
OpenView Service Quality Manager



IP Multimedia Services Value Pack User's Guide

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Preface

This document describes the IP Multimedia Services 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 IP Multimedia Services; 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:

Bold	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.

Chapter 1

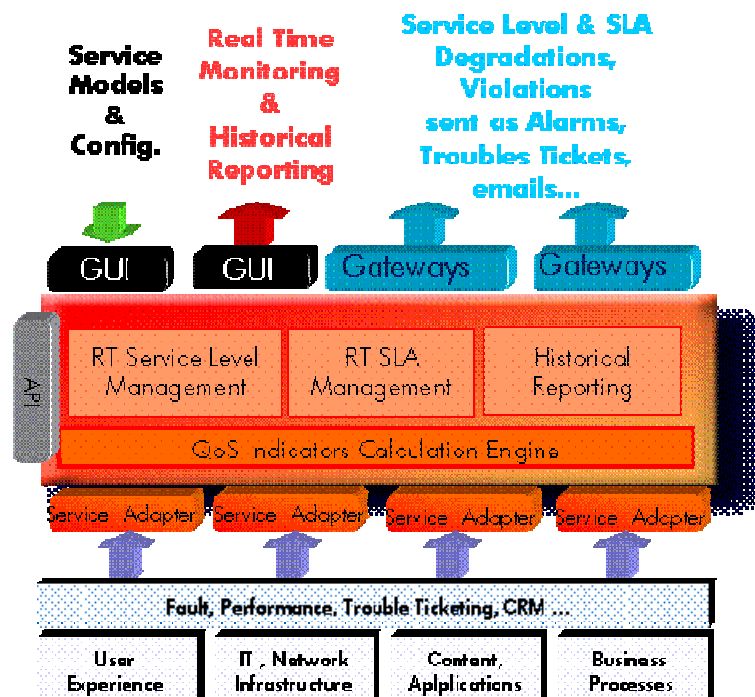
OV SQM IPMS Value Pack description

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 Telemanagement Forum (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).

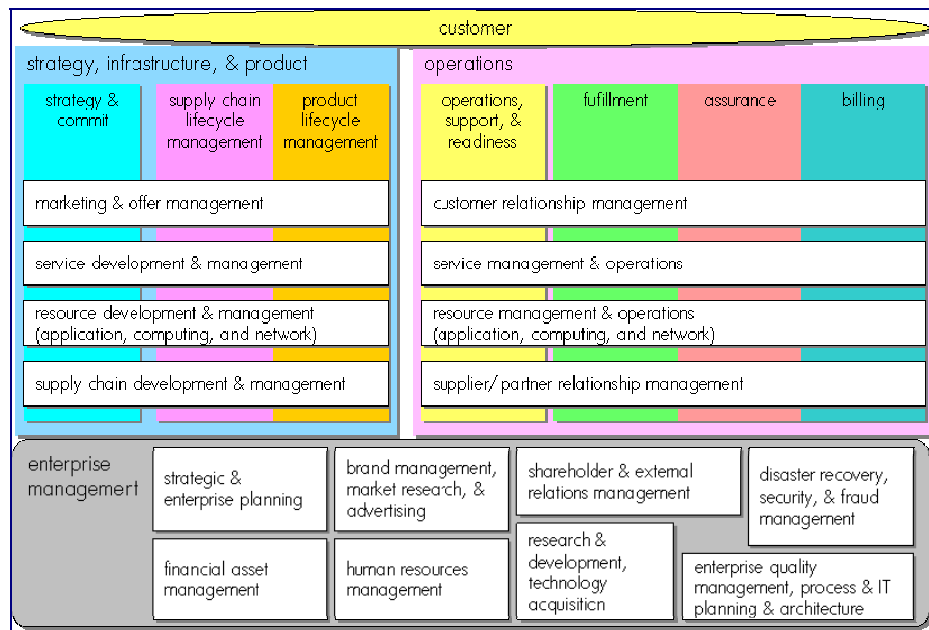


Figure 2 - eTOM – TeleManagement Forum

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.

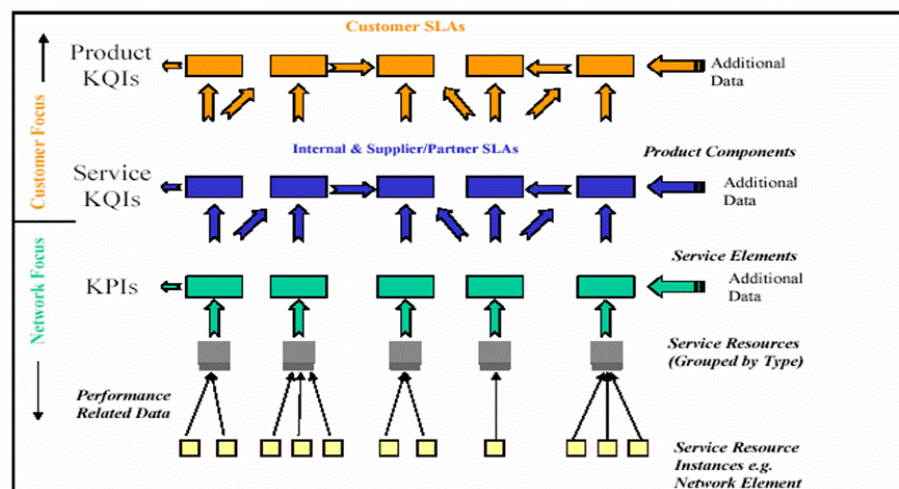


Figure 3 – Key Indicator Hierarchy (from TeleManagement Forum)

3. The 3rd 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 design, 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.

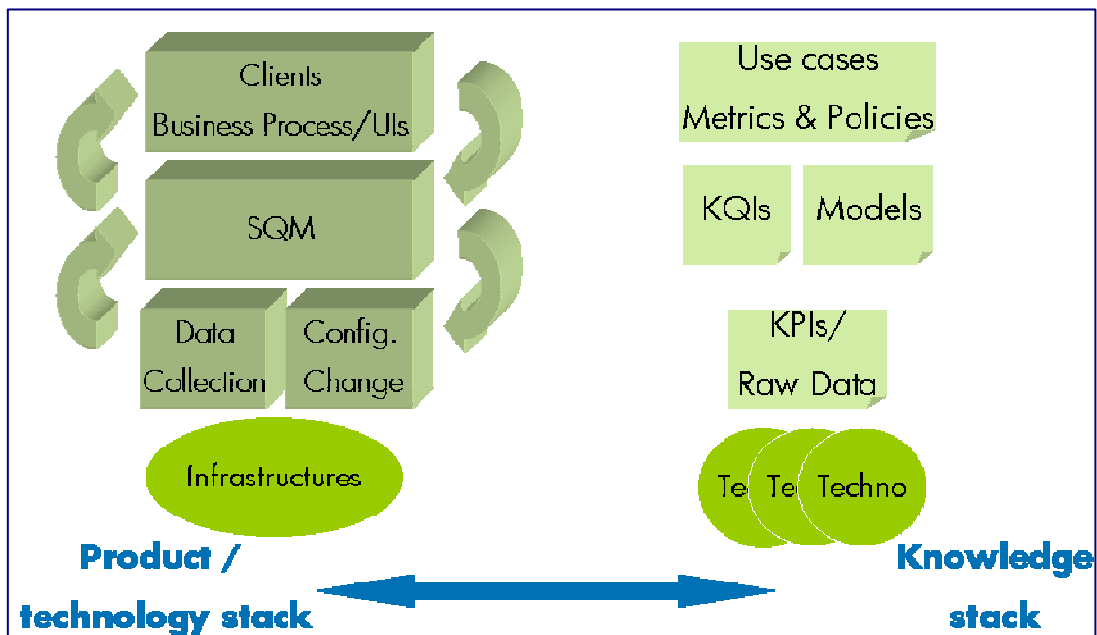


Figure 4 – OV SQM Value Pack solution analysis

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.

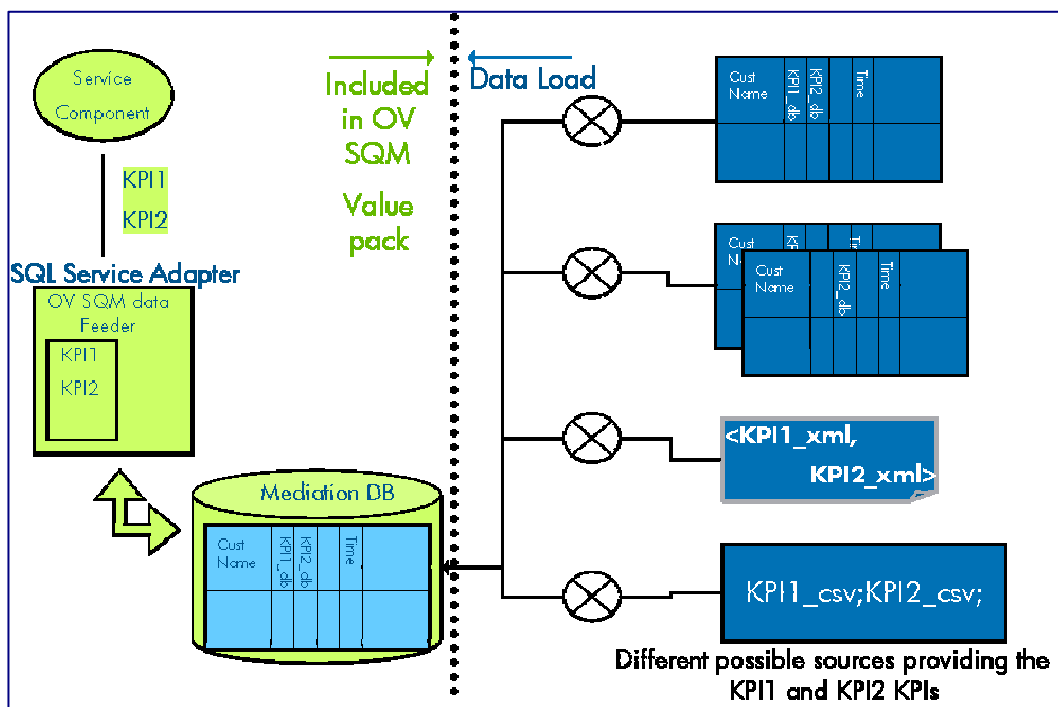


Figure 5 – OV SQM Value Pack: data collection through a mediation database

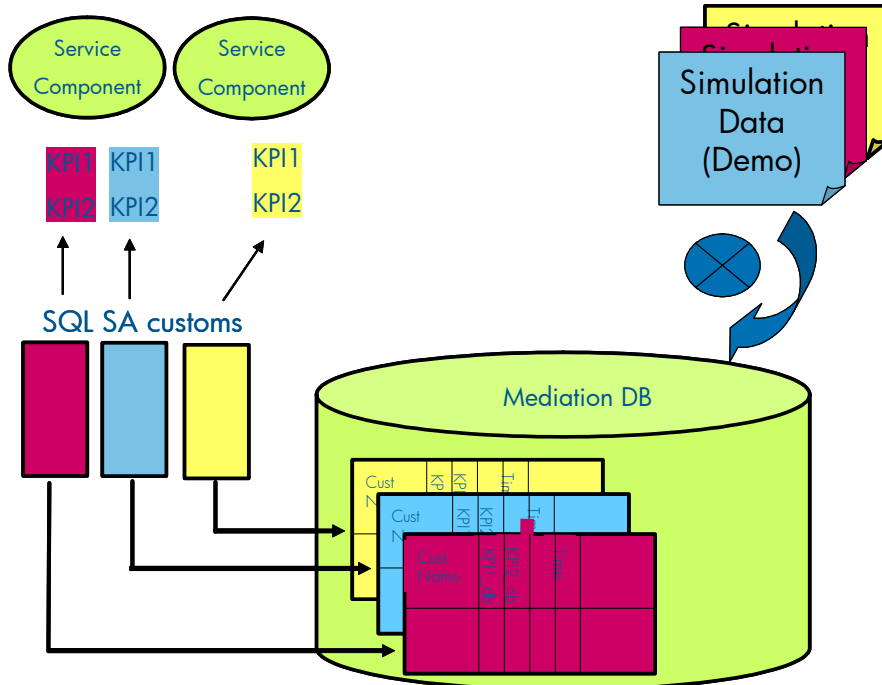
1.2.2.4 Validation / simulation data

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

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.

An OV SQM Value Pack provides a supplementary Business Objects universe and additional sample reports that are specific to the domain addressed by the value pack.

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
- 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 IP Multimedia Services Value Pack

1.3.1 IP Multimedia Services: key aspects regarding Quality of Service

An increasing number of service providers are pushing for the triple play of voice, video, and data over cable, fiber, or copper networks. Such services give the service provider the opportunity to reduce customer churn and increase revenue per customer. These broadband services, however, require the management and monitoring of different types of traffic with advanced QoS features.

Having established very high standard of quality for voice and television with traditional delivery networks, guaranteeing similar VoIP or IPTV quality across triple play deployments is now mandatory.

The OV SQM IPMS value pack provides a solution to monitor triple play SLAs, ensuring that voice, video and data applications run across service infrastructures within expected QoS objectives. Such QoS objectives would reflect what is considered an acceptable level of video or voice quality for common services as well as for dedicated subscribers (like Corporate accounts).

For a **Voice over IP**, quality objectives would for example meet the following generally accepted standards:

- Call Setup Delay: < 3 s
- Latency: < 150ms
- Jitter: < 10ms
- Packet Loss: 10**-5 BER

Within these QoS parameter limits, voice quality generally is given a MOS – Mean Opinion Score, the de-facto industry standard for measuring voice quality on a 1 to 5 scale – of 4.0 or higher, which indicates a good quality.

For **Video services**, despite the lack of standards, key indicators can be identified to characterize the most prevalent transport techniques used for Video on Demand (VOD) and IPTV (Broadcast TV over IP). Video on Demand streams are typically unicast UDP/IP flows with video payload that is MPEG2 Transport Stream (ISO 13818). Broadcast TV over IP streams are typically multicast UDP/IP flows with MPEG2 TS payload.

Video over IP flow quality measurements can for example involve IP cumulative jitter, packet loss and MPEG TS errors. More synthetic indicators that combine different simple quality measurement are provided with the IPMS value pack to help assessing and monitoring the end-user perception of the Video services.

1.3.2 IP Multimedia Services management challenges

1.3.2.1 New business models

- Different service and content providers
 - Multiple subscription plans
 - Voice, data, content, usage, pre-paid
- A service management solution needs to cope with the complexity of the IPMS value chain providing a clear picture of boundaries of responsibilities through dedicated key indicators measuring each contribution to the delivery and maintenance of services.

1.3.2.2 Handling increase in complexity

- New services
 - Multi-vendor
 - Multi-technologies
- A service quality management solution needs to hide that technical complexity to Operators

1.3.2.3 Integrate multiple domains and operational models

- Access networks (cable, broadband)
- Content Delivery Networks
- Core networks

- Data centers, Voice, Video applications
- Voice NOC <=> IP NOC

➔ A service quality management solution needs to include and combine different technologies and domains in one single exhaustive and consistent view that will be shared by all players.

1.3.2.4 Leveraging OSS applications

- Customer & service centric
- Service impact management (end to end view)
- Root-cause analysis
- Task automation
- Scalability & availability

➔ A service quality management solution should help leveraging different layers of Operational and Business systems already existing by taking various specialized levels of contribution from each system to help providing a consolidated view of the operations.

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.

Area	supplier/partner relationship management	resource management & operations	service management & operations	customer relationship management
Goal	Monitoring of the quality of VAS as provided from a Third Party	Monitoring of the quality delivered by service resources / components	Monitoring of the quality of end-to-end services	VAS monitoring from customer perspective incl. full service life cycle (es. provisioning, trouble shooting, ..)
Users	Interco/ 3PP Management Center (NMC)	Network Operation (NOC)	Service Operations Center (SOC) – VAS NMC	Customer Service Center (CSC)
Typ. KQIs	Content accessibility Service availability Response time	Resource availability Response usage, performance	Service accessibility Service availability Response time	E2E Service accessibility E2E Service availability TTR
Solution Capabilities	- 3PP or Interco SLA monitoring -	- Trend Analysis & Reporting on targetted NE - Integration with network trouble ticketing	- Service modeling in XML language - Service Level Management based on IT/network KQIs	SLA Management on subs. network and non-network KQIs Customer Trouble Shooting integration
Business objectives	Monitor what suppliers provide to back-up customer SLA	Optimize use and repair of critical service resources / components	Ensure resources as used consistently to provide expected Service Levels	Enable pro-active management of gold customers

Figure 7 – OV SQM solution users

1.3.4 OV SQM IP Multimedia Services Value Pack software add-on

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

1.3.4.1 Service Models

The IPMS value pack contains a service model that can be deployed for the monitoring of SLAs for Voice (VoIP), Video (IPTV, Video on Demand) or data services over IP Networks.

The Service model combines and organizes a set of service components that all together provide an end-to-end view of triple play services over IP.

The service components include:

- The Multimedia delivery infrastructure that can be organized in geographies
- Security Servers
- DNS
- Video Servers / caching servers
- Call Servers
- Application servers (POP3, SMTP, FTP, HTTP)
- Servers / Cluster of Servers
- IP Phones
- Charging Gateways
- Subscribers private networks (like corporate sites)

With there respective KQIs, as further defined in 1.3.5.

1.3.4.2 Service Levels and basic SLAs

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

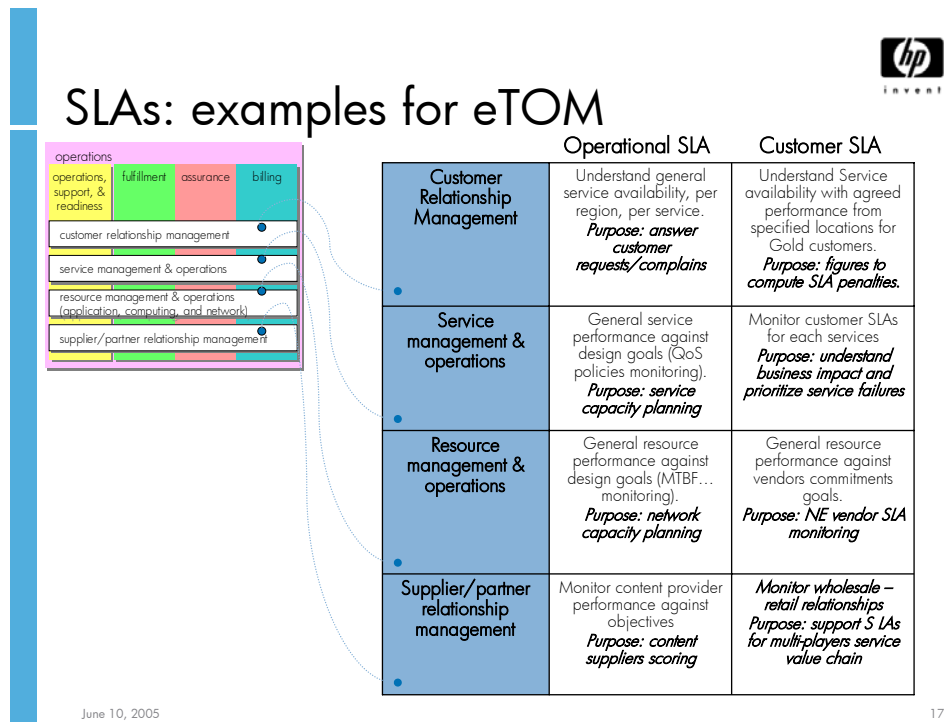


Figure 8 – OV SQM Value Pack: data collection through a mediation database

Some typical SLAs for Corporate IP Telephony, Video download and IPTV 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 triple play services using HP OV Service Quality Manager IPMS value pack
- The scenarios are based on IPTV Services —Video Downloading and Broadcast TV-- and IP telephony services that are delivered to end users over an IP network
- They highlight the role of each player in the value chain with simple business model scenarios and different types of SLAs that can be deployed
- They highlight the complexity of the service infrastructure to support new applications and the need for the overall integration within a full OSS environment.

Example 1: Sample business model for User/Corporate IP Telephony SLA

- The service provider wants to offer a SLA to large corporations that have multiple premises and offer IP Telephony services
- The requirement to manage and report on multiple customer enterprise SLAs is necessary.
- SLA will have objectives that consist of service quality, service availability, unsuccessful calls, time to repair, time to provision, etc.

SLA name: Corporate Gold IP Telephony Class of Service

- Service: IP Telephony
 - IP Telephony is provided over a corporate IP VPN between the corporate locations
 - HP Headquarters location is more weighted than other locations
- Service level (gold) metrics:
 - Average MOS (voice quality) across all (weighted) sites: target is average MOS value > 4
 - Ratio of unsuccessful calls (%): target is ratio <2%
 - Service Availability: calculated by OV SQM from voice quality and successful calls over monthly periods (5x7, Office hours): target service availability is 99%
 - Time to Repair: target is 95% of customer calls cleared within 2 hours
- SLA results need to be reported monthly and weekly

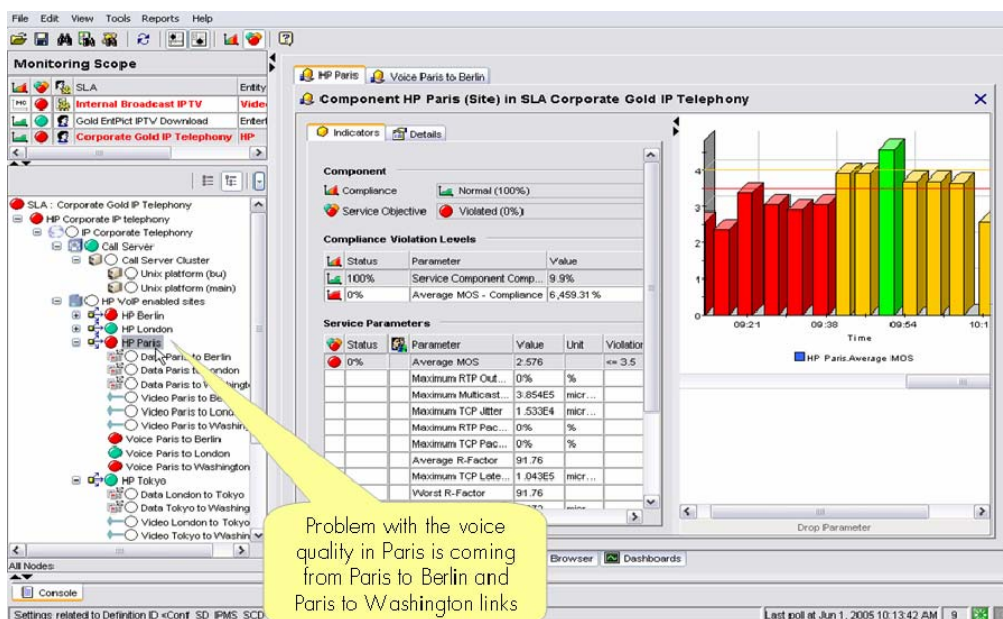


Figure 9 – OV SQM real time monitoring user interface

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, service QoS, customer care, inventory, provisioning, fulfillment, CPE and other key components

SLA name: Service Provider COS Objectives w/customer

- Name: Service Provider Service Objectives
 - Property: Content type = TV
 - Property: Access method = IP Multicast from POP
- Service level
 - Average QoS V-Factor (video quality as perceived by the end user) degradation when crossing the service provider networks: target is diff (in/out) V-Factor <5%
 - Intrinsic QoS values:
 - jitter<100ms and packet loss <3%,
 - time to change/zap channels <1sec
 - Service Availability: calculated by OV SQM from customer complaints and known performance degradation and faults (7days, 24 hours): target service availability is 99.9%
- SLA results need to be reported monthly and weekly

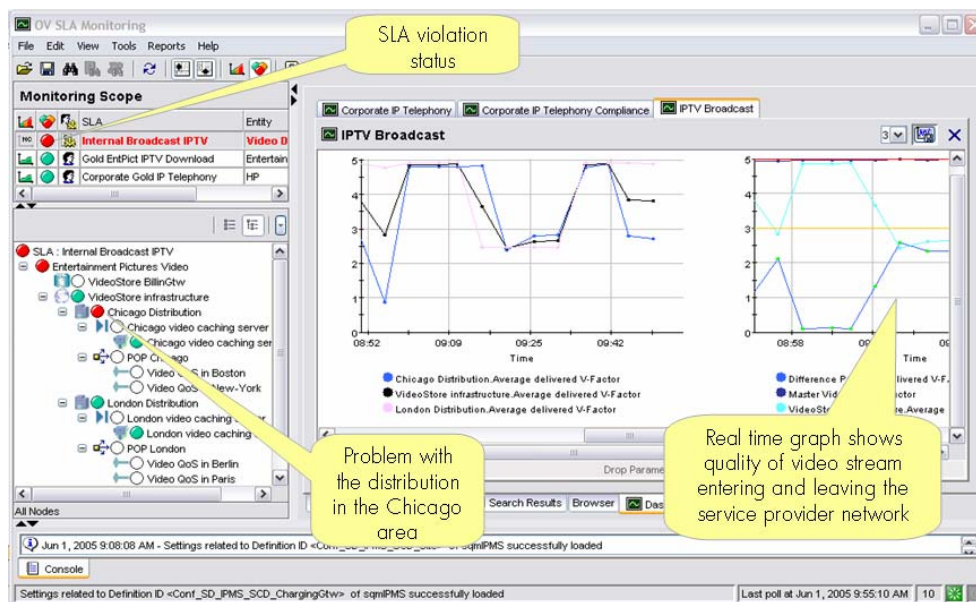


Figure 10 – OV SQM real time monitoring user interface: IPTV Operational SLA

Example 3: Sample business model and Media Partner SLA

- Media partner makes its media content available to be downloaded to a personal video recorder in the home
- Telco service provider bills the user for the digital broadcast TV service and for each video downloaded and pays a fee to the content partner for each download
- If the video is not downloaded successfully within 4 hours, then the user will get a refund
- Back to back agreement by which the Telco service provider will request refunds be paid by the media partner for all failures due to the media partner and the media partner will request penalties if the Telco service provider fails to deliver the video adequately and impacts their brand image.

SLA name: *Innovative Entertainment Video Download Service*

- Name: Content Service: Entertainment Pictures Video
 - Property: Media Partner name = Innovative Entertainment Ltd
 - Property: Content type = video
 - Property: Access method = trickle the packets to the Personal Video Recorder (PVR) at the premise using
- Service level (Gold)
 - Service/Content Availability: calculated by OV SQM from accessibility, # customer complaints and ratio of unsuccessful streaming videos
 - # of customer complaints registered by service provider (percentage of downloads)
 - Guarantee video download delivery in <4 hours
- SLA results need to be reported monthly and weekly

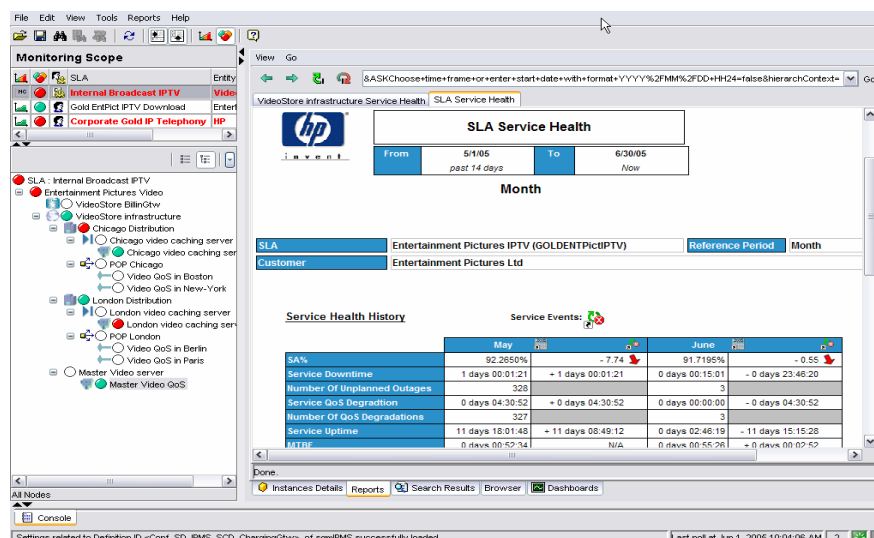


Figure 11 – OV SQM user interface: SLA embedded reports

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. IPMS Value pack specific reports

The IPMS value pack provides examples of IPTV and IP Telephony specific reports that are included together with the associated specific Business Objects universe in the software kit.

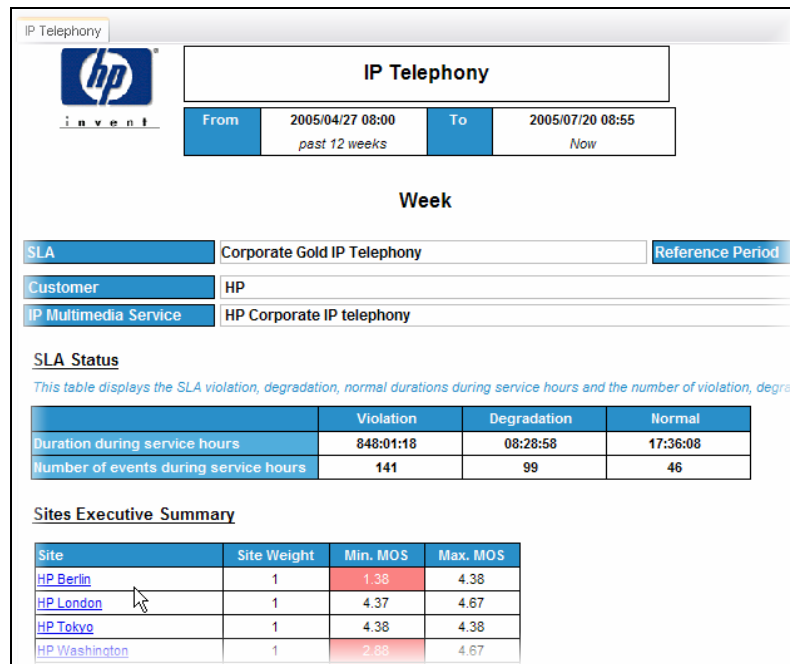


Figure 12 – Example of report for IP telephony

1.3.5 OV SQM IP Multimedia Services 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 (ITU-T Rec. I.350, Eurescom P806 GI) to characterize the different aspects of service management. Those KPIs will be either Technical KQIs or Non Technical KQIs.

Technical KQIs:

- **Speed** characterizes the temporal aspects of QoS associated with a function, like data transfer or user authentication, showing time related efficiency characteristics. Speed parameters are defined on the basis of statistics made on sets of “duration times”. However, the function may, or may not, be realized with the desired accuracy.
- **Accuracy** characterizes the degree of correctness with which a given function is realized. Accuracy parameters are defined on the basis either of the ratio of incorrect realizations on total attempts, or of the rate of incorrect realizations during an observation period.
- **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 Multiple 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. Customer Trouble Ticketing System

Collected Indicator(s)	Comment
Number of Cust TT opened:	Number of tickets currently opened against a specific item or area (region). Depending upon the information included in the tickets, this indicator can help measuring MTTR, Time to close customer calls ...

1.3.5.2.2. End-to-End Performance System (active probes)

For each of the DNS, ICMP, RADIUS and MediaStream server:

Collected Indicator(s)	Comment
DNS: Availability Response Time Resolved	Please refer to the “HP OpenView Internet Services - User’s Reference Guide” about OVIS related indicators.
ICMP: Availability Response Time Throughput Min Response Max Response Packet Loss	Please refer to the “HP OpenView Internet Services - User’s Reference Guide” about OVIS related indicators.
RADIUS: Availability Response Time (DNS Setup Time + Data) Transfer Time Setup Time Throughput Transfer Time	Please refer to the “HP OpenView Internet Services - User’s Reference Guide” about OVIS related indicators.
MediaStream Availability Response Time Total response time for the	Please refer to the “HP OpenView Internet Services - User’s Reference Guide” about OVIS related indicators.

Streaming Media service (Setup Time + Connect Time + Server Response Time + Transfer Time). Setup Time Throughput Connect Time Server Response Time Transfer Time Packets Received Packet Loss Latency Congestion Stream Setup Time	
IPPM Probe: Min, max, mean latency Latency standard deviation Min, max mean jitter Jitter standard deviation Number of packets lost Latency histogram Latency underrun Latency overrun IPDV histogram IPDV underrun IPDV overrun Number of bad timestamps Number of received frames Number of received bytes Latency 10th percentile IPDV (Ipdv10th) percentile Latency inverse percentile IPDV inverse percentile Number of packets out of order Number of duplicated frames Min, max, mean TTL	KPIs defined in the IPPM RFC: - RFC 2330: Framework for IP Performance Metrics - RFC 2679: One-way Delay Metric for IPPM - RFC 2680: One-way packet loss metric for IPPM - RFC 2681: Round-trip delay Metric for IPPM - RFC 3393: IP Packet Delay Variation Metric for IPPM - RFC 3432: Network Performance Measurements with periodic streams
VoIP Probe: MOS R-Factor Mean Jitter Network loss probability Nb packets out of sequence Receive rate RR packets Lost Current send RTP data rate	End to End VoIP KQIs based on RTP RTCP unicast probes.
Video Probe: Number of packets in sequence Jitter maximum Jitter minimum Maximum lost episode length Video Multicast first time Video multicast join time Nb frames out of sequence Jitter discards	End to End Video KQIs based on MPEG2 probes

Cumulative B frame Count Cumulative I frame count Cumulative episodes of packet loss Network loss probability Cumulative P frame count Video Perceived Quality Indicator	
---	--

1.3.5.2.3. Application servers

Collected Indicator(s)	Comment
CALL SERVER: Worst Dial Tone delay Worst Post Dial delay Average Dial to ring delay Worst Dial to ring delay Average Call duration Average Dial Tone delay Average Post Dial delay Worst Call Release duration Average Call Release duration Percentage successfully established calls Ineffective Call Attempts Ratio Number of active calls Average Post-pickup delay Worst Post-pickup delay Nb Rejected Unauthorized Call Average Call setup duration Customer average call duration Customer Average dial tone delay Number of customer active calls Customer unsuccessful calls ratio Customer Average call setup duration	KPIs can alternatively be collected from mediation servers or Servers MIBs/Log files.
Video Server: Successful download ratio Unsuccessful download due to network ratio Unsuccessful download due to server ratio Customer successful download ratio	KPIs can alternatively be collected from mediation servers or Servers MIBs/Log files.

1.3.5.3 Additional Computed /aggregated Key Quality Indicators

Example of Key Quality Indicators as aggregated for a site (as a collection of destinations) or for the Multimedia infrastructure (as a collection of multimedia servers / functions):

Computed Key Quality Indicator(s)	Comment
<p>Site / Group of - (Customer or Network):</p> <p>Maximum TCP Jitter</p> <p>Maximum TCP Latency</p> <p>Maximum TCP PacketLoss</p> <p>Maximum TCP OutOfOrder</p> <p>Average MOS</p> <p>Average R-Factor</p> <p>Maximum JoinFirstReceive</p> <p>Maximum LeaveToLastReceive</p> <p>Maximum RTP Latency</p> <p>Maximum RTP PacketLoss</p> <p>Maximum RTP OutOfSequence</p> <p>Average Video Perceived Quality</p> <p>Worst Video Perceived Quality Indicator</p> <p>Worst R-Factor</p> <p>Maximum RTP Jitter</p> <p>Maximum MulticastJoinTime</p> <p>Number of TroubleTickets opened</p> <p>Site weighted average MOS</p>	
<p>Multimedia infrastructure:</p> <p>Average R-Factor</p> <p>Dropped calls ratio</p> <p>No dial tone failure ratio</p> <p>Unreachable location ratio</p> <p>Ineffective call attempts ratio</p> <p>Average call succes ratio</p> <p>Average DNS Lookup Duration</p> <p>Average calls setup duration</p> <p>Average DNS availability</p> <p>Number of TroubleTickets opened</p> <p>Number of security rejected call requests</p> <p>Average delivered VPQ indicator</p> <p>Average provided VPQ indicator</p> <p>Difference Provided-Delivered VPQ indicator</p> <p>Video accessibility ratio</p> <p>Telephony accessibility ratio</p> <p>Replica Video accessibility ratio</p>	

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.

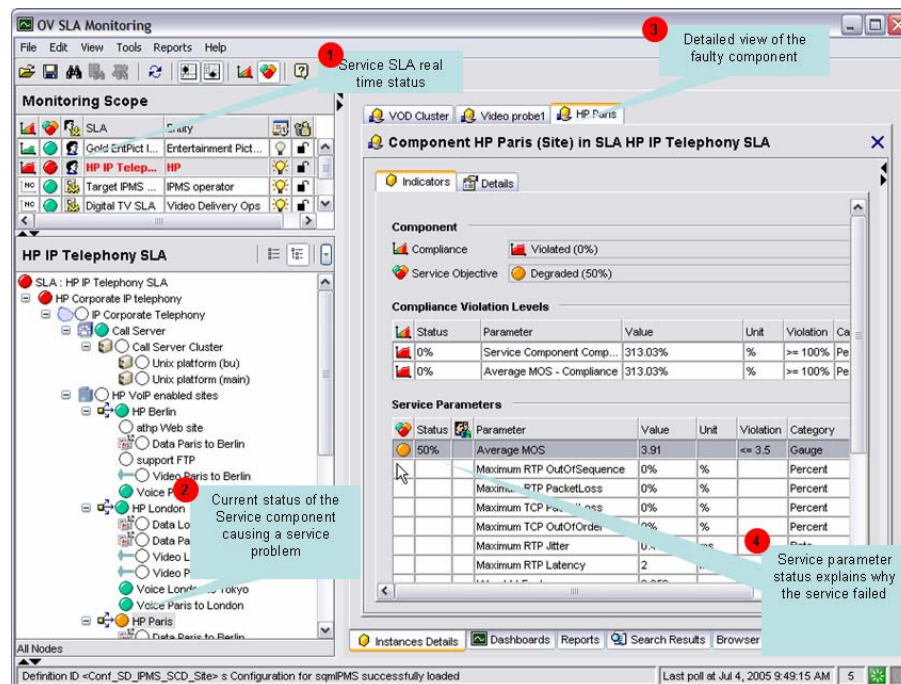


Figure 13 – HP OpenView Service Quality Manager interface

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.

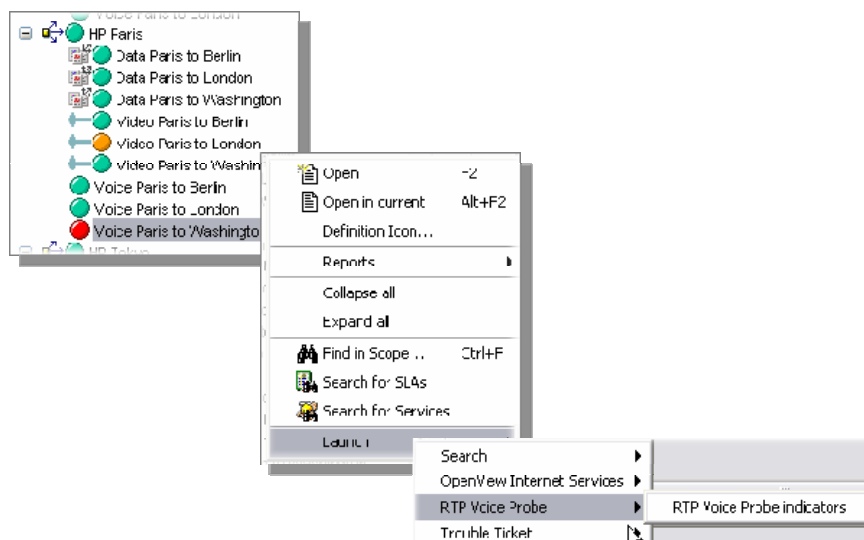


Figure 14 – Service component tree contextual menu

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.

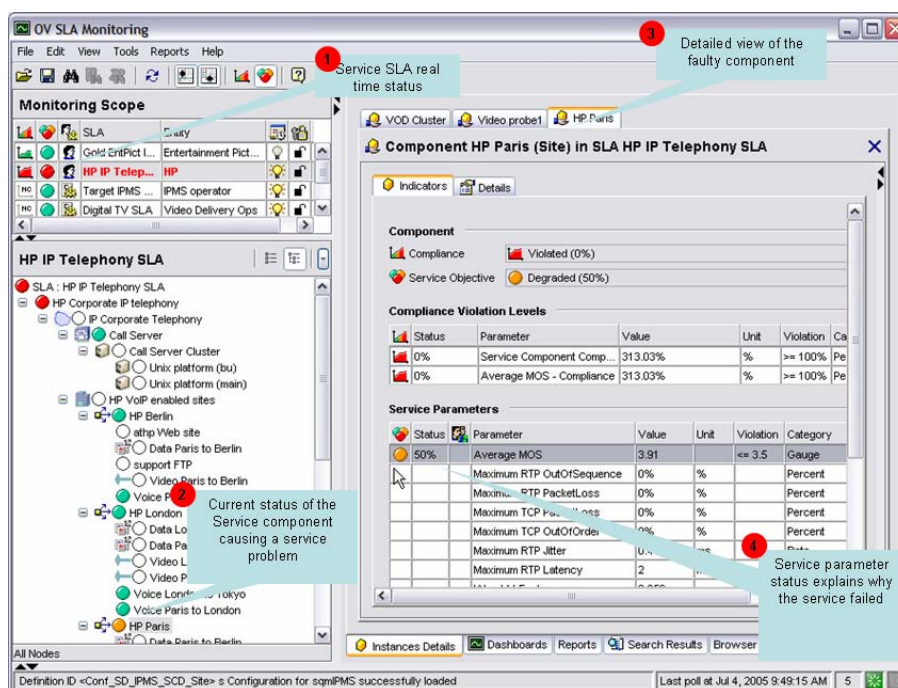


Figure 15 – Monitoring Scope example window

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

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

1. 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.

- 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 *Average_MOS* aggregate indicator, by looking at the history and current status of each primary indicator used in calculating the high-level *Average_MOS* aggregate indicator, as shown in the following figure.

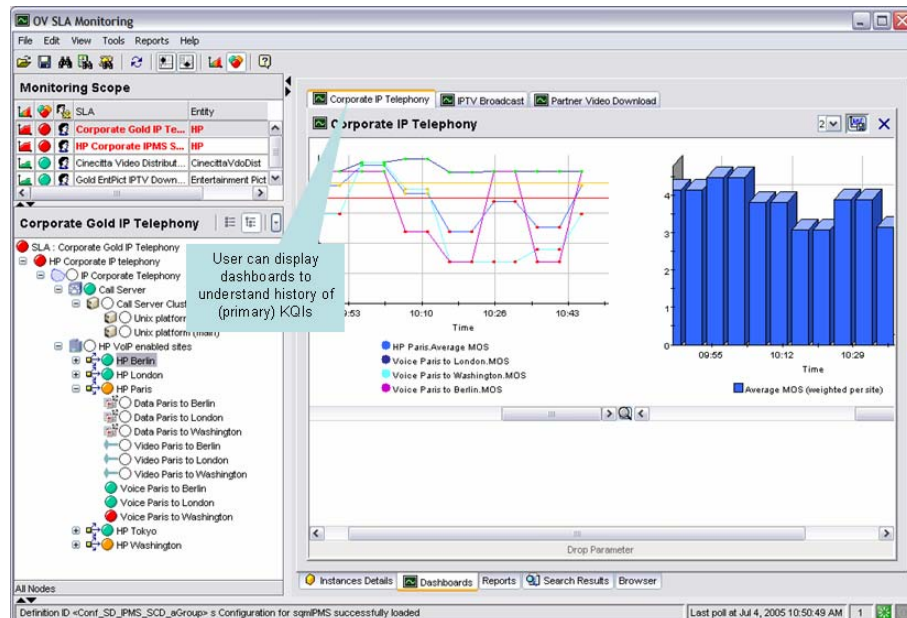


Figure 16 – Average_MOS dashboard

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.

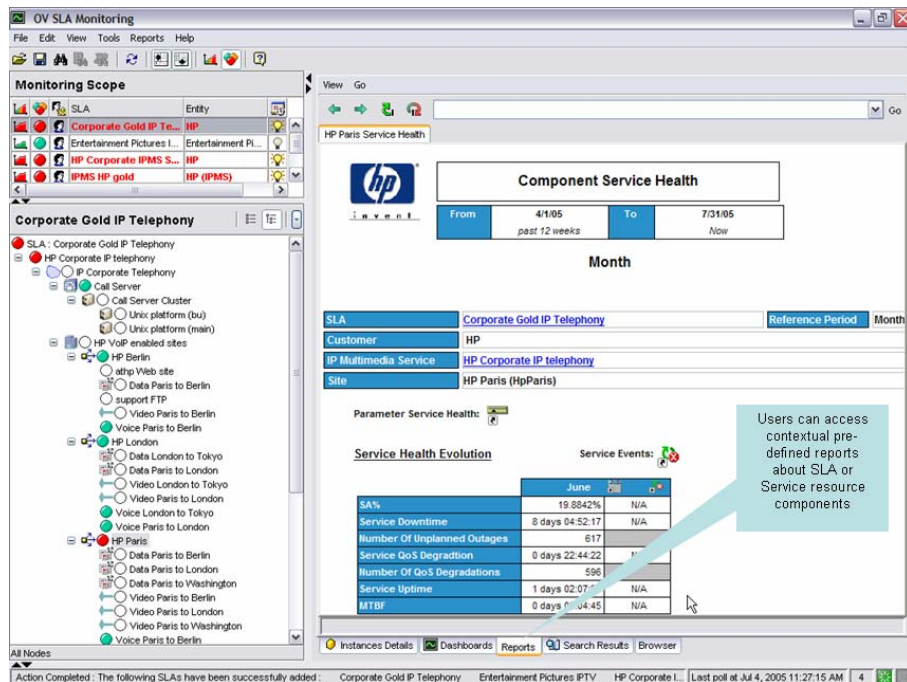


Figure 17 – OV SQM SLA reports window

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 (such as IT network components, for example), as shown in the following figure.

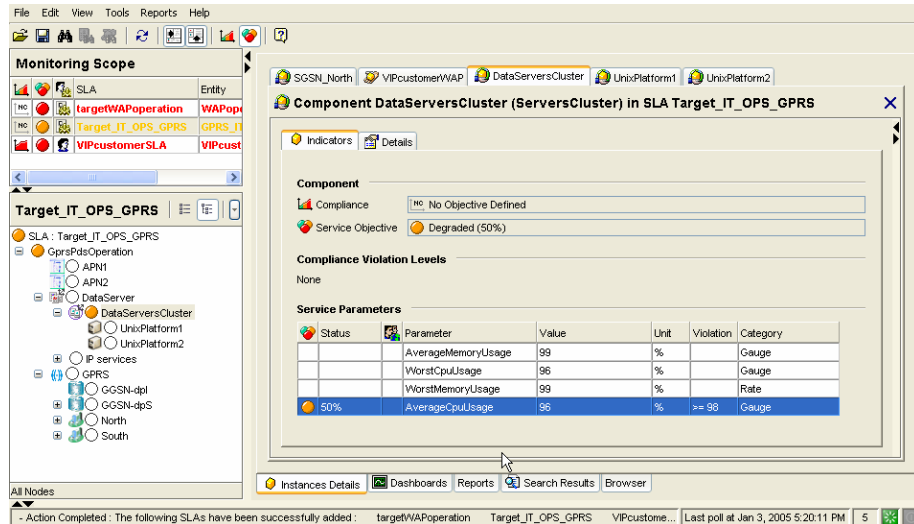


Figure 18 – Service component parameter window

HP OpenView Service Quality Manager's real-time monitoring dashboards help you to analyze complex or aggregate indicators (such as the average CPU usage, for example) through changes in the primary indicators (such as system CPU usage on specific network components, for example), as shown in the following figure.

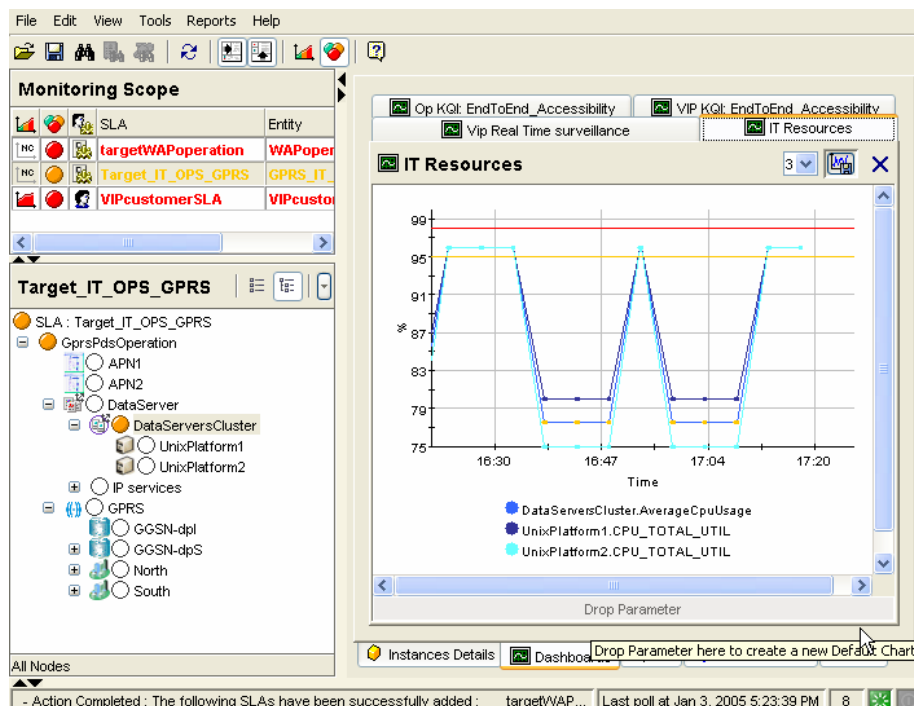


Figure 19 – IT Resources window

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.

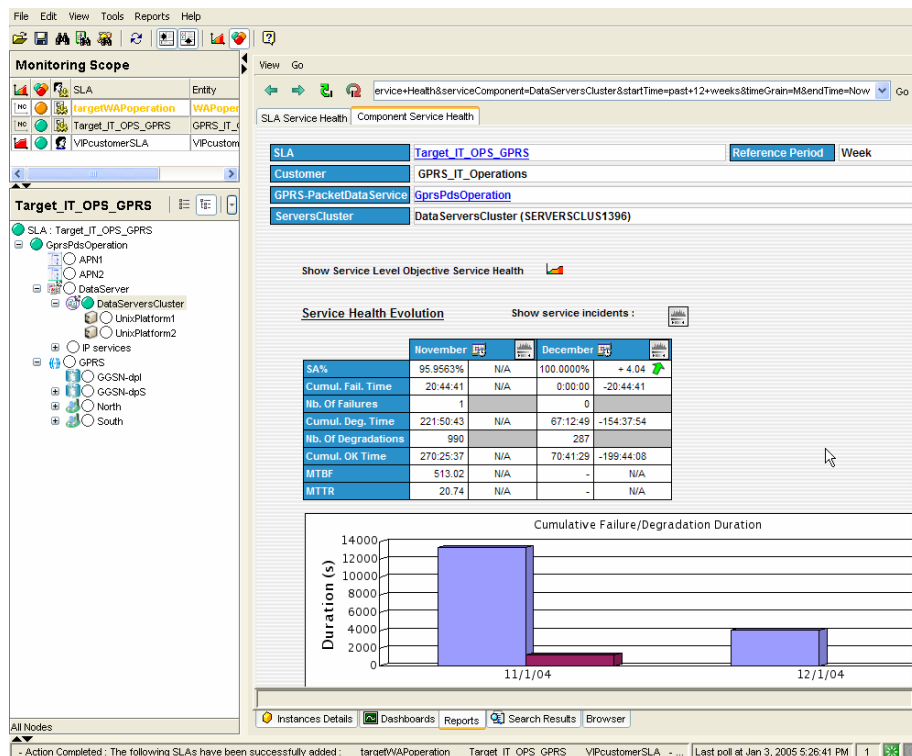


Figure 20 – SLA Service Health window

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.

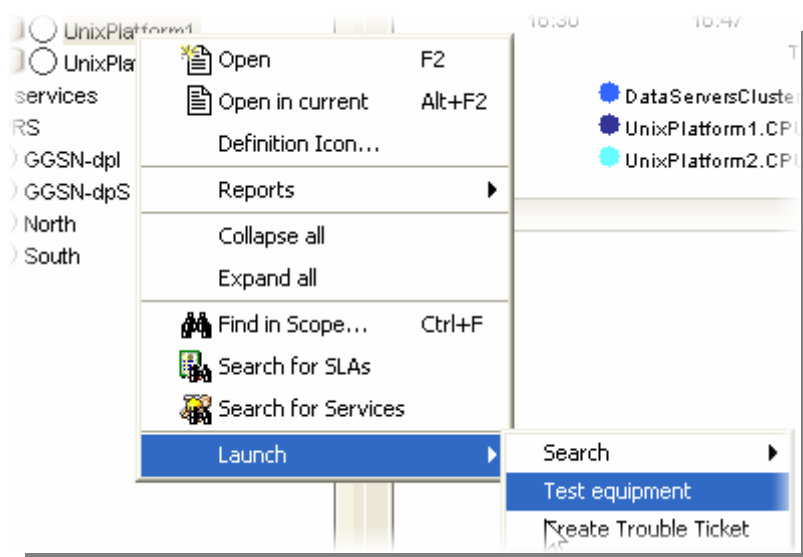


Figure 21 - 'Launch' contextual menu

Chapter 2

Setting up the OV SQM IPMS 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 (SQMSAGTWCOMMON), and the SQL Service Adapter Runtime V1.2 (SQMSADB)
- 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 SL Monitoring graphical interface and the SL 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 33.

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):

```
$TEMIP_SC_HOME/SolutionSet/IPMS/populate_sqlsa_db
```

Data and SQL scripts are contained in the following directories:

```
$TEMIP_SC_HOME/SolutionSet/IPMS/Database/  
.../IPMS  
.../dpQ
```

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

```
$TEMIP_SC_HOME/SolutionSet/IPMS/SQLSA/  
.../IPMS  
.../dpQ
```

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

```
$TEMIP_SC_HOME/SolutionSet/IPMS/setup_solution
```

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

```
$TEMIP_SC_HOME/SolutionSet/IPMS/load_definitions  
$TEMIP_SC_HOME/SolutionSet/IPMS/load_instances
```

Their input data is contained in the following directories:

```
$TEMIP_SC_HOME/SolutionSet/IPMS/Definition/  
.../DFD  
.../ExprDef  
.../ServiceDef  
.../ServiceLevel  
  
$TEMIP_SC_HOME/SolutionSet/IPMS/Instance/  
.../Customer  
.../Profile  
.../SI  
.../SIG  
.../SLA
```

- The script that cleans up the Value Pack:

```
$TEMIP_SC_HOME/SolutionSet/IPMS/cleanup_solution
```

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

```
$TEMIP_SC_HOME/SolutionSet/IPMS/Reporting/  
.../Univers  
.../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\IPMS\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\IPMS\Doc\ModelDesign
```

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

```
%TEMIP_SC_HOME%\SolutionSet\IPMS\Model\Designer
```

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

```
%TEMIP_SC_HOME%\SolutionSet\IPMS\Model\CustomExpressions\java
```

```
%TEMIP_SC_HOME%\SolutionSet\IPMS\Model\CustomExpressions\plsql
```

- The IPMS 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\IPMS\Reporting\  
... \Univers  
... \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 IP Multimedia Services Value Pack, as **root** user.

Installing the kit

To install the Unix portion of the IP Multimedia Services 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*.

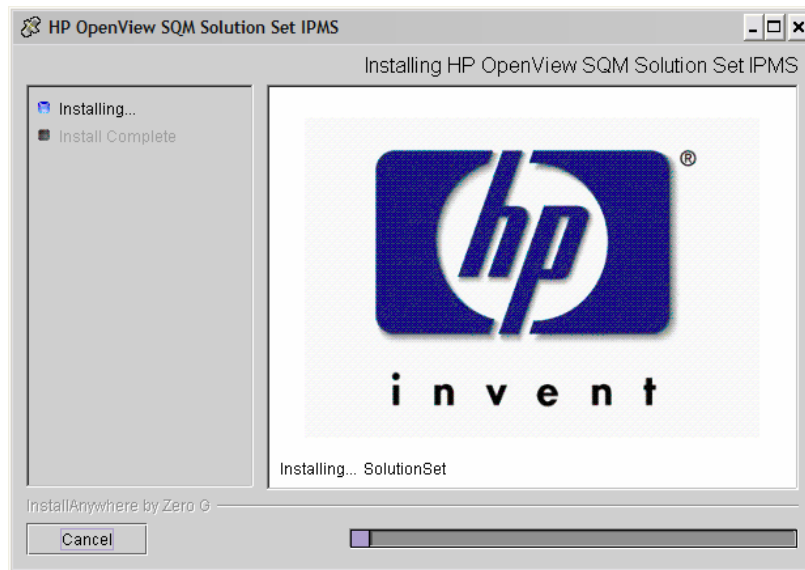
```
# cd $TEMIP_SC_VAR_HOME  
# . $TEMIP_SC_VAR_HOME/temip_sc_env.sh
```

- Insert the IP Multimedia Services Value Pack CD-ROM into your CD-ROM drive, and then execute *SQMSSETIPMS-1.20.02.bin*

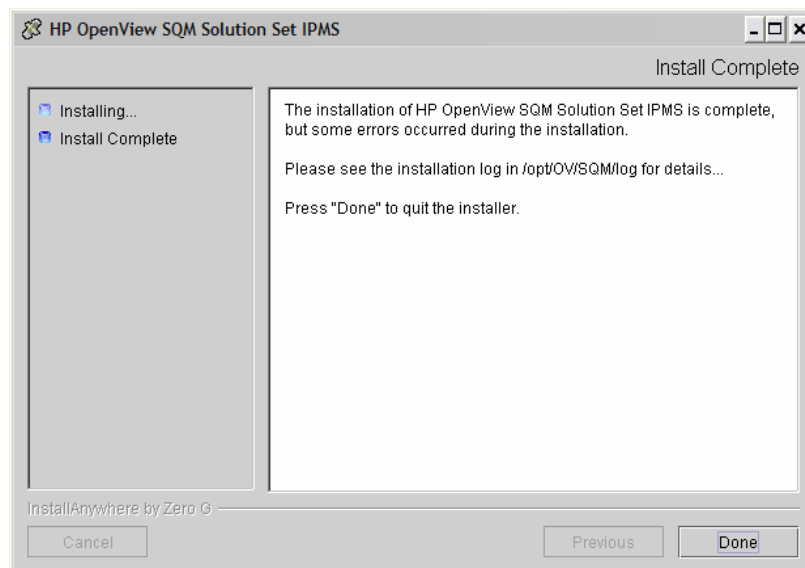
The following output is displayed.

Note

All the following windows are labeled “SQM Solution Set IPMS”, which is an alias of the “IP Multimedia Services Value Pack”.



When the Unix portion of the IP Multimedia Services Value Pack has been installed, the following screen is displayed.



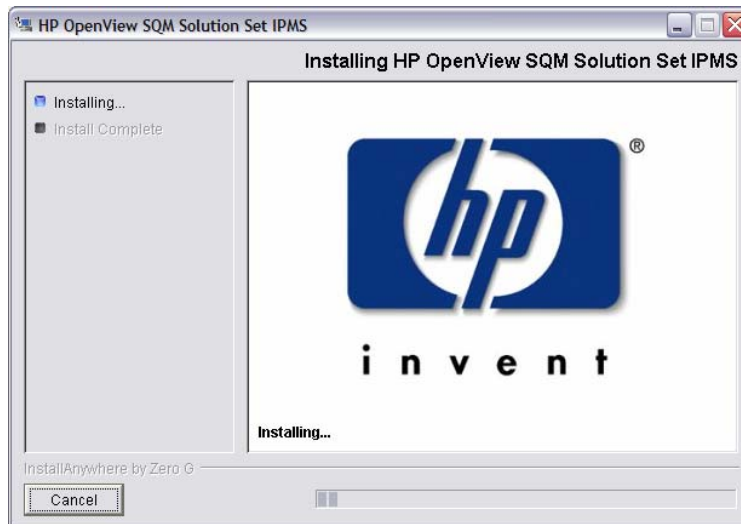
Click **Done** to end the installation process on the Unix platform.

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

To install the Windows portion of the HP OpenView Service Quality Manager IP Multimedia Services Value Pack kit, do the following.

1. Insert the IP Multimedia Services Value Pack CD-ROM into your CD-ROM drive, and then open the SQM-1.20.00\Windows folder.
2. Run the *SQMSSETIPMS-1.20.02.exe* installer.

The following output is displayed:



When the Windows portion of the IP Multimedia Services 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 IP multimedia services value pack specific reports

The installation and setup of IPMS 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 pre-requisite setup phase.

2.3.3.1 IPMS Value Pack reports installation on the Reporting Server

1. **Copy the WI Reports** on the Web Server Personal Web Intelligence documents are stored under a user specific folder created in your WebI node's distribution and in the specified cluster.

Copy the delivered IPMS Value Pack reports into WI SQM Reporting user folder (default: `sqmadm`):

Unix command:

```
cd $BO_HOME/nodes/<node>/<cluster>/storage/user/sqmadm
cp $TEMIP_SC_HOME/SolutionSet/IPMS/Reporting/Reports .
```

Windows command:

```
copy %TEMIP_SC_HOME%\SolutionSet\IPMS\Reporting\Reports\*  
%BO_HOME%\nodes\<hostname>\<cluster>\storage\user\sqmadm
```

2. Configure the IPMS Universe.

The OV SQM IPMS 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\IPMS\Reporting\Univers to find the IPMS.unv universe.
7. Click on the Open button.
8. The Export Universe window is displayed with the chosen universe.
9. Select the IPMS 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.

To test that the reports have been successfully installed, use the following URL:

http://reporting_server_name:port_number/SQMReporting/servlet/reporting/test

Where the reporting server name and apache port are the one are already configured to access the WebI Infoview portal.

3. Update Tomcat configuration.

The deployed SQMReporting Web application needs to be updated with the new IPMS Value Pack Reports definition. For this, it is necessary to:

- ✓ Edit the SQMReporting web application report definition file:

File on Windows: %TOMCAT_HOME%\webapps\SQMReporting\WEB-INF\classes\report_definition.xml

File on Unix: *\$TOMCAT_HOME/webapps/SQMReporting/WEB-INF/classes/report_definition.xml*

- ✓ Augment the WebI Server file with the IPMS report definitions highlighted in the file:

\$TEMIP_SC_HOME/SolutionSet/IPMS/Reporting/report_definition.xml (on Unix), or

%TEMIP_SC_HOME%\SolutionSet\IPMS\Reporting\report_definition.xml (on Windows).

Copy paste into the Tomcat original file, all entries

from the keyword "*<!-- IP MULTIMEDIA SERVICE STARTS HERE -->*"

to the keyword "*<!-- IP MULTIMEDIA SERVICE ENDS HERE -->*".

4. Restart Tomcat/Apache/ WebI Server.

After all these updates, it is necessary to restart Tomcat/Apache and WebI Server applications (please refer to OV SQM Reporting Configuration Guide for more information)

2.3.3.2 Configure the SQM SLA Monitoring launch menus

To launch the reports from SQM SLA Monitoring User Interface, it is necessary to configure the SLA Monitoring user's environment on the SQM UI Server.

The following file need to be updated (located on the SQM Server, in *\$TEMIP_SC_VAR_HOME/UI/UIServer/users/config*). The IPMS Value Pack entries are highlighted (with keywords "*START OF IPMS UPDATE*" and "*END OF IPMS UPDATE*").

Note: For the particular user *sqmIPMS*, this configuration is done automatically by the value pack setup on HP-UX

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 each SQL Service Adapter that collects data from the mediation database, and then register 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 SPDM	(spdm)	[2]
- TeSC SRM	(srm)	[3]
- TeSC Datamart production	(dmprod)	[4]
- TeSC Datamart staging	(dmstag)	[5]
- TeSC SQL SA	(sqlsa)	[6]
- TeSC BO repository	(borepos)	[7]
- Exit	(terminate the session)	[e]

```
Please enter the database you want to install:
```

1. Select *sqlsa* [6] to create the mediation database.

The *temip_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/IPMS/populate_sqlsa_db
```

This script loads the data that has been collected from each DFI used by the IP Multimedia Services 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 IP Multimedia Services 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 IP Multimedia Services 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/IPMS/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 IP Multimedia Services Value Pack Runtime license

Before you run the HP OpenView Service Quality Manager IP Multimedia Services Value Pack, you must configure the SQM-VPACK-IPMS license.

The IP Multimedia Services 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 IP Multimedia Services Value Pack

Once you have executed the *setup_solution* script, you can run the acquisition director. The IP Multimedia Services Value Pack director is called *acquisitionIPMS*.

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-source the *\$TEMIP_SC_VAR_HOME/temip_sc_env.sh* OpenView SQM environment file before you restart the OpenView SQM kernel and start the *acquisitionIPMS* director.

To run the HP OpenView Service Quality Manager IP Multimedia Services Value Pack director, do the following.

Log on as **sqmadm** user.

1. Execute the following command.

```
# temip_sc_start_director -plat slmv12 -direc acquisitionIPMS
```

This enables you to monitor the statuses of Services and SLAs provided by the IP Multimedia Services Value Pack, using the SL Monitoring graphical interface.

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

2.4.6 Configuring the HP OpenView SQM platform to run the IP Multimedia Services Value Pack

2.4.6.1 Predefined monitoring user profile

The IP Multimedia Services 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 **sqmIPMS**. 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 IP Multimedia Services 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 Service Adapters provided in the IP Multimedia Services Value Pack are as follows:

- IPMS SA: 5 minutes

- dpQ SA: 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 IP Multimedia Services 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 IP Multimedia Services Value Pack from the Service Repository Manager by executing the following HP-UX script:

```
# $TEMIP_SC_HOME/SolutionSet/IPMS/cleanup_solution
```

2.6 Uninstalling the IP Multimedia Services Value Pack

2.6.1 Uninstalling the IP Multimedia Services Value Pack from HP-UX

Note:

Before you uninstall the IP Multimedia Services Value Pack, you must execute the *\$TEMIP_SC_HOME/SolutionSet/IPMS/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 IP Multimedia Services Value Pack”, above.

Logging on

To log on to the HP-UX computer in order to uninstall the IP Multimedia Services 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
```

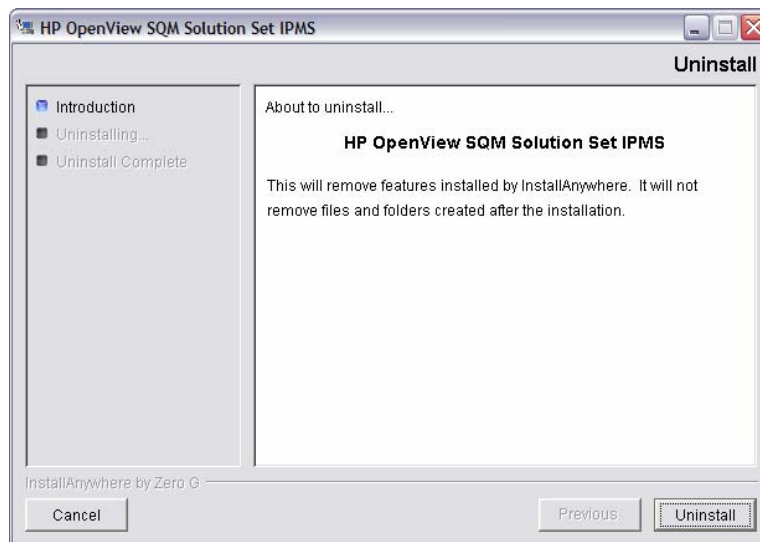
Uninstalling the kit

On the OpenView SQM platform on which the IP Multimedia Services Value Pack has been installed, do the following.

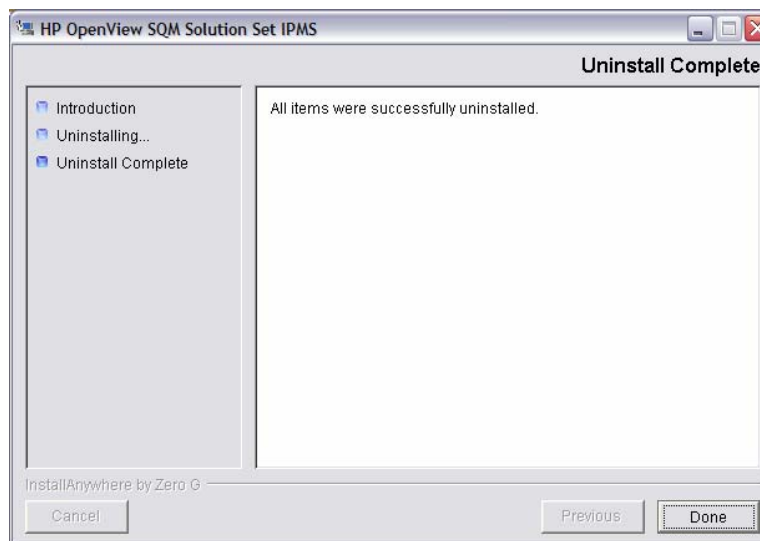
2. Enter the following commands.

```
# cd $TEMIP_SC_HOME/SolutionSet/IPMS/Uninstaller
# ./Uninstall_IPMS
```

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.



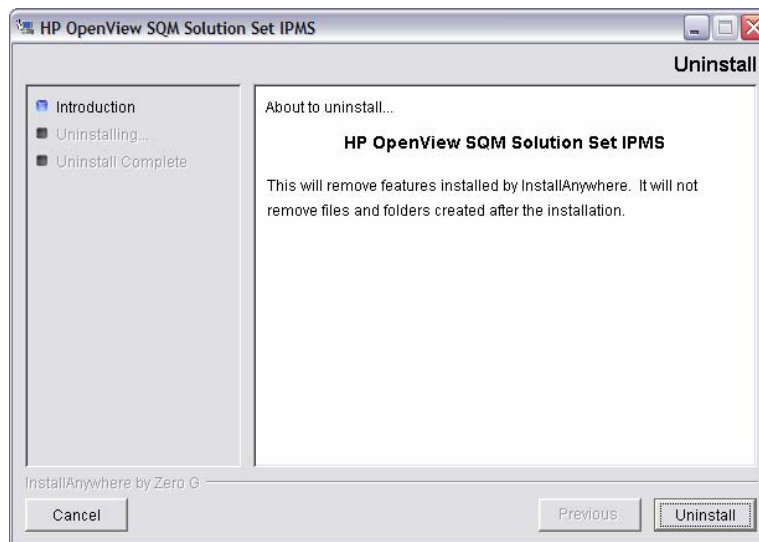
4. To finish, click **Done**.

2.6.2 Uninstalling the IP Multimedia Services Value Pack from Windows

To uninstall the IP Multimedia Services Value Pack from Windows, do the following.

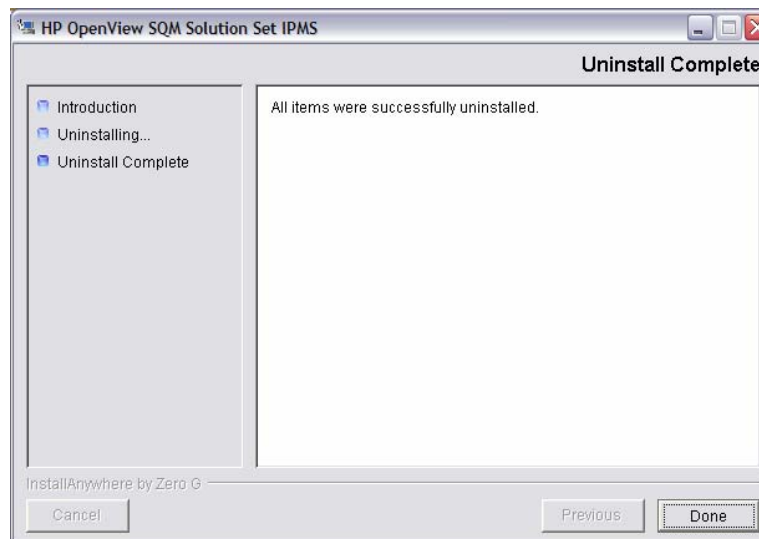
From the Windows *Start* menu, select *All programs* → *HP OpenView* → *SQM* → *SSET* → *IPMS* → *Uninstall*.

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

IP Multimedia Services Value Pack model design

The aim of this chapter is to help you to navigate through the IP Multimedia Services Definitions provided in the IP Multimedia Services 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 IP Multimedia Services 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 IP Multimedia Services Value Pack contains one generic IP multimedia service (*IPMS*) that serves as a basis for deployment of any combination of voice, video and/or data services.

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 *IPMS* that the IP Multimedia Services Value Pack installs in the

`%TEMIP_SC_HOME%\SolutionSet\IPMS\Model\Designer` directory are:

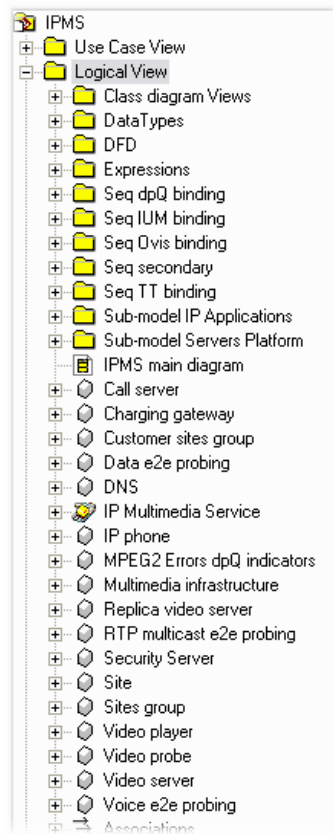
- `IPMS.mdl`

3.2.1 Package description

As shown in the following figure, the upper level of each Service Designer project provided by the IP Multimedia Services Value Pack contains the following packages:

- *Main IPMS package* for the IPMS service design
- An Expressions package containing predefined SQM expressions and global custom expressions.

Figure 22 - IPMS service design packages



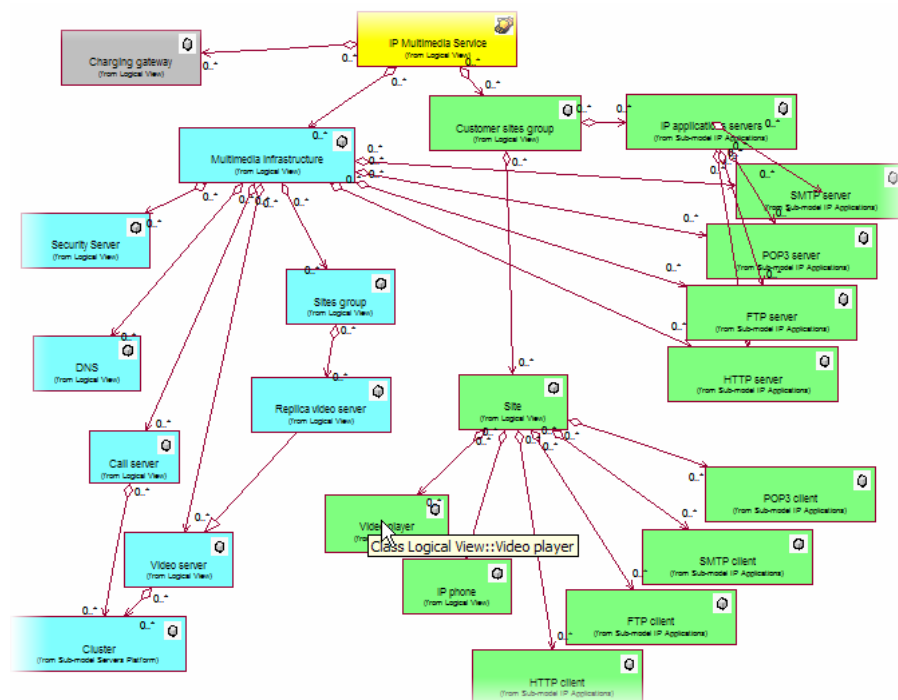
- The Class Diagram View Package simply provides a simplified presentation of a subset of the generic service components that relate to a particular domain: IP telephony, Video Download, IPTV.
- Any data types specified in the current petal. This package is named DataTypes. The InternetServices petal contains a DataTypes package, in which the enumerated AvailabilityOvis parameter is declared, for example.
- Data Feeder Definitions (DFDs) provided by a given Service Adapter (SA), such as the DFD IPMS 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. Those packages are named Seq <SAnam> binding, such as Seq dpQ binding, for example.
- Sequence diagrams specifying how secondary parameters are computed. These packages are named Seq secondary.
- ⇒ A sequence diagram is identified by the name of the SCD target of the bindings it specifies.
- Sub-model Packages provide: the generic service includes another level of packages used to group together objects that are characterized by the same type of KPI provider. For instance, KPIs bound to the IP Applications SCD are provided by the various OVIS probes.

3.3 Key points of the design

3.3.1 Generic IPMS service

- The IPMS service provided on a multimedia infrastructure has been designed as shown in the following class diagram.

Figure 23 - IPMS simplified class diagram



The IPMS service comprises the following main components:

- Multimedia infrastructure
- The multimedia infrastructure would be used to model the service provider public infrastructure. It includes main servers involved in triple play kind of services.
- Customer sites group
- The Customer sites group would be used to model sites accessing the multimedia services. Then a site typically represents a subscriber or enterprise location. End to end measurements are collected between two sites.

3.3.2 IPMS for Triple Play services

This section shows examples of service that can be deployed using the components available with the main IPMS package. Those examples are included in the IPMS value pack. They are used to support the example SLAs as described in section [1.3.4.2](#).

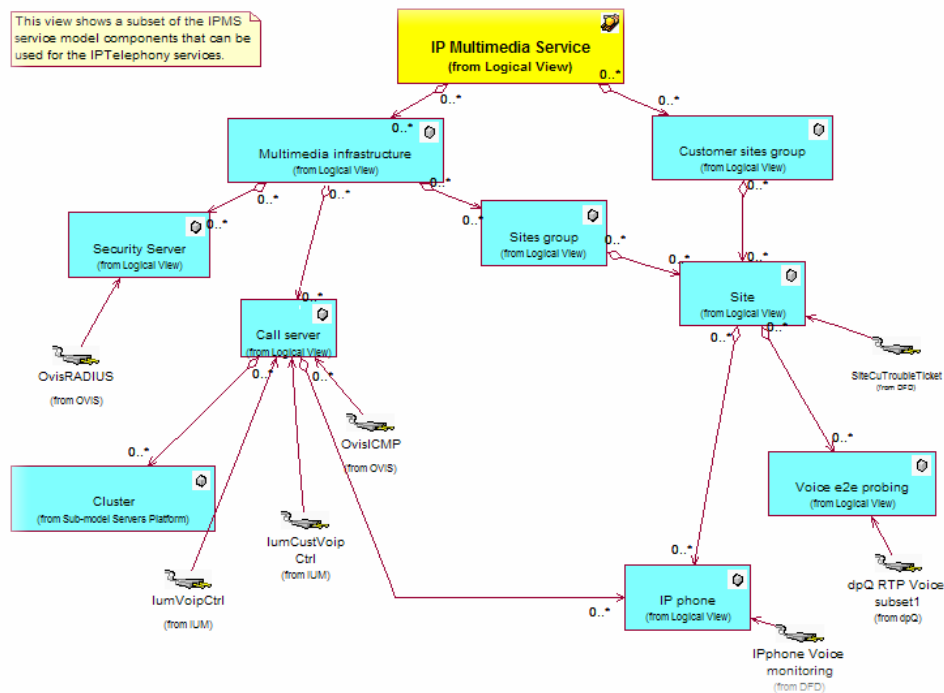
3.3.2.1 IP Telephony / VoIP service model

The IP telephony service is using a subset of the elements that build the IPMS service:

- The voice service related servers on the multimedia infrastructure: Call Server and Security Server

- Subscriber sites with IP phone.

Figure 24 - IP telephony class diagram

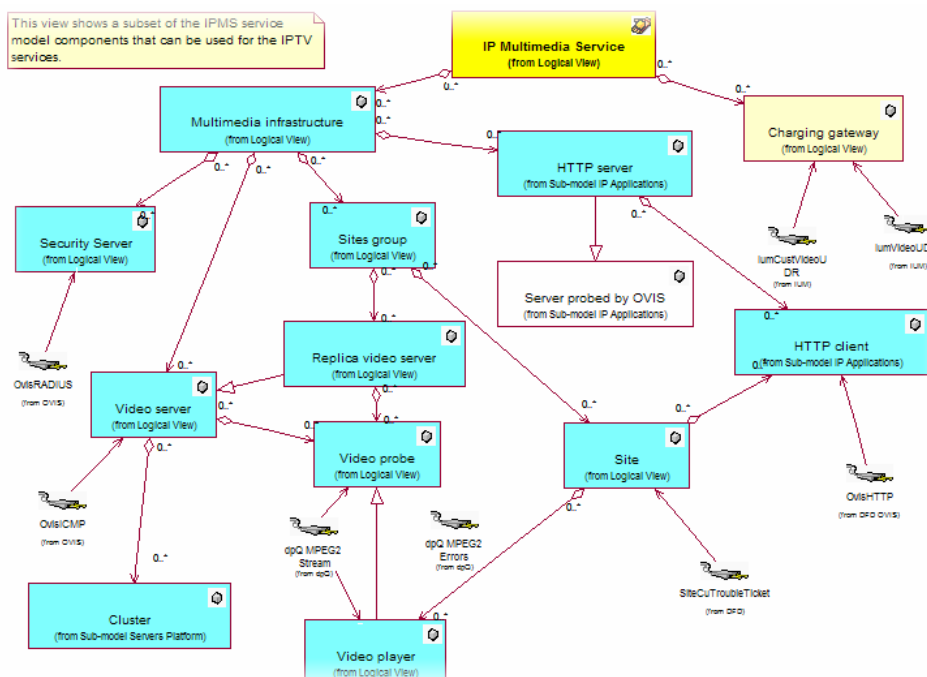


3.3.2.2 IPTV service model

The IPTV service involves components that are necessary to model a video content distribution network as well as the video player that represent the end-user device that receives the video stream.

End-user metrics attached to the components aggregate both transport (RTP) and encoding (MPEG2) related measurements.

Figure 25 - IPTV service class diagram

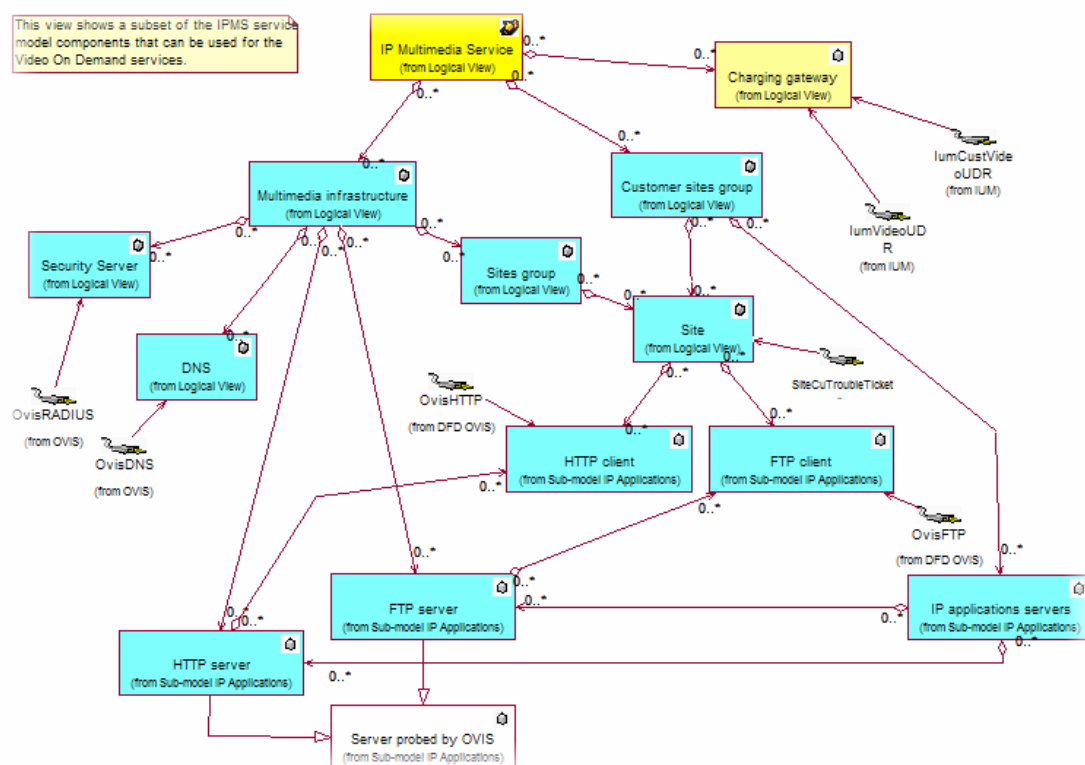


3.3.2.3 Video Download service model

The Video download service involves components to manage asynchronous request for video download.

Typical end-user metrics will be collected through the mediation or charging gateway and may relate to customer service (typ. Customer compliant management).

Figure 26 - VoD class diagram



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:

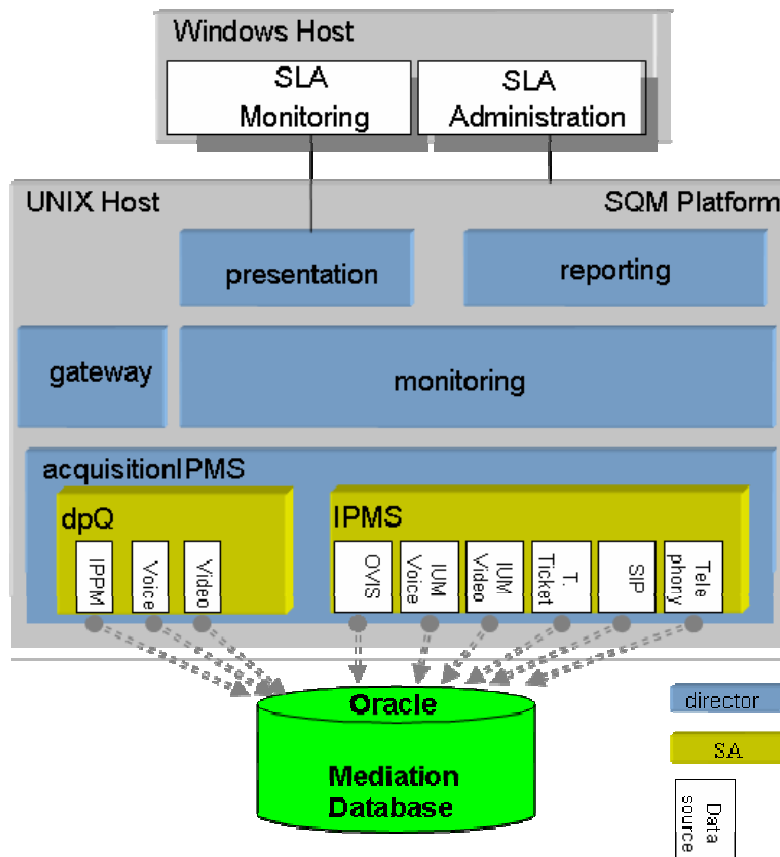
- Mediation database
- acquisitionIPMS director
- SQL Service Adapters (SQL SAs) embedded in the acquisitionIPMS director

Note

These SQL SAs are not the actual SAs that the OpenView SQM provides to collect data on your physical service resources. The SQL SAs 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. The InternetServices SA

installed by the Value Pack is effectively an image of the actual OVIS SA, for example.

Figure 27 - Value Pack runtime components



Several SQL SAs are used to collect the KPIs described in the previous paragraph from the Value Pack mediation database in which the live data collected in one day is loaded for the Service Instances and their Service Component Instances deployed by the Value Pack. These SQL SAs, which were built using the SQM SQL SA toolkit, are:

- **dpQ SA:** The custom SQL SA that collects from the mediation database the Voice, Video and Data KPIs provided by a 3rd party probe vendor.
- **IPMS SA:** The custom SQL SA that collects from the mediation database the KPIs provided by the OVIS, IUM, Trouble Ticket System, SIP server and IP Phones.

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 IP Multimedia Services Value Pack with Service Adapters that collect KPIs for your own service resources.
- You must use the SL Administrator 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 SL Administrator graphical interface.

4.2 Modifying the IP Multimedia Services Value Pack SQL SA

In most cases, you can use the SQL Service Adapter provided by the IP Multimedia Services 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 IP Multimedia Services 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_IPMS.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 SL Administrator graphical interface to browse these definitions.

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

```
temip_sc_get_sd -sd IPMS
```

- To check whether the Service Repository Manager has correctly registered the Service Instances, Service Levels and SLAs delivered by the IP Multimedia Services Value Pack, you can either enter the following commands or use the SL Administrator graphical interface to browse the SLA:

```
temip_sc_get_sla -sd IPMS
```

This command must return the contents of *Cinecitta Video Distribution CoS Objectives*, *Innovative Entertainment Video Download Service* and *HP Corporate Gold IP Telephony* SLAs.

IP Multimedia Services Value Pack Service Adapters

Diagnostic check

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

```
temip_sc_start_director -plat slmv12 -dire acquisitionIPMS
```

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

```
temip_sc_show_director -plat slmv12 -dire acquisitionIPMS
```

The *IPMS* and *dpQ* applications must each be running.

Mediation database

Diagnostic check

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

```
ipmsGLANCE;  
ipmsCMSIUM;  
ipmsCUCMSIUM;  
ipmsOVIS;  
ipmsCUTT;  
ipmsRTCP;  
ipmsVIUDR;  
ipmsCUVIUDR;  
DPQ_VOIP;  
DPQ_IPPM;  
DPQ_Video;  
DPQ_MPEG2_STREAM;
```