

SolarWinds® Orion®

Network Performance Monitor Quick Start Guide



ORION NETWORK PERFORMANCE MONITOR

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About SolarWinds

SolarWinds, Inc develops and markets an array of network management, monitoring, and discovery tools to meet the diverse requirements of today's network management and consulting professionals. SolarWinds products continue to set benchmarks for quality and performance and have positioned the company as the leader in network management and discovery technology. The SolarWinds customer base includes over 45 percent of the Fortune 500 and customers from over 90 countries. Our global business partner distributor network exceeds 100 distributors and resellers.

Contacting SolarWinds

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Technical Support	www.solarwinds.com/support
User Forums	http://www.thwack.com/

Conventions

The documentation uses consistent conventions to help you identify items throughout the printed and online library.

Convention	Specifying
Bold	Window items, including buttons and fields.
<i>Italics</i>	Book and CD titles, variable names, new terms
Fixed font	File and directory names, commands and code examples, text typed by you
Straight brackets, as in [value]	Optional command parameters
Curly braces, as in {value}	Required command parameters
Logical OR, as in value1 value2	Exclusive command parameters where only one of the options can be specified

SolarWinds Orion Network Performance Monitor Documentation Library

The following documents are included in the SolarWinds Orion Network Performance Monitor documentation library:

Document	Purpose
Administrator Guide	Provides detailed setup, configuration, and conceptual information.
Evaluation Guide	Provides an introduction to Orion Network Performance Monitor features and instructions for installation and initial configuration.
Page Help	Provides help for every window in the Orion Network Performance Monitor user interface
Quick Start Guide	Provides installation, setup, and common scenarios for which Orion Network Performance Monitor provides a simple, yet powerful, solution.
Release Notes	Provides late-breaking information, known issues, and updates. The latest Release Notes can be found at www.solarwinds.com .

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Chapter 1

Introduction

Orion Network Performance Monitor (Orion NPM) delivers comprehensive fault and network performance management that scales with rapid network growth and expands with your network monitoring needs, allowing you to collect and view availability and realtime and historical statistics directly from your web browser. While monitoring, collecting, and analyzing data from routers, switches, firewalls, servers, and any other SNMP-enabled devices, Orion NPM successfully offers you a simple-to-use, scalable network monitoring solution for IT professionals juggling any size network. Users find that it does not take a team of consultants and months of unpleasant surprises to get Orion NPM up and running because the Orion NPM experience is far more intuitive than conventional, complex enterprise network management systems. Because it can take less than an hour to deploy and no consultants are needed, Orion NPM provides quick and cost-effective visibility into the health of network devices, servers, and applications on your network, ensuring that you have the realtime information you need to keep your systems running at peak performance.

Why Install SolarWinds Orion NPM

Out of the box, Orion NPM monitors the following critical performance metrics for devices on your network:

- Network availability
- Bandwidth capacity utilization
- Buffer usage and errors
- CPU and memory utilization
- Interface errors and discards
- Network latency
- Node, interface, and volume status
- Volume usage

These monitoring capabilities, along with a fully customizable web-based interface, alerting, reporting engines, and flexible expansion capabilities, make SolarWinds Orion Network Performance Monitor the easiest choice you will make involving your network performance monitoring needs.

Benefits of Orion Network Performance Monitor

Consider the following benefits of Orion Network Performance Monitor.

Out-of-the-box Productivity

Automatic discovery and wizard-driven configuration offer an immediate return on your investment. Within minutes of installing Orion NPM, you can be monitoring your critical network devices.

Easy to Understand and Use

Orion NPM is designed for daily use by staff that also have other responsibilities. The Orion NPM interface provides what you need where you expect to find it and offers advanced capabilities with minimal configuration overhead.

Affordable Value

While Orion NPM provides functionality that is comparable, if not superior, to most other solutions, the cost and maintenance of your Orion NPM installation is less than the initial cost of most other solutions.

Scalability

By adding individual polling engines, you can scale your Orion NPM installation to any environment size. By sharing the same database, you can also share a unified user interface, making the addition of polling engines transparent to your staff.

thwack.com Online Community

thwack.com is a community site that SolarWinds developed to provide SolarWinds users and the broader networking community with useful information, tools and valuable resources related to SolarWinds network management solutions. Resources that allow you both to see recent posts and to search all posts are available from the Orion Web Console, providing direct access to the thwack.com community.

Key Features of Orion Network Performance Monitor

Considering the previously listed benefits of Orion NPM and the following features, Orion NPM is a simple choice to make.

Customizable and Flexible Orion Web Console

You can easily customize the web console to meet your individual needs. If you want to segregate use, you can custom design views of your data and assign them to individual users. You can also create web console accounts for departments, geographic areas, or any other user-defined criteria.

Automatic Device Discovery

Wizard-driven device discovery further simplifies the addition of devices and interfaces to Orion NPM. Answer a few general questions about your devices, and the discovery application takes over, populating Orion NPM and immediately beginning network analysis. You can also create network discovery schedules to independently and automatically run Network Sonar Discovery jobs whenever you need them.

Intuitive Orion NPM Administration

Using the award-winning, intuitive Orion NPM web interface, you can now conduct administrative tasks, such as adding new devices, both individually and in groups, establish unique user accounts, and customize web console displays from anywhere on your network. These administration features allow you to save time by administering Orion NPM tasks remotely without having to RDP directly into the Orion NPM host server.

Open Integration

Enterprise-tested standards, including a Microsoft® SQL Server database and industry-standard MIBs and protocols, are the backbone of the Orion NPM network monitoring solution.

Integrated Wireless Poller

An integrated wireless device poller enables you to leverage proven Orion NPM alerts, reports, and web console resources as you monitor and manage wireless thin and autonomous access points in the same views in which you are already monitoring your wired network devices.

Cisco EnergyWise Monitoring

Cisco EnergyWise technology allows you to responsibly manage energy usage across the enterprise. With Orion NPM, you can view EnergyWise device management data to measure, report, and reduce the energy consumption of any devices connected to EnergyWise-enabled switches.

Network Atlas with ConnectNow

Network Atlas, the Orion network mapping application, gives you the ability to create multi-layered, fully customizable, web-based maps of your network to visually track the performance of any device in any location across your network in real time. The ConnectNow feature automatically draws links between directly-connected physical nodes discovered on your network.

Unpluggable Port Mode

Orion NPM enables you to designate selected ports as unpluggable, so you no longer receive unnecessary alerts when users undock or shutdown

connected devices. This feature is particularly useful for differentiating lower priority ports connected to laptops and PCs from more critically important infrastructure ports.

Universal Device Pollers

The Universal Device Poller allows you to easily add any SNMP-enabled device into the local monitoring database and collect any statistics or information that are referenced in device MIB tables. Using poller transforms available in the Universal Device Poller Wizard, you can also manipulate data collected from multiple Universal Device Pollers to create your own custom statistics and then choose your own customized data display.

VMware ESX Server Monitoring

Orion NPM enables you to monitor VMware ESX servers, including VMware ESXi, and any virtual machines (VMs) hosted by ESX servers on your network. Available resources include lists of VMs on selected ESXi and ESX servers, performance details for ESXi and ESX servers and hosted VMs, and relevant charts and reports.

Incident Alerting

You can configure custom alerts to respond to hundreds of possible network scenarios, including multiple condition checks. Orion NPM alerts help you recognize issues before your network users experience productivity hits. Alert delivery methods and responses include email, paging, SNMP traps, text-to-speech, Syslog messaging, and external application execution.

Integrated Trap and Syslog Servers

Orion NPM allows you to save time when investigating network issues by giving you the ability to use traps and Syslog messages to access network information from a single interface instead of requiring that you poll multiple machines. You can use Orion NPM to easily set up alerts and then receive, process, forward, and send syslog and trap messages.

Detailed Historical Reports

Easily configure reports of data from the Orion database over custom time periods. Data is presented in an easily reviewed format in the web console or in the Orion Report Writer application. With over 40 built-in reports available, you can project future trends and capacity needs, and immediately access availability, performance, and utilization statistics. You can also download new reports for import into Report Writer from www.thwack.com.

Extensible Orion NPM Modules

With additional modules, including Application Performance Monitor, NetFlow Traffic Analyzer, IP SLA Manager (formerly VoIP Monitor), IP Address

Manager, and the Network Configuration Manager integration, Orion NPM can monitor network applications, analyze network traffic, monitor VoIP and WAN traffic using Cisco IP SLA, manage IP address and subnet allocations, and monitor EnergyWise devices, respectively. Orion modules save time by leveraging the existing Orion NPM deployment to add feature functionality without requiring additional standalone software.

Product Update Notifications

Receive regular, automatic notification of updates to your installed Orion monitoring and management applications in the Orion Web Console as soon as they are available from SolarWinds. Product updates can include upgrade opportunities, service packs, and hotfixes.

Orion Product Team Blog

Stay in touch with the people who bring you the products in the Orion family by following the Orion Product Team Blog on [thwack](#), the SolarWinds online user community. Read posts from Orion product managers and developers to learn how to extend and optimize your Orion installation to best meet the needs of your network.

Networking Concepts and Terminology

The following sections define the networking concepts and terminology that are used within Orion NPM.

- Internet Control Message Protocol (ICMP)
- Simple Network Management Protocol (SNMP)
- SNMP Credentials
- Management Information Base (MIB)

Internet Control Message Protocol (ICMP)

Orion NPM uses the Internet Control Message Protocol (ICMP) to poll for status using `ping` and `echo` requests of managed devices. When Orion NPM polls a managed device using ICMP, if the device is operationally up, it returns a response time and record of any dropped packets. This information is used by Orion NPM to monitor status and measure average response time and packet loss percentage for managed devices.

Note: Orion NPM only uses ICMP to poll devices for status, average response time, and packet loss percentage. Other information displayed in the Orion Web Console is obtained using SNMP requests.

Simple Network Management Protocol (SNMP)

For most network monitoring and management tasks, Orion NPM uses the Simple Network Management Protocol (SNMP). SNMP-enabled network devices, including routers, switches, and PCs, host SNMP agents that maintain a virtual database of system status and performance information that is tied to specific Object Identifiers (OIDs). This virtual database is referred to as a Management Information Base (MIB), and Orion NPM uses MIB OIDs as references to retrieve specific data about a selected, SNMP-enabled, managed device. Access to MIB data may be secured either with SNMP Community Strings, as provided with SNMPv1 and SNMPv2c, or with optional SNMP credentials, as provided with SNMPv3.

For more information about MIBs, see “Management Information Base (MIB)” on page 7.

For more information about SNMP credentials, see “SNMP Credentials” on page 6.

Notes:

- To properly monitor devices on your network, you must enable SNMP on all devices that are capable of SNMP communications. The steps to enable SNMP differ by device, so you may need to consult the documentation provided by your device vendor.
- If SNMPv2c is enabled on a device you want Orion NPM to monitor, by default, Orion NPM will attempt to use SNMPv2c to poll the device for performance information. If you only want Orion NPM to poll using SNMPv1, you must disable SNMPv2c on the device to be polled.

SNMP Credentials

SNMP credentials secure access to SNMP-enabled managed devices. SNMPv1 and SNMPv2c credentials serve as a type of password that is authenticated by confirming a match between a cleartext SNMP Community String provided by an SNMP request and the SNMP Community String stored as a MIB object on an SNMP-enabled, managed device. SNMPv3 provides a more secure interaction by employing the following fields:

- The **User Name** is a required cleartext string that identifies the agent or poll request that is attempting to access an SNMP-enabled device. User Name functions similarly to the SNMP Community String of SNMP v1 and v2c.
- The **Context** is an optional identifying field that can provide an additional layer of organization and security to the information available in the MIB of an SNMP-enabled device. Typically, the context is an empty string unless it is specifically configured on an SNMP-enabled device.

- SNMPv3 provides two optional **Authentication Methods**: Message Digest 5 (MD5) and Secure Hash Algorithm 1 (SHA1). Both methods, MD5 and SHA1, include the **Authentication Key** with the SNMPv3 packet and then generate a digest of an entire SNMPv3 packet that is then sent. MD5 digests are 20 bytes long, and SHA1 digests are 16 bytes long. When the packet is received, the User Name is used to recreate a packet digest using the appropriate method. Both digests are then compared to authenticate.
- SNMPv3 also provides two optional **Privacy/Encryption Methods**: Data Encryption Standard (DES56) and Advanced Encryption Standard (AES128) using a 128 bit key. DES56 uses a 56 bit key with a 56 bit salt, and AES128 uses a 128 bit key with a 128 bit salt to encrypt the full SNMP v3 packet.

Management Information Base (MIB)

A Management Information Base (MIB) is the formal description of a set of objects that can be managed using SNMP. MIB-I refers to the initial MIB definition, and MIB-II refers to the current definition. Each MIB object stores a value such as `sysUpTime`, `bandwidth utilization`, or `sysContact`. During polling, Orion NPM sends a `SNMP GET` request to each network device to poll the specified MIB objects. Received responses are then recorded in the Orion NPM database for use in Orion NPM, including within Orion Web Console resources.

Most network devices can support several different types of MIBs. While most devices support the standard MIB-II MIBs, they may also support any of a number of additional MIBs that you may want to monitor. Using a fully customizable Orion Universal Device Poller, you can gather information from virtually any MIB on any network device to which you have access.

How Orion Network Performance Monitor Works

Through ICMP, SNMP, and Syslog communication and data collection, Orion NPM continuously monitors the health and performance of your network. Orion NPM does this without interfering with the critical functions of your network devices. Unlike many other network monitoring products, Orion NPM helps you maintain the overall performance of your network in the following ways:

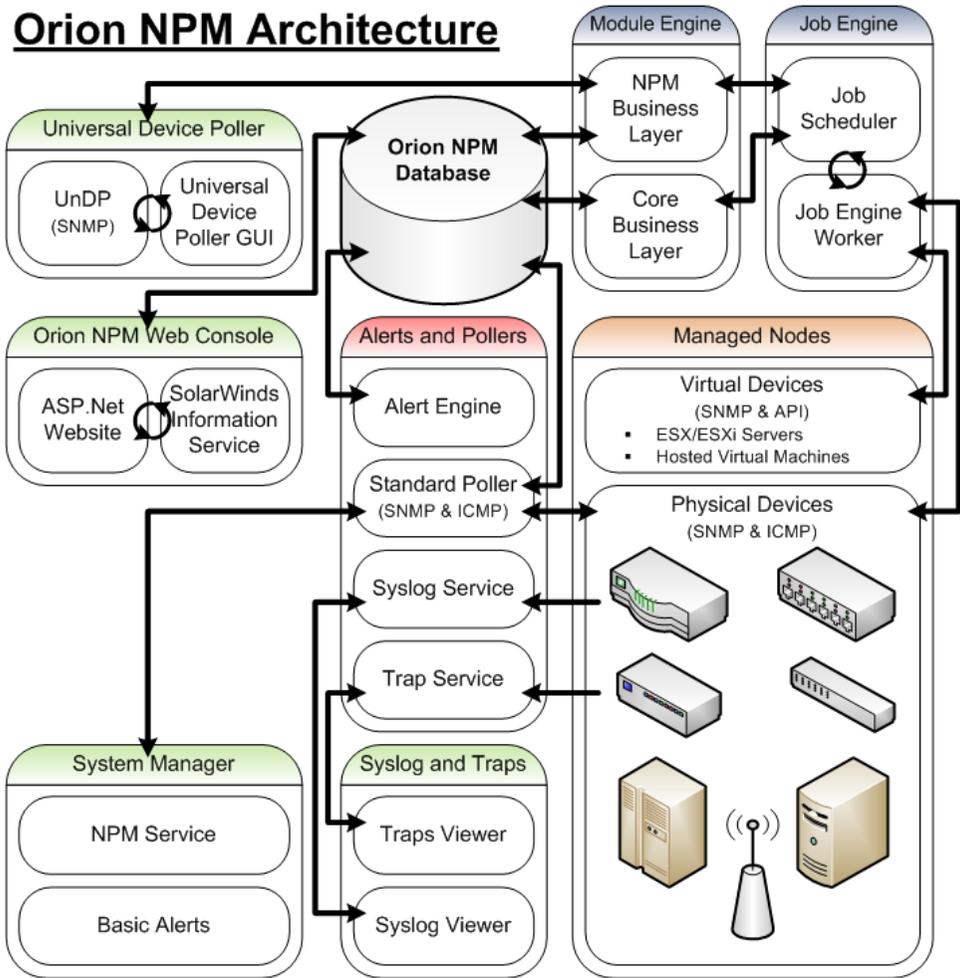
- Orion NPM does not install outside agents on your mission-critical servers
- Orion NPM does not employ services that take vital resources from critical applications
- Orion NPM does not install any code on monitored network devices. Unmanaged or outdated code can open security holes in your network.

After installing Orion NPM, you can automate the initial discovery of your network, and then simply add new devices to Orion NPM as you add them to your network. Orion NPM stores gathered information in a SQL database and

provides a user-friendly, highly customizable web console in which to view current and historical network status.

The following diagram provides an overview of the current Orion NPM architecture, including interactions among Orion NPM components, the Orion NPM database, and the managed nodes on your network.

Orion NPM Architecture



Chapter 2

Installing SolarWinds Orion Network Performance Monitor

Orion Network Performance Monitor (Orion NPM) provides a simple, wizard-driven installation process. For an enterprise-class product, system hardware and software requirements are nominal.

Licensing Orion Network Performance Monitor

Orion NPM can collect data and detailed information from any of your version 3 or earlier SNMP-enabled devices, including routers, switches, firewalls, and servers. Orion NPM is licensed in accordance with the largest number of the following three types of monitored network elements:

Nodes

Nodes include entire devices, for example, routers, switches, virtual and physical servers, access points, and modems.

Interfaces

Interfaces include switch ports, physical interfaces, virtual interfaces, sub-interfaces, VLANs, and any other single point of network traffic.

Volumes

Volumes are equivalent to the logical disks you are monitoring.

The following list provides the different types of Orion Network Performance Monitor licenses that are available:

- Up to 100 objects (SL100)
- Up to 250 objects (SL250)
- Up to 500 objects (SL500)
- Up to 2000 objects (SL2000)
- Unlimited objects (SLX)

Database size increases with the addition of managed objects. Depending on the number of objects and the amount of traffic flowing through them, managing more than 8,000 objects may require additional polling engines. For more information about adding polling engines, see “Using Additional Polling Engines” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Orion NPM Requirements

SolarWinds recommends installing Orion NPM on its own server, with the Orion database hosted separately, on its own SQL Server. Installations of multiple Orion NPM servers using the same database are not supported.

Orion NPM Server

The following table lists minimum software requirements for your Orion server.

Software	Requirements
Operating System	Windows 2008 Server R2 (32-bit or 64-bit, with IIS in 32-bit mode) Windows 2003 Server R2 (32-bit or 64-bit, with IIS in 32-bit mode) IIS must be installed. SolarWinds recommends that Orion NPM administrators have local administrator privileges to ensure full functionality of local Orion NPM tools. Accounts limited to use of the web console do not require administrator privileges. Note: SolarWinds does not support production installations of Orion NPM in Windows XP, Windows Vista, or Windows 7 environments.
Web Server	Microsoft IIS, version 6.0 and higher, in 32-bit mode. DNS specifications require that hostnames be composed of alphanumeric characters (A-Z, 0-9), the minus sign (-), and periods (.). Underscore characters (_) are not allowed. For more information, see <i>RFC 952</i> . Note: SolarWinds neither recommends nor supports the installation of Orion NPM on the same server or using the same database server as a Research in Motion (RIM) Blackberry server.
.NET Framework	Version 3.5 or higher. .NET Framework 3.5 SP1 is recommended.
SNMP Trap Services	Windows operating system management and monitoring tools component
Web Console Browser	Microsoft Internet Explorer version 6 or higher with Active scripting Firefox 3.0 or higher (Toolset Integration is not supported on Firefox)

The following hardware requirements are listed by Orion NPM license level.

Hardware	SL100, SL250, or SL500	SL2000	SLX
CPU Speed	2.0 GHz	2.4 GHz	3.0 GHz
	Note: Dual processor, dual core is recommended.		
Hard Drive Space	2 GB	5 GB	20 GB
	Note: A RAID 1 drive for server operating system, Orion NPM installation, and tempdb files is recommended. The Orion installer needs 1GB on the drive where temporary Windows system or user variables are stored. Per Windows standards, some common files may need to be installed on the same drive as your server operating system. For more information, see "Working with System Temporary Directories" in the SolarWinds Orion Network Performance Monitor Administrator Guide.		
Memory	2 GB	3 GB	3 GB
Application Ports	161/SNMP and 443/SNMP. VMware ESX/ESXi Servers are polled on 443. 17777/TCP open for Orion module traffic 17778/HTTPS open to access the SolarWinds Information Service API		

Orion Database Server (SQL Server)

The following table lists software and hardware requirements, by license level, for your Orion database server.

Requirements	SL100, SL250, or SL500	SL2000	SLX
SQL Server	SQL Server 2005 SP1 Express, Standard, or Enterprise SQL Server 2008 Express, Standard, or Enterprise Notes: <ul style="list-style-type: none"> • Either mixed-mode or SQL authentication must be supported. • If you are managing your Orion database, SolarWinds recommends you install the SQL Server Management Studio component. • Use the following database select statement to check your SQL Server version, service pack or release level, and edition: <pre>select SERVERPROPERTY ('productversion'), SERVERPROPERTY ('productlevel'), SERVERPROPERTY ('edition')</pre> 		
CPU Speed	2.0 GHz	2.4 GHz	3.0 GHz
Hard Drive Space	2 GB	5 GB	20 GB
	Note: Due to intense I/O requirements, a RAID 1+0 drive is strongly recommended for the SQL Server database and Orion NPM data and log files. RAID 5 is not recommended for the SQL Server hard drive. The Orion installer needs at least 1GB on the drive where temporary Windows system or user variables are stored. Per Windows standards, some common files may need to be installed on drive as your server operating system. For more information, see "Working with System Temporary Directories" in the SolarWinds Orion Network Performance Monitor Administrator Guide.		
Memory	2 GB	3 GB	4 GB

The Configuration Wizard installs the following required x86 components if they are not found on your Orion database server:

- SQL Server System Common Language Runtime (CLR) Types. Orion NPM uses secure SQL CLR stored procedures for selected, non-business data operations to improve overall performance.
- Microsoft SQL Server Native Client
- Microsoft SQL Server Management Objects

Notes:

- If you are using SQL Server 2005 SP1 Express Edition on a Windows XP operating system, enable Shared Memory, TCP/IP, and Named Pipes.
- If Orion NPM installs SQL Server System CLR Types, a manual restart of the SQL Server service for your Orion database is required.

Requirements for Virtual Machines and Servers

Orion NPM installations on VMware Virtual Machines and Microsoft Virtual Servers are fully supported if the following minimum configuration requirements are met for each virtual machine.

Note: SolarWinds strongly recommends that you maintain your SQL Server database on a separate physical server.

Virtual Machine Configuration	Orion NPM Requirements by License Level		
	SL100, SL250, or SL500	SL2000	SLX
CPU Speed	2.0 GHz	2.4 GHz	3.0 GHz
Allocated Hard Drive Space	2GB	5GB	20GB
	Note: Due to intense I/O requirements, SQL Server should be hosted on a separate physical server configured as RAID 1+0. RAID 5 is not recommended for the SQL Server hard drive.		
Memory	2GB	3 GB	3 GB
Network Interface	Each installation of Orion NPM should have its own, dedicated network interface card. Note: Since Orion NPM uses SNMP to monitor your network, if you are unable to dedicate a network interface card to your Orion NPM installation, you may experience gaps in monitoring data due to the low priority generally assigned to SNMP traffic.		

SNMP Requirements for Monitored Devices

Orion NPM can monitor the performance of any SNMPv1-, SNMPv2c-, or SNMPv3-enabled device on your network. Consult your device documentation or a technical representative of your device manufacturer to acquire specific instructions for configuring SNMP on your device.

Notes:

- To properly monitor devices on your network, you must enable SNMP on all devices that are capable of SNMP communications
- Unix-based devices should use the configuration of Net-SNMP version 5.5 or higher that is specific to the type of Unix-based operating system in use.
- Orion NPM is capable of monitoring VMware ESX and ESXi Servers versions 3.5 and higher with VMware Tools installed. For more information about enabling SNMP and VMware Tools on your VMware device, consult your VMware documentation or technical representative.
- If SNMPv2c is enabled on a device you want Orion NPM to monitor, by default, Orion NPM will attempt to use SNMPv2c to poll the device for performance information. If you only want Orion NPM to poll using SNMPv1, you must disable SNMPv2c on the device to be polled.

Server Sizing

Orion NPM is capable of monitoring networks of any size, ranging from small corporate LANs to large enterprise and service provider networks. Most Orion NPM systems perform well on 3.0 GHz systems with 3 GB of RAM, using default polling engine settings. However, when monitoring larger networks, you should give additional consideration to the hardware used and the system configuration.

There are three primary variables that affect scalability. The most important consideration is the number of monitored elements, where an element is defined as a single, identifiable node, interface, or volume. Systems monitoring more than 1,000 elements may require tuning for optimal performance. The second variable to consider is polling frequency. For instance, if you are collecting statistics every five minutes instead of the default nine, the system will have to work harder and system requirements will increase. Finally, the number of simultaneous users accessing Orion NPM directly impacts system performance.

When planning an Orion NPM installation, there are four main factors to keep in mind with respect to polling capacity: CPU, memory, number of polling engines, and polling engine settings. For minimum hardware recommendations, see “Orion NPM Requirements” on page 10. For more information about polling engines, see “Managing Orion NPM Polling Engines” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

In most situations, installing Orion NPM and SQL Server on different servers is highly recommended, particularly if you are planning to monitor 2000 elements or more. If you experience performance problems or you plan to monitor a very large network, you should certainly consider this option. This scenario offers several performance advantages, as the Orion NPM server does not perform any database processing, and it does not have to share resources with SQL Server.

If you plan to monitor 8000 or more elements, SolarWinds recommends that you install additional polling engines on separate servers to help distribute the work load. For more information about sizing Orion NPM to your network, contact the SolarWinds sales team or visit www.solarwinds.com. For more information about configuring additional pollers, see “Using Additional Poller Engines” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Enabling Microsoft Internet Information Services (IIS)

To host the Orion Web Console, Microsoft Internet Information Services (IIS) must be installed and enabled on your Orion NPM server. Windows XP and Server 2003 require IIS version 6; Windows Vista and Server 2008 require IIS version 7, as detailed in the following sections:

- Enabling IIS on Windows Server 2003 and Windows XP
- Enabling IIS on Windows Vista and Windows Server 2008

Enabling IIS on Windows Server 2003 and Windows XP

The following procedure enables IIS on Windows Server 2003.

To enable IIS on Windows Server 2003 and Windows XP:

1. Click **Start > Control Panel > Add or Remove Programs**.
2. Click **Add/Remove Windows Components**.
3. Select **Application Server** and confirm that it is checked.
4. Click **Details**.
5. Select **Internet Information Services (IIS)** and confirm that it is checked.
6. Click **Details**.
7. Select **World Wide Web Service** and confirm that it is checked.
8. Click **Details**.
9. Select **World Wide Web Service** and confirm that it is checked.
10. Click **OK**.
11. Click **OK** on the **Internet Information Services (IIS)** window.
12. Click **OK** on the **Application Server** window.
13. Select **Management and Monitoring Tools** and confirm that it is checked.
14. Click **Details**.
15. Select both **Simple Network Management Protocol** and **WMI SNMP Provider** and confirm that they are checked, and then click **OK**.
16. Click **Next** on the Windows Components window, and then click **Finish** after completing the Windows Components Wizard.
Note: You may be prompted to install additional components, to provide your Windows Operating System media, or to restart your computer.
17. *If you are currently enabling IIS as part of an Orion NPM installation, restart the Orion NPM installer. For more information, see "Completing an Orion NPM Installation" on page 16.*

Enabling IIS on Windows Vista and Windows Server 2008

The following procedure enables IIS on Windows Server 2008.

To enable IIS on Windows Vista and Windows Server 2008:

1. Click **Start > All Programs > Administrative Tools > Server Manager**.
2. Click **Roles** in the left pane.

3. Click **Add Roles** on the right, in the main pane.
4. Click **Next** to start the Add Roles Wizard.
5. Check **Web Server (IIS)**.
6. *If you are prompted to add features required for Web Server (IIS), click **Add Required Features**.*
7. Click **Next** on the Select Server Roles window.
8. Click **Next** on the Web Server (IIS) window.
9. Confirm that **Common HTTP Features > Static Content** is installed.
10. Check **Application Development > ASP.NET**.
11. Click **Add Required Role Services**.
12. Check both **Security > Windows Authentication** and **Security > Basic Authentication**.
13. Check **Management Tools > IIS 6 Management Compatibility**.
14. Click **Next** on the Select Role Services window.
15. Click **Install** on the Confirm Installation Selections window.
16. Click **Close** on the Installation Results window.
17. *If you are currently enabling IIS as part of an Orion NPM installation, restart the Orion NPM installer as detailed in “Completing an Orion NPM Installation” on page 16.*

Enabling IIS on Windows 7

SolarWinds only supports evaluations of Orion NPM version 10 and higher on Windows 7. In these version of Orion NPM, IIS is enabled automatically after installation and prior to the start of the Configuration Wizard.

Installing Orion Network Performance Monitor

Any installation or upgrade of Orion NPM requires completion of both the installer and the Configuration Wizard, as detailed in the following sections:

- Completing an Orion NPM Installation
- Completing the Orion Configuration Wizard

Completing an Orion NPM Installation

The following procedure guides you through installing Orion NPM. Ensure that the computer on which you install Orion NPM meets or exceeds the stated requirements. For more information, see “Orion NPM Requirements” on page 10.

Notes:

- If you are using Internet Explorer, SolarWinds recommends that you add both the URL of your Orion website (`http://FullOrionServerName/`) and `about:blank` to the list of trusted sites. For more information about adding sites to your trusted sites list, see the Microsoft article, “Working with Internet Explorer 6 Security Settings”.
- For evaluation purposes only, Orion NPM may be installed on Windows 7, Windows XP, or Windows Vista. SolarWinds does not, however, support or recommend installing Orion NPM on these operating systems in production environments.
- When installing Orion NPM on Windows XP, you must confirm that Shared Memory, Named Pipes, and TCP/IP are enabled on remote databases.
- When installing Orion NPM on Windows Server 2008, Windows Vista, or Windows 7, you must disable IPv6 support in Internet Information Services (IIS). For more information, see <http://support.microsoft.com/kb/929852/>.
- If you are upgrading from a previous version of Orion Network Performance Monitor, see “Upgrading Orion Network Performance Monitor” on page 20.

To install Orion Network Performance Monitor:

1. As an administrator, log on to your Orion NPM server.

Notes:

- To avoid permissions issues, do not log on using a domain account.
 - Do not install Orion NPM on a domain controller.
 - SolarWinds generally recommends that you back up your database before performing any upgrade.
2. ***If you are using more than one polling engine to collect network information***, shut down each of these polling engines before continuing.
 3. ***If you downloaded the product from the SolarWinds website***, navigate to your download location, and then launch the executable file.
 4. ***If you received physical media***, browse to the executable and launch it.

5. **If you are prompted to install requirements**, click **Install**, and then complete the installation, including a reboot, if required.

Notes:

- Downloading and installing Microsoft .NET Framework 3.5 may take up to 20 minutes or more, depending on your existing system configuration.
 - If a reboot is required, after restart, click **Install** to resume installation, and then click **Next** on the Welcome window.
6. Review the Welcome text, and then click **Next**.
 7. **If the InstallShield Wizard detects that Microsoft Internet Information Services (IIS) is not installed**, select the suspend installation option, click **Next**, quit setup, and then install Internet Information Services. For more information, see “Enabling Microsoft Internet Information Services (IIS)” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
 8. **If the InstallShield Wizard detects that any of the following SQL Server components are not already installed**, click **Install**:
 - Microsoft SQL Server System CLR Types
 - Microsoft SQL Server Native Client
 - Microsoft SQL Server Management Objects
 9. Accept the terms of the license agreement, and then click **Next**.
 10. **If you want to install Orion NPM in a destination folder other than the default given**, click **Browse**, select an installation folder, and then click **OK**.
 11. Click **Next** on the Choose Destination Location window.
 12. Confirm the current installation settings, and then click **Next** on the Start Copying Files window.
 13. Provide the appropriate information on the Install Software License Key window, and then click **Continue**.

Note: You need your customer ID and password to successfully install the key. For more information, see “Software License Key” on page 77.
 14. Click **Continue** when the license is successfully installed.
 15. Click **Finish** on the InstallShield Wizard Complete window.

The Orion Configuration Wizard should load automatically. For more information about completing the Orion Configuration Wizard, see “Completing the Orion Configuration Wizard” on page 18.

Completing the Orion Configuration Wizard

The following procedure using the Orion Configuration Wizard completes and configures your Orion NPM installation.

Notes:

- Confirm that you have designated a SQL Server database instance for Orion NPM. For more information, see “Orion NPM Requirements” on page 10.
- Confirm that the Internet Information Services (IIS) Manager is not open while the Configuration Wizard is running.
- During configuration, the Orion polling engine will shutdown temporarily with the result that, if you are actively polling, you may lose some polling data. SolarWinds recommends that you perform upgrades during off-peak hours of network usage to minimize the impact of this temporary polling stoppage.

To configure Orion Network Performance Monitor:

1. **If the Configuration Wizard has not loaded automatically**, click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Configuration Wizard**.
2. Click **Next** on the Welcome window of the Configuration Wizard.
3. **If you are prompted to stop services**, click **Yes**.

Note: To ensure that all updates and changes are installed correctly, it is imperative that you stop all services.

4. Specify the SQL Server instance you want to use to store network data.
5. Provide the credentials, if necessary, that are required to log into the selected instance.

Notes:

- **If you are using an existing database**, the user account needs only to be in the `db_owner` database role for the existing database.
- **If you are using an existing SQL account**, the user account needs only to be in the `db_owner` database role for the Orion NPM database.
- The selected instance must support mixed-mode or SQL authentication with strong passwords. A strong password must meet at least three of the following four criteria:
 - Contains at least one uppercase letter.
 - Contains at least one lowercase letter.

- o Contains at least one number.
- o Contains at least one non-alphanumeric character, e.g., #, %, or ^.

For more information about authentication with strong passwords, see <http://msdn.microsoft.com/ms143705.aspx>.

- ***If you are using SQL Express***, specify your instance as `(local)` and use a strong password. For more information about authentication with strong passwords, see <http://msdn.microsoft.com/ms143705.aspx>. Due to its inherent limitations, SolarWinds recommends against the use of SQL Express in production environments.
- ***If you are creating a new database***, the user account must be a member of the `dbcreator` server role. The `sysadmin` role and the `sa` user account are always members of `dbcreator`.
- ***If you are creating a new SQL account for use with Orion NPM***, the user account must be a member of the `securityadmin` server role.

Note: The `sysadmin` role and the `sa` user account are always members of `securityadmin`.

6. Click **Next**.

7. ***If you are creating a new database***, select **Create a new database**, provide a name for the new database, and then click **Next**.

Note: SolarWinds recommends against using non-alphanumeric characters in database names.

8. ***If you are using an existing database***, select **Use an existing database**, type the database name or select it from the list, and then click **Next**.

9. ***If you want to create a new SQL account for the Orion NPM polling engine and web console to use for accessing the database***, select **Create a new account**, provide an account name and password, confirm the account password, and then click **Next**.

10. ***If you want to use an existing SQL account for the Orion NPM polling engine and web console to use for accessing the database***, select the existing account, provide the appropriate password, and then click **Next**.

11. ***If you need to specify a particular IP Address for the Orion NPM Web Console***, provide the IP address of the host web server.

Note: SolarWinds recommends the default **All Unassigned** unless your environment requires a specific IP address for your Orion Web Console.

12. Specify both the port through which you want to access the web console and the volume and folder in which you want to install the web console files.

Note: If you specify any port other than 80, you must include that port in the URL used to access the web console. For example, if you specify an IP address of 192.168.0.3 and port 8080, the URL used to access the web console is `http://192.168.0.3:8080`.

13. Click **Next**.

14. **If you are prompted to create a new directory**, click **Yes**.

15. **If you are prompted to create a new website**, click **Yes**.

Note: Choosing to overwrite the existing website will not result in the deletion of any custom Orion NPM website settings you may have previously applied.

16. Confirm that all services you want to install are checked, and then click **Next**.

17. Review the final configuration items, and then click **Next**.

18. Click **Next** on the Completing the Orion Configuration Wizard dialog.

19. Click **Finish** when the Orion Configuration Wizard completes.

20. Log in to the Orion Web Console as an administrator.

Note: By default, you can log in with User Name `Admin` and no password.

21. **If you have not discovered your network devices and added them to the Orion database**, the Network Discovery Wizard starts. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 23.

Upgrading Orion Network Performance Monitor

Complete the following procedure when you are upgrading Orion NPM from a previous version or upgrading the licensed number of elements you can monitor.

Notes:

- SolarWinds recommends that you backup your database before any upgrade. For more information about creating database backups, see the “Moving Your Orion NPM Database” technical reference.
- SolarWinds recommends that you backup your web console configuration after creating a backup of your database. For more information about web console configuration backups, see “Managing Orion Web Console Configurations” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
- Discovery profiles from older Orion NPM versions are not retained through upgrades to this Orion NPM version. If you want to retain a discovery profile, prior to starting your upgrade, externally record the configuration of the profiles you want to retain.

- While it is being upgraded, your Orion polling engine will shutdown temporarily with the result that you may lose some polling data. SolarWinds recommends that you perform upgrades during off-peak hours of network usage to minimize the impact of this temporary polling stoppage.
- If you currently have Orion NPM 7.X installed, you must first upgrade to Orion NPM 7.8.5. After upgrading from Orion NPM 7.8.5 to Orion NPM 8.5.1, you can then upgrade to Orion NPM 9.1 SP5 before upgrading to any newer Orion NPM versions.
- For more information about upgrading Orion NPM, particularly if you are upgrading an Orion NPM installation that includes Orion modules, log in to your SolarWinds Customer Portal at www.solarwinds.com/customerportal/, click **License Management**, and then click **Upgrade Instructions** under the license listing of any Orion product.

To upgrade Orion Network Performance Monitor:

1. ***If you are using more than one polling engine to collect network information***, shut down all polling engines before continuing.
2. Using the local administrator account, log on to the computer on which you want to upgrade Orion Network Performance Monitor.
3. ***If you downloaded the product from the SolarWinds website***, navigate to your download location and then launch the executable.
4. Review the Welcome text, and then click **Next**.
5. Orion Network Performance Monitor automatically detects the previous installation. When prompted to upgrade the current installation, click **Next**.
Note: All customizations, including web console settings, are preserved.
6. Accept the terms of the license agreement, and then click **Next**.
7. Confirm the current installation settings.
8. Click **Next** on the Start Copying Files window.
9. Provide required information on the Install Software License Key window.
Note: You need your customer ID and password to successfully install the key. For more information, see “Software License Key” on page 77.
10. Click **Continue**, and then click **Continue** again when the license is successfully installed.
11. Review the Upgrade Reminder, and then click **Next**.
12. Click **Finish** on the InstallShield Wizard Complete window.
13. Complete the Configuration Wizard. For more information, see “Completing the Orion Configuration Wizard” on page 15.

Maintaining Licenses with License Manager

SolarWinds License Manager is an easily installed, free utility that gives you the ability to migrate Orion licenses from one computer to another without contacting SolarWinds Customer Service. The following sections provide procedures for installing and using License Manager.

Installing License Manager

Install License Manager on the computer from which you are migrating currently licensed products.

Note: You must install License Manager on a computer with the correct time. If the time on the computer is even slightly off, in either direction, from Greenwich Mean Time (GMT), you cannot reset licenses without contacting SolarWinds Customer Service. Time zone settings neither affect nor cause this issue.

To install License Manager:

1. Click **Start > All Programs > SolarWinds > SolarWinds License Manager Setup**.
2. Click **I Accept** to accept the SolarWinds EULA.
3. ***If you are prompted to install the SolarWinds License Manager application, click Install.***

Using License Manager

You must run License Manager on the computer where the currently licensed SolarWinds product is installed before you can migrate licenses to a new installation. The following procedure deactivates currently installed licenses that can then be transferred to a new installation.

To deactivate currently installed licenses:

1. Click **Start > All Programs > SolarWinds > SolarWinds License Manager**.
2. Check the products you want to deactivate on this computer.
3. Click **Deactivate**.
4. Specify your SolarWinds Customer ID and password when prompted, and then click **Deactivate**.

Note: Deactivated licenses are now available to activate on a new computer.

When you have successfully deactivated your products, log on to the computer on which you want to install your products, and then begin installation. When asked to specify your licenses, provide the appropriate information. The license you deactivated earlier is then assigned to the new installation.

Chapter 3

Getting Started with Orion NPM

Orion Network Performance Monitor (Orion NPM) comprises a number of monitoring, alerting, reporting and display tools. The following sections provide an introduction to the network monitoring tools that are available in Orion NPM.

Network Discovery Using the Network Sonar Wizard

Orion NPM provides the easy-to-use Network Sonar Wizard to direct you in the discovery of devices on your network. Before using the Network Sonar Wizard, consider the following points about network discovery in Orion NPM:

- The Network Sonar Wizard recognizes network devices that are already in your Orion database and prevents you from importing duplicate devices.
- CPU and Memory Utilization charts are automatically enabled for your Windows, Cisco Systems, VMware, and Foundry Networks devices.
- The community strings you provide in the Network Sonar Wizard are only used for SNMP `GET` requests, so read-only strings are sufficient.

The following procedure steps you through the discovery of devices on your network using the Network Sonar Wizard.

To discover devices on your network:

1. If the Network Sonar Wizard is not already open, click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.
2. ***If you have already defined a network discovery***, select one of the following options:
 - ***If you want to create a new discovery***, click **Add New Discovery**.
 - ***If you want to use an existing discovery to rediscover your network***, select the discovery you want to use, click **Discover Now**, and then complete the Network Sonar Results Wizard. For more information, see "Using the Network Sonar Results Wizard" on page 28.
 - ***If you want to edit an existing discovery before using it***, select the discovery you want to edit, and then click **Edit**.
 - ***If you want to import some or all devices found in a defined discovery that you may not have already imported for monitoring***, select a currently defined discovery, and then click **Import All Results**.

For more information about network discovery results, see “Managing Scheduled Discovery Results” on page 30.

- **If you want to import any newly enabled devices matching a defined discovery profile**, select a currently defined discovery, and then click **Import New Results**. For more information about network discovery results, see “Managing Scheduled Discovery Results” on page 30.
- **If you want to delete an existing discovery profile**, select a currently defined discovery and then click **Delete**.

3. **If the devices on your network do not require community strings other than the default strings** `public` **and** `private` **provided by Orion NPM**, click **Next** on the SNMP Credentials view.

4. **If any of your network devices require community strings other than** `public` **and** `private` **or if you want to use an SNMPv3 credential**, complete the following steps to add the required SNMP credential.

Note: Repeat the following procedure for each new community string. To speed up discovery, highlight the most commonly used community strings on your network, and then use the arrows to move them to the top of the list.

- a. Click **Add New Credential**, and then select the **SNMP Version** of your new credential.
- b. **If you are adding an SNMPv1 or SNMPv2c credential**, provide the new **SNMP Community String**.
- c. **If you are adding an SNMPv3 credential**, provide the following information for the new credential:
 - **User Name, Context, and Authentication Method**
 - **Authentication Password/Key, Privacy/Encryption Method, and Password/Key**, if required.

d. Click **Add**.

5. Click **Next** on the SNMP Credentials view.

6. **If you want to discover any VMware ESX or ESXi Servers on your network**, confirm that **Poll for ESX** is checked, and then complete the following steps to add or edit required local ESX Server credentials.

Note: Repeat the following procedure for each new credential. To speed up discovery, use the arrows to move the most commonly used credentials on your network to the top of the list.

- a. Click **Add ESX Credential**.
- b. **If you are using an existing ESX credential**, select the appropriate credential from the **Choose Credential** dropdown menu.

- c. **If you are adding a new ESX credential**, select **<New Credential>** in the **Choose Credential** dropdown menu, and then provide a new credential name in the **Credential Name** field.

Note: SolarWinds recommends against using non-alphanumeric characters in VMware credential names.

- d. Add or edit the credential **User Name** and **Password**, as necessary.
- e. Confirm the password, and then click **Add**.

7. Click **Next** on the Local ESX Credentials for VMware view.

8. **If you want to discover devices located on your network within a specific range of IP addresses**, complete the following procedure.

Note: Only one selection method may be used per defined discovery.

- a. Click **IP Ranges** in the Selection Method menu, and then, for each IP range, provide both a **Start address** and an **End address**.

Note: Scheduled discovery profiles should not use IP address ranges that include nodes with dynamically assigned IP addresses (DHCP).

- b. **If you want to add another range**, click **Add More**, and then repeat the previous step.

Note: If you have multiple ranges, click **X** to delete an incorrect range.

- c. **If you have added all the IP ranges you want to poll**, click **Next**.

9. **If you want to discover devices connected to a specific router or on a specific subnet of your network**, complete the following procedure:

Note: Only one selection method may be used per defined discovery.

- a. Click **Subnets** in the Selection Method menu.

- b. **If you want to discover on a specific subnet**, click **Add a New Subnet**, provide both a **Subnet Address** and a **Subnet Mask** for the desired subnet, and then click **Add**.

Note: Repeat this step for each additional subnet you want to poll.

- c. **If you want to discover devices using a seed router**, click **Add a Seed Router**, provide the IP address of the **Router**, and then click **Add**.

Notes:

- Repeat this step for each additional seed router you want to use.
- Orion NPM reads the routing table of the designated router and offers to discover devices on the Class A network (255.0.0.0 mask) containing the seed router and the Class C networks (255.255.255.0

mask) containing all interfaces on the seed router, using the SNMP version chosen previously on the SNMP Credentials page.

- Networks connected through the seed router are NOT automatically selected for discovery.

d. Confirm that all networks on which you want to conduct your network discovery are checked, and then click **Next**.

10. If you already know the IP addresses or hostnames of the devices you want to discover and include in the Orion database, complete the following procedure:

a. Click **Specific Nodes** in the Selection Method menu.

b. Type the IPv4 addresses or hostnames of the devices you want Orion NPM to discover for monitoring into the provided field.

Note: Type only one IPv4 address or hostname per line.

c. Click **Validate** to confirm that the provided IPv4 addresses and hostnames are assigned to SNMP-enabled devices.

d. **If you have provided all the IPv4 addresses and hostnames you want to discover,** click **Next**.

11. Configure the options on the Discovery Settings view, as detailed in the following steps.

a. Provide a **Name** and **Description** to distinguish the current discovery profile from other profiles you may use to discover other network areas.

Note: This Description displays next to the **Name** in the list of available network discovery configurations on the Network Sonar view.

b. Position the slider or type a value, in ms, to set the **SNMP Timeout**.

Note: If you are encountering numerous SNMP timeouts during Network Discovery, increase the value for this setting. The SNMP Timeout should be at least a little more than double the time it takes a packet to travel the longest route between devices on your network.

c. Position the slider or type a value, in ms, to set the **Search Timeout**.

Note: The Search Timeout is the amount of time Orion NPM waits to determine if a given IP address has a network device assigned to it.

d. Position the slider or type a value to set the number of **SNMP Retries**.

Note: This value is the number of times Orion NPM will retry a failed SNMP request, defined as any SNMP request that does not receive a response within the SNMP Timeout defined above.

- e. Position the slider or type a value to set the **Hop Count**.

Note: If the Hop Count is greater than zero, Orion NPM searches for devices connected to any discovered device. Each connection to a discovered device counts as a hop.

- f. Position the slider or type a value to set the **Discovery Timeout**.

Note: The Discovery Timeout is the amount of time, in minutes, Orion NPM is allowed to complete a network discovery. If a discovery takes longer than the Discovery Timeout, the discovery is terminated.

12. *If you only want to use SNMP to discover devices on your network*, check **Use SNMP only**.

Note: By default, Network Sonar uses ICMP ping requests to locate devices.

13. *If multiple Orion polling engines are available in your environment*, select the **Polling Engine** you want to use for this discovery.

14. Click **Next**.

15. *If you want the discovery you are currently defining to run on a regular schedule*, select either **Custom** or **Daily** as the discovery **Frequency**, as shown in the following steps:

Notes:

- Scheduled discovery profiles should not use IP address ranges that include nodes with dynamically assigned IP addresses (DHCP).
 - Default Discovery Scheduling settings execute a single discovery of your network that starts immediately, once you click **Discover**.
 - Results of scheduled discoveries are maintained on the Scheduled Discovery Results tab of Network Discovery. For more information, see “Managing Scheduled Discovery Results” on page 30.
- a. *If you want to define a Custom discovery schedule to perform the currently defined discovery repeatedly in the future*, select **Custom** and then provide the period of time, in hours, between discoveries.
- b. *If you want your scheduled discovery to run once daily*, select **Daily**, and then provide the time at which you want your discovery to run every day, using the format HH:MM AM/PM.

16. *If you do not want to run your network discovery at this time*, select **No, don't run now**, and then click **Save** or **Schedule**, as appropriate.

17. Click **Discover** to start your network discovery.

Note: Because some devices may serve as both routers and switches, the total number of Nodes Discovered may be less than the sum of reported Routers Discovered plus reported Switches Discovered.

Using the Network Sonar Results Wizard

The Network Sonar Results Wizard directs you through the selection of network devices for monitoring, and it opens whenever discovery results are requested, either when the Network Sonar Wizard completes or when either **Import All Results** or **Import New Results** is clicked for a selected discovery. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 23.

The following steps detail the process of selecting discovered devices, interfaces, and volumes for monitoring in Orion NPM.

To select the results of a network discovery for monitoring in Orion NPM:

1. On the Device Types to Import page, check the device types you want Orion NPM to monitor, and then click **Next**.

Note: If you are not sure you want to monitor a specific device type, check the device type in question. If, later, you do not want to monitor a selected device, simply delete the device using Web Node Management. For more information, see “Managing Devices in the Orion Web Console” on page 35.

2. On the Interface Types to Import page, check the interface types you want Orion NPM to monitor, and then click **Next**.

Note: If you are not sure you want to monitor a specific interface type, check the interface type in question. If, later, you do not want to monitor a selected interface, delete it using Web Node Management. For more information, see “Managing Devices in the Orion Web Console” on page 35.

3. On the Volume Types to Import page, check the volume types you want Orion NPM to monitor, and then click **Next**.

Note: If you are not sure you want to monitor a specific volume type, check the volume type in question. If, later, you do not want to monitor any volume of the selected type, delete the volume using Web Node Management. For more information, see “Managing Devices in the Orion Web Console” on page 35.

4. **If you want to import nodes, even when they are already known to be polled by another polling engine**, check the option in the **Allow Duplicate Nodes** section. For more information about working with multiple polling engines, see “Managing Orion NPM Polling Engines” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

5. Check valid states for imported interfaces on the Import Settings page, and then click **Next**.

Note: By default, Orion NPM imports interfaces that are discovered in an **Operationally Up** state. However, because interfaces may cycle off and on

intermittently, the Import Settings page allows you to select interfaces found in **Operationally Down** or **Shutdown** states for import, as well.

6. Confirm that the devices, interfaces, and volumes you want to monitor are checked on the Import Preview page, and then click **Import**.
7. After the import completes, click **Finish**.

Note: Imported devices display in the All Nodes resource.

Importing a List of Nodes Using a Seed File

Orion NPM provides a Specific Nodes option in the Network Discovery Wizard that may be used to import devices from a seed file. The following procedure details how the Specific Nodes option is used with a seed file to import devices in the Orion database.

To import devices from a seed file:

1. Open your seed file.
2. Click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.
3. Click **Add New Discovery**.
4. ***If you need to supply new SNMP credentials to discover the devices in your seed file***, click **Add New Credential**, provide the required information, and then click **Add**. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 23.
5. ***If you intend to import known ESX servers and you need to supply new ESX credentials to discover these servers in your seed file***, complete the following steps on the Local ESX Credentials for VMware view:
 - a. Check **Poll for ESX**.
 - b. Click **Add ESX Credential**.
 - c. Provide the required information, and then click **Add**.

Note: For more information, see “Network Discovery Using the Network Sonar Wizard” on page 23.
6. Click **Next**, and then click **Specific Nodes** in the Selection Method menu.
7. Copy and then paste the IP addresses or hostnames of the devices you want Orion NPM to discover from your seed file into the provided field.

Note: Type only one IPv4 address or hostname per line.
8. Click **Validate** to confirm that the provided IP addresses and hostnames are assigned to SNMP-enabled devices.

9. **If you have provided all the IP addresses and hostnames you want to discover**, click **Next**.
10. Complete the Network Discovery and Network Discovery Results Wizards. For more information, see “Network Discovery Using the Network Sonar Wizard” on page 23.

Managing Scheduled Discovery Results

The Scheduled Discovery Results tab of Network Discovery provides a list of all recently discovered, changed, or imported devices on your monitored network. Results are compared between scheduled discoveries, and results are listed on this tab. The following procedure provides guidelines for managing scheduled discovery results.

To manage scheduled discovery results:

1. Click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.
2. Click **Scheduled Discovery Results**.
3. Select the type of devices you want to view from the Status menu in the left pane. The following options are available:
 - Select **Found** to view all devices discovered by a scheduled discovery.
 - Select **Changed** to view all devices that have changed between recent scheduled discoveries. Changes include the addition of interfaces and device configuration changes.
 - Select **Imported** to view all devices you have recently imported into Orion NPM. For more information about importing devices, see “Using the Network Sonar Results Wizard” on page 28.
 - Select **Ignored** to view all devices you have added to your Discovery Ignore List. For more information about the Discovery Ignore List, see “Using the Discovery Ignore List” on page 31.
 - Select **Found and Changed** to view a combined list of all devices found or changed as described above.
 - Select **All except Ignored** to view all discovered, changed or imported devices you have not already designated as Ignored, as detailed above.
4. **If you want to apply a grouping criterion to organize your listed results**, select an appropriate criterion from the Group by menu in the left pane.
5. **If there are changed or discovered nodes in the results list that you want to update your Orion database to include**, check all nodes to update or add, and then click **Import Nodes**.

- 6. If there are devices you want Orion NPM to ignore in future discoveries, regardless of discovered updates or changes,** check all nodes to ignore, and then click **Add to Ignore List**. For more information about the Discovery Ignore List, see “Using the Discovery Ignore List” on page 31.

Using the Discovery Ignore List

Often, devices are found during a network discovery that you never intend to monitor with Orion NPM. The Discovery Ignore List is a record of all such devices on your network. By placing a device on the Discovery Ignore List you can minimize the SNMP processing load associated with discovering devices that you never intend to monitor.

To manage devices on the Discovery Ignore List:

1. Click **Start > All Programs > SolarWinds Orion > Configuration and Auto-Discovery > Network Discovery**.
2. **If you want to view the current Discovery Ignore List,** click **Discovery Ignore List**.
3. **If you want to add devices to the Discovery Ignore List,** complete the following procedure:
 - a. Click **Scheduled Discovery Results**.
 - b. Check devices you want to ignore, and then click **Add to Ignore List**.
4. **If you want to remove devices from the Discovery Ignore List,** complete the following procedure:
 - a. Click **Scheduled Discovery Results**, and then
 - b. Check the devices you want to remove from the list, and then click **Remove from Ignore List**.
 - c. Confirm that you want to stop ignoring selected items by clicking **OK**.

Using the Web Console Notification Bar

Below the web console menu bar, the Orion notification bar provides informational messages related to the following Orion NPM features:

- The Orion Product Team Blog offers regular posts from members of the Orion product team to help you take full advantage of features provided by Orion NPM and its modules. If you have configured the Orion Web Console to store blog posts, new and unread posts to the Orion Product Team Blog are announced in the notification bar.
- The Available Product Updates view allows you to configure regular checks for Orion NPM updates that can include version upgrades and service packs.

If you have configured the Orion Web Console to check for product updates, an announcement displays in the notification bar when an update, including any upgrade, service pack, or hotfix, to Orion NPM or any other Orion modules you currently have installed becomes available.

- If you have currently configured a scheduled discovery, results display in the notification bar when the discovery completes. For more information about Scheduled Discovery, see “Network Discovery Using the Network Sonar Wizard” on page 23.
- If you are currently using Orion NPM to monitor any VMware ESX or ESXi Servers, the notification bar can display messages communicating the number of ESX nodes found during any discovery, and, if any discovered ESX nodes require credentials, the notification bar tells you. For more information about monitoring VMware ESX Servers, see “Monitoring VMware ESX Servers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

For more information about any displayed notification bar message, click **More Details** and a web console view relevant to the displayed message opens.

To delete a posted message, either click **Dismiss Message** next to the displayed message, or properly address the situation mentioned in the posted notification.

To remove the notification bar from your web console, click Close (**X**) at the right end of the notification bar.

Navigating the Orion Web Console

The Orion Web Console offers two primary methods of navigation: top-level web console tabs and view-level breadcrumbs. The following sections describe how these navigation methods are used:

- Using Web Console Tabs
- Using Web Console Breadcrumbs

Using Web Console Tabs

In the case of a basic Orion NPM installation, the Orion Web Console displays the following tabs:

Home

The **Home** tab provides a menu bar of links to views aiding you in general network management and monitoring. Information, like events and Top 10 lists, and technologies, like alerts, used to generate the views linked from the Home menu are generally available to all Orion modules. By default, the

Network Summary Home view displays when you click **Home** from any view in the web console.

Network

The **Network** tab opens a menu bar of links to views and technologies, like wireless network monitoring, that are specific to the features provided by Orion NPM. By default, the **NPM Summary Home** view displays when you click **Home** from any view in the web console.

For each additional Orion module installed in your environment, an additional tab is provided, offering access to views and tools specific to the Orion module added. For more information about additional Orion modules, see “Orion NPM Modules” at www.solarwinds.com. For more information about customizing menu bars, see Customizing the Orion Web Console in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Using Web Console Breadcrumbs

As you navigate the views of the Orion Web Console, your location is recorded as a series of links, or breadcrumbs, to the web console views through which you have linked to arrive at your current location. Each breadcrumb offers the following navigation options:

- Clicking a breadcrumb opens the corresponding view directly.
- Clicking **>** next to a breadcrumb opens a clickable list of all other views at the same navigation level in the web console. For example, if you are on a Node Details view, clicking **>** displays a list of other monitored nodes.

Note: Only the first 50 monitored nodes, listed in alphanumeric order by IP address, are displayed.

Dropdown breadcrumb lists are customizable, as shown in the following procedure.

To customize the items in a breadcrumb dropdown:

1. Click **>** at an appropriate level in a breadcrumb to open the dropdown.
2. Click **Customize this list**.
3. Select a criterion from the menu, and then click **Submit**.

Note: All items in the customized breadcrumb list will be identical for the selected criterion.

Configuring the Orion Web Console

The primary user interface for Orion NPM is the Orion Web Console, where performance data for your network devices is most easily viewed. The following

sections describe the primary administrative functions performed by an Orion Web Console administrator. For more information about administrative functions in the Orion Web Console, including extensive configuration examples, see “Managing the Orion Web Console” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Logging in for the First Time as an Administrator

The first time you start the Orion Web Console, you will be presented with a login page requiring both a **User Name** and a **Password**. Log in to the Orion Web Console as shown in the following steps.

To log in to the Orion Web Console:

1. Launch the Orion Web Console using either of the following methods:
 - Click **Start > All Programs > SolarWinds Orion > Orion Web Console**.
 - Or launch a browser on your Orion NPM server and enter `http://ip_address` or `http://hostname`, where `ip_address` is the IP address of your Orion NPM host server, or where `hostname` is the domain name of the server hosting your Orion NPM installation.
2. Enter `Admin` as your **User Name**, and then click **Login**.

Note: Until you set a password, you can log in as `Admin` with no **Password**. After your first login, you may want to change the `Admin` password. For more information, see “Changing an Account Password” on page 34.

Changing an Account Password

Orion NPM Administrators may change user account passwords at any time, as shown in the following procedure.

To change an account password:

1. Log in to the web console as an administrator.
2. Click **Admin** in the Views toolbar.
3. Click **Account Manager** in the Accounts grouping of the Orion Website Administration page.
4. Select the user account with the password you want to change, and then click **Change Password**.
5. Complete the New Password and Confirm Password fields, and then click **Change Password**.
6. Click **Continue** when the password is successfully changed.

Managing Devices in the Orion Web Console

Managing all the monitored devices on your network is greatly simplified with the Node Management feature of the Orion Web Console. Using this tool, you can easily add and remove nodes, interfaces, and virtual servers and quickly view and edit device properties. Any user that has been granted node management rights can directly access the Node Management tool either from any All Nodes resource or through the Orion Website Administration page. For more information about granting node management rights, see “Editing User Accounts” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

The following sections describe the various functions that allow you to view and manage all your network devices from the Orion Web Console.

Note: The Node Management feature is accessible by clicking **Manage Nodes** either in the header of any All Nodes resource or in the Node Management group of the Orion Website Administration page. The All Nodes resource is included on the Network Summary Home view by default, but you can include it on any other web console view as well. Confirm that the All Nodes resource is available on an appropriate Web Console view before continuing. For more information about adding resources to Orion NPM views, see “Editing Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Adding Devices for Monitoring in the Web Console

The following procedure details the steps required to add a device and its interfaces and volumes for monitoring in the Orion Web Console.

To add a device for monitoring in the Orion Web Console:

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console.
3. Click **Manage Nodes** in the Node Management grouping of the Orion Website Administration page.
4. Click **Add Node** on the Node Management toolbar.
5. Provide the hostname or IP Address of the node you want to add in the **Hostname or IP Address** field.
6. ***If you only want to use ICMP to monitor node status, response time, or packet loss for the added node, check ICMP (Ping only).***
7. ***If you are adding a VMware ESX Server, check Poll for ESX to ensure that Orion NPM acquires any data the ESX Server provides to SNMP polling requests, and then complete the following steps to provide required ESX Server credentials. For more information about monitoring VMware ESX***

Servers, see “Monitoring VMware ESX Servers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Provide an appropriate **VMware credential name**.

Notes:

- If you are editing an existing credential, select the credential you are editing from the **Choose Credential** field.
- SolarWinds recommends against using non-alphanumeric characters in VMware credential names.

- b. Provide an appropriate **User name** and a **Password**.
- c. Provide the password again in the **Confirm password** field.
- d. Click **Validate VMware** to confirm the ESX credentials you provided.

8. **If you want to add an External node to monitor a hosted application with Orion Application Performance Monitor**, check **External**.

Note: Orion NPM does not collect or monitor any network performance data from nodes designated as External. The External status is reserved for nodes hosting application that you want to monitor with Orion Application Performance Monitor.

9. **If you want to use SNMP to monitor the added node**, confirm that **ICMP (Ping only)** is cleared, and then complete the following steps:

- a. Select the **SNMP Version** for the added node.

Notes:

- Orion NPM uses **SNMPv2c** by default. If the device you are adding supports or requires the enhanced security features of SNMPv3, select **SNMPv3**.
- If SNMPv2c is enabled on a device you want Orion NPM to monitor, by default, Orion NPM will attempt to use SNMPv2c to poll for performance information. If you only want Orion NPM to poll using SNMPv1, you must disable SNMPv2c on the device to be polled.

- b. **If you have installed multiple polling engines**, select the **Polling Engine** you want to use to collect statistics from the added node.

Note: This option may not be available if you are only using one polling engine to collect information from your network.

- c. **If the SNMP port on the added node is not the Orion NPM default of 161**, provide the actual port number in the **SNMP Port** field.

- d. **If the added node supports 64 bit counters and you want to use them**, check **Allow 64 bit counters**.

Note: Orion NPM fully supports the use of 64-bit counters; however, these high capacity counters can exhibit erratic behavior depending on manufacturer implementation. If you notice peculiar results when using these counters, use the Node Details view to disable the use of 64-bit counters for the device and contact the hardware manufacturer.

10. **If you want Orion NPM to use SNMPv2c to monitor the added node**, provide valid community strings for the added node.

Note: The **Read/Write Community String** is optional, but Orion NPM does require the `public` **Community String**, at minimum, for node monitoring.

11. **If you want Orion NPM to use SNMPv3 to monitor the added node**, provide the following **SNMP Credentials, Authentication, and Privacy/Encryption** settings:

- **SNMPv3 Username and Context**
- **SNMPv3 Authentication Method and Password/Key**
- **SNMPv3 Privacy/Encryption Method and Password/Key**

12. **If you are using SNMP to communicate with your added node**, click **Validate SNMP** after entering all required credentials to confirm your SNMP settings.

13. Click **Next**.

14. Check the interfaces, volumes, and interface charts for the added node that you want Orion NPM to monitor. The following options are available in the selection toolbar:

- Clicking **All** selects all listed devices and charts for monitoring.
- Clicking **None** clears any checked interfaces, volumes, or interface charts that have been selected for monitoring.
- Clicking **All Active Interfaces** selects only currently active interfaces and the associated interface charts for monitoring.
- Clicking **All Volumes** selects all listed volumes for monitoring.
- Clicking **All Interfaces** selects all listed interfaces for monitoring.

15. After you have selected interfaces, volumes, or interface charts for monitoring, click **Next**.

16. If you want to apply pollers to the added node, click **+** to expand poller groups, as necessary, check the appropriate pollers, and then click **Next**.

Note: For more information about using predefined pollers or about defining your own universal device pollers, see “Monitoring MIBs with Universal Device Pollers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

17. If you want to edit the SNMP settings you provided earlier, change the appropriate values in the SNMP area of the Change Properties page, and then click **Validate SNMP** to confirm your new settings.

18. If you want to edit the default polling settings for your added node, change the **Node Status Polling** or **Collect Statistics Every** values in the Polling area of the Change Properties page, as appropriate.

Note: The **Node Status Polling** value refers to the number of seconds, between the node status checks Orion NPM performs on the added node. The **Collect Statistics Every** value refers to the period of time between the updates Orion NPM makes to displayed statistics for the added node.

19. If you have defined any custom properties for monitored nodes, provide appropriate values for the added node in the Custom Properties area of the Change Properties page.

Note: The Custom Properties area is empty if you have not defined any custom properties for monitored nodes in Orion NPM.

20. Click **OK, Add Node** when you have completed properties configuration for your added node.

21. If you have successfully added the node, click **OK** on the dialog.

Deleting Devices from Monitoring

The following procedure deletes devices from monitoring in the web console.

Warning: Deleting nodes from monitoring in the web console automatically terminates monitoring of all interfaces and volumes on deleted nodes.

Note: You can select multiple devices to delete at the same time. Additionally, using the search tool above the node list, you can select multiple interfaces on different nodes for simultaneous deletion.

To delete devices from monitoring in the Orion Web Console:

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node Management grouping of the Orion Website Administration page.

3. **If you want to delete a node with all its monitored interfaces**, complete the following steps.
 - a. Locate the node to delete using either of the following methods:
 - Use the search tool above the node list to search your Orion database for the node you want to delete.
 - Select an appropriate **Group by**: criterion, and then click the appropriate group including the node to delete.
 - b. Check the node to delete in the list, and then click **Delete** on the toolbar.
4. **If you want to delete an interface or a volume**, use the following steps.
 - a. Locate the element to delete using either of the following methods:
 - Use the search tool above the node list to search your Orion database either for the interface or for the parent node of the interface or volume to delete.
 - Select a **Group by**: criteria, and then click the appropriate group including the parent node of the interface or volume to delete.
 - b. **If you have a list of node results**, click **+** to expand the parent node of the interface or volume you want to delete.
 - c. Check the interface or volume to delete, and then click **Delete** on the Node Management toolbar.
5. Click **OK** to confirm deletion.

Editing Device Properties

The following procedure provides the steps required to edit node, interface, or volume properties using the Node Management utility of the Orion Web Console.

To edit device properties in the Orion Web Console:

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node Management grouping.
3. Locate the device to edit using either of the following methods:
 - Use the search tool above the node list to search your Orion database for either the node or interface you want to edit or the parent node of the volume you want to edit.
 - Select an appropriate **Group by** criteria, and then click the appropriate group including either the node to edit or the parent node of the interface or volume to edit.

4. **If you want to edit the properties of a monitored node**, check the node you want to edit, and then click **Edit Properties**.
5. **If you want to edit the properties of a monitored interface**, click + next to the parent node of the interface you want to edit, check the interface you want to edit, and then click **Edit Properties**.
6. **If you are editing the SNMP properties of a node**, click **Validate SNMP** after providing new settings to confirm they are valid for the edited node.
7. **If the selected node is a VMware ESX Server and you want to poll it for data using the VMware API**, Confirm that **Poll for ESX** is checked.
8. **If you want to poll for ESX data using an existing ESX credential**, select the appropriate credential from the **VMware credentials** dropdown menu.
9. **If you want to poll for ESX data using a new ESX credential**, complete the following steps:
 - a. Select **<New Credential>** in the **Choose Credential** dropdown menu, and then provide a new credential name in the **Credential Name** field.
Note: SolarWinds recommends against using non-alphanumeric characters in VMware credential names.
 - b. Add the credential **User name** and **Password**, as necessary.
 - c. Confirm the password, and then click **Validate VMware** to confirm the credentials you have provided are valid for the edited node.
10. Edit additional device properties as needed, and then click **Submit**.

Viewing Node Resources

The List Resources feature of the Orion Web Console Node Management utility allows you to immediately see all monitored interfaces, volumes, and interface charts on a selected node, as shown in the following procedure.

To view a list of all resources present on a node:

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node Management grouping.
3. Locate the node to view using either of the following methods:
 - Use the search tool above the node list to search your Orion database for the node you want to view.
 - Select an appropriate **Group by** criteria, and then click the appropriate group including the node to view.

4. Check the node you want to view from the list.
5. Click **List Resources** on the Node Management toolbar.

Viewing Node and Interface Data in Tooltips

Node and interface tooltips in Orion NPM provide immediate status overviews of monitored nodes and interfaces. To view a quick overview of any monitored node or interface in the web console, hover over the device name. Depending on the selected device, the information in the following tables is displayed immediately.

Interface Data	
Interface Name	The name of the interface as discovered from its parent node
Operational Status	Operational status of the interface
Administrative Status	Administrative status of the interface (enabled or disabled)
Interface Type	Numerical type of the interface, as determined by Orion NPM when the parent node is discovered.
Transmitted Current Traffic	The amount of traffic the interface was transmitting as of the last interface poll
Transmitted Percent Utilization	The percent of available bandwidth used for traffic transmitted from the interface as of the last interface poll
Received Current Traffic	The amount of traffic the interface was receiving as of the last interface poll
Received Percent Utilization	The percent of available bandwidth used for traffic received by the interface as of the last interface poll

Node Data	
Node Status	Current status of the node. (up, down, warning, unplugged, or unmanaged)
IP Address	The IP address currently assigned to the selected node
Machine Type	The vendor icon and vendor description of the selected node
Average Response Time	The measured average response time of the selected node as of the last node poll
Packet Loss	The percent of all transmitted packets that are lost by the selected node as of the last node poll
CPU Load	The percent of available processing capacity on the selected node that is currently used as of the last node poll
Memory Used	The percent of available memory on the selected node that is currently used as of the last node poll

Setting Device Management States

Monitored devices are regularly polled for operational status. Collected statistics are displayed in the Orion Web Console. Using the Node Management feature of the Orion Web Console, the management status of monitored nodes, is easily set or changed, allowing you to either temporarily suspend data collection or resume polling and statistics collection, as necessary. The following procedure sets or changes management states for monitored nodes in the Orion Web Console.

Note: Setting a node to an unmanaged state automatically suspends the management of all interfaces and volumes on the selected node.

To set or change the management state of a node:

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console, and then click **Manage Nodes** in the Node Management grouping.
3. Locate the node to manage using either of the following methods:
 - Use the search tool above the node list to search your Orion database for the device you want to manage.
 - Select an appropriate **Group by** criteria, and then click the appropriate group including the node to manage.
4. Check the node to change, and then click **Unmanage** or **Remanage**, as appropriate, for the selected node.
5. **If you have selected Unmanage**, provide start and end times and dates for your management suspension, and then click **OK**.

Assigning Pollers to Monitored Devices

Orion NPM provides both a selection of predefined pollers and the Universal Device Poller utility for defining your own pollers to monitor specific aspects of your network devices. In the Orion Web Console, the assignment of pollers to monitored devices is a straightforward process, as shown in the following steps.

Note: If you do not see a poller that meets your specific monitoring needs, use the Universal Device Poller to create your own poller. For more information, see “Monitoring MIBs with Universal Device Pollers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

To assign a poller to a monitored device:

1. Log in to the Orion Web Console as an administrator.
2. Click **Settings** in the top right of the web console.

3. Click **Manage Nodes** in the Node Management grouping of the Orion Website Administration page.
4. Locate the node to poll, the interface to poll, or the parent node of the interface or volume to poll using either of the following methods:
 - Use the search tool above the node list to search your Orion database.
 - Select an appropriate **Group by** criteria, and then click the appropriate group including either the node to poll or the parent node of the interface or volume to poll.
5. *If you want to assign a poller to a node*, complete the following steps:
 - a. Check the monitored node to which you want to assign the poller.
 - b. Click **Assign Pollers** in the Node Management toolbar.
 - c. Check the pollers you want to assign to the selected node, and then click **Submit**.
 - d. Click **OK** to confirm the assignment.
6. *If you want to assign a poller to an interface or volume*, complete the following steps:
 - a. Click **+** next to the parent node of the interface or volume to which you want to assign the poller.
 - b. Check the interface or volume to which you want to assign the poller.
 - c. Click **Assign Pollers** in the Node Management toolbar.
 - d. Check the pollers you want to assign to the selected interface or volume, and then click **Submit**.
 - e. Click **OK** to confirm the assignment.

Adding Views to the Admin Toolbar

As an example of a useful customization in the Orion Web Console, the following procedure adds a Network Trends chart view to the Admin toolbar.

To add the Network Trends chart view to the Admin toolbar:

1. Click **Start > All Programs > SolarWinds Orion > Orion Web Console**.
2. Log in to the Web Console as an administrator, and then click **Settings** in the top right of the web console.
3. Click **Customize Menu Bars** in the Customize grouping of the Orion Website Administration page, and then click **Edit** under the Admin menu bar.

4. Click and drag **Network Trends** from the Available items list on the left to the Selected items list on the.

Note: The Edit Admin Menu Bar lists a wide array of views that can be added directly to the Orion Web Console Views toolbar. Hover over any view title to read a view description. Selected views may be further customized by clicking **Edit** next to the view title.

Note: Selected items display from left to right in the edited menu bar as they are listed from top to bottom.

5. Click **Submit** on the Edit Admin Menu Bar page.
6. Click **Network Trends** on the Admin toolbar.

Note: Due to the amount of data queried from the database, the Network Trends resources may take a significant time to load. You can also edit the number of resources included in the view to reduce the time to load. For more information about customizing views, see “Customizing Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Chapter 4

Using Orion Network Performance Monitor

A wealth of information can be collected about your network using the powerful tools that comprise Orion Network Performance Monitor (Orion NPM). The first two sections in this chapter introduce the configuration of Orion NPM reports and alerts, and a third section details additional Orion NPM features:

- Creating Custom Orion NPM Reports
- Using Orion NPM Alerts
- Additional Orion NPM Features

Creating Custom Orion NPM Reports

Using Orion Report Writer, you can create custom network monitoring reports. A variety of predefined reports are also included. Icons preceding report names distinguish available report types. The following procedure starts Report Writer.

Note: Before Report Writer can create useful reports Orion NPM must have collected at least a few minutes worth of data in the Orion database populated with the network devices that you want to monitor.

To start Report Writer:

1. Click **Start > All Programs > SolarWinds Orion > Report Writer**.
2. Click **File > Settings**.
3. In the General tab of the Report Writer Settings window, select either of the following as a default viewing mode:
 - **Preview** displays the report as it will appear in printed form. For more information, see “Preview Mode” on page 46.
 - **Report Designer** is the report creation and editing interface. For more information, see “Design Mode” on page 46.

Note: You can toggle between Preview and Report Designer modes at any time by clicking **Preview** or **Design**, respectively, on the toolbar.

4. **If you want to separate the data for individual network objects with horizontal lines**, click **Report Style**, and then check **Display horizontal lines between each row**.
5. Click **OK** to exit Report Writer Settings.

Preview Mode

Preview mode shows a report as it will print. When you open a report in Preview mode, or switch to Preview mode from Design mode, Orion NPM runs the query to generate the report and Report Writer displays the results.

The Preview window toolbar provides the following actions and information:

- Current page number and total number of pages in the report in the form *current# / total#*
- Page navigation buttons: First Page, Page Up, Page Down, and Last Page
- Zoom views
Note: Double-click on a report preview to zoom in and double-right-click to zoom out.
- Print report

Design Mode

Use Design mode to create new reports and modify or rename existing reports. The options available for both creating and modifying reports are the same. Design mode options are also dynamic, based upon the type of report, included report data, and report presentation. Available options differ according to the type of report that you are designing, but all reports require that you select the data to include and decide how that data will be sorted, ordered, filtered, and presented.

Creating and Modifying Reports

The following procedure guides you in the creation and modification of reports in Report Writer.

Notes:

- The SQL query used to generate a report may be viewed in an additional tab. Click **Report > Show SQL** to add a read-only SQL tab to the Design window.
- A preview of your report is also available at any time. Click **Preview** to enter Preview Mode, and then click **Design** to return to Design Mode.

To open a report with Report Writer:

1. **If you want to modify an existing report**, select an existing report from the inventory in the left pane of the main Report Writer window.
2. **If you want to create a new report**, click **File > New Report**, select the type of report that you would like to create, and then click **OK**.

The following sections provide procedures for formatting your reports in Design mode. Each of the following sections corresponds to an available tab containing report formatting options.

Note: Each report, depending on its type, offers unique options on separate tabs of the Report Designer. Depending on the type of report, some of the following formatting tabs may not be available.

General Options

The General tab opens by default and shows titling and display options that may be configured as follows.

To configure General options:

1. Specify the **Report Group**, **Report Title**, **Sub Title**, and **Description** for your report.

Note: If you use an existing report group name, the new report is added to that existing group in the left pane of the main window.

2. Select the display **Orientation** of your report.
3. ***If you do not want to make this report available on your Orion Web Console***, clear **Make this Report available from the Orion website**.

Note: By default, most reports are made available for display in the Orion Web Console. For more information, see “Customizing Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Select Fields Options

The Select Fields tab allows you to select the data fields either to include in a new report or to modify in an existing report as follows.

To select and configure fields:

1. Click Select Fields. In the Select Fields tab, fields are chosen, sort orders are established, and functions are specified.
2. ***If you are creating a new report or adding fields to an existing report***, click **Browse (...)**, select **Add a new field**, and then dynamically define each new report field as follows:
 - a. Click the asterisk after **Field:**, and then select the type of information you want to include in the current report field.
 - b. ***If you want to sort the data in the current field***, click the **sort** asterisk, and then select a sort order.
 - c. ***If you want to perform an operation on the data in the current field***, click the **function** asterisk and select an operation.

3. **If you are modifying an existing report**, click the **Field**, **sort**, or **function** that you want to change and select a new value as follows.
 - a. Click the asterisk after **Field**: and select the type of information that you want to include in the current report field.
 - b. **If you want to sort the data in the current field**, click the **sort** asterisk and select a sort order.
 - c. **If you want to perform an operation on the data in the current field**, click the **function** asterisk and select an operation.
4. **If you want to test your selections as you assemble your report**, click **Execute SQL Query** to view the current query results.
5. **If you want to preview your report**, click **Preview** to run the query and display the results in Preview mode. Click **Design** in the toolbar to return to the Design Mode window.
6. **If you want to delete a field or rearrange the order of the fields that are listed in your report**, select a field, click **Browse (...)**, and then select the appropriate action.

Note: Unchecked fields are not displayed in your report, but their sort and function configurations are retained.

Filter Results Options

The Filter Results tab allows you to generate filter conditions for field data by selecting appropriate descriptors from the linked context menus. Results filters are configured as follows.

To configure results filters:

1. Click **Browse (...)**, and then select from the following options:
 - Select **Add a new elementary condition** to generate a condition that is based on a direct comparison of network object data fields.
 - Select **Add a new advanced elementary condition** to generate a condition based on a comparison of device data fields and values.
 - Select **Add a new complex condition** to define a condition that filters other defined conditions.
 - Select **Delete current condition** to remove a selected condition.
 - Select **Move current condition forward** or **Move current condition backward** to change the order of your conditions accordingly.

Note: The lists of available linked descriptors are dynamically generated in consideration of all other variables within the same condition. For more

information, see “Understanding Condition Groups” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

2. Check or clear individual filter conditions to enable or disable their application, respectively, to your report.

Top XX Records Options

The Top XX tab allows you to limit the number of records that are shown in your report to either a top *number* or a top *percentage* of all results. Top XX options are configured as follows.

To configure Top XX records:

1. *If you want to show all records in your report*, select **Show All Records**.
2. *If you want to specify a truncated list of eligible items for your report*, either select **Show only the Top *number* Records** or select **Show the Top *percentage* % of Records**, and then provide *number* or *percentage* values.

Time Frame Options

The Time Frame tab allows you to limit the scope of your report to a specific period of time. Time Frame options are configured as follows.

To configure Time Frame options:

1. Select one of the following Time Frame options for your report:
 - **Named Time Frame**
 - **Relative Time Frame**
 - **Specific Time Frame**
2. Select or provide required values.

Notes:

- If you receive a SQL Timeout error message, you may edit the timeout setting in the `SWNetPerfMon.db` file. By default, this file is located in the `C:\Program Files\SolarWinds\Orion` directory
- Since the **Relative Time Frame** is continuously variable, reports run using it will likely show different results, even if they are run close together in time.

Summarization Options

The Summarization tab allows you to generate summaries of your results over specific periods of time. Summarization options are configured as follows.

To configure results summarization:

1. ***If you do not want to summarize your results***, confirm that **Do not Summarize the Results** is selected.
2. ***If you want to summarize your results over specific periods of time***, select **Summarize the Results by Hour, Date, Month, etc** and then select the following:
 - Select the summarization period and then specify the location of the summary field for your report.
 - Select a location for the **Summary Date/Time** field.

Report Grouping Options

The Report Grouping tab allows you to group results by field descriptor within your report. Add, edit and delete report groups to organize the data in your report. Establish and edit report groups as follows.

To add and edit report groups:

1. ***If you want to add a new report group***, select a field from the list to define your group, and then click **Add Report Group** to add your selected field to the **Report Groups** list.
Note: Use up and down arrows to change the grouping order accordingly.
2. ***If you want to edit an existing report group***, select the field from the Report Groups list, and then click **Edit Report Group**.
3. The following options may be changed as needed:
 - The **Group Header** is the text that designates groups on your report.
 - The **Web URL** is the dynamic location of your published report with respect to your Orion Web Console.
 - **Font** size, face, color, and background may all be modified by clicking associated ellipses.
 - **Alignment** may be left, center, or right.
 - Check **Transparent Background** for better results with web reports.
 - Use the up and down arrows to change the grouping order accordingly.

Field Formatting Options

The Field Formatting tab allows you to customize the format of the various results fields in your report. Field formatting options are configured as follows.

To format results fields:

1. Select the field that you want to format, and then edit labels and select options as appropriate.

Notes:

- Formatting options for each field may differ according to field data type.
- Check **Hidden Field** to hide any field in your report.

2. *If you want to view your changes at any time*, click **Preview**.

Customizing the Header and Footer Image

The image that is displayed at the top and bottom of each report can be changed. To add your company logo or any other image as the header and footer image in your reports, rename your logo or custom image file as `ReportHeader.jpg`, and then copy it to the `SolarWinds\Orion` folder.

Note: The image must be in JPEG format with a height of 150 pixels or less.

Example of Report Creation

The following procedure generates an example report of network device availability information over the previous week. The final report is sorted so that the worst errors are viewed first. Down nodes that are still down are at the top with all devices listed in order of increasing availability.

Note: At any point during the creation of a report (or perhaps at many points), you may save what you have done by clicking **File > Save**. The first time you save you must give your report a filename or accept the default, which will be the report title that you assign in the following procedure.

To generate an example report of network device availability information:

1. Click **File > New Report**.
2. The example calls for a report on availability over the past week, so select **Historical Availability Details**, and then click **OK**.
3. Type `My Reports` in the **Report Group** field.
4. Enter `Last Week's Availability` as the **Report Title**.
5. Select **Portrait** for the paper orientation.

6. Click **Select Fields**.
7. Click **Browse (...)**, and then select **Add a new field**.
8. Click the **Field** asterisk, and then select **Network Nodes > Node Details > Node Name**.
9. Click **Browse (...)**, and then select **Add a new field**.
10. Click the **Field** asterisk, and then select **Network Nodes > Node Status > Status**.
11. Click **Browse (...)**, and then select **Add a new field**.
12. Click the **Field** asterisk, and then select **Network Nodes > Node Status > Status Icon**.

Note: While this field makes a distinct visual difference for a report viewed in color, it will make little or no difference if printed in black and white.

13. Click **Execute SQL Query** to view the report data in the preview window.
14. *If you want to see the status icon before the status description*, click **Status Icon** to move **Browse (...)** to the Status Icon line, and select **Move Current Field Backward**.
15. Click **Execute SQL Query**.

Note: The report should show information about both current and historical status. Current status entries must be relabeled to avoid confusion.

16. Click **Field Formatting**.
17. Select **Status** from the field list.
18. Change the **Column Header** entry to `Current Status`.
19. Select **Status_Icon** from the field list.
20. Change the **Column Header** entry to `Current Status`.
21. Click **Execute SQL Query**.

Note: Column widths are adjustable. To change a column width, place your cursor on the column divider and drag it to a different position.

22. Click **Select Fields**.
23. Click the **sort** asterisk on the Status field line, and then select **descending**.
24. Click **Execute SQL Query** to confirm your choice.
25. Click **Browse (...)**, and then select **Add a new field**.
26. Click the **Field** asterisk, and then select **Historical Response Time and Availability > Availability**.

27. Click the **sort** asterisk on the new line, and then select **ascending**.
28. Click **Execute SQL Query** to view the report.
29. Click Time Frame.
30. Select **Relative Time Frame**, type 7 in the text field, and then select **Days** from the list.
31. *If you want to break down the report day-by-day*, click Summarization and specify your choices.
32. *If you want to filter your report*, click Filter Results and specify filter rules.
33. Click **File > Save** to save your work.

Using Orion NPM Alerts

An alert is a configurable response to the behavior of a monitored object. One of the many powerful features of Orion Network Performance Monitor is its ability to alert on almost every aspect of your network. You can trigger responses when an alert is generated and when it is resolved; you can create simple or complex conditions under which an alert is triggered or reset; you can suppress alerts when a set of simple or complex conditions exist; and you can create an escalation path that triggers when an alert remains unresolved.

When monitoring your network, you can take advantage of Orion NPM alerts to draw attention to a number of issues, including the following:

- Unexpected one-time or sustained high CPU load
- Loss of available memory or insufficient hard drive space
- Slow response time
- Disproportionate interface utilization or excessive interface errors

Both the triggering of an alert and the resetting of an alert can trigger a number of actions, including the actions listed in the following table.

Note: Windows Server 2008 does not support Windows Net Messaging, so the Send a Windows Net message alert action is not available to Orion NPM installations on Windows Server 2008.

Orion NPM Alert Actions		
Play a .wav sound	Send an email or page	Log alerts to the Windows Event Log
Log alerts to a file	Text-to-Speech output	Log alerts to the Orion NPM Event Log
Email a web page	Send a Syslog message	Send a Windows Net message
Send SNMP traps	Execute an external program	Execute an external VB script
Paging or SMS	Get or Post a URL	

Configuring Orion NPM Alerts

The following sections provide steps required to configure a few example alerts.

High CPU Load Alert Example

The following procedure creates a high CPU load alert.

To configure a high CPU load alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type `CPU Load High` in the **Name of Alert** field on the General tab.
5. Provide an alert description in the **Enter a description for this Alert** field.
6. Check **Enable this Alert**.
7. Click the Trigger Condition tab.
8. Select **Node** from the **Type of Property to Monitor** list.
9. Click **Add**, and then select **Simple Condition**.
10. Click **is equal to**, and then select **greater or equal**.
11. Click the first *, and then click **Network Nodes > Current CPU Memory > CPU Load**.
12. Click **0** after **is greater than or equal to**, and then type 80.
13. Click the Reset Condition tab.
14. Select **Reset this alert when the following conditions are met**.
Note: Configuring a reset condition ensures that stale alerts do not remain prominent in your alert log.
15. Click **Add**, and then select **Simple Condition**.
16. Click **is equal to**, and then select **less or equal**.
17. Click the first *, and then click **Network Nodes > Current CPU and Memory > CPU Load**.
18. Click **0** after **is less than or equal to**, and then type 70.
19. Click the Trigger Actions tab.
20. Click **Add New Action**.

21. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

22. After completing the configuration of your selected alert action, click **OK**.

23. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

Note: For more information about alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Click the Reset Actions tab.
 - b. Click **Add New Action**.
 - c. Select an action to execute when the alert is reset, and then click **OK**.
 - d. Complete the displayed tabs as appropriate, and then click **OK**.
24. Click **OK** when you are satisfied with the configuration of your alert.

Sustained High CPU Load Alert Example

The following procedure creates a sustained high CPU load alert.

Note: This alert differs from the High CPU Load Alert created in the previous procedure in that the alert in this example procedure allows the triggering condition to persist for an hour before the trigger action fires.

To configure a sustained high CPU load alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type `CPU Load Sustained High` in the **Name of Alert** field on the General tab.
5. Provide an alert description in the **Enter a description for this Alert** field.
6. Check **Enable this Alert**.
7. Click the Trigger Condition tab, and then select **Node** from the **Type of Property to Monitor** list.
8. Click **Add**, and then select **Simple Condition**.

9. Click **is equal to**, and then select **greater or equal**.
10. Click the first *, and then click **Network Nodes > Current CPU and Memory > CPU Load**.
11. Click **0** after **is greater than or equal to**, and then type 80.
12. At the bottom of the window, next to **Do not trigger this action until condition exists for more than**, type 1, and then select **Hours**.
13. Click the Trigger Actions tab, and then click **Add New Action**.
14. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

15. After completing the configuration of your selected alert action, click **OK**.
16. **If you want to specify an action to execute when this alert is reset**, complete the following steps:
 - a. Click the Reset Actions tab, and then click **Add New Action**.
 - b. Select an action to execute when the alert is reset, and then click **OK**.
 - c. Complete the displayed tabs as appropriate, and then click **OK**.

Note: For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

17. Click **OK** when you are satisfied with the configuration of your alert.

Sustained Loss of Available Memory Alert Example

The following procedure creates a sustained loss of available memory alert.

Note: This alert allows the low memory triggering condition to persist for 30 minutes before the configured trigger action fires.

To configure a loss of available memory alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type `Memory Low` in the **Name of Alert** field on the General tab.

5. Check **Enable this Alert**.
6. Click the Trigger Condition tab, and then select **Node** from the **Type of Property to Monitor** list.
7. Click **Add**, and then select **Simple Condition**.
8. Click **is equal to**, and then select **less or equal**.
9. Click the first *, and then click **Network Nodes > Current CPU and Memory > Percent Memory Available**.
10. Click **0** after **is less than or equal to**, and then type 10.
11. At the bottom of the window, next to **Do not trigger this action until condition exists for more than**, type 30, and then select **Minutes**.
12. Click the Trigger Actions tab, and then click **Add New Action**.
13. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

14. After completing the configuration of your selected alert action, click **OK**.
15. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

Note: For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Click the Reset Actions tab, and then click **Add New Action**.
- b. Select an action to execute when the alert is reset, and then click **OK**.
- c. Complete the displayed tabs as appropriate, and then click **OK**.
16. Click **OK** when you are satisfied with the configuration of your alert.

Insufficient Hard Drive Space Alert Example

The following procedure creates a low hard drive space alert.

To configure an insufficient hard drive space alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.

3. Click **New** on the Manage Alerts window.
4. Type `Disk Space Low` in the **Name of Alert** field on the General tab.
5. Check **Enable this Alert**.
6. Click the Trigger Condition tab, and then select **Volume** from the **Type of Property to Monitor** list.
7. Click **Add**.
8. Select **Simple Condition**.
9. Click **is equal to**, and then select **less or equal**.
10. Click the first *****, and then click **Volumes > Volume Status > Volume Percent Available**.
11. Click **0** after **is less than or equal to**, and then type 5.
12. Click the Trigger Actions tab, and then click **Add New Action**.
13. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

14. After completing the configuration of your selected alert action, click **OK**.
15. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

Note: For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Click the Reset Actions tab.
 - b. Click **Add New Action**.
 - c. Select an action to execute when the alert is reset, and then click **OK**.
 - d. Complete the displayed tabs as appropriate.
 - e. Click **OK**.
16. Click **OK** when you are satisfied with the configuration of your alert.

Sustained Slow Response Time Alert Example

The following procedure creates a sustained slow response time alert.

Note: This alert allows the slow response time triggering condition to persist for 10 minutes before the configured trigger action fires.

To configure a sustained slow response time alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type `Response Time Slow` in the **Name of Alert** field on the General tab.
5. Check **Enable this Alert**.
6. Click the Trigger Condition tab.
7. Select **Node** from the **Type of Property to Monitor** list.
8. Click **Add**.
9. Select **Simple Condition**.
10. Click **is equal to**, and then select **greater or equal**.
11. Click the first *****, and then click **Network Nodes > Current Response Time > Response Time**.
12. Click **0** after **is greater than or equal to**, and then type `150`.
Note: Response time is measured in milliseconds.
13. At the bottom of the window, next to **Do not trigger this action until condition exists for more than**, type `10`, and then select **Minutes**.
14. Click the Trigger Actions tab.
15. Click **Add New Action**.
16. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

17. After completing the configuration of your selected alert action, click **OK**.

18. If you want to specify an action to execute when this alert is reset, complete the following steps:

Note: For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Click the Reset Actions tab, and then click **Add New Action**.
- b. Select an action to execute when the alert is reset, and then click **OK**.
- c. Complete the displayed tabs as appropriate, and then click **OK**.

19. Click **OK** when you are satisfied with the configuration of your alert.

Sustained Excessive Interface Utilization Alert Example

The following procedure creates a sustained excessive interface utilization alert.

Note: This alert allows the excessive interface utilization triggering condition to persist for 10 minutes before the configured trigger action fires.

To configure an excessive interface utilization alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type `Interface Utilization (Excessive)` in the **Name of Alert** field on the General tab.
5. Check **Enable this Alert**.
6. Click the Trigger Condition tab.
7. Select **Interface** from the **Type of Property to Monitor** list.
8. Click **Add**, and then select **Simple Condition**.
9. Click **is equal to**, and then select **greater or equal**.
10. Click the first *****, and then click **Interfaces > Current Traffic > Average Xmit+Recv Percent Utilization**.
11. Click **0** after **is greater than or equal to**, and then type 80.
12. At the bottom of the window, next to **Do not trigger this action until condition exists for more than**, type 10, and then select **Minutes**.
13. Click the Trigger Actions tab.
14. Click **Add New Action**.

15. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

16. After completing the configuration of your selected alert action, click **OK**.
17. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

Note: For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Click the Reset Actions tab, and then click **Add New Action**.
 - b. Select an action to execute when the alert is reset, and then click **OK**.
 - c. Complete the displayed tabs as appropriate, and then click **OK**.
18. Click **OK** when you are satisfied with the configuration of your alert.

Interface Error Alert Example

The following procedure creates an interface error alert.

To configure an interface error alert:

1. Click **Start > All Programs > SolarWinds Orion > Advanced Alert Manager**.
2. Click **View > Configure Alerts**.
3. Click **New** on the Manage Alerts window.
4. Type `Interface Receive Errors (Excessive)` in the **Name of Alert** field on the General tab.
5. Check **Enable this Alert**.
6. Click the Trigger Condition tab, and then select **Interface** from the **Type of Property to Monitor** list.
7. Click **Add**, and then select **Simple Condition**.
8. Click **is equal to**, and then select **greater or equal**.
9. Click the first *, and then click **Interfaces > Errors and Discards > Recv Errors – This Hour**.
10. Click **0** after **is greater than or equal to**, and then type 50.

11. Click the Trigger Actions tab, and then click **Add New Action**.
12. Select your preferred means of notification, click **OK**, and then complete the displayed tabs as appropriate.

Note: As an example, select **Send an Email/Page**, and then specify the appropriate information on tabs of the Edit Email/Page Action window to receive an email whenever the High CPU Load alert is triggered. For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

13. After completing the configuration of your selected alert action, click **OK**.
14. **If you want to specify an action to execute when this alert is reset**, complete the following steps:

Note: For more information about available alert actions, see “Available Alert Actions” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

- a. Click the Reset Actions tab, and then click **Add New Action**.
 - b. Select an action to execute when the alert is reset, and then click **OK**.
 - c. Complete the displayed tabs as appropriate, and then click **OK**.
15. Click **OK** when you are satisfied with the configuration of your alert.

Viewing Alerts in the Orion Web Console

Once you have configured alerts in Orion NPM, the Orion Web Console provides both an Alerts view and alerts resources that you can use to continuously monitor the status of your network and its devices. The following sections provide the steps required to use alerts for immediate notification of potential problems on your network.

Using the Alerts View

Orion provides the Alerts view on the Views toolbar, allowing you to quickly review all triggered alerts on your network. The following procedure configures the Alerts view to display the specific alerts you need to see at any time.

To use the Alerts view to review network alerts:

1. Click **Start > All Programs > SolarWinds Orion > Orion Web Console**.
2. Log in to the web console as an administrator, and then click **Home > Alerts**.
3. Select **Advanced** from the **Select an Alert Engine** list.

Note: The example alerts created in the “Using Orion NPM Alerts” section on page 53 are all advanced alerts. For more information about alerts in Orion

NPM, see “Creating and Managing Alerts” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

4. **If you want to limit the list of alerts to only those dealing with a single device**, select the specific device from the **Select a Network Device** list.

Note: This option is only available if Orion NPM has fired alerts on multiple network devices.

5. **If you want to limit the list of alerts to only those dealing with a single type of device**, select the specific device type from the **Select a Type of Device** list.

Note: This option is only available if Orion NPM is monitoring multiple types of network devices.

6. **If you want to limit the list of alerts to only those of a single type**, select the specific alert type from the **Type of Alert** list.

Note: This option is only available if Orion NPM has fired multiple types of alerts.

7. **If you want to group the list of alerts by type or by device**, select the appropriate grouping criterion (**Type of Alert** or **Network Node**) from the **Group By** list.

8. Click **Refresh** to update the alerts list with your new settings.

The Alerts view shows all alerts matching your provided criteria. For each alert, the Alerts view provides the time the alert was triggered, the network device and object that triggered the selected alert, the measure value that triggered the alert, and any message associated with the triggered alert.

Adding the Active Alerts Resource to Orion Web Console Views

Orion provides the Active Alerts resource for use in Orion Web Console views, allowing you to tailor your views of alerts to specific devices on your network. The following steps add the Active Alerts resource to Orion Web Console views.

To add the Active Alerts resource to an Orion Web Console view:

1. Log in to the Web Console as an administrator, and then click **Settings** in the top right of the web console.
2. Click **Manage Views** in the Views grouping.
3. Click the view to which you want to add the Active Alerts resource, and then click **Edit**.

Note: The scope of an Active Alerts resource is limited by the scope of the view in which the Active Alerts resource displays. For example, if you add an Active Alerts resource to a Node Details view, the added Active Alerts resource only displays alerts relevant to the viewed node. In the same way,

the Active Alerts resource in the Network Summary Home view displays all active alerts on your entire network.

4. Click **+** next to the view column in which you want to display the Active Alerts resource.
5. Click **+** next to Alerts to expand the list of available alerts resources.
6. Check **All Triggered Alerts**, and then click **Submit**.

Additional Orion NPM Features

Orion NPM provides a number of additional tools and features that can enhance your ability to fully monitor the performance of your network. The following sections provide brief descriptions of these additional tools and features.

Monitoring EnergyWise Devices

SolarWinds has partnered with Cisco to present EnergyWise to optimize energy usage on your network. EnergyWise is a Cisco technology developed to help you cut enterprise energy costs, address environmental concerns, and adhere to government directives around *green* technologies. By deploying EnergyWise capable devices and by enabling their energy-saving features, you can run business-critical systems in a fully powered state while allowing less critical devices on Power over Ethernet (PoE) ports to power down or drop into standby during off-peak hours. Orion NPM provides the EnergyWise Summary view and related EnergyWise resources to help you monitor the energy expended on your network and the energy savings provided by EnergyWise-enabled devices. For more information about monitoring EnergyWise-enabled devices, see “Monitoring EnergyWise Devices” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Using Maps in Orion NPM

Orion Network Atlas is a powerful tool for creating custom maps and network diagrams. The maps created in Orion Network Atlas enable users to view a graphical depiction of their network in the Orion Web Console. You can also use the maps to create network documentation, which can then be printed and exported as needed. Creating a map can be as simple as selecting a background image, dragging nodes to the image, and connecting them with a few lines. However, Network Atlas presents options enabling you to be as creative as you like. For more information about creating network maps for use with Orion NPM, see the *SolarWinds Orion Network Atlas Administrator Guide*.

Monitoring Wireless Networks

Orion NPM can monitor any 802.11 IEEE-compliant autonomous access point (AP) or wireless controller. Details about your access points (AP), wireless

clients, wireless controllers, thin APs, and rogue APs can all be monitored using Orion NPM. Wireless device monitoring is configured, customized, and managed using the Orion Web Console. For more information about monitoring wireless networks, see “Monitoring Wireless Networks” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Monitoring VMware ESX Servers

Orion NPM gives you the ability to monitor the performance of VMware ESX servers, including VMware ESXi servers, and the multiple virtual machines (VMs) hosted by ESX servers on your network. Available resources include lists of VMs on selected ESX servers, performance details for ESX servers and hosted VMs, and relevant alerts, charts and reports. For more information about monitoring VMware ESX Servers, see “Monitoring VMware ESX Servers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Using Custom Properties in Orion NPM

Orion NPM provides the Custom Property Editor, allowing you to add custom properties to any interface, node, or volume. Custom properties are additional fields, such as country, asset tag, or serial number that you can define and store in your Orion Network Performance Monitor database. Once properties are added, they are available for display and filtering within the Orion Web Console and other Orion applications. For more information about custom properties, see “Creating Custom Properties” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Using SNMP Traps in Orion NPM

The Orion NPM Trap Viewer application is used in Orion NPM to configure alerts, view and search trap messages, and to apply rules to filter out certain types of messages. Because the SolarWinds Trap service has the ability to open multiple connections to the SQL server database, it can handle large quantities of incoming trap messages. For more information about using SNMP traps in Orion NPM, see “Monitoring SNMP Traps” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Using Syslog Messaging in Orion NPM

The Orion Syslog Server allows the Network Performance Monitor to receive and process Syslog messages from any type of device. Syslog messages are realtime messages that network devices generate to notify about a specific event within the device. The Syslog Viewer is used to configure alerts, to view and search Syslog messages, and to apply rules to filter out certain types of messages. Because the Syslog service has the ability to open multiple connections to your SQL server, it can handle large numbers of simultaneously incoming Syslog messages. For more information about using Syslog messaging

in Orion NPM, see “Monitoring Syslog Messages” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Using Universal Device Pollers in Orion NPM

Using Universal Device Pollers, Orion NPM has the ability to monitor more than just network status, availability, bandwidth, and errors. With Orion Universal Device Pollers, you can monitor virtually any statistic that your network devices can record. Orion Universal Device Pollers can both collect realtime statistics and record historical statistics. Additionally, with Universal Device Poller transforms, you can mathematically manipulate the results of multiple pollers to create your own network performance metrics. All network information collected from Universal Device Pollers is easily accessible within the Orion Web Console. For more information about using Universal Device Pollers in Orion NPM, see “Monitoring MIBs with Universal Device Pollers” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Viewing External Websites

With the external website view feature, any Orion NPM administrator can make any website accessible as an Orion Web Console view. Designated external websites display as items in the Orion Web Console Views tool bar. For more information, see “Creating and Editing External Website Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Chapter 5

Monitoring Your Network with Orion NPM

You can begin seeing meaningful network monitoring and management benefits from your installation of Orion NPM in an hour or less. The following sections introduce some of the network monitoring abilities that come standard with an installation of Orion NPM. After completing these quick introductions, you will be able to take advantage of the following core capabilities of Orion NPM:

- Realtime performance charts and gauges.
- Node response and availability monitoring.
- Real bandwidth usage measurement.
- Powerful status and performance reporting.

The following cases are explored in the order of run time, that is, the amount of time you need to have Orion NPM running to see representative results.

1. Network performance monitoring is covered in the section “Monitoring Network Performance”, on page 67, with results available in approximately 1 hour.
2. Server management is detailed in the section “Managing Your Servers”, on page 70, with results available in approximately 1 hour.
3. Network availability monitoring is described in the section “Diagnosing Network Availability”, on page 72, with meaningful results generally available in approximately 1 week.
4. Long-term trend analysis is covered in the section “Analyzing Usage Trends”, on page 74, with meaningful results viewable in approximately 3 months.

Note: After installing Orion NPM, the polling engines create a baseline by collecting status and statistics immediately, and then collecting them again 30 seconds later. You may notice an increase in your CPU usage during this time. After this initial collection, Orion NPM collects network data every 10 minutes for nodes, every 9 minutes for interfaces, and every 15 minutes for volumes.

Monitoring Network Performance

Once Orion NPM is properly configured to show network performance data, a primary use case is the generation of charts and reports to confirm compliance with current service level agreements (SLAs). The following sections provide procedures showing steps to start monitoring your network with Orion NPM.

Viewing Node and Interface Charts and Gauges

The following procedure guides you through locating and viewing the charts and gauges that are immediately helpful when monitoring network performance.

Notes:

- For more information about viewing Orion NPM resources in addition to the defaults described in the following procedure, see “Customizing Views” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
- Clicking a gauge allows you to view a customizable chart of the collected data over time. Clicking a chart allows you to customize the time period, sample interval, and chart size, among other options.
- ***If a resource displays No Data for Selected Time Period***, Orion NPM has not had sufficient time under the current settings to collect meaningful data for the viewed resource. Click **Edit** in the resource header, and then select smaller values for both the **Time Period for Chart** and **Sample Interval** options.

To view node and interface charts and gauges:

1. Click **Start > All Programs > SolarWinds Orion > Orion Web Console**.
2. Log in to the Web Console as an administrator.
3. Expand a node grouping in the All Nodes resource of the Network Summary Home page, and then click the node you want to explore.
4. Review the resulting Node Details page, ensuring you pay close attention to the following ICMP-based near-realtime gauges, statistical gauges, and statistical charts:
 - Average Response Time & Packet Loss gauge
 - Average Response Time & Packet Loss statistical chart
 - CPU Load & Memory Utilization gauge showing the last polled values
 - Min/Max Average CPU Load statistical chart
5. ***If you navigated away from your Node Details page***, click **Home** in the Views toolbar to return to the Network Summary Home page, and then expand and select a node in the All Nodes resource on the Network Summary Home page.
6. Locate the Current Percent Utilization of Each Interface resource of the Node Details page, and then click any interface.

7. Review the resulting Interface Details page, ensuring that you pay close attention to the following statistical gauges and charts:
 - Percent Utilization gauges
 - Percent Utilization - Line Chart
 - Min/Max/Average bps In/Out chart
 - Min/Max/Average packets In/Out chart
 - In/Out Errors and Discards chart
 - Total Bytes Transferred chart
8. Click **Reports** in the Views toolbar.
9. Expand **Current Volume Status**.
10. Click **Available Space on each Volume**.
11. Locate the volumes you are managing and review the Volume Size, Space Available, and Percent Available statistics.
12. **If you want a hard copy of the currently viewed report**, complete the following steps:
 - a. Click **Printable Version** in the upper right corner of the web console view.
 - b. Click **File > Print**.
 - c. Configure print options.
 - d. Click **Print**.

Viewing Network Performance Reports

The following procedure guides you through locating and viewing the Orion NPM reports that are immediately helpful when monitoring network performance.

Note: For more information about viewing creating see “Creating Reports” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

To view Orion NPM reports:

1. Click **Start > All Programs > SolarWinds Orion > Orion Web Console**.
2. Log in to the Orion Web Console using an account with administrative privileges.
3. Click **Reports** in the Views toolbar.
4. Click **+** next to the type of report you want to view.

5. Click the title of any report that you want to view.

Note: Depending on the length of time that Orion NPM has been monitoring your network, some reports may not return useful results. For example, if you have just installed Orion NPM and added nodes today, reports covering time periods prior to today may not return useful information. SolarWinds recommends you tailor Orion NPM reports to match desired monitoring periods as closely as possible. For more information, see “Creating Reports” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

6. **If you want a hard copy of the currently viewed report**, click **Printable Version** in the upper right corner of the web console view, click **File > Print**, configure print options, and then click **Print**.

Orion NPM reports viewed in the web console are interactive. Clicking any report heading toggles column values into ascending or descending order, and clicking any device opens the corresponding *Device Details* view in the web console.

Managing Your Servers

You can see the benefits of using Orion NPM to monitor network servers in as little as an hour of network monitoring. Before continuing, confirm that your Orion NPM database includes any and all of the following objects on your network:

- Windows servers and workstations
- VMware ESX servers
- Linux, Solaris, HP-UX, AIX, and AIS servers
- Microsoft Exchange and SQL Servers

For more information about adding network devices to your Orion NPM database, see “Managing Devices in the Orion Web Console” on page 35.

Viewing Server Management Charts and Reports

The following procedure guides you through locating and reviewing the charts and gauges that are immediately helpful when managing mission-critical servers.

To review server management charts and reports:

1. Click **Start > All Programs > SolarWinds Orion Network Performance Monitor > Orion Web Console**.
2. Log in to the Web Console. The default user is `admin` with a blank password.
3. Expand a node grouping in the All Nodes section of the Network Summary page, and then click a server you want to explore.

4. Review the resulting Node Details page, ensuring you pay close attention to the following resources:
 - Average Response Time & Packet Loss gauge
 - Average Response Time & Packet Loss chart
 - CPU Load & Memory Utilization gauge
 - Min/Max Average CPU Load chart

Notes:

- Consider using this data to ensure you comply with your current service level agreements (SLAs).
 - Clicking a gauge allows you to view customizable chart of the collected data over time. Clicking a chart allows you to customize the time period, sample intervals, among other data points.
5. ***If you navigated away from your Node Details page***, click the Network Performance Monitor tab to return to the Network Summary page, and then expand and select a node in the All Nodes section of the Network Summary page.
 6. Locate the Current Percent Utilization of Each Interface section of the Node Details page, and then click an interface.
 7. Review the traffic and error charts and reports.
 8. Click **Reports** on the menu bar.
 9. Expand **Current Volume Status**.
 10. Click **Available Space on each Volume**.
 11. Locate the volumes you are managing and review their available and percent available space statistics.
 12. Complete the following procedure to add the Network Trends view to the Admin menu bar:
 - a. Click **Admin** on the menu bar.
 - b. Click **Customize Menu Bars** in the left navigation pane.
 - c. Click **Edit** under the Admin menu bar.
 - d. Drag **Network Trends** from the Available items menu to the Selected items menu, and then click **Submit**.
 13. Click **Network Trends** on the menu bar.

Note: Due to the amount of data queried from the database, the Network Trends resources may take a significant time to load. You can also edit the

number of resources included in the view to reduce the time to load. For more information about customizing views, see the *Administrator Guide*.

14. Review the resulting Network Trends page, ensuring that you pay close attention to the following reports:

- Network Wide Average Response Time
- Network Wide Min/Max/Average Response Time
- Network Wide Average Utilization
- Network Wide Availability

Configuring Key Server Management Alerts

Using the alert configuration procedures detailed in the “Using Orion NPM Alerts” section on page 53 as guides, consider configuring the following alerts with a trigger action that pages the appropriate operator:

- Node status is equal to down
- CPU load is greater than 90% for over 5 minutes
- Percent memory available is less than 5
- Volume space available is less than 100MB
- Average transmit and receive percent utilization is greater than 50

For more information about configuring alerts in Orion NPM, see “Creating and Managing Alerts” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Diagnosing Network Availability

The benefits of diagnosing network availability with Orion Network Performance Monitor become apparent in approximately one week. Before continuing, confirm that your Orion NPM database includes any and all of the following objects on your network:

- All network devices, including routers, switches, firewall, VPN devices, and servers (Unix and Windows).
- All network interfaces and connections, including physical, virtual, and subinterfaces.
- All device resources, including CPU, memory, volumes, and buffers.

For more information about adding network devices to your Orion NPM database, see “Managing Devices in the Orion Web Console” on page 35.

Viewing Network Availability Charts and Reports

The following procedure guides you through locating and reviewing the charts and reports that deal with network availability analysis and trends.

To view network availability charts and reports:

1. Click **Start > All Programs > SolarWinds Orion Network Performance Monitor > Orion Web Console**.
2. Log in to the Orion Web Console.
3. Expand a node grouping in the All Nodes section of the Network Summary page, and then click a server you want to explore.
4. Review the resulting Node Details page, ensuring that you pay close attention to the following resources:
 - Average Response Time & Packet Loss chart showing the last 7 days of data
 - Availability Statistics table
5. Click **Reports** on the menu bar.
6. Expand **Daily Node Availability**.
7. Click **Availability – This Month**.
8. Review the report.
9. Click **Reports** on the menu bar.
10. Expand **Availability**.
11. Click **Availability – Last Year**.
12. Review the report.
13. Click **Network Trends** on the menu bar.

Note: Due to the amount of data queried from the database, the Network Trends resources may take a significant time to load. To reduce the load time, you can edit the number of resources included in the view. For more information, see the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
14. Review the Network Trends page, paying attention to the following reports:
 - Network Wide Average Response Time
 - Network Wide Availability

Configuring Key Network Availability Alerts

Using the alert configuration procedures detailed in the “Using Orion NPM Alerts” section on page 53 as guides, consider configuring the following alerts with a trigger action that pages the appropriate operator:

- Node status, interface status, or volume status is equal to down
- Alert based on the receipt of a specific SNMP trap. Use the Trap Viewer to configure these alerts. For more information about receiving traps with Orion NPM, see “Monitoring SNMP Traps” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.
- Alert based on the receipt of a specific Syslog message. Use the Syslog Viewer to configure these alerts. For more information about receiving traps with Orion NPM, see “Monitoring Syslog Messages” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

For more information about alerts, see “Creating and Managing Alerts” in the *SolarWinds Orion Network Performance Monitor Administrator Guide*.

Analyzing Usage Trends

Using Orion NPM to analyze trends on your network requires an extended period of time to collect enough data to generate useful charts and reports. In 3 months, the amount of data collected by Orion NPM should be sufficient to see real trends and predict possible capacity shortfalls. Before continuing, confirm that your Orion NPM database includes the following objects on your network:

- All network devices, including routers, switches, firewall, VPN devices, and servers (Unix and Windows).
- All network interfaces and connections, including physical, virtual, and subinterfaces.
- All device resources, including CPU, memory, volumes, and buffers.

For more information about adding network devices to your Orion NPM database, see “Managing Devices in the Orion Web Console” on page 35.

Viewing Useful Node Trend Resources

The Orion Web Console provides many useful resources that can help you recognize trends and bottlenecks at the node level. The following charts and gauges are available as resources within Orion Web Console views:

- Average Response Time & Packet Loss chart
- Min/Max/Average CPU Load chart

- CPU Load & Memory Utilization gauges
- Overall Historical Power Consumption (EnergyWise) charts

Note: Optimize the ability of charts to display longer time periods by clicking **Edit** in the resource header to customize each chart as you require.

Orion NPM also provides reports that can help you recognize trends and bottlenecks at the node level on your network. The following node-level reports, available by clicking **Reports** in the Views toolbar, track node trends:

- Availability reports
- Historical Response Time reports
- Historical CPU and Memory reports
- Historical Traffic reports

Viewing Useful Interface Trend Resources

The Orion Web Console provides many useful resources that can help you recognize trends and bottlenecks at the interface level. The following charts are available as resources within Orion Web Console views:

- Min/Max Average bps In/Out chart
- Percent Utilization chart
- Total Bytes Transferred chart

Note: Optimize the ability of charts to display longer time periods by clicking **Edit** in the resource header to customize each chart as you require.

Orion NPM also provides reports that can help you recognize trends and bottlenecks at the interface level on your network. The following interface-level, Historical Traffic reports, available by clicking **Reports** in the Views toolbar, track interface trends:

- Average and Peak Traffic Rates – Last 7 Day
- Average and Peak Traffic Rates – Last Month
- Average and Peak Traffic Rates – This Month
- Average and Peak Traffic Rates – Wan Interfaces Last 7 Days
- Total Bytes Transferred by Interface – Last Month
- Total Bytes Transferred by Interface – This Month

Viewing Useful Volume Capacity Resources

The Orion Web Console provides many useful resources that can help you recognize trends and problems at the volume level. The following volume-level charts are available as resources within Orion Web Console views:

- Average Disk Space Used chart -- customized to display longer time periods
- Percent Disk Space Used chart – customized to display longer time periods

Orion NPM also provides Historical Volume Usage reports that can help you recognize trends and problems at the volume level on your network. Historical Volume Usage reports are available by clicking **Reports** in the Views toolbar.

Appendix A

Software License Key

During installation, you may be prompted with the Install Software License Key window requesting that you supply your name, e-mail address, phone number, customer ID, and password. If this is the case, follow the instructions below to enable a software license key.

To enable a software license key:

1. ***If the computer on which you are installing Orion Network Performance Monitor is connected to the Internet***, enter the requested information on the Install Software License Key window, and then click **Continue**.

Note: The SolarWinds license registration server will immediately issue a license key that will allow Orion Network Performance Monitor to operate.

2. ***If the computer on which you are installing Orion Network Performance Monitor is not connected to the Internet***, your server cannot authenticate to the SolarWinds license registration server, so you must complete the following procedure:
 - a. Click **Skip This and Enter Software License Key Now** on the Install Software License Key window.
 - b. Using another computer that is connected to the Internet, log in to the customer area of the SolarWinds website at www.solarwinds.com/keys.
 - c. Click **Software Keys** from the Customer Area menu.
 - d. Click the product for which you need a key.
 - e. Provide the requested information, including the Computer Name and Program Serial Number.
 - f. Click **Generate Key**.
 - g. Copy the generated key.
 - h. Enter the key in the **Enter Software License Key** text box.
3. Click **Continue** to complete your Software License Key installation.

