HP Operations Dashboard

for the Microsoft® Windows® operating system

Software Version: 2.10

RealTime Health View Concepts Guide

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Contents

1 Before You Begin

Introduction

This document discusses some of the important concepts used in HP Operations Dashboard RealTime Health View (RealTime Health View). It explains how to monitor the health of your managed services by using RealTime Health View.

Audience

This guide is intended for service managers, service owners, service users, administrators, business staff, and operations staff who administer or use the HP Operations Dashboard RealTime Health View.

Prerequisites

This guide assumes that you are familiar with the basic concepts of networking, application management, and services management.

Book Contents

This document includes the following chapters:

Chapter	Contents
Introduction	Provides an overview of the basic concepts in IT services management and introduces HP Operations Dashboard RealTime Health View.
HP Operations Dashboard RealTime Health View Models	Discusses the concepts related to dashboard modeling and provides examples.
HP Operations Dashboard RealTime Health View	Discusses generation of dashboards and using the various status views, drill down, and reporting functions.
Dashboard Architecture	Discusses the HP Operations Dashboard RealTime Health View architecture, components, and data flow.
Integrating Management Servers and Data Sources with HP Operations Dashboard RealTime Health View	Discusses the integration of data sources with HP Operations Dashboard RealTime Health View and provides pointers to custom data integration.
Glossary	Explains terms used in the document.

Related Documents

The following documentation is available for HP Operations Dashboard RealTime Health View on the World Wide Web:

- HP Operations Dashboard RealTime Health View Release Notes
- HP Operations Dashboard RealTime Health View Administrator Guide

To find these and other HP Software documents, go to:

http://ovweb.external.hp.com/lpe/doc_serv/

2 Introduction

This chapter includes the following topics:

- Key concepts of HP Operations Dashboard RealTime Health View.
- An overview of HP Operations Dashboard RealTime Health View.

Key Concepts of HP Operations Dashboard RealTime Health View

360-degree View of Services

In today's environment, managers are faced with the challenge of understanding the health of their applications and business services across a wide spectrum of tools and infrastructure.

A 360-degree view allows service managers and owners to:

- Quickly discover problems and drill down to any business
- View related details of the environment the business service operates in.

In addition, application managers, whose applications provide a series of services to others, want to get a comprehensive view of all the services their applications provide. For example, an SAP owner may treat the SAP system not as a single service, but as a payroll service, an order processing service, a vendor payments service, and a purchasing service, and would like different views for each service type.

Easy Modeling and Maintainability

RealTime Health View provides you with tools that help you create business service views very quickly. RealTime Health View enables you to build management dashboards by using existing management data sources and does not require you to recreate your existing health hierarchy models.

Customized Views for Different Users

Different types of users need to view different kinds of data. For example, operations staff would typically be required to toggle between different management consoles to check results from different management products. Contextualizing or integrating data from the different tools would be difficult and time consuming. However, with RealTime Health View, the operations staff can look at all data in a consolidated and integrated way. Service managers, on the other hand, would like to get a high-level health view of the services that they manage and resellers would like to have a status check of all the services at the business unit level. The content of the dashboard, the navigation, and the drill down capabilities can be different for each user. The figure below shows the different views that RealTime Health View provides for different types of users:

Figure 1   Different Views provided by RealTime Health View
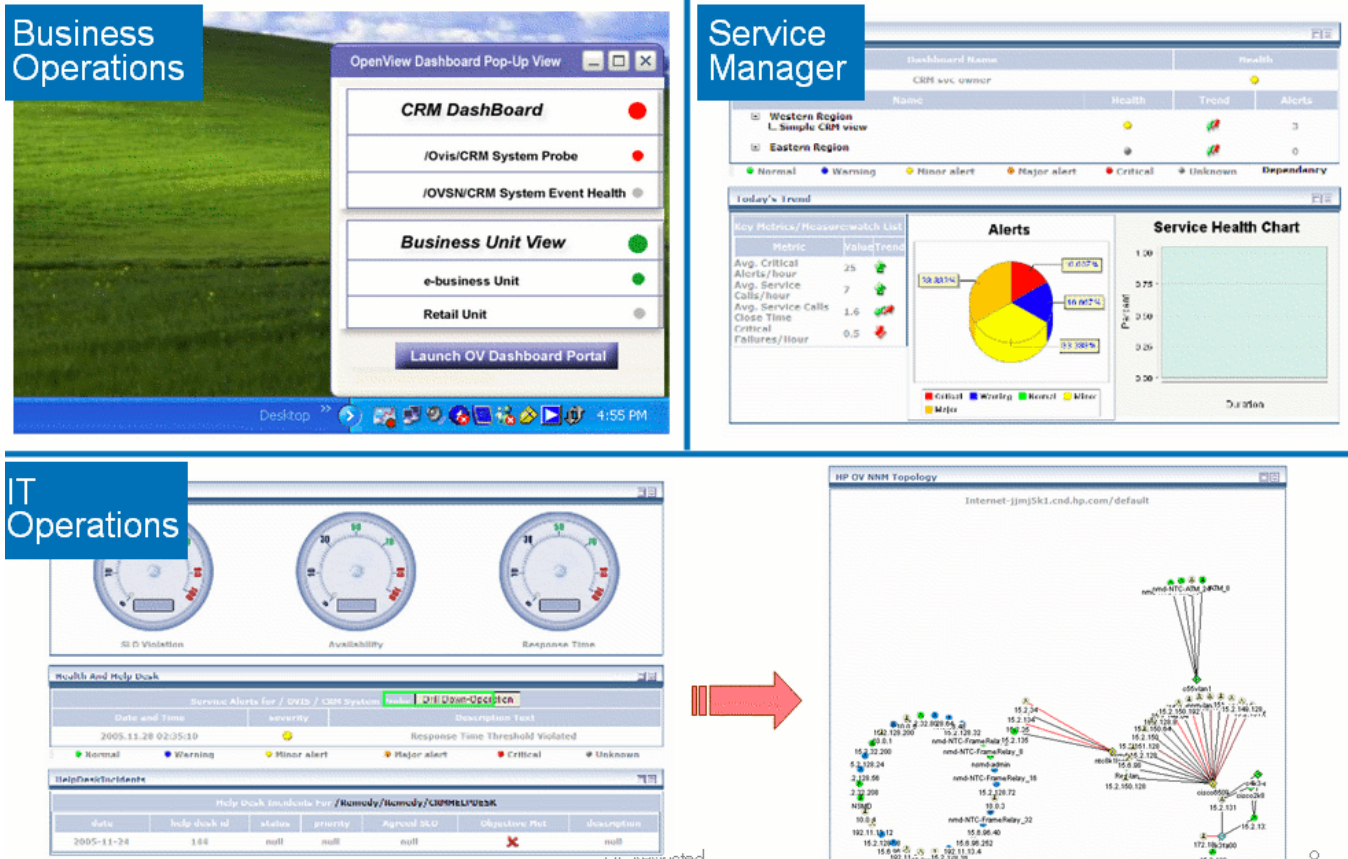
Customised Look and Feel

Users can customize dashboard views according to their needs and preferences. Users can view their dashboards on portals. A portal is a web site that provides a variety of different types of information and services. The Operations Dashboard portal customization has two dimensions:

- Design time

  — Content selection – you can add menus and links to the portal pages that helps you complete the dashboard view with the information that you can get from the external information sources.

  — Template selection – you can customize the look and feel of RealTime Health View from a variety of templates (also called "skins" or style sheets).

    – Modify look and feel

    – Modify the portal content. Operations Dashboard provides a set of out-of-the box content templates for a set of target users (service and application managers)

- Run time

— Add/remove portlets – you can add or remove portlets on the portal pages based on your monitoring and viewing needs.

— Customize brand identity – you can add your brand identity to the portal that mainly consists of your company logo and other related information

Figure 2   New Dashboard Dialog Box
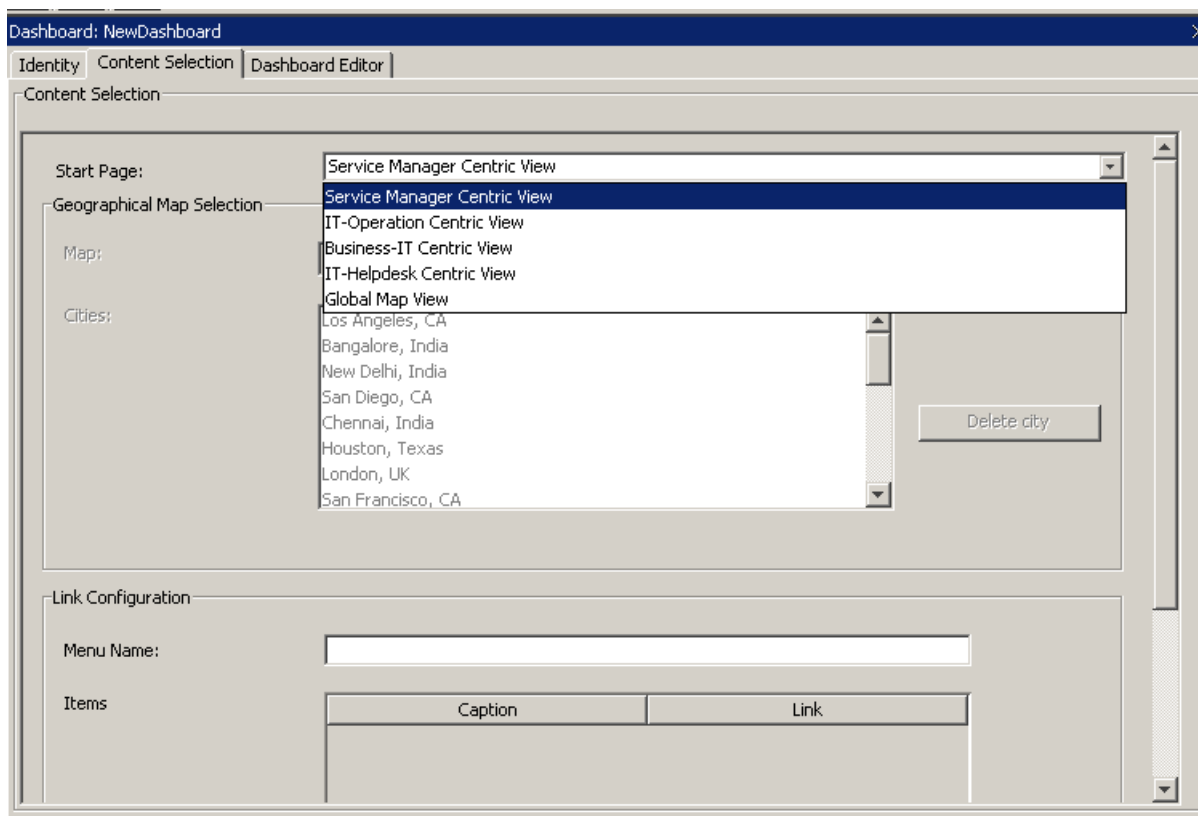
Simple and Operational Drill Down

The level of drilldown required will vary depending on the type of user using the management dashboard. RealTime Health View supports the idea of simple drill down for business customers, service managers, and applications managers and "operational" drill down for infrastructure and application operations staff. For more details, see the section, Services Drilldown on page 25.

Defining a Service

From a business perspective, a service is a complete business function that can be defined in software. A business function is addressed by a service to enable its managers to perform the business function more effectively. This typically involves implementing necessary monitoring, troubleshooting, and impact analysis, as well as implementing planning mechanisms. A business service can be any function such as email, company portal, B2B service for partners, and so on.

Services are not defined in RealTime Health View, but are imported as views from selected management products and data sources. In RealTime Health View, a service becomes a dashboard view customized to meet the specific requirements of a target user or user group.

Types of Services in HP Operations Dashboard RealTime Health View

In Service Oriented Architecture (SOA), a service is a business function provided with the help of an application or a combination of applications, which users access to perform a business function. The following list summarizes the different types of services available in a typical network:

- **Elementary Service** – is the basic unit in the dashboard hierarchy. Elementary services are defined in the existing management servers in the environment or in any other arbitrary data source such as URL (HTTP, HTTPS), Web Services, Win Registry, WMI, SNMP, SQL, and so on. For example, an elementary service can be one of the various services that HP Internet Services, HP Operations Service Navigator, HP Service Desk, HP Operations Manager for Windows, or BMC Remedy provides. Standalone service obtains two kinds of data from management products:

  — Static design time data – service model definitions.

  — Runtime data – data about the incidents and alarms related to services defined in the composite service model.

- **Composite Service** – consists of one or more elementary services, which are defined in the existing management servers in the environment or in any other data source such as URL (HTTP, HTTPS), Web Services, Win Registry, WMI, SNMP, SQL and others. Composite properties such as health, availability, load, performance, SLA status, trend, alerts, and incidents are calculated for a composite service at runtime according to set propagation rules.

- **Service Group** –is a collection of composite services used to aggregate composite services into well-defined collections based on either functional or geographical areas. Grouping is an optional part of dashboard customization. Groups can have characteristics similar to a composite service except that groups cannot contain other groups and groups cannot aggregate elementary services. Groups can only contain composite services. The status of group attributes is calculated in the same way as in the composite service.

Dashboard Effectiveness

To carry out management tasks efficiently, service managers need real-time data on how their services are performing. Typically, management applications do not provide data that support immediate decision making.

Dashboards are designed to provide you with a way to quickly identify and monitor your services and to drill down to the root cause of problems for quick and easy troubleshooting.

Dashboards display graphs, diagrams, and maps of your data from all specified data sources. Dashboards provide data that is analyzed, verified, and directly caters to the information needs of a particular user or role.

RealTime Health View Overview

The following list gives you a broad-level overview of the benefits RealTime Health View provides. The detailed description of each of these benefits is provided in later sections of this guide.

- **Easy modeling of dashboard views, group views, and composite service nodes:** RealTime Health View provides you a highly intuitive and easy-to-use interface to create your own composite services and group views by importing service definitions from various management products and to build custom dashboards for the services you manage.

- **Import service definitions and stitch them together:** RealTime Health View enables you to use the service definitions that already exist in various management servers and data sources and eliminates the need to remodel services to build your dashboards. The imported service definitions are stitched together as meaningful entities called composite services. RealTime Health View enables you to leverage and utilize the existing service definitions and create executive level abstractions on top of existing service definitions in the form of composite services, group views, and dashboard views.

- **Synchronize service definitions of already imported services:** The service definitions on management tools may undergo changes according to business needs. RealTime Health View allows you to synchronize and update the definitions of existing services using the interfaces called adapters or Smart Link Integrators (SLI).

- **Status aggregation:** RealTime Health View allows you to define status propagation rules and dynamically update the status of a service based on the data extracted from management products and data sources. IT service managers and other users can get analysis-based results in the form of changing status based on the changes in data that different management products report to RealTime Health View. RealTime Health View provides two types of status aggregation: the simple AND/OR based propagation and Weight-based propagation.

- **Near real-time health and history:** Service managers usually like to see how a service has been performing over a period of time. RealTime Health View views, once generated and deployed on the runtime environment, report near real-time health of service groups and composite service nodes with comparison capability using the past data about a service.

- **Drill down to management server data:** Whenever a problem is reported by a management product, service managers and other management staff can drill down into the problem so that they can identify the cause and the origin of the problem. After the cause of the problem is identified, an owner can be assigned.

- **Integrate with external data sources:** To get a complete view of selected services, you can configure additional data sources such as HTTP sites and SQL databases and customize the output from the data sources.

- **Customized portal view:** You can customize the Operations Dashboard portal pages by choosing from a variety of templates, customizing the start page, and adding or removing portlets.

Components of RealTime Health View

RealTime Health View consists of the following components:

- Operations Dashboard Composer
- Operations Dashboard Server
- Operations Dashboard Portal
- Operations Dashboard Configuration Manager
- Operations Dashboard System Tray

Operations Dashboard Composer

The Dashboard Composer module allows you to do the following:

- Import services from management applications and other data sources such as
  HP Internet Services, HP Operations Service Navigator, HP Service Desk, and SQL data
  source (using queries).

- Create dashboard views and define service groups (higher level grouping of service views
  such as geographies, business units, and organizational units), composite services, and
  elementary services.

- Deploy newly designed dashboards that auto-generate the aggregation rules in the
  RealTime Health View Server Engine and auto-generate a complete portal-based web site
  along with all the drill downs based on the content template selected in the composer.

Operations Dashboard Server

The RealTime Health View server acts as a repository for dashboard definitions. It is required
by the composer at design time. It also contains an engine component that accepts runtime
data from adapters and computes status for each of the dashboard components at runtime.
You must start the server before you start RealTime HealthView.

Operations Dashboard Portal

The portal view is a set of JSR168-compliant portlets that are generated from the deployed
dashboards. These portlets provide the service consolidation view to the service manager and
allow drill down to the elementary services that constitute a dashboard. They also provide a
breakdown of the health and other attributes of each component of the dashboard.

The Dashboard Portal module provides the following:

- A set of summarized views showing multi-dimensional aspects of the service, such as
  health, availability, SLO compliance if the underlying tool defined does not have SLO
  calculation, alerts, and help desk incidents. Also, these summarized Portlets show the
  weekly and monthly trends of certain key measures.

- A set of first level drill down Portlets shows the service hierarchies as defined by the
  services managers and cross domain/heterogeneous views (data from multiple products
  but only for a particular service context) of the service.

- A set of second level drill down Portlets shows more detail of the Services from the
  dependent services (still keeping the context) from multiple products such as
  HP Internet Services and HP Operations Service Navigator.

- A set of third level drill down Portlets show the relevant details of specific products such
  as HP Internet Services or HP Operations Service Navigator.

Operations Dashboard Configuration Manager

The RealTime Health View Configuration Manager allows administrators to configure
RealTime Health View design time and run time components and set up RealTime Health
View in a client environment. Using the RealTime Health View control panel, you can do the
following:

- Configure the RealTime Health View Server properties such as server, port, mode, and
  polling interval.

- Configure the RealTime Health View Database properties such as driver type, driver name, URL, user name, and password.

- Register the various adapters that you want to use for your RealTime Health View deployment.

- Unregister adapters that are not in use.

- Map dashboards to users according to their role or requirements.

- Start and stop portal and model servers.

- View the status of the servers.

Operations Dasjboard System Tray

The RealTime Health View System Tray tool shows the status of dashboards, deployed in the Dashboard server, on a client system. It provides the current status and status update alert for each dashboard. After you install and configure the system tray component, it appears in the system tray of your system.

Figure 3   HP Operations Dashboard RealTime Health View Block Diagram

OD Portal
(Dashboard Viewer)

- Dashboard views and composite service health in JSR 168 Compliant Portlets
- Drill down with context
- Customize display

OD Run Time
(Dashboard Engine)

- Gathers composite service data and status
- Gathers data from user-defined data sources
- Pattern matching
- Status aggregation

OD Composer

- View existing service definitions from management tools
- Import service definitions
- Model the business service views
- Choose a template for the dashboard
- Generate the dashboard

OD Design Time
(Dashboard Generator)

- Dynamically generates dashboards from the defined views and templates
- Generates the runtime engine for status aggregation
- Sets up the relationships and aggregation in the database

Data Link Layer

(Adapter/ SLI/ Proxy/ Driver)

OpenView System Management Products
(OVIS, OVSD, OVSN, OVOW, etc.)

OEM System Management Products
(Mercury, Remedy, etc.)

Custom Data Sources (HTTP, SQL, etc.)

3 RealTime Health View Models for Different Views

This chapter gives you an overview of the HP Operations Dashboard RealTime Health View (RealTime Health View) models that you can construct to view real-time health of services.

Models Definition

RealTime Health View models allow you to construct custom dashboards based on your specific monitoring and forecasting requirements. A dashboard model is the backbone of the business service view that you want to construct. Dashboard composer stitches the services together and lets you define the hierarchy of services, propagation rules associated with composite services, and status calculation specifications. A typical RealTime Health View model or dashboard view definition is made up of service definitions, relationship data, and hierarchy of services, composite services, and service groups in a dashboard. The constructed dashboards are deployed to a repository from which they are rendered through a portal application.

The dashboard model determines the behavior of the dashboard, that is, navigation and drill-down methods in your dashboard view in the portal. The dashboard model determines the source of service information based on the service definitions and follows a drill-down mechanism appropriate for a service. Several business service views can be constructed on the portal using the status from various services that are stitched together as part of the dashboard model.

RealTime Health View helps you define services based on existing service definitions in the underlying management tools. Service views are displayed as dashboards that users can modify based on their specific requirements.

Service Introspection

Using RealTime Health View, you can import all the services defined in the configured management server into the design time environment. The importing process involves bringing the service definitions to the RealTime Health View design time view for integrating with dashboard views. Service introspection uses a synchronization mechanism to check for changes in the service definitions that exist in the management products and update the RealTime Health View service views accordingly.

Figure 4   HP Operations Dashboard RealTime Health View Import Services from Configured Data Sources
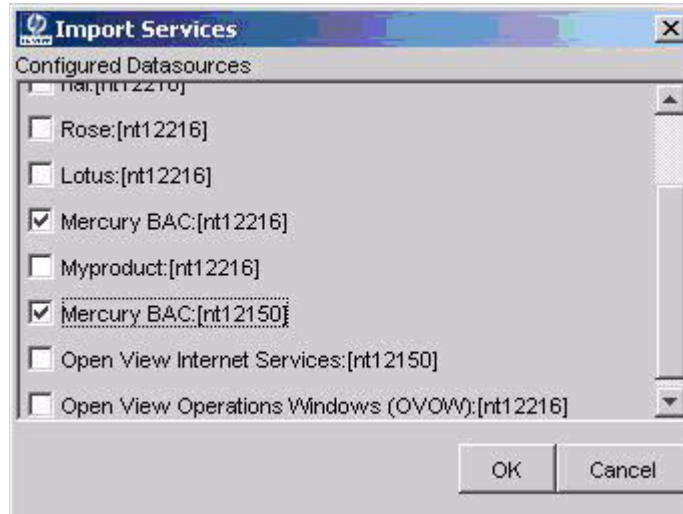
As the IT infrastructure and environment are constantly changing, it is extremely important to synchronize the service definitions that have been imported with actual service definitions in the underlying management tool and ensure that they are up-to-date with the changed environment.

During the synchronization process, HP Operations Dashboard RealTime Health View launches a new import process and then synchronizes the newly imported service definitions with the existing service definitions. All the changes (add, delete, and change) are merged into the existing service definitions. After RealTime Health View discovers changes in the synchronized environment, all the service compositions and dashboards with dependencies on the changed services are marked invalid and will need to be updated during dashboard deployment.

Service Stitching

A high-level business service in RealTime Health View is a combination of various services and impact sources. A RealTime Health View model "stitches together" all the impact sources you want to associate with a user-defined higher business service view. Impact sources can be event-based health, performance-based health, security health, viral health, the health of outsourced services, and, in the future, business process health and web service health.

While stitching together the services from underlying management tools, it is important to look across into products like Helpdesk to understand when there is a problem in event-based health or performance-based health to see whether a trouble ticket has been assigned in help desk, what priority has been given and when the problem will be fixed.

RealTime Health View also allows you to link any related web pages such as virus outbreak alerts, and any information delivered through SQL queries into a service.

In order to allow users of the dashboard to quickly see problems with a business service, RealTime Health View keeps a simple status for each business service view. For instance, when the green button for the business service changes color, it indicates that one of the impact sources for that service has detected a problem.

Often, the service information that a user requires is spread across several external sources. In order to use the data, the portal must combine group data from multiple sources and adapt it to the design of portals. A composite service is a transactional service made up of several services, business functionality, and information from varied information sources.

RealTime Health View stitches service definitions from various management servers and generates a composite service. The model repository provides users a way to import service definitions and combine these services into a new composite service definition. These composite services can be grouped and various groups can constitute a dashboard. Each composite service contains status and propagation rules that define how health and other system attributes can be derived from the underlying service definitions.

The following figures show how you can build a composite service by stitching various impact sources together and how the dashboard view will be translated into portlets on a portal view:

Figure 5   Composite service view created in HP Operations Dashboard RealTime Health View Composer
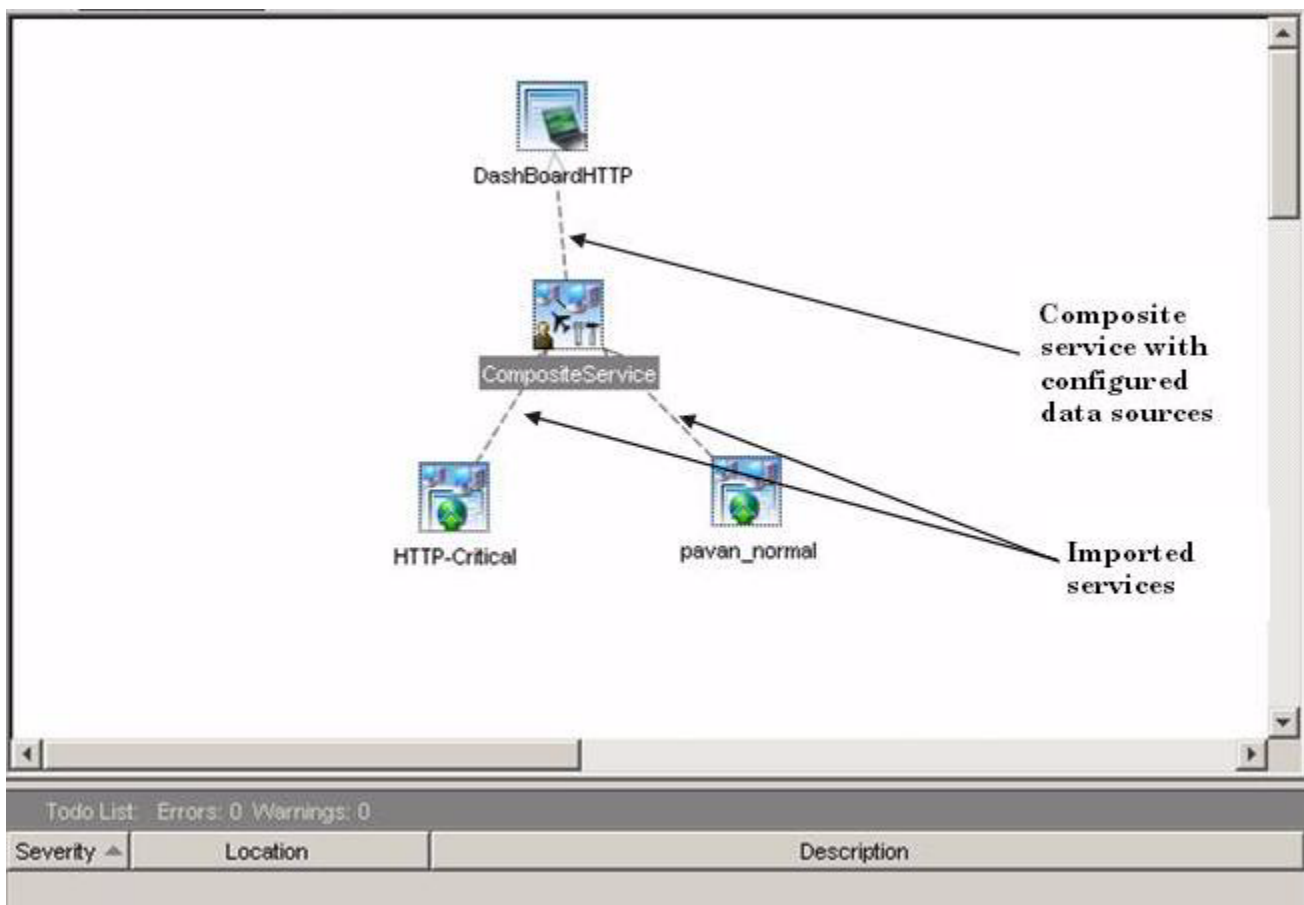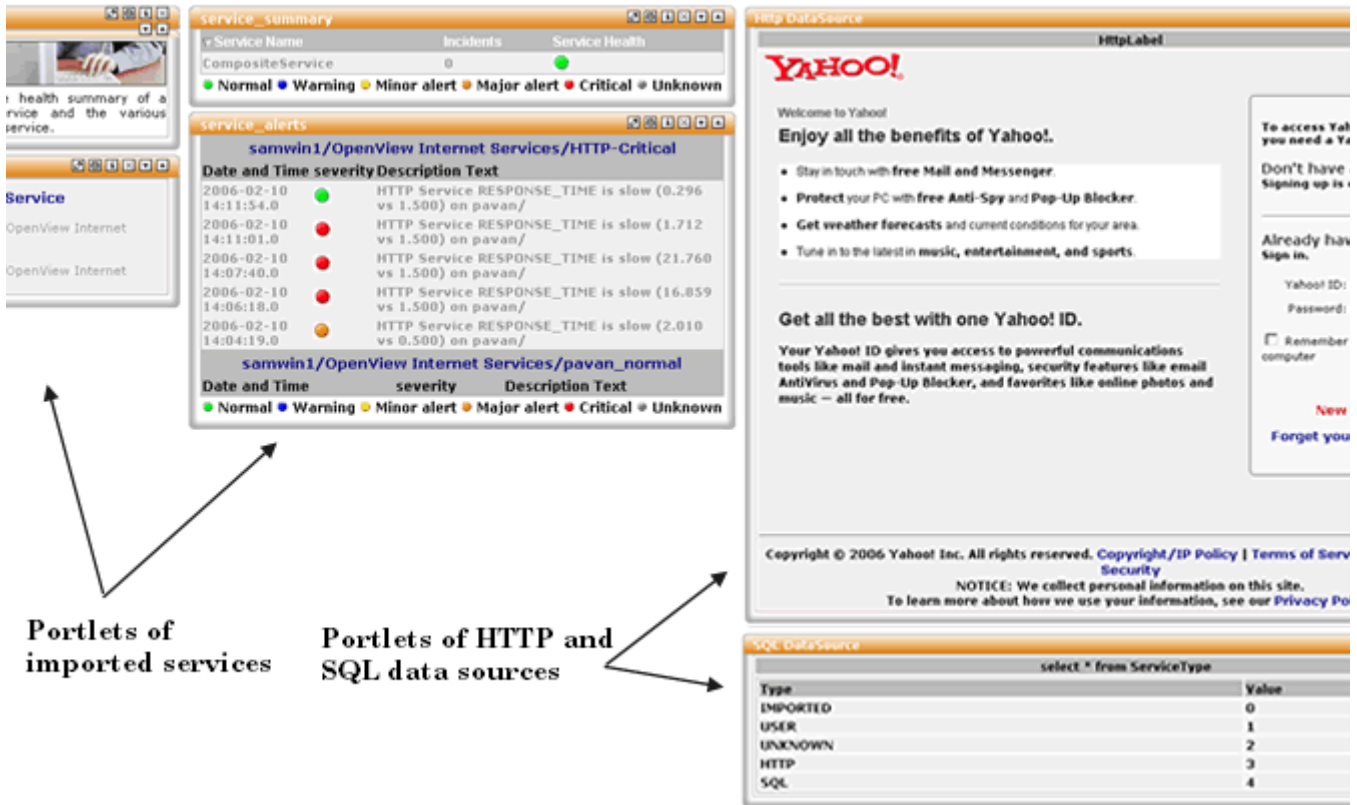
Figure 6   Portal view of the Composite service

Status Aggregation

You can attach aggregation and propagation rules for the composite service nodes and group views in your dashboard view. A status calculation scheme is defined for each composite service, group, or dashboard and this scheme defines how the event data will be interpreted by the composite service, group, or dashboard. For example, if a composite service receives data pertaining to performance and availability from two of its underlying standalone services, the status calculation determines how to calculate the overall health of that node.

Health is the most important high-level attribute of any service node that reflects the status. Health of a service is calculated based on the following attributes:

- Alarm
- Availability
- Incidents
- Performance
- SLO Compliance

In RealTime Health View, health of each aggregate node (composite service, group, and elementary service) indicates the overall health of that particular node. RealTime Health View assigns greater weight to the availability aspect. For example, if a service aggregated to a composite service has a critical availability issue, the health of that composite service on the dashboard reflects as critical. If the availability is not critical, the health is calculated as average of all the non-zero severity of the attributes (performance, availability, alarm, incident, and SLO-compliance).

RealTime Health View design time view provides capabilities to define rules that help status aggregation at design time and updating the portal view at run time. The RealTime Health View composer allows you to define propagation rules for determining how the dependent services status are aggregated into the composite node's status.

RealTime Health View supports propagation rules such as AND/OR and WEIGHT for propagating low-level dependent service status and events into a high-level composite node. These types of aggregation rules enable assigning priorities on the dependent nodes and ignoring status from some dependent nodes.

Example of model

Figure 7   A Dashboard Model
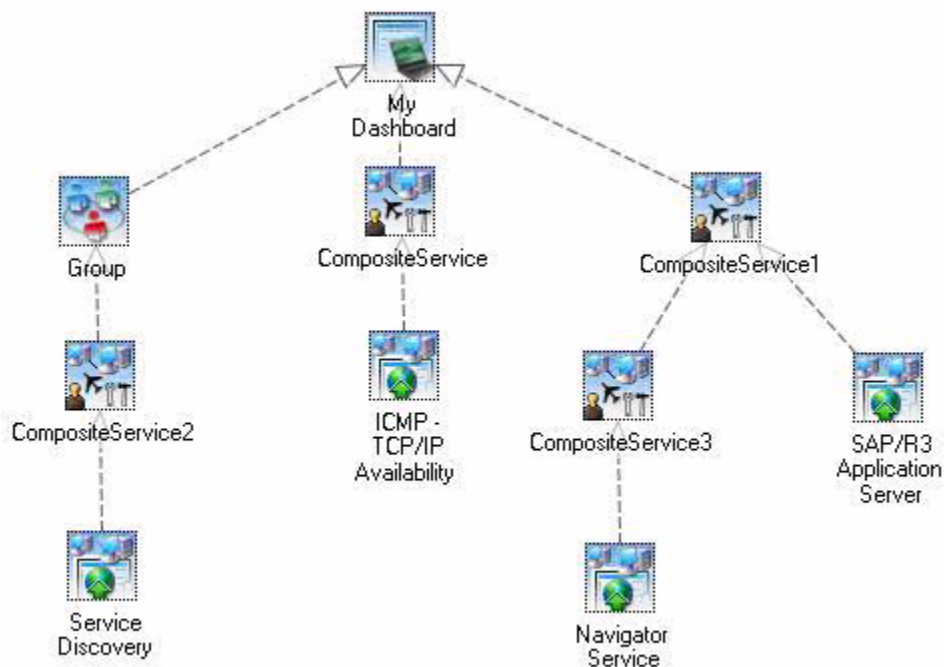
# 4 RealTime Health View Dashboard Generation

Generating a Dashboard View

As an HP Operations Dashboard RealTime Health View (RealTime Health View) user, you can build your own custom dashboard views using the RealTime Health View composer and generate them on RealTime Health View run time environment. RealTime Health View dashboard or view creation involves the steps illustrated in Figure 3 on page 16. To generate a custom dashboard view, you must import the required service definitions from management products and build your composite services and groups. RealTime Health View does not modify or remodel the services that it imports from underlying management products. HP Operations Dashboard is a dashboard that analyzes the events, messages, and all kinds of results and data provided by application management products and data sources to give you a comprehensive view of the services that you manage or want to monitor.

The dashboard composer is where you establish the relationships between different services. A service can exist either as an independent node under the top-level dashboard view or as part of a composite service or group. Similarly a composite service can exist as an independent node under the top-level dashboard view or as part of a group. The modeling of dashboard determines the drill-down structure of the dashboard view on RealTime Health View portal. RealTime Health View dynamically builds the drill-down structure based on your dashboard view definition method.

You can perform the following portal customizations:

- At design time

    — Content selection – you can add menus and links to the portal pages that helps you complete the dashboard view with the information that you can get from the external information sources.

    — Template selection – you can customize the look and feel of the RealTime Health View portal by choosing from a variety of templates (also called "skins" or style sheets).

- At run time

    — Add/remove portlets – you can change the layout of your portal pages by adding or removing portlets on the portal pages as per your monitoring and viewing needs. For example, RealTime Health View provides a host of generic portlets such as HTTP, SQL, PDF, streaming video, etc., which can be added to any of your portal pages.

    — Branding customization –RealTime Health View also allows you customize your RealTime Health View portal according to your brand identity. The most common visual elements that constitute brand identity are the page header and footer. You can replace the default logo and branding text with your own company logo and branding text. Jetspeed and BEA WebLogic tools provide various easy-do-use portal customization options.

Figure 8   Dashboard Modeling Workflow
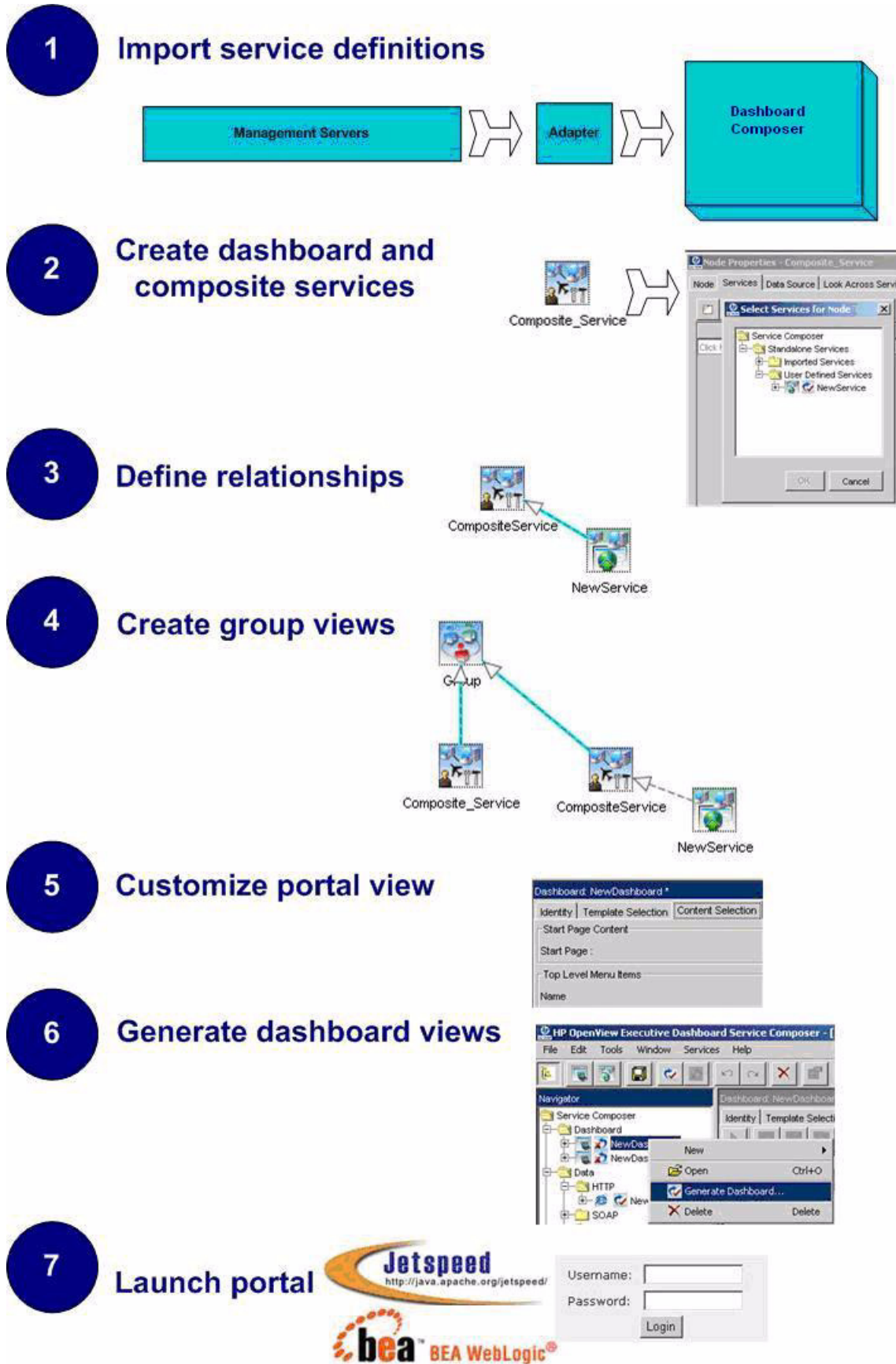
Near-realtime Health

RealTime Health View provides a near-real-time consolidated view of the state of managed services across the enterprise. In order to do this, RealTime Health View uses service stitching of service models used by various management products to represent a consolidated service. The health of this consolidated service is then determined at runtime using status propagation rules defined for each service.

Services Drilldown

The level of drill down required varies based on the type of users. RealTime Health View supports simple drill down for business customers, service managers, and applications managers; and operational drill down for infrastructure and application operations staff.

RealTime Health View provides two types of drilldown scenarios:

- A **simple drill down** shows a single level drill down of the IT service having the problem. For example, if a composite service defined by a user contains an IT service such as a service probe from HP Internet Services, drill down into the HP Internet Services IT service will show the contextual HP Internet Services data along with the relationship with the higher level view or composite service.

- **An Operation drill down** or drilldown to individual management product data (Operations View) – capability to drilldown into a particular management product that has reported a problem to see how the details of how that product views the problem. In the case of an operational drill down, RealTime Health View does not process any data for display. Instead, RealTime Health View invokes the Operations View JSR168 compliant portlet to display the result.

Drilldown capabilities of RealTime Health View provide you the ability to analyze, report, and assign the ownership of the problem to the right department. The same event may be viewed differently by different management servers and the ownership of the problem or the responsibility of resolving it depends on the point from which the problem originated. Hence, you can use one of the above-mentioned drilldown methods to get into the details of the status of a service without losing the context.

History Reporting

Some users, such as the service managers in a company, do not want just the status information at this particular point of time, but also how the services have been performing or behaving over the last one week or so. For example, in case of an event that is reported by a management product, information such as the history of that event (similar events reported by other products at the same time or in the past) will help to understand the problem better. If a user gets an alert from an underlying IT service about a performance problem, the user can check to see whether the problem existed at the same time yesterday or last week, which will be helpful in analyzing the trend or pattern of the issue.

5 Dashboard Architecture

HP Operations Dashboard RealTime Health View (RealTime Health View) has an architecture consisting of design time and run time components and common components.

The design time components are:

- RealTime Health View Composer
- RealTime Health View Database
- The run time components are:
- RealTime Health View Server
- Operations Dashboard Portal

The set of common components include:

- Adapters for HP Software products
- Smart Link Integrators (SLIs) for non-HP software products

Design Time View

RealTime Health View Design time view is for users who configure data sources, model dashboards, and generate them to the runtime environment. If you are a dashboard designer, you can use the RealTime Health View composer to do the following design time tasks:

- Import service definitions from a variety of data sources such as HP Software products, third party management products, archived sources,
- To introspect services to synchronize the existing service definitions
- Define data sources from HTTP, and SQL
- Assign propagation rules and display criteria with data sources
- Build composite services with a host of services and other impact sources
- Define relationships between various services
- Build dashboard models that suit your requirements
- Customize the portal view by selecting content for the start page and selecting a template
- Generate the dashboard models into the runtime environment
- Undeploy dashboard models to bring them out of the runtime environment

Run Time View

RealTime Health View runtime view is for users such as service managers and those who would like to know the health of the services that they use, monitor, or own. Any user who wants to have a comprehensive view of a service can log in to the portal and view the composite service level health and do a simple or operational drill down for the kind of status information that they want.

RealTime Health View runtime view consists of a portal that uses a set of JSR168-compliant portlets that are generated from the deployed dashboards. These portlets provide the service consolidation view to the service managers and other users and enable the facility to drill down to the elementary services that constitute a dashboard. It also provides a breakdown of the health and other attributes of each component of the dashboard.

Users have the choice of configuring and invoking the portals in either BEA WebLogic or Jetspeed.

You can customize the portal view at design time. Using the RealTime Health View Configuration Manager, administrators can configure the runtime views for different users. RealTime Health View uses an authentication method to provide customized dashboard views for users.

On the portal, you can do the following run time tasks:

- Do a simple or operational drill down
- Customize the portal view by adding or removing portlets according to your requirement
- Customize the brand identity by modifying portal page header and footer

Data Integration Layer

The data integration layer of RealTime Health View acts as an interface between and its underlying data sources. It contains adapters for data sources, and proxies, and drivers on the Dashboard server:

- Data: Data integration using prepackaged or licensed adapters for data integration
- View: View integration is done using JSR 168-complaint portlets. RealTime Health View provides portlets and configured portals for all the out-of the-box data sources adapters supported by RealTime Health View. In addition, RealTime Health View also provides a set of generic portlets, which can be incorporated in any portal pages:
  — PDF
  — Streaming View

RealTime Health View provides out-of-the box integration support (free of cost and licensing) for HP Software products such as HP Operations Service Navigator, HP Internet Services, HP Operations Manager for Windows, and HP Service Desk, and HP Operations Manager for UNIX. For third-party management products such as Remedy Helpdesk, HP Operations Dashboard RealTime Health View provides licensed SLIs.

In addition to standard HP Software product adapters and some popular third-party product adapters, RealTime Health View provides two generic data source adapters, which users can use to connect to common generic data sources like databases (that support standard SQL queries) and HTTP streams. The two out-of-the box data source adapters that RealTime Health View supports are:

- SQL Data Source

- HTTP Data Source
  - — A Set of HTTP Links
  - — Raw HTTP
  - — HTTP URL Content Display

As mentioned earlier, the above data sources can be used to create elementary services. Once these elementary services are created, they can be used like any other imported elementary service to build dashboards. Runtime data for each of these elementary services can be generated by running the raw output of the associated data source thru a Perl script. The output of the Perl script should conform to the runtime data XSD defined in Chapter 6.

HP Operations Dashboard RealTime Health View adapters use Web Services for providing data from target data sources to dashboard modules (both design time and runtime components). HP Operations Dashboard RealTime Health View adapters provide WSDL interfaces (Web Services) and use a simple Web Services runtime stack based on Apache Axis or HP Software Container. HP Operations Dashboard RealTime Health View generalizes the data source side or Adapter interfaces (Web Services-based) depending on certain categories rather than interface for each data source. This gives third parties and customers to add and write HP Operations Dashboard RealTime Health View adapters without any changes to the HP Operations Dashboard Portal or HP Operations Dashboard RealTime Health View Engine. Here are the categories of management software for which HP Operations Dashboard RealTime Health View generalizes/normalizes
HP Operations Dashboard RealTime Health View Web Services Interfaces:

- Probe or Availability Management (Response time, performance, availability): Mercury Sitescope, HP Internet Services

- Help Desk Tools: BMC Remedy, HP Service Desk

- Enterprise Management Products (With Service Models): Managed Objects, BMC Patrol Enterprise Manager, HP Operations Service Navigator

- Generic Operations and Event Management Products (no service definitions and raw events only): HP Software

- Security Management Products: Symantec Enterprise Security Manager, eSecurity, netForensics

- Generic Data sources: HTTP, HTTPS, SQL, SOAP, XML

All the adapter interfaces are Web Services based (WSDL) and use the Web Services protocol to communicate between RealTime Health View and adapters. See the following diagram:

Figure 9   Dashboard High-level Architecture
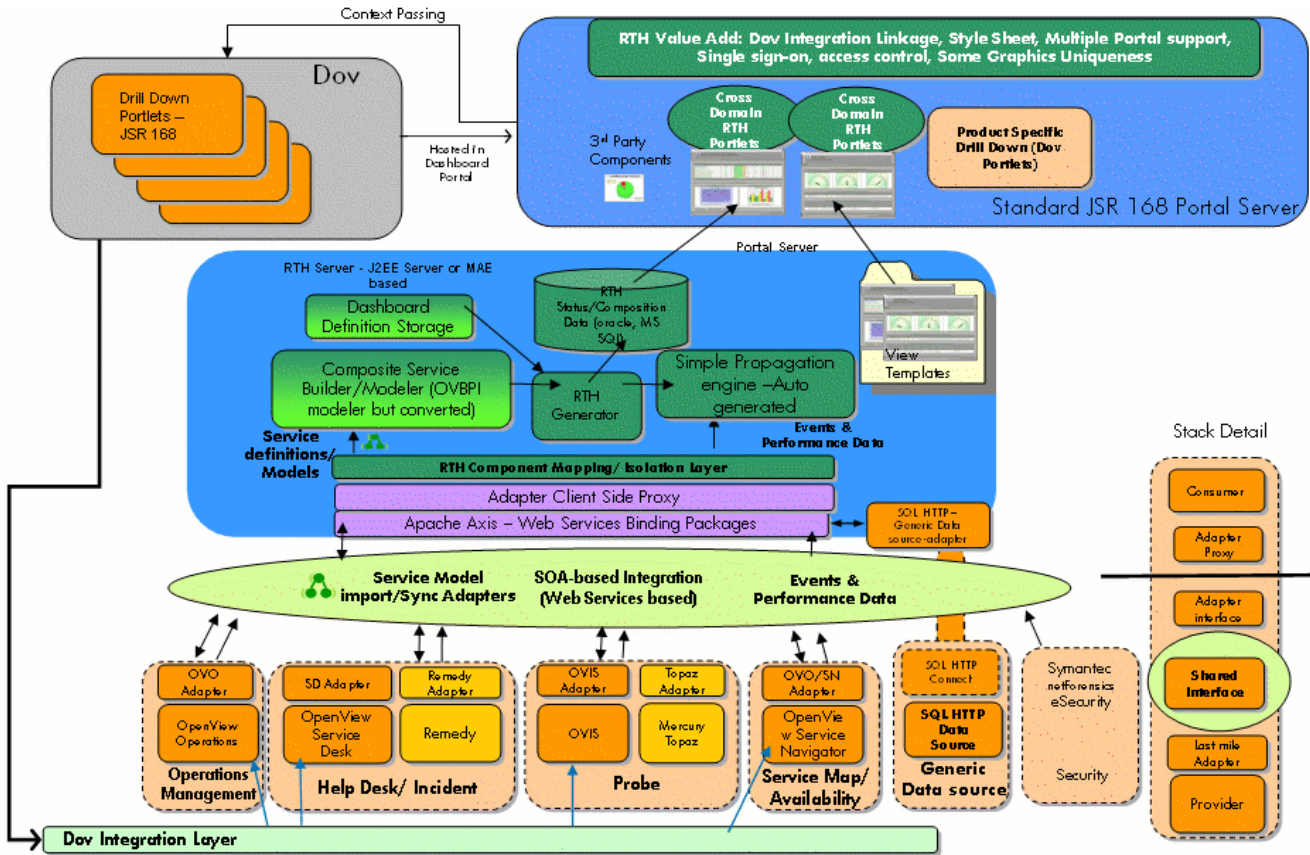
If customers or third party integrators want to write a custom adapter to connect with RealTime Health View, they can use the Adapter Software Development Kit (SDK) to write adapters that are not supported by RealTime Health View (out-of-the-box). This SDK clearly specifies what you need to do to write a custom adapter for the custom data source that you are planning to connect with RealTime Health View. Please refer to the Adapter SDK document that describes the details of writing custom adapters for RealTime Health View.

6 Integrating Management Servers and Data Sources with RealTime Health View

HP Operations Dashboard RealTime Health View (RealTime Health View) completely integrated with other HP Software solutions and provides capabilities to integrate with other management products and data sources.

Integration with RealTime Health View

One of the benefits of RealTime Health View is its integration with HP Software products. A set of pre-packaged adapters for HP Software products such as HP Internet Services, HP Operations Service Navigator, HP Service Desk, HP Operations Manager for UNIX, and HP Operations Manager for Windows enable the integration of Software products with RealTime Health View.
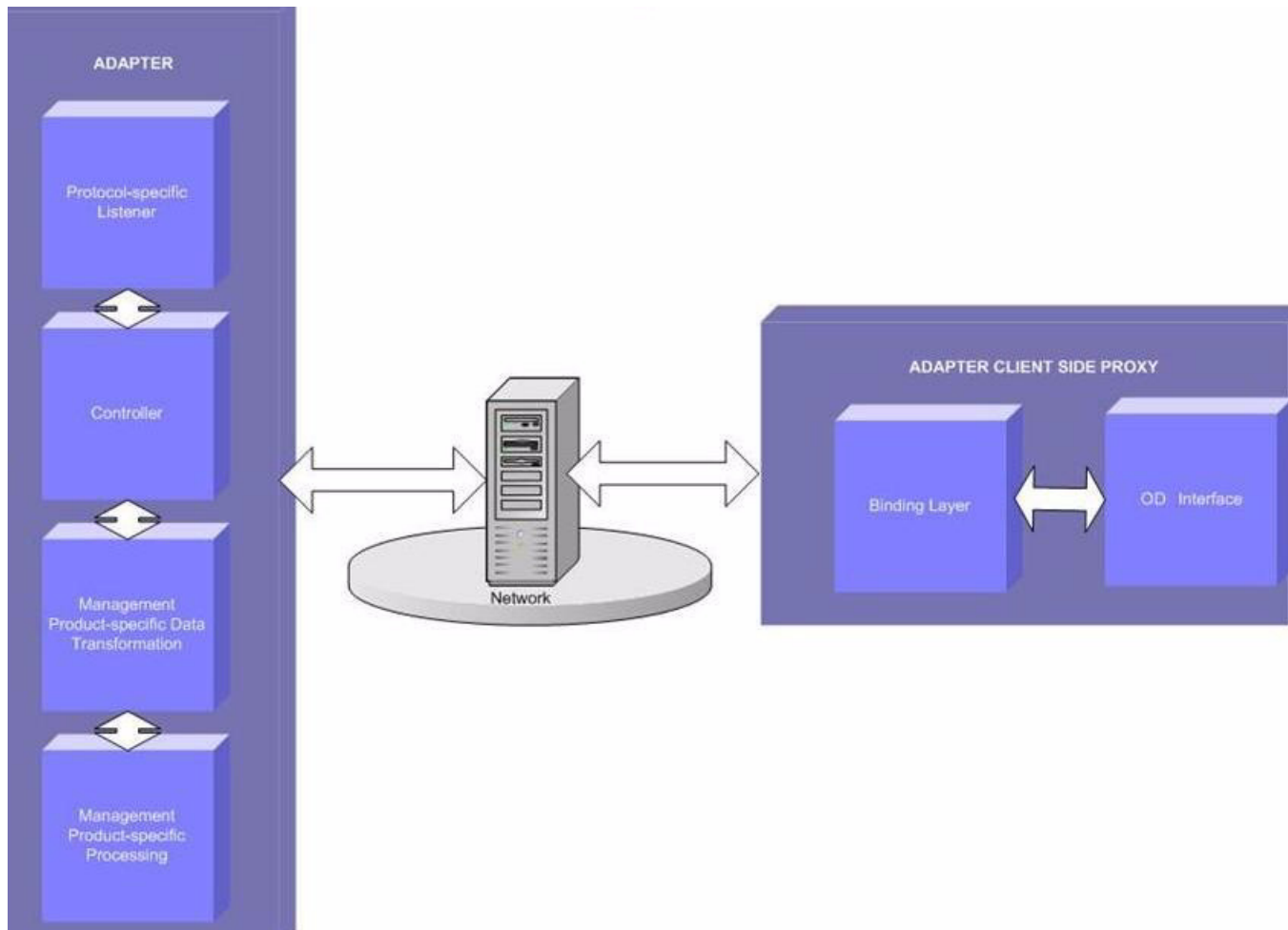
HP Operations Dashboard RealTime Health View uses service definitions that already exist in management servers or data sources. Adapters or integrators synchronize the data on the HP Software servers, such as HP Operations Service Navigator, HP Service Desk, HP Operations Manager for Windows, and HP Internet Services, with your run time dashboard views based on defined frequency of updates and the data filters configured for the data source. Adapters help RealTime Health View import the service definitions required for a dashboard view, gather data, filter the gathered data based on rules and conditions, and make sure that only the required updates are done on the portal where the near real- time status of your composite services is reflected.

Deploying an adapter of an HP Software product means configuring that product as a data source for your dashboard view. Adapters are deployed on those nodes, which run the respective management software.

HP Software adapters play the following roles at design time and run time:

- Design time:
  - — Helps RealTime Health View Composer import services from underlying data sources using Web services-based interfaces
  - — Helps RealTime Health View Composer synchronize service definitions for service introspection
- Run time
  - — Sets filters for run time data according to the services in the deployed dashboard model
  - — Sends run time data based on the filters that goes into the appropriate portlets

Figure 10 Adapter Data Flow

Integration with Other Management Software

RealTime Health View is truly a cross-product ITSM dashboard. With its capabilities to integrate with a wide variety of data sources that include non-HP Software servers, it fulfills the need for a complete dashboard view integrated with all the heterogeneous management servers that help you manage your services. You can configure various management servers other than those in the HP Software suite, such as BMC Remedy, as data sources by deploying appropriate adapters along with
HP Operations Dashboard RealTime Health View.

RealTime Health View comes with a set of adapters or Smart Link Integrators (SLIs) that allows importing service definitions from a host of heterogeneous management servers, colleting near real-time data, and aggregating service status, and reporting through the run time environment. Apart from pre-packages SLIs, HP Operations Dashboard RealTime Health View also enables provides the capability of developing your own SLIs to connect to any management server that you have deployed on your IT infrastructure. SLIs play the following roles at design time and run time:

• Design time:

    — Helps RealTime Health View Composer import services from underlying data sources
       using Web services-based interfaces

— Helps RealTime Health View Composer synchronize service definitions for service introspection

- Run time

  — Sets filters for run time data according to the services in the deployed dashboard model

  — Sends run time data based on the filters that goes into the appropriate layers and portlets

Integration with User-Defined Data Sources

HP Operations Dashboard RealTime Health View integrates with other data sources such as SQL and HTTP to gather general information or data and derive the business impact based on a defined processing mechanism. For example, if you want to monitor the virus alerts updated on a Web site, you can configure the Web site as an HTTP data source and display it. RealTime Health View provides a number of ways to display the results such as displaying text data in a portlet or changing the status of a particular service on the dashboard portal. RealTime Health View comes with a smart HTTP adapter and an SQL adapter that enable integration with HTTP data sources and SQL data sources respectively. The following example in Figure 10 and Figure 11 shows a sample data source definition and its result as displayed on an Operations Dashboard portal page.

The SQL adapter in RealTime Health View works in a similar way to the HTTP adapter. It searches the configured SQL data source or database for status information and other data, analyzes it using a pattern-matching criteria specified, and updates the dashboard with the results in a way you have configured. The SQL adapter can be used to bring data, such as business throughput figures, into RealTime Health View and associate it with a business service.

Figure 11 Configuring a new SQL data source in RealTime Health View Composer

Figure 12 The results from the data source as displayed on Operations Dashboard portal

Resultant SQL Portlet on OVD portal
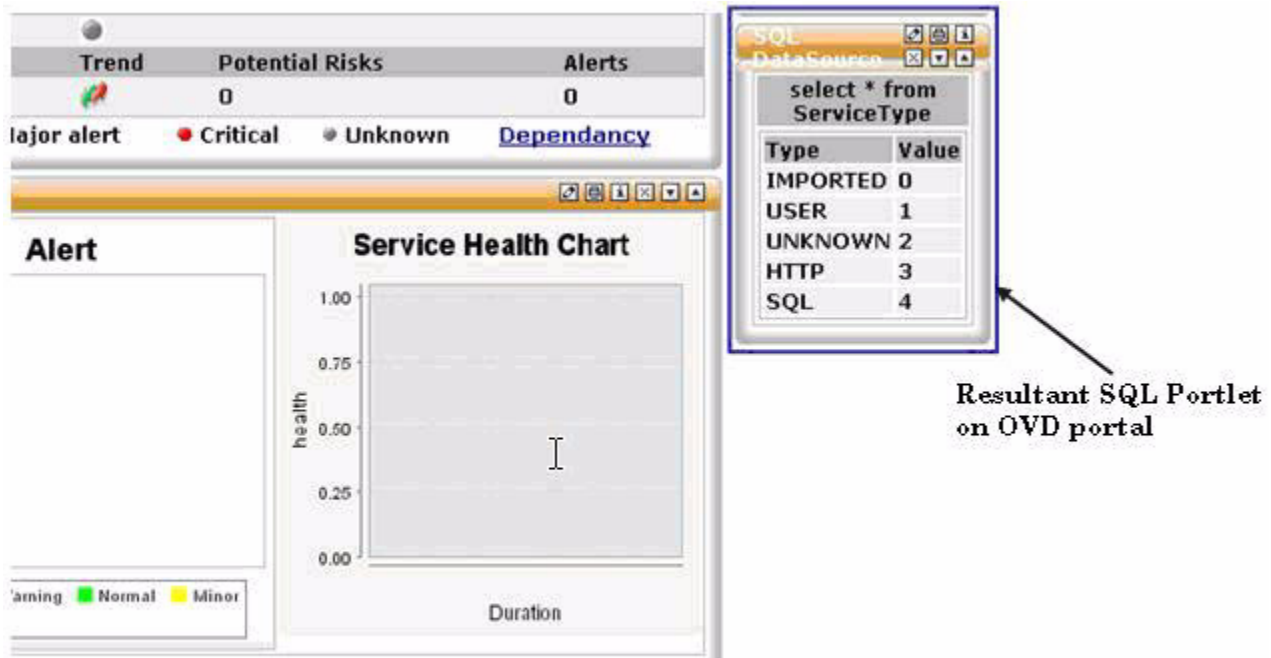
Custom Data Integration with HP Operations Dashboard RealTime Health View

This section gives you the details of Custom Data integration with RealTime Health View.

Out-of-the Box Integration with RealTime Health View

RealTime Health View supports custom integration. Not all management products deliver the same information to RealTime Health View. For example, HP Service Navigator gives event-based service health information, HP Internet Services give performance-based health information, HP Service Desk and BMC Remedy do not give health information, but they give "look across" information about the service including fix priorities and expected fix times; and HP Software and HP Network Node Manager give pure event-based information. If the product that you wish to integrate with RealTime Health View is similar to the products listed above, then integration is relatively easy because templates already exist.

For each of the three RealTime Health View integration points (design-time, run-time, and dashboard-time), there are templates. There is a template for the type of information RealTime Health View shows in the composer when offering a list of IT services an integrated product manages; a template for the information the integrated product gives RealTime Health View when there is a problem; and a template for the information required to draw the simple drill down portlet.

Writing a Custom Adapter

RealTime Health View uses SOA design patterns to integrate with third party and HP Software data sources. HP Operations Dashboard RealTime Health View product bundle comes with prepackaged adapters for HP Software data sources such as HP Internet Services, HP Operations Manager for Windows, and HP Operations Service Navigator and an implementation of a set of WSDL interfaces on top of the adapters to publish the data. To integrate third party management products and other data sources that you use in your IT environment with HP Operations Dashboard RealTime Health View, you can use the adapter development resources.

Adapter Architecture

RealTime Health View adapter environment or data flow is broken down in two parts:

- Data source level (RealTime Health View Adapter/ Provide of the data)
- Client level (RealTime Health View Server or Consumer of the data)

Figure 13 Data flow between the Data source side and client side
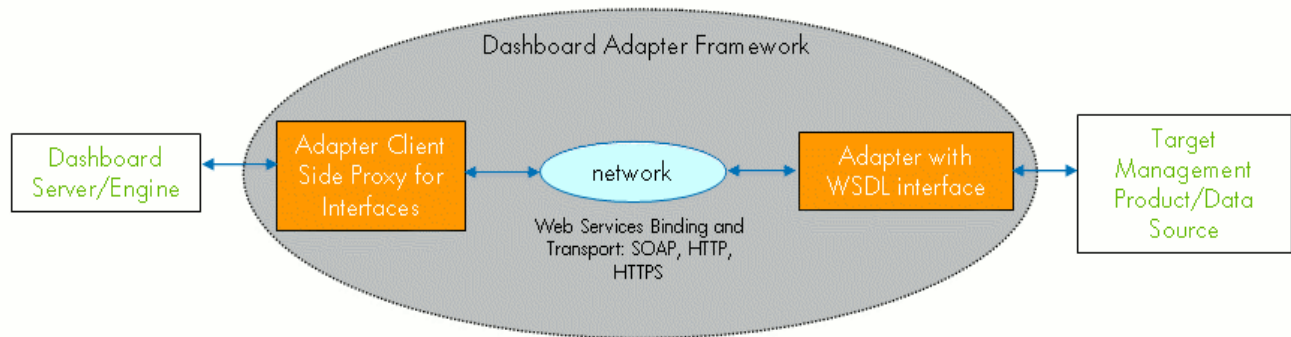
Data Source Level

The data source side of the adapter is the main part of the adapter that actually connects to the data source and provides the Web Services Interface for RealTime Health View or any RealTime Health View Adapter client side to connect to RealTime Health View adapter.

The data source side, adapters are deployed to actual location/system where the data source resides (usually this is the Management Server from which the adapter has to collect data in the case of RealTime Health View Management System's adapters). This type of implementation requires a Web services container environment for hosting the adapter so that adapter can provide Web Services Interface (WSDL based).

RealTime Health View needs a Web Services stack/container on the data source side. At minimum, HP recommends Apache Axis stack for providing Web Services environment for the stack. This stack consists of a SOAP Engine, Java Web Server, Transport Sender, and Receiver.

Client Level

The RealTime Health View Composer and RealTime Health View Engine usually invoke Adapter interfaces from a remote system to the system where the actual adapter (data source side) resides. This requires a proxy for the client side to enable RealTime Health View to invoke the remote interface. This proxy client interface must use a specific XML-oriented data interface format (XSD) as well as support the specified interface type and interfaces (WSDL).

Types of Interfaces (Generalized)

RealTime Health View adapters group interfaces based on the type of Management Server that is supported by the adapters. The data format and interfaces are same for each type of the Management servers supported RealTime Health View. This helps generalize the data and the views of
RealTime Health View and eliminates the need for common data format for all different types of Management Servers. RealTime Health View currently supports the following interface types:

- Probe or Availability Management (Response time, performance, availability) tools: Mercury Sitescope, HP Internet Services

- Help Desk tools: BMC Remedy and HP Service Desk

- Enterprise Management Products: Managed Objects, BMC Patrol Enterprise Manager, HP Service Navigator

- Generic Operations and Event Management Products (no service definitions and raw events only): HP Software

- Security Management Products: Symantec Enterprise Security Manager, eSecurity, netForensics

- Generic Data sources: HTTP, SQL

Types of Data

Two types of data flows through the adapters:

- Service Definitions (Design Time) – Used during Dashboard Design by the RealTime Health View Composer

- Service Status/Health/Performance (Events or Runtime Data) – Used by RealTime Health View Engine to calculate and aggregate the status of RealTime Health View Views

Data Formats of Service Definitions

RealTime Health View imports service definitions from management servers and other data sources through adapters. For successful import, service definitions must have the following attributes and syntax:

Figure 14 Data format of service definitions in enterprise management products
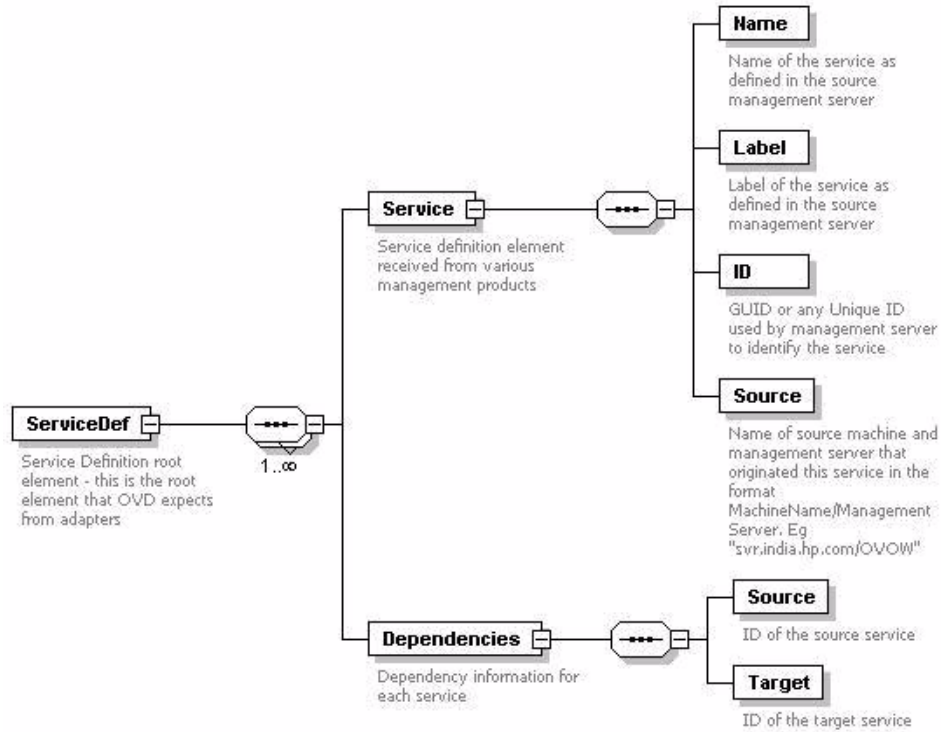

Data Formats of Events Definitions

RealTime Health View runtime needs the status and availability information from the underlying data sources or Management tools RealTime Health View connects to. The RealTime Health View adapter uses an Event-oriented data format to pull the status of Services from the underlying Management tools.

RealTime Health View events use the following attributes and data format:

Figure 15 Format of the run time event data to RealTime Health View
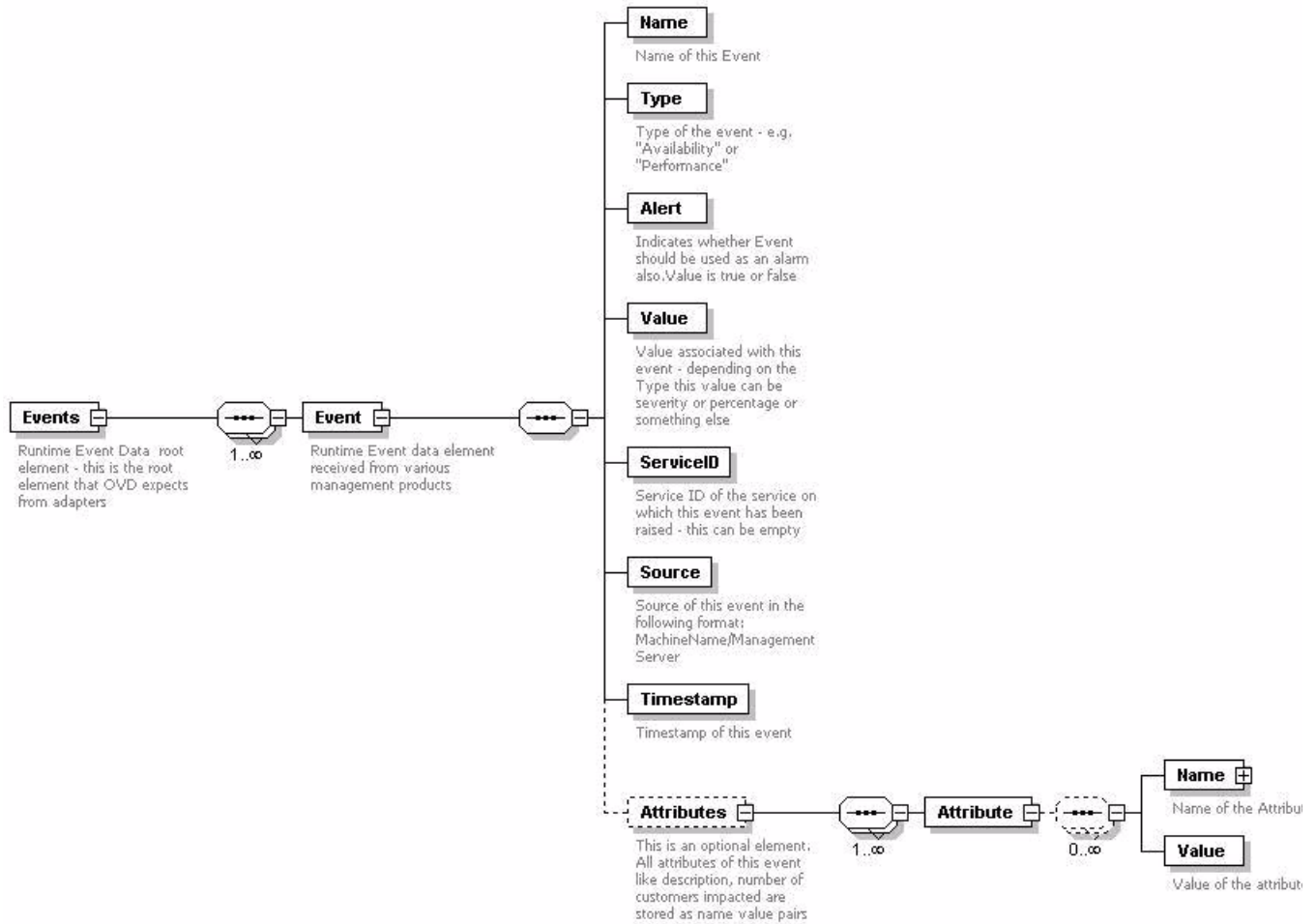
RealTime Health View Adapter Framework

RealTime Health View provides an Adapter framework and SDK for writing adapters. This framework provide an Abstract Class (BaseAdapter) that needs to be extended by the "Last Mile Code" (target data source) or the part of code that connects (extracts the data from the source) the RealTime Health View adapter to the Target data source:

- This class provides APIs for:
    — Design time import of definitions
    — Runtime data (events) for the imported definitions
- The Abstract Class is in Java called "BaseAdapter" that:
    — acts as the integration point between underlying management server/data source and adapter framework.
    — abstracts all the transport details from the Last Mile Code.
- The Last Mile Code or the part of the RealTime Health View code that extracts the data from Target Data source need not be given any SOAP/WebServices details

- Each adapter needs to do the following:
  — Extend the BaseAdapter
  — Implement the necessary methods to actually retrieve the data from the Target Data source. There are two types of methods that needs to be implemented to support the two types of data sources:
    – Service Definitions: Implement the methods for extracting the Service Definitions from the Target data sources
    – Runtime Status/Events: Implement the methods to extract the events or runtime status of the Services of the Target data source

Glossary

Dashboard

A dashboard is a consolidated view of a service that is maintained by various different management servers. Dashboards are tailored to assist executives in decision making by providing summarized, real-time data in an easy-to-use style, mainly using graphs, maps, and other graphical elements.

IT Service Management (ITSM)

ITSM refers to the management of the performance and monitoring of the health and availability of network applications, such as e-mail, intranets and other client/server software. IT Infrastructure Library (ITIL) is a comprehensive collection of documentation of best practices in the IT Services Management domain. ITIL provides foundation for quality IT Service Management. ITIL was developed by Office of Government Commerce (OGC) and is supported by publications, qualifications and an international user group.

Service Level Management

There are two parts to Service Level Management. You can specify the service levels that meet the requirements of your Service Level Agreement (SLA). You can also analyze history data to check for SLA compliance over a given time period.

Service Oriented Architecture (SOA)

SOA is a component model that is designed to achieve loose coupling among interacting software agents or an application's different functional units, called services, through well-defined interfaces and contracts between these services. SOA achieves the loose coupling among interacting software agents by providing a small set of simple and uniform interfaces to all participating software agents and descriptive messages constrained by an extensible schema delivered through these interfaces. This allows services, built on a variety of systems, to interact with each other in a uniform and universal manner. In short, SOA is essentially a collection of services that communicate with each other, using a process that involves either simple data passing or two or more services coordinating some activity. SOA allows business IT systems to be more agile to the changes in the business. By allowing strongly defined relationships, yet flexible specific implementations, SOA enables IT systems to take advantage of the capabilities of existing systems, and yet be ready for future changes to their interactions.

Viral Health

One of the most likely things to adversely affect a service is an attack by a fast spreading virus. Service owners want to be alerted as quickly as possible to fast spreading viruses that could impact their services. At present, there is no clever "viral alert correlation software" that relates a virus to some model of a service. RealTime Health View allows you to look at an HTML web site or multiple sites, and pattern match for certain phrases. For example, if you

are running the email service for your company, you might look for "email virus" on the Symantec web site.

Web Services

According to the W3C, a Web service is a software system designed to support interoperable machine-to-machine interaction over a network. Other systems interact with the Web service in a manner prescribed by its interface using messages, which may be enclosed in a SOAP envelope, or follow a REST approach. These messages are typically sent using HTTP, and normally comprise XML in conjunction with other Web-related standards. Software applications written in various programming languages and running on various platforms can use web services to exchange data over computer networks.

WSDL

WSDL describes the public interface to the web service. This is an XML-based service description on how to communicate using the web service; namely, the protocol bindings and message formats required to interact with the web services listed in its directory. The supported operations and messages are described abstractly, and then bound to a concrete network protocol and message format.

WSDL is often used in combination with SOAP and XML Schema to provide web services over the internet. A client program connecting to a web service can read the WSDL to determine what functions are available on the server. Any special data types used are embedded in the WSDL file in the form of XML Schema. The client can then use SOAP to actually call one of the functions listed in the WSDL.

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