C H A P T E R   3
Windows NT and Windows 2000 SAN Configurations

This chapter provides an example of a Windows NT and Windows 2000 SAN configuration and provides high-level installation instructions for installing the Windows SAN with either PowerVault 650F and 651F storage systems or the 660F storage system.

NOTE: For information about the PowerVault 530F SAN appliance, see Chapter 5, "Dell PowerVault 530F SAN Appliance Configurations."

Windows NT or Windows 2000 SAN

Figure 3-1 shows an example of a Windows NT or Windows 2000 SAN configuration with 20 Windows NT or Windows 2000 servers. Installation procedures for a Windows SAN vary depending on whether it includes the 650F and 651F or the 660F.

To install and configure the 650F or 651F in a Windows SAN, you should use the following management software:

- Dell OpenManage Data Managed Node
- Dell OpenManage Data Administrator or Dell OpenManage Data Supervisor
- Dell OpenManage Application Transparent Failover (ATF)
- Dell OpenManage Storage Consolidation
- QLogic Fibre Channel Configuration Utility

To install and configure the 660F in a SAN, you need to use the following software:

- QLogic QLDirect
- QLogic Fibre Channel Configuration Utility
- Dell OpenManage Array Manager

  You do not need Dell OpenManage Hardware Instrumentation Package (HIP) if Array Manager is used to manage only servers with Fibre Channel HBAs. However, if Array Manager is used to manage servers with PERC RAID controllers, you must install HIP on the management station before installing Array Manager.
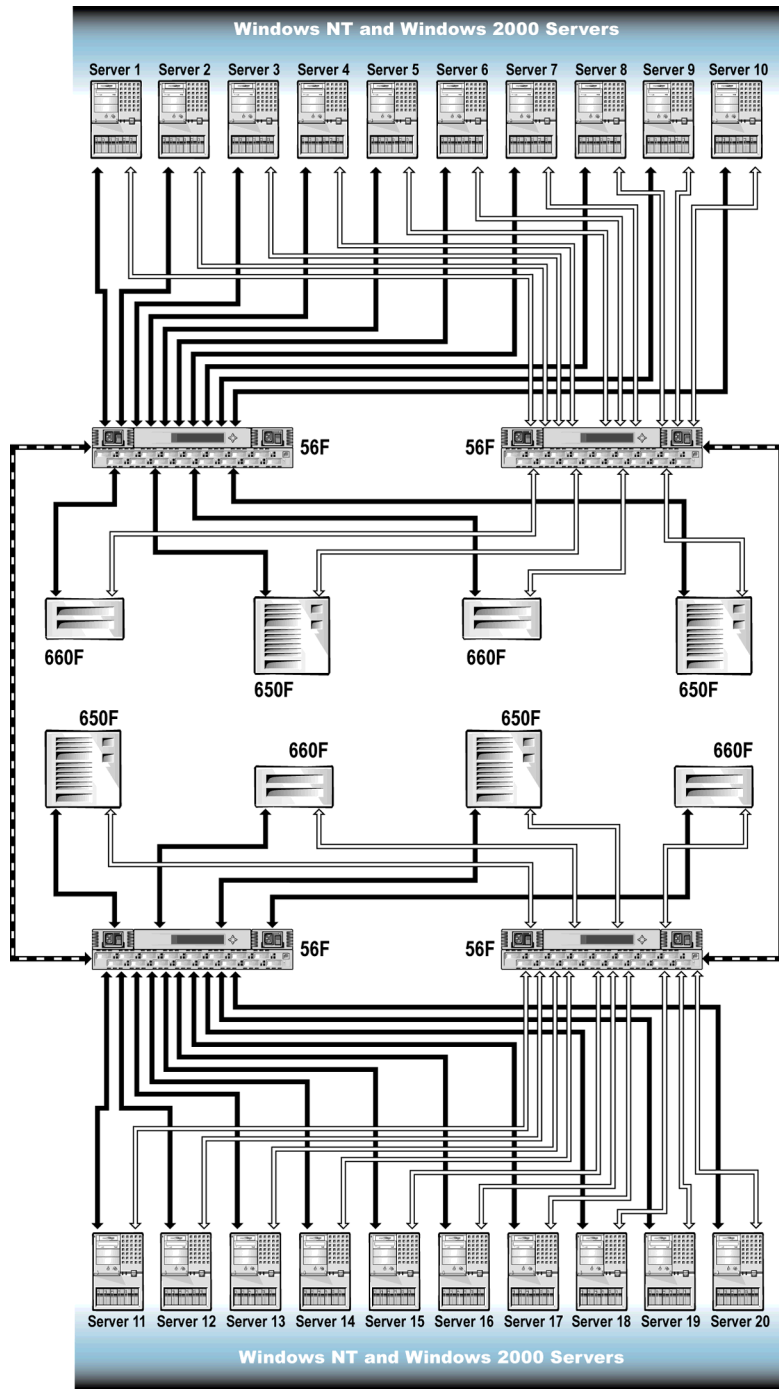
- Dell OpenManage Storage Consolidation

Figure 3-1. Windows NT and Windows 2000 20-Server SAN Sample Configuration

High-Level Installation Instructions for a Windows NT or Windows 2000 SAN

When installing a SAN, you must perform some procedures that are common to all devices and some that vary depending on your SAN configuration.

NOTE: Ensure that all of your SAN components have the latest firmware and software installed on them. For information about updating your software and firmware, see Chapter 9, "Upgrading Your Dell PowerVault Fibre Channel Software and Firmware."

1. For all of the following devices, unpack and install all hardware (including mounting in the rack; see the *Rack Installation Guide* that came with your system), and connect AC power and LAN cables, but do *not* connect any SAN cables. For installation instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

    *   PowerVault 50F, 51F, and 56F Fibre Channel switches
    *   PowerVault 650F, 651F, and 630F storage arrays and all PowerVault 660F and 224F storage systems
    *   PowerVault 120T autoloaders
    *   PowerVault 130T libraries
    *   PowerVault 35F Fibre Channel bridges

2. For all servers, perform the following steps.

NOTICE: Do not connect any SAN cables at this time. If you do, you will be unable to complete the installation. You will have to disconnect the SAN cables and perform the installation procedure again.

    a. Unpack and install all hardware (including mounting in the rack; see the *Rack Installation Guide* that came with your system), and connect AC power and LAN cables, but do not connect any SAN cables. For instructions, see the server documentation.

    b. Install the operating system. For instructions, see the operating system documentation.

    c. Install all Fibre Channel host bus adapters (HBAs). For instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

    d. Install QLogic drivers and the BIOS, and set the execution throttle. For instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

    e. Install the QLogic Fibre Channel Configuration Utility. For instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

     f.   Install Dell OpenManage Storage Consolidation. For instructions, see Chapter 11, "Installing, Configuring, and Removing Microsoft Windows SAN Software Components."

     g.   Install failover software on all servers. The software must be installed in the following order if the server uses both types of storage systems.

          1.   Install Dell OpenManage ATF on all servers to which 650F or 651F LUNs will be assigned. For instructions, see Chapter 11, "Installing, Configuring, and Removing Microsoft Windows SAN Software Components."

          2.   Install QLDirect on all servers to which 660F LUNs will be assigned. For instructions, see Chapter 11, "Installing, Configuring, and Removing Microsoft Windows SAN Software Components."

3. Connect all SAN cables.

     a.   Connect all switches.

     b.   Connect all servers.

     c.   Connect all storage array(s).

     d.   Connect all bridge(s).

4. Reboot all servers.

5. If you are using a PowerVault 660F, set the failover path in the QLogic Fibre Channel Configuration Utility on the servers that are to be assigned 660F LUNs, and reboot the server. (Windows 2000 will require an additional reboot when it discovers new devices.) For instructions, see "Configuring QLconfig to Set Primary and Secondary Failover Paths for the 660F" in Chapter 11.

6. Install LUN management software on all servers.

- On one or two of the servers (two are recommended for redundancy) to which 650F or 651F LUNs will be assigned, install Data Managed Node and either Data Supervisor or Data Administrator. For instructions, see Chapter 11, "Installing, Configuring, and Removing Microsoft Windows SAN Software Components."

- On one of the servers to which 660F LUNs will be assigned, install Dell OpenManage Array Manager. For instructions, see Chapter 11, "Installing, Configuring, and Removing Microsoft Windows SAN Software Components."

NOTE: You need to install Data Managed Node for 650F and 651Fs and Dell OpenManage Array Manager for 660Fs on only one server per zone.

7. Bind or create LUNS.

- Bind LUNs in the 650F and 651Fs. For instructions, see "Managing LUNS in PowerVault 650F, 651F, and 630F Storage Systems" in Chapter 14 or see the *Dell OpenManage Data Supervisor, Event Monitor, and Integrator Installation and Operation* guide or the *Dell OpenManage Data Administrator Installation and Operation Guide*.

- Create virtual disks in the 660Fs. For instructions, see "Managing LUNs" in Chapter 14 or see the *Dell OpenManage Array Manager User's Guide*.

8. Reboot all servers after all LUNs have transitioned to owner status and you have verified their status by using Dell OpenManage Data Supervisor or Dell Open-Manage Data Administrator for 650Fs and 651Fs or Dell OpenManage Array Manager for 660Fs.

9. Assign LUNs and virtual disks to servers by using Dell OpenManage Storage Consolidation. For instructions, see the *Dell OpenManage Storage Consolidation User's Guide*.

10. Install all system management software. For instructions, see Chapter 16, "Configuring SAN Management Applications."

11. Install selected SAN tape backup software. For instructions, see the software documentation.

12. Check and, if needed, update all firmware levels for the following components. For additional information, see Chapter 9, "Upgrading Your Dell PowerVault Fibre Channel Software and Firmware" or see the suggested documentation.

- All PowerVault 50F, 51F, and 56F Fibre Channel switches — For information about determining the firmware levels, see the documentation that came with your switch.

- All PowerVault 650F, 651F, and 630F storage arrays — For information about determining the firmware levels, see the *Dell OpenManage Data Supervisor, Event Monitor, and Integrator Installation and Operation* guide. For installation instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

- All PowerVault 660F storage systems — For installation instructions, see the *Dell OpenManage Array Manager User's Guide*.

- All hard-disk drives in your storage systems — For information, see the *Dell PowerVault Fibre Channel Utilities CD* or the **File Library** at **http://support.dell.com**.

- All PowerVault 120T autoloaders — For instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

- All PowerVault 130T libraries — For instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

- All PowerVault 35F Fibre Channel bridges — For instructions, see Chapter 10, "Installing and Configuring Hardware Devices in a Windows SAN."

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