

HP OpenView Telecom Extensions

Concepts Guide

HP-UX, Solaris, Windows NT®



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1 **Concepts**

Concepts

This document gives a high-level overview of HP OpenView Integrated Service Assurance for Communication Networks and answers the following questions:

- What problems does this product solve?
- What is included in this product?
- What does a product installation look like?

Network Management

A computer network may include a wide variety of hardware and software. Each component in the network may transmit events describing its current condition. These events are usually sent in standard formats; however, there are several event standards, each specifying different information sizes and contents. The process of interacting with network components and maintaining their proper function is called network management.

An effective network management system serves many functions. These include:

- Receiving and interpreting events from a wide variety of equipment and applications.
- Communicating problem conditions to the network operator.
- Acting on these problem conditions when appropriate.
- Displaying network information to the screen in an easy-to-read format.
- Allowing the network administrator to limit the events received and the actions available to the operator.

Figure 1-1 shows the common pieces of a network management system.

A network may contain managed and unmanaged devices. Managed devices are those that the network management system monitors by tracking related events. The status information conveyed in these events contributes to the status of the managed devices. When a network device emits events in a non-standard, proprietary format, a proxy agent receives these events and maps them to a standard format, such as SNMP, before forwarding them to a data collector. While the network management system display may include unmanaged devices, it does not maintain status information about them.

A network that includes telecom equipment may contain one or more element management systems. An element management system acts as a proxy for telecom network elements that are not able to specify a remote event target. The element management system connects to each managed network element via a direct connection method, such as a socket, to receive events from the device. It forwards these events to a network management system data collector.

A network management system contains one or more agents; each agent contains one or more data collectors. The network administrator configures each network element or device to send its events to a specific data collector on a specific agent. The data collector filters out unknown events and forwards recognized events to the network management server. The agent may also do some preliminary interpretation and correlation of events.

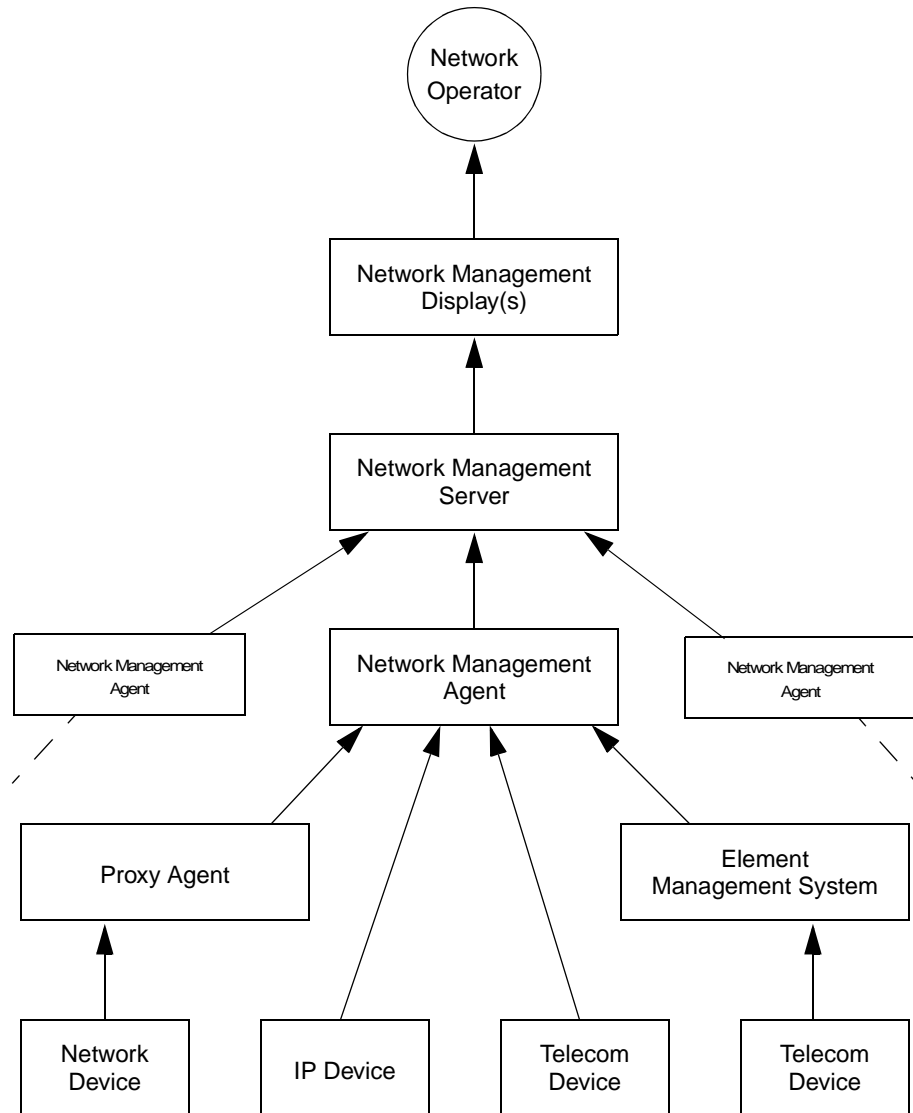
The network management server receives events from the agents and processes the events for use in network management. Some network management servers can trigger actions that occur automatically under certain conditions. For example, the receipt of a router down event may cause a network operator's pager to sound. Additionally, the network management server passes information to and receives input from the network management display.

When a network is large or spread across several regions, there may be multiple network management servers active in the network. In this case, one of these servers is generally the master server for network management. This server receives events from the other network management servers and, possibly, some agents. Each network management server may communicate with its own network management display.

The network management display is generally a graphical user interface (GUI) that presents information about network health to one or more network operators. The GUI displays a list of relevant events from network components and may include a symbolic representation of the network layout.

Typically, many network operators work together in a network operations center (NOC). Each network operator is responsible for maintaining a subsection of the network so that network users can do their jobs without concern for the network's availability. An operator responds to events that indicate a problem within the network and implements the appropriate solution. An operator may also use information from the network management system to identify potential problems and predict future demand on the network. The operator can then take proactive steps to improve the network's functionality.

Figure 1-1 Network Management System Conceptual Diagram



About HP OpenView Integrated Service Assurance for Communication Networks

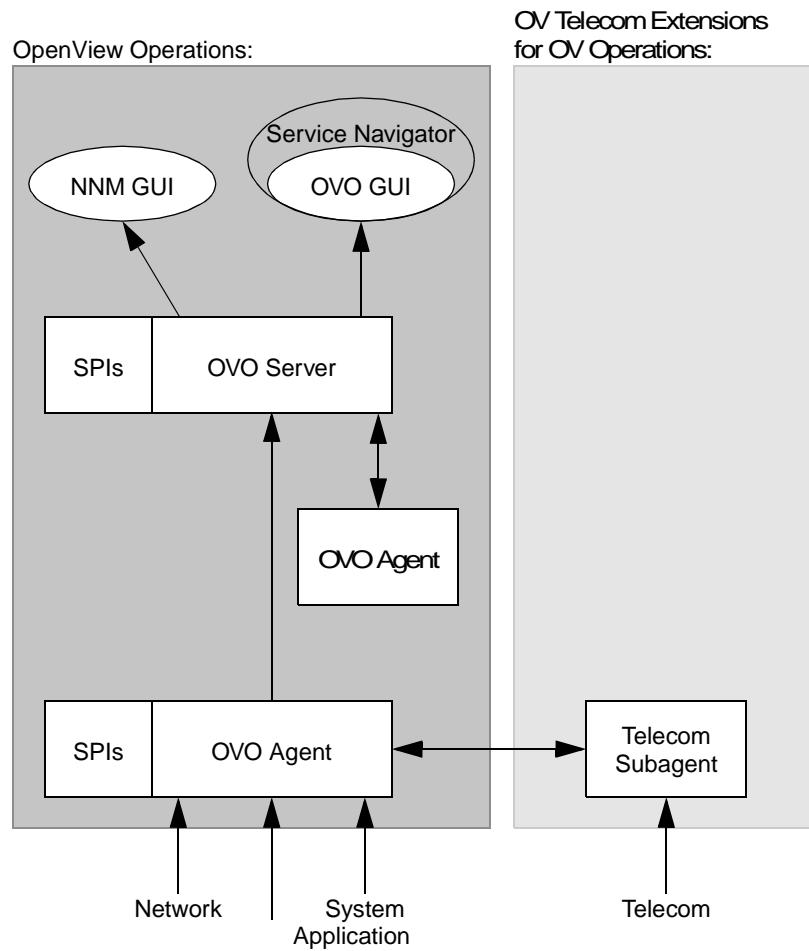
Traditionally, managing a diverse network has required the implementation of several different network management systems. Each system would gather information about one type of technology (domain) in the network. A network operator would focus on that one domain to the exclusion of the other managed domains. For example, one network operator might use a network management system to maintain IP devices while another operator uses a different network management system to maintain telecom equipment.

HP OpenView Integrated Service Assurance for Communication Networks (OVISACN) is an integrated solution for managing IP devices, telecom equipment, system information, and software applications. It includes two products:

- **HP OpenView Operations (OVO).** OVO provides the foundation for OVISACN. It includes HP OpenView Network Node Manager (NNM) for the management of IP networks. OVO also includes HP OpenView Service Navigator for the management of interdependent services in one or more managed domains.
- **OV Telecom Extensions for OV Operations.** OV Telecom Extensions adds a telecom data collector to OVO to receive events from telecommunications devices. HP and third-party partners offer HP OpenView Smart Plug-ins (SPIs) that contain preconfigured message source templates for receiving these events.

Figure 1-2 presents a high-level overview of the OVISACN product architecture.

Figure 1-2 High-Level Product Architecture



HP OpenView Operations

OVO presents events from all managed devices and applications in one message browser. Network operators see the broad picture of the network state and can prioritize their efforts across the entire managed network. The OVO operator GUI displays icons for the managed devices and applications. This GUI shows status of the represented elements based on the severity of the received events.

The primary components of OVO are:

- **OVO agent**—The OVO agent processes run on managed nodes throughout the environment to collect events from the processes running on those nodes. The OVO agent filters and formats these events according to information in configured message source templates. It then forwards relevant information in the form of messages to the OVO server. The OVO server responds with actions to prevent or correct problems on the managed nodes and passes the messages to the message browser in the OVO operator GUI.

The OVO agent performs self-management by reading OVO server software and machine operating system log files and creating and sending applicable messages to the OVO server.

Custom data collectors may be needed for managed devices that use proprietary APIs to send events. The OVO developer's toolkit provides an interface for writing such custom data collectors to receive events via the proprietary API and insert these events directly into the OVO agent message interceptor in an appropriate format.

- **OVO server**—The OVO server receives formatted messages from all managed nodes (via the OVO agents). It manages these messages, initiating automatic actions as necessary, and groups messages according to the current configuration. The OVO server updates the messages and status information displayed in the OVO operator GUI. Additionally, the OVO server can forward messages to other management servers and can install, configure, and update the OVO agent software on managed nodes.
- **OVO operator GUI**—The Java OVO graphical user interface displays the nodes managed by the current operator in the node bank. It also includes message groups, applications, and services. The OVO operator GUI message browser displays formatted messages received from all managed devices and applications.

About HP OpenView Integrated Service Assurance for Communication Networks

Network operators interact with the information presented in the OVO operator GUI to know the condition of the managed nodes they are responsible to maintain and to set priorities for their work day.

The network administrator uses the Motif OVO administrator GUI to configure each operator's working environment.

- **NNM GUI**—The Motif NNM administrator graphical user interface displays a network map of the managed IP devices. This map groups the IP devices into subnets and shows status for each managed component. The NNM GUI is populated by the automated IP discovery and layout mechanism and includes tools for troubleshooting problems in the IP network. A Java read-only copy of the NNM map is available from the OVO operator GUI.
- **Service Navigator**—Service Navigator provides visual data about the availability of the services in the network. Service Navigator displays a hierarchy of services and shows the current status of each service. It supports the definition of relationships between these services and managed devices and applications such that an incoming event from a device or application can affect the status of an associated service. Service Navigator provides root cause analysis of service status issues. It can also show the services impacted by a particular failure condition listed in the message browser. If OV Topology Server is also configured, the service hierarchy can show the specific telecom network element that is causing a service degradation.

OV Telecom Extensions for OV Operations

The OV Telecom Extensions for OV Operations product adds one or more telecom data collectors to the OVO agent, thereby increasing the types of equipment that OVO can manage. OV Telecom Extensions offers the following functionality:

- Provides management of events from network element (NE) and element management system (EMS).
- Extends OVO to enable correlation and presentation of events and alarms from NEs and EMSs.
- Provides NE and EMS mediation with communication and data collection enhancements for the OVO agent.
- Provides stream data collectors for socket and FIFO communications in addition to the SNMP, logfile, scripting, and programmatic capabilities of the OVO agent.

The primary component of the OV Telecom Extensions product is the telecom subagent. The telecom subagent acts as a data collector to receive events from telecom network elements and telecom element management systems. The telecom subagent formats the received events using the configured message source templates, provides table lookup capabilities, and forwards the events to the OVO agent.

As shipped, the telecom subagent can receive events via TCP (passive and active) and FIFO pipes. It can also receive events from an executed command that acts as a proxy to the NE.

SPIs

The OVO agent is configured via message source templates that specify the events of interest to the network management operator and define event processing. The agent can only format and forward an event that is described in a message source template. It can be very time-consuming to configure message source templates for all of your managed applications and devices. For that reason, HP and third-party partners offer HP OpenView Smart Plug-ins (SPIs) that contain preconfigured message source templates.

SPIs are designed to collect events from data sources and insert these events into the OVO agent. They may also contain associated mapping tables and additional discrimination on content to produce messages that are specific and meaningful to the user. Additionally, SPIs often include custom applications for managing the supported applications or devices.

HP provides the following SPIs for telecom equipment:

- HP OpenView Smart Plug-ins for TL1 Network Devices—OVISACN interface that allows bidirectional monitoring and control of TL1 network devices for fault management.
- HP OpenView Smart Plug-ins for Communication Network Devices—OVISACN interfaces for various telecommunications network devices.
- HP OpenView Smart Plug-ins for Agilent AcceSS7—OVISACN interfaces for the Agilent AcceSS7 application.

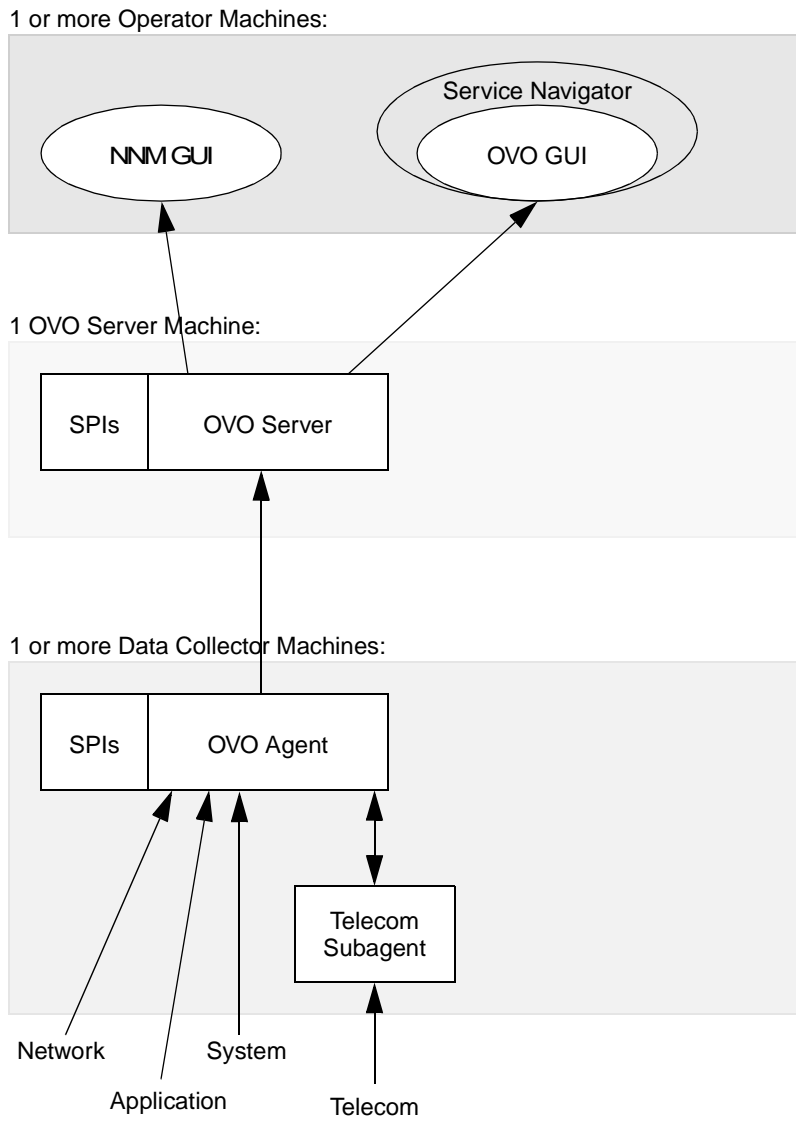
Deployment

This section describes a common scenario for deploying OVISACN in small and moderately sized networks that have not yet used a telecom equipment-specific network management tool. The effect of this scenario is to add a new set of data collection elements to those provided with the standard OVO product. It should show immediate return on a small time investment for product installation and configuration.

The telecom data collectors are deployed as a subagent to the OVO agent. The telecom subagent preprocesses the telecom events to do table lookups for some event fields and inserts these events into the OVO agent for normal OVO handling. Ordinarily, the agent is deployed remotely at a site close to the managed elements, requiring little consulting for the initial deployment.

Figure 0-5 shows the recommended distribution of OVISACN software for this scenario.

Figure 1-3 **Distribution of Software Components for OV Telecom Extensions**



For Detailed Information

The *HP OpenView VantagePoint Operations for UNIX Administrator's Reference* guides contain information on:

- Agents.
- Customizing the event viewer.
- Configuring and using OVO.

The *Managing Your Network with Network Node Manager* guide contains information on:

- Configuring and using NNM.

The *HP OpenView Telecom Extensions Configuration and Maintenance Guide* contains information on:

- Initial and ongoing configuration of telecom subagents.
- Troubleshooting OV Telecom Extensions.