VERITAS

VERITAS NetBackup™ 6.0 Operations Manager

Getting Started Guide

for Windows and Solaris

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Preface

This guide contains getting started topics for using NetBackup Operations Manager (NOM) to manage and monitor key areas of your NetBackup™ Enterprise Server environment.

This getting started guide assumes you are familiar with key NetBackup concepts, VxSS, and the operating system of the server where NOM software is installed.

See "Getting Help" on page x for information about finding NetBackup documentation and accessing the VERITAS support site.

Where to Go for Specific NOM Information

◆ For information about the required software components that are used by NOM, see "Installing NetBackup Operations Manager" on page 11.

◆ For information about the VERITAS ICS components required by NOM see "VERITAS ICS CD" on page 15.

◆ For an understanding of the NOM console views and the features available to you, refer to "Getting Started Using NetBackup Operations Manager Console" on page 25.

◆ For detailed information and instructions on using NOM to monitor and manage your NetBackup environment, use the NOM online help in the console. See "Using Help to Understand NOM Views and Tasks" on page 48.

◆ For a list of typical tasks you may be interested in refer to "A Quick Start for Performing Some Common Tasks in NOM" on page 48.

◆ For information on using the features of the NOM online help, including the Quick-Help Links page and the Search function, refer to "Understanding NetBackup Operations Manager Online Help" on page 59.

◆ For more detailed information about the NOM database, security, log files, and services and processes see "Administering NetBackup Operations Manager" on page 65.

Getting Help

You can find answers to questions and get help from the NetBackup documentation and from the VERITAS technical support web site.

Finding NetBackup Documentation

A list of the entire NetBackup documentation set appears as an appendix in the *NetBackup Release Notes.* All NetBackup documents are included in PDF format on the NetBackup Documentation CD.

For definitions of NetBackup terms, consult the online glossary.

▼ **To access the NetBackup online glossary**

1. In the NetBackup Administration Console, click **Help** > **Help Topics**.

2. Click the **Contents** tab.

3. Click **Glossary of NetBackup Terms**.

Use the scroll function to navigate through the glossary.

Accessing the VERITAS Technical Support Web Site

The address for the VERITAS Technical Support Web site is http://support.veritas.com.

The VERITAS Support Web site lets you do any of the following:

◆ Obtain updated information about NetBackup, including system requirements, supported platforms, and supported peripherals

◆ Contact the VERITAS Technical Support staff and post questions to them

◆ Get the latest patches, upgrades, and utilities

◆ View the NetBackup Frequently Asked Questions (FAQ) page

◆ Search the knowledge base for answers to technical support questions

◆ Receive automatic notice of product updates

◆ Find out about NetBackup training

◆ Read current white papers related to NetBackup

From http://support.veritas.com, you can complete various tasks to obtain specific types of support for NetBackup:

1. Subscribe to the VERITAS Email notification service to be informed of software alerts, newly published documentation, Beta programs, and other services.

   a. From the main http://support.veritas.com page, select a product family and a product.

   b. Under Support Resources, click **Email Notifications**.

      Your customer profile ensures you receive the latest VERITAS technical information pertaining to your specific interests.

2. Locate the telephone support directory at http://support.veritas.com by clicking the **Phone Support** icon. A page appears that contains VERITAS support numbers from around the world.

   Note Telephone support for NetBackup is only available with a valid support contract. To contact VERITAS for technical support, dial the appropriate phone number listed on the Technical Support Guide included in the product box and have your product license information ready for quick navigation to the proper support group.

3. Contact technical support using e-mail.

   a. From the main http://support.veritas.com page, click the **E-mail Support** icon.

      A wizard guides you to do the following:

      ◆ Select a language of your preference

      ◆ Select a product and a platform

      ◆ Provide additional contact and product information, and your message

      ◆ Associate your message with an existing technical support case

   b. After providing the required information, click **Send Message**.

Contacting VERITAS Licensing

For license information, you can contact us as follows:

◆ Call 1-800-634-4747 and select option 3

◆ Fax questions to 1-650-527-0952

◆ In the Americas, send e-mail to amercustomercare@veritas.com.

   In the Asia and Pacific areas, send email to apaccustomercare@veritas.com.

   In all other areas, send email to internationallicense@veritas.com.

Accessibility Features

NetBackup contains features that make the user interface easier to use by people who are visually impaired and by people who have limited dexterity. Accessibility features include:

◆ Support for assistive technologies such as screen readers and voice input (Windows servers only)

◆ Support for keyboard (mouseless) navigation using accelerator keys and mnemonic keys

For more information, see the *NetBackup Installation Guide.*

Comment on the Documentation

Let us know what you like and dislike about the documentation. Were you able to find the information you needed quickly? Was the information clearly presented? You can report errors and omissions or tell us what you would find useful in future versions of our manuals and online help.

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◆ Your name

Email your comment to NBDocs@veritas.com.

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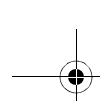
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NetBackup Operations Manager Overview   1

This chapter provides a brief overview of NetBackup Operations Manager, why you might use it, and introduces its main architectural components. Many of the following topics assume you are familiar with current NetBackup concepts and components.

Topic	Description
"What is NetBackup Operations Manager?" on page 1	Provides an overview of NOM
"Why use NetBackup Operations Manager?" on page 2	Provides a list of benefits in using NOM
"NetBackup Operations Manager Components" on page 6	Provides an overview about the key components of NOM

What is NetBackup Operations Manager?

◆ NetBackup Operations Manager (NOM) is an advanced, easy-to-use managing and monitoring application that works in conjunction with your NetBackup master and media servers, and clients.

NOM is included with NetBackup server products for no additional cost.

◆ NOM is web-based and allows you to view the operational status and health of your distributed data protection environment. NOM is capable of managing and monitoring dozens of NetBackup installations spread across multiple locations from a single point.

Using NOM does not require a separate login to each NetBackup master or media server.

◆ NOM provides a consistent backup management interface to simplify the complex tasks involved in protecting and managing the data resources of a large enterprise effectively. NOM offers NetBackup job activity, job policy, media and devices, and service monitoring and management; as well as policy-based alerting and notification.

◆ NOM is an operations monitoring and management tool for NetBackup. Management tasks available with NOM are focused on maintaining your environment once initial configuration is completed.

NOM is *not* a web-based UI for NetBackup configuration and administrative functions. The NetBackup Administration console and command line interfaces are still used for core administrative functions such as configuration of your media, storage units, policies, and schedules.

◆ NOM is a completely new product based on a new architecture, data modeling, design, and implementation, and is *not* an incremental update to any existing VERITAS products.

◆ NOM includes new reporting capabilities, such as built-in standard reports that you can use immediately. You also can modify these reports to better meet your needs, or create your own reports using the many database views that are provided.

Why use NetBackup Operations Manager?

The Management Challenge

As the proliferation of data continues in today's computing environments, effective data management and analysis tools are required to manage and protect this valuable resource. Data centers are growing quickly and becoming more complex, increasing the difficulty of management. Remote management can be cumbersome and inefficient.

Management and reporting are critical functions in these complex enterprise environments. Monitoring, capturing and responding quickly to data center events is essential, yet challenging when each of these tasks can require multiple tools and areas of expertise.

Without using NOM, the operational status of each NetBackup server would have to be determined by logging into multiple NetBackup master servers and using the NetBackup Administration Console to view each server and its logs.

How NetBackup Operations Manager Can Help

NetBackup Operations Manager (NOM) provides advanced management, reporting and alerting functions that simplify administration of NetBackup environments. NOM offers you the ability to quickly gain a real-time understanding of the health of your entire NetBackup sever environment.

NOM provides monitoring and management across multiple NetBackup master servers. The NOM server component is in continuous communication with NetBackup servers to provide a near real-time view of operations. Selected subsets of servers can be monitored using server groupings and advanced data filtering options.

Using NOM, you can diagnose problems, identify potential issues, or just review the operational status of multiple NetBackup master and media servers at many locations - all from a centralized location.

Additional benefits of NetBackup Operations Manager include the following:

◆ *Managing and Monitoring of Global or Remote NetBackup Sites*

   World-wide NetBackup sites can be monitored real-time on a 24 hour basis using NOM consoles. At remote sites where staffing may be an issue, NOM enables you to use available resources in a more efficient manner. NOM provides "at a glance views" of the domain and the ability to drill down to monitor an individual server for more detail.

   Built-in grouping of master servers allow you to define server groups and easily manage diverse geographical sites or lines of business. NetBackup master servers can be members of multiple server groups.

◆ *Single Point of Control*

   Often the greatest challenge with globally distributed, complex enterprise data centers is remote administration. Issues can range from slow connections that require significantly increased administration time to installations with large system footprints that consume valuable space and resources. The NOM interface is web-based and provides efficient remote administration across multiple NetBackup servers from a single, centralized console. Administration can be done from any web-enabled system. There is little system resource impact, as there are no local installation requirements beyond the browser platform.

   Network environments with multiple UNIX, Linux, or Windows NetBackup servers are commonly used to protect valuable data. Using the flexibility offered by NOM, you can easily administer heterogeneous systems from any web-enabled system.

◆ *NOM Alert Monitoring, Notification, and Management*

Management across many NetBackup servers can be complicated in enterprise environments, making management by exception desirable. In large, distributed environments proactive management is necessary to head off potentially critical issues and problems.

NOM provides policy-based alerting and alert notification that allow you to find issues before problems happen to your NetBackup systems. You can set up convenient policies that use predefined alert conditions to specify typical issues or thresholds within NetBackup.

You can specify email or SNMP notification in response to an actual alert that allows administrators to focus on other job responsibilities, rather than remaining logged in to a terminal doing continuous monitoring.

◆ *Standard and Custom Reporting Capabilities*

Many NetBackup sites use custom scripting to meet their reporting needs and often get too much or too little information in these reports. Also, many end users or customers expect immediate access to client specific information, for example, job status, restorability of data, and so on.

NOM provides flexible reporting. Reports contain data collected by the NOM server from your NetBackup master servers. Reports on backup performance, media utilization, rates of success of jobs and policies can be used to assess the health of your environment and plan changes to your NetBackup environment.

NOM comes with built-in reports that you can use immediately to access commonly requested data or customize them to fit your special needs. In addition to the built-in reports, you can create custom reports for tracking the performance of your backup environment. These custom reports can also be reused by other users.

You can tailor these reports by using master server groups, and can email, print, or copy these reports.

◆ *NetBackup Troubleshooting Assistance*

Troubleshooting remains one of the most time consuming responsibilities for NetBackup administrators. NOM reduces the time needed to resolve NetBackup issues by providing troubleshooting capabilities.

NOM provides a visual indication of health of your servers, in-context links to NetBackup job status codes, NOM alert notification, log viewing within the context of a job, advanced data filters and sorting methods, and also allows you to merge and filter multiple job logs.

◆ *Advanced Data Filtering Options*

In environments where a high volume of data is being protected by multiple NetBackup master and media servers, NOM allows filtering options and master server groupings to enable you to display and report on only the type of information from the servers that you want. NOM consolidates and displays the data views needed to make important decisions.

Custom or ready-to-use filters allow only information satisfying the defined condition to be presented. For instance, a filter may be applied to display only jobs for a specific client or policy.

The grouping of related master servers can be applied to manage sets of NetBackup servers. Master server groups can be used in the monitoring of NetBackup environments, as well as reporting and active management functions throughout NOM.

◆ *Intuitive and Easy-to-Use*

Icons and the use of color provide visual keys to the health of your systems and enable you to quickly isolate possible NetBackup system issues.

◆ *NetBackup Job Monitoring and Management*

Consolidated job and job policy views per server (or group of servers) provide the ability to filter and sort job activity.

Available job tasks allow you to activate or deactivate job policies, or start a job using an existing NetBackup policy. You can also pause, restart, or cancel a job. NOM also provides help for all NetBackup job status codes.

◆ *NetBackup Log File Management*

NOM improves and consolidates NetBackup log management features. NOM features allow a user to gather, collate and filter logs to help debug issues, all from a single location.

Available log views and tasks allow you to trace the progress of a single job as it is run on NetBackup master and media servers. You can view all applicable debug and error logs, merge multiple log files, search logs for a specific log message, or filter logs using regular expression conditions.

Other tasks allow you to enable or disable selected logs. You can also set retention levels and the verbose levels for most NetBackup log files.

◆ *NetBackup Device, Media, and Storage Unit Monitoring and Management*

Consolidated NOM views provide an overview of the health of the robots, drives, media, and storage units in your NetBackup environment. For example, associated drive tasks allow you to control drives and the paths to drives.

◆ *NetBackup Service Monitoring and Management*

Consolidated status views in NOM for all services on all master servers can be used to troubleshoot or prevent issues with your NetBackup jobs. Associated tasks allow you to control (stop, start, and restart) most services.

◆   *NOM Security*

NOM uses the VERITAS security subsystem, VxSS, which can also be utilized by NetBackup to deliver role-based access control. Only users or groups of users given access rights by the NOM administrator are allowed to log into the console.

If NetBackup is configured to use VxSS (NBAC is configured), all data transferred between the NOM server and NetBackup master server will be done through a secure connection.

NetBackup Operations Manager Components

NetBackup Operations Manager is comprised of a server application (and its associated components), which collects job, configuration, and performance data from NetBackup master and media servers.

The following diagram shows the typical flow of data from a NetBackup master server to the NOM server. The data is then formatted and displayed on the web-based NOM console.

```
                                                      ┌─────────────────┐
                                                      │  NOM UI Console │
              ┌─────────────────┐                     └─────────────────┘
              │  NOM UI Console │         ┌─────────────────┐
              └─────────────────┘         │  NOM UI Console │
                                          └─────────────────┘        ┌─────────────────┐
      NOM Server                                                     │  NOM UI Console │
                                                                     └─────────────────┘
   ┌──────────────────────────────────────────────────────────────────────┐
   │   ┌──────────────┐           ┌──────────────────┐                     │
   │   │  Reporting   │  ◄──►     │  NOM Web Client  │                     │
   │   │  Service     │           └──────────────────┘                     │
   │   └──────────────┘                                                    │
   │         ▲                              ▲                              │
   │         ▼                              ▼                              │
   │   ┌──────────────┐           ┌──────────────────┐                     │
   │   │ NOM Database │  ◄──►     │ NOM Monitoring and│                     │
   │   │  (Sybase)    │           │ Managing Services │                     │
   │   └──────────────┘           └──────────────────┘                     │
   │         ▲                                                             │
   │         ▼                                                             │
   │   ┌──────────────┐                                                    │
   │   │ Alert Manager│                                                    │
   │   └──────────────┘                                                    │
   └──────────────────────────────────────────────────────────────────────┘

   ┌──────────────┐       ┌──────────────┐       ┌──────────────┐
   │  NetBackup   │       │  NetBackup   │       │  NetBackup   │
   │ Master Server│       │ Master Server│       │ Master Server│
   └──────────────┘       └──────────────┘       └──────────────┘
```
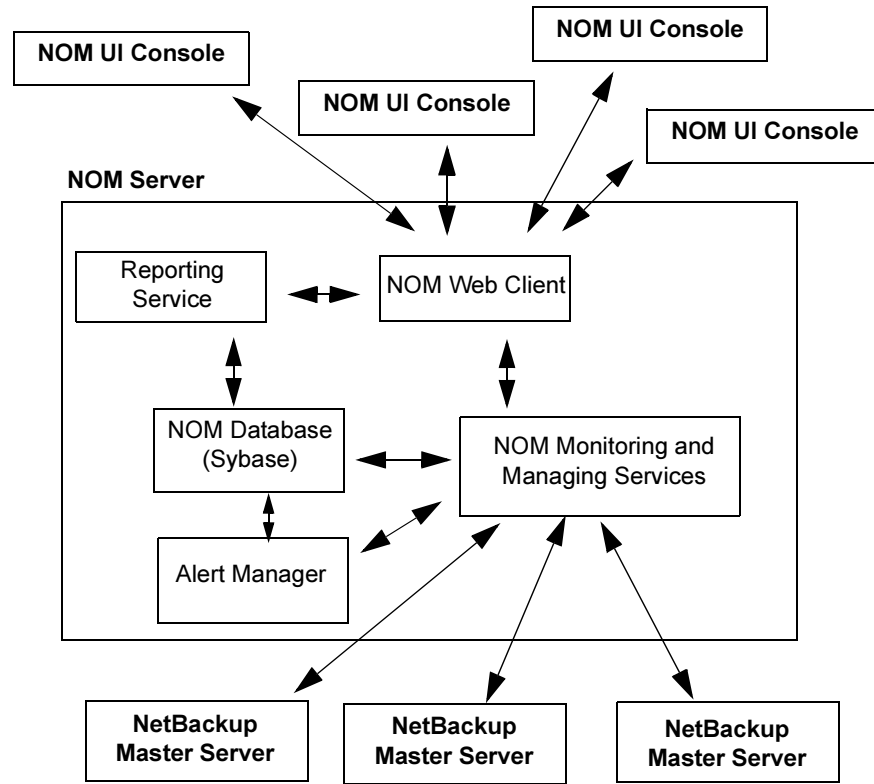
The NOM console provides a single user interface to the NOM server. All requests from the console are sent to the NOM web client (a component of the NOM server).

The NOM server component is the focal point for centralized monitoring and managing of the NetBackup servers in your environment. The NOM server gathers data and information from NetBackup master servers and stores it the NOM database. The NOM server also handles any user-requested monitoring and maintenance tasks for the NetBackup master servers.

See the following topics for more information about key NOM components:

Topic	Description
"The NOM Console" on page 8	Provides an overview about the web-based user interface.
"The NOM Server" on page 8	Provides an overview about the NOM server and its main components.

Topic	Description
"Managed NetBackup Master Servers" on page 10	Provides an overview about how NOM obtains information about NetBackup jobs and resources, and so on from the master servers.

The NOM Console

The NOM console is a web-based user interface that displays data and handles tasks associated with managing your backup master servers. Many standard web browsers can be used to display the NOM console.

The console connects to and communicates with the NOM web client (see "NOM Web Client" on page 9) to provide a central point from which to monitor and manage NetBackup resources, create and modify policies, administer access control, and view reports.

The console displays multi-level (summary, detail, and object) views of key NetBackup resources and objects. From the console, you can monitor the status of NetBackup servers, and manage jobs, resources, and troubleshoot log files. The console also contains tools for creating groups of servers to more easily manage large numbers of master servers, and simplify the amount of data viewed.

The NOM console also provides quick access to online help for console views, task dialogs, and wizard task screens.

The NOM Server

The server where NetBackup Operations Manager software is installed is known as the NOM server. NOM software can be installed on a dedicated server or on a server where NetBackup is installed. The NOM server requires that the NetBackup service layer (NBSL) is present and running on managed NetBackup master servers.

Refer to the NetBackup Operations Manager sections of the NetBackup release notes for any restrictions when installing the NOM software.

Also see "Choosing a Server where NOM will be Installed" on page 13 for information, recommendations, and requirements for the server where NOM will be installed.

The NOM server provides the core functional logic, including the following:

◆ Access control enforcement

◆ User profile control

◆ Master server grouping

◆ Monitoring and managing functions

◆ Reporting

◆ Database management

The NOM server is comprised of the following main components. All of these components are installed as part of the NOM software installation.

NOM Web Client

This component services HTTP and HTTPS requests and handles user login requests.

NOM server and web client software are located on the same physical server. The web client component communicates with NOM monitoring and managing services as needed, and generates HTML pages for display in the NOM console.

The web client also communicates with the reporting service to provide built-in and custom reports.

Reporting Service

This VERITAS component is used by the web client to create and manage reports. These reports consist of the data collected by the NOM server and are formatted in standard reports or as defined by users. You can customize most reports by selecting groups of NetBackup servers, jobs, or policies to report on. You can also email, export, print, copy, or import these reports.

NOM Monitoring and Managing Services

These services communicate with your NetBackup master servers (see "Managed NetBackup Master Servers" on page 10) and the NOM web client to satisfy user requests for NetBackup data. For example, these services interface with the NetBackup media and device components to provide media and device monitoring in the NOM console.

Alert Manager

A NOM alert policy associates particular sets of conditions with NetBackup resources or objects, and defines the actions to be taken if those conditions are met.

The NOM alert manager communicates with the NOM server and the NetBackup master servers to handle alerts. This component manages alert policies to allow users to define policies, view active policies, and modify policies; and to respond to any actual alerts.

NOM Database

A Sybase database management system (DBMS and DB) is used by the NOM server, alert manager and reporting system components (see "NOM Monitoring and Managing Services" on page 9). This database is used to store and retrieve all data related to NetBackup managed servers, NOM alerts, and NOM reports.

This data base is not shared with NetBackup. The database contains VxAM and NOM database schemas, and database views used by NOM reports.

Database utilities for consistency checking, purging, and password management are provided. You can also use the Sybase utilities to manage the database.

Managed NetBackup Master Servers

The NetBackup data collection and management logic used by NOM is built into NetBackup master servers. This logic is included in the NetBackup Service Layer (NBSL). NBSL is automatically included with NetBackup release 6.0 and greater.

NBSL provides a single point of access to key NetBackup data, objects, and change events. NBSL is required software on each NetBackup master and media servers, and is also used by the NetBackup GUI. NBSL runs as a service or daemon, and has local configuration information, but no local database.

Each NetBackup master server that is to be managed by NOM must have NBSL present and running. NBSL is also included on media servers, but is not used by NOM.

NetBackup master servers with NBSL included that are being managed by NOM are referred to as managed NetBackup servers. These managed NetBackup servers harvest pertinent NetBackup data and store it in the NOM database (see "NOM Database" on page 10).

When the NOM server first connects to a NetBackup master server it collects any changes that have occurred since the last time that it connected with the server. After that, the master server pushes event changes to the NOM server.

Installing NetBackup Operations Manager 　2

This chapter covers the planning and implementing of your installation of NetBackup Operations Manager software. The installation process includes choosing the server where you will install NOM software and the installation of NOM.

Also included are topics to get you started, and topics on uninstalling or upgrading NOM.

See "Administering NetBackup Operations Manager" on page 65 for information on administration of the NOM database, security topics, NOM processes, and event logging.

This chapter contains the following installation topics:.

Topic	Description
"Planning a NetBackup Operations Manager Installation" on page 12	Provides information to help plan your NOM installation. Included are NOM sever, NetBackup master server, and web browser considerations.
"Installation of NOM and Required Components on the NOM Server (Windows)" on page 16	Provides instructions for installing NOM software and VERITAS components on a Windows server.
"Installation of NOM and Required Components on the NOM Server (Solaris)" on page 20	Provides instructions for installing NOM software and VERITAS components on a Solaris server.
"After NetBackup Operations Manager is Installed" on page 22	Provides a list of the start-up tasks done by NOM and document references to get you started using the NOM console.
"Uninstalling or Upgrading NetBackup Operations Manager" on page 24	Provides a list of considerations to note if you need to uninstall or upgrade NOM.

Planning a NetBackup Operations Manager Installation

Review the following sections before deciding on a server where you will install NetBackup Operations Manager.

Shared and Unshared Software Components Used by NOM

NOM uses some VERITAS common components that are shared and also uses components that are not shared.

Components Shared with Other VERITAS Applications

The following VERITAS components are used by NOM:

◆ VERITAS Private Branch Exchange (VxPBX)

VxPBX provides the ability for VERITAS applications to share a common TCP/IP port thus reducing the number of ports in firewalls that need to be opened for products to operate. VxPBX also integrates with the VxSS Authentication Service to allow for authenticated connections in addition to non-authenticated connections.

See the pdf files in the docs directory of the ICS CD ("VERITAS ICS CD" on page 15) for information about VxPBX.

◆ VERITAS Authentication (VxSSAT)

VxSS (VERITAS Security Services) is used for user login authentication and is required for the NOM server, unlike NetBackup where it is optional. Only the VxSSAT component is required by NOM.

See the pdf files in the docs directory of the ICS CD ("VERITAS ICS CD" on page 15) for information about VxSS.

◆ VERITAS Web Server (VRTSweb)

The NOM web client and the reporting service run under VRTSweb.

See the *VERITAS Cluster Server Administrator's Guide for Windows* or the *VERITAS Cluster Server User's Guide for Solaris* more information about VRTSweb.

◆ VRTSjre (Java Run Time Environment)

This component is required by VRTSweb and the NOM application.

◆ VxUL

This logging component is installed with the NetBackup 6.0 client and is used to view NetBackup and NOM logs.

See the *NetBackup Troubleshooting Guide* for more information about VxUL logging.

NOM Components that are Not Shared

The following components are used only by NetBackup Operations Manager:

◆ NOM Sybase database (NOM uses a separate Sybase database installation).

See `http://www.sybase.com/support/manuals` for more information about this component.

◆ Alert manager (VRTSamnom).

Choosing a Server where NOM will be Installed

Consider the following recommendations and requirements when choosing a server system on which to install NOM software:

◆ NOM server software does *not* have to be installed on the same server as NetBackup 6.0 master server software.

Since the NOM server is also a web server, installing NOM on a master server may impact security and performance.

◆ VERITAS recommends that you do *not* install NOM software on a clustered NetBackup master server.

◆ The NOM server must have the NetBackup 6.0 client installed (older versions of the NetBackup client are not supported). NetBackup master server, media server, or client software can be installed on the NOM server to meet this requirement.

NetBackup client software is used to back up and restore the NOM database (see "Database Backup Using the NOM NightlyBackup Script" on page 69) and to view the VxUL logs written by NOM (see "VxUL Log Files" on page 82).

◆ Refer to the NetBackup Operations Manager sections of the NetBackup release notes for the following information:

◆ The list of operating systems supported for the NOM server, and any system requirements, restrictions or limits.

◆ Any operational restrictions or limits for NOM.

◆ The NOM server should have a record of stability, this means long uptimes with minimal interruptions.

◆ The NOM server should be able to support a medium or large-scale Sybase database application.

◆ The NOM server must have network connectivity to all managed NetBackup 6.0-servers.

◆ The NOM server should be configured as a fixed host, rather than as a dynamic host (DHCP).

Web Browser Considerations

Consider the following recommendations and requirements for the web browser that will be used to access the NOM console.

◆ Refer to the NetBackup Operations Manager sections of the NetBackup release notes for the list of web browsers supported for NOM.

◆ The NOM console uses pop-up menus in some cases. If you are using pop-up blockers with your web browser some of these menus may not display properly. You should disable pop-up blocking or add the NOM web address to the list of acceptable sites in your browser.

◆ The web browser should have active scripting (ActiveX and JavaScript) enabled.

Email Client Considerations

Refer to the NetBackup Operations Manager sections of the NetBackup release notes for the list of email clients supported for NOM.

Global Data Manager and NetBackup Advanced Reporter Considerations

NOM is a new product based on a new architecture and is not an incremental update to any existing VERITAS products. This means that current GDM and NBAR installations cannot be upgraded to NOM installations.

Due to the substantial differences in architecture, design, implementation, and the data model, the historical data from NBAR installations is not applicable and cannot be migrated to NOM. You may decide to run NBAR or GDM in parallel on NetBackup systems earlier than release 6.0 during a transition period to using NetBackup release 6.0 and NOM.

If you are upgrading NetBackup software from a previous version to NetBackup 6.0, you should first uninstall GDM or NBAR if they are installed on the server.

GDM or NBAR cannot be installed on a server where NetBackup 6.0 software is installed.

Managed NetBackup Master Server Considerations

Refer to the NetBackup Operations Manager sections of the NetBackup release notes for the list of managed NetBackup server operating systems supported by NOM in this release and any system requirements, restrictions or limits.

Starting with release 6.0 of NetBackup, NetBackup Service Layer (NBSL) components are included as a part of NetBackup on master and media servers.

NBSL and NBNOS (the NetBackup notification service) are required and are used by NOM for all NetBackup monitoring and managing, and control functions. There is an impact if either service stops running on a managed NetBackup server. If NBNOS is stopped, any management changes are lost. If NBSL stops, any changes made to the NetBackup configuration may not be captured by NOM, although NOM will correctly re-capture the latest state when NBSL is restarted.

See the *NetBackup System Administrator's Guide, Volume II* for more information about NBSL.

NOM can manage a NetBackup master server that is configured in a cluster environment. When adding a clustered managed server in NOM, use the cluster name of the master server rather than the physical machine name.

See "Using the Context Window to Configure Master Servers and Server Groups" on page 50 to add managed NetBackup servers in NOM and "VxSS (VERITAS Security Services)" on page 70 for information about using VxSS with NOM and your managed NetBackup master servers.

NetBackup Enterprise Server Media Kit Contents

The following software CDs (along with other CDs) are included in the NetBackup 6.0 Enterprise Server media kit and are used for the installation of NetBackup Operations Manager and required components.

Note that in the media kit, these CDs are organized by operating system platform. See the *NetBackup Installation Guide* for more details about the contents of this media kit.

VERITAS NetBackup CDs

NetBackup master server, media server, or client software must be installed on the NOM server. Client software is used to back up and restore the NOM database and to view the VxUL logs written by NOM.

See "Installing NetBackup 6.0 Software on a Windows System" on page 17 and "Installing NetBackup 6.0 Software on a Solaris System" on page 20.

VERITAS ICS CD

NOM requires NetBackup compatible versions of the following software components. These components are included on the ICS CD and can be installed on Windows or Solaris servers.

◆ VxSSAT (authentication)

◆ VxPBX (for Solaris servers only)

The `docs` directory on the CD contains pdf files for the installation and administration of ICS components (VxPBX) and VxSS.

These components must be installed and configured before installing NOM. See "Installing VxSSAT Software on a Windows System" on page 17 and "Installing VxPBX and VxSSAT Software on a Solaris System" on page 20.

NetBackup Operations Manager CD

This CD is included in the NetBackup 6.0 Enterprise Server media kit at no additional charge. No license keys are required to use NOM.

The following software components associated with the NOM server are included on this CD. These components can be installed on Windows or Solaris servers.

◆ VRTSweb

◆ VRTSjre

◆ VxAM

◆ NOM Sybase database

◆ NOM reporting service

◆ NOM server

◆ NOM web client

◆ VxPBX (for Windows servers only)

Installation of NOM and Required Components on the NOM Server (Windows)

Use the following installation steps, in the order shown.

Step	Description	See this Topic
1	Install NetBackup software	"Installing NetBackup 6.0 Software on a Windows System" on page 17
2	Install VxSSAT	"Installing VxSSAT Software on a Windows System" on page 17

Step	Description	See this Topic
3	Install NetBackup Operations Manager software	"Installing NOM Software on a Windows System" on page 19

Installing NetBackup 6.0 Software on a Windows System

NetBackup 6.0 server or client software must be installed on the NOM server before installing NOM. This installation step can be skipped if any NetBackup 6.0 software is currently installed on the NOM server.

Note If NetBackup server software is installed on the NOM server, VxPBX is also automatically installed during the NetBackup installation. VxPBX is shared with other VERITAS products.

See the appropriate server or client sections of the *NetBackup Installation Guide for Windows* for instructions.

Installing VxSSAT Software on a Windows System

Using VxSSAT (security authentication) is optional for NetBackup servers. VxSSAT is required and must be present for NOM, and can be installed on the NOM server.

NOM uses VxSSAT to authenticate NOM users, mutually authenticate NOM client/server communication, and to establish secure communication with managed NetBackup master servers.

VxSS Cautions

You should be familiar with VxSS before setting up your security environment. Many different and complex security configuration options are available to you. VxSS provides low, medium, and high levels of security.

See "VxSS (VERITAS Security Services)" on page 70 for an understanding of some common security models.

In the following installation instructions, VxSSAT is installed on the NOM server.

VxSS Documentation

Please review the VxSS and the NOM documentation carefully before setting up your security environment and installing VxSSAT for NOM.

The files in the `docs` directory of the ICS CD ("VERITAS ICS CD" on page 15) have information about installing and configuring VxSS.

Also, refer to the Access Management chapter in the *NetBackup System Administrator's Guide, Volume II* for information about NBAC.

Installing VxSS on the NOM Server

The following instructions install VxSSAT for one of the most common security models. In this model, you are *not* using VxSS and NBAC with any of your managed NetBackup master servers.

Installing VxSSAT on the NOM server is still required for use by NOM.

For instructions on installing VxSSAT in more complex security models, see "NetBackup with NBAC is Deployed with Multiple Root Brokers" on page 73 and "NetBackup with NBAC is Deployed with Only One Root Broker" on page 75.

▼ **To install VxSSAT software**

1. Insert the ICS CD.

   Note Use the Authentication\VxSSVRTSatSetup.exe on the ICS CD and not one of the msi (silent installation) files.

2. Run the VxSSAT wizard.

3. Select **Complete** for the installation.

   Note If you select **Typical**, you will likely see the error "VERITAS Authentication Broker (server) must be installed" later when checks are made during the installation of NOM software. In this case, uninstall VxSSAT and reinstall selecting a **Complete** installation.

4. Select **Root** + **Authentication Broker**. This will install VxSSAT on the NOM server and configure a root and AT broker for NOM.

5. The name of the NOM server must be added to the trusted SERVER list on each managed master server to enable NOM to collect data from the server.

   Use the **Host Properties** node of **NetBackup Management** on each managed NetBackup master server to add the NOM server name.

Installing NOM Software on a Windows System

The server where you plan to install NOM software must have the NetBackup 6.0 server or client installed. NetBackup client software may be installed from the clients CD if needed, or it is included as part of a NetBackup server installation. The NOM installation will stop if NetBackup is not present on the server.

In addition, the NOM installation checks for the presence and minimum version required for the following software components. See "Shared and Unshared Software Components Used by NOM" on page 12.

◆ VxSSAT (VERITAS Authentication Service)

   The installation will stop if this component is not installed or is out-of-date See "Installing VxSSAT Software on a Windows System" on page 17.

◆ VRTSjre and VRTSweb

   The installation will install or upgrade these components (using merge modules).

◆ VxPBX

   If NetBackup server software is installed on the NOM server, VxPBX is also automatically installed during the NetBackup installation.

   The NOM installation will install or upgrade VxPBX, if it is not installed or is out-of-date. If it is installed by the NOM installer, VxPBX will not appear in the **Add/Remove Programs** list of the Windows **Control Panel**.

Caution If you are installing NOM on a NetBackup master server, ensure that NetBackup is idle (not doing any critical operations). The VxPBX installer will leave dependent NetBackup services stopped. You must restart NetBackup after NOM is installed.

▼ **To install NOM server software**

The default location for the installation is: `C:\Program Files\VERITAS\NetBackup Operations Manager`. An option to specify an alternate path for the installation is presented during the installation.

Log files are created to trace any install issues. See "NOM Log Files on Windows Servers" on page 83.

1. Insert the NOM CD.

2. Run `setup.exe`.

3. A menu item for **VERITAS NetBackup** > **NetBackup Operations Manager** is added to the Windows Start menu at the completion of the installation.

Installation of NOM and Required Components on the NOM Server (Solaris)

Use the following installation steps, in the order shown.

Step	Description	See this Topic
1	Install NetBackup software	"Installing NetBackup 6.0 Software on a Solaris System" on page 20
2	Install VxPBX and VxSSAT	"Installing VxPBX and VxSSAT Software on a Solaris System" on page 20
3	Install NetBackup Operations Manager software	"Installing NOM Software on a Solaris System" on page 22

Installing NetBackup 6.0 Software on a Solaris System

NetBackup 6.0 server or client software must be must be installed on the NOM server before installing NOM. This installation step can be skipped if any NetBackup 6.0 software is currently installed on the NOM server.

See the appropriate server or client sections of the *NetBackup Installation Guide for UNIX and Linux* for instructions.

Installing VxPBX and VxSSAT Software on a Solaris System

Using VxSSAT (security authentication) is optional for NetBackup servers. VxSSAT is required and must be installed for NOM, and can be installed on the NOM server.

NOM uses VxSSAT to authenticate NOM users, mutually authenticate NOM client/server communication, and to establish secure communication with managed NetBackup master servers.

VxSS Cautions

You should be familiar with VxSS before setting up your security environment. Many different and complex security configuration options are available to you. VxSS provides low, medium, and high levels of security.

See "VxSS (VERITAS Security Services)" on page 70 for an understanding of some common security models.

In the following installation instructions, VxSSAT is installed on the NOM server.

VxSS Documentation

Please review the VxSS and the NOM documentation carefully before setting up your security environment and installing VxSSAT for NOM.

The files in the `docs` directory of the ICS CD ("VERITAS ICS CD" on page 15) have information about installing and configuring VxSS.

Also, refer to the Access Management chapter in the *NetBackup System Administrator's Guide, Volume II* for information about NBAC.

Installing VxPBX and VxSS on the NOM Server

The following instructions install VxSSAT for one of the most common security models. In this model, you are *not* using VxSS and NBAC with any of your managed NetBackup master servers.

Installing VxSSAT on the NOM server is still required for use by NOM.

For instructions on installing VxSSAT in more complex security models, see "NetBackup with NBAC is Deployed with Multiple Root Brokers" on page 73 and "NetBackup with NBAC is Deployed with Only One Root Broker" on page 75.

▼ **To install VxPBX and VxSSAT software**

1. Insert the ICS CD.

2. Run the `installics` script.

3. Install VxPBX first. The VxPBX installation may be skipped if it is currently installed and configured as part of your NetBackup master server or other VERITAS application installation.

   Caution If you are installing VxPBX on a NetBackup master server, ensure that NetBackup is idle (not doing any critical operations). The VxPBX will be unresponsive until the installation is complete.

4. During the VxSSAT installation, answer **Y** to install the Authentication Broker server.

5. Select **Authentication** + **Root Broker**. This will install VxSSAT on the NOM server and configure a root and AT broker for NOM.

6. The name of the NOM server must be added to the trusted SERVER list on each managed master server to enable NOM to collect data from the server.

Use the **Host Properties** node of **NetBackup Management** on each managed NetBackup master server to add the NOM server name.

Installing NOM Software on a Solaris System

The NOM installation checks for the presence and minimum version required for the following software components. See "Shared and Unshared Software Components Used by NOM" on page 12.

◆   VxPBX and VxSSAT

The installer will stop if these ICS components are not installed or are out-of-date See "Installing VxPBX and VxSSAT Software on a Solaris System" on page 20.

◆   VxAM, VRTSjre, and VRTSweb

The installer will install these components from the NOM CD if they are not present, or offer to remove and upgrade them if they are found to be out-of-date or partially installed. You may chose no to this removal and the installation will stop, leaving your system unchanged.

In addition, the server where you plan to install NOM software must have the NetBackup 6.0 server or client installed. NetBackup client software may be installed from the clients CD if needed, or it is included as part of a NetBackup server installation. The NOM installation will stop if NetBackup is not present on the server.

▼   **To install NOM software**

Use the installation defaults when installing NOM. The default location for the installation is: /opt.

A log file with the name of installnom_trace.*nnnn* is created in /opt/tmp to trace any install issues. *nnnn* is the process id of this installation. See "NOM Log Files on Solaris Servers" on page 85.

1. Insert the NOM CD.

2. Run the install script.

After NetBackup Operations Manager is Installed

The following sections explain how to start using the NOM console.

Starting to Use NOM

After completing the installation of NOM, you are ready to start using the NOM console.

▼ **To access and log into the NOM console**

This topic provides instructions on accessing and logging in, and solutions to possible issues.

❖ See "Starting the NOM Console" on page 26.

▼ **To understand the NOM console components**

This topic provides an overview of the console components that you will use.

❖ See "NOM Console Components" on page 32.

▼ **To learn more about using the NOM console**

For instructions on understanding and using the various NOM monitoring, managing, and reporting views and related tasks, use the NOM online help.

❖ See "Using Help to Understand NOM Views and Tasks" on page 48.

❖ See "Understanding NetBackup Operations Manager Online Help" on page 59.

▼ **To learn about some typical tasks in the NOM console**

To get you started using NOM, instructions on accessing some typical monitoring, managing, and reporting tasks in NOM are provided.

❖ See "A Quick Start for Performing Some Common Tasks in NOM" on page 48.

Start-up Tasks Performed by NOM

The first time NetBackup Operations Manager is started, the following tasks are done.

1. Creates and initializes the security domain required by the VxSS authentication broker. If this security domain is present, NOM will use it.

2. Creates the NOM admin user.

3. Starts the Sybase database server, and creates and initializes the NOM database.

4. Starts VRTSamnom (alert manager).

5. Starts the NOM server.

The NOM server process depends on the NOM Alert Manager (VRTSamnom) and NOM Database Server (Sybase). If either of these fail to start, the NOM server will also fail.

See "Services Used by NOM on Windows" on page 86 for a list of services that are normally running after the NOM server is started.

See "Processes Used by NOM on Solaris" on page 87 for a list of processes that are normally running after the NOM server is started.

6. Starts the NOM web client (the NOM console).

Uninstalling or Upgrading NetBackup Operations Manager

The following are some considerations to follow if you need to uninstall or upgrade NOM.

Uninstalling NOM

◆ VxPBX and VxSSAT should not be uninstalled, since they are required by NOM.

◆ `reload.sql` and the `.dat` files created by the `NOMAdmin -unload` utility are deleted if NOM is uninstalled. See "Unloading the NOM Database" on page 68.

Upgrading NOM

◆ `reload.sql` and the `.dat` files created by the `NOMAdmin -unload` utility are not deleted with a NOM upgrade installation. See "Unloading the NOM Database" on page 68.

Getting Started Using NetBackup Operations Manager Console

3

This getting started section covers the basics of accessing and using NetBackup Operations Manager, and includes logging on and off, setting up managed master servers or server groups, and understanding the NOM console.

The following getting started topics are included:.

Topic	Description
"Before Using the NetBackup Operations Manager Console" on page 26	Provides information about using the extensive online help to learn more about NOM capabilities and tasks.
"Starting the NOM Console" on page 26	Provides instructions for starting the NOM console to manage your NetBackup servers. Potential start-up issues are also covered.
"NOM Console Components" on page 32	Provides detailed information on the navigation features, windows, links, and table components available in the NOM console.
"Using Help to Understand NOM Views and Tasks" on page 48	Provides a table of typical NOM tasks and how to locate information about them in the NOM online help.
"Understanding NOM Server Groups" on page 49	Provides an overview about predefined and user-defined master server groups.
"Using the Context Window to Configure Master Servers and Server Groups" on page 50	Provides instructions for adding and managing NetBackup master servers and server groups in NOM.
"Selecting Managed Servers (or Server Groups) to View" on page 56	Provides instructions for selecting servers (or server groups) to control the scope of your views throughout NOM.

Topic	Description
"Using Web-Browser Bookmarks" on page 58	Provides information on using bookmarks to mark key views and tasks in NOM that you use frequently.

Before Using the NetBackup Operations Manager Console

For information on understanding and using the various NOM monitoring, managing, and reporting views and related tasks, refer to the NOM online help. Context-sensitive help is available for all console views, task dialogs, and wizard task screens.

The NetBackup Operations Manager online documentation assumes that the user has a good working knowledge of NetBackup and its concepts and components, for example, NetBackup job policies. Portions of the online help may refer the user to other NetBackup documentation for descriptions of NetBackup components.

The following NetBackup documents are referenced in the online help.

◆ *NetBackup System Administrator's Guide, Volume 1 for Windows*

◆ *NetBackup System Administrator's Guide, Volume 1 for UNIX and Linux*

◆ *Media Manager System Administrator's Guide for Windows*

◆ *Media Manager System Administrator's Guide for UNIX and Linux*

◆ *NetBackup Troubleshooting Guide for UNIX, Windows, and Linux*

See "Using Help to Understand NOM Views and Tasks" on page 48 and "Understanding NetBackup Operations Manager Online Help" on page 59 for more information.

Starting the NOM Console

The NOM server is the focal point for centralized management of the NetBackup servers (release 6.0 and greater) in your backup environment.

When you installed NetBackup Operations Manager, you selected the computer that would serve as the NOM server. When you start the NOM console to manage and monitor your NetBackup environment, you open a connection to the NOM web client.

Topic	Description
"Accessing the NOM Console" on page 27	Provides instructions to access the NOM console

Topic	Description
"Logging Into the NOM Console" on page 28	Provides instructions on suppling login credentials for NOM
"Logging Out of the NOM Console" on page 30	Provides instructions for logging out of NOM
"Possible Issues when Using the NOM Console" on page 30	Provides troubleshooting information for other NOM issues that may occur during operations

Accessing the NOM Console

On a system that has a network connection to the NOM server, start the system's web browser. (If NOM software is installed on the same Windows server as a NetBackup master server, a Windows **Start** menu item is available to launch the NOM console.)

From the browser, type the following address to start the NOM console. *host.domain* is the name of the NOM server and can also be an IP number.

```
http://host.domain:8181/nom
```

Possible NOM Console Access Issues

You may see the following issues when accessing the console.

Issue

You cannot connect to the web client. You will see a "page cannot be displayed" or "connection was refused" message from your web browser.

Cause

The VERITAS web client (the NOM console) is not running or is inaccessible on the network.

Solution

1. Verify that the VERITAS web sever service (VRTSweb) is running.

2. Verify that a web browser on the NOM server can connect to the NOM console using the following address:

```
http://localhost:8181/nom
```

Issue

The VERITAS web client is running, but the NOM console is not available. You will see a "HTTP STATUS 404"error from your web browser.

Cause

The NOM console application is not loaded.

Solution on Windows

1. Verify that the NOM application has been installed by locating the `nom.war` file in the VRTSweb install directory (`c:\program files\VERITAS\VRTSweb\VERITAS`).

2. Verify that the NOM application is running by using the `monitorApp` command line utility. This utility is located in the `VRTSweb\bin` directory.

   Enter `monitorApp nom`.

3. If the NOM application is not running, start it by using the `startApp` utility in the `VRTSweb\bin` directory.

   If the application is running, there will be a `nom` directory in the same directory as `nom.war` file.

Solution on Solaris

1. Verify that the NOM application has been installed by locating the `nom.war` file in the VRTSweb install directory (`/opt/VRTSnom/webgui`).

2. Verify that the NOM application is running by using the following command. Any required NOM process that is not running will appear with NOT RUNNING in its entry.

   `/opt/VRTSnom/bin/nom_server status`

3. If any processes are shown as NOT RUNNING, restart the NOM software by running the following command:

   `/opt/VRTSnom/bin/nom_server restart`

Logging Into the NOM Console

You must supply login credentials on the NOM login screen.

▼ **To log into NetBackup Operations Manager Console**

    1. Choose a display language for the console using the drop-down list.

    The first time you log in the default language of the web browser is used. If this language is not supported by NOM, English is used.

    After initial login, each user can specify a default language in NOM using **Settings** > **Preferences** and then select **Default** when logging in. If a default is not set, the language of the web browser (or English) is used.

    2. Enter a user name and password, and select a domain from the **Domain** drop-down list.

    For initial login by an administrator, refer to the Operational Notes chapter of the NetBackup release notes for the default NOM user name, password, and domain.

    NOM also provides read-only access to NOM for guest users. The default user name and password are guest and welcome. The password can be changed by the administrator (see "Changing the NOM Guest Password" on page 68).

    3. Click **Log On**.

    A monitoring overview of the NetBackup master servers under NOM management is displayed initially. When you log out of the console, your settings and preferences are saved and these settings are used when you restart the console again.

Possible NOM Console Login Issues

You may see the following issues when logging into the console.

Issue

You have an user authentication error. You receive the message "User authentication failed. The user name/password are invalid for the selected domain."on the NOM login screen.

Cause

The username and password for the domain entered could not be validated by the VxSS security component.

Solution

Enter a valid username, password and domain.

Issue

The user name entered is not a registered NOM user. You receive the message "user *user_name* is not a registered NetBackup Operations Manager user" on the NOM login screen.

Cause

The username and domain are valid, but the user has not been added to the list of users for NOM.

Solution

Login as the NOM admin user and add the user to the list of NOM users.

Issue

You cannot connect to the NOM server. You receive the message "Unable to connect to server *server_name*" on the NOM login screen.

Cause

The NOM server is not running.

Solution

Start the NOM server and verify that it is running properly.

Logging Out of the NOM Console

You will exit the application and the login screen will be displayed. All settings and changes you make in a NOM session are saved.

▼ **To log out of NetBackup Operations Manager**

❖ Click **Logout** located on the right side of the title bar.

Possible Issues when Using the NOM Console

You may see the following issues while running the console.

Issue

The connection to the NOM Server is lost. You receive the message "*NOM_server* - Not Responding" displayed in the **Connected To** window (see "The Connected To Window" on page 36).

Solution

Restart the NOM server and verify that it is running properly. Then refresh the GUI from your browser. The GUI will automatically reconnect to the NOM server.

Issue

Your NOM console session times out. The login screen is displayed while attempting to change views or refresh the current view.

Cause

After 30 minutes of inactivity, the NOM user is automatically logged out of the console. Attempting to use NOM will display the NOM login screen.

Solution

Log in again. After successful login, you will then be returned to the NOM view that was last visited.

Issue

An internal error occurs in the NOM console. You will see an exception error message displayed in the NOM console.

Cause

This is caused by an internal issue in the NOM console application.

Solution

Use one of the following solutions:

◆ Try refreshing the web browser, or using the back button of the browser.

◆ In some cases it may be necessary to close the browser and open a new browser session.

◆ The NOM console may need to be restarted.

Issue

You receive the message "Application initialization failed. The database credentials could not be retrieved from the NOM server".

Cause

The NOM web application was not able to successfully get the database credentials from the NOM server.

Solution

Ensure that the NOM server and database are running.

Issue

You receive the message "Application initialization failed. The reporting service is not running".

Cause

The NOM reporting service was not started successfully.

Solution

Restart the NOM database, server, and web server.

Issue

You receive the message "Active scripting is required to use this application. Enable active scripting in the browser".

Cause

Active scripting is disabled in the web browser.

Solution

Enable active scripting the web browser. It must be enabled to use NOM.

NOM Console Components

This section provides information on the basic windows and navigation features available in the NOM console. The console is viewed using a Web browser.

When you log in initially, the **Summary** view of the monitoring overview is displayed (**Monitoring** > **Overview**). See "Summary and Details Views" on page 40. The following is an example view showing the NOM console components.

When you log out of the console, your settings and preferences are saved. NOM uses these settings when you start the console again.

NOM Console Components
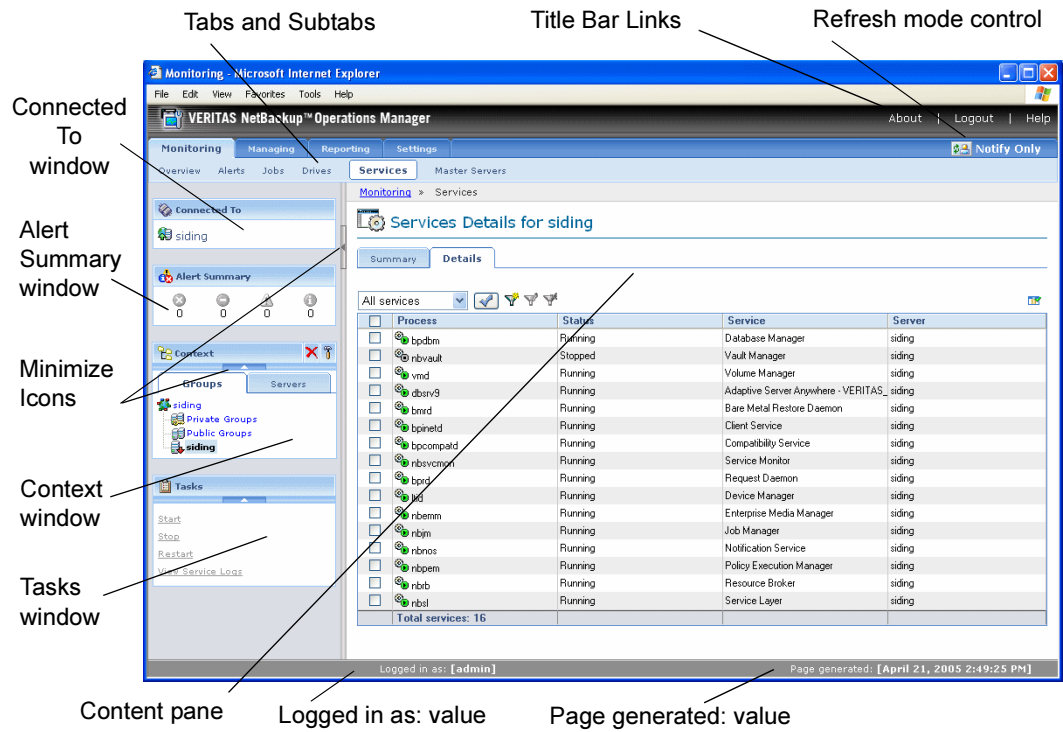
The following topics describe the main elements of the console in greater detail:.

Topic	Description
"Using the Links on the Title Bar" on page 34	Provides information on using the links (for example, **Logout** and **Help**) available from the title bar
"Using Tabs and Subtabs" on page 35	Provides an overview about the main and subtabs available in the console

Topic	Description
"Using the Refresh Mode Control" on page 35	Provides instructions on controlling how often the NOM console is refreshed to reflect changes in your backup environment
"The Connected To Window" on page 36	Provides information about the window containing the NOM server connection and its status
"Using the Alert Summary Window" on page 36	Provides information about the window that displays a quick visual summary of any current alerts
"Using the Context Window" on page 37	Provides information about the window that serves as a key navigation tool in NOM
"Using the Task Window" on page 39	Provides an overview about task windows
"Using the Content Pane" on page 39	Provides information about the main data display window used by NOM
"The NOM Status Bar" on page 41	Provides information about the status bar at the bottom of the NOM console
"Visual Keys in the Console" on page 41	Provides information about the visual keys that are used in NOM to help you understand the information that is displayed
"Using Tables" on page 42	Provides instructions for using tables, including customizing tables, selecting rows, and using filters.

Using the Links on the Title Bar

The links available in the title bar at the top of the NOM console allow you to do the following:

◆ Access NetBackup Operations Manager product version and copyright information (click **About**).

◆ Disconnect from the NOM server to end your session (click **Logout**). See "Logging Out of the NOM Console" on page 30.

◆ Access NetBackup Operations Manager help (click **Help**). Context-sensitive help for all views, wizards, and dialogs is also available, see "Understanding NetBackup Operations Manager Online Help" on page 59 for more information.

Using Tabs and Subtabs

The following main tabs provide access to the major areas of the NetBackup Operations Manager console.

NetBackup Operations Manager Tabs

Tab	Description
Monitoring	Monitor the status of NetBackup jobs, drives, services, and master servers; and display and respond to any NOM alerts.
Managing	Manage NOM alert policies, NetBackup job policies, storage units, devices and media, and master server host properties.
Reporting	View standard NOM reports, create and run custom reports, and schedule reports.
Settings	Customize the NOM server, add NOM users, define user preferences, and set up email and SNMP recipients.

Under each main tab is a series of subtabs; the contents of these subtabs vary depending on the view currently displayed and represent the views accessible from each main tab. Under the **Reporting** tab for example, there are subtabs for **My Portal**, **All Reports**, and **Scheduled Reports**.

Using the Refresh Mode Control

As you use NetBackup Operations Manager, the status of your backup environment is likely to change. Devices go online and off-line, alerts are generated, media usage fluctuates, and so on. You can control when the information in the console is refreshed to reflect the changes in your backup environment.

▼ **To change the refresh setting**

A refresh icon in the upper right-hand corner of the console window indicates the current refresh setting for the console and the state of the information that is currently on display.

1. Click the refresh icon.

2. Select one of the setting choices listed in the first column of the following table. The refresh icon that is displayed will change to reflect your choice as shown in the third column.

Refresh Settings and Corresponding Icons

Dialog Setting	Description	Icon Displayed
Disabled	Disables update notification. With this setting there is no notification of data changes. You must use your browser refresh/reload button periodically to update your view.	
Notify Only	Informs you when there is available data that is more current than the information being displayed. To display the most current data, refresh the console manually by clicking the refresh icon that appears in place of the notify icon or by using your browser's refresh/reload button. Notify Only is the default setting.	Notify Refresh
Auto Refresh	Automatically updates the console display every 20 seconds or when the data displayed is no longer current.	

The Connected To Window

The **Connected To** window shows the NOM server that you have logged into and also the state of your connection to the server. If your connection to the NOM server is lost for any reason, the icon for the server connection will change from green to red (see "Visual Keys in the Console" on page 41).

This window is available in all NOM console views.

Using the Alert Summary Window

The **Alert Summary** window provides a quick visual summary of the current critical, error, warning, and informational alerts for the NetBackup master servers to which you are connected. This window is available in all console views.

If there are no outstanding system alerts, all icons are displayed in gray. See "Visual Keys in the Console" on page 41 for an explanation of the colors used for alerts in the console.

▼ **To quickly view outstanding alerts**

❖ Click any of the colored icons.

A detail view filtered for that alert category is presented (this is a shortcut to **Monitoring** > **Alerts** > **Details**).

Using the Context Window

The **Context** window serves as a key navigation tool in NetBackup Operations Manager. This window allows you to manage master servers and server groups and to control the scope of your views in the console. This window

◆ Allows quick access to change servers that you are monitoring or managing. This allows you to adjust the scope of the information that is collected and displayed in the main content pane.

As you navigate within the NOM console, your server selection applies for any subsequent views until you select a different server (or server group).

Using this window is just one of the methods you can use to determine the scope of information viewed. See "Selecting Managed Servers (or Server Groups) to View" on page 56 for more information.

◆ Is available in any NOM views where you can change servers (or server groups).

◆ Allows you to add and manage master servers.

The **Add master server** and **Add server group** icons are available as convenient ways to add servers or server groups. These icons are present in the **Context** window only when each add task is allowed.

The **Configure** icon can also be used to add and manage master servers, and provides more configuration tasks. Clicking this icon provides a shortcut to the tasks available using the **Settings** > **Server Groups** view.
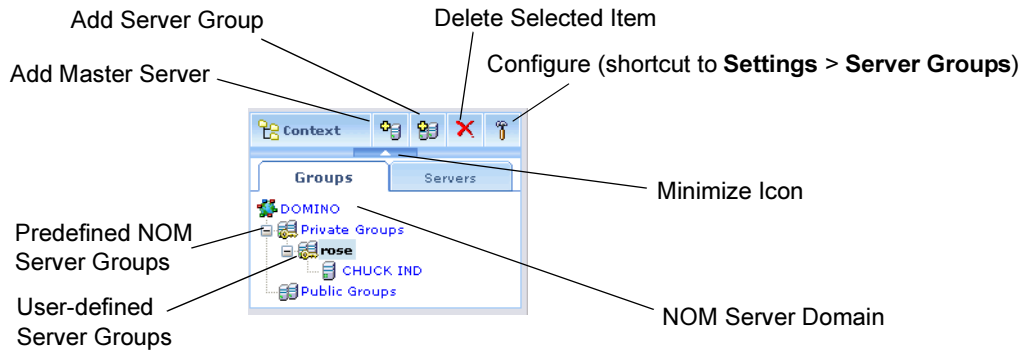
Context Window

▼ **To minimize the Context window**

❖ Click the minimize icon in the **Context** window. Click the icon again to view the window.

Understanding the Groups and Servers Tabs

Any NetBackup master servers that are added to the NOM domain of managed servers are displayed in the **Groups** tab and also in the **Servers** tab. These are the master servers that can be monitored by the NOM server to which you are connected (see "The Connected To Window" on page 36).

Selecting another server (or server group) will change all data views displayed in the content pane on the right. You can also select the entire NOM domain.

The Groups Tab

Server groups are displayed alphabetically in a hierarchical (tree) structure on this tab. The groups tab includes all NetBackup servers being managed by NOM, and may contain your all of your NetBackup servers or a subset. See "Understanding NOM Server Groups" on page 49 for information about server groups.

The groups tab shows you at a glance where you are in your NOM environment and makes it easy to move to another level. You can navigate the tree by expanding (+) or collapsing (-) the groups in the tree. The server (or server group) that is currently selected is highlighted.

The Servers Tab

This tab contains an alphabetical list of all NetBackup servers being managed by NOM. The server that is currently selected is highlighted in the list. This tab may be useful if you are not managing a large number of servers, or do not want to create and use server groups.

Adding NetBackup Servers to the NOM Domain

Note the following points when adding master servers or server groups:

◆ If you have selected the NOM domain in the **Context** window, *only* individual servers can be added. The **Add Master Server** icon is available.

◆ If you have selected one of the predefined NOM server groups in the **Context** window, *only* server groups can be added. The **Add Server Group** icon is available.

◆ If you have selected a user-defined server group in the **Context** window, servers or server groups can be added. The **Add Server Group** and **Add Server Group** icons are available.

◆ If you have selected a server in the **Context** window, servers or server groups cannot be added. The **Add Server Group** and **Add Server Group** icons are *not* available.

See "Using the Context Window to Configure Master Servers and Server Groups" on page 50 for more information on adding servers and server groups.

Using the Task Window

In many views in the console, a task window is available. This window provides access to tasks related to that specific tab and view. A task usually requires a selection in the **Content** pane, and until a selection is made a task may be unavailable.

▼ **To minimize the Tasks window**

❖ Click the minimize icon in the **Tasks** window. Click the icon again to view the window. See "NOM Console Components" on page 32.

Using the Content Pane

When you initially log into NetBackup Operations Manager, the content pane displays a summary of information for all master servers in the domain of the NOM server. Initially a monitoring overview is displayed (**Monitoring** > **Overview** > **Summary**).

If you log out and back in for any reason, the console displays the last view you visited.

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NOM Console Components

The information displayed in the content pane varies and is context-sensitive to the current selections in the **Context** window, the tabs and subtabs, and the **Task** window.

Summary and Details Views

The NOM monitoring and managing tabs present information in two main viewing modes: **Summary** and **Details**. You can view information about your NetBackup environment in the summary view or use the details view. You can switch between these views using the **Summary** or **Details** tabs.

For example, you can view a summary of completed NetBackup jobs for a master server using the **Monitoring** > **Jobs** > **Summary** tabs. If you click the **Details** tab, detailed job activity is shown for that server.

Monitoring Jobs Detail View (click on image to view)

After using the console to drill-down and view details, you can use the **Summary** tab to quickly return to a NOM summary from any view.

Summary views can provide an overview of the entire domain of the NOM server to which you are connected. Using summary views, you can quickly determine the overall status of your operation using a single pane.

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The views displayed when using the **Details** tab contain information in a variety of tabular and graphical formats.

▼ **To enlarge the content pane**

You can provide a larger view of the content pane by using the minimize icon to hide all NOM console windows that are normally displayed on the left.

❖ Click the icon between the **Context** window and the content pane. Click the icon again to show all windows. See "NOM Console Components" on page 32.

The NOM Status Bar

The **Logged in as** value displayed at the bottom of the console shows the user name that is logged into the NOM server.

The **Page generated** value shows the date and time of the NOM server you are logged into (adjusted to match your time zone). This value is updated when the view is changed or refreshed.

Visual Keys in the Console

To help you understand the information being presented, NetBackup Operations Manager uses several visual keys. These keys include color, status icons, and tool tips.

Color Coding

The following colors are used in conjunction with status icons:

◆ Red indicates a critical condition which likely will cause the system to be unable to perform an important function. Critical conditions should be investigated immediately.

◆ Yellow (or orange) indicates a warning condition which may cause the system to be unable to perform as desired. Warning conditions should be investigated as soon as possible.

◆ Green indicates a normal condition, result, or operation.

◆ Blue indicates informational-only conditions.

◆ Blue-grey and grey are often used to indicate enabled and disabled, or assigned and unassigned conditions.

Status Icons

Status icons are also used in conjunction with color coding. When NOM detects a condition (for example, up or down) for a managed NetBackup server, job, drive, or drive path, the icon shown contains color coding.

These colors represent critical, warning, or informational conditions for that icon and allow you to quickly determine the status of a particular area of interest in your NetBackup environment. For example, the detail view for monitoring jobs contains green icons for running and idle jobs.

Unique icons are also displayed in the drive details view for shared drives (the NetBackup SSO option). These icons represent shared drives that are up on all servers sharing the drive. There are also icons for shared drives where the drive status is mixed (up on some servers and down on other servers sharing the drive).

For managed NetBackup servers in the **Context** window, a green up arrow or a red down arrow next to the server icon are used to convey the current status of the master server. A server icon with a line through it is also used to note that the server is no longer a valid managed NetBackup server (for example, an older version of NetBackup may have been installed).

Tool Tips

Tool tips provide brief descriptions of the tool and status icons that appear in NOM views. A tool tip appears after placing the mouse over an icon.

Using Tables

NOM collects information about many aspects of your NetBackup environment. Much of this information is presented in tables. This section describes how to change the tables to display the information you want to see. The following is an sample table showing task icons.
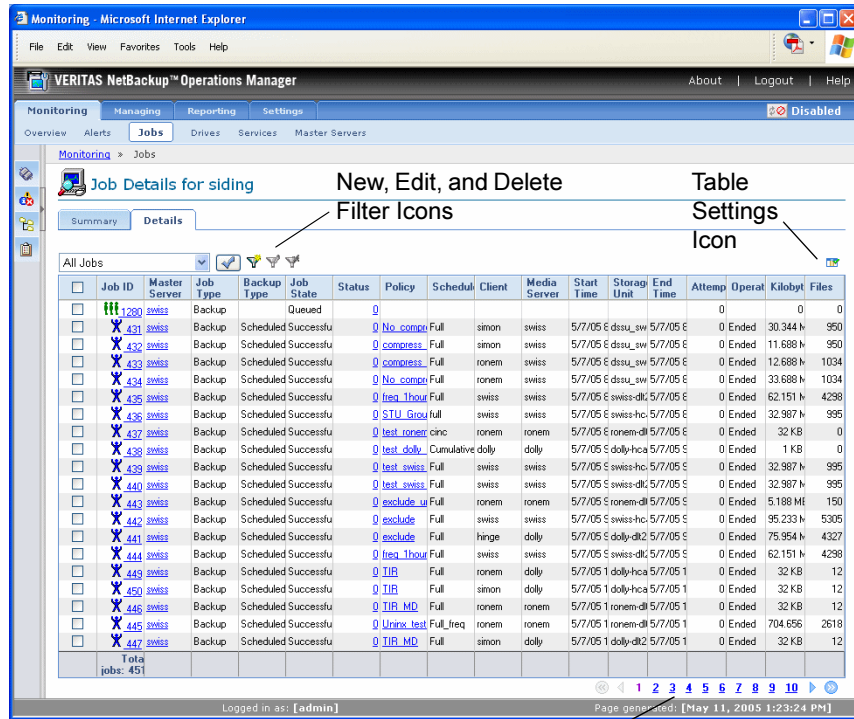
Task Buttons for Tables

Table page controls

The following topics describe these tasks in greater detail.

Topic	Description
"Customizing Tables for Your Needs" on page 44	Provides instructions for customizing tables, including viewing normally hidden columns and moving columns.
"Accessing Multiple Pages of Data in Tables" on page 45	Provides instructions for viewing tables with multiple pages of data.
"Selecting Rows in Tables" on page 46	Provides instructions for selecting single or multiple table rows.
"Using Filters to Customize your Views" on page 46	Provides instructions on using table filters, including creating and using custom filters.

Customizing Tables for Your Needs

You can do the following operations to a table. The table is refreshed after the operation showing the changes you have made.

◆ Sort columns in ascending or descending order.

◆ Choose the number of rows and which columns to display.

◆ Hide column heads containing information that may not be of interest to you.

◆ Re-arrange the order of the column heads for your individual requirements.

◆ Change the widths of columns.

For these operations, your customized settings are saved and are reloaded when you log in to the NOM server again. Each user can have different customized table settings.

▼ **To specify which columns are displayed in a table**

   1. Click the **Table Settings** icon located at the top of the table.

   2. Remove any columns you do not want displayed, by selecting the column in **Selected Columns** and clicking **Remove**.

   Add any columns not currently being displayed by selecting the column in the **Available Columns** list and clicking **Add**.

▼ **To move a column**

   1. Click the **Table Settings** icon located at the top of the table.

   2. Select the name of the column in **Selected Columns**. Click **Move Up** to move the column to the left in the table and **Move Down** to move the column to the right in the table.

▼ **To choose a sort order for a column or multiple columns**

You can group columns together to provide a multi-column sort. See "To sort the contents of a column or multiple columns" on page 45 for instructions on sorting columns.

   1. Click the **Table Settings** icon located at the top of the table.

   2. Use the **Sort** drop-down list box that is available for each column.

   3. Select **Up** to sort the largest values for that column at the bottom of the table. Select **Down** to sort the largest values for that column at the top of the table.

▼ **To choose the number of rows displayed per page for a table**

1. Click the **Table Settings** icon located at the top of the table.

2. Select a number from the **Rows Per Page** drop-down list box.

3. Select **Apply To All Tables** if you want the **Rows Per Page** setting to apply to all tables in NOM.

▼ **To sort the contents of a column or multiple columns**

See "To choose a sort order for a column or multiple columns" on page 44 for instructions on setting the sort order for each column or groups of columns.

❖ In an table, click the name displayed for the column. The column is sorted in ascending order by default.

To sort in descending order, click the column name again.

▼ **To change the width of a column**

1. Select the edge of the column heading and hold the left mouse button down.

2. Drag the edge of the column heading to the right or left.

Accessing Multiple Pages of Data in Tables

Much of the monitoring information is displayed in a table format. NOM tables display 10 rows at one time by default.

When there is more data to display than can fit in a table, the table will contain multiple pages. The table page controls, located below the table, help you navigate the pages.

To display the next 10 rows or to return to a previous set of rows in large tables, use the table page controls. See "Using Tables" on page 42 for an example of these controls.

▼ **To go to a specific page**

❖ Click the page number.

▼ **To go to the previous or next page**

❖ Click the left arrow or the right arrow.

▼ **To go to the first or last page**

❖ Click the double left arrow or the double right arrow.

Selecting Rows in Tables

For many tables in NOM, you must select a row or rows to enable the tasks in the **Tasks** window.

▼ **To select a row in a table**

❖ Click the checkbox for that row. Click the checkbox again to clear the selected row.

▼ **To select all rows on the current page of the table**

❖ Click the checkbox in the header row of the table. Click the checkbox again to clear all selected rows.

Using Filters to Customize your Views

Many tables in NOM allow you to display a subset of the information available by creating and using custom filters, or by using the ready-to-use filters. A filter screens information based on a set of conditions that you define. Once you have created a filter, you can save it, edit it, or remove it.

Views that allow filtering have filtering icons displayed above the table. See "Using Tables" on page 42 for an example of these icons.

Creating Custom Filters

After you create a custom filter, it will appear in the filter drop-down list.

▼ **To create a custom filter**

1. Select the **New filter** icon.

2. Type a name for the filter in **Filter name**.

3. For **Column,** select the column name that you want to filter on from the drop-down list.

For **Operator,** select an operator. Use **!=** if you do not want to match a specific value.

For **Value,** enter or select a value.

If you selected **Start Time** or **End Time** for **Column,** a calendar icon is displayed for **Value**. Click the calendar icon to choose a date and time and then click **OK**.

4. Click >> to build the filter query.

The **Filter Definition** on the right shows the resulting filter queries. You can use the drop-down lists to add or remove open and closing parenthesis to further refine a query. You can also use parenthesis to nest your queries.

If the query is not what you want, click the **Delete** icon to remove the query.

5. To continue building the filter, select another column and repeat step 3 and step 4.

6. Click **OK** when done building the filter. Your new filter is available in the filter drop-down list.

Applying Filters

The table displayed is filtered according to the criteria you specify. The filtering criteria remains in effect until you reset it by selecting another filter.

Picking a Filter to Use

▼ **To pick a filter**

1. From the drop-down list, select a custom filter or a NOM built-in filter.

2. Click the check mark icon.

Editing Custom Filters

The ready-to-use NOM filters cannot be modified. Only custom filters can be modified.

▼ **To edit a custom filter**

1. From the drop-down list, select a custom filter.

2. Click the **Edit filter** icon.

3. Make your changes. See "Creating Custom Filters" on page 46.

Deleting Custom Filters

The ready-to-use filters cannot be deleted.

▼ **To remove a custom filter**

1. From the drop-down list, select a custom filter.

2. Click the **Delete filter** icon.

3. Click **OK** to remove the filter.

Using Help to Understand NOM Views and Tasks

The NOM context-sensitive online help for a view is the best place to start understanding the capabilities and tasks in the console.

The help provided for the various NOM console views provides a description of the view, instructions for navigating within the view and starting the tasks related to the view. In many cases, links are provided at the end of the help topic to helpful related topics.

To access the help, use the help buttons found in most dialogs and wizard screens, and the help button on the title bar of NOM views (see "NOM Console Components" on page 32).

See "Understanding NetBackup Operations Manager Online Help" on page 59 for more information on the help components and using help.

The following table contains some common starting tasks in the console and how to locate them in the NOM console.

A Quick Start for Performing Some Common Tasks in NOM

The following table lists some tasks you may be interested in and how to locate information about them.

To Learn About This Task	Use the Help Button in this Console View
Adding authorized NOM users	**Settings** > **Access Control**
Setting up user preferences	**Settings** > **Preferences**
Configuring the SMTP server and NOM alert retention settings	**Settings** > **System**
Setting up recipients for alert and report notification	**Settings** > **Recipients**

To Learn About This Task	Use the Help Button in this Console View
Configuring NOM server groups and master servers	**Settings** > **Server Groups**
Creating NOM alert policies for your site	**Managing** > **Alert Policies** > **Details**
Viewing and responding to NOM alerts	**Monitoring** > **Alerts** > **Details**
Viewing the details for a NetBackup job	**Monitoring** > **Jobs** > **Details**
Viewing a NetBackup job policy	**Managing** > **Job Policies** > **Details**
Controlling NetBackup job policies	**Managing** > **Job Policies** > **Details**
Configuring log settings for NetBackup master servers	**Managing** > **Host Properties**
Viewing NetBackup job log files	**Monitoring** > **Jobs** > **Details**
Controlling NetBackup services	**Monitoring** > **Services** > **Details**
Using the NOM standard reports	**Reports** > **All Reports** > **Standard Reports**
Creating custom reports for your needs	**Reports** > **All Reports** > **New Report**
Scheduling when you want a report to be run	**Reports** > **All Reports** > **Schedule**

Understanding NOM Server Groups

Based on your needs, NetBackup master servers can be organized into groups of servers for ease of management. Server groups can contain individual master servers and can also contain sub-groups that contain servers.

A single managed master server can be defined in multiple server groups, but can only be defined once in any server group. A server can also be defined in a server group and in subgroups of that server group.

For example, server West can be included in server group-23 and in server group-24, but cannot be included twice in server group-23. Server West can be defined in server group-23 and in a sub-group of server group-23.

If a managed server is included in a server group more than once, the displays for the group contain only one set of collected data for that server.

Predefined NOM Server Groups

The NetBackup Operations Manager server name (the NOM domain) is displayed in the **Context** window as the top level in the server tree. See "Using the Context Window" on page 37. At this level individual servers can be added, but server groups cannot be added.

The NOM domain contains two predefined server groups: **Private Groups** and **Public Groups**. Only server groups can be added under these predefined groups. Individual servers can then be added to these server groups. Predefined groups cannot be edited by a user, but user-defined sub-groups can be added under these predefined groups.

Private Groups

Any NOM user can add server groups under private groups. New server groups in the private group are only visible to the creator of the groups. A user can edit and delete only the private groups that were created by them.

Public Groups

Any NOM user can add server groups under public groups. New server groups in the public group are visible to all users. Any user can edit and delete public server groups.

User-Defined Server Groups

User-defined server groups can contain individual master servers and sub-groups of servers containing servers. User-defined server groups cannot be moved between the predefined groups.

Using the Context Window to Configure Master Servers and Server Groups

To manage or monitor NetBackup activity and resources on master and media servers, you must first add NetBackup servers to the list of NOM managed servers. If you have a number of master servers, you may want to organize them into logical groups of servers that you define for ease of management.

The following topics describe these tasks in greater detail.

Topic	Description
"Adding a Master Server" on page 51	Provides instructions for adding a NetBackup master server to your NOM domain

Topic	Description
"Editing a Master Server" on page 53	Provides instructions for changing the configuration information for a NetBackup master server
"Removing a Master Server" on page 53	Provides instructions for removing a server from your NOM domain
"Adding a Server Group" on page 54	Provides instructions for adding a group of NetBackup master servers to the NOM domain
"Editing a Server Group" on page 55	Provides instructions for changing the configuration information for a master server group
"Removing a Server Group" on page 56	Provides instructions for removing a server group from the NOM domain

Adding a Master Server

To add a managed NetBackup server to the **Private Groups** or **Public Groups**, you must first add server groups under these groups. If there are no user-defined server groups created, the server is added at the NOM server domain level.

Master servers that are added to NOM are displayed in the **Groups** tab and also in the **Servers** tab. See "Adding NetBackup Servers to the NOM Domain" on page 39 for more information on adding managed servers.

Managed NetBackup Server Considerations

Some security configuration is required to allow the NOM server to communicate with a managed NetBackup server and collect data.

If NetBackup Access Control (NBAC) is deployed on the managed NetBackup server, VxSS security configuration must be done.

If NBAC is not deployed, the name of the NOM server must be added to the trusted SERVER list on the managed server. Use the **Host Properties** node of **NetBackup Management** on the managed server. (This configuration is not required if NOM and NetBackup master server software are installed on same server.)

See "Configuring Security for your NetBackup Master Servers for Use with NOM" on page 77.

Adding a Managed Master Server

▼ **To add a managed NetBackup server**

1. In the **Context** window, select the server group level where you want to add the server.

2. Click the **Add master server** icon.

Tip You can also click the **Configure** icon. This icon is a shortcut to the **Settings** > **Server Groups** view. From the **Group Tasks** window, select **Add server**.

3. In the **Network name or IP address** field, enter a host name, a fully-qualified server name (*server.domain*), or an IP address. This field is required.

   Any IP address will be accepted, but unresolved network names will not be accepted.

4. You can optionally use **Locate** to determine if the NOM server can connect to and talk to the NetBackup master server. Master servers must be running NetBackup release 6.0 or greater to communicate with NOM.

5. In **Display name** enter a name for the server.

   Duplicate display names are allowed (you can change the display name later). Special characters are allowed. The server name is optional and if left blank, the network name is used.

6. You can optionally click **Add** to add multiple master servers without closing the dialog.

7. Click **OK** when done.

   An error is displayed if the NOM server cannot connect to the NetBackup master server on the network.

Related Topics:

"Understanding NOM Server Groups" on page 49

"Using the Context Window to Configure Master Servers and Server Groups" on page 50

"Selecting Managed Servers (or Server Groups) to View" on page 56

Editing a Master Server

You can edit information for a managed NetBackup server that was previously configured.

▼ **To edit the information for a managed NetBackup server**

1. In the **Context** window, select the server you want to change.

2. Click the **Configure** icon.

Tip   This icon is a shortcut to the **Settings** > **Server Groups** view.

---

3. From the **Tasks** window, select **Edit**.

Note The edit dialog is also available from other views in the NOM console.

---

4. Supply the information requested by the dialog. You can change the name of the server (or its IP address) or the display name for the server.

5. Click **Locate** to determine if the NOM server can connect to and talk to the NetBackup master server. Master servers must be running NetBackup release 6.0 or greater to communicate with NOM.

6. Click **OK**.

    You will receive a message if the server has been successfully updated.

Related Topics:

"Understanding NOM Server Groups" on page 49

"Using the Context Window to Configure Master Servers and Server Groups" on page 50

"Selecting Managed Servers (or Server Groups) to View" on page 56

Removing a Master Server

The master server will also be deleted from all server groups of which it was a member.

▼ **To remove a managed NetBackup server**

1. In the **Context** window, select the server you want to remove.

2. Click the **Delete selected item** icon.

3. Click **OK** to remove the selected item.

Related Topics:

"Understanding NOM Server Groups" on page 49

"Using the Context Window to Configure Master Servers and Server Groups" on page 50

"Selecting Managed Servers (or Server Groups) to View" on page 56

Adding a Server Group

You can add server groups under the NOM predefined server groups (**Private Groups** and **Public Groups**) or under a user-defined server group. See "Adding NetBackup Servers to the NOM Domain" on page 39 for more information on adding server groups.

You can create a server group without any servers, but you will not be able to add servers to the groups until individual servers have been added in NOM. See "Adding a Master Server" on page 51.

▼ **To add a server group**

1. In the **Context** window, select the server group where you want to add the server group.

2. Click the **Add server group** icon.

> **Tip**   You can also click the **Configure** icon. This icon is a shortcut to the **Settings** > **Server Groups** view. From the **Group Tasks** window, select **Add Server Group**.

3. In the **Group name** field, type a descriptive name for the server group.

   This name is required. Special characters are allowed. Duplicate or blank group names are not allowed.

4. Select the checkbox next to each NetBackup master server you want to include in this server group.

   Click the forward arrows (>>) to add the servers to the server group.

   Click the back arrows (<<) to remove the servers from the server group.

5. You can optionally click **Add** to add multiple server groups without closing the dialog.

6. Click **OK** when done.

Related Topics:

"Understanding NOM Server Groups" on page 49

"Using the Context Window to Configure Master Servers and Server Groups" on page 50

"Selecting Managed Servers (or Server Groups) to View" on page 56

Editing a Server Group

You can edit information about a managed server group.

▼ **To edit the information for a server group**

1. In the **Context** window select the server group you want to change.

2. Click the **Configure** icon.

Tip   This icon is a shortcut to the **Settings** > **Server Groups** view.

---

3. From the **Group Tasks** window, select **Edit**.

4. You can change the **Group name** field.

5. Select the checkbox next to each NetBackup master server you want to include in this server group.

Click the forward arrows (>>) to add the servers to the server group.

Click the back arrows (<<) to remove the servers from the server group.

Tip   You can also add servers to a server group by selecting **Add server** from the **Group Tasks** window.

---

6. Click **OK**.

Related Topics:

"Understanding NOM Server Groups" on page 49

"Using the Context Window to Configure Master Servers and Server Groups" on page 50

"Selecting Managed Servers (or Server Groups) to View" on page 56

Removing a Server Group

▼ **To remove a server group**

1. In the **Context** window select the server group you want to remove.

2. Click the **Delete selected item** icon.

Tip   You can also click the **Configure** icon. This icon is a shortcut to the **Settings** > **Server Groups** view. From the **Group Tasks** window, select **Delete**.

---

3. Click **OK** to remove the selected server group.

Related Topics:

"Understanding NOM Server Groups" on page 49

"Using the Context Window to Configure Master Servers and Server Groups" on page 50

"Selecting Managed Servers (or Server Groups) to View" on page 56

Selecting Managed Servers (or Server Groups) to View

As you navigate within NetBackup Operations Manager (for example, using the **Monitoring** tab), your current master server (or server group) selection is used to determine the scope of your view. You can broaden your view to see an overview of NetBackup information for all managed master servers, or focus your attention on a particular group of servers or just an individual server.

To select the server (or server group) that you want to view and manage, you can do either of the following actions:.

Action	Topic
Use the **Context** window	"Selecting Servers Using the Context Window" on page 57.
Drill down in a table	"Selecting Servers by Drilling Down From a Summary View" on page 57.

Keep the following points in mind:

◆ If you select a server group, a summary view showing the servers (and any server groups) in that server group is presented.

◆ If you select a server, a view for just that server is presented.

◆ Your server (or server group) selection applies for any subsequent views in the console (until you select a different server).

Selecting Servers Using the Context Window

In the **Groups** tab, all server groups (and servers) are displayed in a tree (hierarchical) structure. This tree tells you at a glance where you are in your NetBackup master server environment and makes it easy to move to another level.

You can navigate the tree by expanding or collapsing the branches of the tree. The server group that is currently selected is highlighted.

The **Servers** tab contains a list of all NetBackup servers that have been added. The server that is currently selected is highlighted.

▼ **To select a server group**

If you want your view or actions to affect all master servers under NetBackup Operations Manager management, select the NOM domain. Selecting a server group or a server lower in the tree means that information just for that server group (or server) will be displayed.

1. Select the **Groups** tab.

2. Navigate the tree and select a server group.

Tip   You can also select a server from the **Groups** tab.

▼ **To select a server**

1. Select the **Servers** tab.

2. Select a master server.

Selecting Servers by Drilling Down From a Summary View

From a table in NOM summary views, you can drill down and select another master server group (or server).

▼ **To drill down to a master server (or server group)**

❖ Click the link shown for a master server (or server group). These links are found in the **Name** column of group component tables.

Related Topics:

"Using the Context Window" on page 37

Using Web-Browser Bookmarks

Using your web browser, you can add a bookmark for any view in the NOM console and return to it as needed.

If you log out of the NOM console, you can also use the bookmark to return to the same view after you log into the console.

Understanding NetBackup Operations Manager Online Help 4

NetBackup Operations Manager online help for a view is the best place to start understanding the capabilities and tasks in the console. The help is provided to aid you in navigating to the NOM views you need, and in using task dialogs and task wizards.

NOM has online help for most console views, tasks, and wizard screens.

The following topics describe online help usage in greater detail.

Topic	Description
"Online Help Components" on page 60	Provides an overview of the online help interface used, including the contents and search buttons, and the print icon
"Accessing Online Help" on page 60	Provides instructions on getting help for views, dialogs, and wizard screens
"Locating the Topics You Need" on page 61	Provides instructions for finding information you need, including using the table of contents, index, and search tools
"Using the Related Topics in Help" on page 62	Provides information about the related help topics that are available
"Viewing Graphics in Thumbnails" on page 62	Provides instructions for expanding graphics that are displayed as thumbnails in some help topics
"Using the Quick-Links Page for Help" on page 62	Provides instructions for quickly accessing some of the more commonly used NOM help topics
"Using the Options Icons in Help" on page 63	Provides instructions for sending a comment on the help, using email, printing a topic or bookmarking a topic

Online Help Components

The following figure shows the help control and access components.

Help Task Buttons
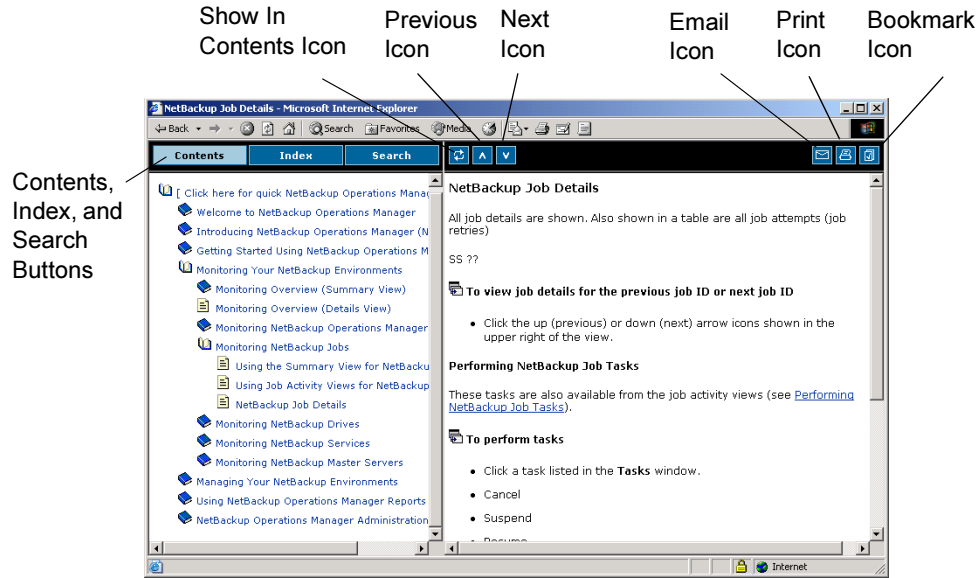
Accessing Online Help

Online help is available for most views, dialogs, and wizard screens in NetBackup Operations Manager.

▼ **To access help for the current NOM view being displayed**

See "NOM Console Components" on page 32 for the location of the **Help** button.

❖ Click **Help** in the upper-right corner of the console header.

The help page presented is based on your currently selected view in NOM.

▼ **To access help for a dialog or wizard**

❖ Click **Help** from the task dialog or wizard screen.

The help page presented is based on the current dialog or wizard screen.

Locating the Topics You Need

You can navigate and locate the help you are searching for by using any of the following methods. See "Online Help Components" for the location of these help icons.

▼ **To view the table of contents for the help**

This view presents the table of contents for all NOM help topics that are available.

❖ If the table of contents is hidden, click the closed book icon at the top.

▼ **To use the table of contents**

❖ Click on any closed books to open them. This allows you to drill down and expand the view of available help topics.

▼ **To locate the current help topic in the table of contents**

This will show you the location within the table of contents of the topic currently on display on the right. The book icons in the table of contents expand to show the location of the current topic.

❖ Click the **Show in Contents** icon.

▼ **To use the index of topics**

1. Click **Index**.

2. Click a letter to view the indexed terms for that letter.

▼ **To use the key word search**

If multiple key words are entered, the resulting topic links contain each of the key words, but not necessarily together as a phrase.

1. Click **Search**.

2. Enter a key word(s) for the search and click **Go!**.

   The resulting topic links are weighted based on the matches of the key word found in the topic. The first topic in the list contains the most matches.

▼ **To navigate from the current help topic to the next or previous topic**

You can navigate from the help topic currently on display to other related topics. The order that the topics will appear is based on their order in the table of contents.

❖   Click the **Previous** or **Next** icons that appear at the top of all help topics.

Using the Related Topics in Help

Many NOM help topics include **Related Topics** sections at the end. Use these related links to access more information on concepts or topics.

Viewing Graphics in Thumbnails

Many help topics include graphic images that are initially displayed in a compressed thumbnail form. You can open and view the graphic when needed.

▼   **To view the expanded graphic**

❖   Click on the graphic image.

▼   **To return to the help topic**

❖   Click the back button of your browser.

Using the Quick-Links Page for Help

The links on this page provide quick access to some of the more commonly used and key NOM help topics.

Quick Help Links Page

Quick-Links Page Access   Quick Help Links
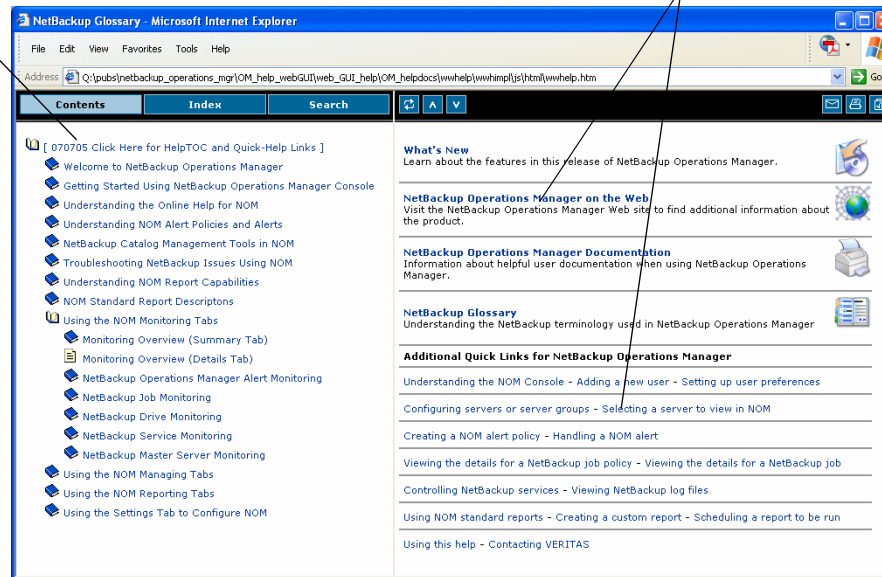
▼ **To view a quick-link**

1. Click the link **[Click HERE for Help TOC and Quick-Help Links]** located at the top of the table of contents. This link is always available from the top of the table of contents pane.

2. Click the link to any of the topics shown on the page on the right.

Using the Options Icons in Help

See "Online Help Components" on page 60 for the location of these help icons.

▼ **To send an email about help issues**

You can send email with any questions or suggestions regarding the online help to the NOM documentation team. The URL of last help topic displayed will be used as the default feedback subject for the email.

1. Click the **email** icon.

2. Enter your comment or suggestion.

▼ **To print the current help topic**

The current topic can be printed using your web browser.

1. Click the **Print** icon.

2. In the print dialog for your operating system, select a printer and adjust printer settings as required.

▼ **To bookmark the current help topic**

The current topic is added to your web browser's favorites list.

1. Click the **Bookmark** icon.

2. Complete your web browser's bookmark dialog.

Administering NetBackup Operations Manager 5

This chapter provides information on managing the NOM database, security issues, NOM logging, and the NOM services and scripts that are installed.

These topics assume you have already installed NOM on a server. If not, please see "Installing NetBackup Operations Manager" on page 11.

See the following administration and reference topics:.

Topic	Description
"NOM Database Administration" on page 65	Provides information on using the NOM database utilities, database troubleshooting, and backing up the database.
"NOM Security Topics" on page 69	Provides information on security and firewall issues in NOM.
"NOM Log Files" on page 82	Provides information on using the NOM log files to troubleshoot NOM.
"Services Used by NOM on Windows" on page 86	Provides an overview of the NOM services.
"Processes Used by NOM on Solaris" on page 87	Provides an overview of the NOM processes.
"NOM Server Scripts on Solaris" on page 88	Provides an overview of the NOM server scripts.

NOM Database Administration

The Sybase database used by NOM is similar to that used by NetBackup and is installed as part of the NOM server installation. The NOM database is located on the NOM server.

Visit `http://www.sybase.com/support/manuals` for information about Sybase databases.

This section contains the following database topics:

◆ "Database Maintenance Utilities (NOMAdmin)" on page 66

◆ "Database Troubleshooting" on page 68

◆ "Database Backup Using the NOM NightlyBackup Script" on page 69

Database Maintenance Utilities (NOMAdmin)

NOM provides some useful utilities to help manage the NOM database. These utilities are available from the NOMAdmin utility. If required, the NOMAdmin will control the starting/stopping of the NOM server and database server.

The path for NOMAdmin on Windows is `\bin\admincmd\NOMAdmin` and the path on Solaris is `/opt/VRTSnom/bin/NOMAdmin`. Using the `-h` option provides help.

VERITAS recommends that you run the following utilities on a regular schedule, since they are not automatically scheduled to run:

◆ The purge utility to clean up the NOM database ("Purging the NOM Database" on page 67).

◆ The consistency checker to insure database consistency ("Checking NOM Database Consistency" on page 67).

Controlling the NOM Database Server

▼ **To start the database server**

❖ NOMAdmin -start

▼ **To stop the database server**

❖ NOMAdmin -stop

Controlling the NOM Server

▼ **To start the NOM server**

On Windows, the NetBackup Operations Manager Database Server service is started (see "Services Used by NOM on Windows" on page 86).

On Solaris, all of the NOM processes are started (see "Processes Used by NOM on Solaris" on page 87).

❖   NOMAdmin -start_service

▼   **To stop the NOM server**

❖   NOMAdmin -stop_service

Purging the NOM Database

This utility purges older records from the database. From the current date, the specified time period (daily, weekly, or monthly) is applied. The utility purges then purges any records older than that date.

An optional reload file is created containing the purged older rows if a file path is specified. You can use this file to reinsert the purged rows.

▼   **To purge the database**

```
NOMAdmin -Purge [Never | Daily | Weekly | Monthly] Filepath
reload-file-path
```

▼   **To reinsert previously purged rows**

```
NOMAdmin -Consistency reload-file-path
```

Checking NOM Database Consistency

This utility checks all rows in the table for any invalid foreign key relationships. These rows are then removed from the table and placed in a file that you specify.

The utility will not delete any rows unless you specify the Delete option when you execute the utility. This allows the utility to be run without changing the database.

An optional reload file is created containing insert statements for the deleted rows if a file path is specified. You can use this file to reinsert the deleted rows.

▼   **To check the database**

```
NOMAdmin -Consistency [Delete] Filepath reload-file-path
```

▼   **To reinsert previously deleted rows**

```
NOMAdmin -Consistency [Reload] reload-file-path
```

Changing the NOM Database Password

This utility allows the administrator to change the default password for the database. Passwords cannot start with a number, or contain a semicolon or a period.

```
NOMAdmin -changePW old_password new_password
```

Changing the NOM Guest Password

This utility allows the administrator to change the password for the read-only user ID `guest`. The default password for `guest` is `welcome`.

Passwords cannot start with a number, or contain a semicolon or a period.

```
NOMAdmin -changeGuest NOM_admin_password new_guest_password
```

Unloading the NOM Database

This utility can be used to make a copy, move, or defragment the NOM database. The utility writes a single file named `reload.sql` and `.dat` files that represent the data from the database tables to the following subdirectories.

The subdirectory names are based on the database names in `server_config.xml`. These names are normally set to `vxpmdb` and `vxam`.

◆ `C:\Program Files\VERITAS\NetBackup Operations Manager\temp\vxpmdb` and `C:\Program Files\VERITAS\NetBackup Operations Manager\temp\vxam` (Windows)

◆ `/opt/temp/vxpmdb` and `/opt/temp/vxam` (Solaris)

The utility makes a copy of the NOM database which can be used to defragment the database using the files created by the utility. After executing the unload, the database can be moved or emptied. Executing the file reload.sql will return the original data to the database and create a defragmented, sequentially organized database.

`reload.sql` and the `.dat` files are deleted if NOM is uninstalled, but are not deleted with a NOM upgrade installation.

```
NOMAdmin -unload
```

Database Troubleshooting

See "NOM Web Client / NOM Server to Sybase Database Communication" on page 81 for security information.

See "NOM Log Files on Windows Servers" on page 83 or "NOM Log Files on Solaris Servers" on page 85 for information on NOM database log files.

Database Backup Using the NOM NightlyBackup Script

VERITAS recommends that you back up the NOM Sybase database on a regular schedule. The database log files will continue to grow if management of the logs is not done.

VERITAS recommends using the `NightlyBackup.sql` script. This script is located in `VERITAS\NOM\bin\admincmd` for Windows and `/opt/VRTSnom/bin/` for Solaris.

This script creates a Sybase database event that does a hot backup of the NOM database to a specified directory. The database log files are also copied to the directory. The script then truncates the log files.

1. Log into the NOM server as the administrator.

2. Open the `NightlyBackup.sql` script and set the scheduled time to be daily, weekly, and so on. Using daily is the default and is recommended.

   You only need to modify the script once.

3. Ensure that the specified directory path is a valid path on the NOM server.

4. Start the Sybase `dbisqlc` interface and enter the following command:

   ```
   dbisqlc -c
   "DBN=vxpmdb;ENG=VERITAS_NOM_nom_server_name;INT=YES;LINKS=tcpip{ud
   p=no;dobroadcast=no;host=10.80.72.69:13729}"
   ```

5. Cut and paste the edited script into the Sybase UI window.

6. Select **execute**.

7. Create a NetBackup policy and schedule, and use NetBackup 6.0 (or greater) software to back up or restore the directory as needed.

   See the *NetBackup System Administrator's Guide, Volume I* for more information on configuring a policy and schedule to back up the directory containing the database.

NOM Security Topics

This section contains the following NOM security topics:

◆ "VxSS (VERITAS Security Services)" on page 70.

◆ "Multiple VxSS Security Models" on page 70.

◆ "Configuring Security for your NetBackup Master Servers for Use with NOM" on page 77.

◆ "The NOM Admin User" on page 78.

◆ "Normal NOM Users" on page 79.

◆ "Communication and Firewall Considerations" on page 80.

VxSS (VERITAS Security Services)

Using VxSSAT (security authentication) is optional for NetBackup servers. VxSSAT is required and must be installed for NOM, and can be installed on the NOM server. If configured for NetBackup, the NetBackup Access Control (NBAC) feature also uses VxSS components.

NOM uses VxSSAT to authenticate NOM users, mutually authenticate NOM client/server communication, and to establish secure communication with managed NetBackup master servers. NOM can manage NetBackup master servers with or without NBAC configured.

VxSS Cautions

You should be familiar with VxSS before setting up your security environment. Many different and complex security configuration options are available to you. VxSS provides low, medium, and high levels of security.

VERITAS recommends that for a highly secure environment you install the VxSS root broker on a secure server and not on the NOM server which is open to the world wide web.

See "Multiple VxSS Security Models" on page 70 for an understanding of some common security models.

VxSS Documentation

Please review the VxSS and the NOM documentation carefully before setting up your security environment and installing VxSSAT for NOM.

The files in the `docs` directory of the ICS CD ("VERITAS ICS CD" on page 15) have information about installing and configuring VxSS.

Also refer to the Access Management chapter in the *NetBackup System Administrator's Guide, Volume II* for information about NBAC.

Multiple VxSS Security Models

The way you install and configure VxSSAT for NOM depends on your security requirements and the architecture of your security system.

Three common security deployment models are described in this section.

◆   "NBAC is not Deployed With NetBackup" on page 71.

◆   "NetBackup with NBAC is Deployed with Multiple Root Brokers" on page 73.

◆   "NetBackup with NBAC is Deployed with Only One Root Broker" on page 75.

Portions of these models could also be mixed in your security architecture. Many different VxSS security deployment models can be used with NOM, NetBackup, and other VERITAS applications. Consult the VxSS documentation when deploying other models of VxSSAT.

NBAC is not Deployed With NetBackup
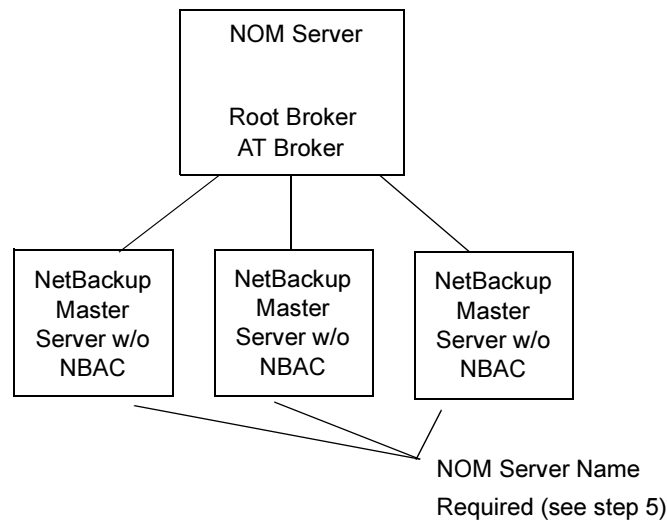
NOM Server

Root Broker
AT Broker

NetBackup
Master
Server w/o
NBAC

NetBackup
Master
Server w/o
NBAC

NetBackup
Master
Server w/o
NBAC

NOM Server Name
Required (see step 5)

In this model, you are *not* using VxSS and NBAC with any of your managed NetBackup master servers. Installing VxSSAT (root + AT brokers) on the NOM server is still required for use by NOM.

Note VxSSAT is installed for this model in "Installing VxSSAT Software on a Windows System" on page 17 and "Installing VxPBX and VxSSAT Software on a Solaris System" on page 20).

▼ **To install VxSSAT software for this model on Windows**

1. Insert the ICS CD.

   Note Use the Authentication\VxSSVRTSatSetup.exe on the ICS CD and not one of the msi (silent installation) files.

2. Run the VxSSAT wizard.

3. Select **Complete** for the installation.

   Note If you select **Typical**, you will likely see the error "VERITAS Authentication Broker (server) must be installed" later when checks are made during the installation of NOM software. In this case, uninstall VxSSAT and reinstall selecting a **Complete** installation.

4. Select **Root + Authentication Broker**. This will install VxSSAT on the NOM server and configure a root and AT broker for NOM.

5. To configure security and allow data collection from your master servers, you must add the name of the NOM server to the server list for each master server. See "Supplying the Name of the NOM Server" on page 78.

▼ **To install VxSSAT software for this model on Solaris**

1. Insert the ICS CD.

2. Run the `installics` script.

3. During the VxSSAT installation, answer **Y** to install the Authentication Broker server.

4. Select **Authentication + Root Broker**. This will install VxSSAT on the NOM server and configure a root and AT broker for NOM.

5. To configure security and allow data collection from your master servers, you must add the name of the NOM server to the server list for each master server. See "Supplying the Name of the NOM Server" on page 78.

NetBackup with NBAC is Deployed with Multiple Root Brokers

In this model, NetBackup with NBAC is deployed with *multiple* VxSSAT root brokers. Each master server has a root broker installed and configured. This is the recommended security model for NetBackup.

Installing VxSSAT (root + AT brokers) on the NOM server is required for use by NOM.

Note If NOM and one of the NetBackup master servers with root and AT brokers configured are on the same server, VxSSAT does not need to be installed.

▼ **To install VxSSAT software for this model on Windows**

1. Insert the ICS CD.

    Note Use the Authentication\VxSSVRTSatSetup.exe on the ICS CD and not one of the msi (silent installation) files.

2. Run the VxSSAT wizard.

3. Select **Complete** for the installation.

    Note If you select **Typical**, you will likely see the error "VERITAS Authentication Broker (server) must be installed" later when checks are made during the installation of NOM software. In this case, uninstall VxSSAT and reinstall selecting a **Complete** installation.

4. Select **Root + Authentication Broker**. This will install VxSSAT on the NOM server and configure a root and AT broker for NOM.

5. Trust relationships must be established between the root broker on the NOM server and the root brokers deployed on each NetBackup master. See "Establishing a Trust Relationship with Root Brokers" on page 77.

    It is also possible to have some NetBackup master servers without NBAC being used in this security model. In this mixed case, see "Supplying the Name of the NOM Server" on page 78.

▼ **To install VxSSAT software for this model on Solaris**

1. Insert the ICS CD.

2. Run the `installics` script.

3. During the VxSSAT installation, answer **Y** to install the Authentication Broker server.

4. Select **Authentication + Root Broker**. This will install VxSSAT on the NOM server and configure a root and AT broker for NOM.

5. Trust relationships must be established between the root broker on the NOM server and the root brokers installed on each NetBackup master. See "Establishing a Trust Relationship with Root Brokers" on page 77.

    It is also possible to have some NetBackup master servers without NBAC configured in this security model. In this mixed case, see "Supplying the Name of the NOM Server" on page 78.

NetBackup with NBAC is Deployed with Only One Root Broker
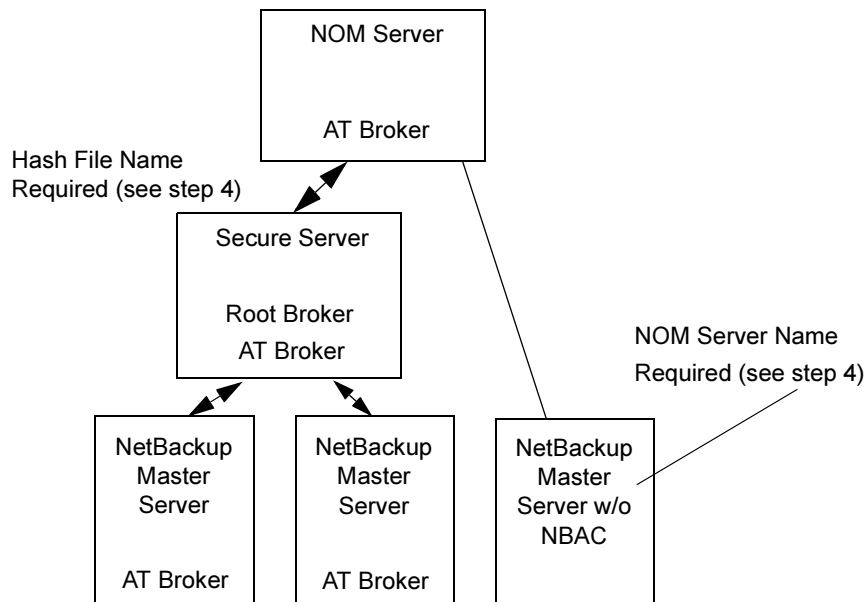
In this model, NetBackup with NBAC is deployed with a *single* root broker installed on a secure server. The NetBackup master servers in the security domain are configured to be automatically trusted.

VxSSAT (only the AT broker) must be installed on the NOM server and be configured to use the same root broker that is being used by the NetBackup master servers. The location of the server with the root broker installed and the hash file name are supplied during the VxSSAT installation.

Note If the root broker is installed on the NOM server, VxSSAT does not need to be installed.

▼ **To install VxSSAT software for this model on Windows**

1. Insert the ICS CD.

Note Use the Authentication\VxSSVRTSatSetup.exe on the ICS CD and not one of the msi (silent installation) files.

2. Run the VxSSAT wizard.

3. Select **Complete** for the installation.

> **Note** If you select **Typical**, you will likely see the error "VERITAS Authentication Broker (server) must be installed" later when checks are made during the installation of NOM software. In this case, uninstall VxSSAT and reinstall selecting a **Complete** installation.

4. Select **Authentication Broker Only**.

    This will install VxSSAT on the NOM server and configure only an authentication broker (AT) for NOM.

    VxSSAT must be configured to use the existing root broker. You need to know the location (the server name) of the root broker and the hash file name. The hash file is `root_hash` and is located in *install_dir*\Authentication\bin on the root broker server.

    > **Note** It is also possible to have some NetBackup master servers without NBAC configured in this security model. In this mixed case, see "Supplying the Name of the NOM Server" on page 78.

▼ **To install VxSSAT software for this model on Solaris**

1. Insert the ICS CD.

2. Run the `installics` script.

3. During the VxSSAT installation, answer **Y** to install the Authentication Broker server.

4. Select **Authentication Broker Only**.

    This will install VxSSAT on the NOM server and configure only an authentication broker (AT) for NOM.

    VxSSAT must be configured to use the existing root broker. You need to know the location (the server name) of the root broker and the hash file name. The hash file is `root_hash` and is located in `/opt/VRTSat/bin` on the root broker server.

    > **Note** It is also possible to have some NetBackup master servers without NBAC configured in this security model. In this mixed case, see "Supplying the Name of the NOM Server" on page 78.

Configuring Security for your NetBackup Master Servers for Use with NOM

Allowing NOM to manage your NetBackup master servers and enabling data collection depends on the server and the security configurations being used for your NetBackup master servers

Establishing a Trust Relationship with Root Brokers

If NOM and NetBackup are not using the same root broker, trust relationships must be established between the NOM root broker and each NetBackup root broker that is installed in your security configuration.

▼ **To establish a trust relationship**

In the following example, NetBackup master server (**win_master**) and NOM server (**NOM_server**) software are installed on two separate Windows servers. The same commands would be used for Solaris servers.

The NetBackup master server in this example has NBAC configured at the medium security level and has a root and authentication broker installed.

The vssat command is located in the *vxss_install_dir*\security\authentication\bin directory on Windows servers and in /opt/VRTSat/bin on Solaris.

1. From the NetBackup master server establish a trust relationship with the broker on the NOM server.

```
vssat setuptrust --broker NOM_server:2821 --securitylevel medium

*************************************
User Name:        root
Domain Name:      root@NOM_server.com
Domain Type:      vx
Issued By:        /CN=root/OU=root@NOM_server.com/O=vx
Issued To:        /CN=root/OU=root@NOM_server.com/O=vx
Friendly Name:
Serial Number:    00000000
Root Credential:          1
Trusted Credential:       0
Expiry Interval:  Jul 18 18:50:56 2013 GMT
Group Information:
Group Count:      0
Certificate Hash          ef16ad562eff335f584df12d93e0c1f149b14d
```

```
The hash of above credential is
ef16ad562eff335f584df12d93e0c1f149b14d
Do you want to trust the above?(y/n)     y

setuptrust
-----------------------
Setup Trust With Broker: NOM_server
```

2. From the NOM server establish a trust relationship with the broker on the NetBackup master server.

vssat setuptrust --broker *win_master*:2821 --securitylevel medium

```
setuptrust
-----------------------
Setup Trust With Broker: win_master
```

3. If you have multiple NetBackup master servers, perform step 1 and step 2 for each server that has a root broker installed.

Supplying the Name of the NOM Server

For any managed NetBackup master server that is not using VxSS and NBAC, the name of the NOM server must be added to the trusted SERVER list on each master server to enable NOM to collect data from the server.

Note This step is not required if NOM and NetBackup master server software are installed on the same server.

▼ **To allow the NOM server to access NetBackup master servers**

❖ Use the **Host Properties** node of **NetBackup Management** on each managed NetBackup master server to add the NOM server name.

The NOM Admin User

NOM creates a private NOM domain (NOM_Builtin@*FQHN\FQHN*) and an admin user when the NOM server is first started. *FQHN* is the fully qualified host name of the server on which the NOM server and web client software are running.

User authentication is performed by the NOM web client using the VxSS authentication service (authentication broker).

The NOM admin user has the following properties:

◆ Is automatically granted administrative and normal user rights by the NOM server. These rights can not be revoked.

Only the admin user has administrative rights and these rights cannot be granted to other users.

◆ Can add or remove other NOM users using the NOM console, and can perform all UI functions of normal users.

Settings > **Access Control** in the NOM console provides a list of the currently configured users of NOM (including the admin user) and provides tasks to manage NOM users.

◆ Has a fixed initial user name and password (it is not prompted for at installation time). The password should be changed after the NOM server is first started by using the vssat command line (`changepasswd`) or the VxSS GUI.

For initial login by an administrator, refer to the Operational Notes chapter of the NetBackup release notes.

Normal NOM Users

Normal users of NOM can perform all functions (for example, NetBackup monitoring, management, and reporting), except the management of other NOM users. NOM users can be added or removed only by the NOM admin user.

Any user that can be authenticated by the local VxSS AT service can be added. Users are managed by the tools specific to the authorization domain of the user. This includes creating users, deleting users, and password management.

See the VxSS administration guide located in the `docs` directory on the ICS CD for a list of naming services that are supported by VxSS.

Communication and Firewall Considerations

The following figure shows the key NOM components and the communication ports that are used.
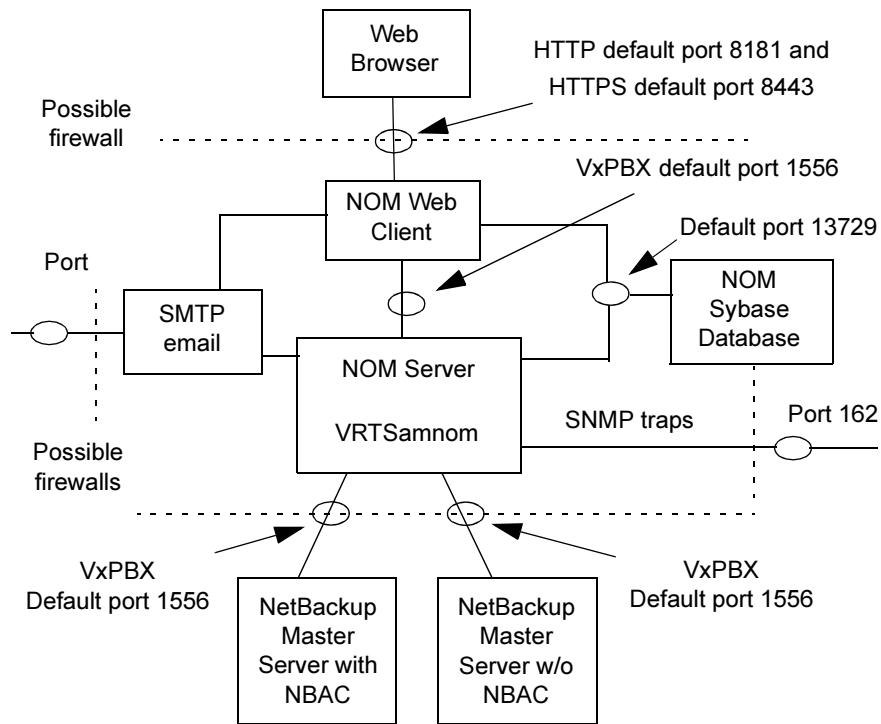
Web Browser to NOM Web Client Connection

Web browsers use Insecure Hyper Text Transfer Protocol (HTTP) and Secure Hyper Text Transfer Protocol (HTTPS) to communicate with the NOM web client. These protocols use TCP/IP.

The default port initially used by NOM is 8181 for HTTP and is then switched to 8443 for HTTPS. These ports are opened only for input and are configurable using the VRTSweb console or command lines.

See the administering VERITAS web appendix of the *VERITAS Cluster Server Administrator's Guide for Windows* or the *VERITAS Cluster Server User's Guide for Solaris* for instructions on using VRTSweb to configure these ports.

NOM Web Client to NOM Server Communication

The NOM web client uses VxPBX to communicate with the NOM server. The default port is 1556. The port range is not configurable. The VxPBX port is opened for input and output traffic.

NOM Server to NetBackup Master Server (NBSL) Communication

NOM requires the NetBackup Service Layer (NBSL) and NetBackup notification services (NBNOS) to be present on all managed master servers.

See the *NetBackup System Administrator's Guide, Volume II* for information about configuring NBSL.

VxPBX is used for communication and requires a port opened for input and output. The default VxPBX port used is 1556. See the PDF files in the `docs` directory of the ICS CD ("VERITAS ICS CD" on page 15) for information about VxPBX.

Also see *"VxSS (VERITAS Security Services)"* on page 70 for information on using NBAC with NetBackup servers.

SNMP Traps

SNMP trap protocol is used for outbound UDP traffic. A port opened for output is required. Port number 162 is used.

NOM Web Client / NOM Server to Sybase Database Communication

The NOM web client communicates with the NOM Sybase database server using the default port 13729.

The Sybase database server port is closed to all inbound connections and the database is available only to the NOM components resident on the NOM server.

NOM Web Client / NOM Server Email Communication

SMTP email server protocol is used for outgoing mail. The port number is defined when the SMTP server port is specified by the user (see **Settings** > **System** in the NOM UI console to specify this port). The port is opened for output only.

NOM Log Files

NetBackup Operations Manager creates log files that can be used to troubleshoot installation, performance, and other issues. NOM writes log files using VERITAS Unified Logging (VxUL), legacy, and other log file formats.

See "NOM Log Files on Windows Servers" on page 83 and "NOM Log Files on Solaris Servers" on page 85.

VxUL Log Files

VxUL logging creates log file names and messages in a format that is standardized across all VERITAS components. These messages use VxUL IDs (a product ID and an originator ID) that are used to identify the component that wrote the log message.

NOM components create most log messages in VxUL format. The following table shows the originator IDs used by NOM and key shared components:

VxUL Originator ID	Originator Name
103	Private Branch Exchange service (PBX)
132	NetBackup Service Layer (NBSL)
146	Operations Manager Reporting Service
147	Operations Manager Client
148	Operations Manager Server

VxUL logs are written to the `/usr/openv/logs` directory (for Solaris) and the *install_path*\logs folder (for Windows).

These log files are written according to the settings specified in the log configuration file (`/usr/openv/netbackup/nblog.conf` or *install_path*\netbackup\nblog.conf).

See the *NetBackup Troubleshooting Guide* for more information about VxUL logging, and using the following configuration file and commands:

◆ `nblog.conf`

◆ The `vxlogview` command to view logs

◆ The `vxlogmgr` command to manage log files

◆ The `vxlogcfg` command to configure log settings

NOM Log Files on Windows Servers

NOM writes the following log files using VxUL and legacy formats.

NOM Log Files

Log File Directory	Log File	Troubleshooting Purpose
C:\Program Files\VERITAS\NetBackup Operations Manager\logs\	convertdb_err.txt convertdb_out.txt ulconfig_err.txt ulconfig_out.txt	These files contain redirected stdout and stderr output from commands that are run during the installation of NOM.
	NOMSrvr_err.txt NOMSrvr_out.txt	These log files for system.err and system.out are passed to javasvc when installing the NOM server service.
	vxam.txt	NOM VxAM activity.

Log Files for Components Used by NOM

Log File Directory	Log File	Troubleshooting Purpose
C:\Program Files\VERITAS\Security\Authentication\bin\	vxatd.log vssconfig.log	VxSSAT activity.

NOM Database Log Files

Log File Directory	Log File	Troubleshooting Purpose
C:\Program Files\VERITAS\NetBackup Operations Manager\logs\	nomdbsrv.log	NOM Sybase database activity.

Log File Directory	Log File	Troubleshooting Purpose
C:\Program Files\VERITAS\NetBackup Operations Manager\db\log\	server.log	VxDBMS activity.
C:\Program Files\VERITAS\NetBackup Operations Manager\db\data\	vxam.log vxpmdb.log	NOM Sybase database transaction files. NOTE: Do not touch these two log files.

NOM Web Client Log Files

Log File Directory	Log File	Troubleshooting Purpose
C:\Program Files\VERITAS\VRTSweb\log\	_vrtsweb0.0.log	Web client application activity (stdout).
	_err0.0.log	Web client errors (stderr).
	nom0.0.log	Web client start up and shut down activity.

VxUL Log Files for NOM and the Components Used by NOM

Log File Directory	Log File	Troubleshooting Purpose
C:\Program Files\VERITAS\VxPBX\bin\	50936-103*.log	VxPBX activity.
C:\Program Files\VERITAS\NetBackup\logs\	51216-111*.log	NetBackup activity.
	51216-132*.log	NBSL activity.
C:\Program Files\VERITAS\VRTSweb\lib\logs\	51216-146*.log	NOM web client (reporting service) activity.
C:\Program Files\VERITAS\NetBackup Operations Manager\logs\	51216-147*.log	NOM web client activity.

Log File Directory	Log File	Troubleshooting Purpose
	51216-148*.log	NOM server activity.

NOM Log Files on Solaris Servers

NOM creates the following log files using VxUL and legacy formats.

NOM Log Files

NOM Log File	Troubleshooting Purpose
/opt/VRTSnom/logs/VRTSnom.log	stdout and stderr for the VRTSnomd daemon.
/tmp/installnom_trace.*nnnn*	Provides a trace for any installation issues.
/opt/VRTSnom/logs/vxam.txt	NOM VxAM activity.

Log Files for Components Used by NOM

Log File	Troubleshooting Purpose
/var/VRTSat/vxatd.log	VxSSAT activity.

NOM Database Log Files

NOM Log File	Troubleshooting Purpose
/opt/VRTSnom/logs/nomdbsrv.log	NOM Sybase database activity.
/opt/VRTSnom/db/data/vxam.log /opt/VRTSnom/db/data/vxpmdb.log	NOM Sybase database transaction files. **Note** Do not touch these two log files.

NOM Web Client Log Files

NOM Log File	Troubleshooting Purpose
/var/VRTSweb/log/_vrtsweb0.0.log	Web client application activity (stdout).
/var/VRTSweb/log/_err0.0.log	Web client errors (stderr).
/var/VRTSweb/log/_nom0.0.log	Web client start up and shut down activity.

VxUL Log Files for NOM and the Components Used by NOM

NOM Log File	Troubleshooting Purpose
/opt/VRTSpbx/log/50936-103*.log	VxPBX activity.
/opt/openv/logs/51216-111*.log	NetBackup activity.
/opt/openv/logs/51216-132*.log	NBSL activity.
/var/VRTSnomweb/log/51216-146*.log	NOM web client (reporting service) activity.
/var/VRTSnomweb/log/51216-147*.log	NOM web client activity.
/opt/VRTSnom/logs/51216-148*.log	NOM server activity.

Services Used by NOM on Windows

After installing NetBackup Operations Manager on Windows, the following services should be active. The NOM server depends on these services. If any of these services fail to start, the NOM Server will fail also.

◆ NetBackup Operations Manager Alert Manager

◆ NetBackup Operations Manager Database Server

◆ VERITAS Authentication

◆   VERITAS Private Branch Exchange

Component	Service
Sybase	NetBackup Operations Manager Database Server
VRTSamnom	NetBackup Operations Manager Alert Manager
VRTSjre	NetBackup Operations Manager Server
VxSS	VERITAS Authentication
VxPBX	VERITAS Private Branch Exchange
VxAT	VERITAS Authentication Service
VRTSweb	VERITAS Web Server

Processes Used by NOM on Solaris

After installing NetBackup Operations Manager on Solaris, the following processes should be active.:

Component	Process
NOM Client	VRTSjre/jre1.4/bin 256m
NOM Database	-./nom-dbsrv
NOM Server	-./bin/VRTSnomd –classpat
NOM VxAM	/opt/VRTSamnom/bin/vxam
VxPBX	/opt/VRTSpbx/bin/pbx_exchange
VXSS (AT)	/opt/VRTSat/bin/vxatd

NOM Server Scripts on Solaris

The following scripts are used within NOM. Many of these scripts can also be used by the NOM administrator. Use the -h option for help about these scripts

Script	Location	Function	Invokes or Is Invoked by
vxnomd	/etc/init.d	Controls the start up/shut down of NOM_dbsrv, vxam, and VRTSnomd.	dbspawn, dbstop, and nomsrvctl.
vxnomweb	/etc/init.d	Controls the start up/shut down of the web client under /var/VRTSnomweb.	/opt/VRTSweb/bin/startApp and /opt/VRTSweb/bin/stopApp.
nomsrvctl	/opt/VRTSnom/ bin	Controls start or stop of VRTSnomd.	vxnomd and nom_server.
VRTSnomd	/opt/VRTSnom/ bin	A symlink to java to give the NOM java server application its name.	vxnomd and nom_server.
nom_server	/opt/VRTSnom/ bin	Starts, stops, or restarts all VRTSnom applications. Similar to running both vxnomd and vxnomweb.	The NOM administrator or custom site scripts.
nomdbms_Create ServerDB	/opt/VRTSnom/ bin	Configures and initializes the database engines for NOM and VxAM.	pkgadd post-install. Also may be invoked by the NOM Administrator to complete installation manually, when the prerequisite packages were not available at pkgadd time. It is only run once.
nomps	/opt/VRTSnom/ bin	Displays the status of the required NOM processes.	pkgadd post-install, vxnomd status, vxnomweb status, or the NOM administrator.

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