectives are met with:

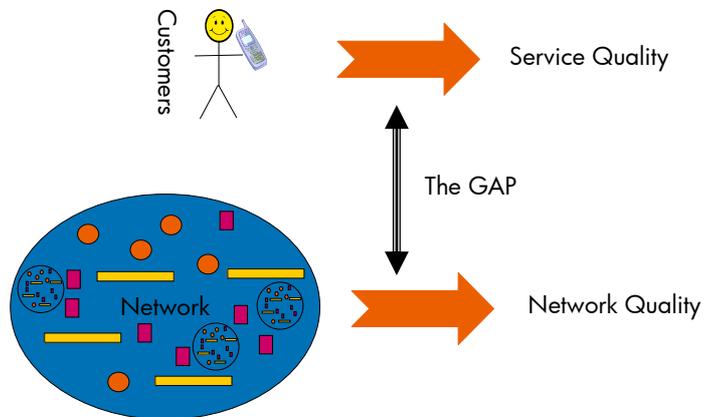
- Service differentiation from the competition creating positive churn.
- Measurable customer SLAs allowing both parties to agree the service paid for what has been delivered - thus reducing churn based on subjective experiences.
- Measurable SLAs allowing new service definitions to be created with their own value (e.g. GSB)
- Measured 'operational' SLA allowing Service Provider to improve their service as perceived by customers, again increasing revenue and reducing churn.
- True targeting of network and radio planning to maximize revenue returns.
- Measurable 3rd party SLA's - enabling costs to be driven down, e.g. devices, radio equipment, roaming agreements.

The availability of measured customer and 'operational' SLA data is a of great benefit for Customers, Product Marketing, Radio Planning, Service Operations, Network Operations, Customer Care, Supply Chain, Senior Management, Sales and Marketing.

### **1.3.2.2 The OpenView SQM MSE Value Pack scope**

Mobile Operators need to monitor various aspects of the business in order to deliver quality services to their customers. Currently there is a gap between trying to derive customer service levels from the network (network based probes or static device emulators) and measure the real service quality delivered to customers.

# The gap between the network and the service



September 12, 2005

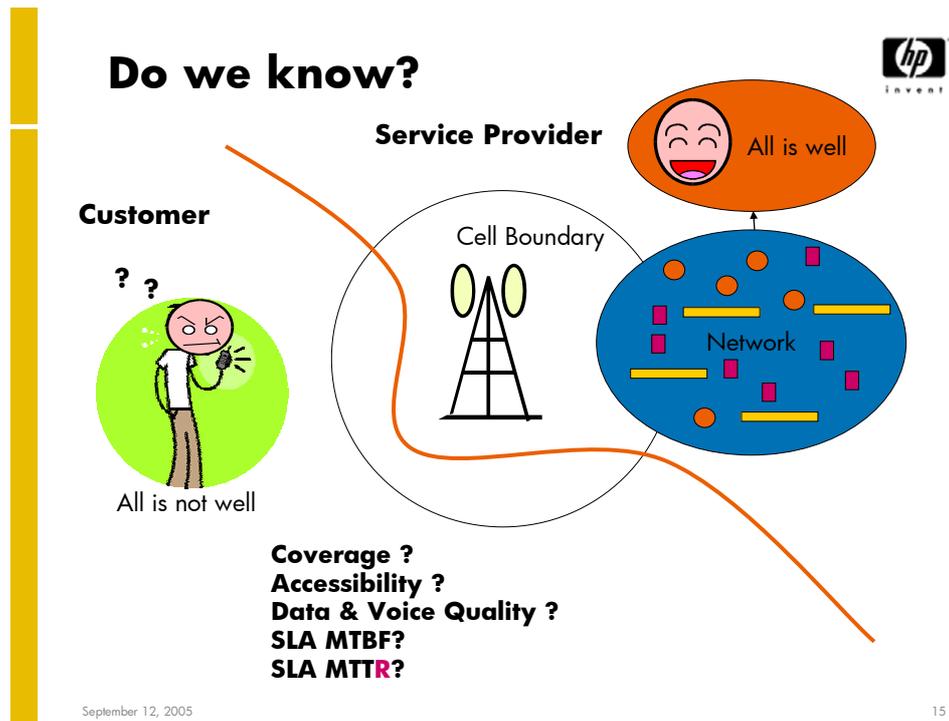
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There are several ways to measure the network but:

- Not all elements in a path can be measured accurately for service,
- Events need to be correlated for service and time synchronised
- No visibility of the air interface
- The network routing is not deterministic
- The Customers are moving
- The closer to the edge of the network you monitor traffic; the more complex it is to recombine data to individual devices and customers.
- The network does not provide the whole picture
- Alarms and events do not always equate to service measurements
- The network does not relate the customer experience - even emulators do not behave and move in a random fashion like users

The MSE Value Pack looks to provide a way to primarily define / measure true and definitive customer SLAs (based on user experience data) and all the associated information associated with them;

- real-time events - jeopardy, breach, thresholds etc
- Reporting – SLA history, SLA reports
- SLA attributes MTBF & MTTR
- Breakdown by Customer, Service, cell, region, device etc.



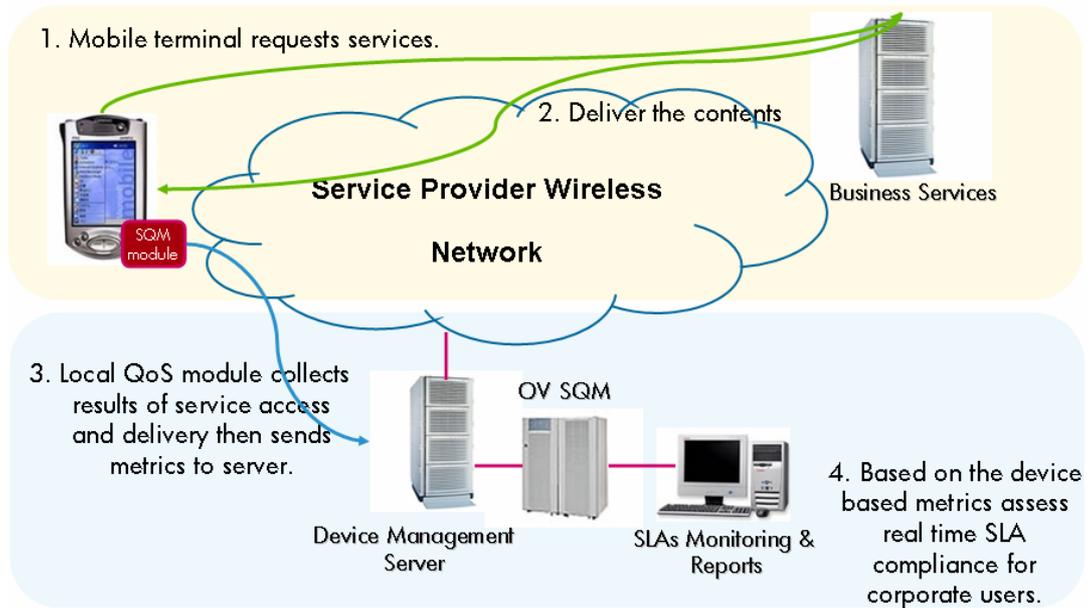
### 1.3.2.3 How does the OpenView SQM MSE Value Pack work?

The MSE Value Pack solution is based on diagnostic, configuration and performance KPIs directly collected from customer smart devices:

- Signal strength and Coverage (data, voice)
- Data Service (SMS, WAP, MMS...) performance indicators
- Battery, memory,
- Device inventory
- View and set settings (e.g. connection settings, active sync)
- Install and remove applications
- Lock and wipe the device

All QoS metrics that describe user experience of services are collected from the intelligent client software installed on the mobile terminal, and returned to the OV SQM Server (as described in the figure below).

Measure the QoS on content delivery based on status information from Intelligent Agent (IA) on mobile terminal



Based on these collected device KPIs, OpenView SQM MSE Value Pack will calculate **three** important mobile network indicators, considering quality from the users' standpoint:

- Coverage
- Accessibility
- Data Quality

And breakdown these KQIs by Customer, Service, cell, region, device...

### 1.3.3 Use cases

#### 1.3.3.1 eTOM and QoS management

The following table illustrates how a solution build on a product like OV SQM help addressing different needs from different organizations in Service Provider companies.

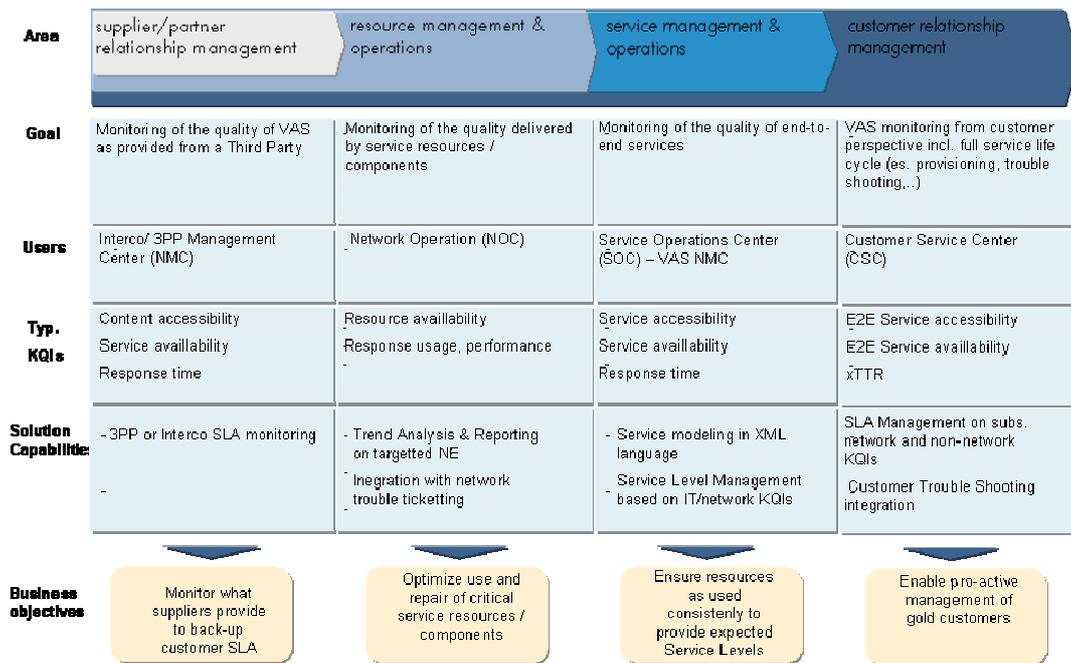


Figure 7 – OV SQM solution users

### 1.3.4 OV SQM Mobile Subscriber Experience Value Pack software add-on

The OV SQM MSE Value Pack comes with the following software add-on:

#### 1.3.4.1 Service Models

The MSE value pack contains a service model that can be deployed for the monitoring of SLAs for Carrier Network or customer data Device Fleets.

The Service model combines and organizes a set of service components that all together provide an end-to-end view of device management.

The service components include:

- The Carrier Network infrastructure that can be organized into
  - Regions
  - Location Areas
  - Cells
  - Data Services (Email, HTTP, SMS, MMS, WAP)
- The customer Device Fleets that can be organized in:
  - Device Groups
  - End-User Devices

with there respective KQIs, are further explained in 1.3.5.

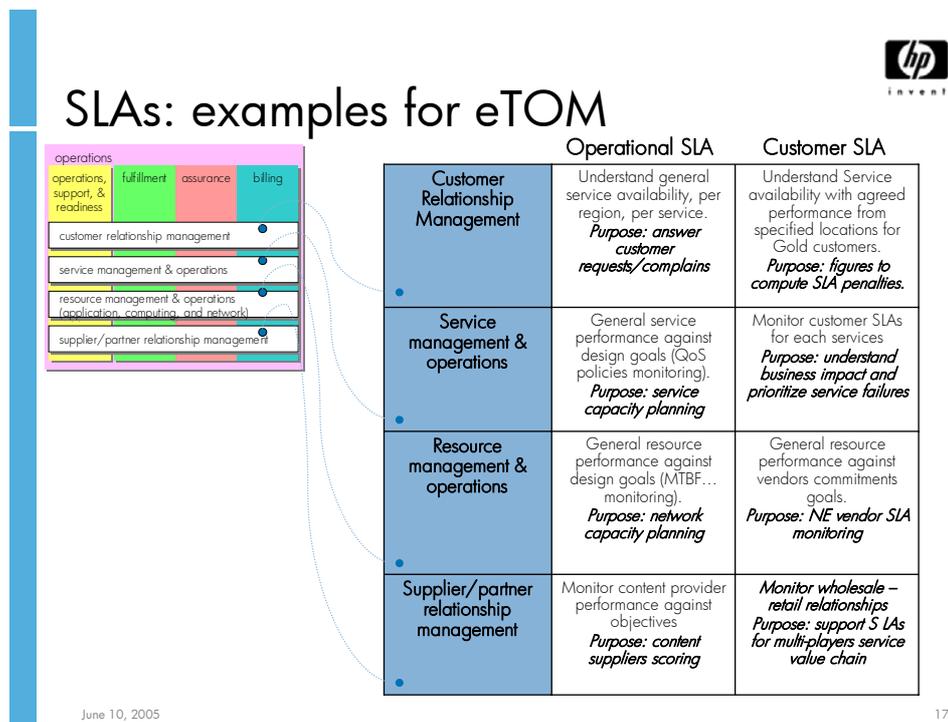
How the information is related:

- Data is collected by the device MSISDN
- We can group devices into collections to represent corporate customers, device manufacturers.
- We can measure the performance of services that devices use (e.g. WAP, voice, MMS)

- We can see the device IMEI thus identify the device type
- We can see the device location and thus report on service by geography (cell, region etc)
- We can quantify the % call drop rate by customer, customer group, by cell, region or by network

### 1.3.4.2 Service Levels and basic SLAs

The MSE value pack allows the definition of Service Levels that correspond to the various use cases described above.



**Figure 8 – OV SQM Value Pack: data collection through a mediation database**

Some typical SLAs for Carrier Network and Device Fleet are provided as examples with the value pack. Those sample SLAs with associated demo data can be used for demonstration or education purposes:

- Those scenarios demonstrate service quality management of mobile services using HP OV Service Quality Manager MSE value pack
- The scenarios are based on Mobile Services —Mail, SMS, HTTP, MMS WAP-- that are delivered by the Service Providers to end users
- They highlight, with simple business model scenarios, the different types of SLAs that can be deployed (customer device fleet SLAs, Service Provider internal SLA, Service Provider mobile partner SLA – roaming SLA...).
- They highlight the need for the overall integration within a full OSS environment (e.g. integration with troubleshooting and Trouble Ticket applications).

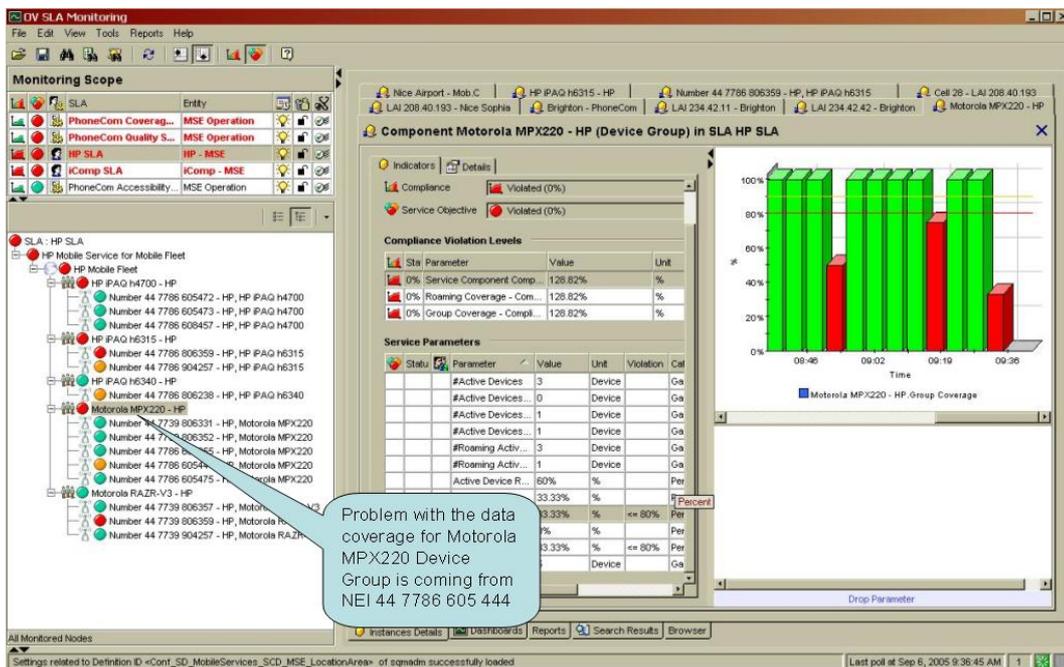
#### **Example 1: Sample business model for User/Corporate Mobile Fleet SLA**

- The service provider wants to offer a SLA to large corporations that have important device fleet with access to Mobile Voice/Data Services

- The requirement to manage and report on multiple customer enterprise SLAs is necessary.
- SLA will have objectives that consist of service availability...

**SLA name:** HP SLA

- Service: Mobile Services
- Service level metrics:
  - Device Signal Strength (End-user device): target is > -100 dBm
  - Group Coverage: target is ratio > 80%
  - Fleet Coverage: target is ratio > 80%
- SLA results need to be reported monthly and weekly



**Figure 9 – OV SQM real time monitoring user interface**

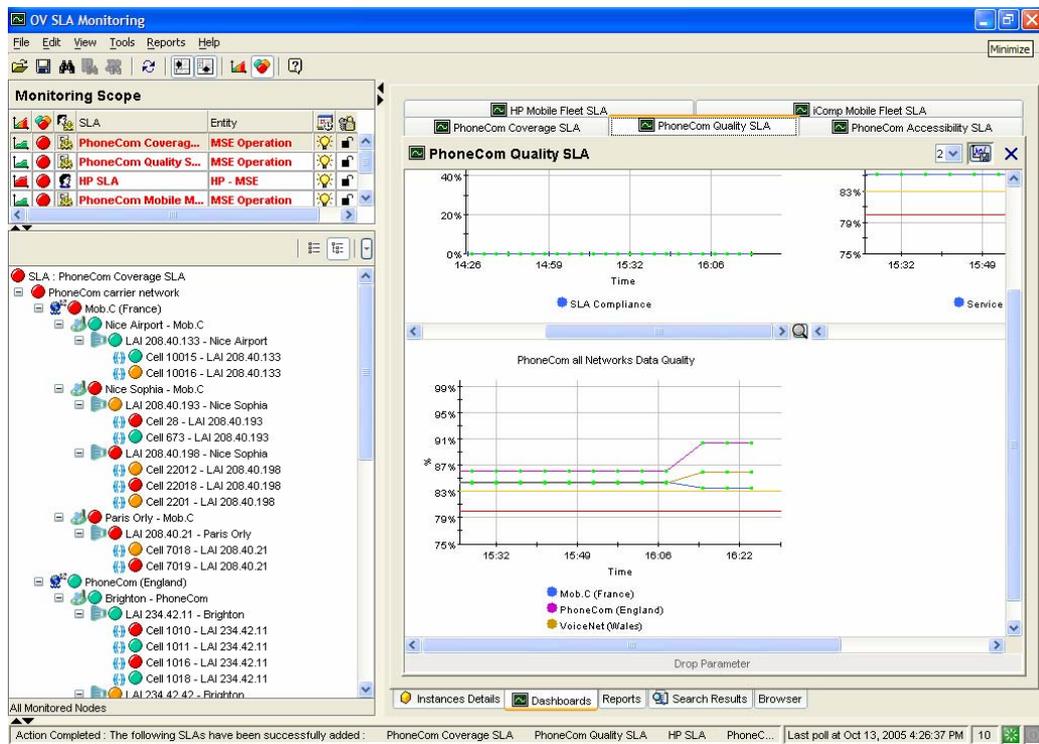
**Example 2: Sample business model for service provider Internal SLA**

- Customers have expectations on service quality and marketing establishes the requirements as Service Level Objectives (SLOs)
- Service provider is not bound legally to pay penalties if objectives are not met
- Business requires that an internal user SLA be set and measured to ensure customers are satisfied
- Key component layers to manage include network, regions, location areas, cells and overall data services

**SLA name:** PhoneCom Coverage SLA

- Name: Service Provider Service Coverage Objectives
- Service levels
  - Carrier Network Coverage > 50%

- Region Coverage > 60%
- Location Area Coverage > 80%
- SLA results need to be reported monthly and weekly



**Figure 10 – OV SQM real time monitoring user interface: Mobile Services Operational SLA**

Additional examples of Operational SLAs are delivered (with associated dashboards). Each SLA focusing on one Key Quality aspect of the service delivered (Accessibility, Data Quality):

- Internal SLA focusing on Mobile Messaging (SMS and MMS) Data Quality (**SLA Name:** PhoneCom Mobile Messaging SLA)
- Internal SLA focusing on Data Service Accessibility (**SLA Name:** PhoneCom Accessibility SLA)

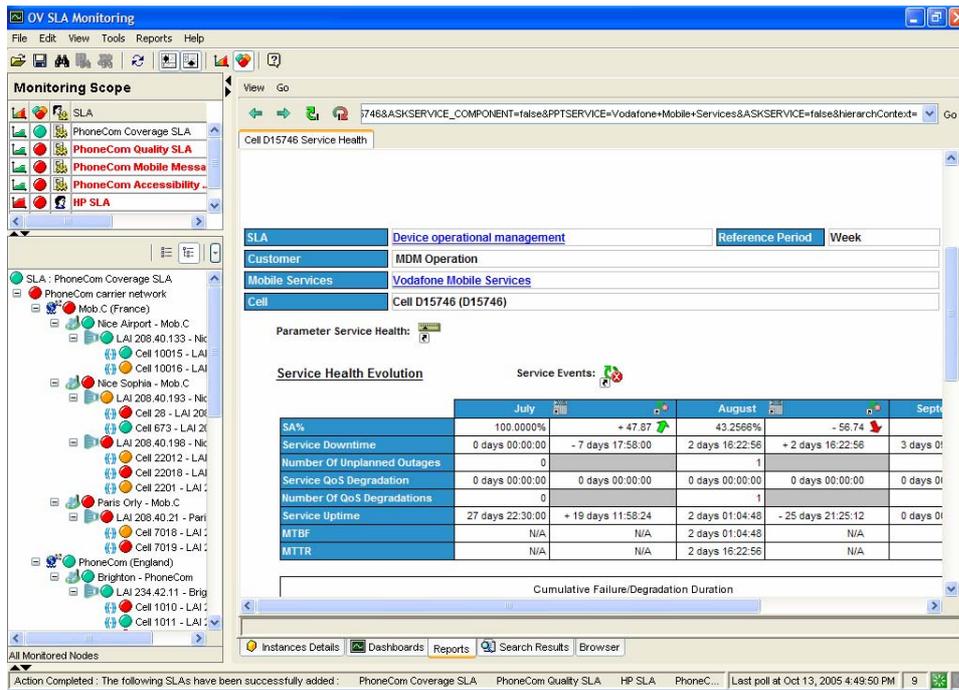


Figure 11 – OV SQM user interface: SLA off-the shelf reports

### 1.3.4.3 BO Universe/Reports

#### 1.3.4.3.1. OV SQM standard reports

The OpenView Service Quality Manager produces a variety of predefined reports on historical quality of service and statistical information. Reports creation can be scheduled or on-demand.

The OV SQM reporting module relies on an open datamart that is pre-integrated with a best-of-breed reporting tool. The objective of the OV SQM Datamart is to store in one place all QoS indicators that have been collected and aggregated from all sources.

Several types of information are available in dedicated reports. Reports are organized in multiple categories:

- SLA Compliance reports
- Service Health reports
- Status History reports
- Inventory reports

#### 1.3.4.3.2. MSE Value pack specific reports

In this first version of the OpenView SQM MSE Value Pack, only the BO Universe adapted to the MSE Value Pack Service Model will be delivered, and ready to be used for developing customized reports. Next versions of the MSE Value Pack will come with dedicated report examples.

## 1.3.5 OV SQM Mobile Subscriber Experience Value Pack: Key Quality Indicators

### 1.3.5.1 Need for high level Key Quality Indicators

Ideally, only a small set of end-to-end historical and real time Key Quality Indicators should be enough to get an instant view of services and SLA

health and status. Those high level KQIs are composite indicators build from primary performance or quality indicators each of them coming from various domains and/or different geographies.

Even though the primary input indicators would be different as coming from different contexts (technology, vendors...), whatever the use case, the same categories of KQIs can be defined to characterize the different aspects of device management. Those KPIs will be either Technical KQIs or Non Technical KQIs.

**Technical KQIs:**

- **Coverage** characterizes the percentage of the resident population who could use mobiles outside their own homes. Three types of coverage are specified:
  - the coverage, which is the ratio between active devices in Voice or Voice/Data state and total active devices,
  - the data coverage that is the ratio between active devices in Voice/Data state and active devices being in Voice or Voice/Data state,
  - the non-coverage, which is the ratio of devices in Emergency state and active devices being in Emergency, Voice or Voice/Data state.
- **Accessibility** characterizes the mobile network’s capacity to make and maintain calls. The accessibility can be weighted depending on the type of location/region: Urban, road arteries, rail axes, airport or suburban. The weighted accessibility takes into account geographical population density.
- **Quality** characterizes the successful access to data services (data quality) via establishment of a successful data connection request, and the correct content delivery within an acceptable timeframe.
- **Compliance** characterizes the percentage of the time, within a contractual period of time, when an objective for a KQI is not met.

Those technical KQIs will be available for both the service access (“access”) phase and the actual service consumption (“information transfer”) phase.

**Non Technical KQIs**

- **Service provisioning** KQIs refer to parameters attached to the processed involved in providing services or changing services to customers.
- **Service Repair** KQIs refer to parameters attached to the processed involved in restoring services to customers.

**1.3.5.2 Data sources**

The following tables list most parameters that are collected from the various systems mentioned as data sources in the service models:

**1.3.5.2.1. Cell Key Performance Indicators**

Collected Indicator(s)	Comment
Cell call monitoring: #Calls #Dropped calls Cell Accessibility	Cell Accessibility calculation is based on this formula: (Number of calls - Number of dropped calls) /

	Number of calls.
Cell coverage: #Devices “Emergency” #Devices “Voice” #Devices “Voice/Data”	Each of these KPIs represents the number of device in the specified coverage state (“Emergency”, “Voice” or “Voice/Data”).
Cell signal strength: Average Signal Strenght Percentile 10% signal strength Percentile 70% signal strength Worst signal strength	The signal strength, viewed from different aspects (average, maximum, percentiles).

### 1.3.5.2.2. Data Services Key Performance Indicators

For each of the Email, HTTP, SMS, MMS and WAP services:

Collected Indicator(s)	Comment
<Generic KPIs>: #Active devices #Data Service Request #Success Data Requests Error – Server Connection Service Response Time Service Signal Strength Service throughput	These KPIs are valid for all of these following Data Service probes (Email, HTTP, SMS, MMS, Wap).
Email: <Generic KPIs>	<b>Note:</b> Email KPIs are not yet accessible from underlying probe (in current version).
HTTP: <Generic KPIs> Error – HTTP request Error – HTTP request timeout Error – PDP activation	These KPIs provide with a <b>number</b> of errors reported for each HTTP Service type of error.
SMS: <Generic KPIs> Error – Send Failed Warning – Message Delayed	These KPIs provide with a <b>number</b> of errors reported for each SMS Service type of error.
MMS: <Generic KPIs> Error – PDP activation Warning – Message Delayed	These KPIs provide with a <b>number</b> of errors reported for each MMS Service type of error.
WAP: <Generic KPIs> Error – WAP gateway connection Error – WAP request Error – WAP request timeout Error – WAP server connection	These KPIs provide with a <b>number</b> of errors reported for each WAP Service type of error.

### 1.3.5.2.3. User Device Key Performance Indicators

Collected Indicator(s)	Comment
Device:	User device KPIs.

<b>Battery Level</b> <b>Coverage State</b> <b>Device Status</b> <b>Roaming Network</b> <b>Signal strength</b>	
---	--

### 1.3.5.3 Additional Computed /aggregated Key Quality Indicators

Example of Key Quality Indicators as aggregated for a cell, LAI, Region and Carrier Network or for the Device Multimedia infrastructure (as a collection of multimedia servers / functions):

Computed Key Quality Indicator(s)	Comment
Cell: <b>Cell Accessibility</b> <b>Cell Coverage</b> <b>Cell Non Coverage</b> <b>Cell Data Coverage</b> <b>Cell Data Quality</b> <b>Average Signal Strength</b>	All Mobile Service KQIs for Cell layer.
Location Area: <b>Area Accessibility</b> <b>Area Coverage</b> <b>Area Non Coverage</b> <b>Area Data Coverage</b> <b>Area Data Quality</b> <b>Average Signal Strength</b>	All Mobile Service KQIs for Location Area layer.
Region: <b>Region Accessibility</b> <b>Region Coverage</b> <b>Region Non Coverage</b> <b>Region Data Coverage</b> <b>Region Data Quality</b> <b>Worst Area Coverage</b>	All Mobile Service KQIs for Region layer.
Carrier Network: <b>Network Accessibility</b> <b>Network Coverage</b> <b>Network Non Coverage</b> <b>Network Data Coverage</b> <b>Network Data Quality</b> <b>Worst Region Coverage</b>	All Mobile Service KQIs for Network Layer.
Device Group: <b>Active Device Ratio</b> <b>Data Coverage</b> <b>Group Coverage</b> <b>Non Coverage</b> <b>Roaming Coverage</b>	All customer Device Group KQIs.
Device Fleet: <b>Active Device Ratio</b> <b>Data Coverage</b> <b>Fleet Coverage</b> <b>Non Coverage</b> <b>Roaming Coverage</b>	All Customer Device Fleet KQIs.

## 1.3.6 Solution in use

The following sections show how HP OpenView Service Quality Manager can help its users to be more efficient in their daily activities monitoring network resources, end-to-end services, or customer SLAs.

### 1.3.6.1 Service Level management

The HP OpenView Service Quality Manager real-time monitoring interface provides a quick and simple way to investigate service problems, as shown in the following figure.

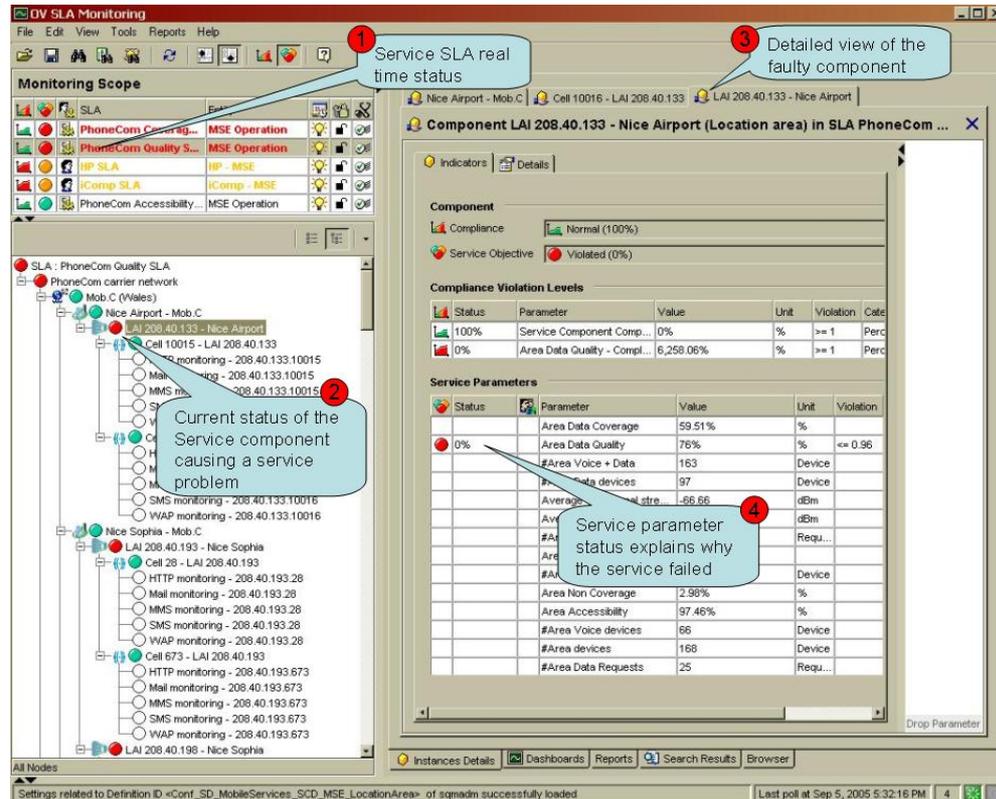


Figure 12 – HP OpenView Service Quality Manager interface

This window displays the following information, as numbered in the figure above:

The Monitoring Scope window showing the current status of each monitored service.

1. By selecting one of the monitored SLAs, Operators see a detailed view of that SLA or service. They can define filters to focus on faulty (degraded or violated) components that impact the SLA or service status.
2. A detailed view of the selected component lists the current values of all indicators attached to that component.
3. Parameter statuses, enabling the Operator to see which conditions caused a service failure.

Once they have used HP OpenView Service Quality Manager to find out which service component is causing the problem, the Operator can use a contextual menu to identify each SLA potentially impacted by the service resource concerned, as shown in the following figure.

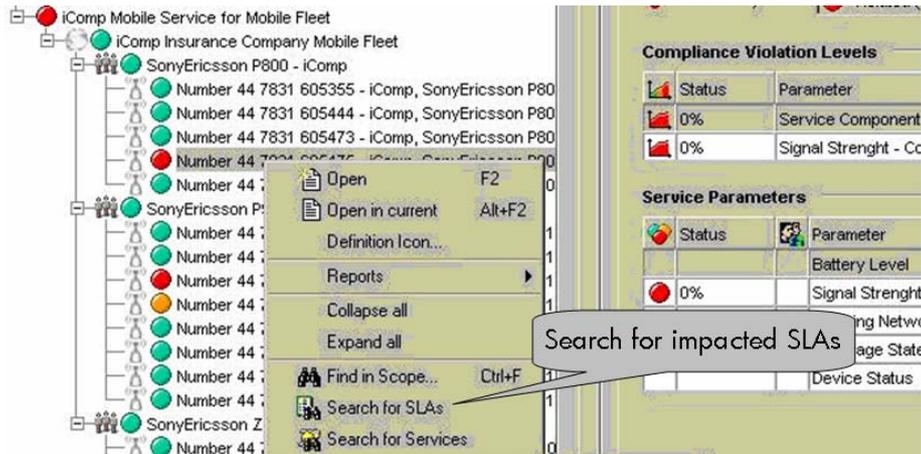


Figure 13 – Service component tree contextual menu

### 1.3.6.2 Customer SLA management

HP OpenView Service Quality Manager enables those interfacing with customers to meet customer expectations better, by giving them a comprehensive, end-to-end view representing how those customers perceive service utilization, as shown in the following figure.

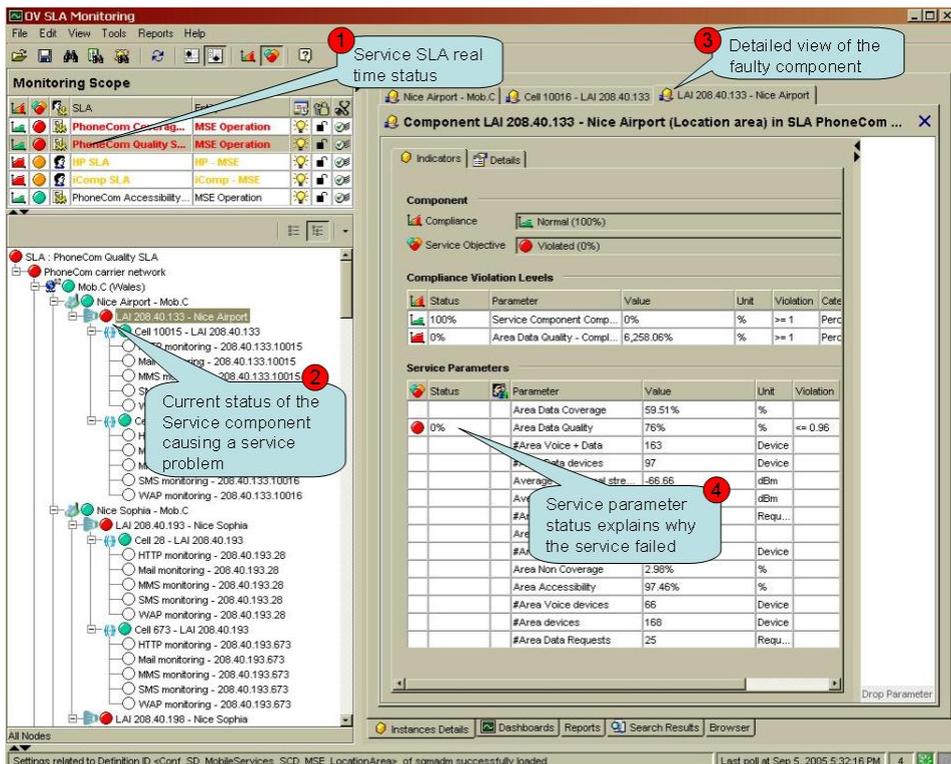


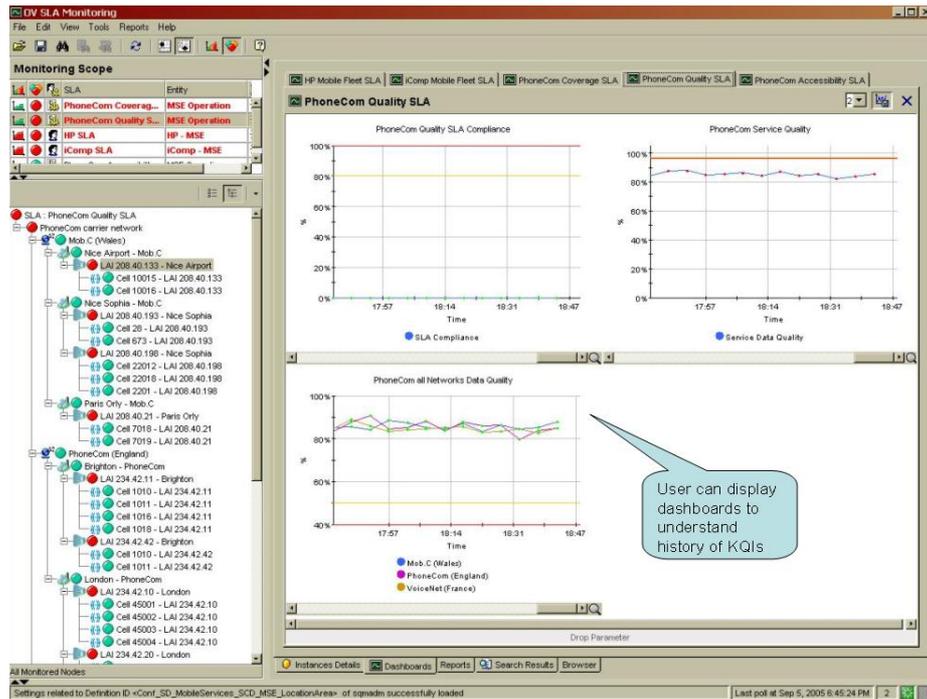
Figure 14 – Monitoring Scope example window

The Monitoring Scope window displays the following information, as numbered in the figure above:

1. The Monitoring Scope window shows the current status of each monitored SLA.

2. A detailed window of the service linked to that customer SLA lists all Key Quality Indicators included in the customer contract and best describing the customer experience regarding the service.
3. The current status of each indicator relative to the objectives set for that customer helps the Operator to understand what problem the service user is currently facing; in this example, there is a problem in accessing the service.

The Operator can use various dashboards to investigate the details behind the *Data Quality* aggregate indicator, by looking at the history and current status of each primary indicator used in calculating the high-level *Data Quality* aggregate indicator, as shown in the following figure.



**Figure 15 – Data Quality dashboard**

Operators can display predefined reports providing summary information on service availability over various timescales. End users can display similar reports using a Web-based interface, as shown in the following figure.

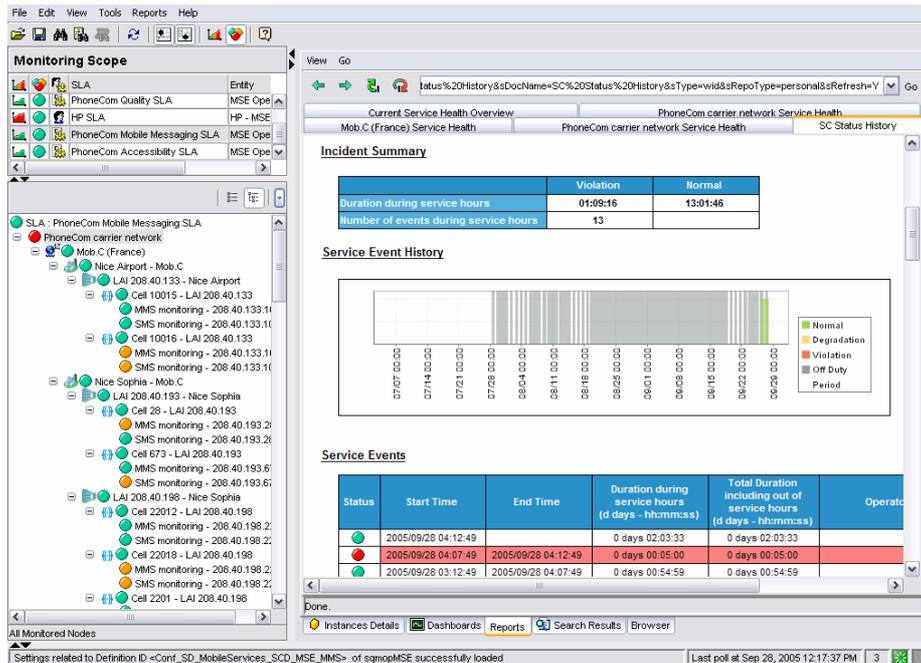


Figure 16 – OV SQM SLA reports window

### 1.3.6.3 Resource management

HP OpenView Service Quality Manager provides resource managers and network planners with a better understanding of how service resources are performing against expectations, and enables them to proactively plan resource updates to meet business expectations while reducing the effect on the customer experience.

Its Monitoring Scope window shows the current status of each SLA attached to specific monitored resources, as shown in the following figure.

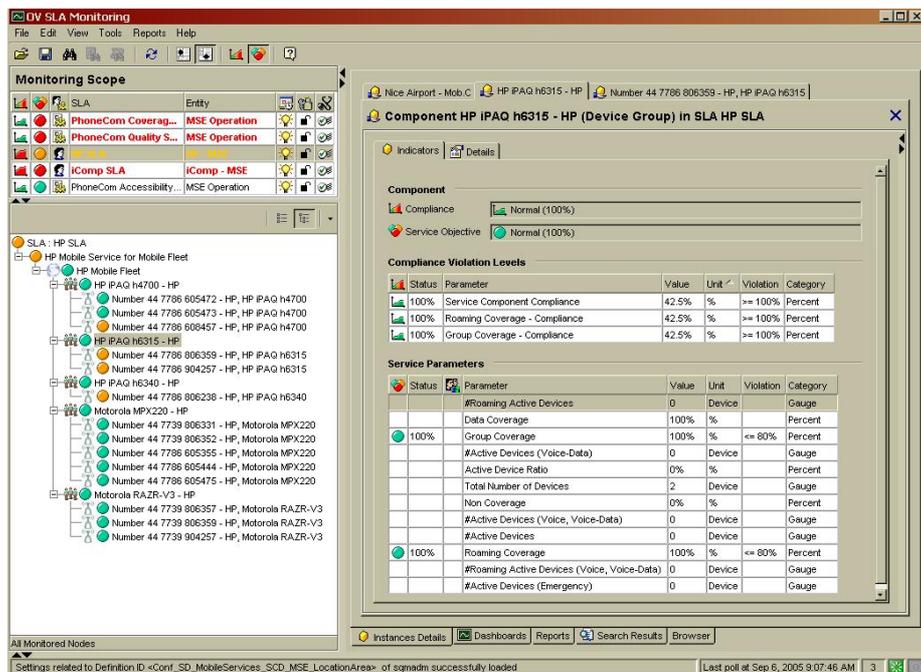


Figure 17 – Service component parameter window

HP OpenView Service Quality Manager's real-time monitoring dashboards help you analyze or aggregate complex indicators (such as the region data coverage) through changes in the primary indicators (such as data coverage on specific location area components, for example), as shown in the following figure.

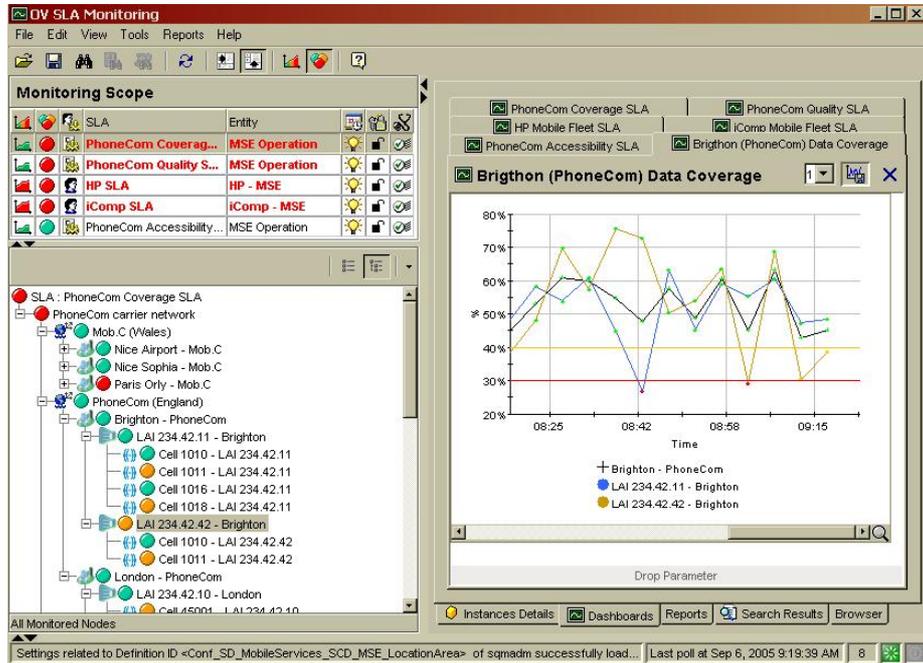


Figure 18 – Data Coverage window

Predefined historical reports provide a comprehensive view of the Quality of Service each service component provides. HP OpenView Service Quality Manager's real-time monitoring interface enables you to access and navigate through reports directly from the service tree structure, as shown in the following figure.

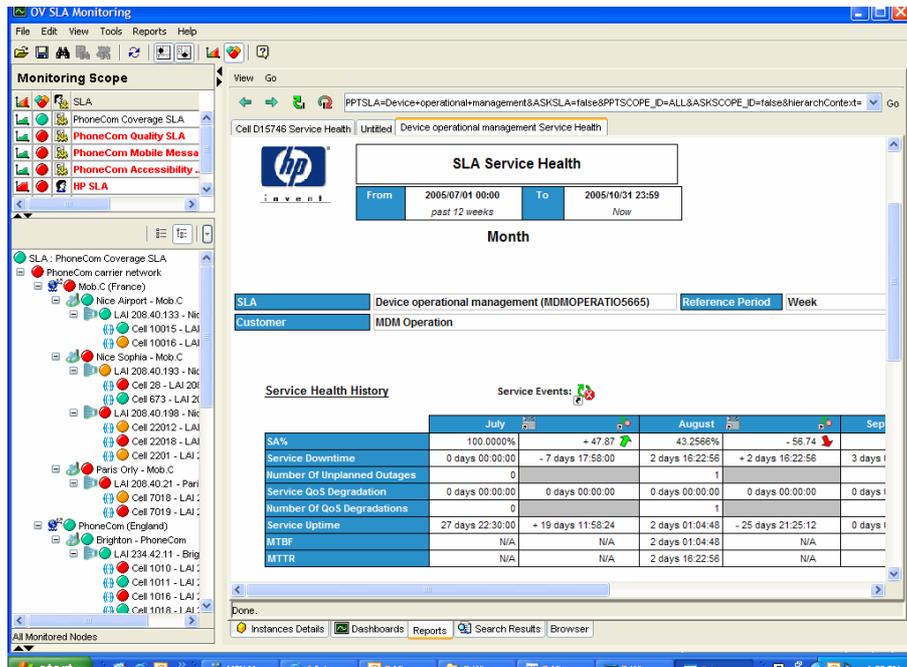
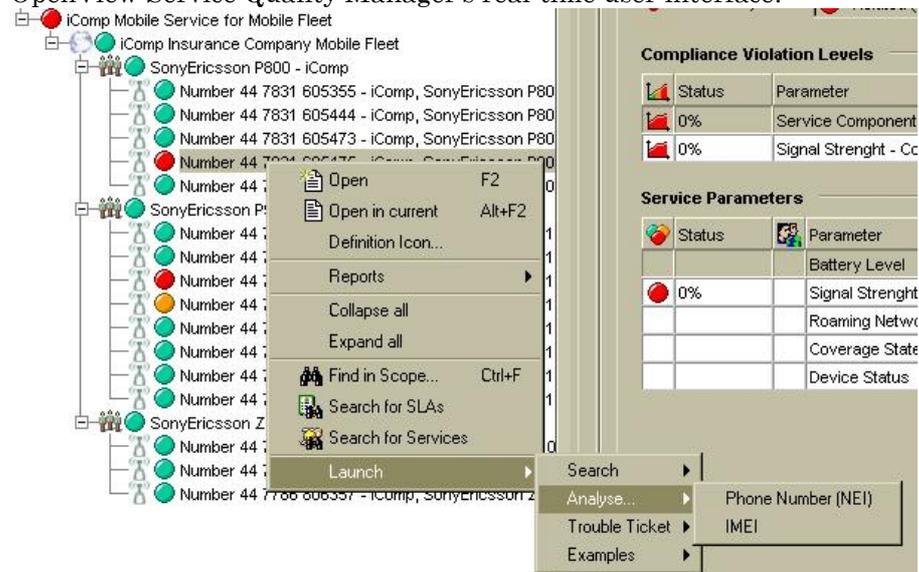


Figure 19 – SLA Service Health window

You can also use additional contextual or user-defined menus to simplify operator related tasks. The following figure shows a user launching troubleshooting tools to test a faulty component from within HP OpenView Service Quality Manager's real-time user interface.



**Figure 20 - 'Launch' contextual menu**

# Chapter 2

## Setting up the OV SQM MSE Value Pack

### 2.1 Software and hardware requirements

#### On HP-UX

The Value Pack must be installed on an HP OpenView SQM 1.2 software platform running on an HP-UX hardware platform. An Oracle database must be available on the server that is to hold the mediation database. The OpenView SQM platform must include the following elements:

- slmonitoring director
- SA Common V1.2 (SQMSAGTWCCOMMON), and the SQL Service Adapter Runtime V1.2 (SQMSASQL)
- slreporting director
- The SQM SNMP Action Executor, if you want to send SNMP traps when an SLA is degraded or violated.

For details of the OpenView SQM software installation procedure, see the *HP OpenView Service Quality Manager Installation Guide*.

#### On Windows

Once you have installed the Value Pack, you must install at least the SLA Monitoring graphical interface and the SLA Administration graphical interface.

If you wish to develop your own Service Model based on the Service Model defined in the Value Pack, you must also install the Service Designer tool on top of the Rational Rose® software.

### 2.2 Value Pack contents

The Value Pack contains two installation kit portions for installation on the two platforms used jointly:

- Unix kit portion, for installation on an HP-UX platform
- Windows kit portion, for installation on a Windows NT, 2000, or XP platform

The contents of each of these kit portions are detailed in the following paragraphs.

You must install both of these kit portions, each on the appropriate platform, as described in “Installation” on page 35.

## 2.2.1 HP-UX installation kit portion

The Unix installation kit portion contains the following:

- The scripts and data used to populate the mediation database (Mediation DB):

```
$STEMIP_SC_HOME/SolutionSet/MSE/populate_sqlsa_db
```

Data and SQL scripts are contained in the following directories:

```
$STEMIP_SC_HOME/SolutionSet/MSE/Database/MSE
```

- The SQL SA toolkit projects (\*.sqltk) and the generated kits (\*.zip) are contained in the following directories:

```
$STEMIP_SC_HOME/SolutionSet/MSE/SQLSA/MSE
```

- The scripts that deploy and create the SQL SA, and load definitions and instances into the Service Repository Manager (SRM):

```
$STEMIP_SC_HOME/SolutionSet/MSE/setup_solution
```

- The scripts and data that only register service definitions and instances, together with the Service Levels and SLAs, into the SRM:

```
$STEMIP_SC_HOME/SolutionSet/MSE/load_definitions
```

```
$STEMIP_SC_HOME/SolutionSet/MSE/load_instances
```

Their input data is contained in the following directories:

```
$STEMIP_SC_HOME/SolutionSet/MSE/Definition/  
    .../DFD  
    .../ExprDef  
    .../ServiceDef  
    .../ServiceLevel
```

```
$STEMIP_SC_HOME/SolutionSet/MSE/Instance/  
    .../Customer  
    .../Profile  
    .../SI  
    .../SIG  
    .../SLA
```

- The script that cleans up the Value Pack:

```
$STEMIP_SC_HOME/SolutionSet/MSE/cleanup_solution
```

- The MSE specific Business Object universe and reports are delivered under directory :

```
$STEMIP_SC_HOME/SolutionSet/MSE/Reporting/  
    .../Univers  
    .../Reports
```

**Note:** For this first version of the MSE Value Pack, only the BO Universe is delivered (no customized reports).

## 2.2.2 Windows NT/2000/XP installation kit portion

The Windows installation kit portion contains the following:

- Value Pack documentation. This is contained in the following directory:

```
%TEMIP_SC_HOME%\SolutionSet\MSE\Doc
```

An HTML image of the Service Design, which does not require the Service Designer for display, is also provided, in the following directory:

```
%TEMIP_SC_HOME%\SolutionSet\MSE\Doc\ModelDesign
```

- Service Model project files used as input for the Service Designer. These are contained in the following directory:

```
%TEMIP_SC_HOME%\SolutionSet\MSE\Model\Designer
```

- Source code of the Custom Expressions used by the Service Model. These are contained in the following directories:

```
%TEMIP_SC_HOME%\SolutionSet\MSE\Model\CustomExpressions\java  
%TEMIP_SC_HOME%\SolutionSet\MSE\Model\CustomExpressions\plsql
```

- The MSE specific Business Object universe and reports are delivered under the following directory. They are the same as those delivered on HP-UX.

```
%TEMIP_SC_HOME%\SolutionSet\MSE\Reporting\  
    ..\Univers  
    ..\Reports
```

**Note:** For this first version of the MSE Value Pack, only the BO Universe is delivered (no customized reports).

## 2.3 Installation

### 2.3.1 Installation on an HP-UX platform

#### Logging on

Log on to the HP-UX system where you want to install the HP OpenView Service Quality Manager Mobile Subscriber Experience Value Pack, as **root** user.

#### Installing the kit

To install the Unix portion of the Mobile Subscriber Experience Value Pack kit, do the following.

- If the OpenView SQM kernel is not already installed on the server, do so by following the procedure described in the *HP OpenView Service Quality Manager Installation Guide*.
- If the OpenView SQM Kernel is not already initialized, you must set up the environment variables by entering the following commands. For further details, see the *HP OpenView Service Quality Manager Installation Guide*.

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

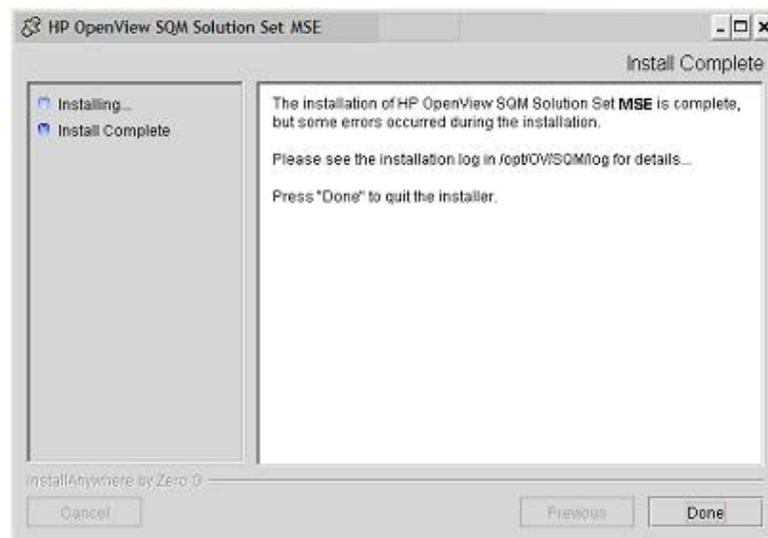
- Insert the Mobile Subscriber Experience Value Pack CD-ROM into your CD-ROM drive, and then execute *SQMSSETMSE-1.20.02.bin*. The following output is displayed.

**Note**

All the following windows are labeled “SQM Solution Set MSE”, which is an alias of the “Mobile Subscriber Experience Value Pack”.



When the Unix portion of the Mobile Subscriber Experience Value Pack has been installed, the following screen is displayed.



Click **Done** to end the installation process on the Unix platform.

### 2.3.2 Installation on a Windows NT, 2000, or XP platform

To install the Windows portion of the HP OpenView Service Quality Manager Mobile Subscriber Experience Value Pack kit, do the following.

1. Insert the Mobile Subscriber Experience Value Pack CD-ROM into your CD-ROM drive, and then open the *SQM-1.20.02\Windows* folder.
2. Run the *SQMSSETMSE-1.20.02.exe* installer.

The following output is displayed:



When the Windows portion of the Mobile Subscriber Experience Value Pack has been installed, the following screen is displayed.



Click **Done** to end the installation process on the Windows platform.

### 2.3.3 Installation of Mobile Subscriber Experience value pack specific reports

The installation and setup of MSE Value Pack reports, suppose that OV SQM Reporting has been previously configured. Please refer to the OV SQM Reporting Installation and Configuration Guide to perform this prerequisite setup phase.

#### 2.3.3.1 MSE Value Pack BO Universe installation on the Reporting Server

In this version of the MSE Value Pack, only the MSE BO Universe is available. No customized reports are delivered. The following steps describe how to install this universe. More information on how to customize SQM Reports is available in the *OV SQM Reporting User's Guide*.

- Configure the MSE Universe.

The OV SQM MSE Value Pack Reporting comes with example of customized reports allowing the user to display and modify reports based on static information available in the Service Quality Manager DataMart.

To display these reports, a specific universe is provided with the Value Pack.

To configure this universe, do the following:

1. Log-on to the Administrating Client under the administrator user account.
2. To launch the Supervisor, click the Start button on the taskbar of the Windows desktop. From the Programs menu, select Business Object and then Supervisor 6.5. The User Identification dialog box is displayed.
3. Log-on to the admin supervisor user created before with admin as password. The main window of Supervisor is displayed.
4. To open the OV SQM IMPS Value Pack universe stored locally on your system, select the Export Universes command from the Tools menu. The Export Universe dialog window is displayed.
5. Click on the Add button. The Universe to Export dialog window is displayed.
6. Go to the folder C:\Program Files\HP OpenView\SQM\SolutionSet\MSE\Reporting\Univers to find the MSE.unv universe.
7. Click on the Open button.
8. The Export Universe window is displayed with the chosen universe.
9. Select the MSE universe and click on the Parameters button.
10. In the Connection drop down list, select the Production entry.
11. Click on the OK button to return to the Export Universe window.
12. Click on the OK button to export the universe. The Export Universe message box is displayed.
13. Click on the Continue button. At the end of the export process, the Supervisor displays the message: "Universe successfully exported".
14. Click OK to close the message and finish the universe export.

## 2.4 Setting up the Value Pack

To set up the Value Pack, you must execute the three following steps. These have been differentiated so that the mediation database (Mediation DB) can be created if it does not exist, and so that Mediation DB can be populated on a remote HP-UX server.

### Note

---

You must perform each of the following steps under the **root** account. You must do so in order to set up each SQL Service Adapter and set up the **oracle** and **sqmadm** users as necessary.

- 
1. Create the mediation database (i.e. the `sqlsa` database). This step is invoked by executing the `temip_create_database` script.
  2. Populate the mediation database with data that has been collected from the different Data Feeder Instances (DFIs) used by the Value Pack. This step is invoked by executing the `populate_sqlsa_db` script.
  3. Set up the SQL Service Adapter that collects data from the mediation database, and then registers the Service Definitions, Service Levels, Service Instances, and SLA(s) provided by the Value Pack. This step is invoked by executing the `setup_solution` script.

Each of these steps is described in detail below.

## 2.4.1 Creating the mediation database

The mediation database, `sqlsa`, must be created before the Value Pack is set up. It can be created either on the local HP-UX server or on a remote HP-UX computer, using the Oracle scripts provided with SQM to deploy and delete the Oracle databases used by the *OpenView SQM* applications. For more details of the installation procedure, see the *Service Adapter for HP OpenView Operations Installation, Configuration and User's Guide*.

### 2.4.1.1 `temip_create_database sqlsa`

This tool is used to deploy all databases used by the HP OpenView SQM system. You must invoke this tool to create the `sqlsa` database on the HP-UX computer that will host it.

---

#### Note

---

You can display help text for this tool by invoking the tool as follows:  
`$TEMIP_SC_HOME/oracle/scripts/temip_create_database -h`

---

To create the mediation database, run the `temip_create_database` tool by doing the following.

Enter the following command:

```
$ TEMIP_SC_HOME/oracle/scripts/temip_create_database
```

By invoking the tool without specifying parameters, you run the tool in an interactive mode that asks you to choose which database you wish to create and guides you through the installation process by asking you basic questions.

The `temip_create_database` tool first displays a choice of available databases, as shown below.

```
temip_create_database will deploy a database for one of the
following OpenView SQM products:
```

```

- TeSC logger                (logger)    [1]
- TeSC logger's archive      (arch)    [2]
- TeSC SPDM                  (spdm)    [3]
- TeSC SRM                   (srm)     [4]
- TeSC Datamart production    (dmprod)  [5]
- TeSC Datamart staging       (dmstag)  [6]
- TeSC SQL SA                 (sqlsa)   [7]
- TeSC BO repository         (borepos) [8]
- Exit      (terminate the session) [e]
```

Please enter the database you want to install:

1. Select `sqlsa [7]` to create the mediation database.

The `temp_create_database` tool next asks you which predefined size of database you wish to create (*SMALL*, *MEDIUM*, *LARGE* or *USER*).

2. Select *SMALL*. This size is sufficient to hold the mediation database.

## 2.4.2 Populating the mediation database

Once you have created the mediation database as described above, execute the following script on the HP-UX computer that hosts the `sqlsa` database.

```
# $TEMIP_SC_HOME/SolutionSet/MSE/populate_sqlsa_db
```

This script loads the data that has been collected from each DFI used by the Mobile Subscriber Experience Value Pack into the mediation database, `sqlsa`. If the `sqlsa` database is not on the same host as the OpenView SQM platform, you must also install the Mobile Subscriber Experience Value Pack on the HP-UX computer hosting the `sqlsa` database so that the `populate_sqlsa_db` script is installed on that computer.

The mediation database then contains all data collected from each DFI during one day of operational running, together with a view of each table that updates the record's timestamp to the current date.

## 2.4.3 Setting up the Mobile Subscriber Experience Value Pack

Once you have populated the mediation database as described in the previous paragraph, execute the following script on the HP-UX computer hosting the OpenView SQM platform:

```
# $TEMIP_SC_HOME/SolutionSet/MSE/setup_solution
```

This script does the following.

- It creates the SQL Service Adapters that collect the data from the mediation database and publish the Key Performance Indicators to the OpenView SQM platform.
- At this stage of the setup process, you are asked to enter the Java DataBase Connectivity (JDBC) parameters used to connect the SQL Service Adapters to the mediation database containing their source data. You must enter the following information:

```
Please enter the
database URL [jdbc:oracle:thin:@haltere.vbe.cpqcorp.net:1521:sqlsa]:
  jdbc:oracle:thin:@yourMediationDBhost.vbe.cpqcorp.net:1521:sqlsa
Please enter the database username [sqlsa]:  sqlsa
Please enter the database password [*****]:  sqlsa
Please enter the database JDBC Driver [oracle.jdbc.driver.OracleDriver]:
```

1. Register the Service Definitions and Service Levels in the Service Repository Manager.
2. Load the Service Instances and SLA into the Service Repository Manager.

## 2.4.4 Configuring the Mobile Subscriber Experience Value Pack Runtime license

Before you run the HP OpenView Service Quality Manager Mobile Subscriber Experience Value Pack, you must configure the **SQM-VPACK-MSE** license.

The Mobile Subscriber Experience Value Pack is supplied with a temporary license, under which it can be used for a trial period of 90 days. This license is activated when the application is executed for the first time.

For details of how to use the *temip\_sc\_license* utility to retrieve HP OpenView SQM licenses and import them into Autopass, see the *HP OpenView Service Quality Manager Administration Guide*.

## 2.4.5 Running the Mobile Subscriber Experience Value Pack

Once you have executed the *setup\_solution* script, you can run the acquisition director. The Mobile Subscriber Experience Value Pack director is called *acquisitionMSE*.

---

### Note

Before you invoke the *temip\_sc\_start\_director* command described below, you must ensure that the *setup\_solution* script has set the JDBC 'CLASSPATH' environment variable in the SQM environment file *\$TEMIP\_SC\_VAR\_HOME/temip\_sc\_env.sh* if this has not already been done. In this case, you must also source this file, and then stop and start the kernel by executing the commands *temip\_sc\_stop\_kernel* and *temip\_sc\_start\_kernel*. You do not need to restart the OpenView SQM platform itself.

The final message displayed when the *setup\_solution* command is executed shows whether or not it is necessary to re-resource the *\$TEMIP\_SC\_VAR\_HOME/temip\_sc\_env.sh* OpenView SQM environment file before you restart the OpenView SQM kernel and start the *acquisitionMSE* director.

---

To run the HP OpenView Service Quality Manager Mobile Subscriber Experience Value Pack director, do the following.

Log on as **sqmadm** user.

1. Execute the following command.

```
# temip_sc_start_director -plat slmv12 -direc acquisitionMSE
```

This enables you to monitor the statuses of Services and SLAs provided by the Mobile Subscriber Experience Value Pack, using the SLA Monitoring graphical interface.

SLAs, Customers, Service Instances, and Service Level management tasks are performed using the SLA Administration graphical interface, however.

## 2.4.6 Configuring the HP OpenView SQM platform to run the Mobile Subscriber Experience Value Pack

### 2.4.6.1 Predefined monitoring user profile

The Mobile Subscriber Experience Value Pack provides a predefined user profile for the HP OpenView Service Quality Manager real-time monitoring interface. The user name associated to this predefined user profile is **sqmopMSE**. The HP\_UX administrator has to create this user before you can login to the HP OpenView Service Quality Manager real-time monitoring interface using this identity.

### 2.4.6.2 Acquisition period

You do not need to configure the HP OpenView Service Quality Manager platform manually to run the Mobile Subscriber Experience Value Pack unless you regenerate the custom SQL Service Adapter (SA) kits. If this is the case, you must then adjust each modified Service Adapter's acquisition period so that it is longer than the data collection period for data provided by the mediation database. The minimum acquisition periods for the MSE Service Adapter provided in the Mobile Subscriber Experience Value Pack is 5 minutes.

For details of how to use the TIBCO Designer graphical interface to edit the configuration used by the Central Repository provided with the OpenView SQM Kernel, see the *HP OpenView Service Quality Manager Administration Guide*.

## 2.5 Cleaning up the Mobile Subscriber Experience Value Pack

You can remove the SQL Service Adapter from the HP OpenView SQM platform and deregister the Service Definitions, Service Levels, Service Instances, and SLAs provided with the Mobile Subscriber Experience Value Pack from the Service Repository Manager by executing the following HP-UX script:

```
# $TEMIP_SC_HOME/SolutionSet/MSE/cleanup_solution
```

## 2.6 Uninstalling the Mobile Subscriber Experience Value Pack

### 2.6.1 Uninstalling the Mobile Subscriber Experience Value Pack from HP-UX

---

**Note:**

Before you uninstall the Mobile Subscriber Experience Value Pack, you must execute the `$TEMIP_SC_HOME/SolutionSet/MSE/cleanup_solution` script to remove related data from the Service Repository Manager and from the SQM Central Repository. For further details, see “Cleaning up the Mobile Subscriber Experience Value Pack”, above.

---

## Logging on

To log on to the HP-UX computer in order to uninstall the Mobile Subscriber Experience Value Pack, do the following.

Log on to the HP-UX system as **root** user.

1. Load the OpenView SQM environment variables by entering the following commands.

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

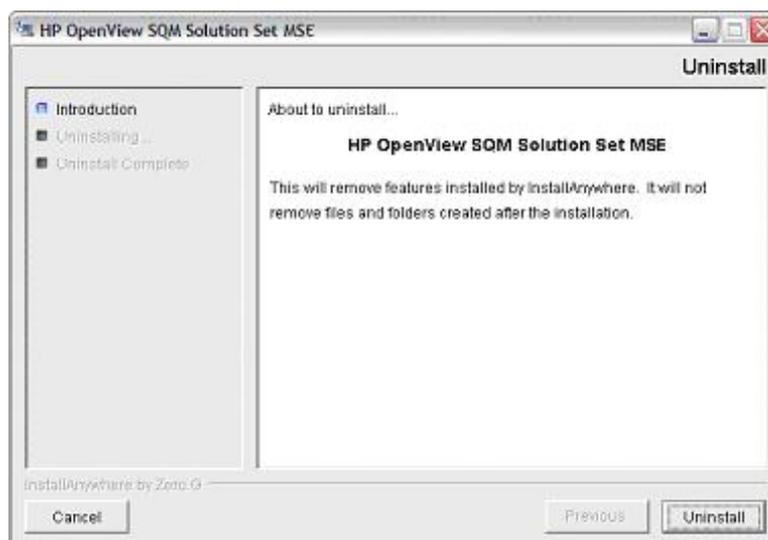
## Uninstalling the kit

On the OpenView SQM platform on which the Mobile Subscriber Experience Value Pack has been installed, do the following.

2. Enter the following commands.

```
# cd $TEMIP_SC_HOME/SolutionSet/MSE/Uninstaller
# ./Uninstall_MSE
```

The **Uninstall** window is displayed.



3. Click **Uninstall** to remove the software from your system. When all of the software has been removed, the following window is displayed.



4. To finish, click **Done**.

## 2.6.2 Uninstalling the Mobile Subscriber Experience Value Pack from Windows

To uninstall the Mobile Subscriber Experience Value Pack from Windows, do the following.

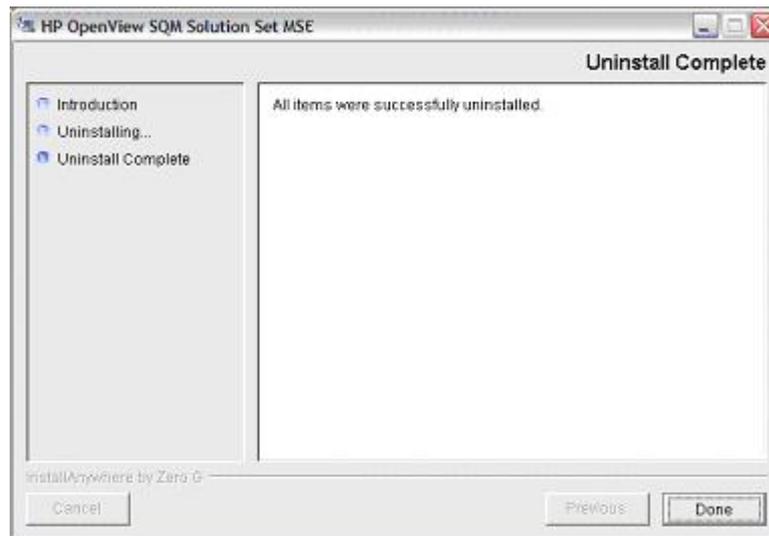
From the Windows *Start* menu, select *All programs* → *HP OpenView* → *SQM* → *SSET* → *MSE* → *Uninstall*.

The **Uninstall** window is displayed.



1. Click **Uninstall**.

The software is uninstalled from your system. When all of the software has been removed, the following window is displayed.



2. To finish, click **Done**.



# Chapter 3

## Mobile Subscriber Experience Value Pack model design

The aim of this chapter is to help you to navigate through the Mobile Subscriber Experience Definitions provided in the Mobile Subscriber Experience Value Pack model. Its intention is not to describe all elements in the model, since these can be easily retrieved and understood using the HP OpenView Service Quality Manager Service Designer.

Instead, it describes the model structure and explains the main Class Diagrams, Sequence Diagrams, and Custom Expressions to help you to understand the key points of the design.

---

### Note

Users that do not intend to customize the Service Definitions provided by the Mobile Subscriber Experience Value Pack do not need to read this chapter.

It is assumed that readers of this chapter are familiar with the information modeling concepts described in the *HP OpenView Service Quality Manager Information Modeling Reference Guide*.

---

### 3.1 Introduction

The Mobile Subscriber Experience (*MSE*) Value Pack contains one generic Network Provider infrastructure that serves as a basis for deployment of any combination of group of devices (home and visited) or a Customer device fleet.

### 3.2 Service Designer project structure

Each model's main Service Designer project file has the **.mdl** suffix. The Service Designer projects that have been used to design the *MSE* that the Mobile Subscriber Experience Value Pack installs in the `%TEMIP_SC_HOME%\SolutionSet\MSE\Model\Designer` directory are:

- MSE.mdl

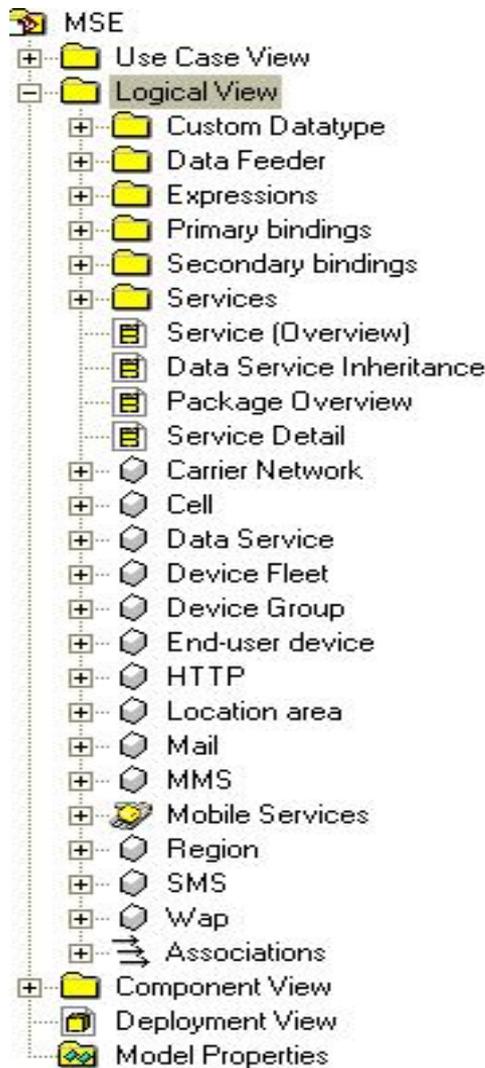
#### 3.2.1 Package description

As shown in the following figure, the upper level of each Service Designer project provided by the Mobile Subscriber Experience Value Pack contains the following packages:

- *Main MSE package* for the MSE service design

- An Expressions package containing predefined SQM expressions and global custom expressions.

**Figure 21 - MSE service design package**



- The Class Diagram View Package simply provides a simplified presentation of a subset of the generic service components that relate to a particular domain: Carrier Network, Device Fleet.
- Any data types specified in the current petal. This package is named Custom DataType, in which the enumerated LocationType parameter is declared, for example.
- Data Feeder Definitions (DFDs) provided by a given Service Adapter (SA), such as the DFD MSE package, for example.
- Custom expressions used in the sequence diagrams specified in the current petal. This package is named Expressions.

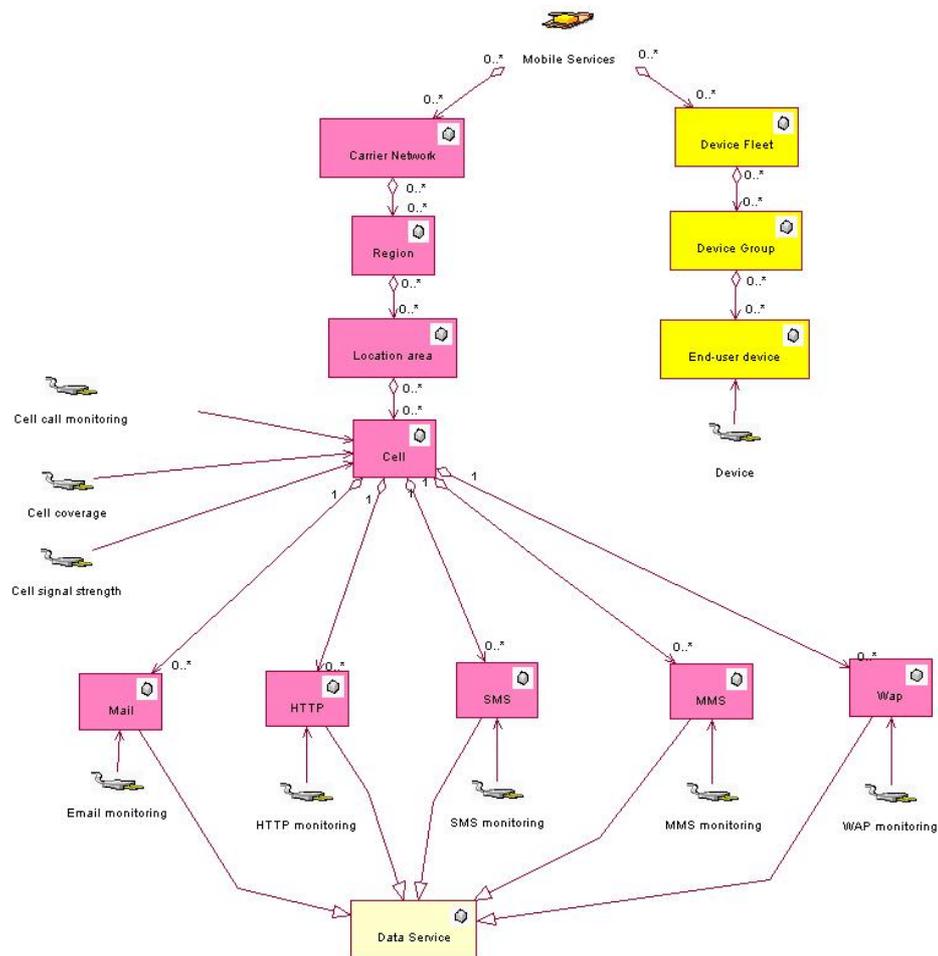
- Sequence diagrams binding the parameters of DFDs provided by a given SA to the primary parameters of the SCDs. This package is named Primary Bindings. A sequence diagram is identified by the name <SCD>-<SAname>, such as SMS-SMS monitoring binding, for example.
- Sequence diagrams specifying how secondary parameters are computed. This package is named Secondary bindings. A sequence diagram is identified by the name of the <SCD target> - <SCD source> of the bindings it specifies, such as Location - Cell.

### 3.3 Key points of the design

#### 3.3.1 MSE Value Pack service

- The MSE service has been designed as shown in the following class diagram.

Figure 22 - MSE class diagram



The MSE service comprises the following main components:

- **Carrier Network:** the carrier network would be used to model the service provider infrastructure (this includes the partner network infrastructure used when roaming).

- **Device Fleet:** the device fleet would be used to model devices accessing the services.

## 3.4 SQL Service Adapter

### 3.4.1 Data sources, and KPIs

### 3.4.2 SQL SAs deployed by the Value Pack

The following figure shows how each runtime component provided by the Value Pack is integrated into the SQM platform. These components are:

- Mediation database
- acquisitionMSE director
- SQL Service Adapter (SQL SA) embedded in the acquisitionMSE director

---

#### Note

The SQL SA is not the actual SA that the OpenView SQM provides to collect data on your physical service resources. The SQL SA retrieve data from the mediation database into which the Value Pack loads data collected in one day from a predefined set of resources used to build the Value Pack.

---

**Figure 23 - Value Pack runtime components**



## Solution building guidelines

### 4.1 Introduction

You can use the Value Pack as a starting point from which to develop your own solution.

In all cases, you must do at least the following when you transform the Value Pack into an operational solution:

- You must replace the SQL Service Adapters provided by the Mobile Subscriber Experience Value Pack with Service Adapters that collect KPIs for your own service resources.
- You must use the SLA Administration graphical interface to create the appropriate Service Instances and groups, customers, and SLAs for your own case.

If necessary, you can modify the Service Definitions via the Service Designer, and then load the new model into the SRM before instantiation. You may also need to redefine the Service Levels for your own case, using the SLA Administration graphical interface.

---

#### Note

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The Mobile Subscriber Experience Value Pack comes with a Service Instance auto discovery tool -- to discover and create automatically Service Instances (based on the Value Pack Service Model and the mediation database inventory). This tool can be used as an example when deploying the solution in a real environment. The auto-discovery script is available in the Unix package, at:

```
$STEMIP_SC_HOME/SolutionSet/MSE/Tools
```

---

### 4.2 Modifying the Mobile Subscriber Experience Value Pack SQL SA

In most cases, you can use the SQL Service Adapter provided by the Mobile Subscriber Experience Value Pack, but you must nevertheless customize so that it can connect to the database in which the KPIs for your own service resources are stored. You can do so using the SQL Service Adapter Toolkit provided with the HP OpenView Service Quality Manager. For details of how to use the SQL SA Toolkit to customize the SQL SA, see the *HP OpenView Service Quality Manager SQL Service Adapter Toolkit Installation, Configuration and User's Guide*. You can use the SQL SA Toolkit's graphical interface to define the mapping between the DFD parameters and the database's TABLE columns. The Value Pack includes the SQL SA toolkit project used to build the initial SQL SA. This project is defined in the file with the *.sqltk* suffix.

---

### Note

---

When you use the SQL Service Adapter Toolkit's graphical interface to modify the SQL SA projects provided by the Value Pack, you must set up the properties of the project at least to set your own project paths, and specify the JDBC connector parameters enabling you to access your KPI database.

---

In all other cases, you must replace an SQL Service Adapter provided by the Mobile Subscriber Experience Value Pack by a different type of Service Adapter.

# Troubleshooting Guide

This appendix describes basic methods you can use to check the condition of Value Pack components.

## Installation

You must check that the following Value Pack components are set up correctly on the Service Quality Manager platform:

- The mediation database must be populated and accessible.
- The Service Adapter provided by the Value Pack must be running.
- The Service Definitions and Service Instances must be registered in the Service Repository Manager.

In addition to checking these components, you can verify the contents of the following setup log file created when the Value Pack is set up:

```
$TEMIP_SC_VAR_HOME/trace/Setup_SolutionSet_MSE.log
```

## Service Repository Manager

### Diagnostic check

You can check whether the Service Repository Manager has correctly registered the Service Definitions delivered by the Value Pack, by entering the following commands. Each command must return the required definitions. Alternatively, you can use the SLA Administration graphical interface to browse these definitions.

- To check that all definitions required by the MSE Service Definition have been registered, enter the following command:

```
temip_sc_get_sd -sd MobileServices
```

- To check whether the Service Repository Manager has correctly registered the Service Instances, Service Levels and SLAs delivered by the Mobile Subscriber Experience Value Pack, you can either enter the following commands or use the SLA Administration graphical interface to browse the SLA:

```
temip_sc_get_sla -sd MobileServices
```

This command must return the contents of *HP SLA*, *iComp SLA*, *PhoneCom Accessibility SLA*, *PhoneCom Coverage SLA* and *PhoneCom Quality SLA* SLAs.

## Mobile Subscriber Experience Value Pack Service Adapters

### Diagnostic check

To check that the Service Adapters delivered by the Mobile Subscriber Experience Value Pack have been set up correctly, enter the *start director* command as follows:

```
temip_sc_start_director -plat slmv12 -dire acquisitionMSE
```

Next, check that all Service Adapters are running by entering the following command:

```
temip_sc_show_director -plat slmv12 -dire acquisitionMSE
```

The *MSE* application must be running.

## Mediation database

### Diagnostic check

Use an SQL browser to check that the following *VIEWS* are not empty:

```
MSE_DF_CELL_CALL_V;  
MSE_DF_CELL_COVERAGE_V;  
MSE_DF_CELL_EMAIL_V;  
MSE_DF_CELL_HTTP_V;  
MSE_DF_CELL_MMS_V;  
MSE_DF_CELL_SIGNAL_V;  
MSE_DF_CELL_SMS_V;  
MSE_DF_CELL_WAP_V;  
MSE_DF_DEVICE_V;
```

Use an SQL browser to check that the following *TABLES* are not empty:

```
MSE_FLEET_GROUP_MAPPING;  
MSE_REGION_LAI_MAPPING;
```