

VERITAS NetBackup[™] Port Usage

UNIX, Windows, and Linux

Release 6.0



VERITAS NetBackup Port Usage

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NetBackup 6.0

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Introduction

This manual supplements the TCP/IP port information contained in the NetBackup 6.0 Administrator's guides. In a typical NetBackup environment, NetBackup servers and clients use the TCP/IP protocol to communicate with each other and with other computers while performing backups and restores. If the NetBackup environment is behind a firewall, the default TCP/IP ports used by NetBackup might have to be reconfigured to avoid conflicts with firewall settings.

Experienced NetBackup and firewall administrators can use the information contained in this manual to avoid port usage conflicts as follows:

- NetBackup administrators can use this information to reconfigure NetBackup port usage, if necessary, to conform to firewall requirements.
- Firewall administrators can use this information to determine which ports NetBackup is using and how they are being used.

General description

NetBackup is a distributed application. The term *distributed* means that in this environment, NetBackup communicates amongst many computers. At the heart of this communication is the NetBackup master server. You can configure the NetBackup master server to communicate with NetBackup media servers or NetBackup media servers and NetBackup clients. These three classes of computers are the basic NetBackup computers. There are other classifications of computers that also communicate in a NetBackup environment, but their method of communication follows the method of communication employed by the basic NetBackup computers.

VERITAS NetBackup uses TCP/IP connections to communicate between one or more TCP/IP ports. Depending on the type of operation and configuration on the environment, different ports are required to enable the connections. There are

different requirements for operations such as backup, restore and administration.

Typical operations

Under typical operations, NetBackup connections are established requiring a call-back or not, as follows:

- For those connections that do not require a call-back, all communication is performed on the established connection between the two computers. A connection that does not require a call-back requires no additional discussion. Such connections can be considered a special case of those that require a call-back.
- For those connections that require a call-back, the computer making the connection (the source computer) passes information to the other computer (the destination computer) so that it can call-back to the source computer. This is known as the *traditional call-back method*.

The traditional call-back method assumes that more than one connection is needed between two computers in order to accomplish a particular operation. The following steps describe the procedure used to establish the connections:

- 1 The destination is actively listening on a well known port number.
- 2 The source computer determines the well known port number on the destination computer to which it needs to connect.
- 3 The source computer creates a socket and binds it to a local port number. This is the socket that the source computer will use to connect to the destination computer.
- 4 The source computer creates another socket and binds it to a local port number. This is the port number to which the destination computer will call back. This port number is the call-back port number. The source computer is actively listening on this port number.
- 5 The source computer connects to the well known port number on the destination computer.
- 6 The source computer passes the call-back port number to the destination computer.
- 7 The destination computer creates a socket and binds it to a local port number.
- 8 The destination computer connects to the call-back port number on the source computer.

- 9 At this point, there are two active connections between the two computers. Data can be sent and/or received on either of the connections.

NetBackup ports

NetBackup communicates between computers by using a combination of *registered* and *dynamically allocated* ports. The following sections describe these ports.

Registered ports

Registered ports are those that are registered with the Internet Assigned Numbers Authority (IANA) and are assigned permanently to specific NetBackup services. For example, the port for the NetBackup client daemon, `bpcd`, is 13782. A system configuration file contains the default port numbers for each daemon. These files are as follows:

- On UNIX systems, you can specify ports in the `/etc/services` file.
- On Windows systems, you can specify ports in the `%systemroot%\System32\drivers\etc\services` file.

Media Manager services include tape library control daemons. These daemons accept connections from daemons on other servers that are sharing the same library. For more information, see the services file on the media server to determine the ports required for a specific library.

Dynamically allocated ports

Dynamically allocated ports are assigned, as needed, from ranges you can specify on NetBackup clients and servers. In addition to the range of numbers, you can configure the following for dynamically allocated ports:

- Whether NetBackup selects a port number at random from the allowed range or starts at the top of the range and uses the first one available.
- Whether connections to `bpcd` on a client use reserved or non-reserved ports.

Overriding and modifying port numbers

Symantec suggests that you use the default port settings for NetBackup services and Internet service ports.

If you need to modify the port number for a daemon, make sure you modify the port number so that it is the same for all NetBackup master servers, media servers, and client systems that communicate with each other.

Default port numbers

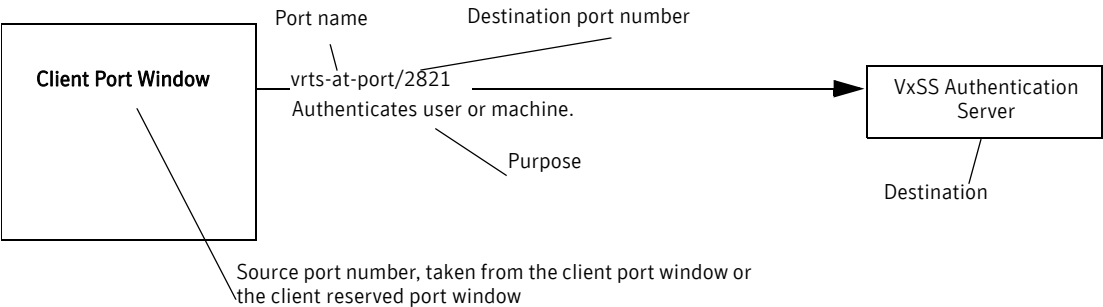
The following sections show the NetBackup connections and ports used in 6.0 and in pre-6.0 systems.

Default port numbers for NetBackup 6.0

The following figures show the port connections between various NetBackup components.

Figure 2-1 shows an example port connection and explains how the following figures represent the port connections.

Figure 2-1 Port connections key



Minimum Master Server Outgoing Connections

Figure 2-2 6.0 Master Server Minimal Outgoing Port Connections - Part 1

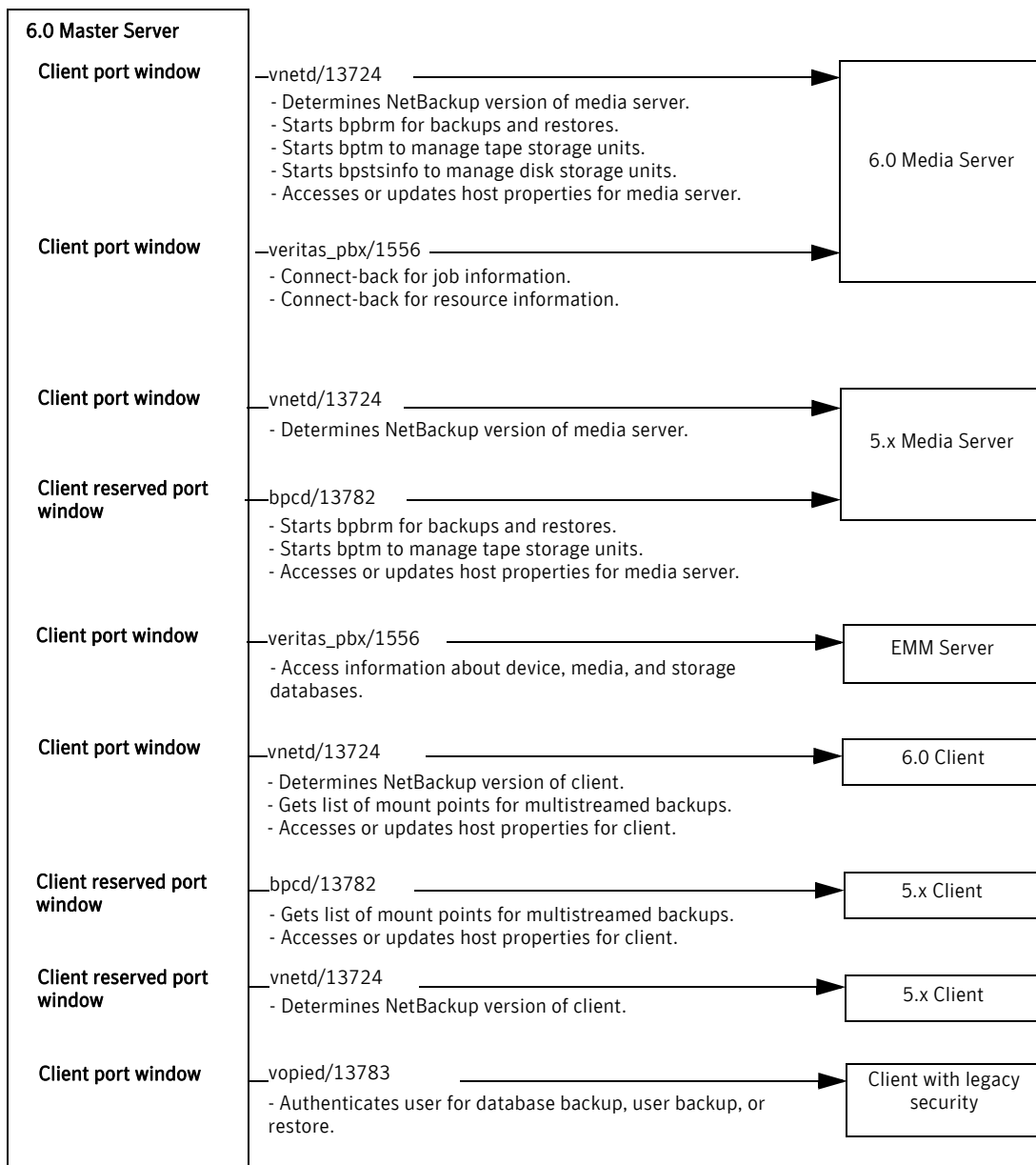
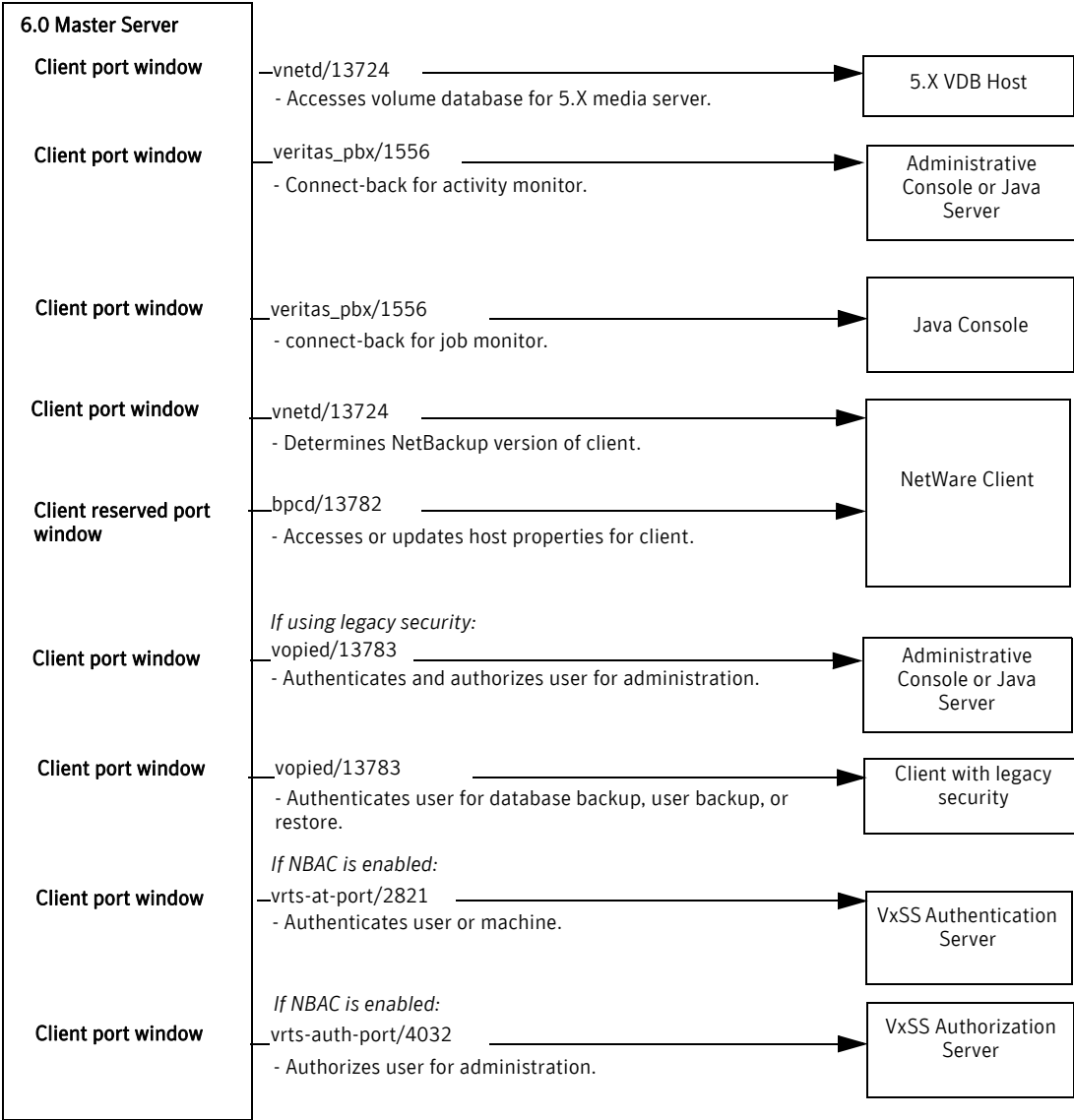


Figure 2-3 6.0 Master Server Minimal Outgoing Port Connections - Part 2



Minimum Media Server Outgoing Connections

Figure 2-4 6.0 Media Server Minimal Outgoing Port Connections - Part 1

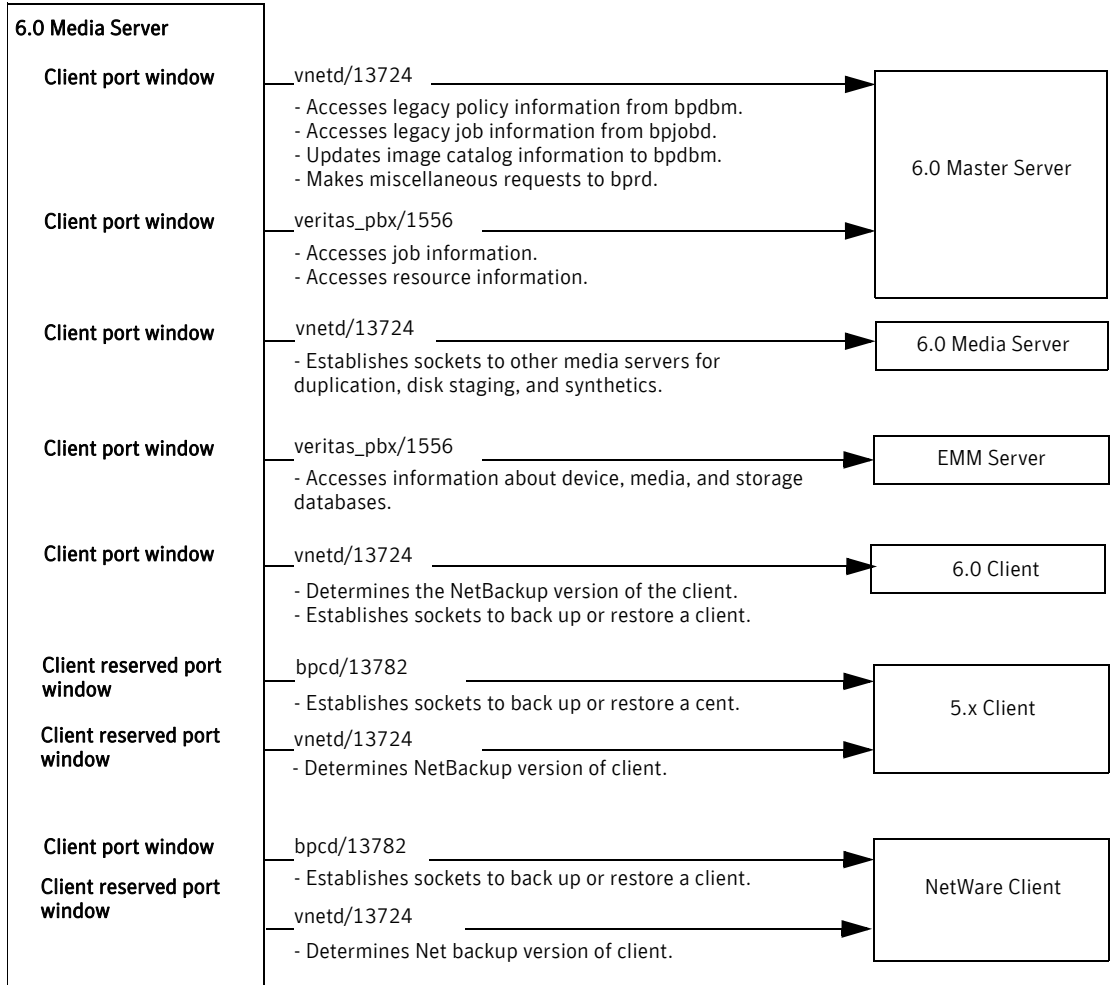


Figure 2-5 6.0 Media Server Minimal Outgoing Port Connections - Part 2

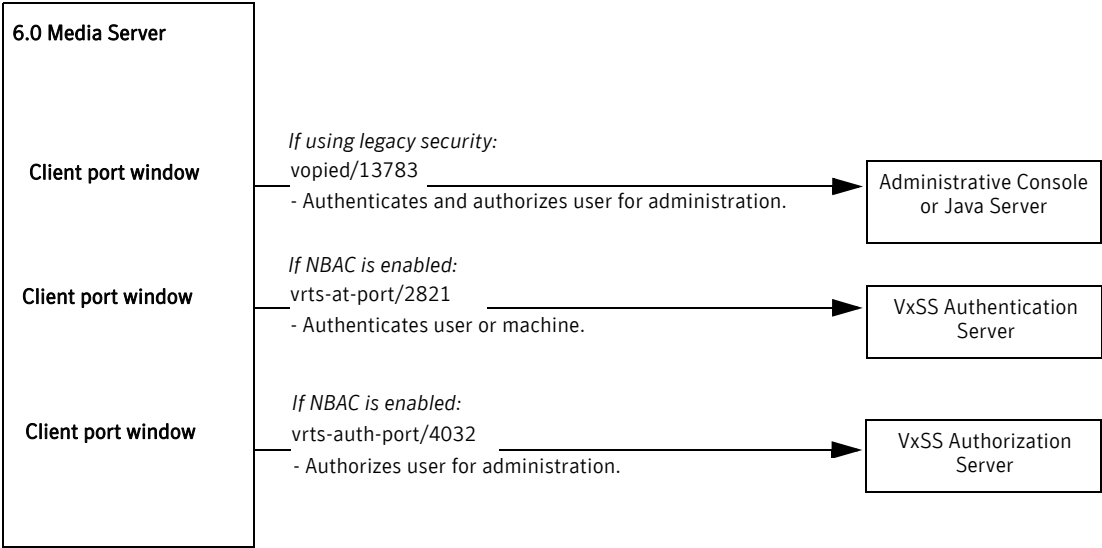
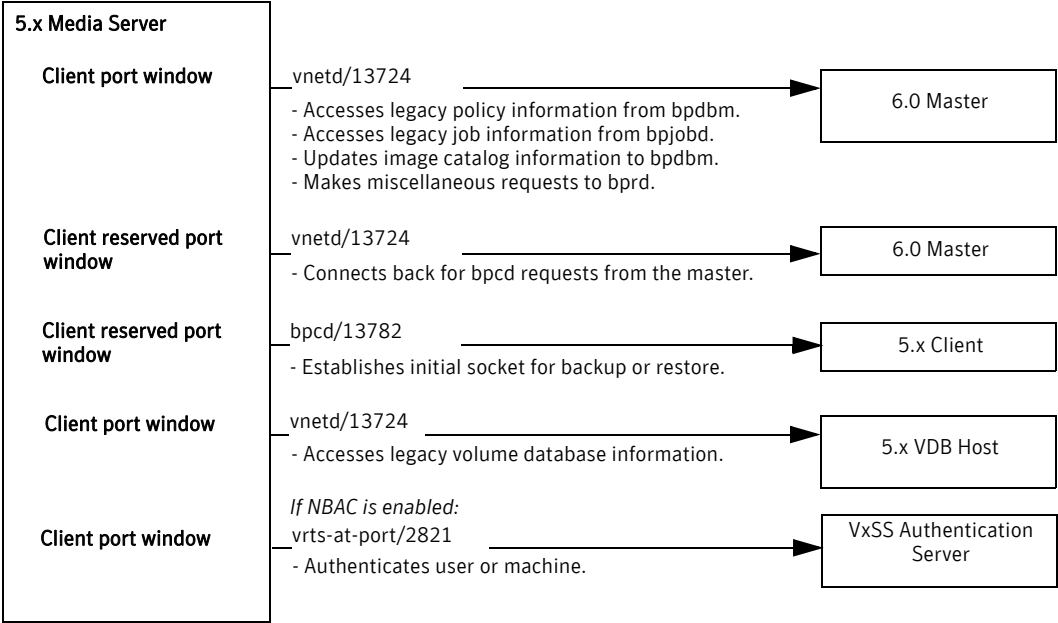


Figure 2-6 5.x Media Server Minimal Outgoing Port Connections



On the 5.x media server, verify the following:

- That the **Host Properties** display specifies using **vneta** instead of the **Daemon Port** connections.
- That the following entries exist in both the `bp.conf` and `vm.conf` files:
`CONNECT_OPTIONS=master 0 1 0`
`CONNECT_OPTIONS=vdb 0 1 0`
 where:

master Specifies the master server hostname.

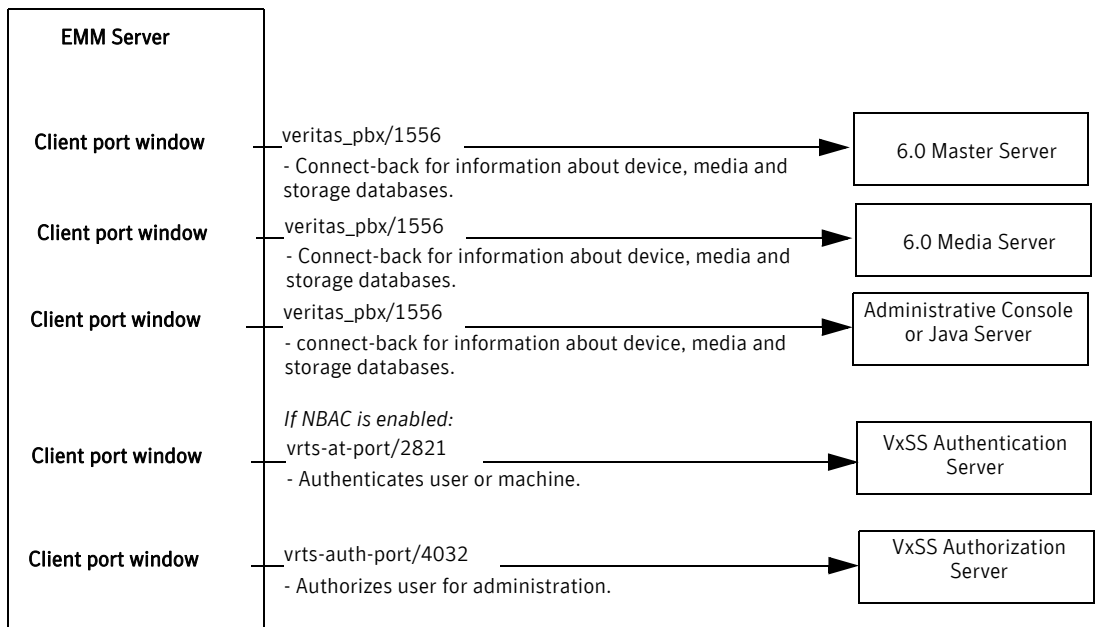
vdb Specifies the volume database hostname.

These settings minimize port use.

You can also specify these settings using the **Host Properties > Firewall** GUI. Select **VNETD port** for **BPCD connect back**. Select **Automatic** for **Daemon connection port**.

Minimum Enterprise Media Manager Outgoing Connections

Figure 2-7 Enterprise Media Manager (EMM) Minimal Outgoing Port Connections



Minimum Client Outgoing Connections

Figure 2-8 6.0 Client (Non-NetWare) Minimal Outgoing Port Connections

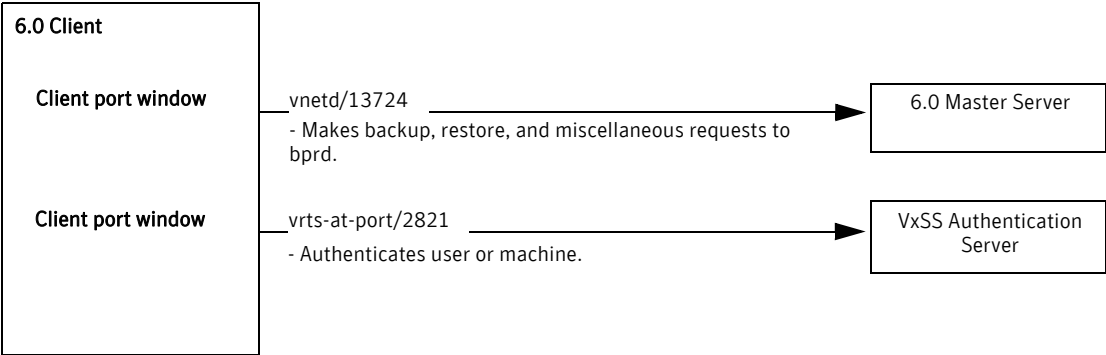
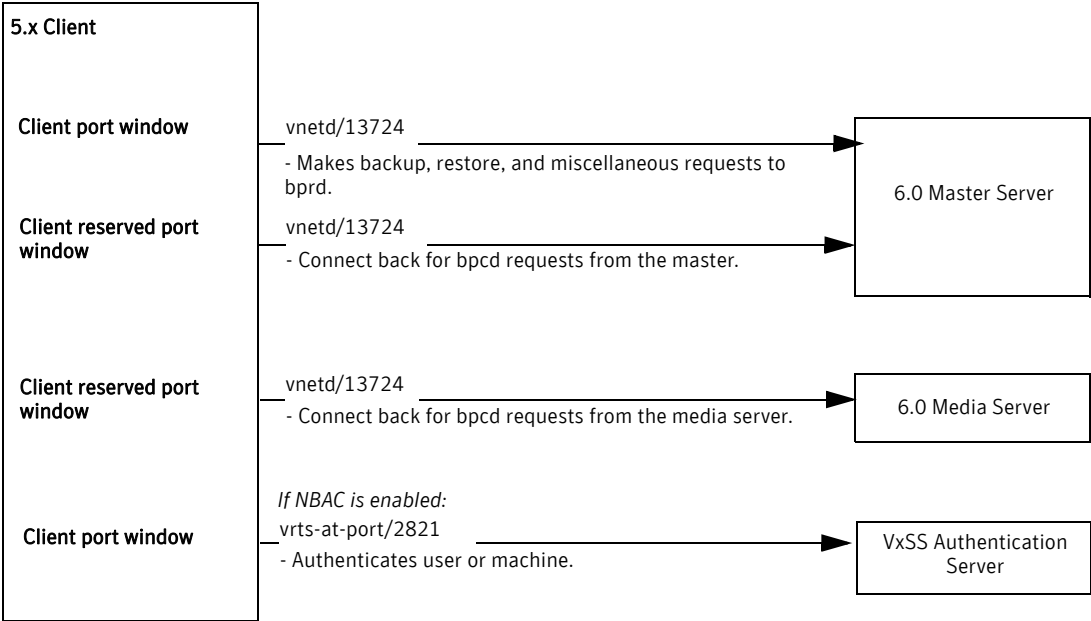


Figure 2-9 5.x Client (Non-NetWare) Minimal Outgoing Port Connections



On the 5.x client, verify the following:

- That the **Host Properties** display specifies using **vnetd** instead of the **Daemon Port** connections.
- That the following entry exists in the `bp.conf` file:
`CONNECT_OPTIONS=master 0 1 0`
 where:

master Specifies the master server hostname.

These settings minimize port use.

You can also specify these settings using the **Host Properties > Firewall** GUI. Select **Automatic** for **Daemon connection port**.

Figure 2-10 4.5 Client (Non-NetWare) Minimal Outgoing Port Connections with Mixed Versions

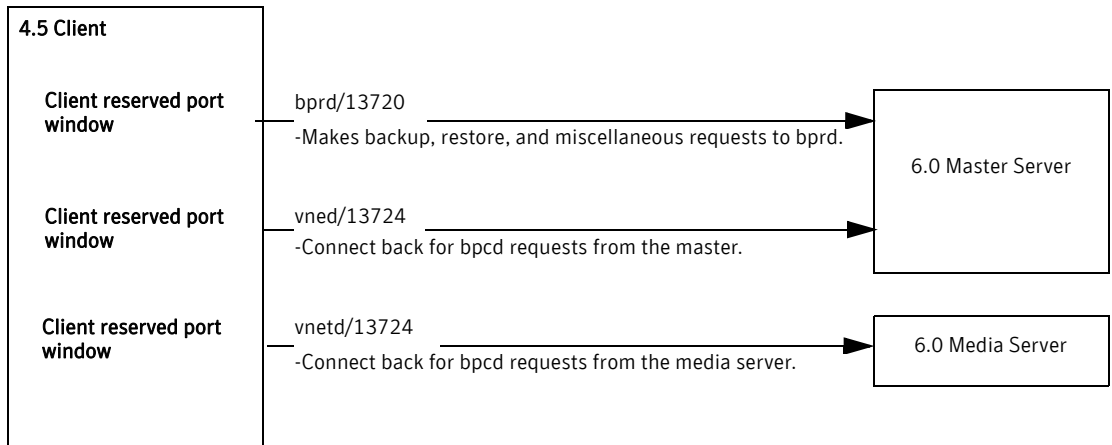


Figure 2-11 6.0 NetWare Client Minimal Outgoing Port Connections

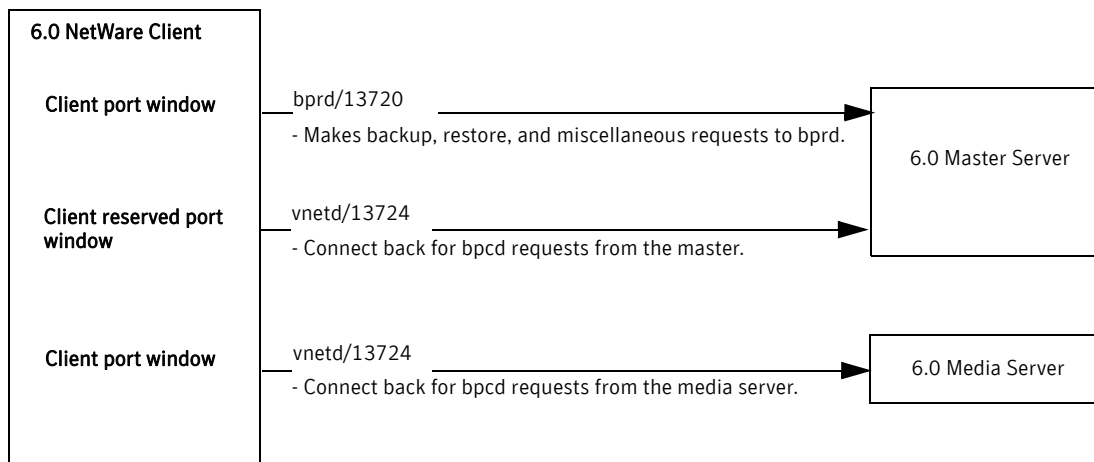
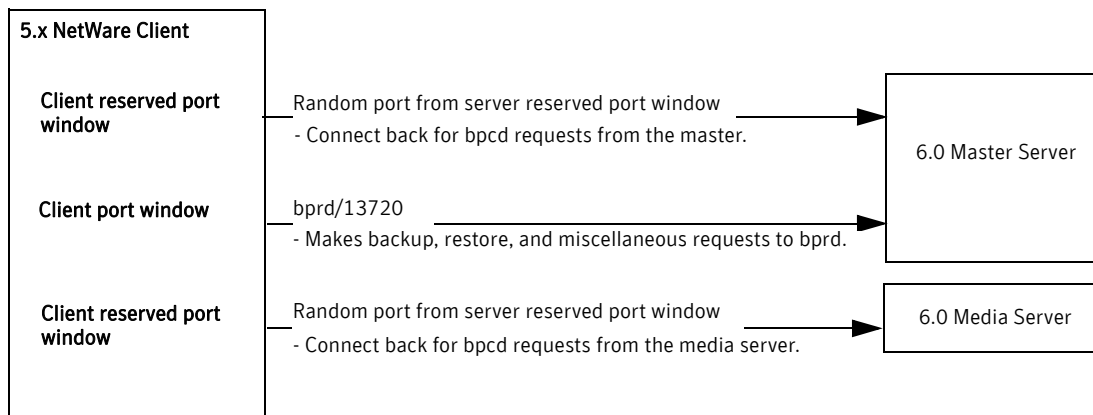


Figure 2-12 5.x NetWare Client Minimal Outgoing Port Connections with Mixed Versions



Minimum Java Server or Windows Administration Console Outgoing Connections

Figure 2-13 Java Server or Windows Administration Console Minimal Outgoing Port Connections

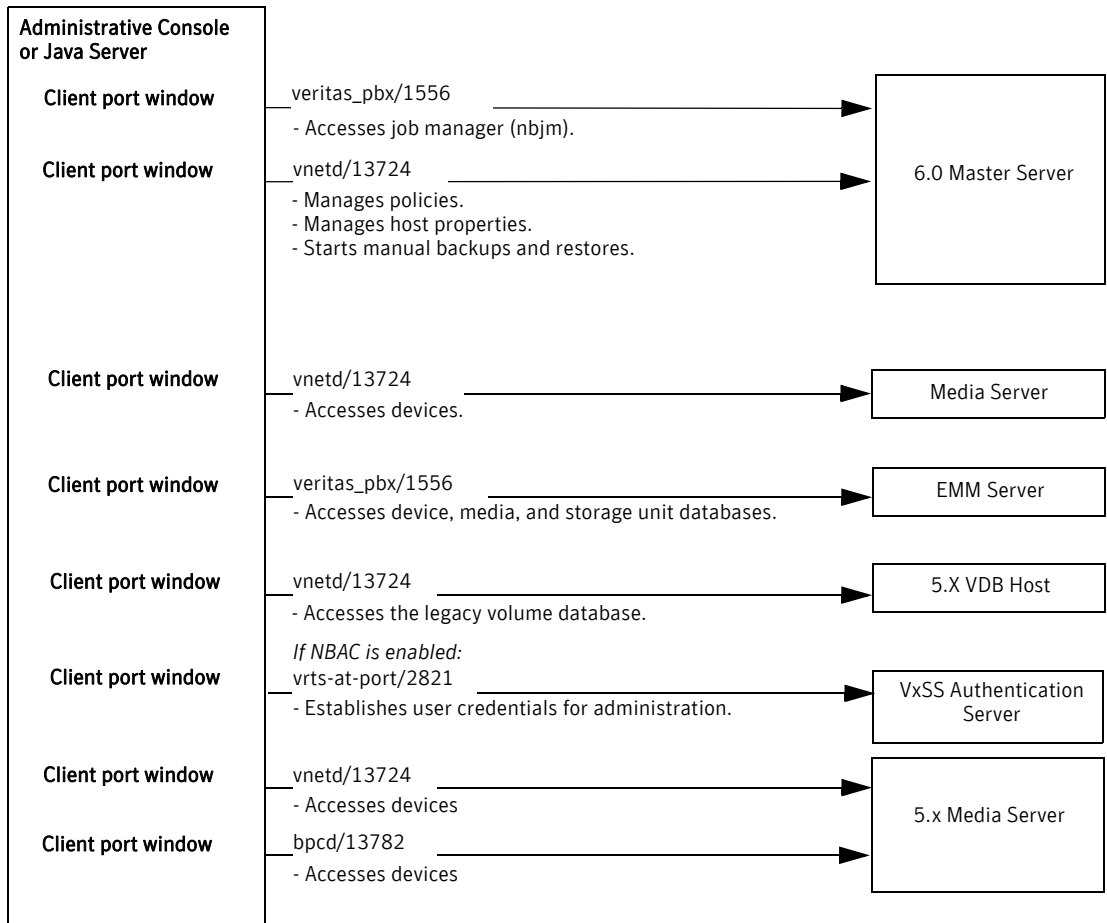
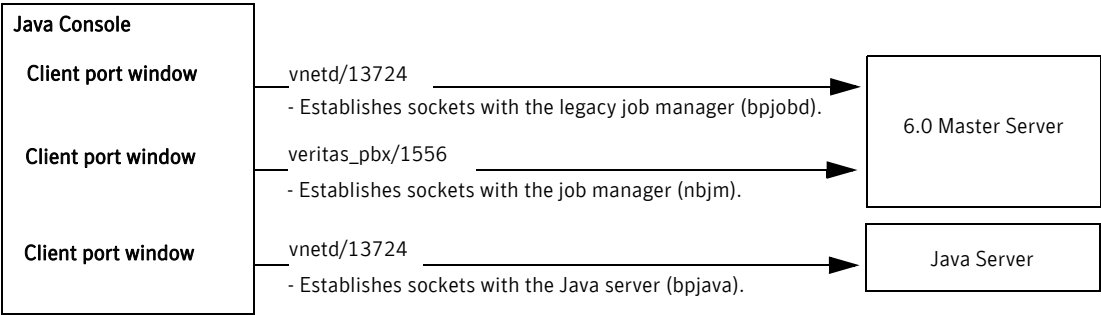
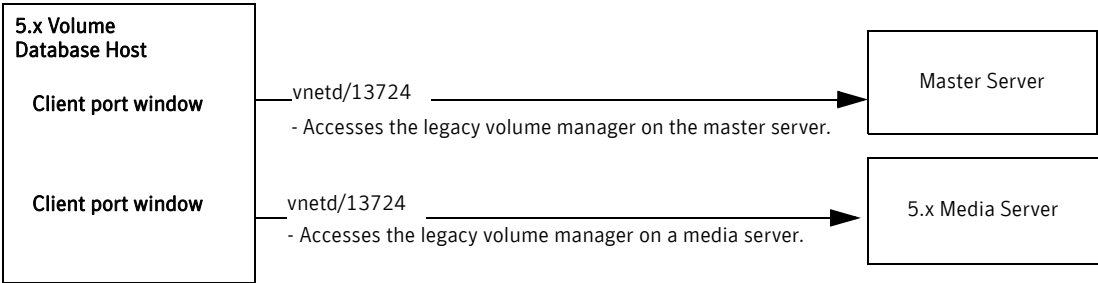


Figure 2-14 Java Console Minimal Outgoing Port Connections



Minimum Volume Database Host Outgoing Connections

Figure 2-15 5.x Volume Database Host and Mixed Versions Minimal Outgoing Port Connections



On the 5.x volume database host, verify the following:

- That the **Host Properties** display specifies using `vnetd` instead of the **Daemon Port** connections.
- That the following entry exists in the `vm.conf` file:
`CONNECT_OPTIONS=master 0 0 0`
`CONNECT_OPTIONS=media 0 0 0`
where:

`master` Specifies the master server hostname.
`media` Specifies the media server hostname.

These settings minimize port use.
You can also specify these settings using the **Host Properties > Firewall** GUI. Select **Automatic** for **Daemon connection port**.

Default port numbers for NetBackup 6.0

Table 2-1 lists the well known ports that are used within a NetBackup environment. Not all of the daemons are available in a base NetBackup installation. Some of them are enabled or used by add-on products, and the right-most column indicates which product uses the daemon.

NetBackup 6.0 and later will use additional ports when connected to NetBackup 5.1 and earlier. See the Default port numbers for NetBackup 4.5-5.1 section for more details.

Table 2-1 Port Numbers for NetBackup 6.0

Daemon or Process	Port Number	Product	Purpose
VNETD	13724	NetBackup	Network daemon.
VOPIED	13783	NetBackup	One-time Password user authentication daemon. It authenticates user names, hosts names, and group/domain names. On UNIX clients, this daemon can only be run in standalone mode. On Windows clients, it always runs under the supervision of BPINETD.EXE.
VERITAS_PBX	1556	VxPBX	VERITAS Public Exchange Service
VRTS-AT-PORT	2821	VxAT	VERITAS Authentication Service
VRTS-AUTH-PORT	4032	VxAZ	VERITAS Authorization Service

Default port numbers for NetBackup 4.5-5.1

Table 2-2 lists the well-known ports that are used within a NetBackup environment. Not all of the daemons are available in a base NetBackup installation. Some of them are enabled or used by add-on products, and the right-most column indicates which product uses the daemon.

Table 2-2 Port Numbers for NetBackup 4.5-5.1

Daemon or Process	Port Number	Product	Purpose
ACSD ^a	13702 ^b	Media Manager	Automated Cartridge System (ACS) daemon. One of the robotic daemons.

Table 2-2 Port Numbers for NetBackup 4.5-5.1 (Continued)

Daemon or Process	Port Number	Product	Purpose
BPCD	13782 ^c	NetBackup	NetBackup Client Daemon. On UNIX clients, this daemon is run typically through <code>inetd(1M)</code> or <code>xinetd(8)</code> . It can also be run in standalone mode. On Windows clients, it always runs under the supervision of <code>BPINETD.EXE</code> . There is a NetBackup specific configuration parameter for this daemon. If the port number is changed within the NetBackup configuration, the software updates the port number in the services file.
BPDBM ^a	13721 ^b	NetBackup	NetBackup database manager daemon.
BPJAVA_MSVC ^a	13722 ^c	NetBackup	NetBackup-Java application server authentication service program.
BPJOBDA	13723 ^b	NetBackup	NetBackup Jobs Database Management Daemon.
BPRD ^a	13720 ^b	NetBackup	BPRD is the NetBackup Request Daemon. On Windows computers, there is a NetBackup specific configuration parameter for this daemon. If the port number is changed within the NetBackup configuration, the software updates the port number in the services file.
LMFD and LMFCDA	13718 ^b	Media Manager	Library Management Facility (LMF) daemon and control daemon. One of the robotic daemons.
NDMP	10000	NetBackup for NDMP	Network Data Management Protocol. NDMP servers adhere to this protocol and listen on port 10000 (by default) for NDMP clients to connect to them.
ODLDA	13706 ^b	Media Manager	Optical Disk Library (ODL) daemon. One of the robotic daemons.
RSMD ^a	13719 ^b	Media Manager	Removable Storage Manager (RSM) process. One of the robotic processes.
TL4DA	13713 ^b	Media Manager	Tape Library 4MM (TL4) daemon. One of the robotic daemons.
TL8D and TL8CDA	13705 ^b	Media Manager	Tape Library 8MM (TL8) daemon and control daemon. One of the robotic daemons.
TLDD and TLDCDA	13711 ^b	Media Manager	Tape Library DLT (TLD) daemon and control daemon. One of the robotic daemons.
TLHD and TLHCD ^a	13717 ^b	Media Manager	Tape Library Half-inch (TLH) daemon and control daemon. One of the robotic daemons.

Table 2-2 Port Numbers for NetBackup 4.5-5.1 (Continued)

Daemon or Process	Port Number	Product	Purpose
TLMD ^a	13716 ^b	Media Manager	Tape Library Multimedia (TLM) daemon. One of the robotic daemons.
TS8D ^a	13709 ^b	Media Manager	Tape Stacker 8MM (TS8) daemon. One of the robotic daemons.
TSDD ^a	13714 ^b	Media Manager	Tape Stacker DLT (TSD) daemon. One of the robotic daemons.
TSHD ^{a*}	13715 ^b	Media Manager	Tar Stacker Half-inch (TSH) daemon. One of the robotic daemons.
VMD	13701 ^b	Media Manager	Media Manager volume daemon.
VNETD	13724	NetBackup	Network daemon.
VOPIED	13783	NetBackup	One-time Password user authentication daemon. It authenticates user names, hosts names, and group/domain names. On UNIX clients, this daemon can only be run in standalone mode. On Windows clients, it always runs under the supervision of BPINETD.EXE.
VSM	13699	Storage Migrator	The Storage Migrator for UNIX.
VRTS-AT-PORT	2821	VxAT	VERITAS Authentication Service
VRTS-AUTH-PORT	4032	VxAZ	VERITAS Authorization Service

- a. This is a standard NetBackup standalone daemon.
- b. This service can also be accessed by the vneta (13724) port number. In NetBackup 6.0, the default is to use the vneta port number. For pre-6.0, the default is to use the legacy port number.
- c. This service can also be accessed by the vneta (13724) port number for NetBackup 6.0. In NetBackup 6.0, the default is to use the vneta port number. For pre-6.0, the legacy port number is always used.

Configuration options

This chapter describes how to configure the various non-default port configurations that you might need in your environment to support firewalls and other features.

You can set the configuration options in this chapter from both the graphical user interface (for Java or Windows) or from the command line (on UNIX or Windows). The instructions in this chapter describe how to set the configuration options using the graphical user interface. For information on setting configuration options from the command line, see [“Configuring port usage without a GUI”](#) on page 45.

Accept connections from non-reserved ports

The **Accept connections from non-reserved ports setting** specifies that the NetBackup client service (bpcd) can accept remote connections from non-reserved ports, which are those with port numbers 1024 and greater. If this setting is not specified, bpcd requires remote connections to come from reserved ports, which are ports numbers less than 1024. **The Accept connections from non-reserved ports setting** is useful when NetBackup clients and servers are on opposite sides of a firewall.

For NetBackup 5.1 and earlier, this setting is disabled by default, which has the following effects:

- NetBackup does not accept remote connections from non-reserved ports.
- The source ports for connections to bpcd use reserved ports. If this setting is specified on a client/server, and you want to use non-reserved ports, the server connecting to the client/server must also be configured to use non-reserved ports for the client.

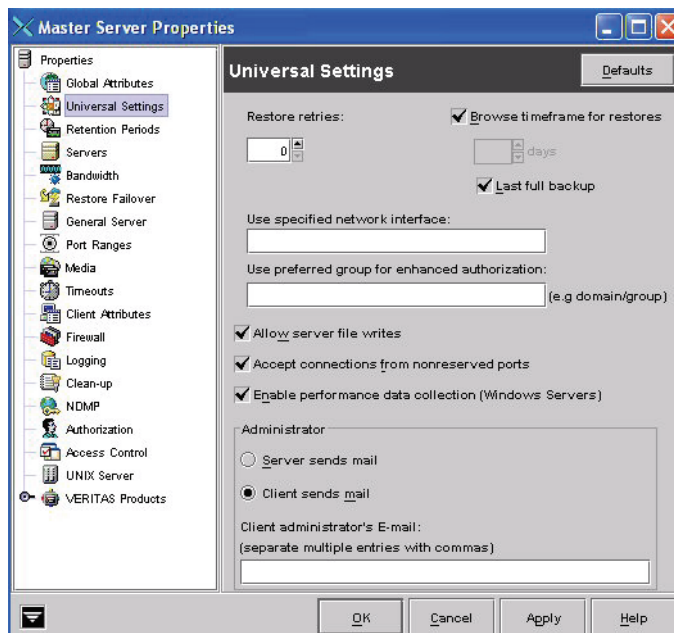
For NetBackup 6.0 and later, this setting is enabled by default. If the system making the bpcd connection is NetBackup 6.0 or later and the system accepting the bpcd connection is NetBackup 6.0 or later (other than the Netware client),

the default is to always use non-reserved port numbers. If the system accepting the bpcd connection is NetBackup 5.1 or earlier or a Netware client, the default is to use reserved ports.

To enable nonreserved ports from the Java or Windows interface

- 1 In the NetBackup Administration Console, expand **NetBackup Management** > **Host Properties** > **Master Servers**.
- 2 Double click the host you want to configure.
- 3 Click **Universal Settings**.
A display similar to the following appears:

Figure 3-1 Universal settings



- 4 Check **Accept connections from non-reserved ports**.

Use random port assignments

The following sections describe how to configure random port assignments in the NetBackup configuration and in the media manager configuration.

Random port assignments in the NetBackup configuration

The **Use random port assignments** setting specifies that when NetBackup requires a port number for communication with NetBackup on other computers, it can randomly choose one from those that are free in the allowed range.

Example If the range is from 1023 through 5000, it chooses randomly from the numbers in this range.

If this setting is changed from the default, NetBackup chooses numbers sequentially, starting with the highest number that is available in the allowed range.

Example If the range is from 1023 through 5000, NetBackup chooses 5000, assuming it is free. If 5000 is being used, NetBackup chooses port 4999. This setting is enabled by default.

To disable random port assignments from the Java or Windows interface

- 1 In the NetBackup Administration Console, expand **NetBackup Management > Host Properties > Master Servers**.
- 2 Double click the host you want to configure.
- 3 Click **Universal Settings**.
- 4 Uncheck **Use random port assignments**.

Random port assignments in the Media Manager configuration

The random ports setting for Media Manager works the same way as it does for the general NetBackup configuration.

The **Use random port assignments** setting specifies that when Media Manager requires a port number for communication with Media Manager on other computers, it can randomly choose one from those that are free in the allowed range.

Example If the range is from 1023 through 5000, it chooses randomly from the numbers in this range.

If this setting is changed from the default, Media Manager chooses numbers sequentially, starting with the highest number that is available in the allowed range.

Example If the range is from 1023 through 5000, Media Manager chooses 5000, assuming it is free. If 5000 is being used, Media Manager chooses port 4999. This setting is enabled by default.

Note: Specify the same port selection for NetBackup as you do for Media Manager. That is, if you specify random ports in the NetBackup configuration, also specify random ports in the Media Manager configuration.

Specifying Firewall connection options on a NetBackup server or client

The connect options specify how connections are made between computers. You specify the settings on the computer that initiates the connection (source computer) for the server to which it connects (destination computer).

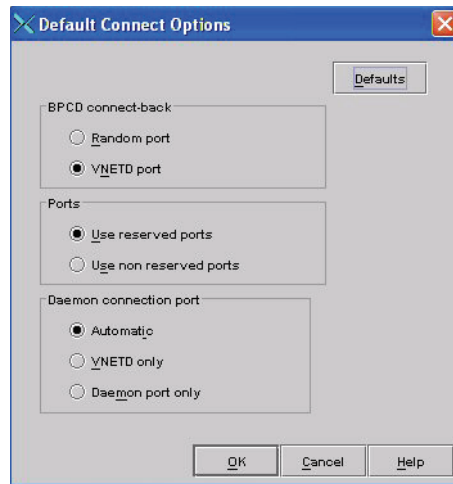
Example If there is a firewall between the master server and the media servers, you can specify the settings from the master server (source computer) for each of the media servers (destination computers) to which the master server connects.

You can define the connect options between the source computer and specific destination computers. If the source computer is running NetBackup 6.0 or later, you also can set default connection options that apply to all other destination computers.

To specify Firewall default connect options for a NetBackup 6.0 or later source computer from the Java or Windows interface

- 1 In the NetBackup Administration Console, expand **NetBackup Management > Host Properties > Master Servers**.
- 2 Double click the host you want to configure.
- 3 Click **Firewall**.
- 4 Click **Change** in the **Default Connect Options** pane.
A display similar to the following appears:

Figure 3-2 Default connect options



You can set the following connection options from the display:

- Ports (reserved versus non-reserved)
- BPCD connect-back
- Daemon connection port

If the source computer is a NetBackup client (not a server), only the Daemon connection port setting will apply.

The following sections describe these settings.

Ports

The use **non-reserved ports** setting determines whether the source computer connects to bpcd on destination computers using a reserved or a non-reserved source port number.

By default, the **use reserved ports** setting is specified. This means that the source computer connects to bpcd on destination computers using a reserved port number.

If you change the default, **use non-reserved ports** goes into effect. This means that the source computer connects to bpcd on destination computers using a non-reserved port number. In addition, if **use non-reserved ports** is specified, configure the host to allow connections on non-reserved ports. For reconfiguration information, see [“Accept connections from non-reserved ports”](#) on page 23.

Note: This setting generally has no effect if both the source and destination computers are NetBackup 6.0 or later and the destination computer is not a Netware client. By default, non-reserved ports are always used in that case. See the note in the Daemon connection port description.

BPCD connect-back

The **BPCD connect-back** setting specifies whether the host can be connected to by another computer using the legacy bpcd random port call back method or by using the VERITAS Network Daemon (vnetd). By default for NetBackup 5.1 or earlier, the **BPCD connect-back** is Random port. This means that the connection uses the legacy random port call-back method.

If **BPCD connect-back** is VNETD port, other computers connect to the host using vnetd, which does not require random port call back. This is the default for NetBackup 6.0 and later.

Note: This setting generally has no effect if both the source and destination computers are NetBackup 6.0 or later and the destination computer is not a Netware client. By default, call-back is not used in that case. See the note in the Daemon connection port description.

Daemon connection port

The **Daemon connection port** setting specifies one of the following methods for computers to use when connecting to the host:

- **Automatic** (default for NetBackup 6.0 and later). Specifies that connections to the daemons on the host be made using vnetd if possible. If it is not possible to use vnetd, the connection is made using the daemon's legacy port number.
- **VNETD only**. Specifies that connections to the daemons on the host be made using vnetd only. If your firewall rules prevent connecting to the host using the legacy port number, make sure that vnetd is used.
- **Daemon port only** (default for NetBackup 5.1 and earlier). Specifies that connections to the host be made using only the legacy port number.

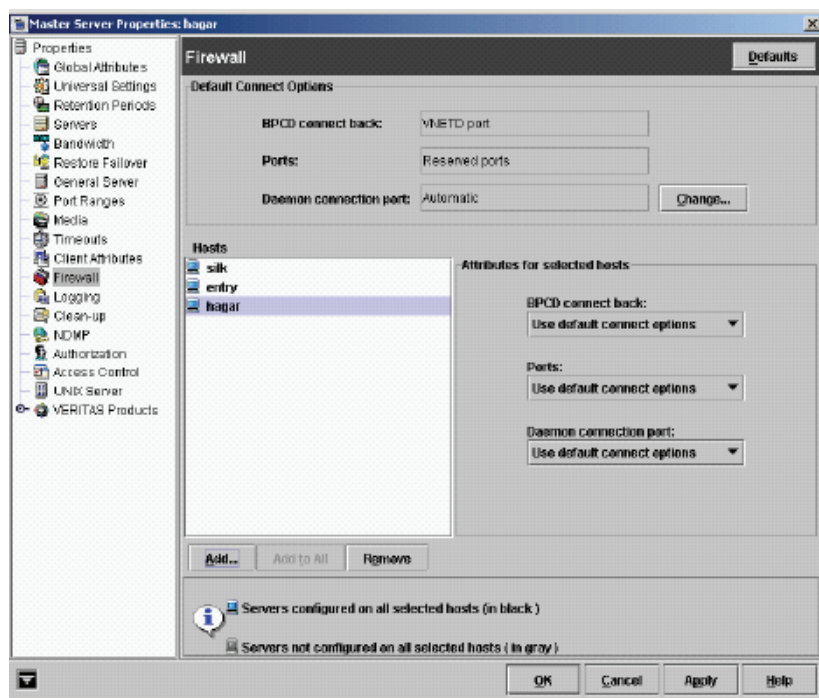
Note: For NetBackup 5.1 and earlier, connections to bpcd are always made with the legacy bpcd port number. Connections to bpcd can be made with the vnetd port number if both the source and destination computers are NetBackup 6.0 or later and the destination computer is not a Netware client. When bpcd connections are made using the vnetd port number, the Ports and BPCD connect-back settings are ignored. The default in that case is to use non-reserved source port numbers, the vnetd destination port number, and no call-back.

Note: Connections to vopied, veritas_pbx, veritas-at-port, and veritas-auth-port are not affected by this setting. Those connections always use the legacy or IANA defined port numbers.

To specify Firewall connect options for a source computer to apply to specific destination computers from the Java or Windows interface

- 1 In the NetBackup Administration Console, expand **NetBackup Management > Host Properties > Master Servers**.
- 2 Double click the host you want to configure.
- 3 Click **Firewall**.
- 4 Click **Add** in the **Hosts** pane. Add a destination host (usually another NetBackup server) to hosts list shown in the following figure.

Figure 3-3 Master Server Properties



- 5 Select the appropriate values from the BPCD connect back, Ports, and Daemon connection port menu items. The values available in these menu items include the values available in the Default Connect Options described above. In addition, you can specify **Use default connect options** which means that the value for the specified destination host will use the value from Default Connect Options instead.

Specifying Firewall connection options on Media Manager

In NetBackup 6.0 and later, the Media Manager defaults to the NetBackup connection options described above unless overridden by the `vm.conf` `CONNECT_OPTION` entries. For NetBackup 5.1 and earlier, Media Manager connection options must be specified in `vm.conf`.

Unlike the NetBackup master servers or clients, there is no graphical user interface to use to change the firewall connections for Media Manager. For

information on changing the `vm.conf` file for Media Manager, see “[Configuring port usage without a GUI](#)” on page 45.

Specifying NetBackup-Java connection options

Unlike the NetBackup master servers or clients, there is no graphical user interface to use to change the `NBJAVA_CONNECT_OPTION`.

The `/usr/opensv/java/nbj.conf` file on UNIX and the `nbackup_install_path\java\setconf.bat` file on Windows contain configuration settings that you might want to change if you are configuring ports. These options are as follows:

```
NBJAVA_CONNECT_OPTION=setting
NBJAVA_CLIENT_PORT_WINDOW=n m
```

For information on changing these settings, see one of the following manuals:

- *NetBackup Administrator's Guide for UNIX and Linux, Volume I*
- *NetBackup Administrator's Guide for Windows, Volume I*

Specifying client attributes

The Client Attributes tab lets you specify several connect options. These options all define how a master or media server can connect to a client.

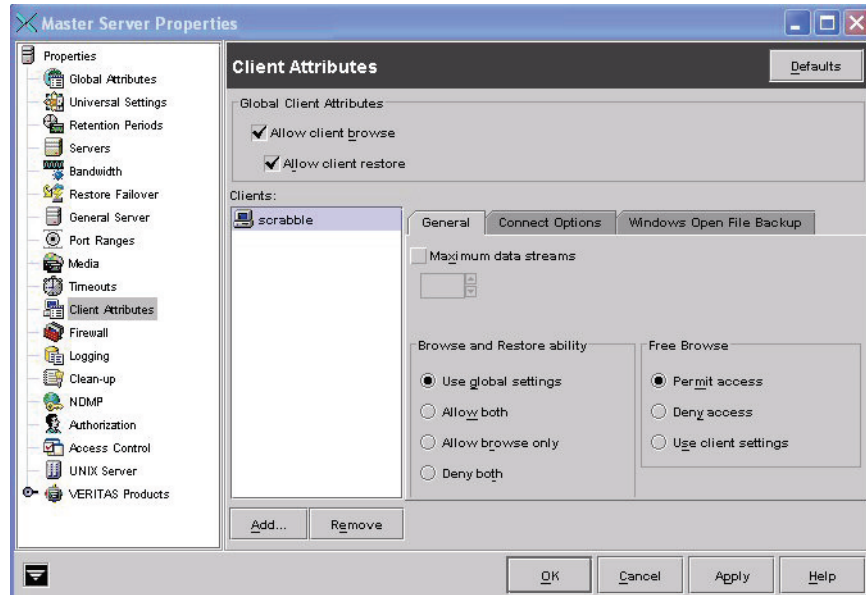
Example You can specify reserved or non-reserved ports,

Note: If a master or media server is configured to connect to a client using non-reserved ports, use the procedure that follows, “[Specifying ports \(reserved or non-reserved\)](#)” on page 32, to configure that client to accept remote connections from non-reserved ports.

To specify client attributes from the Java or Windows interface

- 1 In the NetBackup Administration Console, expand **NetBackup Management > Host Properties > Master Servers**.
- 2 Double click the host you want to configure.
- 3 Click **Client Attributes**.
A display similar to the following appears:

Figure 3-4 Client attributes - main screen



The following sections describe how to enable or disable the following settings:

- Specifying ports (reserved or non-reserved ports)
- Specifying a BPCD connect-back method
- Specifying a Daemon connection port

Specifying ports (reserved or non-reserved)

By default, a master or media server uses a reserved port when it connects to bpcd on a client. This means that the **Reserved ports** selection is in effect. You can use the following procedure to change this setting.

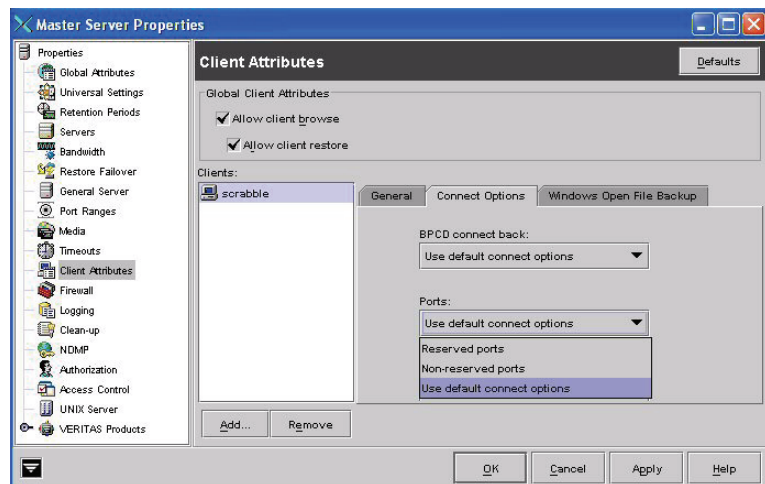
To specify reserved or non-reserved ports

- 1 Make sure that you are in the **Client Attributes** display.
For information on how to get to the **Client Attributes** display, see the procedure [“To specify client attributes from the Java or Windows interface”](#) on page 31.
- 2 Make sure that the client(s) you want to configure show in the **Clients** pane.

To add a client, click **Add...** and type the name of the client you want to add in the dialog box that appears. When you are finished adding clients, click **Close**.

- 3 Click the **Connect Options** tab.
- 4 In the **Ports** dropdown list, select either **Reserved ports**, **Non-reserved ports**, or **Use default connect options**.
The display for this is as follows:

Figure 3-5 Ports dropdown list



- Selecting **Reserved ports** specifies that master and media server use a reserved port when connecting to bpcd on this client.
- Selecting **Non-reserved ports** specifies that master and media servers use a non-reserved port when connecting to bpcd on the client.
- Selecting **Use default connect options** specifies that master and media servers use the `CONNECT_OPTIONS` or `DEFAULT_CONNECT_OPTIONS` that are defined on the master or media server that connects to the client. Default.

- 5 Click **Apply** when you are finished specifying ports.
- 6 Click **OK** to exit from the Client Attributes interface.

Note: By default, if both the server and the client are NetBackup 6.0 or later and the client is not Netware, this setting is not applicable. Non-reserved ports are always used in that case. See the note in the description of the Daemon connection port setting below.

Specifying a BPCD connect-back method

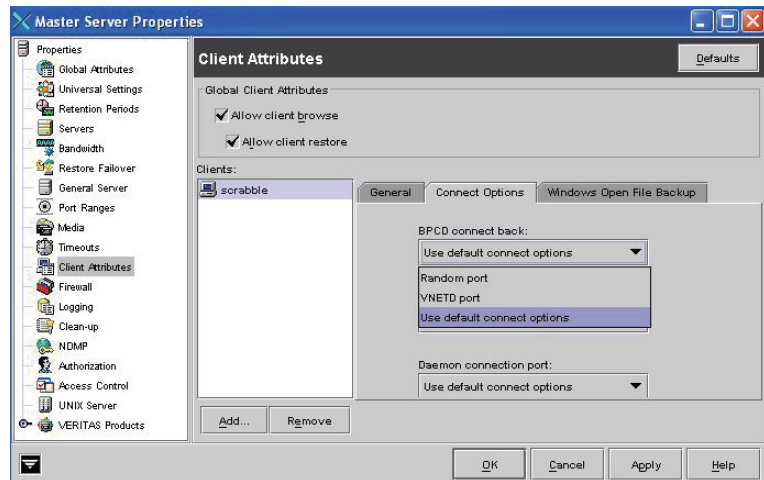
The BPCD connect-back method specifies how the client responds when a master or media server connects to `bpcd` on the client.

By default, the client connects back to the master or media server on the VNETD port number. This means that the **VNETD port** selection is in effect. You can use the following procedure to change this setting.

To specify a BPCD connect-back method

- 1 Make sure that you are in the **Client Attributes** display.
For information on how to get to the **Client Attributes** display, see the procedure [“To specify client attributes from the Java or Windows interface”](#) on page 31.
- 2 Make sure that the client(s) you want to configure show in the **Clients** pane.
To add a client, click **Add...** and type the name of the client you want to add in the dialog box that appears. When you are finished adding clients, click **Close**.
- 3 Click the **Connect Options** tab.
- 4 In the **BPCD connect back** dropdown list, select either **Random port**, **VNETD port**, or **Use default connect options**.
This display is as follows:

Figure 3-6 BPCD connect back dropdown list



- Selecting **Random port** specifies that the client connect back to the master and media server using a random port number.
- Selecting **VNETD port** specifies that the client connect back to the master and media server using the `vnetd` port number.

Selecting **Use default connect options** specifies that the client connect back to the master and media server the `CONNECT_OPTIONS` or `DEFAULT_CONNECT_OPTIONS` that are defined on the master or media server that connects to the client. Default.

- 5 Click **Apply** when you are finished specifying a method.
- 6 Click **OK** to exit from the Client Attributes interface.

Note: By default, if both the server and the client are NetBackup 6.0 or later and the client is not Netware, this setting is not applicable. Connect back is not used in that case. See the note in the description of the Daemon connection port setting below.

Specifying a Daemon connection port

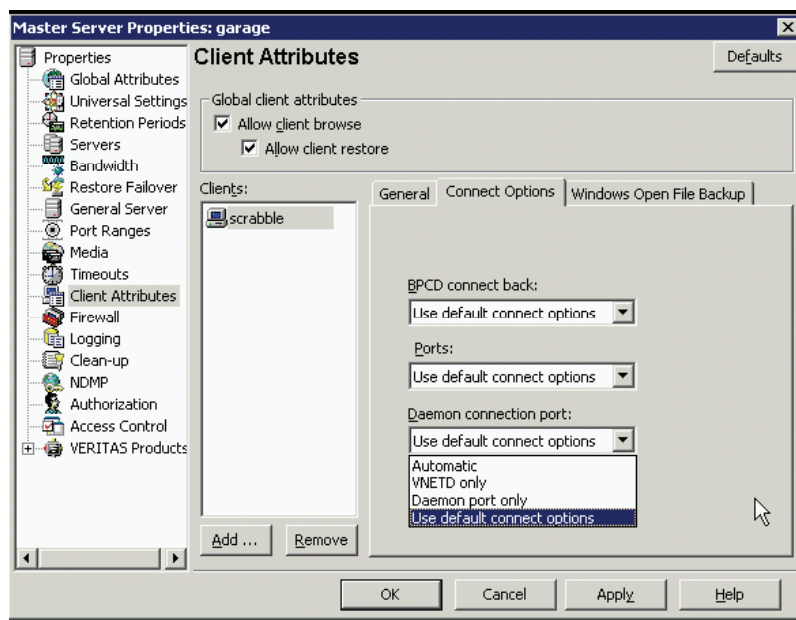
The Daemon connection port specifies which destination port the server uses to connect to the client. By default if both server and client are NetBackup 6.0 or later, the connection will be on the `vnetd` port number. All other server to client `bpcd` connections are on the legacy `bpcd` port number. You can use the following procedure to change this setting.

To specify a Daemon connection port

- 1 Make sure that you are in the **Client Attributes** display. For information on how to get to the **Client Attributes** display, see the procedure “[To specify client attributes from the Java or Windows interface](#)” on page 31.
- 2 Make sure that the client(s) you want to configure show in the **Clients** pane. To add a client, click **Add...** and type the name of the client you want to add in the dialog box that appears. When you are finished adding clients, click **Close**.
- 3 Click the **Connect Options** tab.
- 4 In the **Daemon connection port** dropdown list, select either **Automatic**, **VNETD port only**, **Daemon port only**, or **Use default connect options**.

This display is as follows:

Figure 3-7 Client Attributes



- Selecting **Automatic** specifies that the server will attempt to connect to `bpcd` on the client using the `vnetd` port number. If that fails, the server will attempt to connect to `bpcd` on the client using the legacy `bpcd` port number.
- Selecting **VNETD only** specifies that the server will attempt to connect to `bpcd` on the client using the `vnetd` port number. Do not select this option if the client is NetBackup 5.1 or earlier or if the client is Netware.

- Selecting **Daemon port only** specifies that the server will attempt to connect to `bpcd` on the client using the legacy `bpcd` port number.
 - Selecting **Use default connect options** specifies the port number used by the server to connect to `bpcd` on the client using the `CONNECT_OPTIONS` or `DEFAULT_CONNECT_OPTIONS` that are defined on the master or media server that connects to the client. Default.
- 5 Click **Apply** when you are finished specifying a method.
 - 6 Click **OK** to exit from the Client Attributes interface.

Note: For NetBackup 5.1 and earlier, connections to `bpcd` are always made with the legacy `bpcd` port number. Connections to `bpcd` can be made with the `vnetd` port number if both the server and client are NetBackup 6.0 or later and the client is not Netware. When `bpcd` connections are made using the `vnetd` port number, the Ports and BPCD connect-back settings are ignored. The default in that case is to use non-reserved source port numbers, the `vnetd` destination port number, and no connect-back.

Specifying port ranges

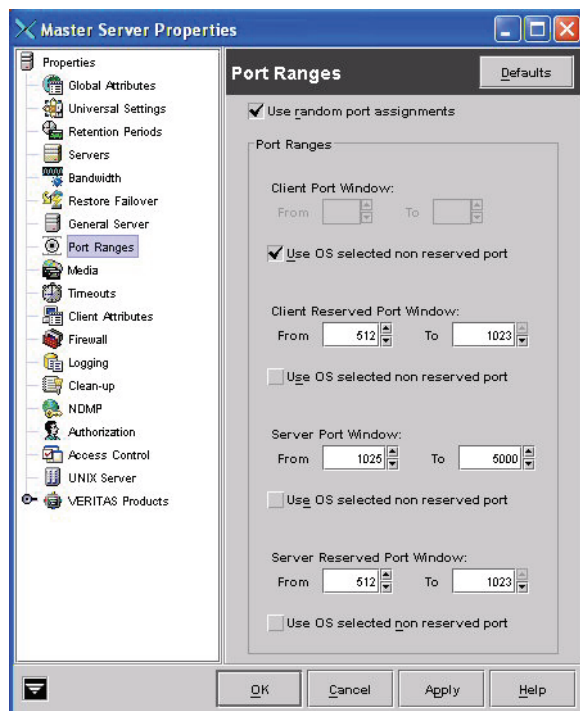
The following sections describe how to specify the numbers for the ranges of ports.

Note: For all port windows, if you specify a 0 in the **From** box, the software uses a non-reserved port of the operating system's choosing.

To specify port ranges

- 1 In the NetBackup Administration Console, expand **NetBackup Management > Host Properties > Master Servers**.
- 2 Double click the host you want to configure.
- 3 Click **Port Ranges**.
A display similar to the following appears:

Figure 3-8 Port ranges



Use [Table 3-1](#) as a guide when specifying ports.

Table 3-1 Port ranges

Port	Purpose	Default Range
Client Port Window	Specifies the range of non-reserved source port numbers that this computer uses to connect to most NetBackup services.	0 - 0 The operating system chooses the port.
Client Reserved Port Window	Specifies the range of reserved source port numbers that this computer uses to connect to <code>bpcd</code> with the legacy <code>bpcd</code> destination port number.	512 - 1023
Server Port Window	Specifies the range of non-reserved destination port numbers that other computers use to connect to this computer for <code>bpcd</code> connect back.	1024 - 5000
Server Reserved Port Window	Specifies the range of reserved destination port numbers that other computers use to connect to this computer for <code>bpcd</code> connect back	512 - 1023

4 Click **Apply**

5 Click **OK**

The Client **Reserved Port Window**, **Server Port Window**, and **Server Reserved Port Window** settings are not applicable to NetBackup clients.

By default, the **Server Port Window** and **Server Reserved Port Window** settings are not used for NetBackup 6.0 or later unless connecting to `bpcd` on a NetBackup 5.1 or earlier Netware client.

By default, **Client Reserved Port Window** setting is not used for NetBackup 6.0 or later if connecting to a destination computer running NetBackup 6.0 or later that is not a Netware client.

Miscellaneous port numbers

The following sections describe the `BPJAVA_PORT`, `VNETD_PORT`, `BPCD`, and `BPRD` ports.

`BPJAVA_PORT` and `VNETD_PORT`

`BPJAVA_PORT` is the configured port for the `bpjava_msvc` daemon process. `VNETD_PORT` is the configured port for the `vnetd` daemon process. These ports are registered with IANA.

Caution: Symantec does not recommend changing these ports.

If the ports for these processes need to be changed, make the change on all NetBackup hosts in the relevant NetBackup cluster as described in the *NetBackup Installation Guide for UNIX* or the *NetBackup Installation Guide for Windows*. In addition, specify the value in the corresponding `nbj.conf` option.

`BPCD` and `BPRD` ports

The `BPCD` port is the configured port for the `bpcd` daemon process. The `BPRD` port is the configured port for the `bprd` daemon process. These ports are registered with IANA.

Caution: Symantec does not recommend changing these ports.

If the ports for these processes need to be changed, make the change on all NetBackup hosts.

On Windows hosts, In addition to making the change in all the relevant `services` files, use the following procedure to set the value for all Windows computers:

To change the ports for BPCD and BPRD on Windows

- 1 On Windows, click through **Start > All Programs > VERITAS NetBackup > Backup, Archive, and Restore**.
- 2 In the **Backup, Archive, and Restore** window, click **File > NetBackup Client Properties**.
- 3 Select the **Network** tab.
- 4 Change the values.
- 5 Click **OK**.

If the `services` file is not changed and the `bpcd` port is changed using the preceding procedure, the change is reflected in the NetBackup configuration. At this point, a difference exists between the value that is in the NetBackup configuration and the `services` file. The next time the NetBackup Client Service is started on the computer; it will automatically update the `services` with the value that appears in the NetBackup configuration.

ICMP, NDMP and Media Manager port usage

ICM port usage

Windows system administration console

By default, the NetBackup Windows administration console pings the computers it communicates with to ensure that they are alive before attempting to connect to them. If the ICMP protocol is blocked in a network, the NetBackup Windows administration console might no longer function.

You can use the following procedure to disable the ping that the NetBackup Windows administration console performs by default.

Note: For 6.0 release, ping by default is already disabled. For 5.x releases, use the following procedure to disable ping.

To disable the ping on a NetBackup Windows administration console

- 1 Select the **View** menu.
- 2 Select the **Options** menu item.
- 3 When the dialog appears, select the **Administration Console** tab.
- 4 On that tab, select the box for Disable ping connection checking.

NDMP port usage

ICMP pinging NDMP

On UNIX systems, the NetBackup `avrd` process uses the Internet Control Message Protocol (ICMP) when it pings NDMP hosts to verify network connectivity. If a ping fails, NetBackup skips this particular device, which leaves the status of the drive as up.

On Windows systems, NetBackup does not ping the NDMP device. It tries the connection. If the network is experiencing connectivity problems, this method can take longer because as NetBackup waits for a timeout.

NDMP in a firewall environment

If you are using an NDMP storage unit in a firewall environment, make sure you know the different types of NDMP backups to be performed. The backup type determines which ports need to be opened in the firewall. The following paragraphs describe the types of NDMP backups and how they pertain to firewall use. These backup types include local, 3-way and remote NDMP, remote NDMP and local and 3-way TIR.

- For local operations, the DMA needs access to port 10,000 on the NDMP server. In this case, the one NDMP server is both the NDMP tape server and the NDMP data server.
- For 3-way and remote NDMP, the DMA needs access to port 10,000 on the NDMP tape server and the NDMP data server. Also, there cannot be a firewall between the NDMP tape server and the NDMP data server because there is no control over the TCP/IP ports used for the data movement.
- For remote NDMP (5.0 / 5.1), it is not advisable to put a firewall between the DMA and the NDMP hosts. This is because the DMA can be on the same computer as the NDMP tape server. In this case, you need an unlimited number of ports available to perform the data movement between the NDMP tape server and the NDMP data server.
- For local and 3-way TIR, the data requires an unlimited number of ports available because NetBackup has no control over the ports used.

Media Manager port usage

ACS storage server interface

ACSSSEL

ACSSSEL is an ACS robotic process. It is the ACS SSI Event Logger. It is modeled after the `mini_el` event logger provided by StorageTek, so its functional model differs slightly from other robotic test tools provided with Media Manager.

By default, ACSSSEL listens on socket name (or IP port) 13740. If this entry is specified in `vm.conf`, you can change the default. This entry is read and interpreted where `acsd` is running, and the format for this entry is as follows:

```
ACS_SEL_SOCKET = socket_name
```

ACSSSI

ACSSSI is an ACS robotic process. By default, ACSSSI listens on unique, consecutive socket names starting as 13741. To specify socket names on an ACS library software host basic, add a configuration entry in `vm.conf`. This entry is read and interpreted on the host where `acsd` and `acsSSI` are running, and the format for this entry is as follows:

```
ACS_SSI_SOCKET = ASC_library_software_host socket_name
```

Example `ACS_SSI_SOCKET = Einstein 13750`

Additional Media manager port information

The following sections describe known firewall problems that you might encounter when using NetBackup with certain other products.

ACS

Communication is required between the media server that has the ACS drives configured and the ACS server, but NetBackup has no control over the communication between these computers. The communication is handled via a RPC mechanism without a common port. Therefore, it is not possible to define the ports that would need to be open if there were a firewall between the media server and the ACS server.

TLH

Communication is required between the media server that has the robotic control and the server that has IBM's Library Manager. This communication is through an unknown network port, and NetBackup has no control over that port

number. Therefore, it is not possible to define the ports that would need to be open if there were a firewall between the media server and the IBM Library Manager server.

LMF

Communication is required between the media server that has the robotic control and Fujitsu's LMF server. This communication is through an unknown network port, and NetBackup has no control over that port number. Therefore, it is not possible to define the ports that would need to be open if there were a firewall between the media server and Fujitsu's LMF server.

TLM

Communication is required between the media server that has the robotic control and ADICs DAS/SDLC server. NetBackup has no control over the communication mechanism and does not know which ports are used between the media server and ADICs DAS/SDLC server. Therefore, it is not possible to define the ports that would need to be open if there were a firewall between the media server and ADICs DAS/SDLC server.

Configuring port usage without a GUI

“[Configuration options](#)” on page 23 shows how to configure settings and port usage by using the NetBackup GUI. In many cases, you can also edit a text file or use a command line to configure your system.

The following sections summarize how to configure port usage settings without a GUI. This appendix is not intended to provide details on using commands to change settings. For more information on any of these commands or files, see the following resources:

- *NetBackup Administrator's Guide for UNIX and Linux, Volumes I and II*
- *NetBackup Administrator's Guide for Windows, Volumes I and II*
- *NetBackup Media Manager Administrator's Guide for UNIX*
- *NetBackup Media Manager Administrator's Guide for Windows*
- *NetBackup Commands for UNIX and Linux*
- *NetBackup Commands for Windows*

Port usage settings in NetBackup configuration - bp.conf

This section describes the NetBackup configuration settings related to port usage. All of the NetBackup configuration settings are described in *NetBackup Administrator's Guide for UNIX and Linux, Volume II* in the Additional Configuration/NetBackup Configuration Options section.

On UNIX or Linux systems, you can edit the `/usr/opensv/netbackup/bp.conf` file directly to update several port usage settings for the local computer's NetBackup configuration. Typically, you would use a text editor such as `vi(1)` to read and update the file.

You can also use the `bpgetconfig` and `bpsetconfig` commands from UNIX, Linux, or Windows NetBackup servers to read and update NetBackup configuration for local or remote computers. The `bpgetconfig(1M)` and `bpsetconfig(1M)` commands are described in the *NetBackup Commands for UNIX and Linux* and the *NetBackup Commands for Windows* manuals.

Typically, you would read the configuration with the `bpgetconfig` command and copy it into a temporary file, edit the configuration in the temporary file and then use the `bpsetconfig` command to update the configuration from the temporary file.

Example You might issue the following commands to update the NetBackup configuration of the computer `client1`:

```
bpgetconfig -M client1 > conf.txt
vi conf.txt # if UNIX or Linux
notepad conf.txt # if Windows
bpsetconfig -h client1 conf.txt
```

Port usage related NetBackup configuration settings

ALLOW_NON_RESERVED_PORTS = YES | NO

Specifies if the NetBackup client daemon (`bpcd`) on the local computer can accept remote connections from non-reserved ports (port numbers 1024 or greater).

- **NO** (default for NetBackup 5.1 and earlier) means that `bpcd` requires remote connections to come from reserved ports (port numbers less than 1024).
- **YES** (default for NetBackup 6.0 and later) means that `bpcd` allows remote connections to come from non-reserved ports (port numbers less than 1024).

This option can be useful when NetBackup clients and servers are on opposite sides of a firewall.

You should specify *YES* for this setting if NetBackup servers are configured via the `DEFAULT_CONNECT_OPTIONS` or `CONNECT_OPTIONS` settings or `bpclient` command line to connect to the local computers `bpcd` with non-reserved source port numbers.

This setting can also be configured in the **NetBackup Administration GUI** by using the **Host Properties > Universal Settings > Accept Connections on Non-reserved Ports** checkbox.

RANDOM_PORT = YES | NO

Specifies whether NetBackup chooses source port numbers randomly or sequentially when it requires one for communication with NetBackup on other computers.

- *YES* (the default) means that NetBackup chooses port numbers randomly from those that are free in the allowed range.

Example If the range is from 1024 through 5000, it chooses randomly from the numbers in this range.

- *NO* means that NetBackup chooses numbers sequentially, starting with the highest number that is available in the allowed range.

Example If the range is from 1024 through 5000, NetBackup chooses 5000 (assuming it is free). If 5000 is being used, port 4999 is chosen.

The allowed port ranges are determined by the `CLIENT_PORT_WINDOW` and `CLIENT_RESERVED_PORT_WINDOW` settings.

This setting can also be configured in the **NetBackup Administration GUI** via the **Host Properties > Port Ranges > Use random port assignments** checkbox.

CLIENT_PORT_WINDOW = min max

Specifies the range of non-reserved source ports on this computer that are used for connecting to NetBackup on other computers. This setting applies to most NetBackup connection. The `CLIENT_RESERVED_PORT_WINDOW` setting applies when connecting to `bpcd` with the legacy `bpcd` destination port number with reserved source port numbers.

- *min* is the minimum port number in the range. It should be 0 (zero) or a number between 1024 and 65535.
- *max* is the maximum port number in the range. It should be a number between min and 65535.

If *min* is 0 (zero), the operating system determines the source port number and *max* is ignored. The default is 0 0.

Example The following command permits ports from 4800 through 5000:
`CLIENT_PORT_WINDOW = 4800 5000`

This setting can also be configured in the **NetBackup Administration GUI** via **Host Properties > Port Ranges > Client port** window.

CLIENT_RESERVED_PORT_WINDOW = *min max*

Specifies the range of reserved source ports on this computer that are used for connecting to bpcd on other computers. This setting is applicable when connecting to bpcd with the legacy bpcd destination port number with reserved source port numbers.

- *min* is the minimum port number in the range. It should be 0 (zero) or a number between 1 and 1023.
- *max* is the maximum port number in the range. It should be a number between *min* and 1023.

If *min* is 0 (zero), the operating system determines the source port number and *max* is ignored. The default is 512 1023.

Example The following command permits ports from 700 through 980:

```
CLIENT_RESERVED_PORT_WINDOW = 700 980
```

This setting can also be configured in the **NetBackup Administration GUI** via **Host Properties > Port Ranges > Client reserved port** window.

SERVER_PORT_WINDOW = *min max*

Specifies the range of reserved destination ports on this computer that are used by bpcd on other computers when connecting back to this computer. This setting is applicable when connecting to bpcd with the legacy bpcd destination port number with non-reserved source port numbers with random port bpcd connect back.

- *min* is the minimum port number in the range. It should be 0 (zero) or a number between 1024 and 65535.
- *max* is the maximum port number in the range. It should be a number between *min* and 65535.

If *min* is 0 (zero), the operating system determines the source port number and *max* is ignored. The default is 1025 5000.

Example The following command permits ports from 3000 through 7500:

```
SERVER_PORT_WINDOW = 3000 7500
```

This setting can also be configured in the **NetBackup Administration GUI** via **Host Properties > Port Ranges > Server port** window.

SERVER_RESERVED_PORT_WINDOW = *min max*

Specifies the range of reserved destination ports on this computer that are used by bpcd on other computers when connecting back to this computer. This setting is applicable when connecting to bpcd with the legacy bpcd destination port number with reserved source port numbers with random port bpcd connect back.

- *min* is the minimum port number in the range. Should be 0 (zero) or a number between 1 and 1023.
- *max* is the maximum port number in the range. Should be a number between min and 1023.

If *min* is 0 (zero), the operating system determines the source port number and *max* is ignored. The default is 512 1023.

Example The following command permits ports from 700 through 980:

```
SERVER_RESERVED_PORT_WINDOW = 700 980
```

This setting can also be configured in the **NetBackup Administration GUI** via **Host Properties > Port Ranges > Server reserved port** window.

CONNECT_OPTIONS = host 0|1|2 0|1|2 0|1|2|3 and DEFAULT_CONNECT_OPTIONS = 0|1 0|1 0|1|2

The CONNECT_OPTIONS and DEFAULT_CONNECT_OPTIONS configuration values determine how the local computer connects to services on other NetBackup systems. DEFAULT_CONNECT_OPTIONS is only available for NetBackup 6.0 and later. The values for CONNECT_OPTIONS are a host name followed by three digits. The values for DEFAULT_CONNECT_OPTIONS are three digits.

- *host* is a remote NetBackup system that the local computer connects to. You may have multiple `CONNECT_OPTIONS` entries in the configuration. If a host is not specified in any `CONNECT_OPTIONS` entries, the values from the `DEFAULT_CONNECT_OPTIONS` entry are used.
- The first digit is the reserved versus non-reserved source port:
 - *0* means that connections to `bpcd` from the local computer should use a reserved source port number selected from the `CLIENT_RESERVED_PORT_WINDOW` range. (Default.)
 - *1* means that connections to `bpcd` from the local computer should use a non-reserved source port number selected from the `CLIENT_PORT_WINDOW` range. Be sure `ALLOW_NON_RESERVED_PORTS = YES` is set on the remote hosts that the local computer may connect to.
 - *2* when specified in `CONNECT_OPTIONS` means that the value from `DEFAULT_CONNECT_OPTIONS` should be used instead.
- The second digit is `bpcd` call-back method:
 - *0* means that for connections to `bpcd` from the local computer, `bpcd` will connect back to a random port number on the local computer selected from the `SERVER_RESERVED_PORT_WINDOW` range or `SERVER_PORT_WINDOW` range on the server. (Default for 5.1 and earlier.)
 - *1* means that for connections to `bpcd` from the local computer, `bpcd` will connect back to the `vnetd` port number on the server. (Default for 6.0 and later.)
 - *2* when specified in `CONNECT_OPTIONS` means that the value from `DEFAULT_CONNECT_OPTIONS` should be used instead.
- The third digit is the legacy versus `vnetd` destination port:
 - *0* means that the local computer will first attempt to connect to a NetBackup service using the `vnetd` destination port number. If that fails, the local computer will attempt to connect to the NetBackup service using the legacy destination port number for that service. (Default for 6.0 and later.)
 - *1* means that connections to a NetBackup service from the local computer use the `vnetd` destination port number.
 - *2* means that connections to a NetBackup service from the local computer use the legacy destination port number for the service.
 - *3* when specified in `CONNECT_OPTIONS` means that the value from `DEFAULT_CONNECT_OPTIONS` should be used instead.

Note: `vnetd` can only be used as the destination port if the remote host is NetBackup 6.0 or later and is not a NetWare client.

If `vnetd` is used as the destination port, the settings from the first two digits are not applicable. In that case, the source port will be from the non-reserved `CLIENT_PORT_WINDOW` range and no connect back will be used.

Example The connection options to most remote hosts from the local computer will use the NetBackup 5.1 defaults. However, connections to host servers will use the NetBackup 6.0 defaults:

```
CONNECT_OPTIONS = servers 0 1 0
DEFAULT_CONNECT_OPTIONS = 0 0 2
```

Example The `DEFAULT_CONNECT_OPTIONS` is restored to the defaults for NetBackup 6.0 and later:

```
DEFAULT_CONNECT_OPTIONS = 0 1 0
```

These settings can also be configured in the **NetBackup Administration GUI** via the **Host Properties > Firewall** panel.

Configuring port usage client attribute settings - bpclient

The `bpclient` command is used to update a variety of client attributes in a database on the NetBackup master server.

The `bpclient (1M)` command is described in the *NetBackup Commands for UNIX and Linux* and the *NetBackup Commands for Windows* manuals.

The `-connect_options` argument to `bpclient` sets three port usage attributes that NetBackup servers use when connecting to `bpcd` on the specified NetBackup client. To specify connection options to a client, first make sure the client is in the master servers database:

```
bpclient -client name -add
```

where *name* is the name of the client.

`bpclient -client name -update -connect_options 0|1|2 0|1|2 0|1|2|3`

This is the format of the `bpclient` command to update client connection attributes. The `-connect_options` argument is followed by three digits.

- The first digit is the reserved versus non-reserved source port:
 - `0` means that connections to `bpcd` from servers to the specified client should use a reserved source port number selected from the `CLIENT_RESERVED_PORT_WINDOW` range on the server. (Default for 5.1 and earlier servers.)
 - `1` means that connections to `bpcd` from servers to the specified client should use a non-reserved source port number selected from the `CLIENT_PORT_WINDOW` range on the server. Be sure `ALLOW_NON_RESERVED_PORTS = YES` is set on the client.
 - `2` means that the reserved versus non-reserved source port setting is determined by the `CONNECT_OPTIONS` and `DEFAULT_CONNECT_OPTIONS` on the server. (Default for 6.0 and later servers.)
- The second digit is BPCD call-back method:
 - `0` means that for connections to `bpcd` from servers to the specified client, the client will connect back to a random port number of the server selected from the `SERVER_RESERVED_PORT_WINDOW` range or `SERVER_PORT_WINDOW` range on the server. (Default for 5.1 and earlier servers.)
 - `1` means that for connections to `bpcd` from servers to the specified client, the client will connect back to the `vnetd` port number on the server.
 - `2` means that the random port versus `vnetd` port setting is determined by the `CONNECT_OPTIONS` and `DEFAULT_CONNECT_OPTIONS` on the server. (Default for 6.0 and later servers.)
- The third digit is the legacy `bpcd` versus `vnetd` destination port:
 - `0` means that servers will first attempt to connect to `bpcd` on the specified client using the `vnetd` destination port number. If that fails, servers will attempt to connect to `bpcd` on the specified client using the legacy `bpcd` destination port number.
 - `1` means that connections to `bpcd` from servers to the specified client use the `vnetd` destination port number.
 - `2` means that connections to `bpcd` from servers to the specified client use the legacy `bpcd` destination port number. (Default for 5.1 and earlier servers.)

- 3 means that the legacy bpcd versus vnetd destination port setting is determined by the `CONNECT_OPTIONS` and `DEFAULT_CONNECT_OPTIONS` on the server. (Default for 6.0 and later servers.)

Note: vnetd can only be used as the destination port if the client is NetBackup 6.0 or later and is not a NetWare client.

If vnetd is used as the destination port, the settings from the first two digits are not applicable. In that case, the source port will be from the non-reserved `CLIENT_PORT_WINDOW` range and no connect back will be used.

Example The following commands will set the legacy (pre NetBackup 6.0) client connect options for connections to client client1. You might find this useful for older clients:

```
bpclient -add -client client1
bpclient -update -client client1
-connect_options 0 0 2
```

Example The following command restores the NetBackup 6.0 client connect option defaults. You might find this useful after you upgrade the client to 6.0:

```
bpclient -update -client client1
-connect_options 2 2 3
```

These settings can also be configured in the **NetBackup Administration GUI** via the **Host Properties > Client Attributes > Connect Options** tab.

Port usage settings in Media Manager configuration - vm.conf

For Media Manager, update port usage settings by editing the `/usr/opensv/volmgr/vm.conf` file (UNIX or Linux) or the `install_path\volmgr\vm.conf` file (Windows). There is no GUI to use when changing these settings.

RANDOM_PORTS = YES | NO

The `RANDOM_PORTS` setting specifies how Media Manager chooses a source port to use when the Media Manager software on one computer needs to

communicate with the Media Manager software on another computer. The default is YES.

- *YES* means that source port number is selected randomly from the range defined by the `CLIENT_PORT_WINDOW` setting.
- *NO* means that source port number is selected sequentially randomly from the range defined by the `CLIENT_PORT_WINDOW` setting. The media manager will attempt the connection with the highest source port number in the range. If that source port does not work, the media manager will try the next highest source port number in the list until it finds a source port number that works.

`CLIENT_PORT_WINDOW` = *min max*

Where *min* and *max* are integers from 1024 to 65535 or 0 (zero). These values define the range of source ports used on out-going media manager connections. *min* defines the lowest source port number and *max* defines the highest source port number. If *min* is 0 or if *max* is less than *min*, then the media manager will let the operating system determine the source port number. The default is 0 0.

Example This setting will define a source port range of 3000 to 8000:
`CLIENT_PORT_WINDOW = 3000 8000`

`CONNECT_OPTIONS` = host 0 0 0|1|2

The `CONNECT_OPTIONS` setting specifies the destination port number to be used to connect to media manager services. You can specify multiple `CONNECT_OPTIONS` settings in the `vm.conf` file.

- *host* is the host name of a computer with media manager services such as `vmc`, `tshd`, and `tlcdc`.
- The first two digits are ignored.
- The third digit is the legacy media manager ports versus `vnetd` destination port:
 - *0* means that the local computer will first attempt to connect to the media manager service on the specified host using the `vnetd` destination port number. If that fails, servers will attempt to connect to the media manager service on the specified host using the legacy media manager destination port number.
 - *1* means that connections to the media manager service on from the local computer to the specified host use the `vnetd` destination port number.

- 2 means that connections to the media manager service on from the local computer to the specified host use the legacy media manager destination port number. (Default for 5.1 and earlier servers.)

For NetBackup 6.0 and later, if no `CONNECT_OPTIONS` settings are specified in the `vm.conf` file, the media manager will default to the `DEFAULT_CONNECT_OPTIONS` and `CONNECT_OPTIONS` settings defined in the NetBackup configuration.

Example This setting forces media manager connections to `server3` to use `vnetd` as the destination port:
`CONNECT_OPTIONS = server3 0 0 1`

