adic

Scalar® Distributed Library Controller

Installation Guide

Document Number: 6-00659-02

Version 2.5

Scalar DLC

Contents

About This Guide

This document cover the install and upgrade instructions for the release of Scalar Distributed Library Controller[1], Version 2.5.

The topics are:

- **Scalar DLC CD-ROM Contents on page 2** shows the Scalar DLC CD.

- **Scalar DLC System Overview on page 4** shortly describes the Scalar DLC system.

- **Setting Up the Basic Solution on page 7** and **Setting Up the Cluster Solution on page 14** describes the Scalar DLC hardware and software setup order.

- **Installing the Scalar DLC on page 47** contains the instructions about the Scalar DLC software installation.

- **Installing DAS Client on page 66** contains the instructions about the DAS Client (dasadmin) software installation.

- **Installing the SCSI/FC Target Drivers on page 71** contains the instructions about the SCSI and Fibre Channel Target Mode Drivers installation.

- **Add/Remove Scalar DLC Software on page 77** contains the instructions about modify and remove the Scalar DLC software.

- **Upgrading the Scalar DLC on page 83** describes the Scalar DLC upgrade process.

- **Renaming and Repair on page 91** contains the detailed instructions on repair the Scalar DLC after the host/cluster is renamed and/or reconfigured.

- **Securing the Scalar DLC on page 96** holds the information on existing methods of securing the Scalar DLC.

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1. Scalar Distributed Library Controller is a trademark of ADIC. Throughout the remainder of this document, we refer to the Scalar Distributed Library Controller software as Scalar DLC.

Scalar DLC CD-ROM Contents

To launch the autostart program, load the CD-ROM in the CD-ROM drive. If the autostart program does not launch, use the *Run* option from the **Start** button on the task bar to execute the *autorun.exe* program.

NOTE: If autostart does not run, locate *autorun.exe* on the CD-ROM and execute the program.

See the figure below for the autostart screen.

Figure 1   Autostart Screen
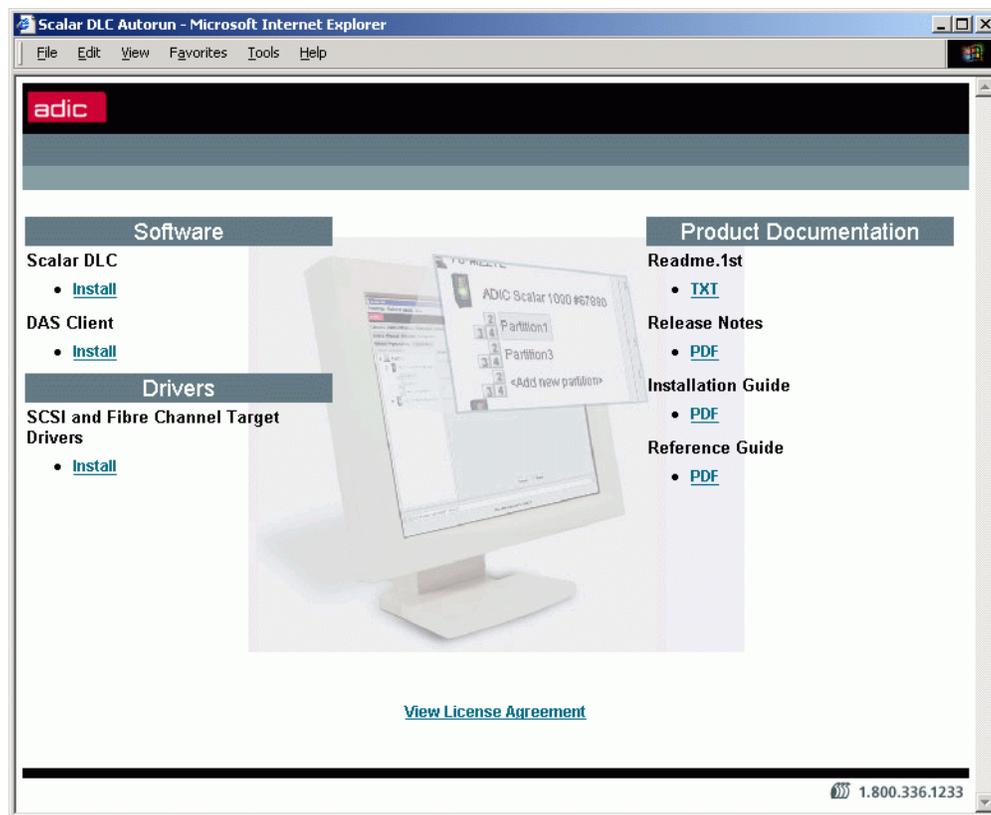
Table 1   Autorun Selection

Link	Action	Explanation
Install software packages	Supplied	Launch the installation of appropriate software package.
Scalar DLC	Click-to-install	Start **Installing the Scalar DLC on page 47**.
DAS Client	Click-to-install	Start installation of DAS Client (dasadmin) software. Refer to **Installing DAS Client on page 66**.
Install Drivers	Supplied	Launch the installation of appropriate drivers.

Table 1   Autorun Selection

Link	Action	Explanation
SCSI and Fibre Channel Target drivers	Click-to-install	Start the installation of Target drivers for SCSI and Fibre Channel adapters. Refer to **Installing the SCSI/FC Target Drivers on page 71**.
View product documentation	Supplied	Open the product documentation.
Readme.1st	Click-to-open (txt)	The last-minute-information about current release of Scalar DLC software.
Release Notes	Click-to-open (PDF)	The notes on current Scalar DLC release. Refer to *Release Notes*.
Installation Guide	Click-to-open (PDF)	The manual on install and upgrade the Scalar DLC.
Reference Guide	Click-to-open (PDF)	The main Scalar DLC document. Refer to *Reference Guide.*
View License Agreement	Click-to-open (htm)	The ADIC Scalar DLC license agreement.

The Adobe Acrobat Reader ver. 4.0 or higher is required to view the documentation in PDF form. The most recent version of the required software can be downloaded from the Adobe web site at http://www.adobe.com.

Scalar DLC System Overview

The Scalar DLC software runs as a service under Windows 2000. It serves as a centralized library management tool that simplifies and automates the tracking and management of all system resources for optimal performance and maximum availability. The Scalar DLC software provides network and Systems Administrators with a Java-based interface that allows library monitoring from anywhere on the Web [1]. It also allows administrators to select parameters that define which library events provide notifications to customers and ADIC Technical Assistance Center (ATAC) via email and Simple Network Management Protocol (SNMP) alerts.

The main working tool of the Scalar DLC software is the Management GUI. All the actions of management and configuration are executed via this tool. Refer to the *Scalar DLC Reference Guide* for the details.

Figure 2 and **Figure 3 on page 5** illustrate the structure of Scalar DLC system.

Figure 2   Scalar DLC Structure

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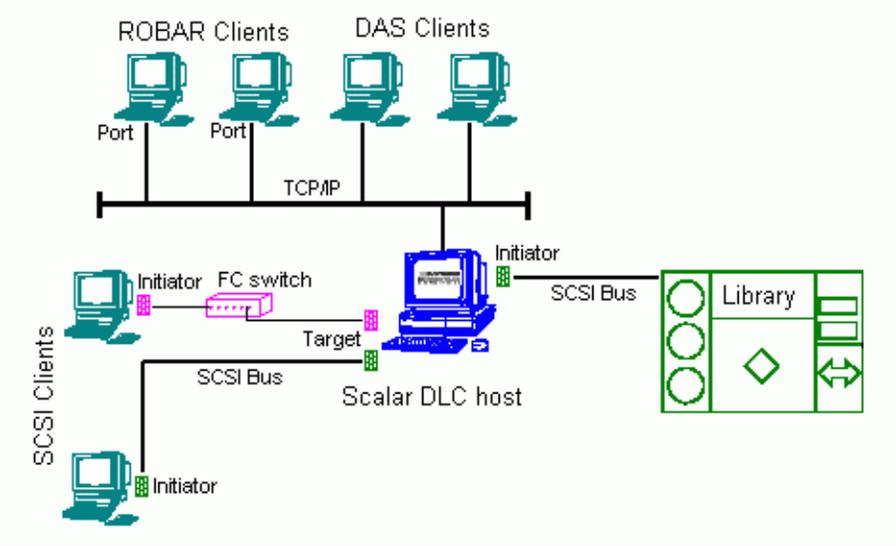
1. If a firewall is being used, outside access by Web browsers might be denied.

Figure 3   Scalar DLC Components
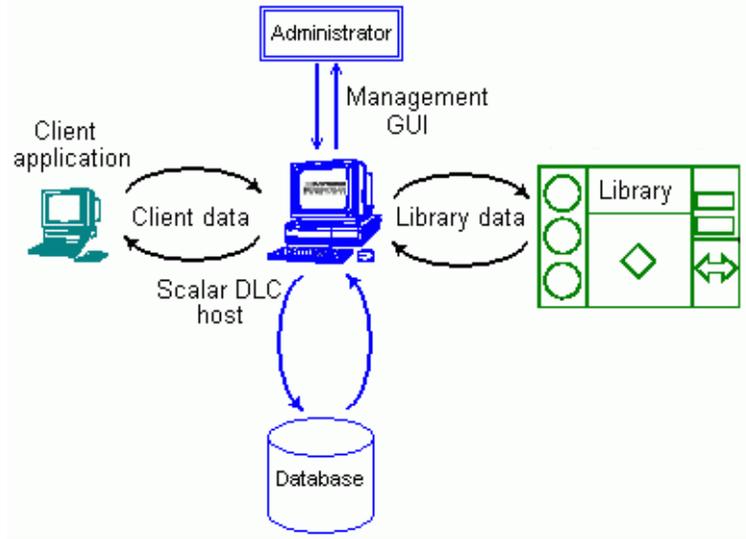
The *client* (user/backup application) sends the request/command to the *Scalar DLC host* (server) via the client interface. Depending on the request, the Scalar DLC either should search the information in the *database* and send the response back to the client, or transfer the command to the *library* via the library interface. After the library has executed the requested operation, the response is sent back to the Scalar DLC indicating that the operation was executed. The Scalar DLC server updates the database according to the information received from the library and transfers the response (operation executed) back to the client. The *Management GUI* serves as the configuration tool to create a working configuration for clients, and also as the monitoring tool for the *Administrator* when it is necessary to watch the system activity.

The details for using Management GUI and other tools of the Scalar DLC software are described in the *Scalar DLC Reference Guide*.

Scalar DLC Solutions

According to the customer requirements, the Scalar DLC can provide a basic (standard) solution or a cluster (failover) solution. Depending on the library used by the customer, the solution and system configuration should be selected, as shown in **Table 2**.

Table 2   Libraries and Solutions

Library	Scalar DLC Solution
Scalar 1000	Basic, Cluster
Scalar 10K	Basic, Cluster
Scalar 10K DA	Cluster (Basic is possible only as an exception)

Basic Solution

The Scalar DLC Basic (standard) solution keeps all Scalar DLC components (server, database) on a single PC that is connected to the library and both client(s). The client can work with the library when the Scalar DLC software is started and the library is online.

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The Scalar DLC standard solution requires a single PC, the library, and the interface cables to provide the connection between PC (Scalar DLC host) and library.

For the requirements and installation instructions, refer to **Setting Up the Basic Solution on page 7**.

Cluster Solution

The Scalar DLC Cluster (failover) solution is provided for the clients using the Microsoft Cluster service. This solution allows the user to have a shared disk with the Scalar DLC database and two hosts containing the installed components of Scalar DLC software; for the redundancy reasons, one host is online and the other is offline. If an error occurs and the online Scalar DLC host turns offline, the other host should immediately go online, so the user may not even notice there has been a problem with the host, and the customer engineer can work under the problem host without stopping the work of Scalar DLC software.

The Scalar DLC failover solution requires two identical PCs, a RAID system, the library, and the interface cables to provide the connections between PCs (Scalar DLC hosts), RAID (shared database), and library.

For the requirements and installation instructions, refer to **Setting Up the Cluster Solution on page 14**.

Setting Up the Basic Solution

The Scalar DLC standard solution can be installed on any Windows 2000-based system.

- Check the system requirements. Depending on the tape device used with the Scalar DLC, **Single-aisle Requirements on page 7** is for the single-aisle library, and **Dual-aisle Requirements on page 8** is for the dual-aisle library.

- Follow the **Setup Roadmap on page 9** to set up the Scalar DLC.

Single-aisle Requirements

The following is a list of hardware requirements.

- A single PC described in the Microsoft PC 2000 System Design Guide Specifications:

  - 800 MHZ or faster Inter Pentium ^{TM} or equivalent CPU (minimum 4 free PC slots in chassis).

  - 256K L2 Cache.

  - 256 MB RAM.

  - Dual matched Hard Drives (10 Gb or more).

  - CD RW.

  - 3.5" Diskette Drive.

  - 15" or greater SVGA Display.

  - Standard keyboard & mouse.

  - 1 Ethernet 100 Mb adapter (network connection).

  - NT/2000 compliant LVD/HVD SCSI initiator adapter (library connection).

⚠️ **CAUTION:** **Do not use anteries (brand) SCSI adapters that do not allow setting reset on startup.**

- 1 middle length (2-3 m) SCSI cable (68 pins) for the library connection.

- TCP/IP subnet mask and network name. Contact the local network administrator for the details.

Figure 4   Scalar DLC Basic Solution: Single-aisle
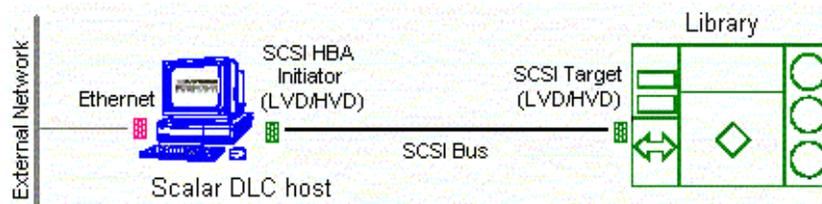
The following hardware (not shown on the scheme) is optional.

- SCSI/FC target adapter(s)

• Appropriate SCSI/FC cable(s)

• Fibre Channel switch

• SNC

Dual-aisle Requirements

NOTE: Although it is not recommended to use DA libraries in a Scalar DLC standard solution, this configuration is possible.

The following is a list of hardware requirements.

• A single PC described in the Microsoft PC 2000 System Design Guide Specifications:

    • 800 MHZ or faster Inter Pentium ^{TM} or equivalent CPU (minimum 4 free PC slots in chassis).

    • 256K L2 Cache.

    • 256 MB RAM.

    • Dual matched Hard Drives (10 Gb or more).

    • CD RW.

    • 3.5" Diskette Drive.

    • 15" or greater SVGA Display.

    • Standard keyboard & mouse.

    • 1 Ethernet 100 Mb adapter (network connection).

    • NT/2000 compliant LVD/HVD SCSI initiator adapter (library connection).

CAUTION: **Do not use anteries (brand) SCSI adapters that do not allow setting reset on startup.**

• 1 middle length (2-3 m) SCSI cable (68 pins) for the library connection.

• 1 middle length (4-5 m) SCSI cable (68 pins) for the aisle connection.
  The total length of two SCSI cables required for the dual-aisle library connection (see **Figure 5**) must not exceed 12 m for LVD adapters and 25 m for HVD adapters.

• 2 SCSI Y-block connectors (Y-cable) to terminate the SCSI Bus.

• 1 SCSI Terminator, LVD/HVD for the library connection.

• TCP/IP subnet mask and network name. Contact the local network administrator for the details.

Figure 5   Scalar DLC Basic Solution: Dual-aisle
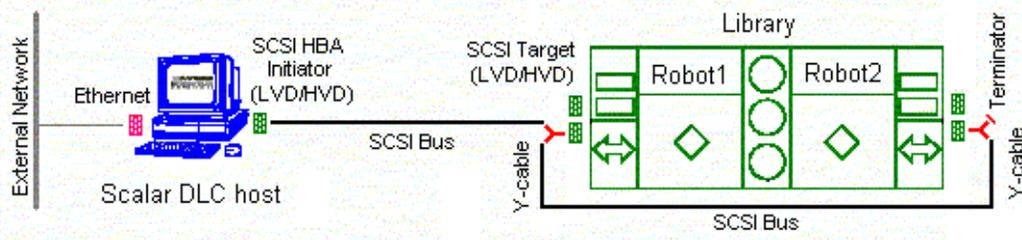
The following hardware (not shown on the scheme) is optional.

- SCSI/FC target adapter(s)

- Appropriate SCSI/FC cable(s)

- Fibre Channel switch

- SNC

Setup Roadmap

Complete the following steps to set up the basic solution.

1. **Set Up the PC on page 9**.

2. **Set Up the Library on page 9**.

3. **Install the Scalar DLC Software on page 11**.

4. **Configure the Logical Library on page 11**.

For the optional additional activity, refer also to **Use Old Database on page 11**, **Build Client Connections on page 12**, and **SNC Usage on page 13**.

Set Up the PC

Step 1   Connect the PC to a local network. Install Windows 2000. Resolve the network name and TCP/IP. Join the PC to the domain, if required.

Step 2   Install all required software services (for example, antivirus packages and firewall). Install all required device drivers (for example, initiator SCSI and RAID). Install the latest Microsoft Service Pack (SP4 for Win2000 is required).

Step 3   When the operation system is installed successfully, reboot and be sure all services work correctly.

NOTE: Unplug the target card SCSI cable if the server has trouble booting (may be a termination problem).

Set Up the Library

Step 1   Set up the library according to the media that will be used.

- For the 6-symbols barcode, set the Media ID to *disabled*. The library cannot determine different media of a single domain (for example, DLT IV or SDLT), so the media type-default-by-domain will be assigned (for example, all DLT media will be recognized as DLT IV). Refer to the library *Operator Guide* for the details.

⚠️ **CAUTION:** **Do not use different media of a single domain in this type of library. A hardware crash is otherwise possible.**
A hardware crash is also possible if the default media type is not properly resolved (for example, DLT media resolved as DLT IV, but the real cartridges are DLT III).

- For the 7-symbols barcode, set the Media ID to *enabled*. The library scanner will read the media type directly from barcode. Use the library Operator panel, *Main > Setup > Library > Media*, then set:

  - Volser: MEDIA ID

  - Add ID: N

  - Mixed: Y

  - Extend: N

  - ASCQ: N

Step 2 Connect the library and resolve the SCSI ID

- For single-aisle (Scalar 1000, Scalar 10K):

  1. Connect the SCSI cable to the respective LVD/HVD controller 1 of the library and to the Scalar DLC SCSI HBA card.

⚠️ **CAUTION:** **Make sure to install the proper voltage SCSI connections (refer to Table 18 on page 73).**

  2. Set the SCSI ID: On the library Operator panel, *Main > Setup > Library > SCSI > Target ID*, then set the SCSI ID.
     The adapter SCSI ID must not overlap with library SCSI ID.

  3. On the PC, launch *My Computer > Manager> Device Manager* to verify that the Windows 2000 machine can see the Library "Media Changer".

- For Dual-aisle (Scalar 10K DA):

  1. Plug Y-block connector with LVD/HVD-terminator to LVD/HVD controller 1 of the Robot 2.

  2. Plug the Y-block connector to LVD/HVD controller 1 of the Robot 1.

  3. Connect two Y-block connectors of Robot 1 and Robot 2 with the SCSI cable.

  4. Connect the free connector of Y-block connector at Robot 1 and the Scalar DLC SCSI HBA card with the SCSI cable.

> ⚠️ **CAUTION:** **Make sure to install the proper voltage SCSI connections (refer to Table 18 on page 73).**

5. Set the SCSI ID for Robot 1 using the Operator panel on Robot 1 (*Main > Setup > Library > SCSI > Target ID*, then set the SCSI ID).

6. Set the SCSI ID for Robot 2 using the Operator panel on Robot 2 (*Main > Setup > Library > SCSI > Target ID*, then set the SCSI ID).
The adapter SCSI ID must not overlap with library SCSI IDs.

7. On the PC, launch *My Computer > Manager > Device Manager* to verify that the Windows 2000 machine can see two Library "Media Changers".

Step 3 Make sure that the created scheme matches the example (**Figure 4 on page 7** for a single-aisle library, and **Figure 5 on page 9** for a dual-aisle library).

Install the Scalar DLC Software

Step 1 Log in as administrator or as a domain user with the local administration rights.

Step 2 Install the Scalar DLC software with all required components (refer to **Installing the Scalar DLC on page 47**).

Configure the Logical Library

Step 1 Log in as administrator or as a domain user with the local administration rights and start the Scalar DLC software if it is not started automatically.

Step 2 Double click the **Scalar DLC Manager** icon to start the Scalar DLC Management GUI from a local computer. From a remote computer, use **http://ScalarDLC-machine-name** in current browser.

Step 3 The first start of the Scalar DLC Management GUI launches the configuration engine. Select either the Automatic or Manual configuration option to configure the logical library automatically, or Advanced configuration option in case of more then one logical library should be created. Refer to the *Configuration* chapter of the *Scalar DLC Reference Guide* for the instructions.

Use Old Database

If the customer has worked with the older version of the Scalar DLC software and he wants to import the database content to the new version, an upgrade must be performed. The table below should be used to select the correct upgrade method.

Table 3 Basic Mode: Database Upgrade Methods

Old Database Version	Old Scalar DLC Solution	Preferable Upgrade Method
2.1	Basic	**Advanced Upgrade on page 88**.
2.2	Basic	**Advanced Upgrade on page 88**.
2.3	Basic	**Advanced Upgrade on page 88**.
	Cluster	**Advanced Upgrade on page 88**.

Table 3 Basic Mode: Database Upgrade Methods

Old Database Version	Old Scalar DLC Solution	Preferable Upgrade Method
2.4	Basic	**Simple Upgrade on page 83**.
	Cluster	**Advanced Upgrade on page 88**.
2.5	Basic	**Simple Upgrade on page 83**.
	Cluster	**Advanced Upgrade on page 88**.

NOTE: The *Advanced Upgrade* can be used always, however sometimes it is possible to use the *Simple Upgrade* method.

Build Client Connections

The following activity is required for the clients to connect to the Scalar DLC software installed as the basic solution.

DAS

Install the DAS Client software on the client PC. Use the common Scalar DLC host name as DAS_SERVER value on the client host. Refer to **Installing DAS Client on page 66**.

If a firewall exist between client and Scalar DLC host, the DAS/ACI Firewall should be installed either on PC in a Scalar DLC host domain or directly on the Scalar DLC PC.

Ensure that there is valid TCP/IP connection between client and server, and proceed the work.

SCSI

In the Basic configuration, additional hardware requirements exist for the SCSI clients based on SCSI connection:

- 1 SCSI Target Adapter, as described in **Table 18 on page 73**.
- 1 middle length (2-3 m) SCSI cable (68 pins) (client connection)

Be sure that the client connection scheme matches the example (see **Figure 6**).

Figure 6 Basic: SCSI Client Connection
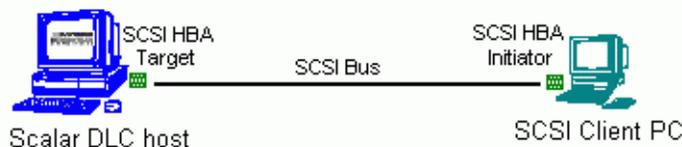
In the Basic configuration, additional hardware requirements exist for the SCSI clients based on Fibre Channel connection:

- 1 FC Target Adapter, as described in **Table 18 on page 73**.
- FC switch
- 1 FC cable (client connection)

Be sure that the client connection scheme matches the example (see **Figure 7 on page 13**). The fibre channel target adapter(s) should operate in the basic mode; this option is set up via the SCSI Target Port tool.

Figure 7   Basic: Fibre Channel Client Connection
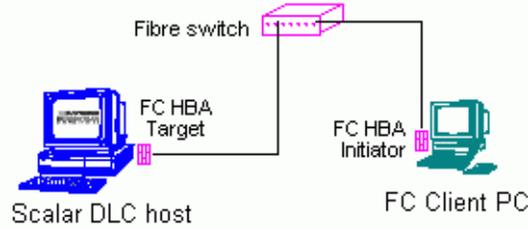
ROBAR

Install the ROBAR Client software on the client PC. If the HCC/MVS software is used, configure it, too, and set the appropriate ROBAR Client parameters in the Management GUI. Be sure that a valid ROBAR port is specified. The details are described in *Reference Guide, GUI Tabs* chapter, *ROBAR* and *ROBAR Client* sections

SNC Usage

Usually the library use SCSI to connect to the Scalar DLC host. However this interface has the distance limitations: depending on the SCSI adapter used the SCSI cable length cannot exceed the sencebility limit (refer to **Table 18 on page 73**). That limitation may cause problems.

The additional SNC hardware can be used in order to remove the distance limitations. Build the connections as it is shown on one of the pictures below, configure the SNC ports, and the Scalar DLC PC (working via the Fibre Channel HBA initiator) can be placed as far from the library as it is required.

NOTE: The SNC configuration instructions are described in the *SNC User Manual*.

Figure 8   Basic: SNC with the single-aisle
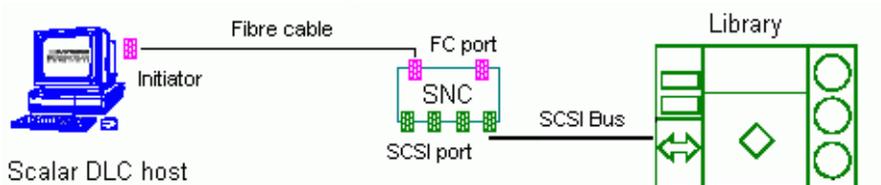
Figure 9   Basic: SNC with dual-aisle
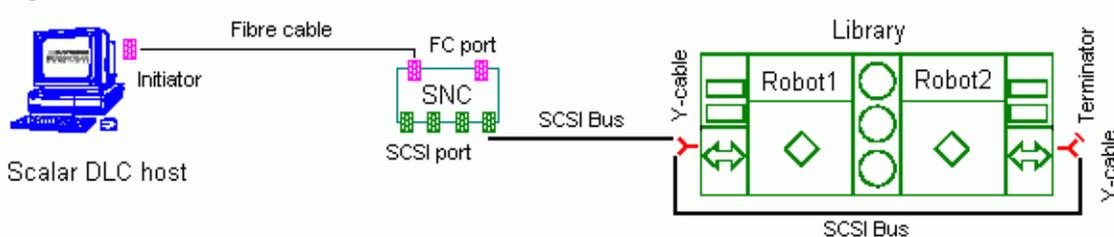
CAUTION: **Wheh the Scalar DLC host PC is restarted the SNC must be restarted, too. Refer to SNC Issues on page 76.**

Setting Up the Cluster Solution

The Scalar DLC cluster solution can be installed only on a Windows 2000 Advanced Server because it uses the Microsoft Cluster Service that is not available under Windows 2000 Professional or Windows 2000 Server.

- Check the system requirements. Depending on the tape device used with the Scalar DLC, **Single-aisle Requirements on page 14** is for the single-aisle library, and **Dual-aisle Requirements on page 15** is for the dual-aisle library.

- Follow the **Setup Roadmap on page 17** to set up the Scalar DLC.

Single-aisle Requirements

The minimum PC system hardware requirements are based on Microsoft PC 2000 System Design Guide Specifications.

- Two PC with identical hardware and software:

    - 800 MHZ or faster Inter Pentium ^{TM} or equivalent CPU (minimum 4 free PC slots in chassis).

    - 256K L2 Cache.

    - 256 MB RAM.

    - Dual matched Hard Drives (10 Gb or more).

    - CD RW.

    - 3.5" Diskette Drive.

    - 15" or greater SVGA Display.

    - Standard keyboard & mouse.

    - 2 Ethernet 100 Mb adapters (network connections).

    - NT/2000 compliant LVD SCSI initiator adapter, RAID connection

    - NT/2000 compliant LVD/HVD SCSI initiator adapter, library connection.

⚠️ **CAUTION:** **Do not use anteries (brand) SCSI adapters that do not allow setting reset on startup.**

- 1 ArrayMasStor J or G Series ADTX RAID System.

- 1 Network cross cable (twisted-pair) (~1 m), for the internal cluster network.

- 2 short (~1 m) SCSI cables (68 pins), for the RAID connections.

- 2 middle length (2-3 m) SCSI cable (68 pins), for the library connections.

- 2 Y-Block connectors (Y-cables) to terminate the SCSI Bus on RAID.

- 2 Y-Block connectors to terminate the SCSI Bus on library.

- 2 LVD SCSI Terminators for the RAID connections.

- 2 LVD/HVD SCSI Terminators for the library connections.

- TCP/IP subnet masks and network names for both cluster nodes and the cluster itself. Only the *static* IP can be used for the cluster. Contact the local network administrator for the details.

> ⚠️ **CAUTION:** **The hardware configuration of both cluster nodes must be identical, and they must remain identical. For example, all cards/adapters must be identical and need to be placed in identical slots.**

Figure 10   Scalar DLC Cluster Solution: Single-aisle
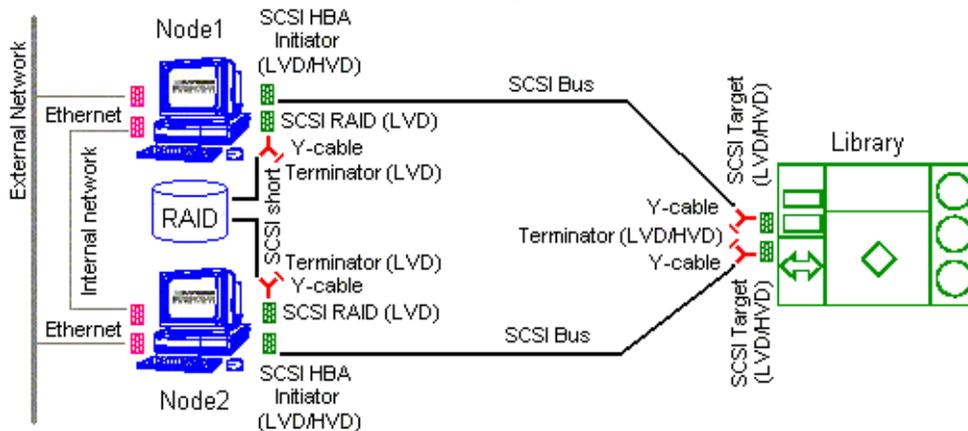
The following hardware (not shown on the scheme) is optional.

- SCSI/FC target adapter(s)

- Appropriate SCSI/FC cable(s)

- Fibre Channel switch

- SNC

Dual-aisle Requirements

The minimum PC system hardware requirements are based on Microsoft PC 2000 System Design Guide Specifications.

- Two PCs with identical hardware and software:

- 800 MHZ or faster Inter Pentium ^{TM} or equivalent CPU (minimum 4 free PC slots in chassis).

- 256K L2 Cache.

- 256 MB RAM.

- Dual matched Hard Drives (10 Gb or more).

- CD RW.

- 3.5" Diskette Drive.

- 15" or greater SVGA Display.

- Standard keyboard & mouse.

- 2 Ethernet 100 Mb adapters (network connections).

- NT/2000 compliant LVD SCSI initiator adapter, RAID connection.

- NT/2000 compliant LVD/HVD SCSI initiator adapter, library connection.

⚠ **CAUTION:** **Do not use anteries (brand) SCSI adapters that do not allow setting reset on startup.**

- 1 ArrayMasStor J or G Series ADTX RAID System.

- 1 Network cross cable (twisted-pair) (~1 m), for the internal cluster network.

- 2 short (~1 m) SCSI cables (68 pins), for the RAID connections.

- 2 middle length (2-3 m) SCSI cable (68 pins), for the library connections.

- 2 middle length (4-5 m) SCSI cable (68 pins), for the aisle connections.
  The total length of two SCSI cables required for the dual-aisle library connection (see **Figure 11 on page 16**) must not exceed 12 m for LVD adapters and 25 m for HVD adapters.

- 2 Y-Block connectors (Y-cables) to terminate the SCSI Bus on RAID.

- 4 Y-Block connectors to terminate the SCSI Bus on library.

- 2 LVD SCSI Terminators for the RAID connections.

- 2 LVD/HVD SCSI Terminators for the library connections.

- TCP/IP subnet masks and network names for both cluster nodes and the cluster itself. Only the *static* IP can be used for the cluster. Contact the local network administrator for the details.

⚠ **CAUTION:** **The hardware configuration of both cluster nodes must be identical, and they must remain identical. For example, all cards/adapters must be identical and need to be placed in identical slots.**

Figure 11   Scalar DLC Cluster Solution: Dual-aisle
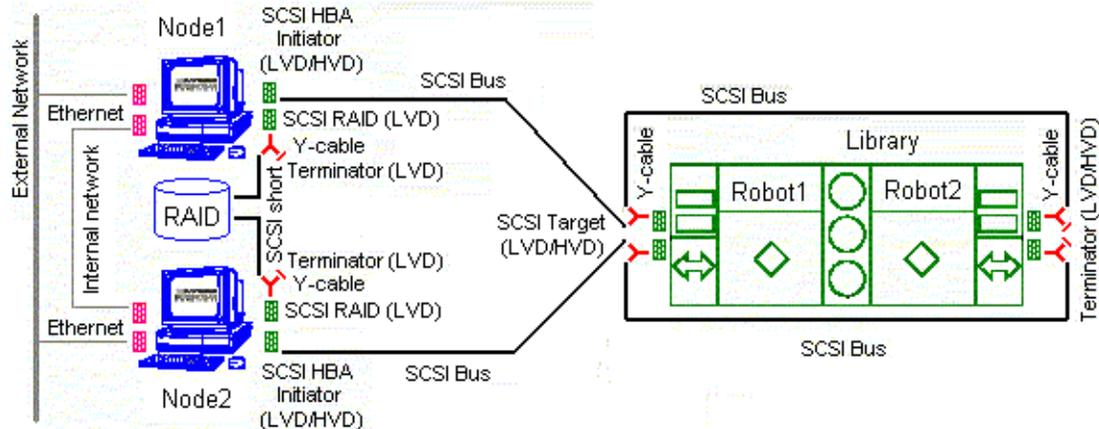
The following hardware (not shown on the scheme) is optional.

- SCSI/FC target adapter(s)

- Appropriate SCSI/FC cable(s)

- Fibre Channel switch

- SNC

Setup Roadmap

Complete the following steps to set up the cluster solution.

1. **Set Up the PCs on page 17**.

2. **Set Up the Library on page 18**.

3. **Install OS and Configure RAID on page 20**.

4. **Configure the Cluster on page 30**.

5. **Install the Scalar DLC Software on page 39**.

6. **Configure the Logical Library on page 42**.

For the optional additional activity, refer also to **Use Old Database on page 42**, **Build Client Connections on page 43**, **Install SCSI/FC Target Cards on a Live Machine on page 44**, and **SNC Usage on page 45**.

Set Up the PCs

Step 1   Build the RAID SCSI connection.

      a. Plug Y-cable with LVD-terminator to the LVD adapter of Node 1.

      b. Link the free connector of the Y-cable and the SCSI connector of the RAID disk with the short SCSI cable.

      c. Plug the Y-cable with the LVD-terminator to the LVD adapter of Node 2.

      d. Link the free connector of the Y-cable and the remaining SCSI connector of the RAID disk with the short SCSI cable.

⚠ **CAUTION:**   **Make sure to install the proper voltage SCSI connections (refer to Table 18 on page 73).**

Step 2   Resolve the RAID SCSI IDs.

      a. Determine the RAID adapter SCSI ID by using the operation buttons (up/down) on the RAID front panel (this is typically SCSI ID 0). If it is NOT zero, set the ID to zero.

      b. Enter the LVD SCSI BIOS Setup on Node 1 for the adapter connected to the RAID.

          - Set *termination* mode to *disable*

          - Set *Reset SCSI Bus* parameter *off*

          - Set "*Start Unit*" command to *off*

          - Set the "*Include in BIOS Scan*" to YES or ON

- Set the SCSI ID of this board to 1

c. Enter the LVD SCSI BIOS Setup on Node 2 for the adapter connected to the RAID.

- Set *termination* mode to *disable*

- Set *Reset SCSI Bus* parameter *off*

- Set "*Start Unit*" command to *off*

- Set the "*Include in BIOS Scan*" to NO or OFF

- Set the SCSI ID of this board to 2

> **NOTE:** Both adapters must have different SCSI IDs.
>
> Adapter IDs must not overlap with the RAID SCSI ID.
>
> The Adapter ID numbers used above assume that the RAID SCSI ID is ZERO. Any number can be used as long as it follows rules described above

Step 3 Connect both PCs (Node 1 and Node 2) to a local network.

a. For Internal (cluster) network - connect the Ethernet network adapters (for internal network) of Node 1 and Node 2 with the network cross-cable (twisted pair).

b. External network - connect the remaining network adapters to the external network. Both Cluster nodes must be connected to a domain server.

Set Up the Library

Complete the following steps to connect both PCs (Node 1 and Node 2) to the library.

Step 1 Set up the library according to the media that will be used.

- For the 6-symbols barcode, set the Media ID to *disabled*. The library cannot determine different media of a single domain (for example, DLT III or SDLT) and the media type-default-by-domain will be set (for example, all DLT media will be recognized as DLT III). Refer to the library *Operator Guide* for the details.

> **CAUTION:** **Do not use different media of a single domain in this type of library. A hardware crash is otherwise possible.**
> **A hardware crash is also possible if the default media type is not properly resolved (for example, DLT media resolved as DLT IV, but the real cartridges are DLT III).**

- For the 7-symbols barcode, set the Media ID to *enabled*. The library scanner will read the media type directly from barcode. Use the library Operator panel, *Main > Setup > Library > Media*, then set:

  - Volser: MEDIA ID

  - Add ID: N

  - Mixed: Y

  - Extend: N

> • ASCQ: N

Step 2 Build the SCSI connection

• For single-aisle (Scalar 1000, Scalar 10K)

1. Plug the Y-block connector with the LVD/HVD-terminator to the LVD/HVD controller 1 of the library.

2. Link the free end of the Y-block connector and the LVD/HVD adapter of Node 1 with the SCSI cable.

3. Plug the Y-block connector with the LVD/HVD-terminator to the LVD/HVD controller 2 of the library.

4. Link the free end of the Y-block connector and the LVD/HVD adapter of Node 2 with the SCSI cable.

⚠ **CAUTION:** **Make sure to install the proper voltage SCSI connections (refer to Table 18 on page 73).**

• For dual-aisle (Scalar 10K DA)

1. Plug the Y-block connector with the LVD/HVD-terminator to the LVD/HVD controller 1 of the Robot 2.

2. Plug the Y-block connector to the LVD/HVD controller 1 of the Robot 1.

3. Link the two Y-block connectors of Robot 1 and Robot 2 with the SCSI cable.

4. Link the free end of the Y-block connector at Robot 1 and the LVD/HVD adapter of Node 1 with the SCSI cable.

5. Plug the Y-block connector with the LVD/HVD-terminator to the LVD/HVD controller 2 of the Robot 2.

6. Plug the Y-block connector to the LVD/HVD controller 2 of the Robot 1.

7. Link the two Y-block connectors of Robot 1 and Robot 2 with the SCSI cable.

8. Link the free end of the Y-block connector at Robot 1 and the LVD/HVD adapter of Node 1 with the SCSI cable.

⚠ **CAUTION:** **Make sure to install the proper voltage SCSI connections (refer to Table 18 on page 73).**

Step 3 Resolve the library SCSI IDs:

• Setting the single-aisle SCSI ID:

1. On the library Operator panel, do the following: *Main > Setup > Library > SCSI > Target ID*.

2. Set the SCSI IDs on both buses to 3.

3. Restart the library so that the SCSI IDs take effect.

• Setting the dual-aisle SCSI IDs:

1. On the Operator panel for Robot 1 do the following: *Main > Setup > Library > SCSI > Target ID*.

2. Set the SCSI ID on both buses to 3.

3. On the Operator panel for Robot 2 do the following: *Main > Setup > Library > SCSI > Target ID*.

4. Set the SCSI ID on both buses to 4.

5. Restart the library so that the SCSI IDs take effect.

Step 4 Configure the SCSI ID's for the LVD/HVD adapters (connected to the library) on the cluster nodes.

    a. Enter the LVD/HVD SCSI BIOS Setup on Node 1 for the adapter connected to the library:

- Set *termination* mode to *automatic*

- Set *Reset SCSI Bus* parameter *off*

- Set the SCSI ID of this board to 5

    b. Enter the LVD/HVD SCSI BIOS Setup on Node 1 for the adapter connected to the library

- Set *termination* mode to *automatic*

- Set *Reset SCSI Bus* parameter *off*

- Set the SCSI ID of this board to 6

NOTE: Both adapters must have different SCSI IDs.

Adapter IDs must not overlap with the single aisle LIBRARY SCSI ID.

Adapter IDs must not overlap with the <u>either</u> of the LIBRARY SCSI IDs for the dual-aisle libraries.

Any number could be used as SCSI IDs as long as it follows the rules above.

Step 5 On any cluster node, launch *My Computer > Manager> Device Manager* to verify that the Windows 2000 machine can see the Library "Media Changer". Two "Media Changer" must be visible for dual-aisle library.

Step 6 Make sure that the created scheme matches the example (see **Figure 10 on page 15** for a single-aisle library, and **Figure 11 on page 16** for dual-aisle library).

Install OS and Configure RAID

Follow the steps below to install the Operating System and configure RAID disk for both PCs (Node 1 and Node 2).

Step 1 Install the Operating System on Node 2.

    a. Power Node 1 off. Power Node 2 on.

    b. Install the Windows 2000 Advanced Server.

c. Resolve the network name and TCP/IP. Join the PC to the domain.

d. Install all required software services (for example, antivirus packages and firewall). Install all required device drivers (for example, initiator SCSI and RAID). Install the latest Microsoft Service Pack (SP4 for Win2000 is required).

e. When the operation system is installed successfully, reboot and be sure all services work satisfactorily.

> NOTE: Unplug the target card SCSI cable if the server has trouble booting (may be a termination problem).

Step 2 Configure the RAID Disk.

a. Log on under the domain account.

b. Disable the write cache for the RAID.

Use **Start > Settings > Control Panel > Administrative Tools > Computer Management> Disk Management** (see the figure below)

Figure 12 Disk Managementt
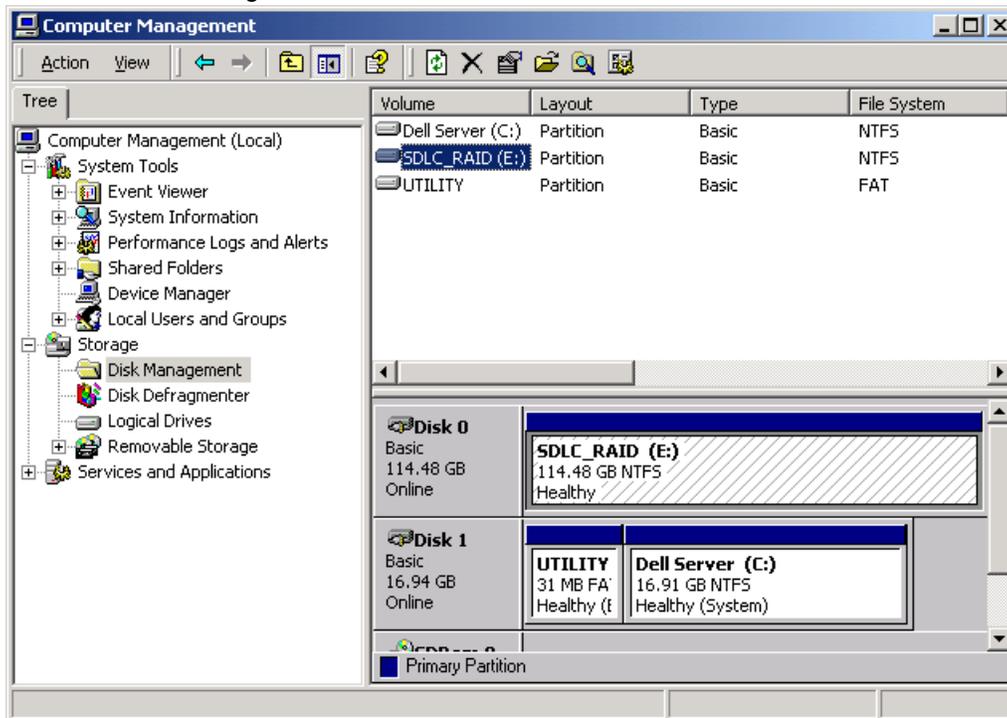
Right-click on the external RAID disk and select properties (in the above figure, the disk is called "SDLC_RAID").

Figure 13   RAID Properties: General
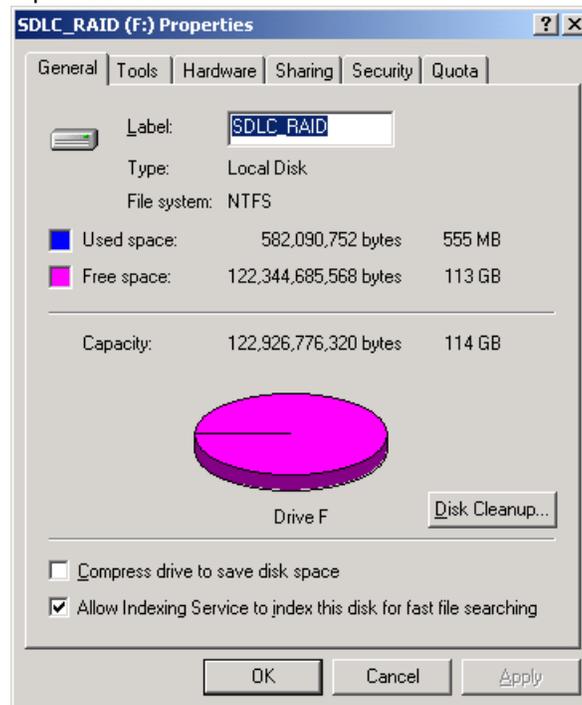
Open *Hardware* tab to view the list of all disk drives.

Figure 14   RAID Properties: Hardware
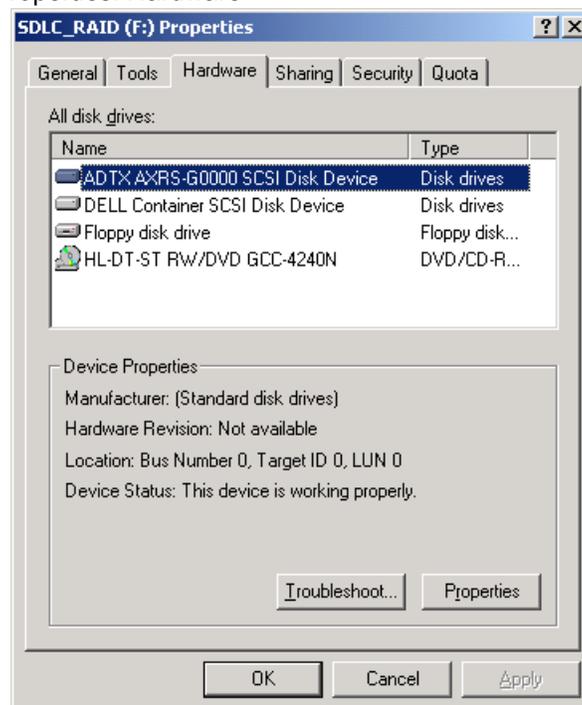
Select ATDX RAID drive and press **Properties** button. See the figure below.

Figure 15   RAID Disk: General
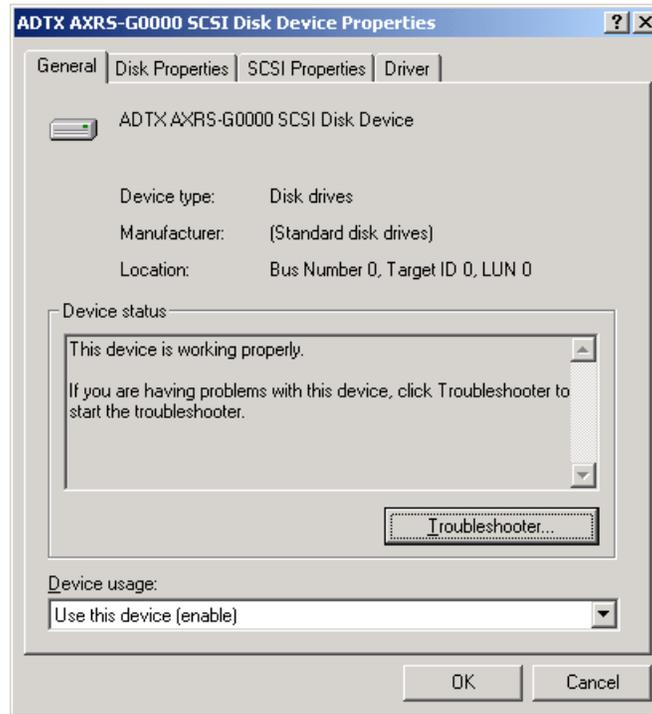
Select *Disk Properties* tab to obtain the following window.

Figure 16   RAID Disk: Properties
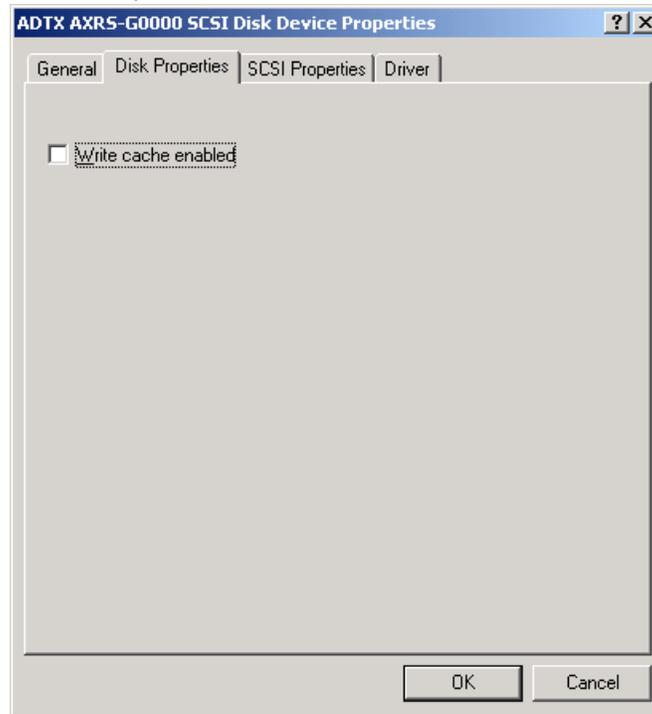
Uncheck the *Write cache enabled* box and then press **OK** to disable write caching.

      c.   Upgrade the RAID disk.

Select disk management for write signature and upgrade disk wizard. The wizard will auto start (see the figure below).

Figure 17 Write Signature and Upgrade Disk Wizard: Start

Click **Next** and proceed to the figure below.

Figure 18 Disk to Write Signature

Leave the field blank and click **Next** to proceed to the following figure.

Figure 19   Write Signature and Upgrade Disk Wizard: Finish

Click **Finish** to complete the Disk Upgrade.

        d.   Format the RAID disk (for Node 2) or connect the formatted disk (for Node 1).

Open *Disk Management* (see the figure below).

Figure 20   Disk Management
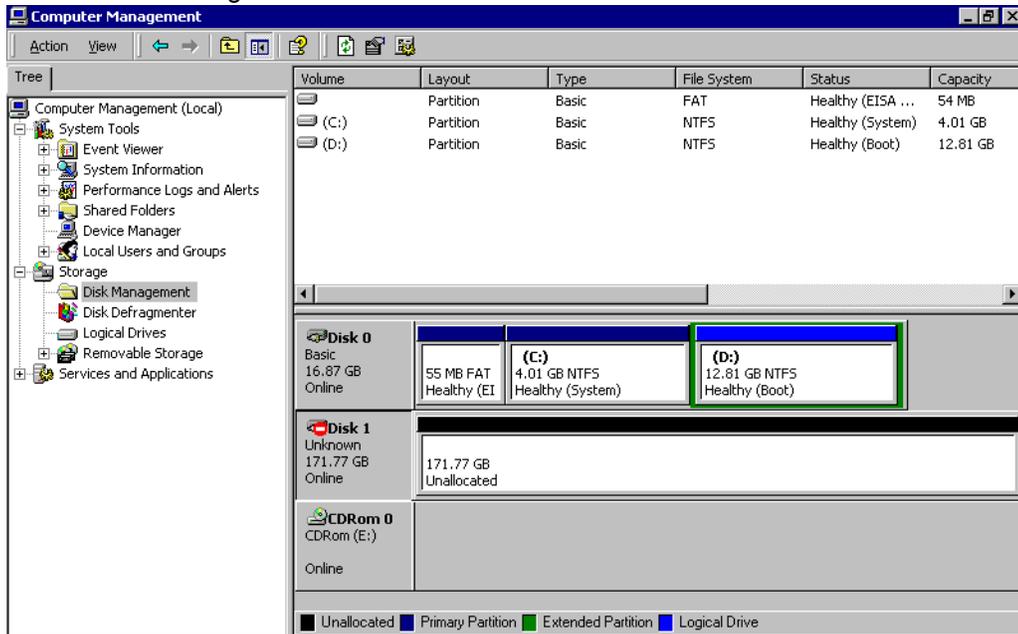
Right-click RAID (in the example Disk 1) and change it to *Basic* (see the figure below).

Figure 21 Disk Management: Basic Disk
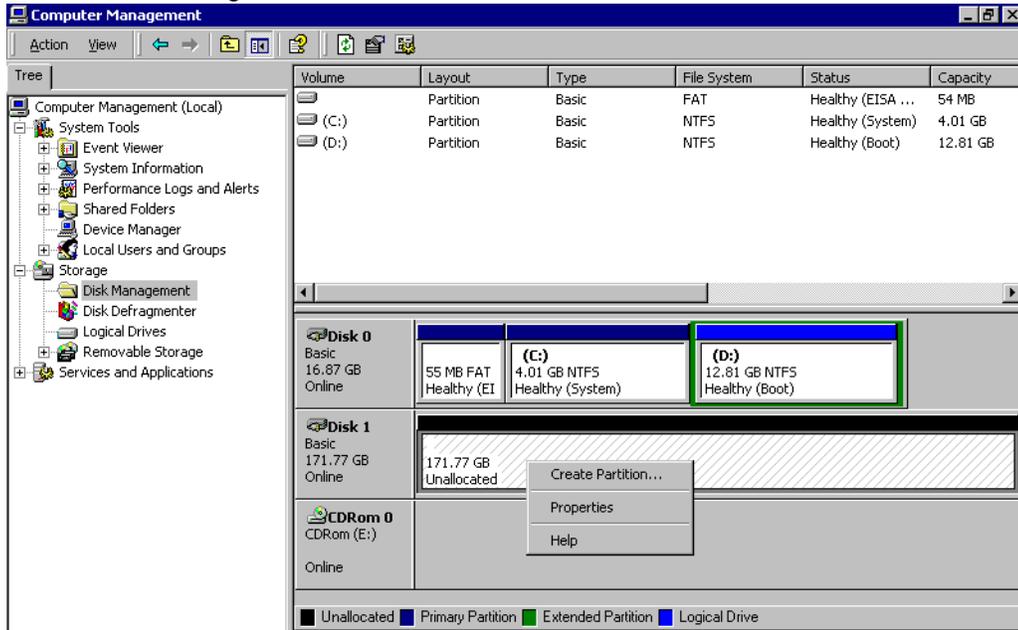
Right-click "Unallocated space". Select "Create Partition" (see figure below).

Figure 22 Create Partition Wizard: Start
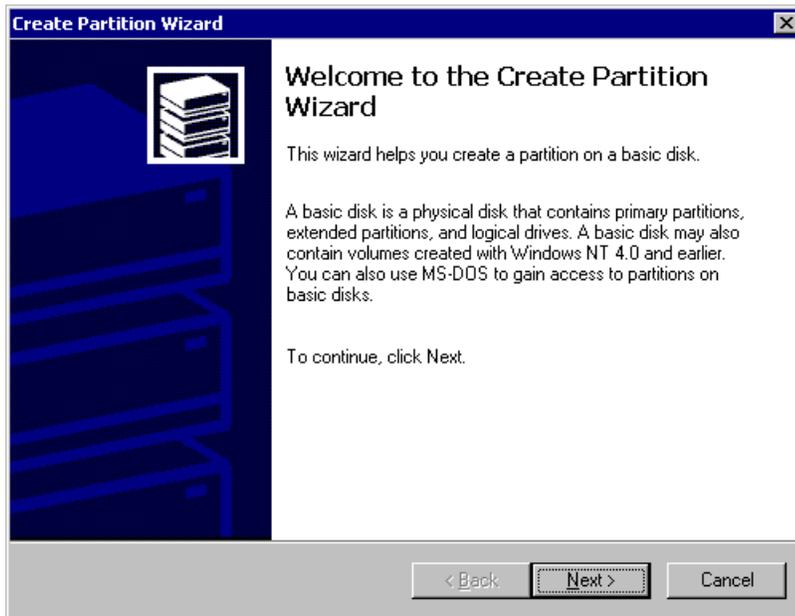
Click **Next** and proceed to the figure below.

Figure 23 Select Partition Type
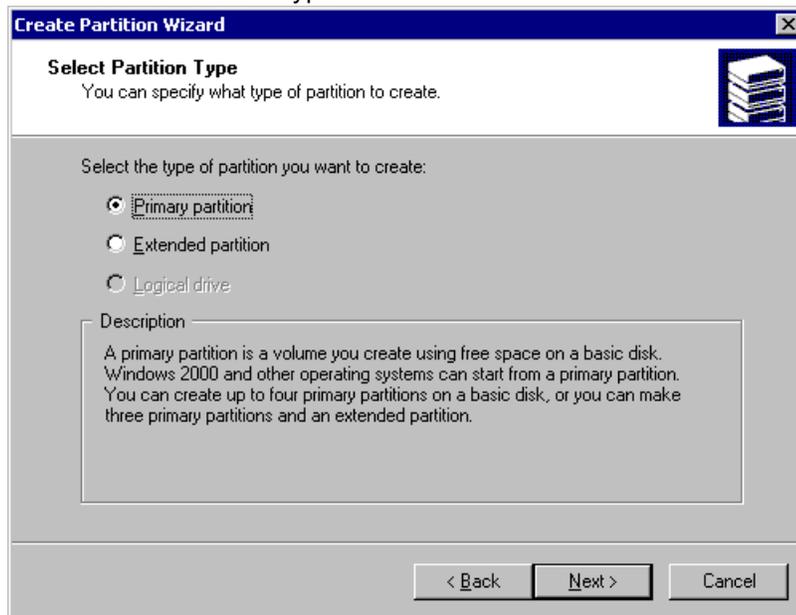
Select "Primary partition" and click **Next** to proceed to the following figure.

Figure 24 Specify Partition Size
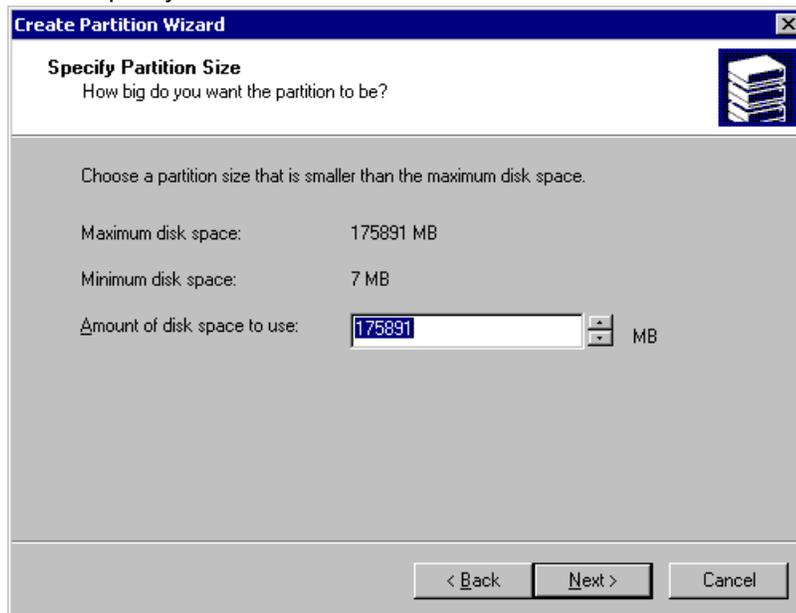
Select Max disk space as amount of space to use and click **Next** to proceed to the following figure.

Figure 25 Assign a Drive Letter
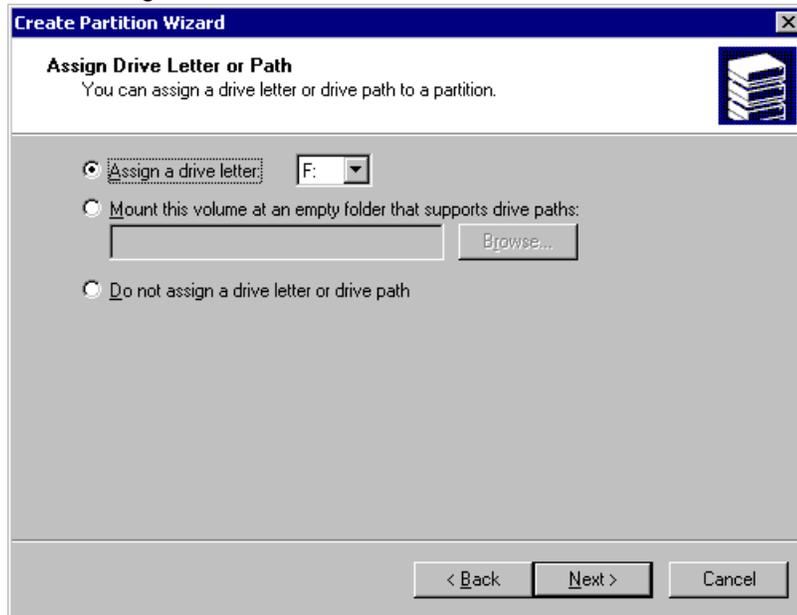
Specify a drive letter that will identify the RAID disk. This letter must be <u>identical</u> on both cluster nodes. Then click **Next** to proceed to the figure below.

Figure 26 Format Partition
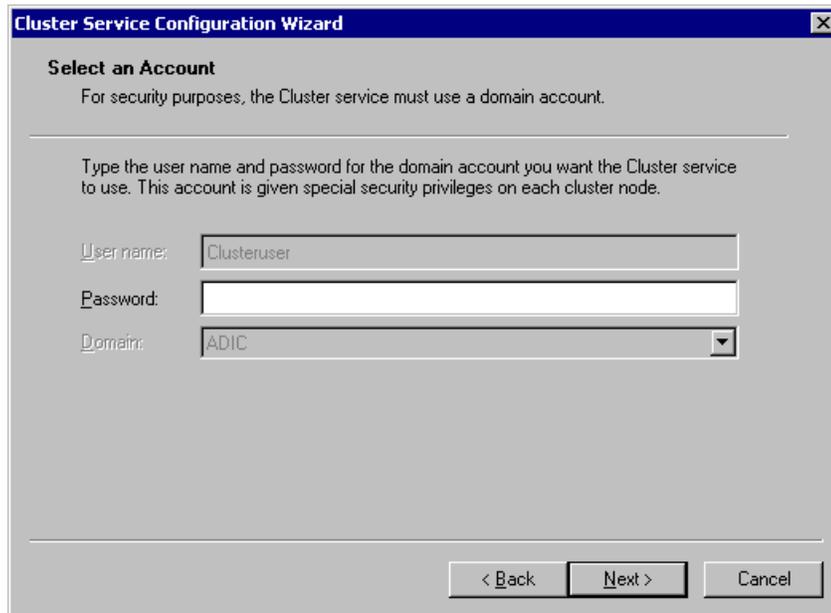
- (Node 2) Select "Format Partition". Specify "Cluster Raid" as a volume label. The file system should be NTFS. Click **Next** to proceed to the following figure.

- (Node 1) Select "Do not format the partition", as it is already formatted. Click **Next** to proceed to the following figure.

Figure 27 Create Partition Wizard: Finish
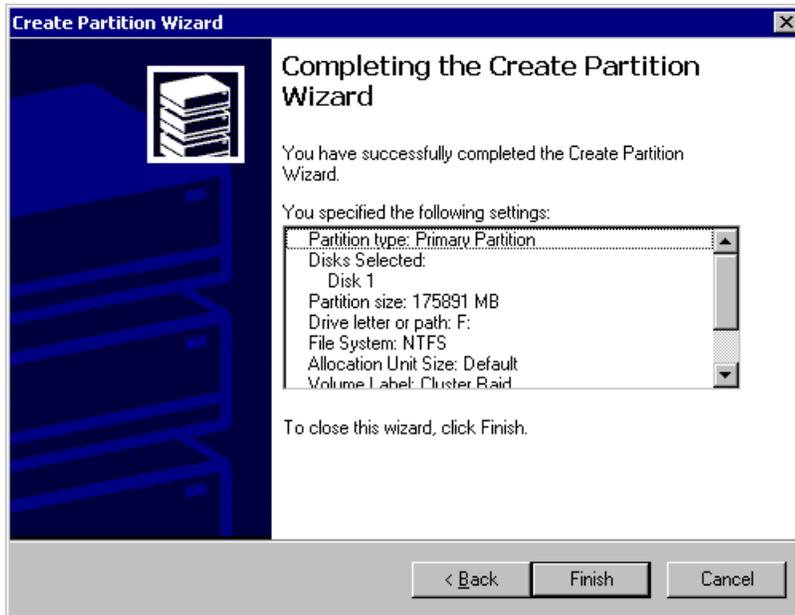
Click **Finish** to start the disk format (see **Figure 28** for Node 2) or just finish the partition wizard (see **Figure 29 on page 30** for Node 1).

Figure 28 Format in Progress
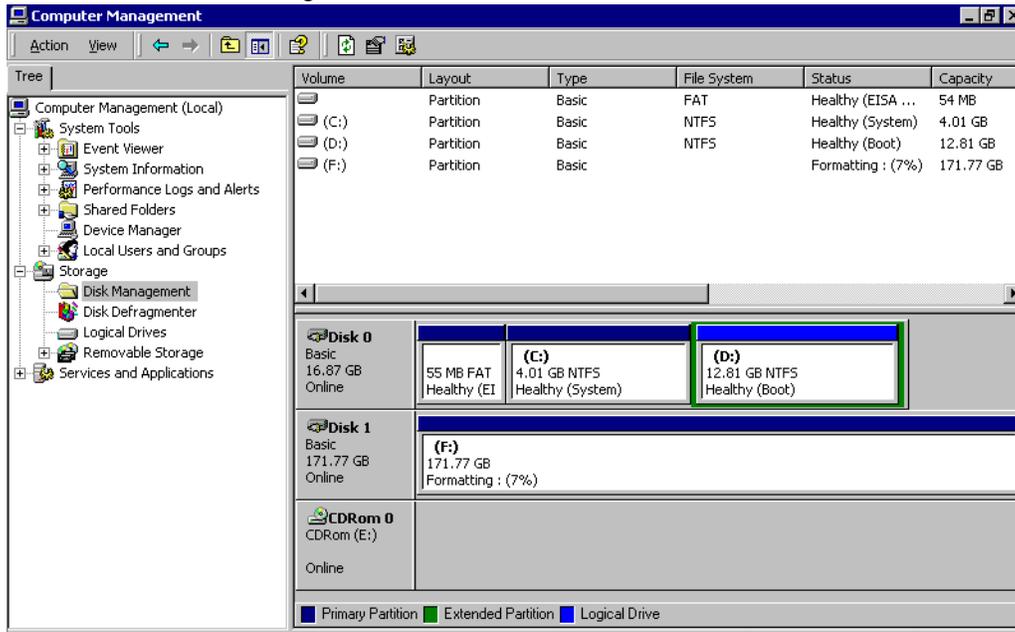
- Node 2: Wait for format to complete (see **Figure 29 on page 30**).

Figure 29   Format Complete
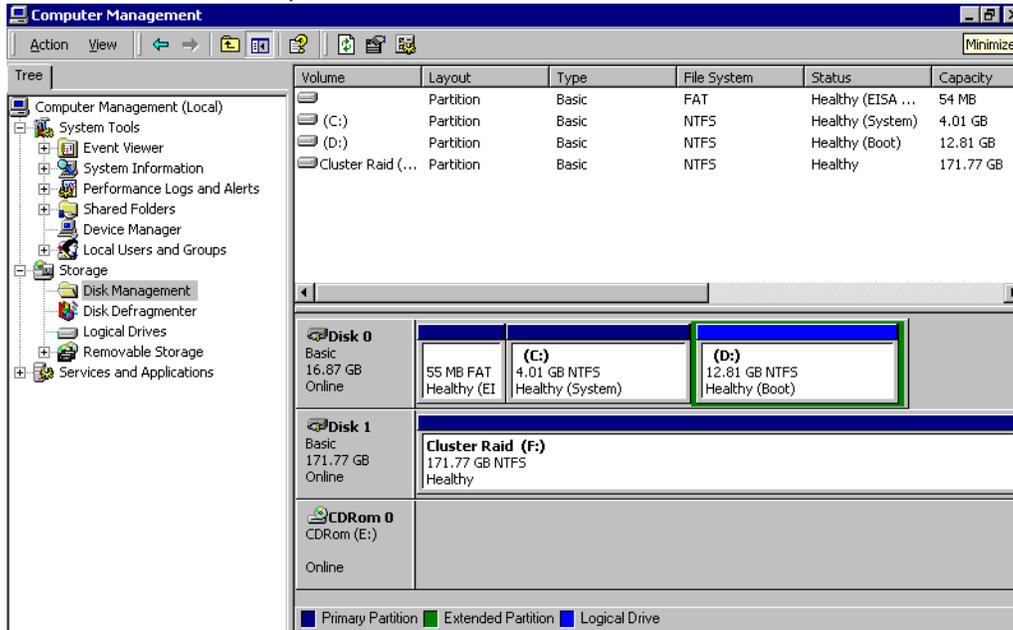
Step 3   Install the Operating System on Node 1.

a. Power Node 2 off. Power Node 1 on.

b. Install the Windows 2000 Advanced Server.

c. Resolve the network name and TCP/IP. Join the PC to the domain.

d. Install all required software services (for example, antivirus packages and firewall). Install all required device drivers (for example, initiator SCSI and RAID). Install the latest Microsoft Service Pack (SP3 for Win2000 is required).

e. When the operation system is installed successfully, reboot and be sure all services work satisfactorily.

NOTE: Unplug the target card SCSI cable if the server has trouble booting (may be a termination problem).

Step 4   Plug the RAID disk for the Node 1.

a. Power Node 2 on. Power Node 1 on.

b. Repeat Step 2 on page 21 for Node 1.

Step 5   Ensure that the RAID disk is now completely accessible from both nodes.

Configure the Cluster

Step 1   Configure the Cluster service on Node 1.

a. Start Windows 2000 Advanced Server on the Node 1. Log on as a domain user with the rights of local admin.

b. Configure the Cluster Service.

Open **Control Panel**. See the figure below.

Figure 30   Control Panel

Open **Add/Remove Programs**. See the figure below.

Figure 31   Add/Remove Programs
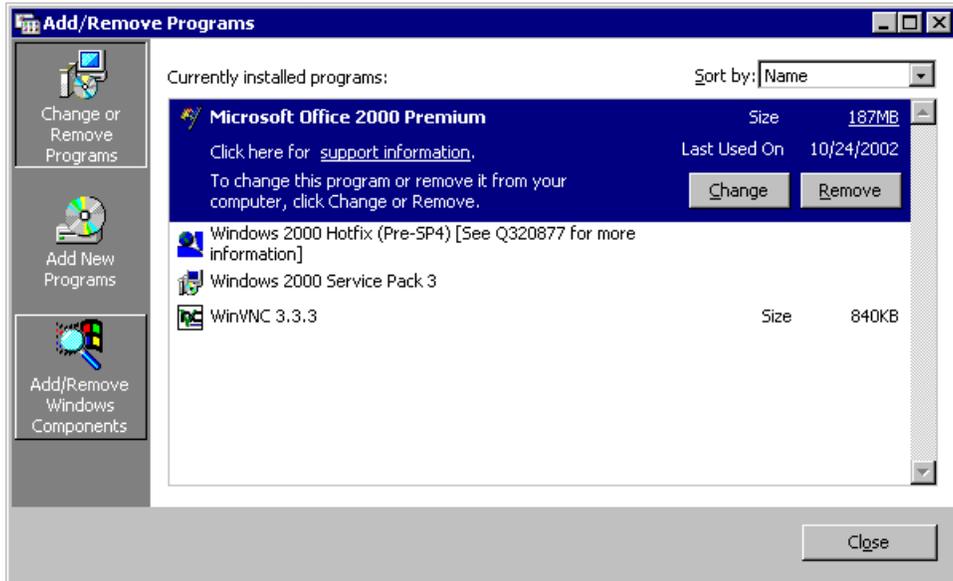
Click **Add/Remove Windows Components**. See the following figure.

Figure 32   Add/Remove Windows Components
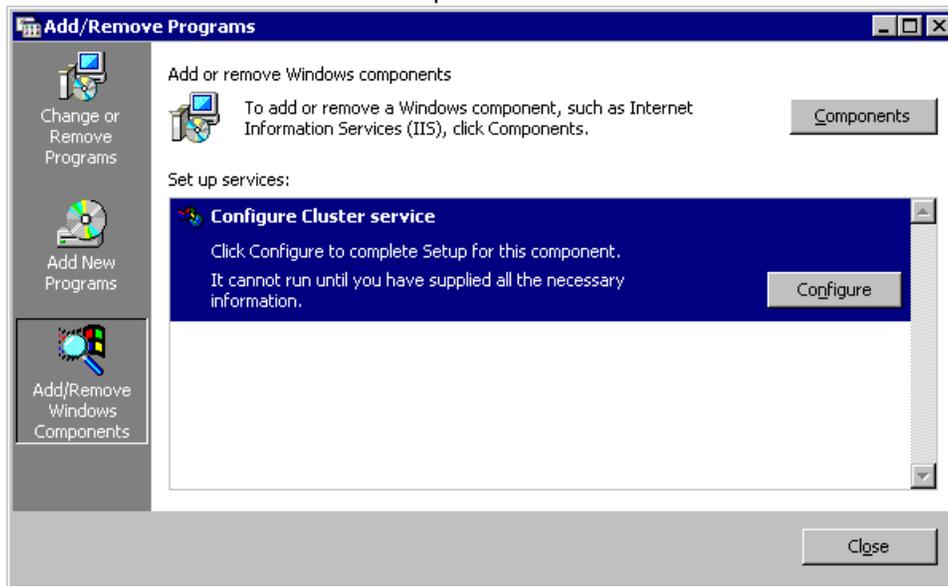
Select "Configure Cluster service" and click **Configure**. See the figure below.

Figure 33   Cluster Configuration Wizard: Start

Click **Next** to proceed to the following figure.

Figure 34 Test Hardware
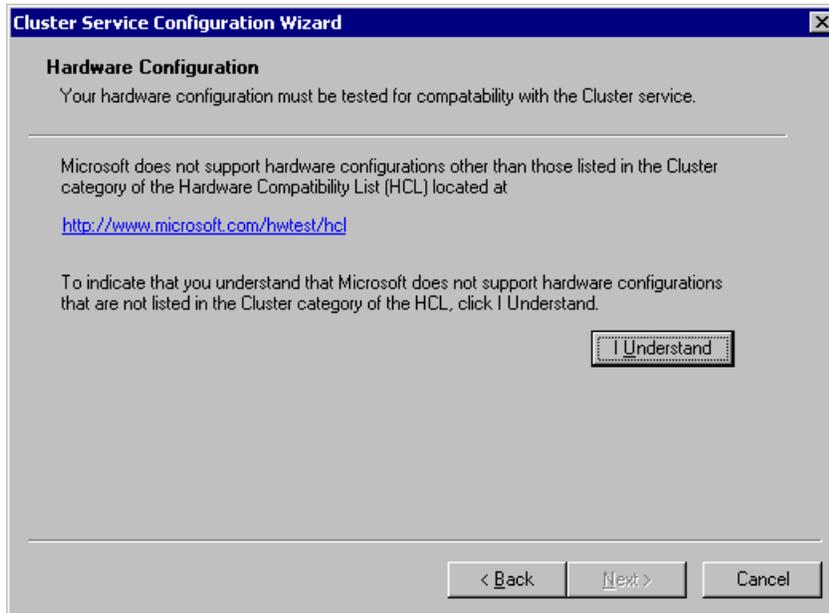
- Press **I Understand**, and click **Next** to proceed to the figure below.

Figure 35 Create/Join a Cluster

Specify the Create/Join operation type.

- (Node 1) Specify the server is the <u>first</u> cluster node and click **Next** to proceed to **Figure 36**.

- (Node 2) specify the server is the <u>second/next</u> cluster node and proceed to **Figure 38 on page 35**.

Figure 36   Create a Cluster
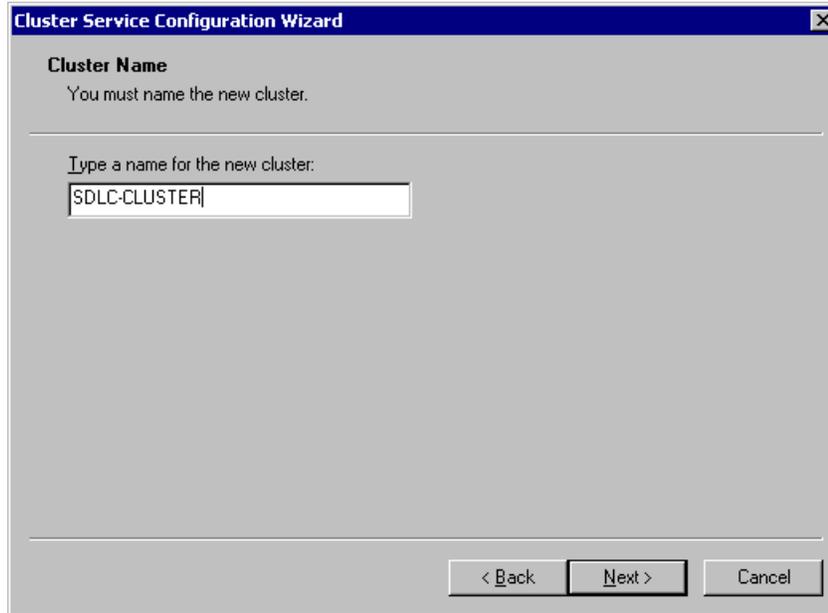
- (Node 1) Specify a cluster network name and click **Next** to proceed to the figure below.

Figure 37   Cluster Service Account: Create
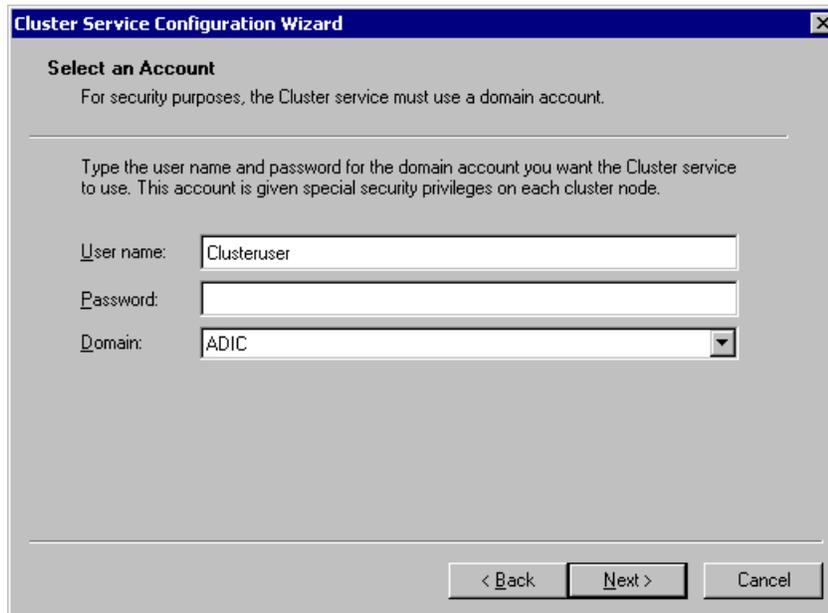
- (Node 1) Specify domain user name and password for the cluster account. Click **Next** to proceed to the **Figure 40 on page 35**.

Figure 38   Join a Cluster
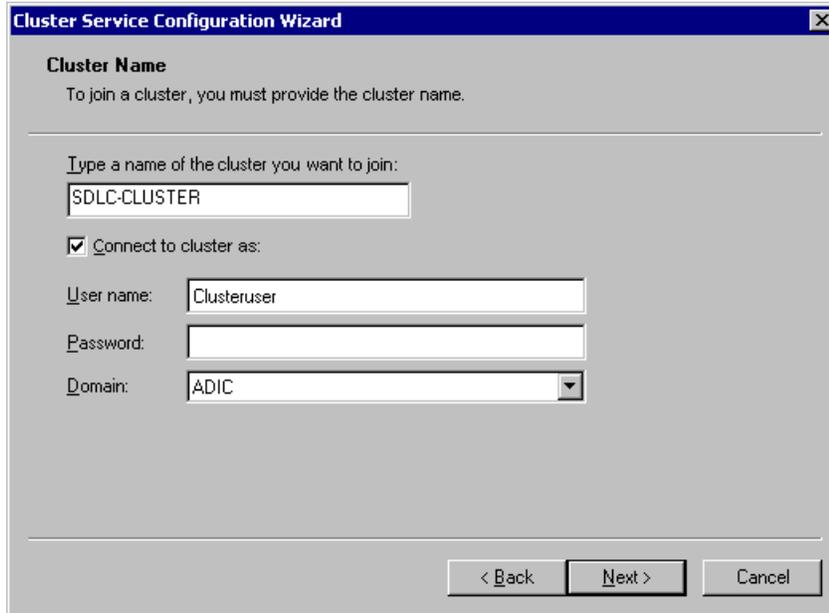
- (Node 2) Enter the cluster name. Check "connect to cluster as" and specify user name/ password/domain. Click **Next** to proceed to the following screen.

Figure 39   Cluster Service Account: Confirm

- (Node 2) Confirm cluster account password. Proceed to the following screen.

Figure 40   Add an Account to the Administrators Group

Click **Yes** to proceed.

- (Node 1) See **Figure 41 on page 36**.
- (Node 2) See **Figure 46 on page 38**

Figure 41   Select Cluster Disk
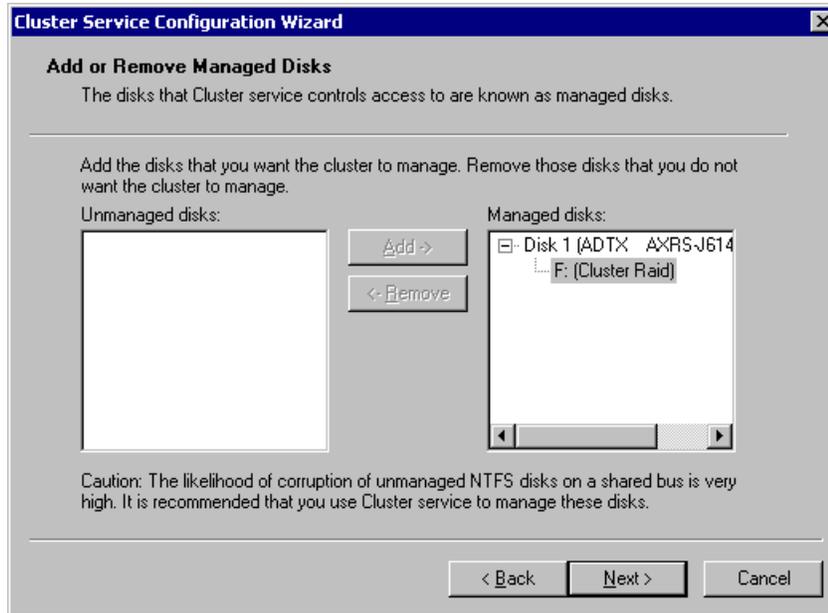
- (Node 1) Select the cluster disk (RAID) as the cluster file storage, press **Add** and click **Next** to proceed to the following figure.

Figure 42   Cluster File Storage
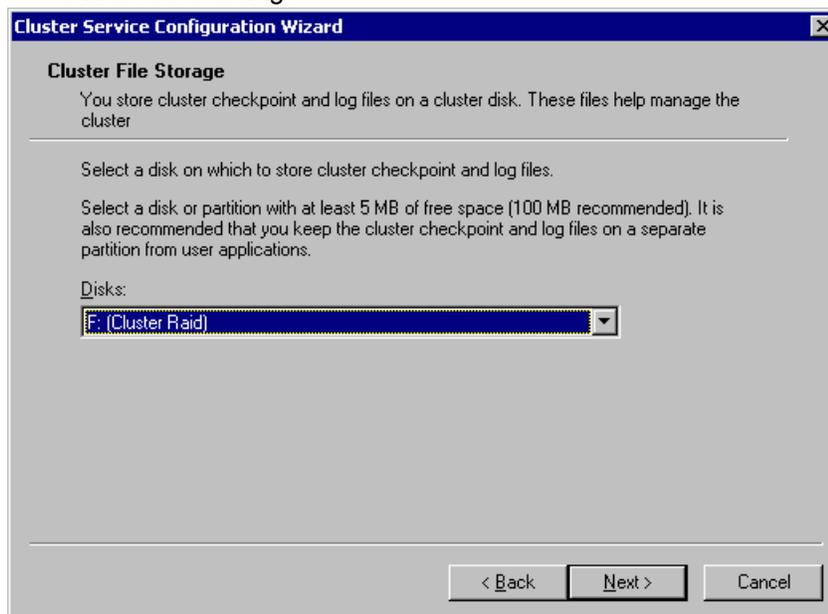
- (Node 1) Click **Next** to proceed to the following figure.

Figure 43   Cluster Network Connection
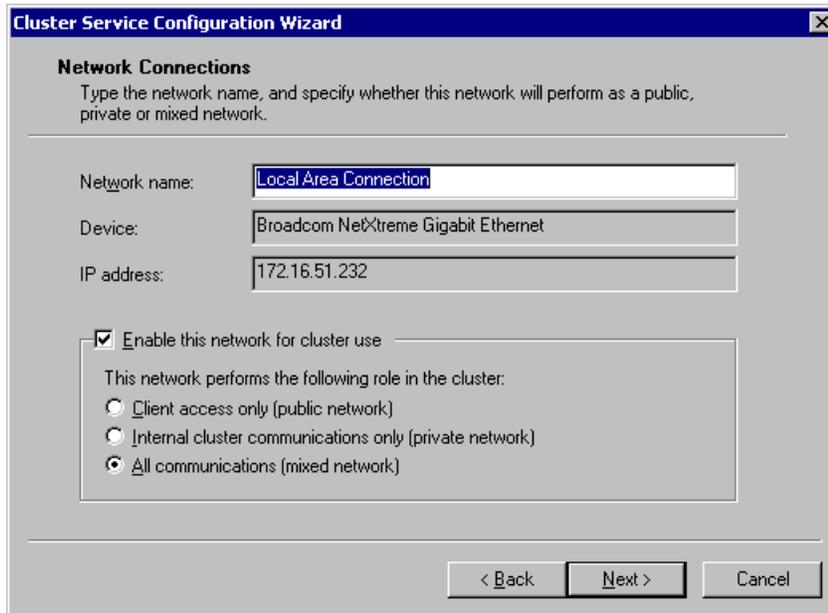
- (Node 1) Set the cluster network type and click **Next** to proceed to **Figure 44**.
  Public network (LAN) is a common network that is used by all system services. A private
  (internal) cluster network is used only by cluster services. The signals are moving faster via
  the private network, so it is preferable to use it in order to decrease the cluster down time.

Figure 44   Cluster TCP/IP
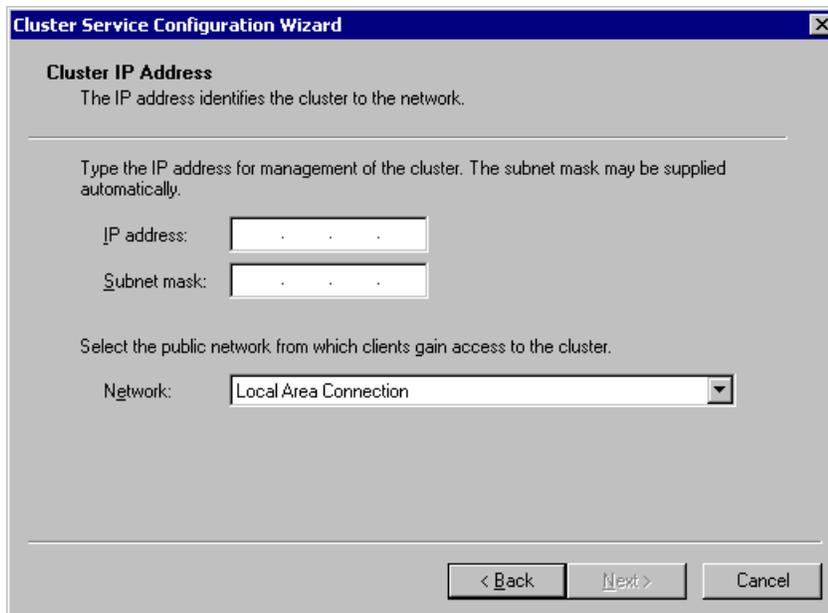
- (Node 1) Configure TCP/IP subnet mask for the Cluster and click **Next** to proceed to **Figure 45 on page 38**.

NOTE: Only *static* IP can be used for the cluster. Contact the local network administrator for the details.

Figure 45   Verify Cluster Subnet Mask
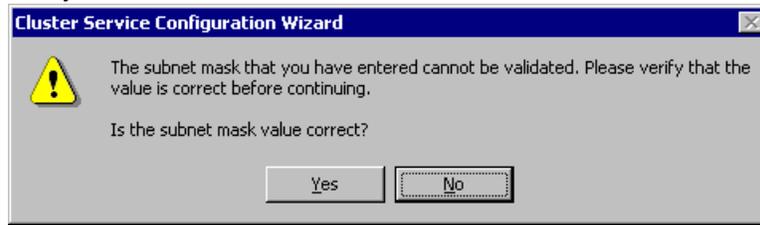
- • (Node 1) Click **Yes**. See the following figure.

Figure 46   Cluster Configuration Wizard: Finish

Click **Finish** to complete the cluster service configuration.

    c. When the service is installed, restart PC. The Cluster service should start now. See **Figure 47**.

Figure 47   Cluster service is started successfully

Step 2   Configure the Cluster service on Node 2.

    a. Shut down Node 1 to release the shared disk and allow Node 2 access to the RAID.

    b. Turn Node 2 on. Start Windows 2000 Advanced Server. Log on as a domain user with the local admin rights.

    c. Start Node 1.

    d. Repeat Step 1 b. on page 31 to configure the Cluster service on the Node 2 using the appropriate notes.

Step 3   Ensure that the Cluster service is successfully started on both nodes.

Install the Scalar DLC Software

Step 1   Install the Scalar DLC required components at Node 1.

    a.   Do NOT install the Scalar DLC software now. Uncheck the box next to "Scalar DLC Version 2.5". See **Figure 59 on page 48**.

    b.   Do NOT select *silent* mode.

    c.   Launch Scalar DLC installation on Node 1. Refer to **Installing the Scalar DLC on page 47**.

    d.   Install MSDE 2000 on the external (RAID) disk. The path should be:
```
<External Raid Drive>:\Program Files\Microsoft SQL Server\.
```

Example:
```
F:\Program Files\Microsoft SQL Server\
```

NOTE: The <External Raid Drive> should be replaced with the letter designation of the external RAID drive. Typically, this would be the F drive but could be any letter.

NOTE: The installation of MSDE2000 may take several minutes to complete.

    e.   When the installation of the MSDE 2000 Service Pack 3 (SP3) is completed, power on Node 2.

    f.   After logging into Node 2, stop the cluster service on Node 1. Use **Control Panel > Administrative Tools > Cluster Administrator**.

Step 2   Install the Scalar DLC required components at Node 2.

    a.   Do NOT install the Scalar DLC software now. Uncheck the box next to "Scalar DLC Version 2.5". See **Figure 59 on page 48**.

    b.   Do NOT select *silent* mode.

    c.   Launch Scalar DLC installation on Node 2. Refer to **Installing the Scalar DLC on page 47**.

    d.   Install MSDE 2000 on the SAME folder as has been selected for Node 1 (for example, `F:\Program Files\Microsoft SQL Server\`).

NOTE: The path must EXACTLY match that selected for Node 1.

NOTE: The installation of MSDE2000 may take several minutes to complete.

e. When the installation of the MSDE 2000 Service Pack 3 (SP3) on Node 2 is completed, start the cluster service on Node 1. Use **Control Panel > Administrative Tools > Cluster Administrator**.

f. Reboot Node 2.

Step 3 Install the Scalar DLC software at Node 1. Refer to **Install the Scalar DLC Software on page 51**.

a. Restart the Node 1 when the installation is finished.

b. The Scalar DLC service is NOT started now because the node is passive and the cluster resources are not available yet. Do NOT start the Scalar DLC service right now.

Step 4 Install the Scalar DLC software at Node 2. Refer to **Install the Scalar DLC Software on page 51**

a. Specify "Use existing database" during the installation of Scalar DLC software.

b. When the installation of Scalar DLC is finished, restart Node 2.

c. The Scalar DLC service is NOT started now because the node is passive and the cluster resources are not available yet. Do NOT start the Scalar DLC service right now.

Step 5 Configure the Scalar DLC software for the Cluster mode.

a. Make sure that cluster services are running on both cluster nodes.

b. Using any node, launch the cluster utility for automatically configuration of all necessary common resources. It can be found at Scalar DLC Installation CD by the following path: `Scalar_DLC\Cluster\SDLC_ClusterConfig.exe` (see the figure below).

Figure 48   Start SDLC Cluster Configuration
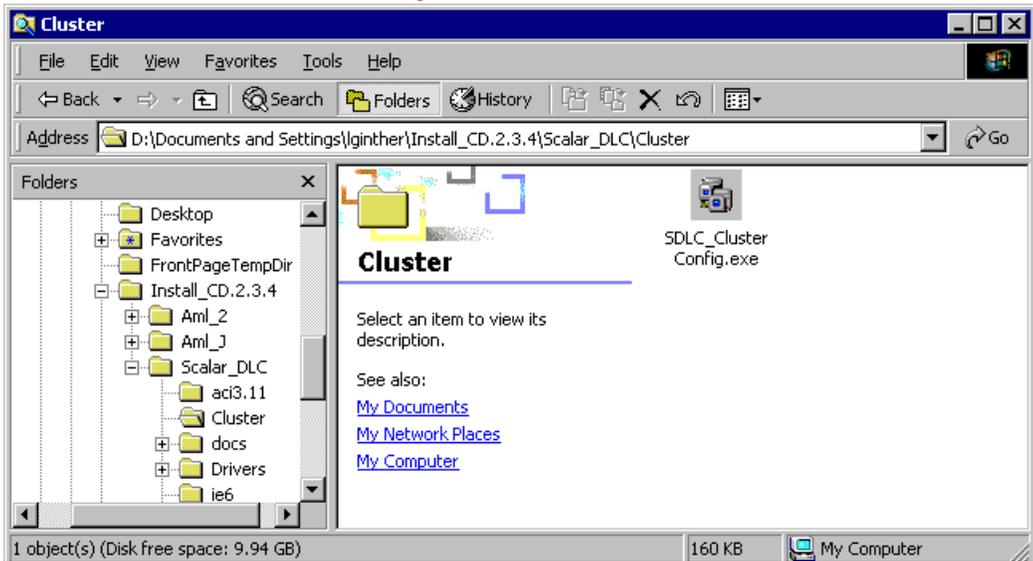
c. Launch the cluster configurator tool. See the following figure.

Figure 49   SDLC Cluster Configuration: no configuration
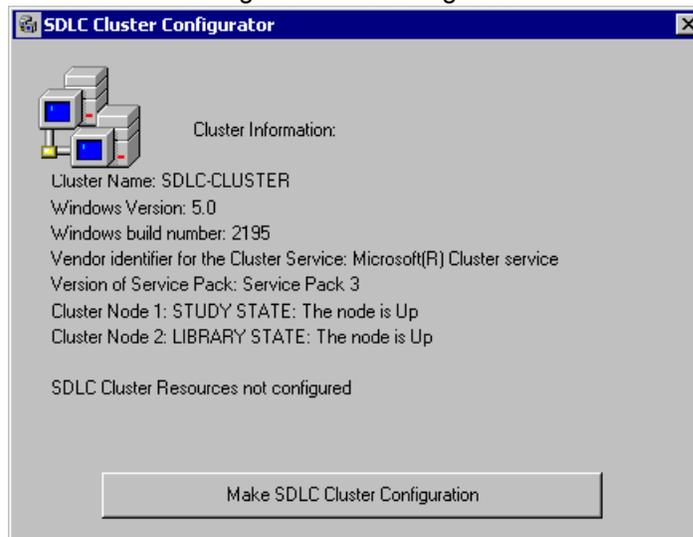
d. Click **Make SDLC Cluster Configuration**. When the configuration completes, the pop-up window opens. See the figure below.

Figure 50   SDLC Cluster Configured
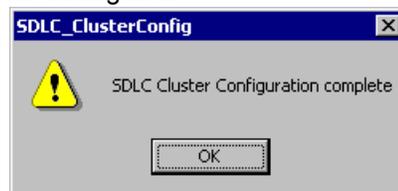
e. Click **OK** to return to the SDLC Cluster Configurator (see the figure below).

Figure 51   SDLC Cluster Configurator: configuration complete
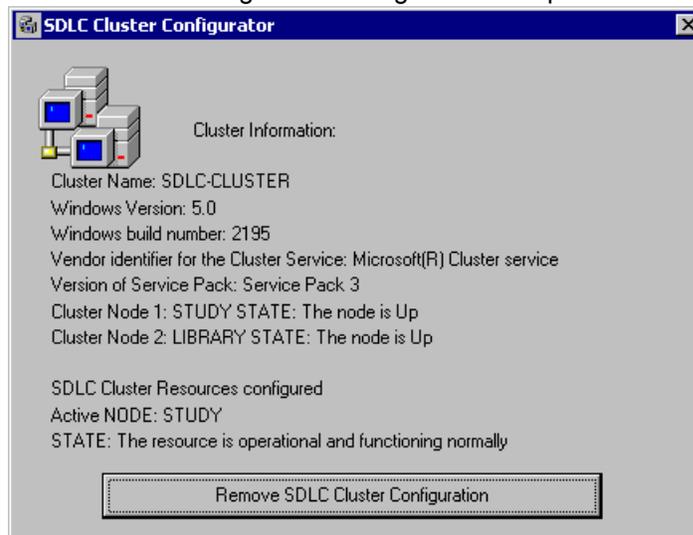
f. Close the Scalar DLC Cluster configurator tool (X-button).

g. Open **Start > Settings > Control Panel > Administrative Tools > Cluster Administration** (see the following figure) and make sure that the SDLC Supervisor service is a part of a Cluster group.

Figure 52   Cluster Administration
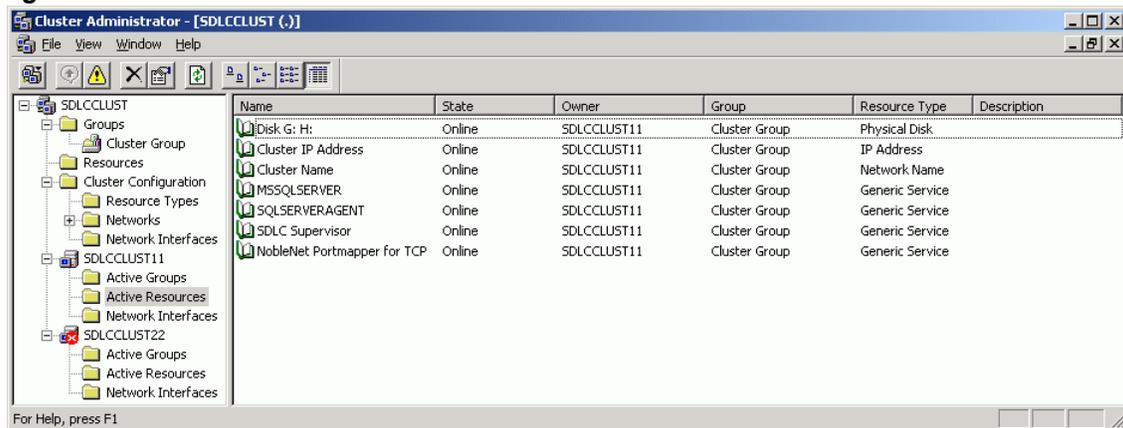
Configure the Logical Library

Step 1   Using any node, log in as administrator or as a domain user with the local administration rights and start the Scalar DLC software if it is not started automatically.

Step 2   Double click the **Scalar DLC Manager** icon to start the Scalar DLC Management GUI from a local computer. From a remote computer, use **http://ScalarDLC-machine-name** in current browser.

NOTE: It is strongly recommended to use the virtual Cluster name here (for example, SDLC-CLUSTER).

Step 3   The first start of the Scalar DLC Management GUI launches the configuration engine. Select either the Automatic or Manual configuration option to configure the logical library automatically, or Advanced configuration option in case of more then one logical library should be created. Refer to the *Configuration* chapter of the *Scalar DLC Reference Guide* for further instructions.

CAUTION: **The operating system and its service packs on both cluster nodes must be identical and they must remain identical. Otherwise it may cause cluster service malfunctions.**

NOTE: If the network parameters are changed, the cluster service will not function and should be repaired or re-configured manually.

NOTE: Never turn the RAID shared disk off. Otherwise, the Scalar DLC will not work.

Use Old Database

If the customer has worked with the older version of the Scalar DLC software and he wants to import the database content to the new version, an upgrade must be performed. The table below should be used to select the correct upgrade method.

Table 4   Cluster Mode: Database Upgrade Methods

Old Database Version	Old Scalar DLC Solution	Preferable Upgrade Method
2.1	Basic	**Advanced Upgrade on page 88**.
2.2	Basic	**Advanced Upgrade on page 88**.
2.3	Basic	**Advanced Upgrade on page 88**.
	Cluster	**Advanced Upgrade on page 88**.
2.4	Basic	**Advanced Upgrade on page 88**.
	Cluster	**Simple Upgrade on page 83**.
2.5	Basic	**Advanced Upgrade on page 88**.
	Cluster	**Simple Upgrade on page 83**.

NOTE: The *Advanced Upgrade* can be used always, however sometimes it is possible to use the *Simple Upgrade* method.

Build Client Connections

Additional activity may be required for the clients to connect to the Scalar DLC software installed as the cluster solution.

DAS

Use the common Cluster name (for example, SDLC-CLUSTER) as DAS_SERVER value on the client host. Refer to **Installing DAS Client on page 66**.

If a firewall exist between client and Cluster, the DAS/ACI Firewall should be installed either on PC in cluster domain or on both cluster nodes; in the second case, the DAS-ACI Firewall server name must be specified as common Cluster name (for example, SDLC-CLUSTER), too.

SCSI

In the Cluster configuration, additional hardware requirements exist for the SCSI clients based on SCSI connection:

- 2 SCSI Target HBA, as described in **Table 18 on page 73**.

- 2 SCSI Y-Block connectors (Y-cables) to terminate the SCSI Bus.

- 1 SCSI Terminator.

- 1short (~1 m) SCSI cable (68 pins) (in-cluster connection)

- 1middle length (2-3 m) SCSI cable (68 pins) (client connection)

Be sure that the client connection scheme matches the example (see figure below).

Figure 53   Cluster: SCSI Client Connection
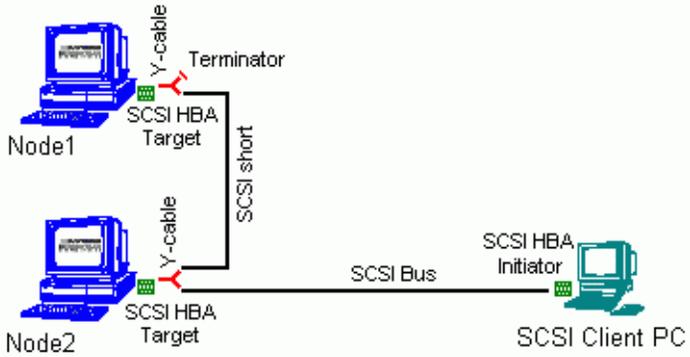
In the Cluster configuration, additional hardware requirements exist for the SCSI clients based on Fibre Channel connection:

- 2 FC Target Adapters, as described in **Table 18 on page 73**.

- FC switch

- 2 FC cables (client connection)

Be sure that the client connection scheme matches the example (see figure below). The fibre channel target adapters on both cluster nodes should operate in the failover (cluster) mode; this option is set up via the SCSI Target Port tool.

Figure 54   Cluster: Fiber Channel Client Connection
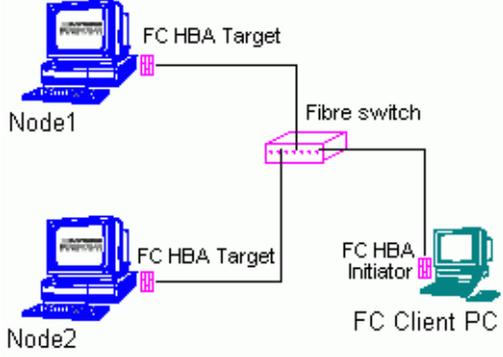
ROBAR

Install the ROBAR Client software on the client PC. Set the HOST parameter to the Cluster name (for example, SDLC-CLUSTER). If the HCC/MVS software is used, configure it, too, and set the appropriate ROBAR Client parameters in the Management GUI. Be sure a valid ROBAR port is specified. The details are described in *Reference Guide, GUI Tabs* chapter, *ROBAR* and *ROBAR Client* sections

Install SCSI/FC Target Cards on a Live Machine

Although ADIC recommends to install and set up all required hardware before starting the work, it is possible to make some changes later, too.

Step 1   Make Node 1 *passive*, Node 2 *active*. The Scalar DLC will operate on Node 2.

Step 2   Shutdown Node 1. Install the new SCSI/FC card into a free PCI slot (note what slot it is).

Step 3   Start Node 1. The Windows Device Manager will find a new device and install the SCSI/
FC initiator driver (or request the user to install it from a manufacturer disk). Refer to
Initiator Driver on page 74.

Step 4   Restart Node 1. Install Target driver for a new card. Refer to **Installing the SCSI/FC
Target Drivers on page 71**.

Step 5   Restart Node 1. Launch Scalar DLC SCSI Target Port Tool and enable the new SCSI
card as Target. For the FC card, resolve the WWN.

Step 6   Restart Node 1. Make Node 1 *active*, Node 2 *passive*. The Scalar DLC will operate on
Node 1.

Step 7   Repeat steps 2 - 6 for Node 2. The SCSI/FC cards should be identical, and they should
be installed in the identical PCI slots.

Step 8   Now launch Scalar DLC Management GUI at any node and configure the SCSI targets
for the client.

The down time for the Scalar DLC software is only during changing the cluster nodes. All startup/
shutdown operations are executed on the un-active node.

SNC Usage

Usually the library use SCSI to connect to the Scalar DLC hosts. However this interface has the
distance limitations: depending on the SCSI adapter used the SCSI cable length cannot exceed the
sencibility limit (refer to **Table 18 on page 73**). That limitation may cause problems.

The additional SNC hardware can be used in order to remove the distance limitations. Build the
connections as it is shown on one of the the pictures below, configure the SNC, and the Scalar DLC
PCs (working via the Fibre Channel HBA Initiator) can be placed as far from the library as it is
required.

NOTE: The SNC configuration instructions are described in the *SNC User Manual*.

Figure 55   Cluster: SNC with the single-aisle, switch scheme
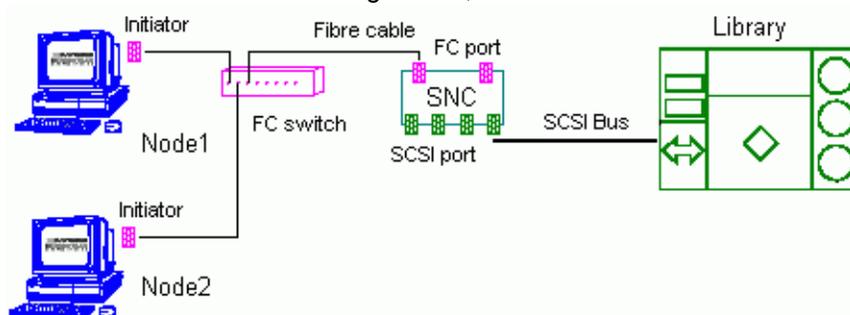
Figure 56   Cluster: SNC with the single-aisle, two-port-scheme
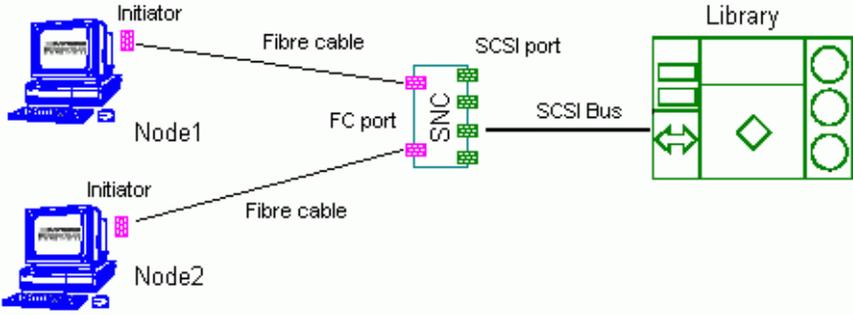
Figure 57   Cluster: SNC with the dual-aisle, switch scheme
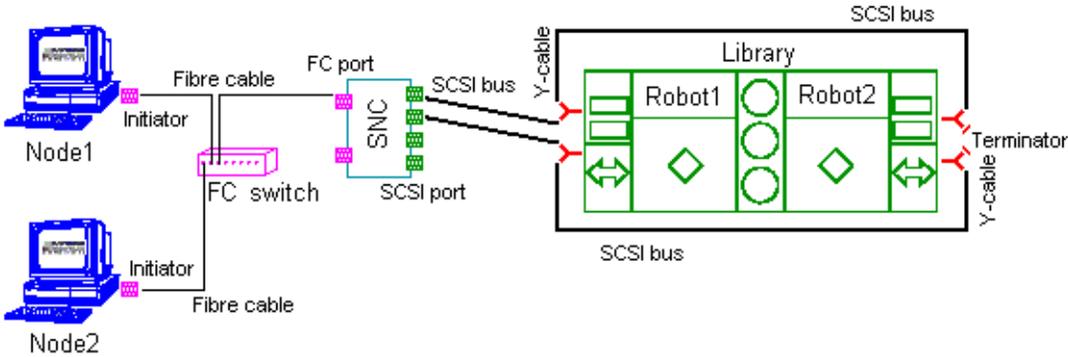
Figure 58   Cluster: SNC with the dual-aisle, two-port-scheme
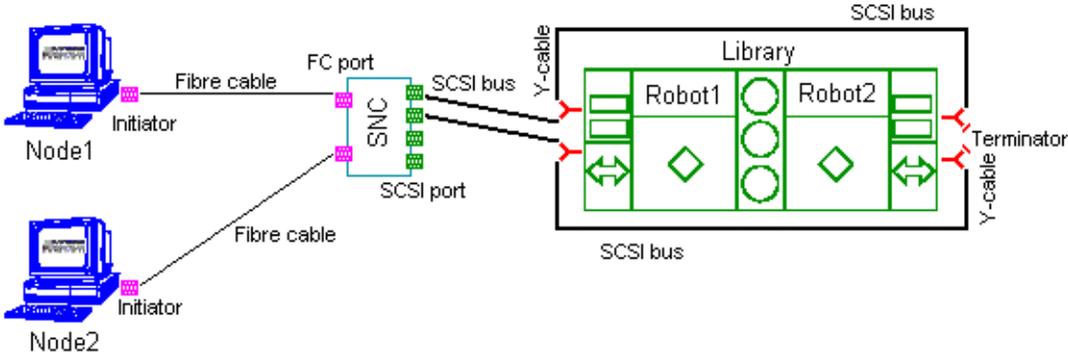
⚠️ **CAUTION:**   **Wheh the Scalar DLC host PC is restarted the SNC must be restarted, too. Refer to SNC Issues on page 76.**

Installing the Scalar DLC

The Scalar DLC software must be installed on a PC running Windows 2000. The Management GUI is installed as a part of the Scalar DLC software. After the software is installed, a remote user can connect to the Scalar DLC host.

NOTE: To install the Scalar DLC software and all required components, local administrator rights are required.

During the *typical installation* process, all required components are installed. System restart may be necessary after the installation of certain components. The system will warn the user that the restart is required, and the installation process will continue until all files have been installed.

- Before installing the Scalar DLC perform the **Solution Checkup on page 47**.
- Using the Scalar DLC setup engine install the required **Software Components on page 47**.
- After this is finished, **Install the Scalar DLC Software on page 51**.

Solution Checkup

Make sure the appropriate solution is set up before installing the Scalar DLC.

Refer to **Setting Up the Basic Solution on page 7** or **Setting Up the Cluster Solution on page 14**.

Software Components

The following figure shows the components that are to be installed during the Scalar DLC setup process. The required components that are currently <u>not</u> installed are marked automatically for the installation.

Figure 59   Scalar DLC Setup Components
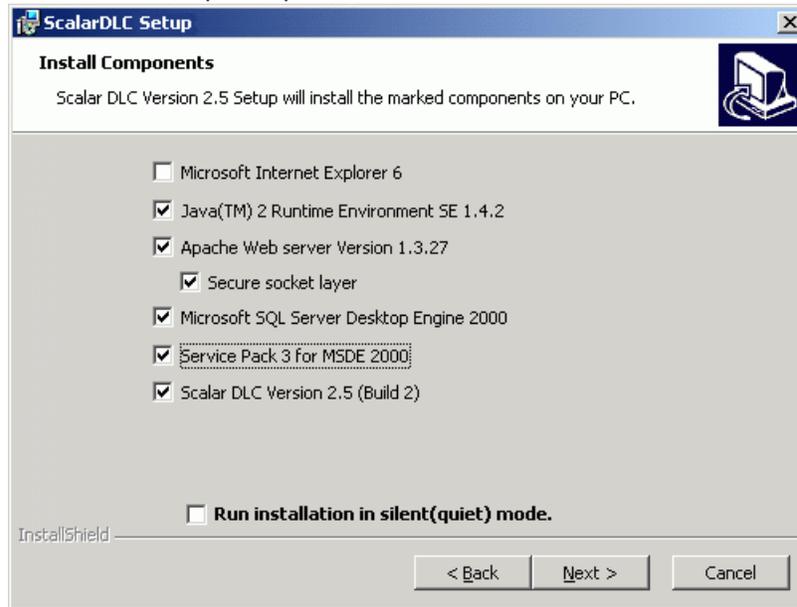
The following components must be installed and configured for the proper performance of the Scalar DLC software service:

- Microsoft Windows 2000 Service Pack 4

- Microsoft Internet Explorer ver. 6.0 or newer, optional

- Java™ 2 Runtime Environment (Java 2) 1.4.1_03

- Apache Web Server ver.1.3.27

- Secure Socket layer (SSL), optional

- Microsoft SQL Server 2000 Desktop Engine (MSDE 2000)

- MSDE 2000 Service Pack 3

Silent Mode

When a customer selects silent mode, all information that is required to the installation of the selected software components must be entered before the actual installation process starts. Note that the complene installation of both the required components and Scalar DLC software will take some time. The installation engine performs automatic restart of the PC, automatic logon after restart, and continue the setup process until everything will be done.

Windows 2000 Service Pack 4

The SP4 for Windows 2000 operating system must be used with the Scalar DLC software. After the SP4 is installed, a restart is required. Then the system will configure the installed tools and services.

NOTE: ADIC supports the SP4 developed by the Microsoft. This service pack can be used with all versions of Windows 2000 OS (Professional, Server, Advanced Server, etc.).

Microsoft Internet Explorer

The Scalar DLC software is compatible with the MS IE browser 6.0 or newer version. ADIC offers the MS IE 6.0 installation kit. After the MS IE is installed, a restart is required. After rebooting, the system continues to configure the installed Internet Explorer tools and services.

> NOTE: The installation of MS IE 6.0 under Windows 2000 is recommended but not required.

Java 2 Runtime Environment

The Java2 component installs over an existing Java runtime environment without producing a warning message. By default, the Java2 is installed in the `<%SystemDrive%>\Program Files\Java\j2re1.4.1_03\` directory. An advanced user can install the Java2 to any directory desired, but ADIC recommends against this action.

> NOTE: If the installation proceeds on a clean PC, the Java2 installation asks for a restart. ADIC recommends rebooting the PC.

Apache Web Server

ADIC does not recommend installing the Scalar DLC software on a machine with a previously installed copy of Apache Web Server. During installation, the configuration file overwrites any configuration file present on the hard drive without providing a warning. By default, the Apache Web Server is installed in the `<%SystemDrive%>\Program Files\Apache Group\Apache\` directory. An advanced user can install the Apache Web Server in any desired directory.

If the default Apache directory exists, the installation provides a warning message. See figure below.

Figure 60   Warning: Apache
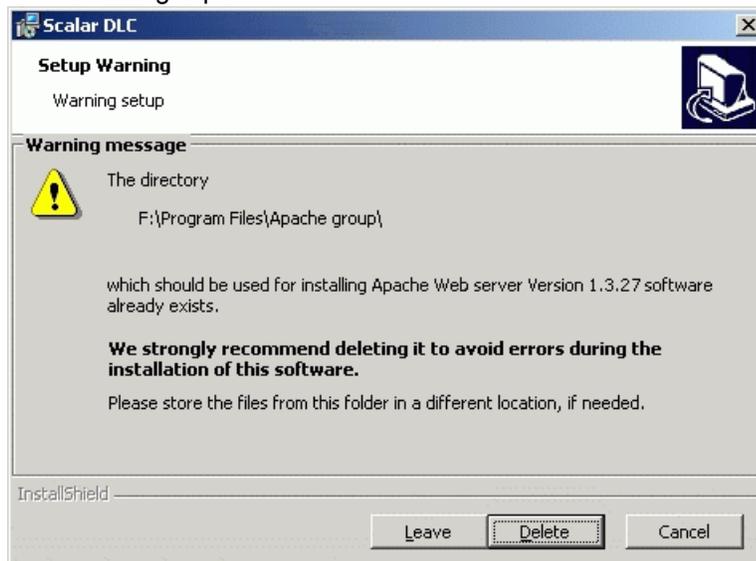
Secure Socket Layer

The Secure Socket Layer (SSL) protocol encrypt the data sent/received via the web. The SSL family of protocols includes also Transport Layer Securyty (TLS).

The SSL is built into all major browsers (Internet Explorer, Netscape), so implementing the SSL component into the Scalar DLC activates this feature when a customer launches the Scalar DLC Management GUI as the browser applet. Also the SSL encryption feature is activated when a customer launches the Java-based application Scalar DLC Manager which represents the same Management GUI. The details on Management GUI are described in the *Reference Guide, Configuration* chapter.

The following are characteristics of SSL/TLS:

- Generic enough to be incorporated into many applications

- Provides security between the transport (TCP protocol) and upper application layer protocol such as HTTP, FTP, or TELNET.

- Supports encryption, authentication, and key exchange

   - Encrypts data so that anyone who intercepts is unable to read it.

   - Assures clients that they are dealing with the server they intend to connect to.

   - Prevents any unauthorized clients from connecting to the server.

   - Prevents anyone from meddling with data going to or coming from the server.

- Three protocol capabilities: authentication, encryption, and key exchange

Microsoft SQL Server Desktop Engine 2000

If the Microsoft SQL Server 2000 is installed already, it is not required to install the MSDE 2000. If there is either MSDE 7.0, or MS SQL Server 7.0 installed on the PC, the installation upgrades it for the MS SQL system service remains workable.

By default, the MSDE 2000 is installed in the `<%SystemDrive%>\Program Files\Microsoft SQL Server\` directory. An advanced user can install the MSDE 2000 in any desired directory. After the MSDE 2000 installation is completed, re-start the system if required.

If the Scalar DLC should be installed as a Cluster solution, the MS SQL 2000 should be installed on a shared disk to the specified folder that must be shared, too. See figure below.

Figure 61   MSDE 2000 Installation
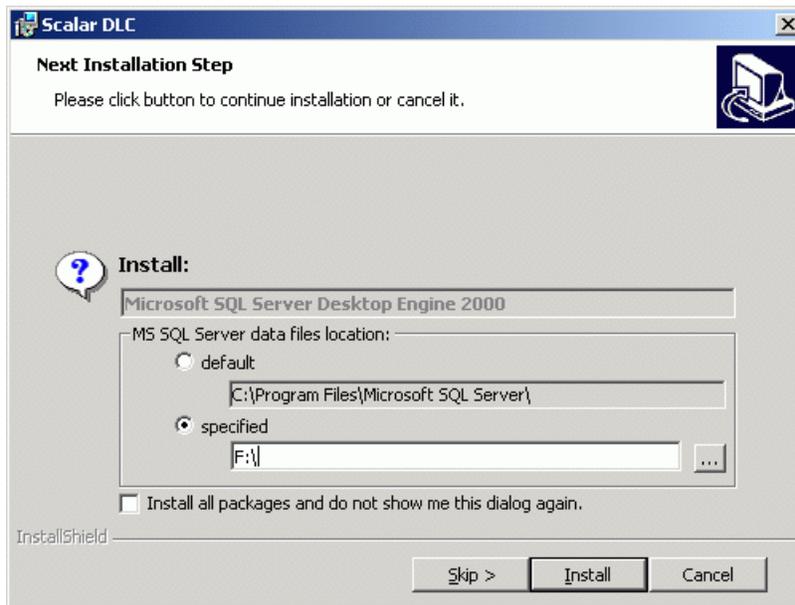
MSDE 2000 Service Pack 3

The SP3 for MSDE 2000 was designed to fix bugs and security holes found in the basic version of the software (MSDE 2000). Because the Scalar DLC uses the SQL database to store all system information this service pack is required for the correct performance of the Scalar DLC software.

NOTE: If there is no MSDE 2000 but complete MS SQL 2000 installed, do <u>not</u> install this service pack. Go to the http://www.microsoft.com instead, download the Service Pack 3 for MS SQL 2000, and install it manually.

CAUTION: **ADIC recommends installing Service Pack 3 for MSDE 2000. Otherwise a security hole in MSDE 2000 remains open and could be used by internet viruses or worms (for example, Slammer).**

Install the Scalar DLC Software

Follow the directions on the Setup Start window to install the Scalar DLC software.

Figure 62   Start Setup

All Setup windows contain the following buttons:

• Back

• Next

• Cancel

Figure 63   Licensing

To continue the Scalar DLC Installation, accept the ADIC License Agreement. Click **Next** to proceed to the next screen.

Figure 64   Required Components
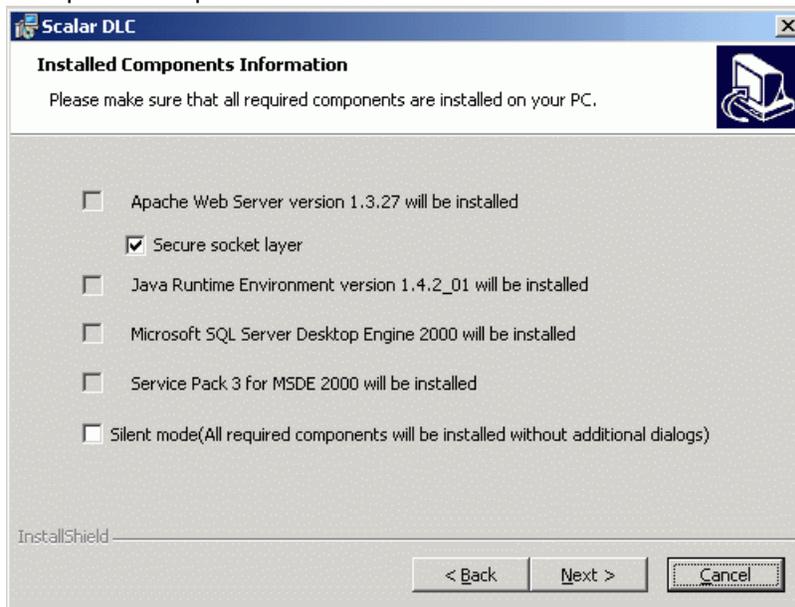
Proceed only after all of the required components are installed. Otherwise, the Scalar DLC Installation must be cancelled and launched again after the missing software is installed.

Click **Next** to proceed to the following screen.

Figure 65   Personal Information
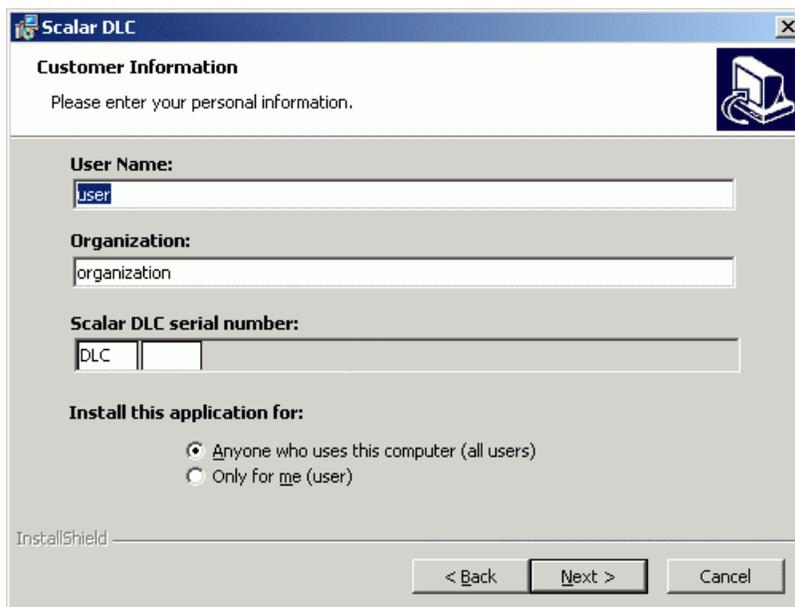
Enter the customer's personal information. Refer to **Table 5 on page 54** for the meaning and required operation of the fields.

Table 5 Personal Information

Name	Operation	Description
User name	Enter	The user name. By default, it is the person registered as the PC owner.
Organization	Enter	The organization name. By default, it is the organization registered as the PC owner
Scalar DLC serial number	Enter	The Scalar DLC serial number (5 digits). This number is shown on the back of the Scalar DLC Installation CD.

Next, the installation process creates an account and registers the Scalar DLC internal components. See **Figure 66** for the local account, see **Figure 67 on page 55** for the domain account, and see **Figure 69 on page 56** for the registration.

Figure 66 Create Local User Account
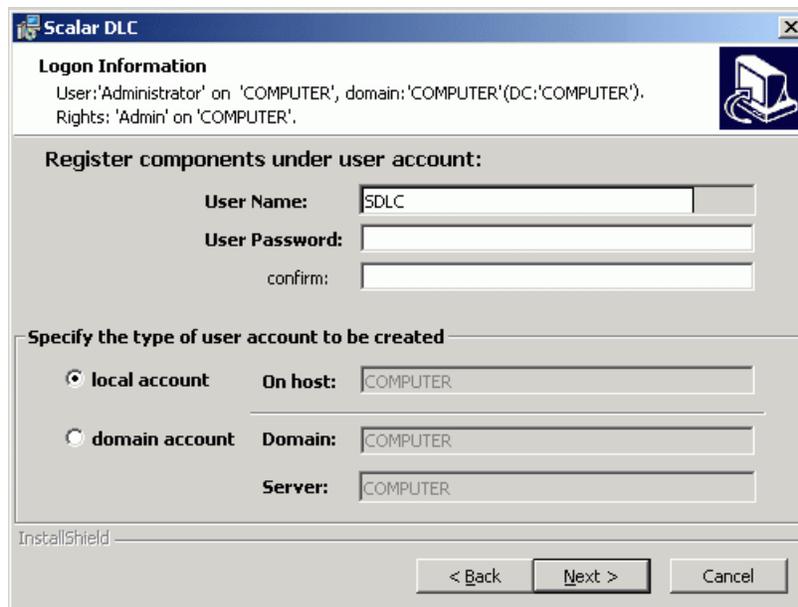
Enter the user account settings.

Table 6 Create User Account

Name	Operation	Description
User name	Enter	User account name, 'SDLC' by default
User password	Enter	User account password.
Confirm	Enter	Password must be confirmed.
User account to be created	Select	*Local* specifies the account type as local (default).
		Domain specifies the account type as domain.
On host	Supplied	Local host name.
Domain	Supplied	The domain name (not editable for the local account).
	Enter	The domain name (editable for the domain account).
Server	Supplied	The domain server name, not editable.

Table 6   Create User Account

Name	Operation	Description
Check (for domain account only)	Click	Check the rights on the domain. For a domain admin, the **Next** button appears; otherwise, domain account installation is not available.

Figure 67   Create Domain User Account
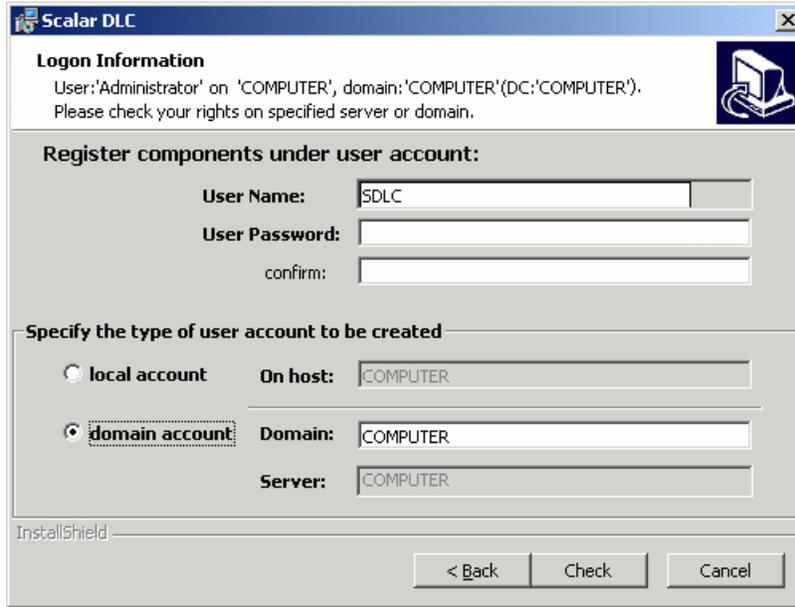
The user account should be entered in this window. Refer to **Table 6 on page 54** for the details. Click **Next** to proceed.

NOTE: Domain administrator rights are required to install Scalar DLC under a domain account.

If the account name already exists and the password does not match the existing account's password, the User Account warning appears. See **Figure 68 on page 56**. Otherwise, if the user account is created successfully, the Component Registration window appears. See **Figure 69 on page 56**.

Figure 68   User Account Warning
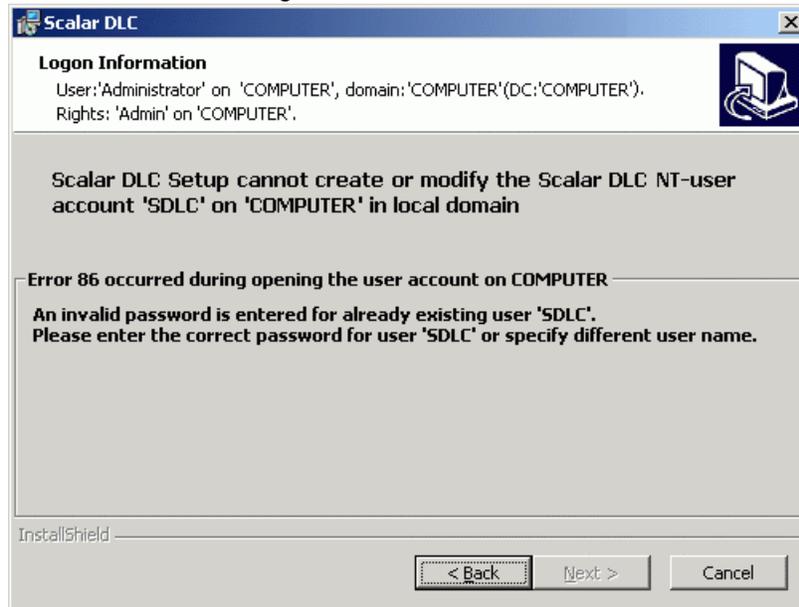
Go back and specify another user account or enter the correct password.

Figure 69   Component Registration
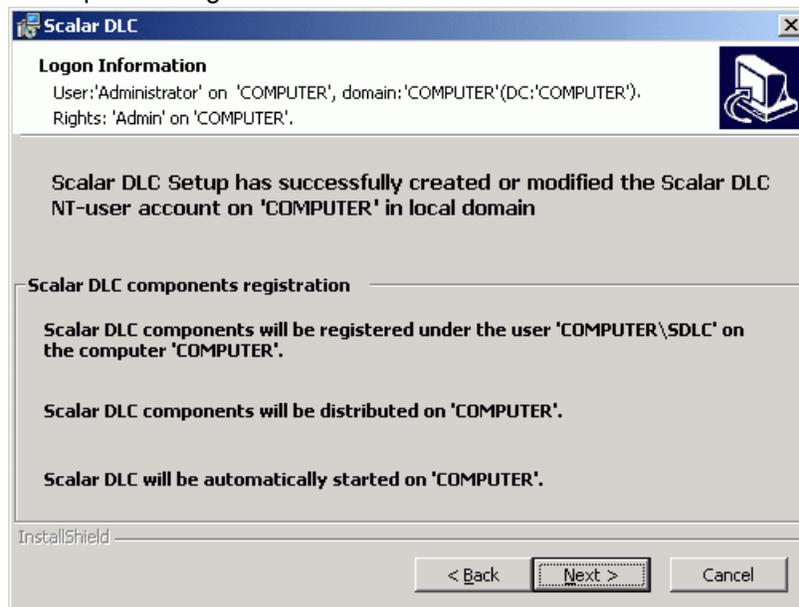
🖉 NOTE: Do not use system tools to change the Scalar DLC user account created during installation. If a change is made, the Scalar DLC system will not start. To correct this situation, launch the Scalar DLC Add/Remove engine in the *Repair* mode.

Figure 70   Database Information
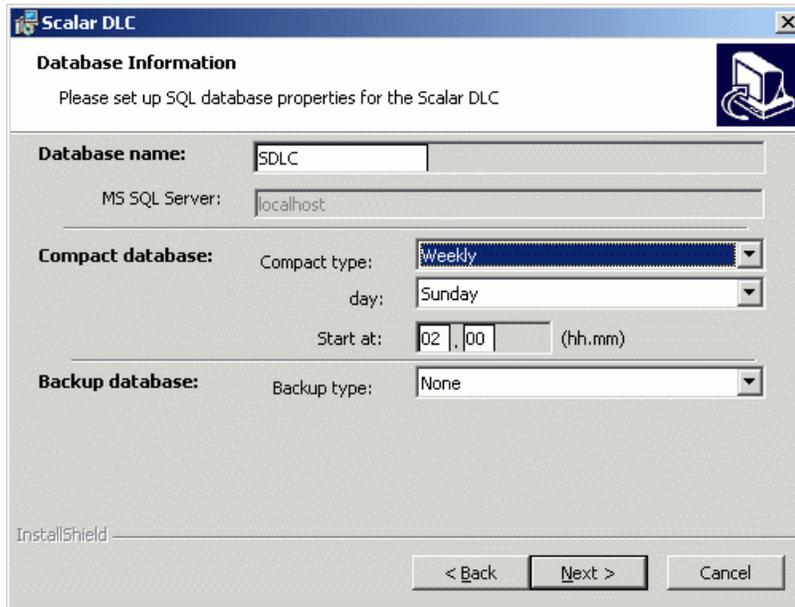
Refer to **Table 7** for the additional information.

Table 7   Database Information

Name	Operation	Description
SDLC Database name	Enter	The default Scalar DLC database name, 'SDLC', will be used unless the user specifies another name.
MS SQL Server	Supplied	The default host name where the database should be created.
Compact	Select	The Compact Database schedule can be set here.
Backup	Select	The Backup Database schedule can be set here.

> NOTE: The schedules for Backup and Compact jobs are described in more detail in the *Database Utility* section of the *Scalar DLC Reference Guide*. The backup and compact schedules can be changed later, the database name cannot be changed.

Specify the database name and backup/compact schedules, and press **Next** to proceed.

If the specified Scalar DLC database already exists, either keep it or create a new, clean database. See **Figure 71 on page 58**7. If the database was created by an older version of Scalar DLC software, either update it or create a new, clean database. See **Figure 72 on page 58**.
If a new database is installed, the next window, Email Notifications settings, appears. See **Figure 73 on page 59**.

Figure 71   Selecting Database: Create or Keep
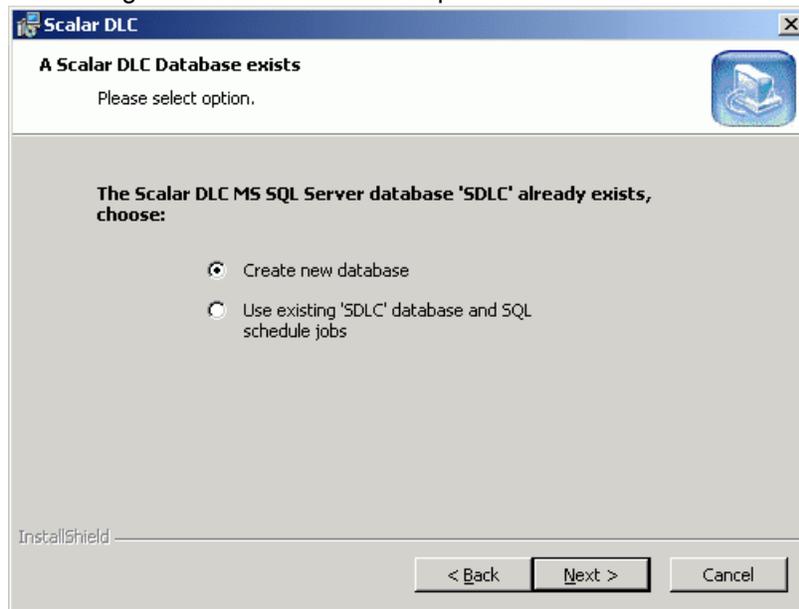
NOTE: The old database may be used only with the same version of the Scalar DLC.

If a new database is created, click **Next** to proceed to the **Figure 73 on page 59**; otherwise, proceed to the final screen.

Figure 72   Selecting Database: Create or Upgrade
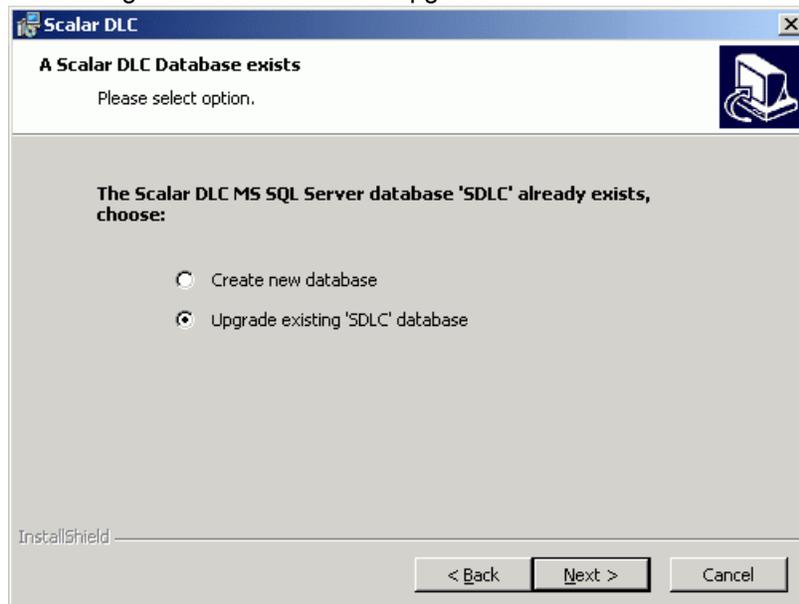
Refer to **Table 8 on page 59** for the additional information.

Table 8   Database Upgrade

Old Scalar DLC Version	Additional activity
2.1	Reconfigure SCSI Target manually after the database upgrade. Refer to **Upgrading the Scalar DLC on page 83**.
2.2	Upgrade database.
2.3	Upgrade database.
2.4	Upgrade database.
2.5	Use existing database.

If a new database is created, click **Next** to proceed to **Figure 73**; otherwise, proceed to the final screen.

Figure 73   Email Notification Settings
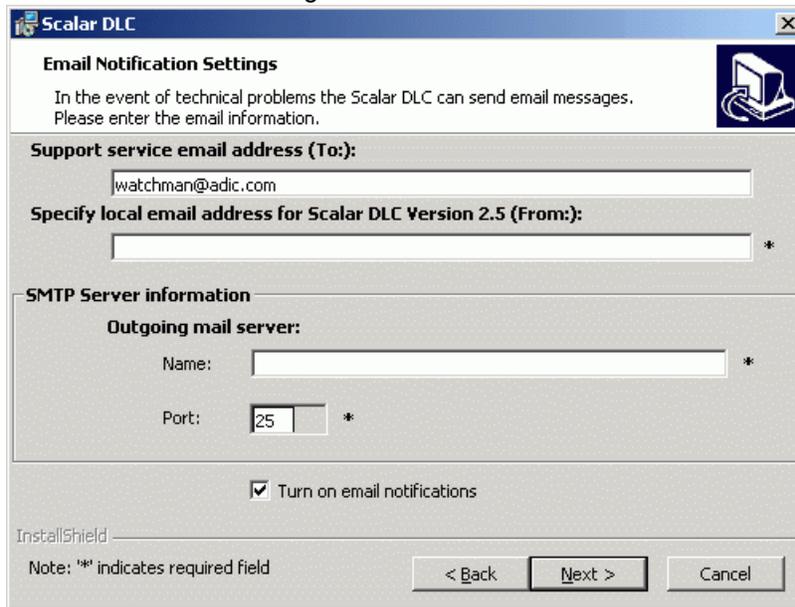
Enter the email settings. Refer to **Table 9** for details.

Table 9   Email Notification Settings

Name	Operation	Description
Support service email address (To:)	Supplied	The email address for ADIC Scalar DLC technical support: 'watchman@adic.com'. Not changeable.
Local email address (From:)	Enter	The email address shown in the **From:** field of emails.
Outgoing mail server: Name	Enter	The SMTP mail server name.
Outgoing mail server: Port	Enter	The SMTP mail server port.

Table 9   Email Notification Settings

Name	Operation	Description
Turn on email notifications	Check	Turn the email notifications on if the box is checked. This can be changed later via the Management GUI (*Main Menu > Extended service > Registration information*).

NOTE: If the email settings are not properly configured, notifications will not be sent via email. The email parameters cannot be changed after the Scalar DLC is installed.

Click **Next** to proceed to the figure below.

Figure 74   Setup Type
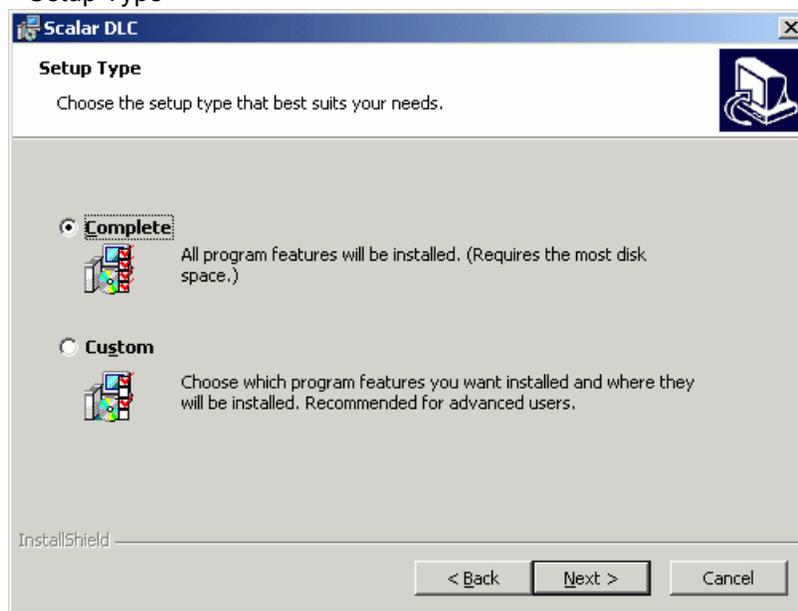
There are two types of Scalar DLC software installations: *Complete* and *Custom*.

The *Complete Setup* requires more disk space than various types of custom installs and places all Scalar DLC software components in the default directory:
`<%SystemDrive%>\Program Files\ADIC\SDLC\`.

The *Custom Setup* allows to choose both the destination directory and the internal Scalar DLC software features that will be installed (if some features are not required, for example, Scalar DLC SCSI Client support). See **Figure 75 on page 61** for details.

Specify the installation type and click **Next** to proceed.

Figure 75   Custom Setup
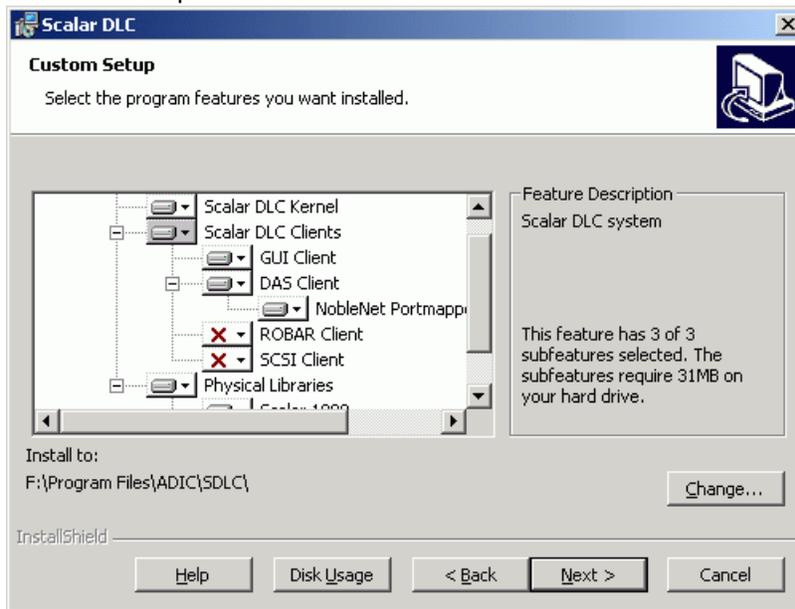
Table 10   Custom Setup

Name	Operation	Description	
Scalar DLC Components	Supplied	Mark/unmark the component for installation.	
Kernel	Supplied	The kernel of Scalar DLC software. Installed always.	
Clients	Supplied	GUI	The Scalar DLC Management GUI, main administrator tool. Installed always.
	Check	SCSI	The SCSI Client support. Installed optionally.
	Check	DAS and NobleNet	The DAS Client support. Installed optionally.
	Check	ROBAR	The ROBAR Client support. Installed optionally.
Physical Libraries	Supplied	Scalar 10K	The support of Scalar 10K single-aisle. Installed always.
	Supplied	Scalar 10K DA	The support of Scalar 10K dual-aisle. Installed always.
	Supplied	Scalar 1000	The support of Scalar 1000. Installed always.
Feature Description	Supplied	The component name and disk space requirements.	
Install to	Supplied	The current destination folder where the Scalar DLC should be installed. The default is `%SystemDrive%\Program Files\ADIC\SDLC\`.	
Change	Click	Change the destination folder.	

Specify the components to install and the destination folder, and click **Next** to proceed.

Figure 76   Install SCSI Target Driver
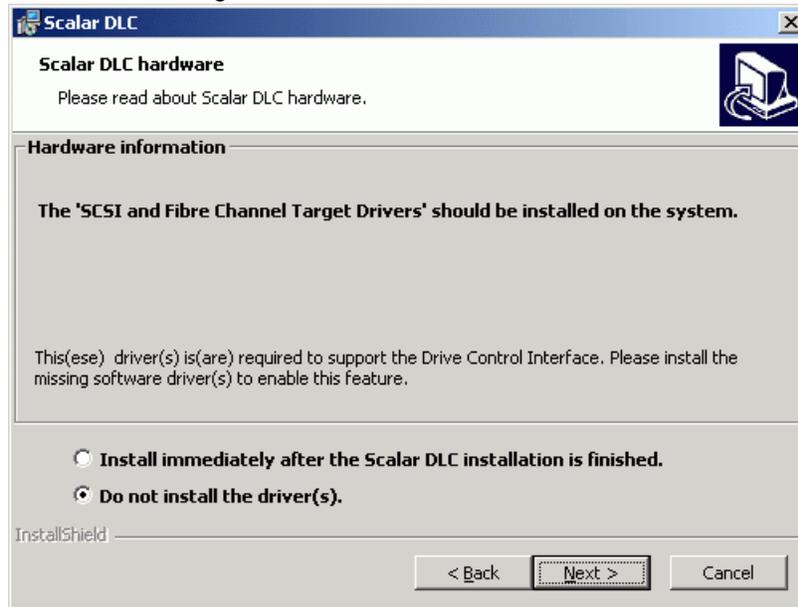
When the SCSI Client component is selected for installation in either the *Complete* or *Custom Setup*, the installation process requests to install the SCSI and Fibre Channel Target driver. If this option is accepted, the SCSI Target Mode Driver installation proceeds after the Scalar DLC software is installed successfully. Otherwise the Scalar DLC software installation proceeds but the SCSI Target software features remain not operable if no SCSI Target driver is present in the system (for example, from a previous installation).

NOTE: The SCSI/Fibre Channel Target drivers are needed to operate additional hardware (the SCSI card or FC card) required for using the Scalar DLC SCSI Target features. If this card is physically absent, the driver can be installed, but the Scalar DLC SCSI Target features will not work.

This request is shown every time the Scalar DLC SCSI Client component is selected for the installation. ADIC recommends accepting the option and installing the drivers. If the drivers are installed already, decline this option. The drivers may be installed later manually as well.

For the details on SCSI Target Mode Driver installation and configuration process, refer to **Installing the SCSI/FC Target Drivers on page 71**.

After the Scalar DLC components are installed, enter the registration information. See **Figure 77 on page 63**.

Figure 77   Registration Form
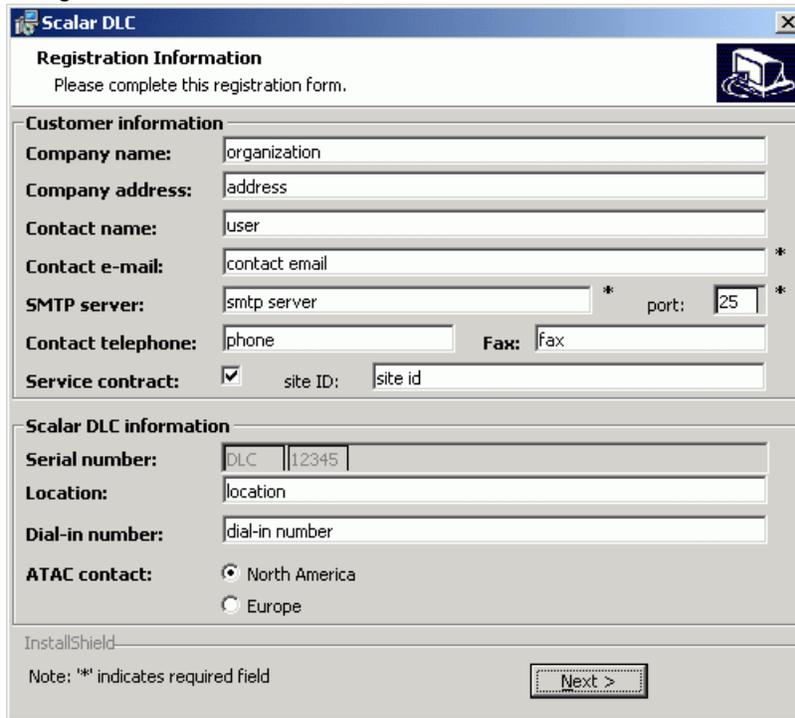
For licensing purposes, enter the registration information. Fields marked with the asterisk must contain valid information.

Table 11   Registration Form

Name	Operation	Description
Company name	Enter	The company's name.
Company address	Enter	The company's mailing address.
Contact name	Enter	The contact person's name.
Contact email *	Enter	The contact email address.
SMTP Server *	Enter	The SMTP server name.
Port *	Enter	The SMTP server port.
Contact telephone	Enter	The contact phone number.
Contact fax	Enter	The contact fax number.
Service contract	Check	Marks the service contract feature as 'signed' if checked.
Site ID	Enter	The site ID (for the signed service contract).
Scalar DLC S/N	Supplied	The Scalar DLC serial number.
Scalar DLC location	Enter	The Scalar DLC location.
Scalar DLC dial-in number	Enter	The Scalar DLC dial-in number.
ATAC contact	Select	The Scalar DLC ATAC contact region (North America or Europe)

NOTE: The registration information can be changed later via the Management GUI (*Main Menu > Extended service > Registration information*).

After entering the data, click **Next** to proceed. Review the information and make changes if necessary. See the following figure.

Figure 78 Review Registration Form

The request form can be printed out and/or send via email to ADIC customer support to obtain a license. Refer to **Table 12** for additional information.

Table 12 Review Registration Form

Name	Operation	Description
Send license request	Check	If checked, sends license request to ADIC.
Print now	Click	Print the registration form for mail or fax delivery.
Send email	Click	Send the registration form via email (see **Figure 79 on page 65**).

Figure 79   Email Registration Form
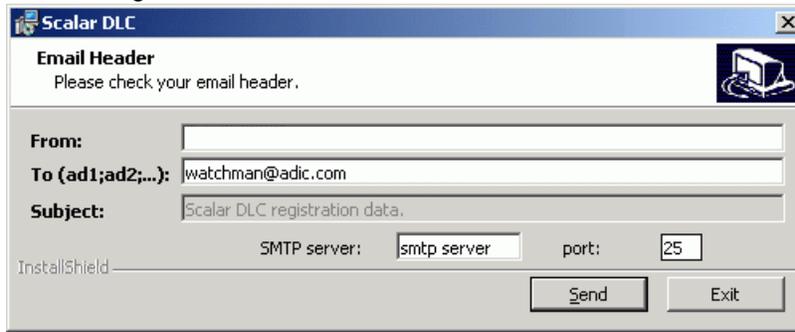
The email can be sent to any number of recipients. Refer to **Table 13** for details.

Table 13   Email Registration Form

Name	Operation	Description
From:	Enter	'From' email address
To:	Enter	'To' email address (list of addresses)
Subject	Supplied	Not changeable. Email 'Subject'.
SMTP Server	Enter	The SMTP server name must be set here
Port	Enter	The SMTP server port must be set here.
Send	Click	Send email.
Exit	Click	Return to the previous dialog without sending email.

The Scalar DLC software is installed successfully. If no additional configuration steps are required, re-start the computer.

Installing DAS Client

The DAS Client software will be completely functional after the following configuration steps.

Step 1   Install the Scalar DLC software with the DAS support on the server PC. Refer to **Install the Scalar DLC Software on page 51**. The server PC requires a restart.

Step 2   Start the Management GUI. Create the library configuration that the client requires. Create the required mailboxes and clean/scratch pools. Create a DAS client and assign it to the created library. Refer to the *Scalar DLC Reference Guide*, *Configuration* chapter.

Step 3   Install the client application on the client PC.

1. **Figure 80 on page 66** shows the DAS Client components selection during the installation of Scalar DLC DAS Client software.

Figure 80   Select Scalar DLC DAS Client Components
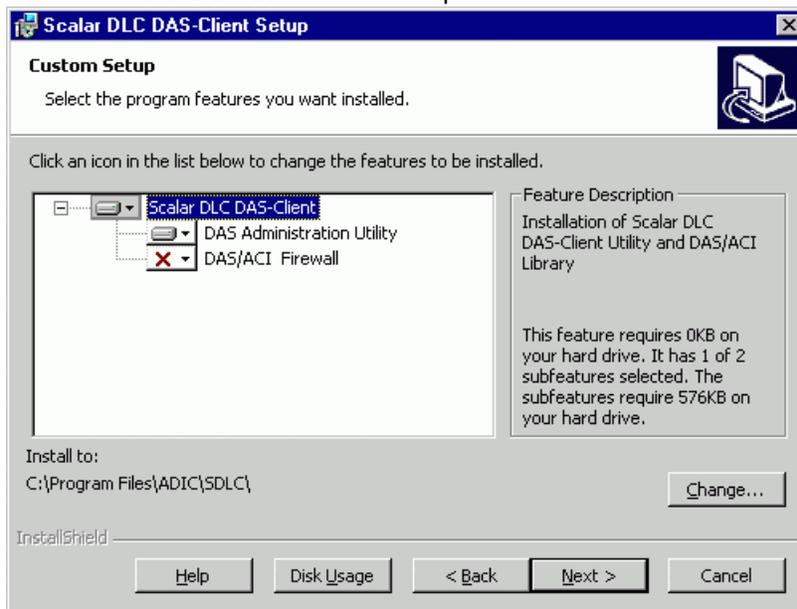
2. The installation will place the selected components in the `<%SystemDrive%>\Program Files\ADIC\SDLC\` directory. Change the destination folder if it is required.

3. The DAS Administration Utility should be installed on a PC that will run the DAS Client software. Refer to **Install the DAS Administration Utility on page 68**.

4. If there is a firewall between the Scalar DLC (server) host and the client host, the DAS/ACI firewall software should be installed on a PC *inside* the firewall. Refer to **Install the DAS/ACI Firewall on page 69**.

> ✎ NOTE: The DAS/ACI firewall software can be installed directly on Scalar DLC host. In case of the cluster solution, it should be installed on both cluster nodes.

5. **Figure 81 on page 67** illustrates the typical network structure.

Figure 81   Scalar DLC DAS Client Network
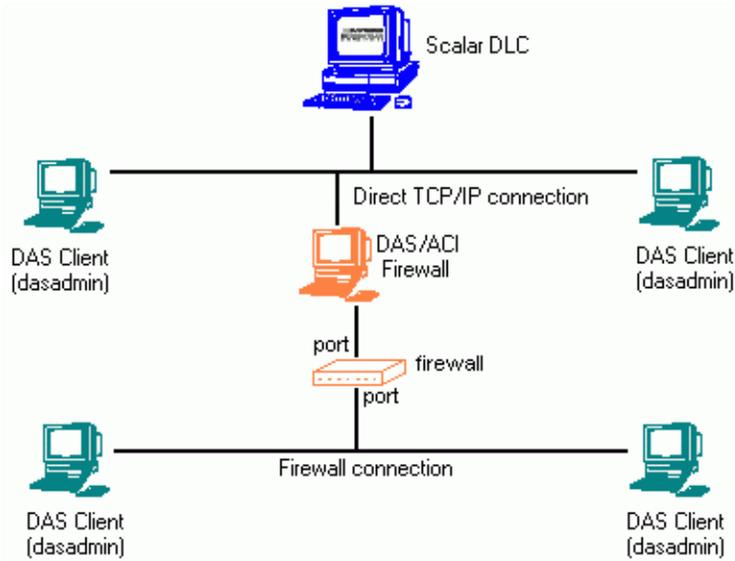
6. The installation configures appropriate server, client, and media type values (refer to **Table 14**).

Table 14   Environment Variables for DAS

Variable	Explanation
DAS_SERVER	Network names (TCP/IP) of the server which are accessed by the *dasadmin* program. Both names are entered separated by a comma, only when installing dual DAS. The names must be resolvable on the computer into TCP/IP addresses. For the firewall connection, the DAS/ACI Firewall PC name is used here.
DAS_PORT	A port being used to send DAS commands (for the firewall connection only).
DAS_CLIENT	Name of the client under which the DAS PC is to access the server. The name must be defined in the Scalar DLC database.
ACI_MEDIA_TYPE	Default media type selected when using *dasadmin* if the parameter *-t* is omitted from the command.

NOTE: These variables can be also set manually. This is very useful when several DAS Clients have to share one client host.

7. Once the variables are set, the restart is requested. ADIC recommends accepting the restart so that the Scalar DLC DAS-Client software works properly.

Step 4   After the configuration is complete, the Scalar DLC software is ready to accept commands from a DAS client.

Install the DAS Administration Utility

The connection settings must be entered during the installation of the *dasadmin* software. See **Figure 82** for a firewall-based connection and see **Figure 83 on page 69** for a direct (firewall-free) connection.

Figure 82   DAS Client Connections Using Firewall

Refer to **Table 15** for details.

Table 15   DAS Client Connection Parameters

Property	Operation	Description
DAS Client connection	Select	*Not using firewall* should be selected if there is no firewall between the client host and the Scalar DLC host.
		Using DAS/ACI firewall should be selected if a firewall exists between the client host and the Scalar DLC host.
DAS/ACI firewall server name	Enter	Name of the PC where the DAS/ACI Firewall software is installed (shown for *Using DAS/ACI firewall* selection only).
Port	Enter	The firewall port (shown for *Using DAS/ACI firewall* selection only).
Scalar DLC server name	Enter	The Scalar DLC server name (shown for *Not using firewall* selection only).
DAS Client name	Enter	The default DAS Client name. Refer to **Table 14 on page 67**.
ACI Media type	Select	The default ACI media type. Refer to **Table 14 on page 67**.

Figure 83   DAS Client Connection without Firewall

> **NOTE:**   If the connection type is specified incorrectly, the DAS Client software will install successfully but the connection with the Scalar DLC host cannot be established.

Install the DAS/ACI Firewall

If there is a firewall between the Scalar DLC host and the client host, the DAS/ACI firewall software should be installed on the PC *inside* the firewall; this PC can be the Scalar DLC host itself. See **Figure 81 on page 67**.

> **NOTE:**   The DAS/ACI firewall software can be launched only under Windows or OS/2 platforms.

Launch the DAS Client installation and when the component selection screen appears (see **Figure 80 on page 66**), select a DAS/ACI Firewall component. See **Figure 84** for a DAS/ACI Firewall settings screen.

Figure 84   DAS/ACI Firewall
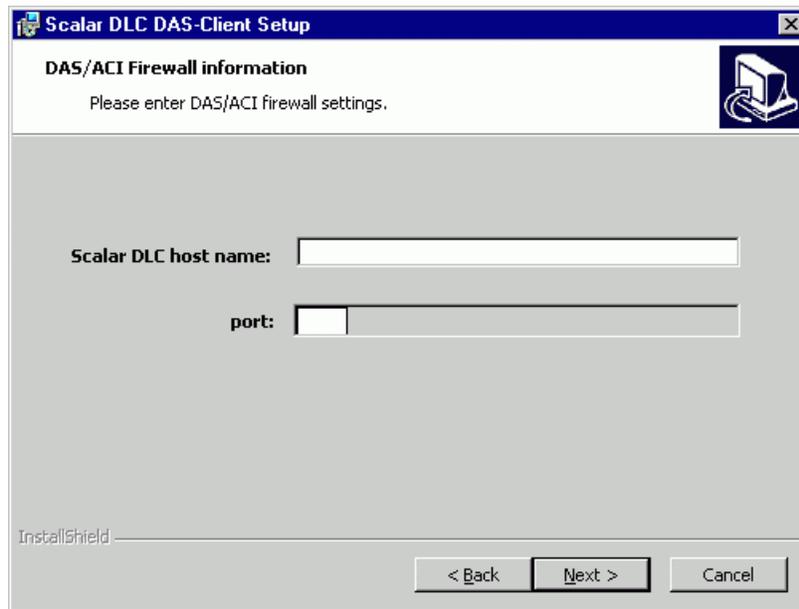
Refer to **Table 16** for details.

Table 16   DAS/ACI Firewall Parameters

Property	Operation	Description
Scalar DLC host name	Enter	The Scalar DLC server name.
Port	Enter	The firewall port to receive client commands.

After the DAS/ACI firewall is installed, the restart is requested. A new software service **DAS-ACI Firewall** appears in system services list.

Installing the SCSI/FC Target Drivers

The SCSI Target Mode Driver installation installs the Target driver for the SCSI/Fibre Channel Adapter(s) present on PC.

> **NOTE:** If the SCSI Target Mode Driver installation is launched on a PC with the installed target drivers from a previous version (for example, 2.4), the install engine will remove the old drivers. Refer to **Add/Remove SCSI Target Drivers on page 76**.

> **CAUTION:** If there is a Virtual SCSI Target Mode Driver installed, it should be removed before the SCSI Target Mode Driver installation. This can be done from **Control Panel > Add-Remove Programs.**

> **NOTE:** There should be the Initiator driver(s) activated in the system before the Target driver(s) are installed. Refer to **Initiator Driver on page 74** for the details.

Figure below shows the Setup Start window of the SCSI Target software.

Figure 85   SCSI Target Start Setup

Click **Next** to proceed.

Figure 86 SCSI Target Licensing
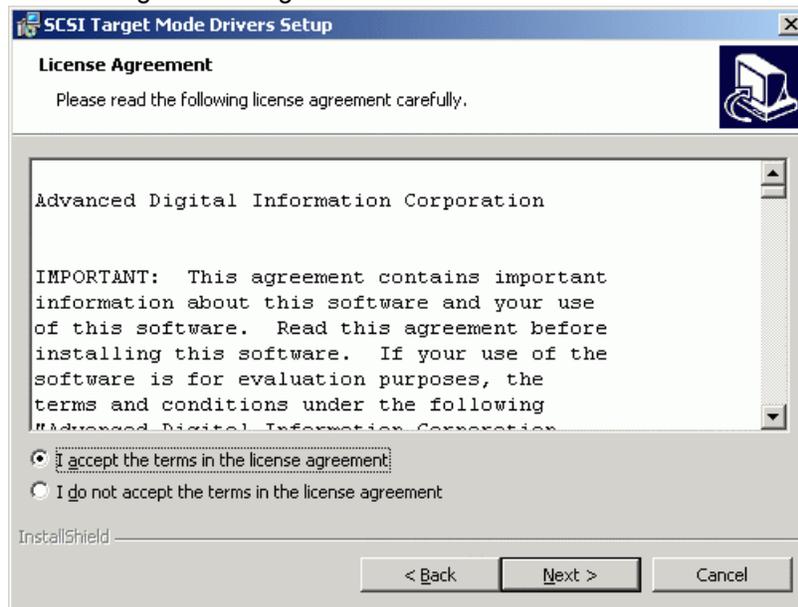
Accept the ADIC License Agreement and click **Next** to proceed.

Figure 87 Personal Information
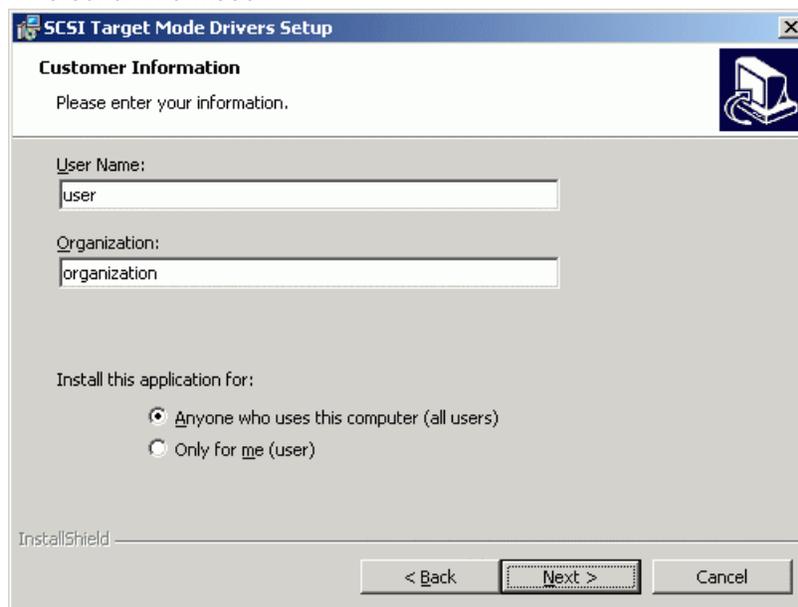
Enter the customer's personal information. Refer to **Table 5 on page 54** for the meaning and required operation of the fields. Click **Next** to proceed.

Figure 88   Driver Selection
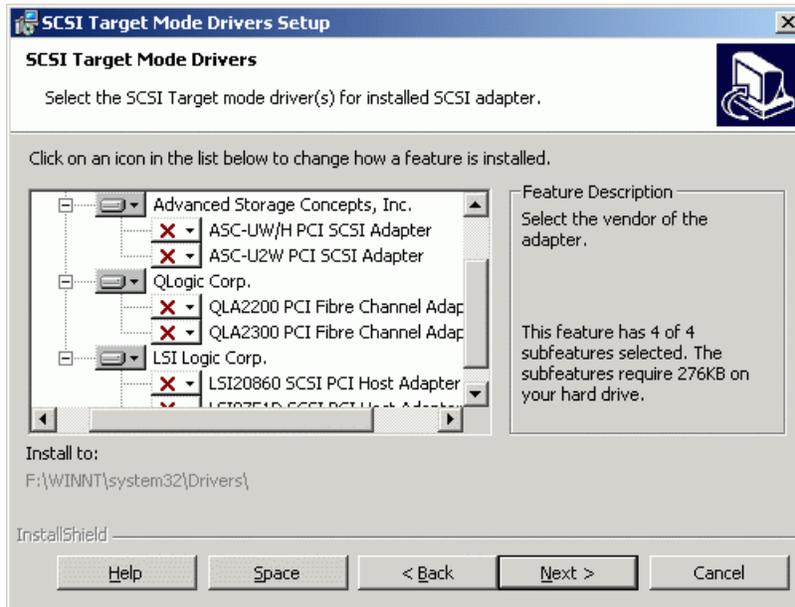
Click the driver to select it. Refer to **Table 17** for driver selection details and **Table 18** for SCSI and Fibre Channel adapters.

Table 17   Driver Selection

Name	Operation	Description
Drivers	Check	Mark/unmark the driver for installation. Refer to **Table 18** for a description of SCSI and Fibre Channel adapters that could be used in the system.
Feature Description	Supplied	Shows the driver name and disk requirements.

Table 18   SCSI and Fibre Channel Adapters

Adapter	Type	Connection (external)	Max targets	Max SCSI ID	Max cable length, m
LSI 20860	SCSI	50-pin high density SE	7	7	5
LSI 8751D	SCSI	68-pin high density HVD	15	15	25
LSI 8951U	SCSI	68-pin very high density LVD/SE	15	15	12(LVD) 5(SE)
LSIU80LVD	SCSI	68-pin very high density LVD/SE	15	15	12(LVD) 5(SE)
QLA 2200	Fibre Channel	SC duplex multi-mode	31	127	-
QLA 23xx [a]	Fibre Channel	Small form factor multi-mode optic LC	31	127	-
Local [b]	SCSI	-	127	127	-

a. 'xx' means 00, 10, 40, and 42. No other models are currently supported.

b. The driver is designed by ADIC to execute the SCSI backup applications right on the PC where the Scalar DLC software is installed. No SCSI/FC hardware is required in this case

NOTE: The Local SCSI Target driver (powered by ADIC) is added for emulation the SCSI Target features on a PC without appropriate SCSI adapter. In the Management GUI, under the SCSI Target tab, the Local SCSI Target port appears, the Target objects can be created and assigned to the SCSI Clients. However, this port is not reflected in the SCSI Target Port Tool because this utility shows only adapters that could operate either as Initiators or as Targets.

After the successful installation, if no additional configuration steps are required, the computer must be restarted.

NOTE: After rebooting, the adapters that should operate in Target mode are disabled. To enable them, use the SCSI Target Port Tool.

SCSI and Fibre Channel Hardware

The SCSI and/or Fibre Channel adapters must be installed into the PCI-type slots.

CAUTION: **Connecting two adapters that do not match will cause hardware damage.**

Before connecting SCSI Initiator (client host) and Target (Scalar DLC host) adapters with the SCSI cable, be sure that they match each other. Refer to **Table 18 on page 73** for a description of adapters that are currently supported and refer to **Table 19** for a match description.

Table 19   Parallel SCSI Match

Adapter Class	Matched
Single-ended (SE)	SE, SE/LVD
Low voltage differential (LVD)	LVD, SE/LVD
SE/LVD	SE, LVD, SE/LVD
High voltage differential (HVD)	HVD

The supported Fibre Channel adapters do match each other.

Initiator Driver

The Initiator driver can be installed before installing Scalar DLC software of after this operation as well. However, it should be done before installing SCSI Target drivers.

For each SCSI adapter found during the Windows setup and/or startup, the operating system usually installs the Initiator mode driver. However, for the newest adapter models, there can be trouble finding an appropriate driver because they are not present in a standard driver library. If such a problem encountered, follow the steps below.

NOTE: Follow the instructions only if there is no proper Initiator mode driver(s) present in the system. When everything works, there is no need to re-install the drivers manually.

Step 1 Be sure that you have a manufacturer disk with the appropriate software driver for your adapter, or you have downloaded this driver from the manufacturer's web-site to the temporary folder. ADIC also offers the required drivers at the `<%Scalar DLC Install_CD%>\Drivers\Initiator` folder.

Step 2 *During* setup/startup, the Win2000 system opens Found New Hardware wizard. Follow the wizard steps. Specify a driver location (disk or temporary folder) so that the system can install it.

Step 3 *After* Win2000 startup, right-click on **My Computer** desktop icon, select **Manage** and launch **Device Manager** system tool. Locate the *Other Devices* group and the SCSI adapter. Open the properties for the required device, select *Driver* tab and click **Update Driver**. Follow the Upgrade Device Driver Wizard steps. Specify a driver location (disk or temporary folder) so that the system can update it.

Step 4 Repeat the steps above for each SCSI and FibreChannel adapter that is not properly configured by the system.

Step 5 Re-start the PC if it is required.

The Target mode drivers now can be installed. Refer to **Installing the SCSI/FC Target Drivers on page 71**.

PCI Slot Troubles

In some cases, the SCSI Adapter installed in the PCI slot operates improperly or does not operate at all. The main symptoms are:

- Windows hangs on starting or works slowly.

- the installed SCSI Target driver does not start

- the driver is installed but the Management GUI does not recognize the Target port

- the logical library visible from the initiator side is unstable (bus errors, target disappears, and so forth)

This situation is sometimes encountered when the PC has more than one active PCI slot, and the SCSI card that should operate in Target mode is installed in this slot.

The problem can be solved by swapping the SCSI Target Adapter with another PCI card in an occupied slot, or temporarily remove any unused PCI devices to avoid possible problems with the system interrupts.

SNC Issues

If the SCSI Clients use SNC as an interface between Initiator (client) and Target (Scalar DLC) host, and the command is send when the Scalar DLC is down, the Target objects mapped on SNC will disappear so the client cannot send the commands later even after the Scalar DLC software is up again.

This results the SNC mapping problem. To fix the situation, either execute the 'ScsiRescan' issue from client side or reboot the SNC. If the Scalar DLC is up, the targets will be re-mapped.

Add/Remove SCSI Target Drivers

To remove, modify, or repair the installed Target drivers, use the Add/Remove build-in system engine (**Control Panel > Add/Remove Programs > SCSI Target Mode Drivers**).

NOTE: Before removing Target drivers, return the appropriate SCSI adapters to the Initiator mode, that is, disable them as Targets via the SCSI Target Port Tool. Refer to SCSI Target Port Tool section in the *Utilities* chapter of the *Reference Guide*.

The same engine should be used in order to perform an upgrade of the SCSI Target Mode Drivers from a previous version.

Step 1   Load the Scalar DLC Install CD. The autostart screen will appear (see **Figure 1 on page 2**).

Step 2   Launch the SCSI Target driver installation. The Add/Remove SCSI Target wizard will appear.

Step 3   Select *Remove* to delete old target drivers installed on PC. Proceed until the remove engine will request to restart PC.

Step 4   After reboot, open the autostart screen again. Launch the Scalar DLC installation (refer to **Install the Scalar DLC Software on page 51**) to install both the Scalar DLC software and appropriate SCSI Target drivers.
If the Scalar DLC is installed already, launch only the SCSI Target driver installation (refer to **Installing the SCSI/FC Target Drivers on page 71**).

Add/Remove Scalar DLC Software

🗒 NOTE: <u>Before</u> removing Scalar DLC software from any cluster node, launch SDLC Cluster Configurator (see **Figure 51 on page 41**) and remove cluster configuration from the Scalar DLC resources (**Remove** button).

To add/remove the Scalar DLC software components launch: **Control panel > Add-Remove Programs > Scalar DLC**. This will run the Scalar DLC Add/Remove engine used to repair, modify, or remove the Scalar DLC software components installed on the PC. See the figure below.

🗒 NOTE: Local administrator rights are required to execute this procedure. Domain administrator rights are required if the Scalar DLC is installed under domain account.

Figure 89   Starting the Scalar DLC Add/Remove

Click **Next** to proceed to the following screen.

Figure 90 Modify/Repair/Remove
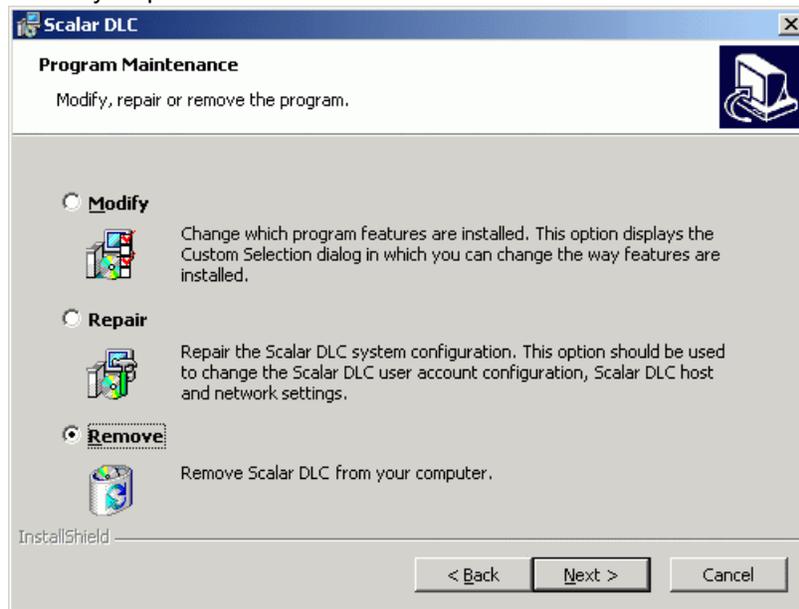
Specify the activity type and click **Next** to proceed.

Remove

The *Remove* process deletes all of the Scalar DLC software features except for the Scalar DLC account name and password that were set up during installation. See the figure below.

Figure 91 Saving the Database
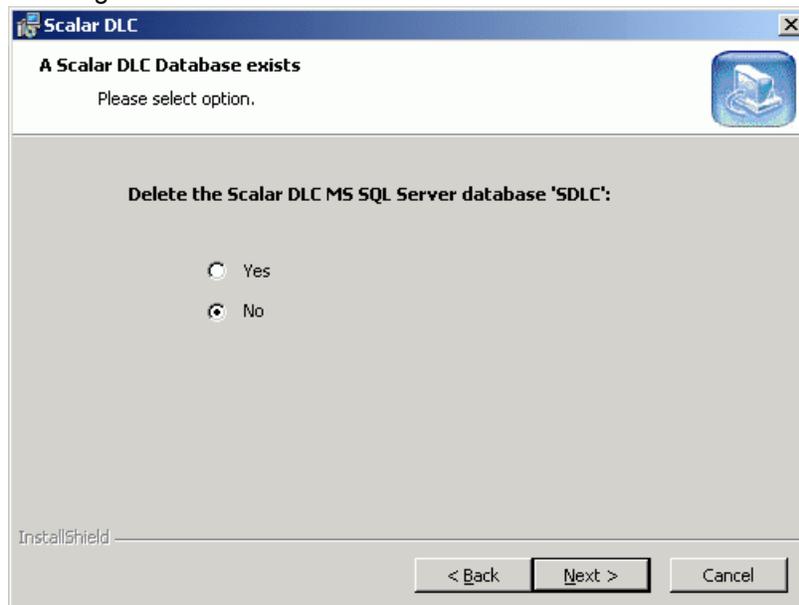
The Scalar DLC database can be either removed, or saved for future use. Click **Next** to proceed to the remove and the final screen.

Software programs such as Java2, Apache, MS IE, MSDE 2000, and so forth, are not removed and should continue to function normally. The *Remove* process also restores the old web server configuration software.

NOTE: To remove the software packages that are required by the Scalar DLC, use **Control panel > Add-Remove Programs**.

Repair

The Repair process allows the user to repair the damaged Scalar DLC configuration without re-installing the software. See figure below for the repair options.

Figure 92   Repair Options
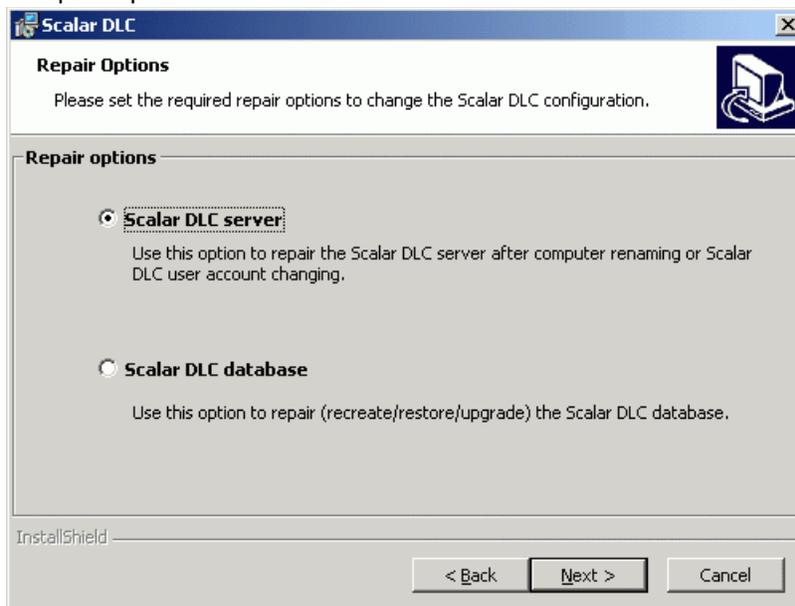
Choose either the Server option to repair damaged Scalar DLC software components (refer to *Server*), or Database option to repair the damaged Scalar DLC database (refer to **Database on page 81**). Click **Next** to proceed.

Server

The *Repair Scalar DLC Server* process allows to re-register the Scalar DLC software components under new user account without re-installing them. This section has been added to avoid problems concerning the changes of user account name/password. This section also allows to repair the installed Scalar DLC software after the PC is renamed. See the following figure.

Figure 93   Repair Server Options
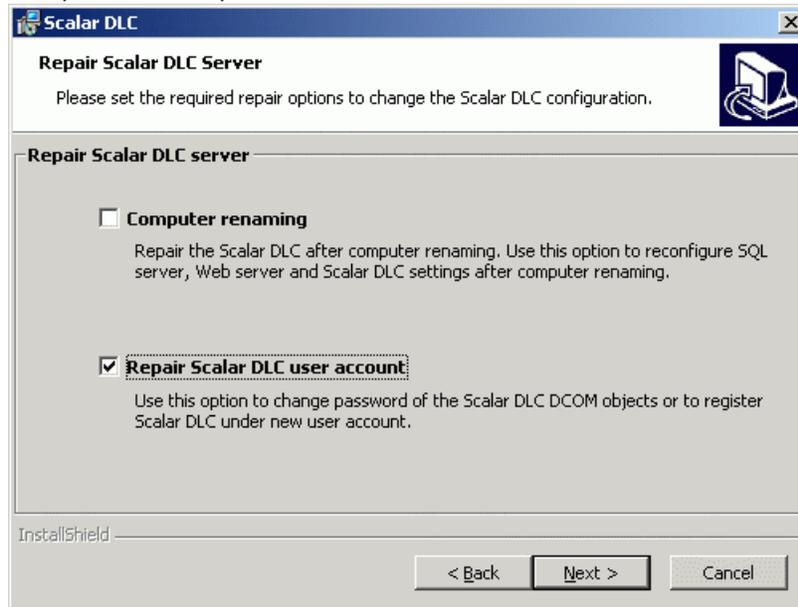
Select the repair options and click **Next** to proceed. Refer to **Table 20** for details.

Table 20   Repair Options

Name	Operation	Description
Computer renaming	Check	Repair the Scalar DLC software after the computer has been renamed. The Scalar DLC user account is also repaired.
Repair user account	Check	Repair the damaged Scalar DLC user account. Refer to **User Account on page 80**.

If the *Computer renaming* mode is selected, the *Repair* checks all needed software components. If no software upgrade needed, the *Repair* process proceeds to the user account section. Refer to **User Account on page 80**.

User Account

The repair user account screens look exactly the same as the user account creation screens appear during the Scalar DLC installation. See **Figure 66 on page 54** for the local account, and **Figure 67 on page 55** for the domain account.

Refer to **Table 6 on page 54** for the user account settings.

NOTE: To repair the Scalar DLC installed under a domain account, the domain administrator rights are required.

If the account name already exists and the password does not match the existing account's password, the User Account warning appears. See **Figure 68 on page 56**. Go back and specify correct password, or another user account.

If the account is repaired successfully, the Component Registration window appears. See **Figure 69 on page 56**.

Database

The *Repair Scalar DLC Database* process allows the user to repair the damaged Scalar DLC database. It contains the same database upgrade engine as the Scalar DLC installation and offers the same functionality. See the figure below.

Figure 94   Repair Database
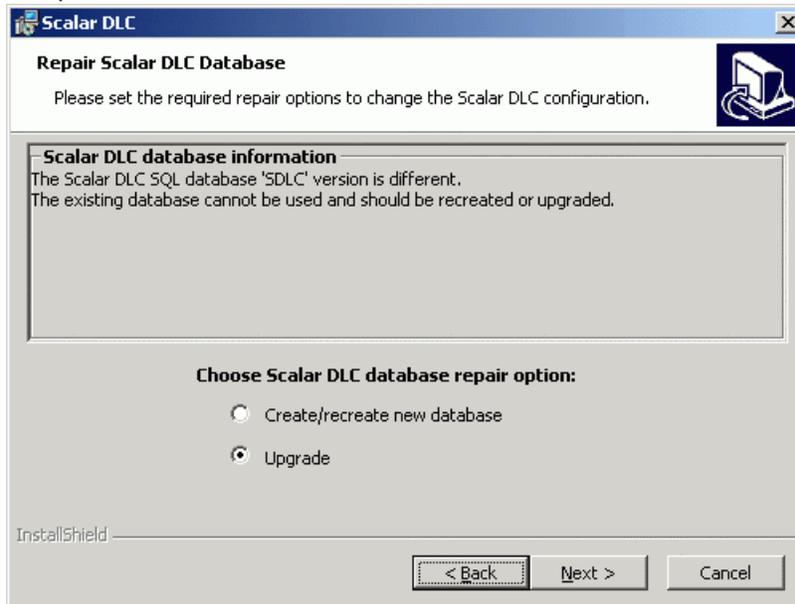
Choose either the "recreate database" option to acquire the new, clean database, or "upgrade" option to update existing database according to current standards (the upgrade details are described at **Table 8 on page 59**). Click **Next** to proceed to the upgrade and the final screen.

Modify

The *Modify* process allows to add or remove a number of Scalar DLC software features and to install the necessary software drivers. All changes will be applied only after system restart. See the figure below.

Figure 95   Modifying the System
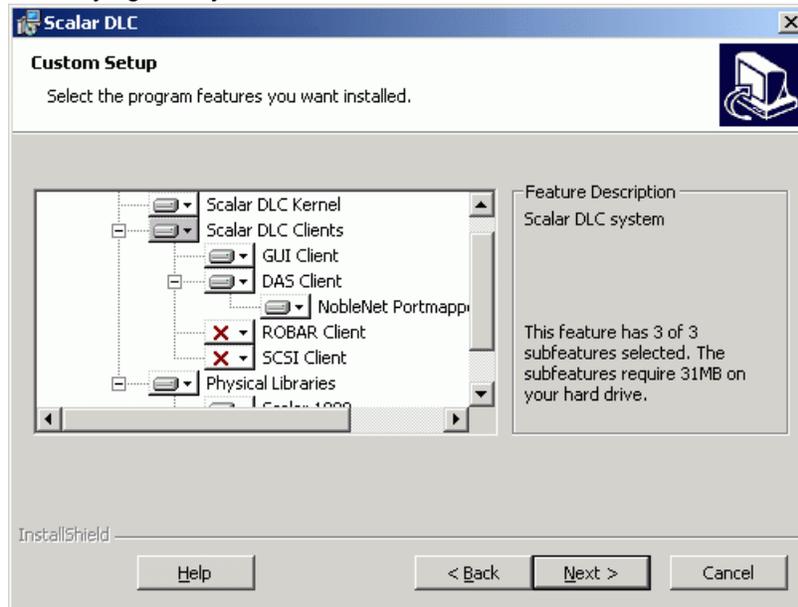
During the installation process, all files are written to the hard drive but do not appear at startup on the configuration list. All of these files can be accessed and activated in the *Modify* process mode. It is allowed to add, register, or un-register the Scalar DLC software features that are the parts of the SCSI, or ROBAR, or DAS-interface. The un-register procedure leaves the software written on the hard drive but makes it inaccessible to the user.

NOTE: The SCSI Client software feature cannot be installed completely without SCSI hardware (the SCSI/FC card) being present on the PC.

After Add/Remove process is finished, ADIC recommends restarting the PC.

Upgrading the Scalar DLC

Although the upgrade engine is a part of Scalar DLC installation, some additional actions may be required. Depending on the configuration used, refer to **Simple Upgrade on page 83** or **Advanced Upgrade on page 88**. The instructions on which upgrade type is more preferable are located in the appropriate sections of this manual (refer to **Table 3 on page 11** or **Table 4 on page 43**). Note also the **Upgrade Issues on page 90**.

Simple Upgrade

Follow these sequence to install the Scalar DLC on the PC where the older version of the Scalar DLC software is working.

Step 1   (only for the Scalar DLC ver. 2.1). Verify the current SCSI Target assignment. Log into the Scalar DLC Manager GUI (**Start >Programs >ADIC Distributed Library Controller > Scalar DLC Manager**) and look under *SCSI Target > SCSI Management*. Note which SCSI target cards are assigned to SCSI target IDs.

Step 2   Initiate the install process for Scalar DLC. This will start by removing old release. During this process the system prompts, "Delete the Scalar DLC MS SQL Server database 'SDLC'." Select "No." (see **Figure 96**). This will preserve the configuration currently running on the Scalar DLC machine. Be sure to save the database so that it can be applied to the new release.

Figure 96   Remove old Scalar DLC: do not delete the database
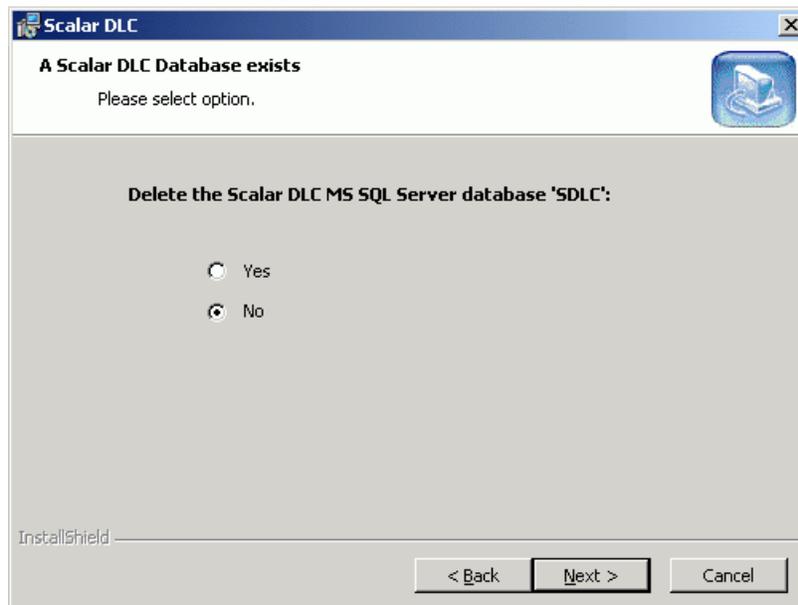
Step 3   During the installation of Release 2.5 the system informs that a database exists and asks whether the existing 'SDLC' database should be upgraded. Select "Upgrade" (see **Figure 97 on page 84**) and proceed.

Figure 97 Install Scalar DLC: Upgrade database
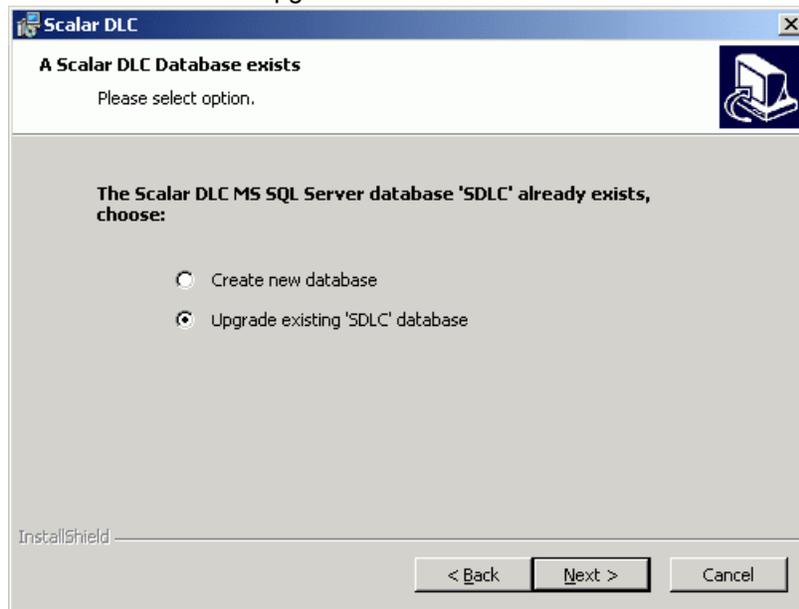
Step 4 Follow the Scalar DLC installation sequence. Install the required SCSI Target drivers (refer to **Installing the SCSI/FC Target Drivers on page 71**). After the new release installation is complete reboot the machine. Then activate the SCSI cards by enabling the Target ports (if this is already done, skip step 5)

Step 5 Configure/activate the SCSI/FC Target cards via SCSI Target Port Tool.

a. On the toolbar there will be a small three-penguin icon. Right click this icon and select **Tools > Scalar DLC SCSI Target Port Tool**.

Figure 98 Access to SCSI Target Port Tool

b. The SCSI Target Port tool opens.

Figure 99   SCSI Target Port Tool: the port is disabled
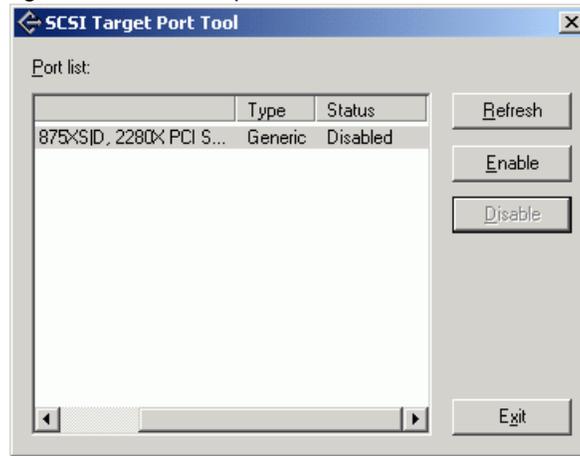
c.   Click **Enable** to enable the required SCSI port(s) (as in the figure below).

NOTE: The two-port adapters are shown in the SCSI Target Port Tool as two different single-port adapters.

Figure 100   SCSI Target Port Tool: the port is enabled
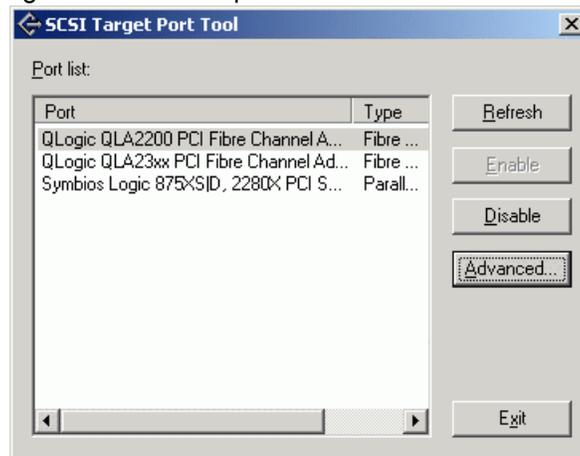
d.   (only for the Fibre Channel) Click **Advanced** to resolve the virtual World-Wide Name (WWN) and make the adapter available for the Cluster (failover) mode work if it is required.

Figure 101   FC Adapter Advanced properties
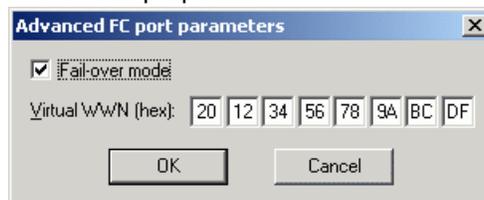
e.   After enabling the cards (ports) and exiting the SCSI Target Port Tool, reboot if it is prompted.

Figure 102 Reboot after change SCSI Target properties

Step 6 After a successful reboot launch the Scalar DLC Manager (**Start > Programs > ADIC Distributed Library Controller > Scalar DLC Manager**).

Step 7 (only for the upgrade from Scalar DLC ver. 2.1) Resolve Port-Target assignment.

a. Log on as 'admin'. Above the main Management GUI the SCSI configuration pop-up screen appears.

Figure 103 SCSI Configuration Screen
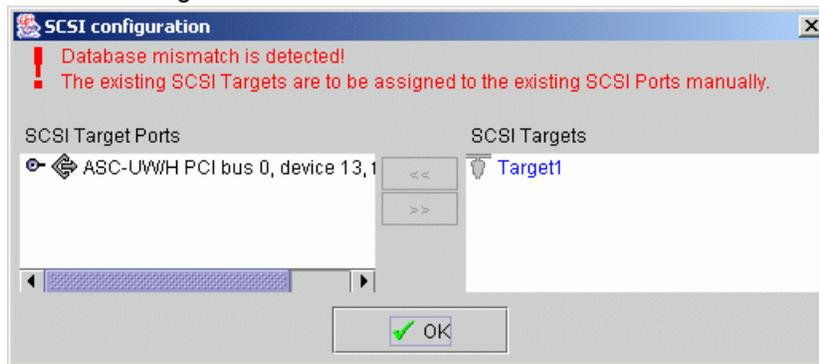
b. Set the associations between Targets and Ports. Use the **<<** button to associate Target with Target port. Remember that the customer may have multiple SCSI Targets. Each Target will have LUN 0; in case when a SCSI client exist for the target, the LUN 0 will be *active* with a client assigned to it.

NOTE: The two-port adapters are shown in the Management GUI as two different single-port adapters.

Figure 104 SCSI configuration: assign target(s) to port(s)
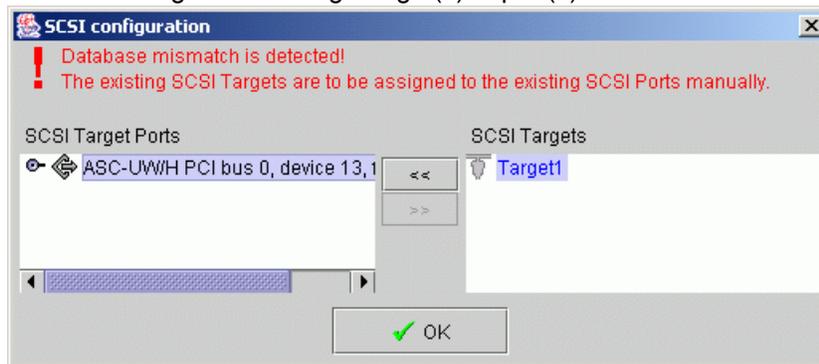
c. After this is completed, click **OK**. A pop-up confirmation window opens.

Figure 105   Confirmation to Restart Scalar DLC
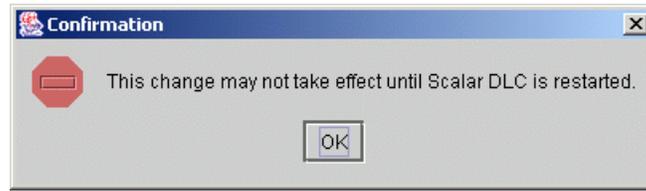
    d.   Close the Scalar DLC Manager. Right-click on the three-penguin icon on the toolbar
         and select 'Stop Scalar DLC'.

Figure 106   Access to Stop Scalar DLC
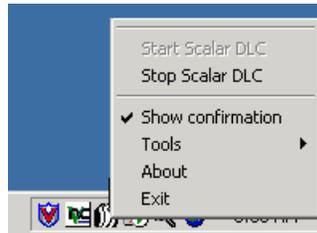
    e.   The Scalar DLC software service will be stopped.

Figure 107   Scalar DLC is successfully stopped

    f.   Re-start Scalar DLC using the Scalar DLC icon on the toolbar.

Figure 108   Access to Start Scalar DLC
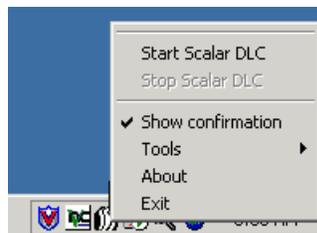
    g.   After a successful start an appropriate message displays.

Figure 109   Scalar DLC is successfully started

Step 8   When the upgrade is complete verify that all target cards are correctly assigned and
                  work ok.

Advanced Upgrade

Follow these steps to perform the upgrade of the Scalar DLC software on any PC and/or to restore the Scalar DLC configuration from an old version of the software.

NOTE: Only the Advanced upgrade procedure can restore the Scalar DLC configuration from standard (basic) to failover (cluster) solution, or vica verse.

Step 1 Before removing the old release: backup an old database and keep it.

a. On the toolbar there will be a small Three Penguin Icon. Right click this icon and select **Tools > Scalar DLC DB Tool**.

Figure 110 Access to DB Tool
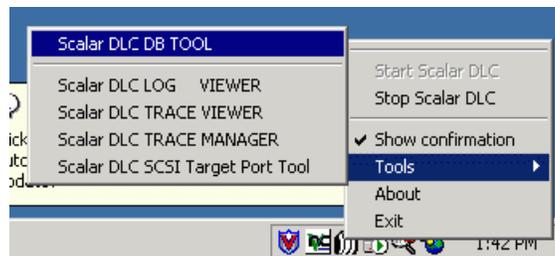
b. Launch Scalar DLC DB Tool and log on (see **Figure 111**). If the Scalar DLC database has been installed under Trusted connection, only the local admin rights are required. If the Scalar DLC database has been installed under user account, either the SQL administrator logon name/password, or the Scalar DLC SQL user name/password are required.

Figure 111 DB Tool Log On

c. Backup the database to file (for example, "OldSDLC.db"). Keep this file in any temporary folder.

Figure 112   Backup Database
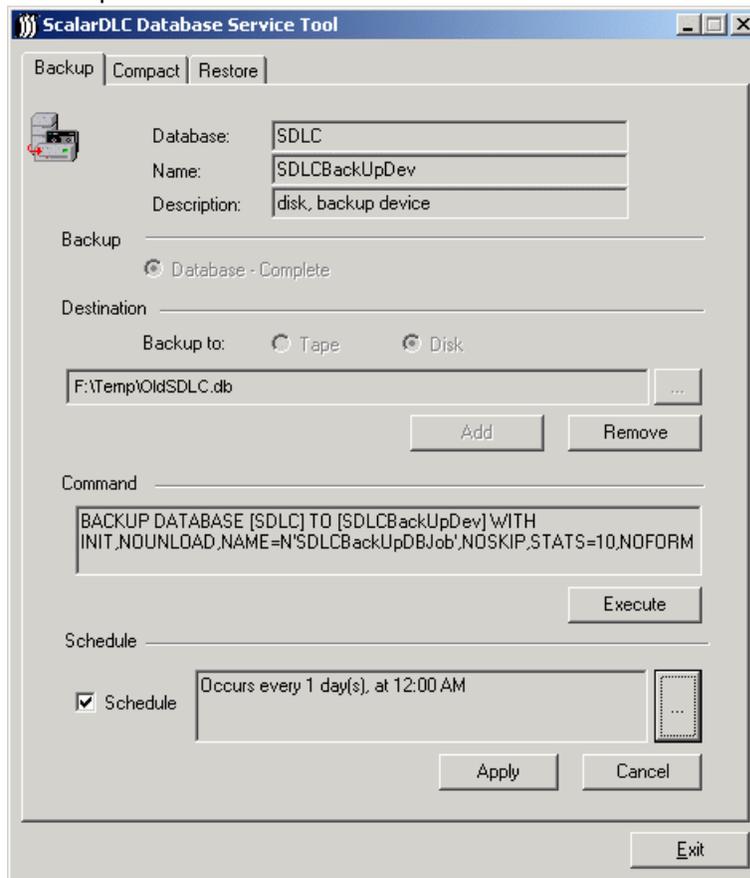
Step 2   Remove the old release of Scalar DLC with the database. Remove SCSI/FC Target drivers. Remove MS SQL 7.0 if it is installed. Restart the PC.

Step 3   Launch Scalar DLC installation. Install MSDE 2000 and Service Pack 3 for MSDE2000. Install Scalar DLC with new, clean database. Restart the PC. Enable the SCSI/FC Target cards if required.

Step 4   Stop Scalar DLC supervisor (see **Figure 106 on page 87**). Launch Scalar DLC DB Tool (see **Figure 110 on page 88**7).

Step 5   Log on the DB Tool (see **Figure 111 on page 88**). Open *Restore* tab and restore database from backup file "OldSDLC.db", as shown in **Figure 113 on page 90**.

Figure 113 Restore Database from Backup file
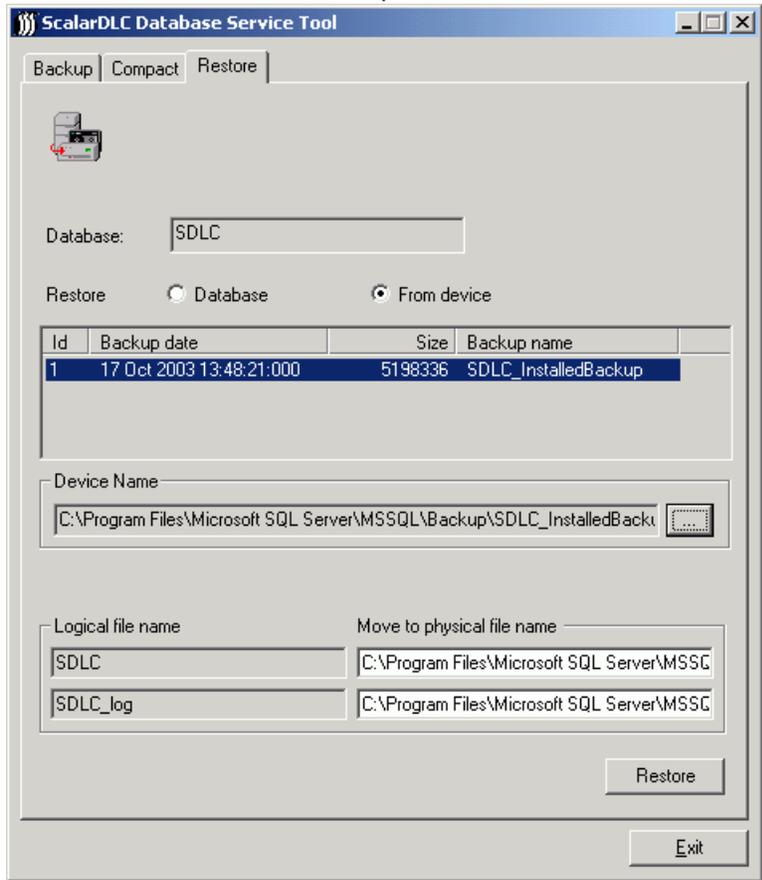
NOTE: Do not start Scalar DLC software at this time. It will not be functional.

Step 6 Launch **Add/Remove Scalar DLC > Repair > Repair database** mode. Select "Upgrade". When upgrade is finished, restart PC.

Step 7 Launch Scalar DLC Management GUI. If required, re-configure SCSI targets and LUNs (see and).

Upgrade Issues

When the upgrade is performed always check whether all names are correctly mapped and all SCSI adapter models used in previous versions of the Scalar DLC software are still supported. Remove old SCSI client(s) and create new client assigned to an old library if it is required. Executing the complete **inventory** is strongly recommended afterwards to maintain the database integrity.

Renaming and Repair

ADIC strongly recommend against renaming the PC or rebuilding the PC network configuration after the Scalar DLC is succesfully installed and configured. Such actions, however, may be necessary, and require the update of most software installed on the appropriate hosts.

When the Scalar DLC Basic solution is installed, after the PC is renamed and/or the network is reconfigured launch the Scalar DLC Repair engine. Refer to **Add/Remove Scalar DLC Software on page 77** and **Repair on page 79**.

For the Scalar DLC Cluster solution the additional procedures are required. Refer to **Change Cluster Domain Name on page 91** and **Change Cluster Node Names on page 94**.

⚠ **CAUTION:**	**After the DNS, and/or the name of cluster, and/or the names of cluster nodes are changed, and after the Scalar DLC software is succesfully started, inform the customers who use the client interfaces (DAS or ROBAR) to work with the Scalar DLC as a server. The client environment variables (for example, DAS_SERVER) may require an update.** **The SCSI-based clients do not require update and can start the work as soon as the Scalar DLC configuration is complete.**

Change Cluster Domain Name

After the domain host is renamed/reconfigured, the cluster service on both cluster nodes (Node 1 and Node 2) is non-operable. The dependable software services, for example, Scalar DLC, will be non-operational, too. To fix the issue do the following:

Step 1   Prepare the system for configuration.

- Create the temporary user account (for example, id: 'TEMPUSER', password: 'admin') in the domain (for example, DOMAIN) with the rights of domain admin. Contact the local network administrator for the details.

- Create the user account (for example, id: 'SDLCUSER', password: 'password') that will be used as the Scalar DLC software account. Contact the local network administrator for the details.

- Ensure that all hardware is correctly connected.

Step 2   Include Node 1 into the DOMAIN.

    a. Switch on the Node 1 and log on as a local admin.

    b. Use **My Computer > Properties > Network Identification > Properties > Domain**.

Figure 114   Network ID Changes
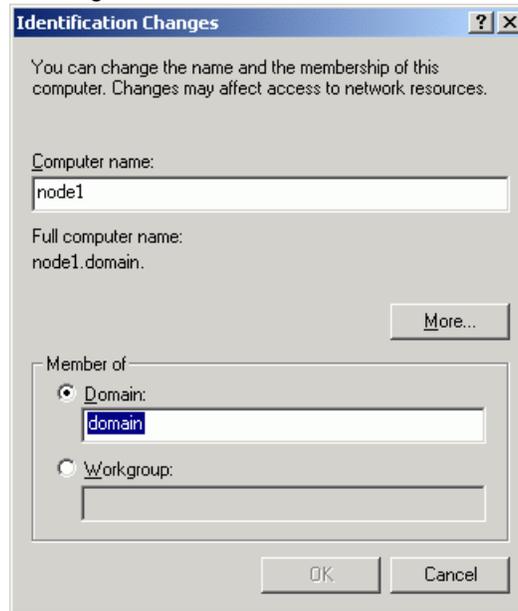
c. Specify new domain name (DOMAIN), click **OK**. Provide the name and password of domain admin (id: 'TEMPUSER', password: 'admin') to validate the domain assignment.

d. Restart the Node 1.

e. After restart log on as local admin and add the account issued for the Scalar DLC (SDLCUSER) to the administrators group.

f. Log off as local admin and log on as domain user (SDLCUSER).

Step 3   Include Node 2 into the DOMAIN.

a. Switch on the Node 2 and log on as a local admin.

b. Use **My Computer > Properties > Network Identification > Properties > Domain**.

c. Specify new domain name (DOMAIN), click **OK**. Provide the name and password of domain admin (id: 'TEMPUSER', password: 'admin') to validate the domain assignment.

d. Restart the Node 2.

e. After restart log on as local admin and add the account issued for the Scalar DLC (SDLCUSER) to the administrators group.

f. Log off as local admin and log on as domain user (SDLCUSER).

Now both nodes can be powered up simultaneously because they still operate as standalone conputers.

Step 4   Reconfigure cluster service on Node 1.

a. Switch to the Node 1.

b. Open **Control Panel > Administrative Tools > Services > Cluster Service > Properties > Log On**.

Figure 115   Cluster Service: Log On
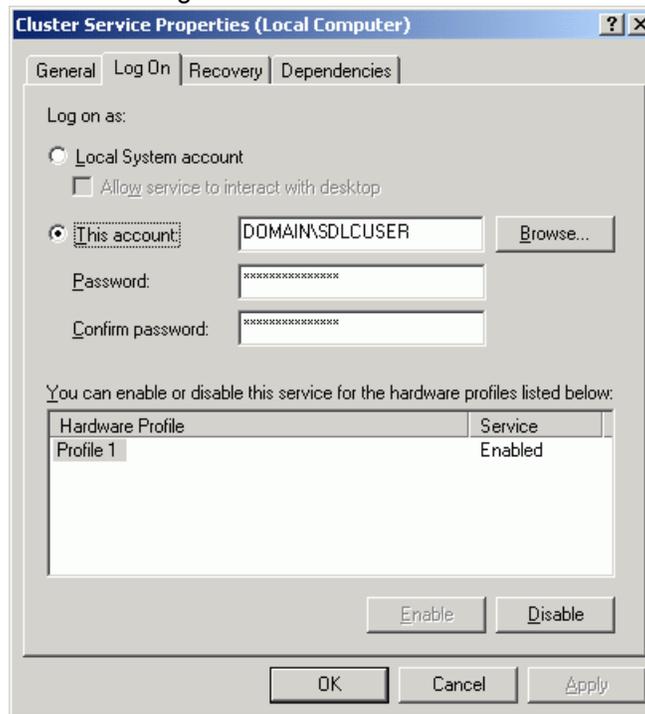
c. Enter domain user name by the pattern: 'domainname\domain user name' (for example, DOMAIN\SDLCUSER). Specify the password (for example, 'password') and confirm.

d. Click **Apply** and **Start Service**. The cluster service will start on Node 1.

Step 5   Reconfigure cluster service on Node 2.

a. Switch to the Node 2.

b. Open **Control Panel > Administrative Tools > Services > Cluster Service > Properties > Log On**.

c. Enter domain user name by the pattern: 'domainname\domain user name' (for example, DOMAIN\SDLCUSER). Specify the password (for example, 'password') and confirm.

d. Click **Apply** and **Start Service**. The cluster service will start on Node 1.

Step 6   Start **Cluster Administrator** on any of the nodes.

Step 7   Connect to the cluster and make sure that cluster system operates properly.

NOTE: If there is no need to change the node names, then the work is finished. Launch the Scalar DLC Management GUI and proceed the work.

NOTE: The names of cluster domain, nodes, users, and passwords are shown just as an example. Any values can be used as long as they are valid.

Change Cluster Node Names

The Windows 2000 Advanced Server CD is required in order to change the name of the PC that is a Cluster node. Make sure that the cluster nodes are running and follow the steps.

Step 1 Change Node 1 name.

    a. Log on as a domain user with the local admin rights (for example, SDLCUSER). Make Node 1 *passive*, Node 2 *active*. Switch to the Node 1 (passive).

    b. Open **My Computer > Properties > Network Identification > Properties >Computer Name.**

    c. Change the name (for example, to SDLCCLUST1), click **OK**. Restart the node.

    d. Log on as local admin. Open **Cluster Administrator** and run command *Evict this node from cluster*.

    e. Open **Add/Remove Programs > Windows Components**. Remove Cluster Service from installed components. Restart the node again.

    f. Log on as local admin. Open **Add/Remove Programs > Windows Components** and install Cluster Service component again.

    g. Usind **Cluster Service Configuration Wizard** add the new node (SDLCCLUST1) to the existing cluster. Refer to **Configure the Cluster on page 30**.

    h. Restart when the cluster is configured.

Step 2 Change Node 2 name.

    a. Log on as a domain user with the local admin rights (for example, SDLCUSER). Make SDLCCLUST1 *active*, Node 2 *passive*. Switch to the Node 2 (passive).

    b. Open **My Computer > Properties > Network Identification > Properties >Computer Name.**

    c. Change the name (for example, to SDLCCLUST2), click **OK**. Restart the node.

    d. Log on as local admin. Open **Cluster Administrator** and run command *Evict this node from cluster*.

    e. Open **Add/Remove Programs > Windows Components**. Remove Cluster Service from installed components. Restart the node again.

    f. Log on as local admin. Open **Add/Remove Programs > Windows Components** and install Cluster Service component again.

    g. Usind **Cluster Service Configuration Wizard** add the new node (SDLCCLUST2) to the existing cluster. Refer to **Configure the Cluster on page 30**.

    h. Restart when the cluster is configured.

Step 3 Repair the Scalar DLC on the SDLCCLUST2.

    a. Make SDLCCLUST1 *active*, SDLCCLUST2 *passive*. Switch to the SDLCCLUST2 (passive).

    b. Stop **Cluster Service**.

c. Open **Add/Remove Programs > Scalar DLC** and launch **Repair > Server**. Refer to **Server on page 79**.

d. Reboot the SDLCCLUST2 and log on.

e. Start **Cluster Service** on SDLCCLUST2. The Scalar DLC service must work on this node.

Step 4 Repair the Scalar DLC on the SDLCCLUST1.

a. Make SDLCCLUST2 *active*, SDLCCLUST1 *passive*. Switch to the SDLCCLUST1 (passive).

b. Stop **Cluster Service**.

c. Open **Add/Remove Programs > Scalar DLC** and launch **Repair > Server**. Refer to **Server on page 79**.

d. Reboot the SDLCCLUST1 and log on.

e. Start **Cluster Service** on SDLCCLUST1. The Scalar DLC service must work on this node.

Now the cluster functionality is restored. Use Scalar DLC Management GUI to configure the libraries if necessary.

NOTE: The names of cluster domain, nodes, users, and passwords are shown just as an example. Any values can be used as long as they are valid.

Securing the Scalar DLC

Follow the linked instructions to make the Scalar DLC system secure.

- For the information on securing the Windows 2000 operating system refer to
  http://nsa2.www.conxion.com/win2k/download.htm

- For the information on securing the Apache Web server refer to
  http://www.securityfocus.com/infocus/1694

- For the information on securing the MSDE 2000 (MS SQL) refer to
  http://www.microsoft.com/sql/techinfo/administration/2000/security/securingsqlserver.asp

The Scalar DLC itself requires the following security actions to be performed:

1. Install the latest Windows hotfixes and service pack. The current version is Service Pack 4. Both the hotfixes and service packs can be downloaded on http://www.microsoft.com.

2. Install the Apache with SSL encryption.

3. Install the SP3 for MSDE 2000.

4. When installing the Scalar DLC, provide the user name and password according to the corporative security standards.

5. Set up the web browser according to the corporative security standards. If the email client will be used on the same PC where the Scalar DLC is installed, ensure it is secured too (for example, binary files are <u>not</u> automatically opened, etc.). Contact the local network administrator for the details.

NOTE: If the firewall is used to secure the Scalar DLC host, the DAS client software must be installed with the firewall support.