



System i™ integration with BladeCenter® and System x™

**VMware® ESX Server  
on iSCSI attached integrated servers  
for i5/OS™ V5R4.**

**First Edition (September 2007)**

This edition applies to version 5, release 4, modification 0 of IBM i5/OS™ (product number 5722-SS1) and to all subsequent releases and modifications until otherwise indicated in new editions.

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# 1 Introduction

The purpose of this document is to prepare you and your System i (iSeries™) solution to begin using your integrated server. It is assumed that you have already decided that you would like to run your VMware ESX Server 3 on a BladeCenter blade or System x (xSeries®) model that is attached via an iSCSI host bus adapter (iSCSI HBA)

This document contains sections for planning, installing, maintaining, utilizing high availability options and backing up your VMware ESX Server 3 installed on an integrated server. Throughout this document, VMware ESX Server 3 may be referred to as 'ESX server' or 'ESX'.

There are limitations to running VMware ESX Server 3 on an iSCSI attached integrated server. Please refer to the following web page for details.

<http://www.ibm.com/systems/i/bladecenter/vmware/>

## 2 Planning

### 2.1 Required Skills

#### 2.1.1 i5/OS™ Skills

A knowledge of basic i5/OS operational skills is required to setup the iSCSI configuration objects, install an ESX Server on an integrated server, vary on or off the integrated server, enter CL commands and access messages.

#### 2.1.2 VMware Skills

A knowledge of VMware Infrastructure 3 is needed in order to configure your environment. To learn, please see the VMware Infrastructure 3 documentation at the following web site.

[http://www.vmware.com/support/pubs/vi\\_pubs.html](http://www.vmware.com/support/pubs/vi_pubs.html)

### 2.2 System Resources Required

#### 2.2.1 Hardware Required

You will need the following hardware to install your integrated server.

- For ESX Server requirements such as number of CPUs and system memory, refer to the VMware Infrastructure 3 documentation at [http://www.vmware.com/support/pubs/vi\\_pubs.html](http://www.vmware.com/support/pubs/vi_pubs.html)
- i5/OS free disk space (see *Disk Storage* section)
- Attached SVGA compatible monitor
- Attached mouse or other pointing device
- Attached keyboard

#### 2.2.2 iSCSI setup

Review the **Prerequisites** through **Preparing for the operating system installation** steps in the iSCSI install read me first web page.

<http://www.ibm.com/systems/i/bladecenter/iscsi/readme/>

#### 2.2.3 Disk Storage

The following guidelines are for installing a VMware ESX Server.

##### **VMware ESX Server predefined drives**

When you install VMware ESX Server on an integrated server, two storage spaces are created. These correspond to the first two drives.

- The first drive is the system drive (/dev/sda) where the ESX Server will be installed.
- The second drive is the install drive (/dev/sdb) which contains integrated server utilities to be installed. This drive is not for general use and is needed for integrated server function.

As a rule of thumb, the recommended amount of disk storage you need for these drives is:

**System drive:**

8192MB (VMware ESX Server system)

4096MB (disk space required for integrated server utilities & other applications).

8192+4096 = 12288MB (minimum).

**Install drive:**

Recommended minimum drive size = 200MB

**User-defined disk drives**

It is not recommended to configure virtual machines on the system or install drive. You should create additional storage spaces and link them in for your virtual machines. Furthermore, it may be most beneficial for you to configure one virtual machine per storage space for ease of backups and other administration tasks.

## 2.3 Topology

During installation of ESX Server on an iSCSI attached integrated server, the installation process will use a 1 initiator iSCSI HBA to a 1 target iSCSI HBA configuration. After installation the ESX Server can be configured to have as many as 2 initiator iSCSI HBAs connected via switch to 4 target iSCSI HBAs. For more information see the *iSCSI mutli-path* section.

## 2.4 Other considerations

For ESX 3.0.x, the initiator iSCSI HBA requires a specific version of BIOS and firmware that may not be compatible with other operating system that can run on an integrated server. For more details, see the *Hot Spare* section.

When ESX server is shutdown by varying off the Network Server Description (NWSA), it does not attempt to shutdown any virtual machines that the ESX server is hosting. You must manually shutdown the virtual machines before shutting down the ESX server to ensure a clean shutdown.

## 3 Installing VMware ESX Server

Before installing a VMware ESX Server on an iSCSI attached BladeCenter or System x , it is assumed that you have completed all the steps listed above in the *Planning for installation* section.

### 3.1 Starting the installation from the i5/OS console

The following steps outline the installation process.

1. Start the install from i5/OS with INSLNXSVR command. . You will need to specify \*ESX3 in the Linux server distribution parameter and \*ALL in the Restrict device resources parameter. Information on other parameters are described in the **Starting the installation from i5/OS** section in the **Linux on an integrated xSeries Solution** document at:

<http://publib.boulder.ibm.com/infocenter/iserics/v5r4/topic/rzau9/rzau9startos400install.htm>

Below is an example for installing an ESX server on a Blade or System x using the objects that you created in the **Preparing for the operating system installation** section from the iSCSI install read me first web page.

```
INSLNXSVR NWSD(MYESX) RSRNAME(*I SCSI) LNXSVRDST(*ESX3)
RSTDDEVRSC(*ALL) STGPTH(MYNWSH) VRTETHPTH((*VRTETHPTP MYNWSH))
RMTNWSCFG(MYRM) SPNWSCFG(MYSP) CNNNWSCFG(MYCN) IPSECRULE(*NONE)
```

**Note:** Virtual Ethernet is not supported on VMware ESX Server but the INSLNXSVR command requires the VRTETHPTH parameter. When varying on the NWSD, the line description for the virtual Ethernet connection will remain in a vary on pending status.

2. By the time the INSLNXSVR command prompts for the ESX media, the BladeCenter or System x will already be automatically powered on and going through the boot process. The installation requires the ESX media to be inserted into the BladeCenter or System x CD drive so that it can boot. If you did not insert the ESX media before the end of the Power On Self Test (POST), you will see a message display on the server console indicating that there is no boot device or a blank screen with a blinking cursor. At this point, you should insert the ESX media in the BladeCenter or System x CD drive and press CTRL-ALT-DEL at the server console. The system will reboot and the installation will start from the CD drive.
3. Follow the steps listed in **Completing a VMware ESX 3 installation on the integrated server** section.
4. After completing the installation steps for VMware ESX 3.0.1, you must follow the steps in the **Post install steps** section.

### 3.2 Completing a VMware ESX installation on the integrated server

To complete the installation of VMware ESX 3:

1. Follow the steps listed in the **Installing VMware ESX Server Software** chapter in the **Installation and Upgrade Guide** for VMware Infrastructure 3 available at [http://www.vmware.com/support/pubs/vi\\_pubs.html](http://www.vmware.com/support/pubs/vi_pubs.html)
2. During the install interview, it is ok to use the defaults. However, there are the following requirements.
  - a. On the **Partitioning Options** screen:
    - You must install ESX on /dev/sda which will be listed as **SCSI Disk sda IBM VDASD xxxx** where the 'xxxx' is the name of the system drive.
    - You must not modify the partition on /dev/sdb otherwise your server will fail to boot after installation.

# ESX Server 3



## Partitioning Options

The wizard can set up initial system partitions for you, or you can create them yourself.

How do you want to partition the disks for this system?

Recommended

If you are not familiar with ESX Server, we will select the best partitioning options for you.

Install ESX Server on:

Keep virtual machines and the VMFS (virtual machine file system) that contains them.

Advanced

You must create all the system partitions on the disks for this system.

b. On the **Advanced Options** screen:

- You must select the **From a drive (install on the MBR of the drive)** option in the ESX Boot Specification box.

# ESX Server 3



## Advanced Options

These advanced options usually do not need to be changed.

ESX Boot Specification

How will the ESX Server boot?

From a drive (install on the MBR of the drive):

This is the standard option. Make sure your BIOS settings are correct for the drive you select.

From a partition

Use this option, for example, if you are using a Boot Menu tool, or if you have the option to run special diagnostic software that runs in a separate partition.

Boot Options

If you wish to add default options to boot up, enter them here:

General kernel parameters:

- After completing the installation steps for VMware ESX 3, you must follow the instructions described in **Running the post install utility**.

### 3.3 Running the post install utility

This topic discusses the running the post install utility (`esxsetup.sh`) to complete the VMware® ESX Server installation.

**Attention:** This step is not an optional step. This step ensures that the ESX server will:

- Shutdown when the Network Server Description (NWS) is varied off.

**Note:** When ESX server is shutdown by varying off the NWS, it does not attempt to shutdown any virtual machines that the ESX server is hosting. You must manually shutdown the virtual machines before shutting down the ESX server to ensure a clean shutdown.

1. At the VMware ESX Server console, press ALT-F1 and log on as **root**.
2. Type `mkdir /mnt/sdb1` and press enter.
3. Type `mount /dev/sdb1 /mnt/sdb1` and press enter.
4. Type `/mnt/sdb1/install/esxsetup.sh` and press enter. This will do some additional setup and reboot your system.

During installation of ESX Server on an iSCSI attached integrated server, the installation process will assume a 1 initiator iSCSI HBA to a 1 target iSCSI HBA configuration. You may configure additional initiator or target iSCSI HBAs after the installation. For details, see *the iSCSI multi-path* section.

## 4 Maintaining the integrated server software for the ESX Server

The integrated server software for VMware has some components that run on i5/OS, and others that run on the ESX server. The ESX server components are installed when you complete the server installation. The i5/OS-based code can be maintained by using the normal PTF process. However, the integration code installed on the ESX server requires:

1. Applying the 5722-LSV PTF on your System i server.
2. Running the `ixsupdt` command from the ESX Server console.

To run the `ixsupdt` command, complete the following steps:

1. At the VMware ESX Server console, press ALT-F1 and log on as **root**.
2. At the command prompt type the `ixsupdt` command and press Enter. The syntax is:
  - o `ixsupdt userid [address]`  
Where *userid* is an i5/OS user profile and *address* is the IP address or host name of the hosting i5/OS partition. The `ixsupdt` command allows you to change the IP address or host name listed as the managing i5/OS partition for your server.
3. You will be prompted for the i5/OS user's password. Type in the password and press Enter.

# 5 High availability

## 5.1 iSCSI multi-path

A hosted system can use redundant iSCSI data paths to access virtual disks hosted by i5/OS. The recommended way to establish redundant iSCSI data paths is by defining a multipath group of two or more iSCSI HBAs and then specifying that a given virtual disk should be accessed using a group, rather than a single iSCSI HBA. With this configuration, the data on the virtual disk can be accessed using any of the iSCSI HBAs in the group.

The integrated server running ESX Server can have a maximum configuration of 2 initiator iSCSI HBAs and 4 targets iSCSI HBAs. For a general description of a multiple initiator or target iSCSI HBA configuration for integrated servers, see

<http://publib.boulder.ibm.com/infocenter/series/v5r4/topic/rzahq/rzahqadvancediscsihardware.htm>

Configuring multiple iSCSI HBAs for an integrated server running ESX Server requires that you do some configuration on your System i server and other tasks from the VMware Virtual Infrastructure Client. The following steps need to be done after the initial installation, and anytime you add additional iSCSI HBA ports to the topology.

1. The following steps are done on the System i server.
  - a. Create a multipath group and link storage spaces to the multipath group. For details, see *Configuring the integrated server for multipath I/O* topic at: <http://publib.boulder.ibm.com/infocenter/series/v5r4/topic/rzahq/rzahqconfiguringnwsdfmpio.htm>
  - b. Ensure all information for the initiator iSCSI HBAs exist in the remote system configuration for the integrated server. You will need to know the MAC address, IP address, and iSCSI qualified name for each initiator in a later step. You can input information for additional initiator iSCSI HBAs to the remote system configuration from iSeries Navigator by:
    - i. Expand Integrated Server Administration
    - ii. Expand iSCSI Connections
    - iii. Select Remote Systems.
    - iv. Right-click a remote system configuration from the list available.
    - v. Select Properties.
    - vi. Click on the Network Interfaces tab.
    - vii. Click Add and input the MAC address, IP address and iSCSI qualified name for additional initiator iSCSI HBAs.
    - viii. Click OK to save and exit.
  - c. Start the integrated server. See details in the link in step 1.
2. From a client workstation, start the Virtual Infrastructure Client interface. You may connect to the Virtual Center Server or directly to the ESX server. If connecting to the Virtual Center Server, select the ESX server that you want to work with.
  - a. Click on the **Configuration** tab.
  - b. Click on **Storage Adapters**.
  - c. A list of initiator iSCSI HBA ports appears under **QLA4022**. One of the initiator ports is configured during the boot process. You need to configure the other initiator ports to match the information in the remote system configuration. Do the following steps for each port that appears under **QLA4022**:

- i. Select the HBA port and click on **Properties...**, which is located below and to the right of **QLA4022**.
- ii. On the **General** tab, note the MAC address and find the same MAC address in the remote system configuration.
- iii. Click **Configure...**
- iv. Enter the initiator iSCSI qualified name (IQN) from the remote system configuration, if not already configured. The initiator IQNs assigned by i5/OS are identical except for the last character, which is a 0, 1, 2, or 3.
- v. Enter the initiator IP address information, if not already configured. Even though a gateway is not supported, the VMware interface requires one to be configured. Make the gateway address the same as the IP address. This signifies that there is no gateway.
- vi. If changes were made, click **OK**. Otherwise, click **Cancel**.
- vii. Select the **Dynamic Discovery** tab. Click **Add...** and enter the IP address of a NWSH that is part of the multipath group in i5/OS. Repeat the previous step until the IP address of every NWSH in the multipath group has been added.
- viii. Click **OK**.
- d. Under **Recent Tasks** near the bottom of the window, check the status associated with previous steps. When the status is 'Completed', click **Rescan...**, which is located in upper right corner Storage Adapters view. In the Rescan dialogue, click **OK**. When the rescan completes, you should see more LUN information in the Storage Adapters view.

## 5.2 Hot Spare

Hot spare hardware provides a way to quickly recover from certain types of hardware failures. This can reduce the server downtime from hours or days to minutes. With iSCSI attached integrated servers, there are two ways to use hot spare hardware to minimize downtime that is caused by hardware failures

### 5.2.1 Hot spare of the System i iSCSI host bus adapter

If the System i iSCSI HBA fails, you can switch to use another iSCSI HBA. To learn more about this process see the following.

<http://publib.boulder.ibm.com/infocenter/iseri5/v5r4/topic/rzahq/rzahqhotsparebetweeniscsi.htm>

### 5.2.2 Hot spare of the Blade or System x server

If the Blade or System x server fails, you can switch to use another Blade or System x. To learn more about this process see the following.

<http://publib.boulder.ibm.com/infocenter/iseri5/v5r4/topic/rzahq/rzahqhotsparebetw.htm>

**Note:** If you have multiple NWSDs configured to use the same iSCSI integrated sever where one NWSD is for a ESX server and another NWSD is for a Windows server, you must be aware of a potential issue that may cause a Hot Spare of an ESX server to fail. Windows and ESX Server may require different versions of iSCSI initiator HBA BIOS and firmware which may not be compatible between the two servers.

Furthermore, the Windows integration update process may automatically update the iSCSI initiator HBA BIOS and firmware, so you may not be aware that an incompatibility has been introduced. During a Hot Spare, you must verify that the BIOS and firmware of the iSCSI initiator HBA is compatible with your integrated server operating system by checking the following website:

<http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/docdisplay?Indocid=MIGR-64054&brandind=5000008>

## 6 Backing up and restoring your ESX server

Because your VMware ESX Server is running on an integrated server attached to System i, you can manage backups and restores by using i5/OS commands.

When backing up or restoring an iSCSI attached integrated server, it is necessary to understand the i5/OS objects and storage spaces associated with the integrated server. The i5/OS objects and storage spaces constitute the complete integrated server and should be saved and restored together at the same time. Otherwise, the integrated server may not be able to function properly. However, if you know exactly how your integrated server is using the storage spaces (those required for the server operating system and those required for data), it may be possible to save and restore storage spaces individually.

The i5/OS objects associated with an iSCSI attached integrated server are:

1. The i5/OS configuration objects.
  - a. The network server description (NWS D) object is the key i5/OS configuration object of integrated servers. The NWS D object is used to tie together all of the other i5/OS objects that relate to an integrated server. The objects include the rest of the configuration objects below as well as the storage spaces that are linked.
  - b. The network server host adapter (NWS H) device description represents the iSCSI host bus adapter (HBA) that is used by the iSeries side of the iSCSI connection.
  - c. The service processor network server configuration (NWS CFG type SRVPRC) object represents the System x service processor or the IBM BladeCenter management module.
  - d. The remote system network server configuration (NWS CFG type RMTSYS) object represents the iSCSI attached System x or IBM BladeCenter blade server.
  - e. The connection security network server configuration (NWS CFG type CNNSEC) object is used by i5/OS.
2. The storage spaces associated with the integrated server. The storage spaces fall into two categories.
  - a. Predefined disks which are the system and install drive that are created when you run the i5/OS install command.
  - b. User-defined disks which are manually created and linked to the NWS D after the installation.

### 6.1 Back up the iSCSI attached integrated server

To backup an iSCSI attached integrated server, you will need to do the following.

1. Saving the i5/OS controlling objects. Refer to the following sections on how to back up these objects.
  - o **Back up the NWS D of an integrated server**
  - o **Back up the NWS H of an iSCSI attached integrated server**
  - o **Back up iSCSI NWS CFGs and validation lists**
2. Saving the storage spaces associated with the integrated server. Refer to the following section on how to backup the storage spaces.
  - o **Back up predefined and user-defined disk drives for integrated servers**

#### 6.1.1 Back up the NWS D of an integrated server

To save an NWS D, you use the Save Configuration (SAVCFG) command:

1. On the i5/OS command line, type SAVCFG.
2. Press Enter to have i5/OS save the NWS D configuration.

**Note:** The Save Configuration (SAVCFG) command will save the objects associated with an NWS D.

### 6.1.2 Back up the NWSH of an iSCSI attached integrated server

To save an NWSH, you use the Save Configuration (SAVCFG) command:

1. On the i5/OS command line, type SAVCFG.
2. Press Enter to have i5/OS save the NWSH configuration.

### 6.1.3 Back up iSCSI NWSCFGs and validation lists

For servers attached by iSCSI HBAs, the additional configuration objects are stored in the QUSRSYS library. These include the network server configuration objects (type \*NWSCFG) and an associated validation list object (type \*VLDDL).

**Note:** The \*NWSCFG and \*VLDDL objects will share the same name.

To save the network server configuration and validation list objects, use the **Save Object (SAVOBJ)** command:

1. If you are saving to tape, ensure that you have mounted a tape that is formatted for i5/OS.
2. Shut down the integrated server to release any object locks.
3. On the i5/OS command line, type SAVOBJ and press F4.
4. In the **Objects** field, specify the NWSCFG names. If default names were used, specify the generic name nwsdname\*.
5. In the **Library** field, specify QUSRSYS.
6. If you are saving the objects to tape, specify the name of your tape device in the **Device** field (for example, TAP01). If you want to use a save file instead of tape, specify \*SAVF as the device and enable the data compression option.
7. For **Object type**, specify both \*NWSCFG and \*VLDDL.
8. If you are using a save file, press F10 to see additional parameters.
9. In the **Save file** field, specify the path to your save file (for example winbackup/nwscfg).
10. If you are using a save file, page down change the value for Data compression to \*YES.

### 6.1.4 Back up disk drives (network storage spaces) for integrated servers

When you install an integrated server, i5/OS creates the system and installation drives as predefined drives that you need to save. You may have also linked in user-defined drives which need saving as well.

To save disk drives (network server storage spaces) associated with the integrated server, do the following:

1. If you are saving to tape, ensure that you have mounted a tape that is formatted for i5/OS.
2. Shut down the integrated server to prevent users from updating files during the backup. See “Start and stop an integrated server” on page 149.
3. For network server storages spaces created in an independent disk pool, verify that the auxiliary storage pool (ASP) device is varied on before saving the 'dev/independent ASP name/stgspc.UDFS' object.
4. On the i5/OS command line, type SAV and press F4.
5. If you are saving the storage space to tape, specify the name of your tape device (for example, /QSYS.LIB/TAP01.DEVD) in the *Device* field. If you are saving the storage space to a save file instead of to tape, specify the path to the save file as the device. For example, to use a save file named MYSAVF in library WINBACKUP, you would specify '/QSYS.LIB/WINBACKUP.LIB/MYSAVF.FILE' for the device.
6. In the Name field under Objects:, specify '/QFPNWSSTG/stgspc', where stgspc is the name of the network server storage space.
  - For storage spaces created in the system disk pool, use QFPNWSSTG/stgspc
  - For storage spaces created in a user disk pool, use /QFPNWSSTG/stgspc and also dev/QASPnn/stgspc.UDFS, where nn is the number of the user disk pool.

- For an independent disk pool, use /QFPNWSSTG/stgspc and also dev/independent ASP name/stgspc.UDFS, where independent ASP name is the name of the independent disk pool.
7. Specify values for any other parameters that you want and press Enter to save the storage space.
  8. At this point, you may vary on the integrated server.

## 6.2 Restore an iSCSI attached integrated server

To restore an iSCSI attached integrated server, you will need to do the following.

1. Restore the storage spaces associated with the integrated server. Refer to the following section on how to backup the storage spaces.
  - **Restore predefined and user-defined disk drives for integrated server**
2. Restore the i5/OS controlling objects. Refer to the following sections on how to back up these objects.
  - **Restore the NWSH of an integrated server**
  - **Restore the NWSH of an iSCSI attached integrated server**
  - **Restore the iSCSI NWSCFGs and validation lists**

### Notes:

1. To have i5/OS automatically relink restored disk drives in the integrated file system to the appropriate NWSH, restore the NWSH after you restore the disk drives.
2. If you restore an NWSH before restoring the predefined and user-defined disk drives in the integrated file system, you need to relink those disk drives. You can do this by using the Add Network Server Storage Link (ADDNWSSTGL) command for each disk drive that is associated with the NWSH: ADDNWSSTGL NWSSTG(Storage\_Name) NWSH(NWSH\_Name)

### 6.2.1 Restore disk drives (network storage spaces) for integrated servers

When you install an integrated server, i5/OS creates the system and installation drives as predefined drives that you need to restore. You may have also linked in user-defined drives which need restoring as well.

To restore disk drives (network server storage spaces) associated with the integrated server, do the following:

1. If you are restoring from save media, ensure that you have mounted your media.
2. If there are no network server storage spaces that currently exist on the system (none appear when you use the WRKNWSSTG command), you must create the /QFPNWSSTG directory before you can restore network server storage spaces that you saved beneath that directory. To create the /QFPNWSSTG directory, complete these steps:
  - a. On the i5/OS command line, type CRTNWSSTG to create a network server storage space and press F4.
  - b. Provide a name for the storage space.
  - c. Use the minimal size allowed and specify the appropriate disk pool (ASP).
  - d. Press Enter to create the storage space. i5/OS creates the storage space in the /QFPNWSSTG directory.
3. To restore the storage spaces, type RST and press F4.
4. In the Name field under Objects:, specify '/QFPNWSSTG/stgspc' and 'dev/QASPnn/stgspc.UDFS', where *stgspc* is the name of the network server storage space and *nn* is the number of the disk pool.
 

**Note:** To restore the .UDFS object to an independent disk pool, the disk pool device must be varied on. Specify dev/*independent ASP name*/stgspc.UDFS where *independent ASP name* is the name of the independent disk pool and *stgspc* is the name of the network server storage space.
5. Specify values for any other parameters that you want and press Enter to restore the storage space.

## 6.2.2 Restore integrated server NWSDs

To restore the NWSD, you use the Restore Configuration (RSTCFG) command:

1. On the i5/OS command line, type RSTCFG and press F4.
2. In the Objects field, specify the name of the NWSD followed by an '\*'. This will restore both objects (NWSD, LIND) that have used the standard naming convention in one pass and in the proper sequence.
3. In the Device field, specify the device name if you are restoring from media. If you are restoring from a save file, specify \*SAVF and identify the name and library for the save file in the appropriate fields.
4. Press Enter to have i5/OS restore the NWSD.
5. When you are done restoring the NWSD and all its associated storage spaces, you may vary on the integrated server.

## 6.2.3 Restore integrated server NWSHs for iSCSI attached servers

To restore the NWSH, you use the Restore Configuration (RSTCFG) command:

1. On the i5/OS command line, type RSTCFG and press F4.
2. In the Objects field, specify the name and type of the NWSH.
3. In the Device field, specify the device name if you are restoring from media. If you are restoring from a save file, specify \*SAVF and identify the name and library for the save file in the appropriate fields.
4. Press Enter to have i5/OS restore the NWSH

**Notes** When you restore an NWSH, it must be started before starting the integrated server.

## 6.2.4 Restore integrated server NWSCFGs for iSCSI attached servers

For servers attached by iSCSI HBAs, the additional configuration objects need to be restored to the QUSRSYS library. These include the network server configuration objects (type \*NWSCFG) and an associated validation list object (type \*VLDDL).

**Note:** The \*NWSCFG and \*VLDDL objects will share the same name.

To restore the network server configuration and validation list objects, use the Restore Object (RSTOBJ) command:

1. On the i5/OS command line, type RSTOBJ and press F4.
2. If you are restoring from save media, ensure that you have mounted your media.
3. In the **Objects** field, specify the name the network server configuration. (If you want to restore multiple NWSCFGs, enter the generic names "nwsdname\*". You can also explicitly identify the object names by typing + and press Enter.) v To restore the default connection security network sever configuration, specify the name of the NWSD followed by CN. v To restore the default service processor network sever configuration, specify the name of the NWSD followed by SP. v To restore the default remote system network sever configuration, specify the name of the NWSD followed by RM.
4. In the **Save Library** field, specify QUSRSYS.
5. In the **Device** field, specify either the name of the device that contains the save media or specify \*SAVF if you are restoring from a save file.
6. In the **Object types** field, specify both \*NWSCFG and \*VLDDL.
7. If you are restoring from a save file, specify the name and library for the save file.
8. Press Enter to restore the network server configuration and associated validation list.

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