Scalar ® Distributed Library Controller ™ 2.7 Installation Guide

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About This Guide and Your Product

This manual contains reference information and instructions for setting up, installing, and upgrading the Scalar Distributed Library Controller (Scalar DLC) software. This guide is intended for customers, customer engineers, and administrators who use the Scalar DLC software.

Explanation of Symbols and Notes

The following symbols appear throughout this document to highlight important information.

WARNING	**INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR BODILY INJURY.**
CAUTION	**Indicates a situation that may cause possible damage to equipment, loss of data, or interference with other equipment.**
Note	Indicates important information that helps you make better use of your system.

Other Documents You Might Need

The following documents are also available for this product. These documents can be found on the product CD or at www.quantum.com/support:

- *Scalar DLC Release Notes (6-00335-xx)*
- *DAS Administration Guide (6-00345-xx)*
- *DAS/ACI Interfacing Guide (6-00346-xx)*
- *Scalar 10K SCSI Reference Guide*
- *SCSI Primary Commands 2 (SPC-2)*
- *SCSI Primary Commands 3 (SPC-3)*

- *ROBAR Interfacing Guide*
- *Scalar 10K Operator Guide*
- *RMU Reference Guide*

Getting More Information or Help

More information about this product is available on the Service and Support website at www.quantum.com/support. The website contains a collection of information, including answers to frequently asked questions (FAQs). You can also access software, firmware, and drivers through this site.

For further assistance, or if training is desired, contact Quantum:

Global Call Center	1-800-284-5101
For additional contact information:	www.quantum.com/support
To open a Service Request:	www.quantum.com/esupport

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System Description

The Scalar DLC software runs as a service under Windows 2000 / 2003. 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.

Note If a firewall is being used, outside access by web browsers might be denied

The Scalar DLC also allows administrators to select parameters that define which library events provide notifications to customers and the Global Call Center (GCC) 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. See the *Scalar DLC Reference Guide* for details.

Figure 1 illustrates the structure of a typical Scalar DLC system.

Figure 1 Scalar DLC Structure

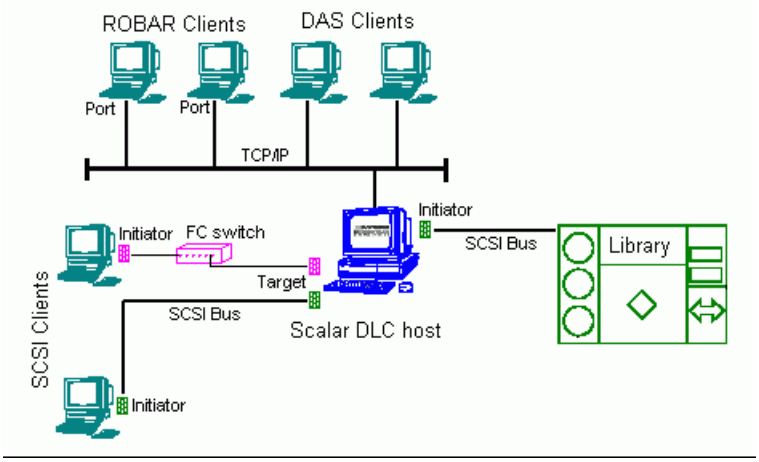
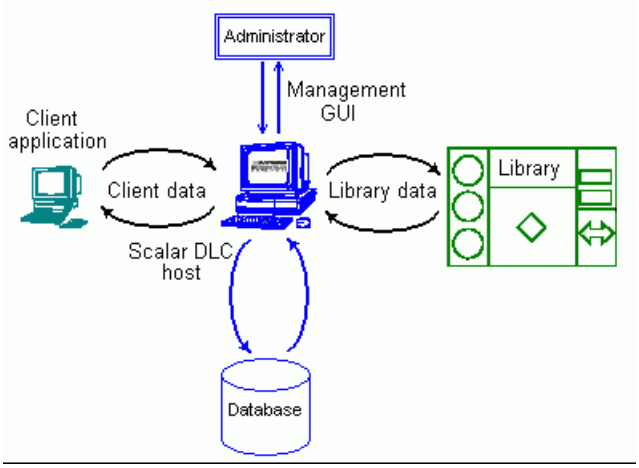


Figure 2 illustrated the data flow and the Scalar DLC components.

Figure 2 Scalar DLC Components



As shown on figure 2, the *client* (user/backup application) sends the request/command to the *Scalar DLC host* (server) via the client interface; several interfaces are used (SCSI/FC, DAS, and ROBAR).

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*.

Platforms

The Scalar DLC software can be installed on the operating systems (platforms) listed in table 1.

Table 1 Scalar DLC Platforms

OS/Platform	Service Pack	Referred as
32-bit Windows Server 2003 Enterprise Edition	SP1	Windows 2003 Server
32-bit Windows Server 2003 Standard Edition	SP1	Windows 2003
Windows 2000 Advanced Server	SP4	Windows 2000 Advanced Server
Windows 2000 Server	SP4	Windows 2000

The OS update with the required hot fixes and/or service packs is performed on regular basis, see Securing the Scalar DLC on page 135.

Solutions

According to the customer requirements, the Scalar DLC introduce a basic (standard) solution or a failover (redundant, cluster) solution. The latter can be provided in plain version and in self-domain version, also called the *self-domain* solution. See <Teal underline>Standard Solution on page 4, <Teal underline>Failover Solution on page 5, and <Teal underline>Self-Domain Solution on page 5.

Depending on the library used by the customer, the solution and system configuration should be selected, as shown in table 2.

Table 2 Libraries, Solutions, and OS/Platform

Library	Scalar DLC Solution	OS/Platform
Scalar 10K	Failover / Self-domain	Windows 2000 Advanced Server Windows 2003 Server
	Standard	Windows 2000 (all platforms) Windows 2003 (all platforms)
Scalar 10K dual-aisle (DA)	Failover / Self-domain	Windows 2000 Advanced Server Windows 2003 Server
	Standard (only as an exception)	Windows 2000 (all platforms) Windows 2003 (all platforms)

Standard Solution

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

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. Additional cabling may be required to provide the client connections (SCSI/FC) and using SNC.

For the requirements and installation instructions see Setting Up the Standard Solution on page 7.

Failover Solution

The Scalar DLC Failover (redundant, cluster) 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 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 is immediately online, so the user may not even notice there has been a problem with the host, and the customer engineer can work with 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. Additional cabling may be required to provide the client connections (SCSI/FC) and using SNC.

For the requirements and installation instructions, see Setting Up the Failover Solution on page 13.

Self-Domain Solution

From version 2.5, Scalar DLC also offers a self-domain solution. This configuration of the Scalar DLC acts the same way as basic failover solution and has the same hardware requirements, however it is installed without an external domain controller, thus the setup does not exactly duplicate the failover solution instructions.

In terms of the network security, the self-domain solution is the most reliable method that Scalar DLC currently can provide.

For the details see Setting Up the Self-Domain Solution on page 33.

Compatibility Matrix

The Scalar DLC compatibility with other hardware and third-party applications is described in table 1.

Table 1 Scalar DLC Compatibility Matrix

Software/Hardware	SW/FW Level
Scalar 10K (both single- and dual-aisle models)	320A.00004
SNC 5100	4.45.22
Scalar DLC	2.7
RMU	210A
AMC	4.5.1
SNMS (StorNext Management System)	2.7
LTO-1	5AU1 (SCSI/FC)
LTO-2	67U1 (SCSI/FC)
LTO-3	64D0 (FC)
LTO-4	75X2
AIT-2	0203 001
AIT-3	0209_0001
DLT8000	V80
SDLT 220	V94
SDLT 320	V96
3590	D0IF_2D4
3592	D310_A0D
TS1120	D3I1_B25

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Setting Up the Scalar DLC

Depending on the configuration used, follow the setup instructions:

- Setting Up the Standard Solution.
- Setting Up the Failover Solution on page 13.
- Setting Up the Self-Domain Solution on page 33.

Review also Common Setup Notes on page 44. Some instructions are for Failover and Self-domain solutions only, other instructions are for all solutions.

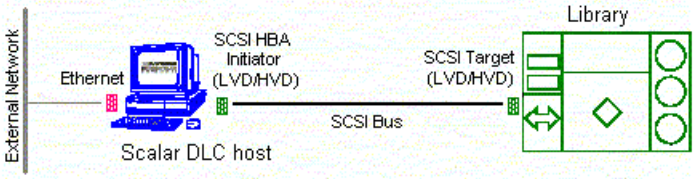
Setting Up the Standard Solution

The Scalar DLC standard solution can be installed on any Windows 2000 or Windows 2003-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

Figure 1 Scalar DLC Basic Solution: Single-aisle



The minimum PC system hardware requirements are summarized in following list.

- A single PC:
  - 1G MHZ or faster Intel Xeon or equivalent CPU
  - 512 MB RAM
  - Dual 18Gb SCSI Hard Drives

- Single On-Board NICS (build-in Ethernet)
- CD-RW
- 3.5” inch Diskette Drive
  *Required for 2.5 installation only
- Redundant AC Power
- 15" or greater SVGA Display
- Standard keyboard & mouse
- 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 via BIOS.**

CAUTION **Adaptec 39160 is an LVD/SE adapter, so note Table 16 on page 71 when choosing SCSI adapter for the library.**

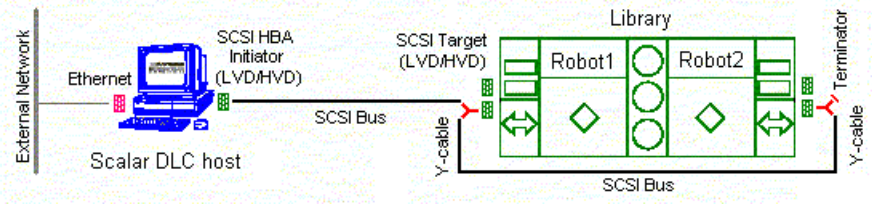
- 1 middle length (2-3 m) SCSI cable (68 pins) for the library connection.
- Recovery CD (Windows 2000 or 2003)

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

Figure 2 Scalar DLC Basic Solution: Dual-aisle



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

The minimum PC system hardware requirements are summarized in following list.

- A single PC:
  - 1G MHZ or faster Intel Xeon or equivalent CPU
  - 512 MB RAM
  - Dual 18Gb SCSI Hard Drives
  - Single On-Board NICS (build-in Ethernet)

- CD-RW
- 3.5” inch Diskette Drive
  *Required for 2.5 installation only
- Redundant AC Power
- 15" or greater SVGA Display
- Standard keyboard & mouse
- 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 via BIOS.**

CAUTION **Adaptec 39160 is an LVD/SE adapter, so note Table 16 on page 71 when choosing SCSI adapter for the library.**

- 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 4 on page 8) 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 on library.
- 1 SCSI Terminator, LVD/HVD for the library connection.
- Recovery CD (Windows 2000 or 2003)

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 Collecting Setup Data on page 9.

2 Setting Up the Host on page 10.

3 Installing the Scalar DLC Software on page 12.

4 Configuring the Logical Library on page 12.

For the optional additional activity, see Setting Up the Library on page 123, Building Client Connections on page 131, and Host/Library Communication using Fibre Channel and SNC on page 127. See also Upgrade, Remove, Repair on page 81.

Collecting Setup Data

Collect the following information before starting setup.

- Computer

    - computer name (max 14 symbols)
    - public IP address
    - public Subnet mask
    - public default Gateway
    - public preferred DNS
    - public Alternate DNS
    - public Primary WINS
    - public Secondary WINS
    - private IP address
    - private subnet mask
    - Local administrator login name and password
    - Scalar DLC serial number
- Domain
    - domain name
    - domain admin login name and password

Table 3 Standard Solution: Installation Time

Installation procedure	Time
Provide cabling and setup for PC system	10 min
Set IP address and computer name	10 min
Install Scalar DLC on PC	50 min

Setting Up the Host

Step 1 Set up the host hardware (network adapters, SCSI and FC adapters if required). Note Table 18 on page 72.

Step 2 Connect the PC to a local network. Install Windows 2000 / 2003. Resolve the network name and TCP/IP. Join the PC to the domain, if required (domain admin password is required).

Note Enter BIOS. Go to Chipset section. *Hyper threading* parameter should be disabled.

Step 3 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 and SP1 for Windows 2003 is required).

Note For installation and re-installation of all 2.6 configurations, use the Recovery CD. The Recovery CD contains the appropriate drivers and the required SP1 installations.

Step 4 When the operation system is installed successfully, reboot and ensure all services work correctly.

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

Configuring SCSI for Library

Step 1 Configure the SCSI ID's for the LVD/HVD adapter connected to the library.

- Set *termination* mode to *automatic*
- Set *Reset SCSI Bus* parameter to *disabled*
- Set the SCSI ID of this board to 5

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

Adapter ID must not overlap with the either 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 2 Log on. Update drivers (Adaptec, QLA, etc.) as described in Updating Drivers on page 110.

Step 3 Reboot host PC.

Setting Up IP Address, Host Name, and Joining Domain

Step 1 Log in host PC as administrator.

Step 2 Set up Public network.

- <pause> Right click “My Network Places” and select “Properties”.
- Right click “Local Area Connection” and rename it to ‘Public’. Select “Properties”.
- Select “Show Icon in the Task Bar when Connected”.
- Select “Internet Protocol (TCP/IP)” and select “Properties”.
- Select “Use the Following IP Address”
  - Set *IP Address* (208.230.5.100 in lab)
  - Set *Subnet Mask* to 255.255.255.0
  - Set *Preferred DNS Server* to 208.230.5.4 (in lab)

Note Also enter any additional customer networking information (additional DNS, WINS etc.).

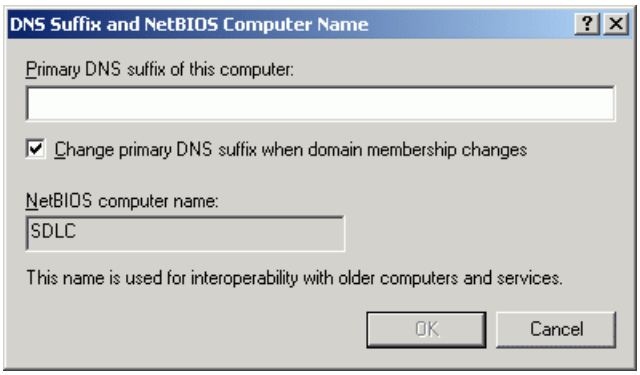
- Press “OK” and “OK”.

Step 3 Join computer to the domain

- Right click “My Computer” and select “Properties”.
  - (on Windows 2000) Open “Network Identification” and select “Properties”.

- (on Windows 2003) Open Computer Name > Change > More. Ensure that the checkbox ‘Change primary DNS suffix when domain membership changes’ is *enabled* (see Figure 5 on page 12). Press OK.

Figure 3 Windows 2003: DNS suffix enabled



- Set “Computer name” (SDLC)

CAUTION **Computer name must not be longer than 14 symbols.**

- Select “Domain” and enter <domain name without postfix> and OK (“domain” for lab)
- Enter domain admin name and password and OK (“adicuser” and “pa$$w0rd”)
- Wait for *Welcome to domain*.
- Press “OK” and then “OK” to reboot. Press “OK” and then “Yes”.

Step 4 Press ‘Yes’ to reboot now. Wait until reboot completes.

Installing the Scalar DLC Software

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

Step 2 If it has not already been done, set up the library media changer. See Setting Up the Library on page 123.

Step 3 Install the Scalar DLC software with all required components (see Installing the Scalar DLC on page 45).

CAUTION **Do not install Scalar DLC Clustering until both nodes are fully installed with Scalar DLC.**

Configuring 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 **Scalar DLC Manager** 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. If more than one logical library should be created, select the Advanced configuration option. Refer to the *Configuration* chapter of the *Scalar DLC Reference Guide* for the instructions.

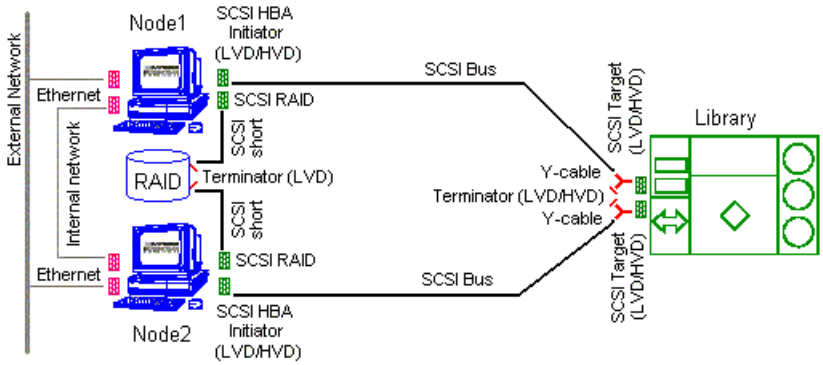
Setting Up the Failover Solution

The Scalar DLC Failover (Redundant, Cluster) solution can be installed only on a Windows 2000 Advanced Server or Windows 2003 Enterprise Server because it uses the Microsoft Cluster Service that is not available under Windows 2000 Professional, Windows 2000 Server, and Windows 2003. Clustering is only provided on the Windows 2003 Enterprise CD.

- Check the system requirements. Depending on the tape device used with the Scalar DLC, Single-aisle Requirements on page 13 is for the single-aisle library, and Dual-aisle Requirements on page 14 is for the dual-aisle library.
- Follow the Setup Roadmap on page 15 to set up the Scalar DLC.

Single-aisle Requirements

Figure 4 Scalar DLC Failover Solution: Single-aisle



The minimum PC system hardware requirements are summarized in following list.

- Two PCs with identical hardware and software:
  - 1G MHZ or faster Intel Xeon or equivalent CPU
  - 512 MB RAM
  - Dual 18Gb SCSI Hard Drives
  - PERC3-DI, 128MB Battery Backed Cache, two Internal Channel - Embedded RAID Controller (1, 2 Drives connected to on-board RAID)
  - Dual On-Board NICS (build-in Ethernet)
  - CD-RW
  - 3.5” inch Diskette Drive
    *Required for 2.5 installation only
  - Redundant AC Power
  - 15" or greater SVGA Display
  - Standard keyboard & mouse
  - 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 via BIOS.**

CAUTION **Adaptec 39160 is an LVD/SE adapter, so note Table 16 on page 71 when choosing SCSI adapter for the library.**

- 1 ArrayMasStor P-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 to terminate the SCSI Bus on library.
- 2 LVD SCSI Terminators for the RAID connections.

- 2 LVD/HVD SCSI Terminators for the library connections.
- Recovery CD (Windows 2000 Advanced Server or 2003 Server)

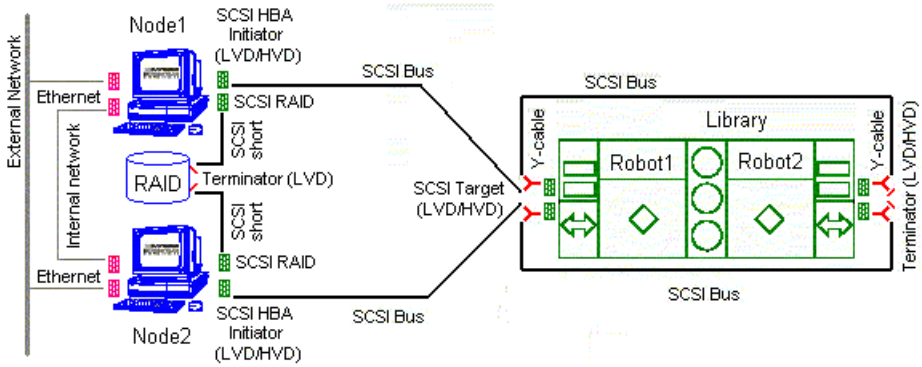
CAUTION **The hardware configuration of both cluster nodes must be identical, and they must remain identical. For example, all cards/adapters must be identical and need to be placed in identical slots.**

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

Figure 5 Scalar DLC Failover Solution: Dual-aisle



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  - CD-RW
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  - Redundant AC Power
  - 15" or greater SVGA Display
  - Standard keyboard & mouse
  - 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 via BIOS.**

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- 1 ArrayMasStor P 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 7 on page 14) must not exceed 12 m for LVD adapters and 25 m for HVD adapters.
- 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.
- Recovery CD (Windows 2000 Advanced Server or 2003 Server)

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.**

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 Failover solution.

1 Collecting Setup Data on page 16.

2 Installing the Nodes on page 17.

3 Installing ADTX RAID on page 18.

4 Configuring SCSI for RAID and Library on page 20.

5 Setting Up IP Address, Node Name, and Joining Domain on page 22.

6 Setting Up the RAID on page 24.

7 Configuring Cluster Service on page 26

8 Installing Scalar DLC Software on page 28.

9 Configuring the Logical Library on page 31.

For the optional additional activity, see Setting Up the Library on page 123, Building Client Connections on page 131, Installing SCSI/FC Target Adapters on a Live Machine on page 134, and Host/Library Communication using Fibre Channel and SNC on page 127. See also Upgrade, Remove, Repair on page 81.

Collecting Setup Data

Collect the following information before starting setup.

- Nodes
  - Node1 computer name (14 symbols max)
  - Node1 public IP address
  - Node2 computer name (14 symbols max)
  - Node2 public IP address
  - public Subnet mask
  - public default Gateway
  - public preferred DNS
  - public alternate DNS (optional)
  - public primary WINS (optional)
  - public secondary WINS (optional)
  - Node1 private IP address
  - Node2 private IP address
  - private subnet mask
  - Local administrator login name and password (same on both nodes)
  - Scalar DLC serial number (same on both nodes
- Cluster
  - name (14 symbols max)
  - IP address
  - Subnet mask = public subnet mask
- Domain
  - name
  - domain admin name and password
  - directory services restore mode password

Table 4 Failover Solution: Installation Time

Installation procedure	Time
Provide cabling and setup for dual PC failover system	30 min
SCSI configuration for RAID and library	20 min
Set IP addresses and computer names	30 min
Configure primary and secondary domain controllers	45 min

Table 4 Failover Solution: Installation Time (Continued)

Installation procedure	Time
Setup RAID	10 min
Configure cluster service	20 min
Install Scalar DLC on both PC	120 min

Active Directory Account Information

Contact the local network administrator and ensure that the following settings are performed.

- User account created with domain admin rights and the following options:
  - User must not change password under next logon.
  - User cannot change password.
  - Password never expires.
  - All other options are disabled.
- Logon hours for this user are set to 24/7.
- Log on rights are set either to all computers or to all Scalar DLC nodes.

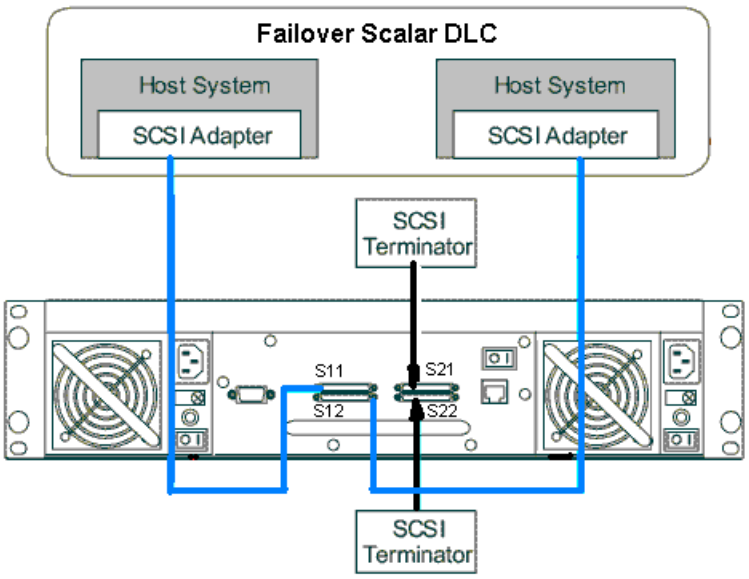
Installing the Nodes

Step 1 Turn off external RAID.

Step 2 Insert the RAID SCSI HBA into the PCI slot of Node1 according to Table 18 on page 72. Connect it and RAID SCSI channel (S11) with the short SCSI cable. Terminate the second RAID SCSI channel (S21) with the SCSI terminator (see Figure 8 on page 18).

Step 3 Insert the RAID SCSI HBA into the PCI slot of Node2 according to Table 18 on page 72. Connect it and RAID SCSI channel (S12) with the short SCSI cable. Terminate the second RAID SCSI channel (S22) with the SCSI terminator (see Figure 8 on page 18).

Figure 6 RAID SCSI cabling



Step 4 Connect the monitor, keyboard, mouse, and KVM.

Step 5 Boot Node1. Log on (administrator / password).

Note Enter BIOS. Go to Chipset section. *Hyper threading* parameter should be disabled.

Step 6 <pause> select “I will configure the server later” and press **Next.** Clear “Show This Screen on Startup” and close window.

Step 7 Shutdown Node1.

Step 8 Repeat steps 4 to 7 for Node2.

Step 9 Connect ethernet cables LAN 1 (public network) and LAN 2 (private network).

Installing ADTX RAID

Step 1 Power on RAID.

Step 2 Set SCSI ID.

- The default setting is SCSI ID 0 for both channels. In order to verify the SCSI ID for both channels use the Operator Panel on the RAID.
  RAID SUBSYSTEM
  - MAIN MENU
  - [MAIN MENU]
    - SYSTEM INFO
  - [MAIN MENU]
    - VIEW CONFIG
  - [VIEW CONFIG]
    - SCSI
  - [SCSI]
    - CHANNEL 1
    - SCSI ID
    - 0
      The same steps for channel 2.
- In order to change the SCSI ID for both channels use the following steps.
  RAID SUBSYSTEM
  - MAIN MENU
  - [MAIN MENU]
    - SYSTEM INFO
  - [MAIN MENU]
    - CHANGE CONFIG
  - ENTER PASSWORD 1234
  - [CHANGE CONFIG]
    - SCSI
  - [SCSI]
    - CHANNEL 1
    - SCSI ID
    - SET 0
      The same steps for channel 2.

Step 3 Change the RAID 'WRITE CACHE' setting.

- In order to change the RAID 'WRITE CACHE' setting via Operator Panel use the following steps.
  RAID SUBSYSTEM
  - MAIN MENU

- [MAIN MENU]
  - SYSTEM INFO
- [MAIN MENU]
  - CHANGE CONFIG
- ENTER PASSWORD 1234
- [CHANGE CONFIG]
  - OPTION SETTING
- [OPTION SETTING]
  - CACHE SETTING
- [CACHE SETTING]
  - WRITE CACHE
- [WRITE CACHE]
  - SET 'DISABLE'

Step 4 Reset RAID by turning it off.

Configuring SCSI for RAID and Library

Step 1 Plug the SCSI cable directly in to the RAID vhdci connector.

Step 2 Power on Node1, then power on RAID.
If Write Signature does not appear, the RAID is not initialized.

Step 3 <Ctrl>+A to enter Bios for Adaptec SCSI card at Bios 3.10.0 (see Figure 9).

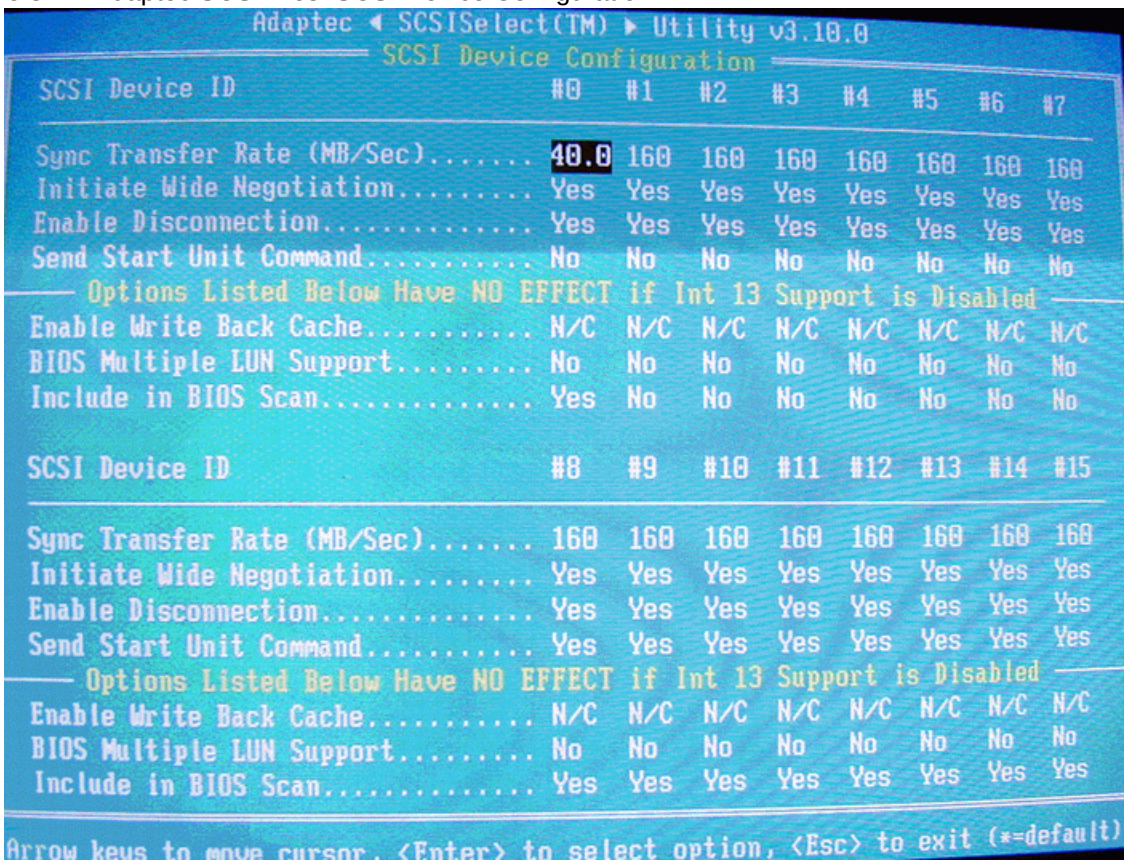
Figure 7 Adaptec SCSI Bios

- Select B for RAID configuration.
  - Select *SCSI disk utilities* to scan for RAID device.

- Press “Esc”.

- Select “Configure / view SCSI settings”.
  - Set SCSI controller ID (14 for Node1 and 15 for Node2).
  - Set SCSI termination to *Automatic.*
  - Go to *Advanced configuration*.
    - Set “Reset SCSI bus at IC Initialization” to *Disabled*.
    - Set “SCSI controller Int 13 Support“ to *Disabled: NOT scan*.
    - Press “Esc”.
  - Go to “SCSI device configuration” (see Figure 10 on page 21).

Figure 8 Adaptec SCSI Bios: SCSI Device Configuration



  - Set “Sync Transfer Rate” to 40

Note Rate is 160 for L and P series RAIDs

  - Set “Start unit command” to *No* for #0.
  - Set “Include in Bios scan” to *Yes* for Node1 and *No* for Node2 for #0.
  - Press “Esc”, and “Esc”, and “Save changes”.
- Press “Esc”.

- Select A for library configuration
  - Select “Configure / view SCSI settings”

- Set termination to *Automatic*
- Go to *Advanced configuration*
  - Set “Reset SCSI bus at IC Initialization” to *Disabled*
  - Press “Esc”, and “Esc”, and “Save changes”.
- Press “Esc”, and “Esc”, and exit utility.

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

- Enter the LVD/HVD SCSI BIOS Setup on Node1 for the adapter connected to the library:
  - Set *termination* mode to *automatic*
  - Set *Reset SCSI Bus* parameter to *disabled*
  - Set the SCSI ID of this board to 5
- Enter the LVD/HVD SCSI BIOS Setup on Node2 for the adapter connected to the library.
  - Set *termination* mode to *automatic*
  - Set *Reset SCSI Bus* parameter to *disabled*
  - 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 either 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 Log on. Update drivers (Adaptec, QLA, etc.) as described in Updating Drivers on page 110.

Step 6 Shutdown Node1.

Step 7 Repeat steps 2 - 5 using Node2 instead of Node1.

Step 8 Initialize LUN 0.
To initialize LUN 0, go to **Main Menu > Change Configuration > Password**
In the **Password** field, type: `1 2 3 4`
then **Raid Config > Initialize LU**
In the **Initialize LU** field, type: `Yes`
On the keyboard, press 0

Note

The RAID initialization takes a minimum of 3 hours.

Setting Up IP Address, Node Name, and Joining Domain

Step 1 Power on Node1 and log in.

Note "HDD changed" message may appear. F1 to enter setup and esc and ok.
During logging in ignore duplicate name message if it appears.

Step 2 Set up Public network.

- <pause> Right click "My Network Places" and select "Properties".
- Right click "Local Area Connection" and rename in to 'Public'. Select "Properties".
- Select "Show Icon in the Task Bar when Connected".
- Select "Internet Protocol (TCP/IP)" and select "Properties".
- Select "Use the Following IP Address"
  - Set *IP Address* (208.230.5.100 for Node1 and 208.230.5.200 for Node2 in lab)
  - Set *Subnet Mask* to 255.255.255.0
  - Set *Preferred DNS Server* to 208.230.5.4 (in lab)
  - Set *Public default Gateway* to 208.230.5.4 (in lab)

Note Also enter any additional customer networking information (additional DNS, WINS etc.).

  - Press "OK" and "OK".

Step 3 (This step is for Windows 2000 system only. On Windows 2003 follow the Step 4)
Right click "Public" and "Disable" then right click and "Enable". A new item "Local Area Connection 2" will appear.

Step 4 Set up Private network

- Right click "Local Area Connection 2" and rename it to 'Private'. Select "Properties"
- Select "Show Icon in the Task Bar when Connected"
- Select "Internet Protocol (TCP/IP)" and select "Properties"
- Select "Use the Following IP Address"
  - Set IP Address to (10.10.10.1 and 10.10.10.2 in lab) (use here a completely different IP than for "Local Area Connection").
  - Set Subnet Mask to 255.0.0.0.
  - Press "OK" and "OK".

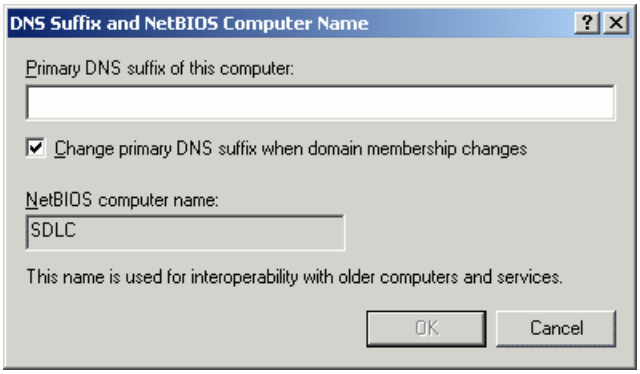
Step 5 (This step is for Windows 2000 system only. On Windows 2003 follow the Step 6)
Right click "Local Area Connection 2" and "Disable" then right click and "Enable".

Step 6 Join node to the domain

- Right click "My Computer" and select "Properties".

- (on Windows 2000) Open “Network Identification” and select “Properties”.
- (on Windows 2003) Open Computer Name > Change > More. Ensure that the checkbox ‘Change primary DNS suffix when domain membership changes’ is *enabled* (see Figure 11). Press OK.

Figure 9 Windows 2003: DNS suffix enabled



- Set “Computer name” (sdlc1 for Node1 and sdlc2 for Node2)

CAUTION **Both Node1 and Node2 names must not be longer than 14 symbols.**

- Select “Domain” and enter <domain name without postfix> and OK (“domain” for the computers in lab)
- Enter domain user name and password and OK (“adicuser” and “pa$$w0rd”)
- Wait for *Welcome to domain*.
- Press “OK” and “OK” to reboot and “OK” and “Yes”.

Step 7 ‘Yes’ to reboot now. Wait until reboot.

Step 8 Repeat steps 1 to 6 for Node2. ‘No’ to reboot now.

CAUTION

Using Start > Run do the following:
From Node2 run: ping <Node1 public IP address>
From Node2 run: ping <Node1 private IP address>
From Node1 run: ping <Node2 public IP address>
From Node1 run: ping <Node2 private IP address>
From Node1 or Node2 run: ping <Domain name>
If any of these commands returns “Request timed out“ response, that means the network settings are configured incorrectly, for example, the network connection that has been configured as ‘public’, is in fact internal cluster (private) network connection.

Step 9 Shutdown both nodes.

Setting Up the RAID

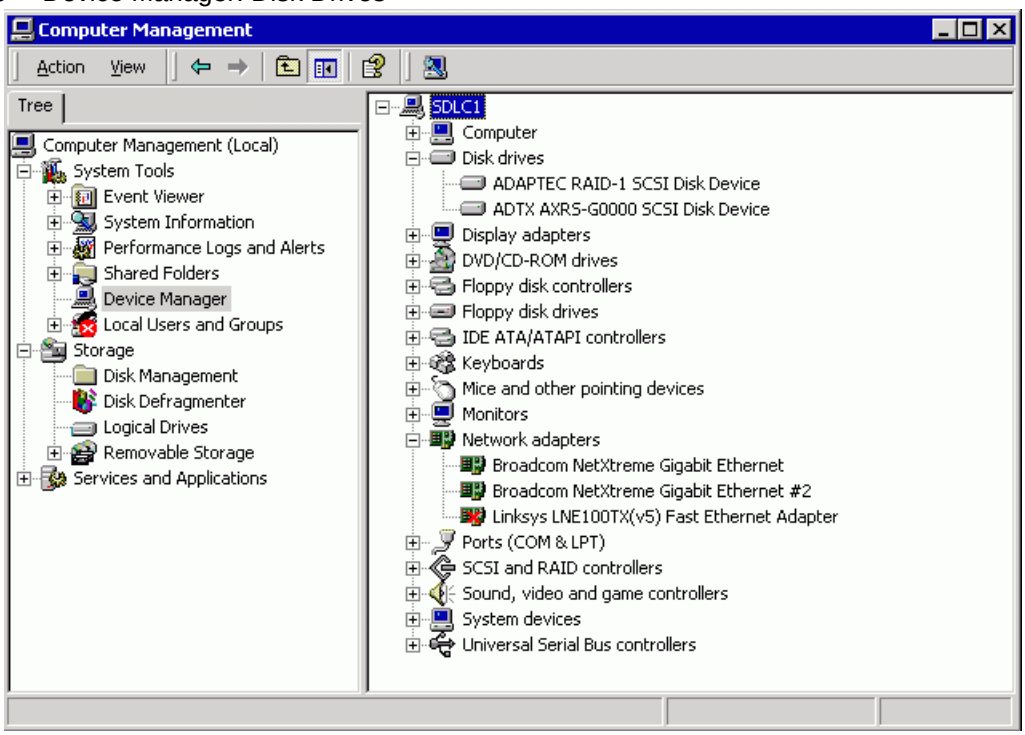
Same on both Windows 2000 and Windows 2003 unless the other specified.

Step 1 Power up Node1 and log in as Administrator for SDLC1 (this computer)

Step 2 Prepare to Format RAID disk

- Right click “My Computer” and select “Manage”.
- Select Device Manager and open Disk Drives. Scan for new devices (see Figure 12).

Figure 10 Device Manager: Disk Drives



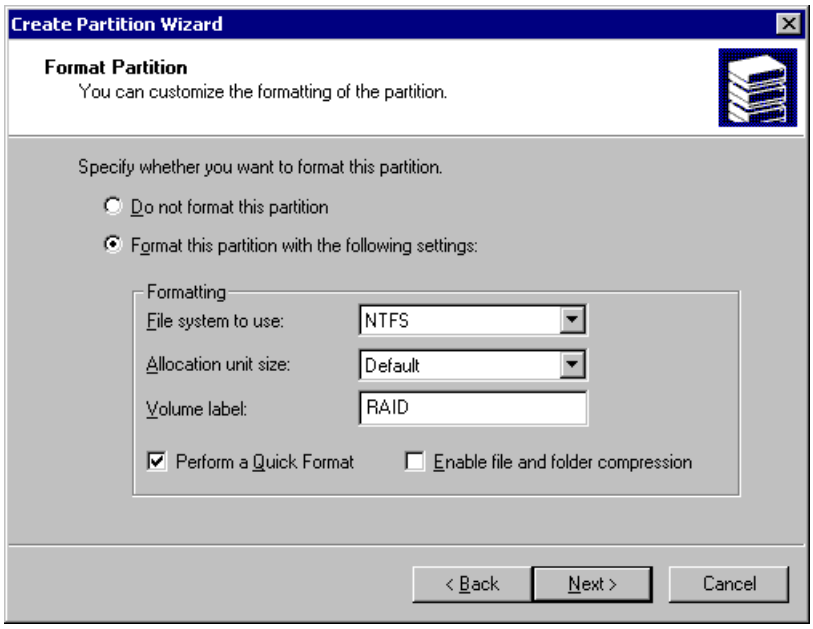
- Verify that the ADTX RAID is present.
- Select “Disk Management”. *Write Signature Wizard* should start. Press “Next”.
  If *Write Signature* does not appear, the RAID is not initialized. Return to Step 1.
- Select “Disk 1” to write a Signature and press “Next”.
- Unselect “Disk 1” to *Upgrade* (*Convert* on Windows 2003), press “Next” and then “Finish”.

Step 3 Format RAID

- Right click unallocated space and select “Create Partition”. Create Partition Wizard starts. Click Next.
- Select “Primary Partition” and press “Next”.
- Set maximum value in “Amount of Disk Space to Use” and press “Next”.
- Select “Assign a Drive Letter” and select “R:” and press “Next”.
- Select “Format this Partition with the Following Settings”
  - Set “File System” to “NTFS”
  - Set “Allocation Unit Size” to “Default”

- Set “Volume Label” to “RAID”
- Select “Perform A Quick Format” (see Figure 13)

Figure 11 Format RAID Partition



- Press “Next” and “Finish” and let format complete.
- Shutdown Node1, turn RAID off.

Step 4 Power up Node2 and log in as Administrator for SDLC2 (this computer). Turn RAID on and wait for it to come ready.

Step 5 Join RAID disk

- Right click “My Computer” and select “Manage”.
- Select Device Manager and open Disk Drives. Scan for new devices.
- Verify that the ADTX RAID is present.
- Select “Disk Management”. Right click “RAID”. Select “Change Drive Letter and Path”.
- Select “Edit” and “Assign Drive Letter” to “R”. Press OK. Press “Yes” to confirm.
- Shutdown Node2.

Configuring Cluster Service

Under WIndows 2000 and Windows 2003 the cluster is installed differently.

Windows 2000

Step 1 Power up Node1 and log in as Administrator to SDLC1 (this computer)

Step 2 Configure Cluster Service on Node1.

- Select **Start > Settings > Control panel > Add/Remove Programs > Add/Remove Windows Components >> Cluster Service**. Press **Next**.

- Insert Windows 2000 Advanced Server SP4 CD and press OK. Cluster Service Configuration Wizard will start. Press “Next”.
  - Click “I Understand” and “Next”.
  - Select “The First Node in the Cluster” and “Next”.
  - Set cluster name to SDLC-CLUSTER and “Next”.

CAUTION **The cluster name must not be longer than 14 symbols.**

  - Set User Name to “adicuser” and Password to “pa$$w0rd”. Set Domain to <domain> and “Next”.
  - Click “Yes” to adding account to the Administrators Group.
  - Ensure that “R: Raid” is in managed disks and “Next”.
  - Select “R: Raid” and “Next” and “Next”.
  - Set up Cluster Network
    - For Network Name “Public” select “Enable this Network for Cluster Use”.
    - Select “All Communications (mixed network)” and “Next”.
    - For Network Name “Private” select “Enable this network for cluster use”.
    - Select “Internal Cluster Communications Only (Private Network)” and “Next”.
    - Ensure that “Private” is at the top of Networks list and “Next”
      - Set “Cluster IP address” to <ip address> (208.230.5.3 in lab)
      - Set “Subnet Mask” to 255.255.255.0
      - Set “Network” to “Public” and “Next”.
  - “Finish” and “OK” to Cluster Service Started Successfully.
- Finish and eject CD and close all windows.

Step 3 Power up Node2 and log in as Administrator for SDLC2 (this computer)

Step 4 Configure Cluster Service on Node2.

- Select **Start > Settings > Control panel > Add/Remove Programs > Add/Remove Windows Components >> Cluster Service**. Press **Next**.
- Insert Windows 2000 Advanced Server SP4 CD and press OK.
- Cluster Service Configuration Wizard will start and Next
  - Click “I Understand” and “Next”.
  - Select “Second or Next Node in the Cluster” and “Next”.
  - Set cluster name as SDLC-CLUSTER
  - Select “Connect to Cluster As”.
  - Set User Name to “adicuser” and Password to “pa$$w0rd”.
  - Set Domain to <domain> and “Next”.
  - Set password as “pa$$w0rd” and “Next”.
  - “Yes” to Specified Account not a Member

- “Finish” and “OK” and “Finish”.

Step 5 Remove CD and close all windows.

Step 6 Verify Cluster service.

- On Node2 select Start > Settings > Control Panel > Administrative Tools > Cluster Administrator.
- Select Groups > Cluster Group
- Select File > Move Group to verify the cluster is working properly
- Move group again and return ownership to Node1

Windows 2003

Step 1 Power on Node1. Log on as Administrator.

Step 2 Create Cluster on Node1.

- Start > Administrative Tools > Cluster Administrator
- Choose 'Create new cluster' and OK. Next. Enter cluster name (SDLCCLUSTER2003) and Next.

 **CAUTION** **The cluster name must not be longer than 14 symbols.**

- Review Node1 name and Next. The wizard will analyze an existing configuration.
- Next. Enter cluster IP (static, unique) and Next.
- Enter domain user account & password. Next.
- Review cluster summary and Next. Wizard creates a cluster.
- Next and Finish.

Step 3 Join Node2 to Cluster

- Power on Node2 and wait till it comes up. Wait circa 5 min until the virtual cluster name will be available from Node2. Switch to Node2.
- Start > Administrative Tools > Cluster Administrator. Choose 'Open Connection to cluster' and enter the cluster name (SDLCCLUSTER2003).
- OK. Then Fine > New > Node. Add new Node wizard starts.
- Next. Add, then Next. The wizard will analyze an existing configuration.
- Enter domain user account & password. Next.
- Review cluster summary and Next. Wizard adds node to a cluster.
- Next and Finish. The cluster is ready.

Step 4 Ensure the cluster works.

- Select Start > Administrative Tools > Cluster Administrator
- Select Groups > Cluster Group

- Select File > Move Group to verify the cluster is working properly
- Move group again and return ownership to Node1.

Installing Scalar DLC Software

Same on both Windows 2000 and Windows 2003 unless the other specified.

CAUTION **When entering the backup directory information in the required setup screens and fields, make certain the backup directory information is accurate. After the installation is complete, verify that the backup directory path is correct.**

CAUTION **Do not install Scalar DLC Clustering until both nodes are fully installed with Scalar DLC.**

Step 1 If it has not been done, set up the library media changer. See Setting Up the Library on page 123.

Step 2 Install Scalar DLC on Node1.

- Log in as the domain admin.
- Insert Scalar DLC 2.7CD. Select Scalar DLC Install to install the Scalar DLC with all required components (see Installing the Scalar DLC on page 45).
- Set SQL Destination to “R:”.
- Specify Scalar DLC settings, as required for Scalar DLC Software on page 50.
  - Set SDLC User Name to <SDLC user name>. Set password to <SDLC user password>. Select domain account and “Check”. Wait (~5 min) and Submit.

Note As the SDLC user is a domain account, the user name and password should match the local network security policy. Contact the local network administrator for the details.

  - Set Database Name as “SDLC”. Select Compact Database Weekly, Backup Database None.
  - Unselect “Turn On Email Notifications”.
  - Select “Complete”.
  - Select “Install immediately” for Target Drivers (if required).
- Install.
  - Java 2 install: “I accept” and “Next” and “Typical” and “Next” and “Finish”.
  - MSDE2000 install: “No”, then “Yes“.
  - Set Network Domain as <domain name>. Set Server name as <computer name>.<domain name>. Set Administrators Email as “admin@<domain name>. Set “Run as a service for all Users” and “Next”.
  - Select “Complete” and “Next” and “Next” and “Install” and “Finish”. “OK” to “the system being restarted now” and restart (15 min for SQL).

- OK to restart and wait for <ctrl><alt><del>. Remove Scalar DLC Install disk from Node1.

Step 3 Install Scalar DLC on Node2.

- Power on Node2. Log in as the domain admin.
- Insert Scalar DLC 2.7 CD. Select Scalar DLC Install to install the Scalar DLC with all required components (see Installing the Scalar DLC on page 45).
- Set SQL Destination to “R:”.
- Specify Scalar DLC settings, as required for Scalar DLC Software on page 50.
  - Set SDLC User Name to <SDLC user name>. Set password to <SDLC user password>. Select domain account and “Check”. Wait (~5 min) and Submit.

Note As the SDLC user is a domain account, the user name and password should match the local network security policy. Contact the local network administrator for the details.

  - Set Database Name as “SDLC”. Select Compact Database Weekly, Backup Database None.
  - Unselect “Turn On Email Notifications”.
  - Select “Complete”.
  - Select “Install immediately” for Target Drivers (if required).
- Install.
  - Java 2 install: “I accept” and “Next” and “Typical” and “Next” and “Finish”.
  - MSDE2000 install: “No”, then “Yes“.
  - Set Network Domain as <domain name>. Set Server name as <computer name>.<domain name>. Set Administrators Email as “admin@<domain name>. Set “Run as a service for all Users” and “Next”.
  - Select “Complete” and “Next” and “Next” and “Install” and “Finish”. “Ok” to “the system being restarted now” and restart (15 min for SQL).
- Remove Scalar DLC Install disk from Node2.

Step 4 Finish installing Scalar DLC on Node1

- Load Scalar DLC Install disk on Node1. Log in as the domain admin; installation should continue. Cancel immediately.
- Open Cluster Administrator and go to Groups > Cluster Group. Verify that Node1 has ownership now.
- Manually run <CD>:\autorun. Select Scalar DLC Install. Next and I Accept and Next and Next.
- Specify Scalar DLC settings
  - Set user name to ADIC User and organization to ADIC. Enter serial number. Select Anyone (all Users) and “Next”
  - Set SDLC User Name to <SDLC user name>. Set password to <SDLC user password>. Select domain account and “Check”. Wait (~5 min) and Submit.

Note As the SDLC user is a domain account, the user name and password should match the local network security policy. Contact the local network administrator for the details.

- Look for successful component registration and “Next”.
- Set Database Name as “SDLC”. Select Compact Database Monthly, Backup Database Weekly, set backup file “SDLC_backup” in folder “R:\MSSQL\Backup” and Next

Note

The Backup directory is to be created manually.

When entering the backup directory information in the required setup screens and fields, make certain the backup directory information is accurate. After the installation is complete, verify that the backup directory path is correct.

- Unselect “Turn On Email Notifications” and “Next”.
- Select “Complete” and “Next”.
- Select “Do not Install” for Target Drivers and “Next”. Install.

- Install Scalar DLC.
- Enter Registration Information and Next
- Unselect Send License request to ADIC Now and Next. Unselect Read Installation Summary Now and Finish.
- Remove Scalar DLC Installation CD. “Yes” to restart Node1. Wait for <ctrl><alt><del> screen.

Step 5 Finish installing Scalar DLC on Node2

- Load Scalar DLC Install disk on Node2. Log in as the domain admin; install should continue. Cancel immediately.
- Open Cluster Administrator and go to Groups > Cluster Group. Verify that Node2 has ownership now.
- Manually run <CD>:\autorun. Select Scalar DLC Install. Next and I Accept and Next and Next.
- Specify Scalar DLC settings
  - Set user name to ADIC User and organization to ADIC. Enter serial number. Select Anyone (all Users) and “Next”.
  - Set SDLC User Name to <SDLC user name>. Set password to <SDLC user password>. Select domain account and “Check”. Wait (~5 min) and Submit.

Note

As the SDLC user is a domain account, the user name and password should match the local network security policy. Contact the local network administrator for the details.

- Look for successful component registration and “Next”.
- Set Database Name as “SDLC”. Select Compact Database Monthly, Backup Database Weekly, set backup file “SDLC_backup” in folder “R:\MSSQL\Backup” and Next

Note

The Backup directory is to be the same one as for Node1.

When entering the backup directory information in the required setup screens and fields, make certain the backup directory information is accurate. After the installation is complete, verify that the backup directory path is correct.

- Select “Use Existing Database” and Next. Do not choose “Create new database“ or the Scalar DLC will not function.
- Select “Do not Install” for Target Drivers and “Next”. Install.

- Install. Cancel License wizard.
- Unselect “Read Installation Summary Now” and “Finish”.
- Remove Scalar DLC Install CD. “Yes” to restart Node2. Wait for <ctrl><alt><del> screen

Step 6 Install Target Drivers (optional, only for SCSI/FC clients with Scalar DLC. If no SCSI/FC Client will be used with the Scalar DLC software, proceed to Step 7)

- Insert Scalar DLC install CD in Node1. Autorun will start.
- Follow the installation sequence for Installing the SCSI/FC Target Drivers on page 74.
- Remove CD and reboot Node1.
- Insert Scalar DLC install CD in Node2. Autorun will start.
- Follow the installation sequence for Installing the SCSI/FC Target Drivers on page 74.
- Remove CD and reboot Node2.
- On Node1 enable Target mode for the adapter, see Activating Target Mode on page 77. Then reboot Node1.
- On Node2 enable Target mode for the adapter, see Activating Target Mode on page 77. Then reboot Node2.

Step 7 Set Scalar DLC to Failover (cluster) mode

- Log in as the domain user with local admin rights.
- Insert Scalar DLC Install CD. Close Autorun. Run `<CD>:\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe`
- Verify that both nodes show as up in the SDLC Cluster Configurator.
- Click Make SDLC Cluster Configuration.
- “OK” when complete and close all windows.
- Reboot Node1 and Node2.

Configuring 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 option to configure the logical library automatically, or Advanced 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. See Renaming and Repair on page 97.

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

Never remove the SCSI terminators from RAID or library. Doing so will cause the Scalar DLC to malfunction.

Post-install checklist

- Nodes
  - Node1 computer name (14 symbols max)
  - Node1 public IP address
  - Node2 computer name (14 symbols max)
  - Node2 public IP address
  - public Subnet mask
  - public default Gateway
  - public preferred DNS
  - public Alternate DNS (optional)
  - public Primary WINS (optional)
  - public Secondary WINS (optional)
  - Node1 private IP address
  - Node2 private IP address
  - private subnet mask
  - Local administrator login name and password (same on both nodes)
  - Scalar DLC serial number (same on both nodes
- Cluster
  - name (14 symbols max)
  - IP address
  - Subnet mask = public subnet mask
- Domain
  - name
  - domain admin name and password
  - directory services restore mode password

- Configuration
  - library SN
  - backup to RAID
  - backup to floppy
  - clients configured and tested
  - hardware configured and tested
  - email address settings
  - contact information
  - client type(s)
  - target card model
- License
  - Node1 SID
  - Node1 license string
  - Node2 SID
  - Node2 license string

Setting Up the Self-Domain Solution

Installing the Failover solution as Self-domain system, without an external domain controller, means that the Scalar DLC will be installed on both the Primary Domain Controller and the Backup Domain Controller. This configuration is possible but requires the extended setup, not the same as for the plain Failover solution that described in details in Setting Up the Failover Solution on page 13.

Setup Roadmap

1 Collecting Setup Data on page 34.

2 Installing the Nodes on page 34.

3 Installing ADTX RAID on page 35.

4 Configuring SCSI for RAID and Library on page 35.

5 Setting Up Network, IP Address and Computer Names on page 35.

6 Configuring Domain Controllers on page 36.

7 Setting Up the RAID disk on page 40.

8 Configuring Cluster Service on page 40.

9 Installing Scalar DLC Software on page 43.

For the optional additional activity, see Setting Up the Library on page 123, Building Client Connections on page 131, Installing SCSI/FC Target Adapters on a Live Machine on page 134, and Host/Library Communication using Fibre Channel and SNC on page 127. See also Upgrade, Remove, Repair on page 81.

Collecting Setup Data

- Nodes
  - Node1 computer name (14 symbols max)
  - Node1 public IP address
  - Node2 computer name (14 symbols max)
  - Node2 public IP address
  - public Subnet mask
  - public default Gateway = Node1 public IP
  - public preferred DNS = Node1 public IP
  - public alternate DNS = Node2 public IP
  - Node1 private IP address
  - Node2 private IP address
  - private subnet mask
  - private preferred DNS = Node1 private IP
  - private alternate DNS = Node2 private IP
  - Local administrator login name and password (same on both nodes)
  - Scalar DLC serial number (same on both nodes
- Cluster
  - name (14 symbols max)
  - IP address
  - Subnet mask = public Subnet mask
- Domain
  - name (14 symbols max; a compound name must be used, for example, SDLCDOMAIN.INT; the 14-symbol-length limit does not include postfix .INT)
  - domain admin name and password
  - directory services restore mode password
- Contact information of IT person for connection questions

Installing ADTX RAID

Same as in plain Failover solution. See Installing ADTX RAID on page 18.

Configuring SCSI for RAID and Library

Same as in plain Failover solution. See Configuring SCSI for RAID and Library on page 20.

Setting Up Network, IP Address and Computer Names

The procedure is more or less the same on both Win2000 and Win2003.

Step 1 Power on Node1 and log in (ignore duplicate name message).

Step 2 Set up Public network.

- On Windows 2000, right click “My Network Places” and select “Properties”.
  On Windows 2003, use Start > Control Panel > Network Connections (right-click) > Open.
- Right click “Local Area Connection”. Rename it to ‘Public’. Right-click and select “Properties”.
- Select “Show Icon in the Task Bar/Notification Area when Connected”. Select “Internet Protocol (TCP/IP)” and select “Properties”.
- Select “Use the Following IP Address”
  - Set *IP Address* (192.168.0.220 for Node1 and 192.168.0.221 for Node2 in lab)
  - Set *Subnet Mask* to 255.255.255.0
  - Set *Default gateway* to same as static IP of Node1 (192.168.0.220)
  - Set *Preferred DNS* to same as static IP for Node1 (192.168.0.220)
  - Set *Alternate DNS* to static IP of Node2 (192.168.0.221)
  - Press “OK” and “OK”. (OK and Close on Windows 2003).

Step 3 (This step is for Windows 2000 system only. On Windows 2003 follow the Step 4)
Right click “Public” and “Disable” then right click and “Enable”. A new item “Local Area Connection 2” will appear.

Step 4 Set up Private (cluster) network.

- Rename Local Area Connection 2 to ‘private’.
- Right click “Private” and select “Properties”.
- Select “Show Icon in the Task Bar when Connected”. Select “Internet Protocol (TCP/IP)” and select “Properties”
- Select “Use the Following IP Address”
  - Set IP Address to (10.0.0.1 for Node1 and 10.0.0.2 for Node2 in lab) (use a completely different IP than Local Area Connection that is on a higher subnet)
  - Set Subnet Mask to 255.0.0.0
  - Set preferred DNS to static IP of Node1 (10.0.0.1)
  - Set alternate DNS to static IP of Node2 (10.0.0.2)
  - Press “OK” and “OK” (OK and Close on WIndows 2003).

Step 5 Set computer name.

- Right click “My Computer” and select “Properties”.
  - (on Windows 2000) Open “Network Identification” and select “Properties”.
  - (on Windows 2003) Open Computer Name > Change > More. Ensure that the checkbox ‘Change primary DNS suffix when domain membership changes’ is *enabled* (see Figure 11 on page 23). Press OK.
- Set “Computer name” (sdlc1 for Node1 and sdlc2 for Node2)

CAUTION **Both Node1 and Node2 names must not be longer than 14 symbols.**

- Press “OK” and “OK” to reboot and “OK” and “No” to reboot server.

Step 6 Restart Node1.

Step 7 Repeat steps 1 to 6 for Node2.

CAUTION

Using Start > Run do the following:
From Node2 run: ping <Node1 public IP address>
From Node2 run: ping <Node1 private IP address>
From Node1 run: ping <Node2 public IP address>
From Node1 run: ping <Node2 private IP address>
If any of these commands returns “Request timed out“ response, that means the network settings are configured incorrectly, for example, the network connection that has been configured as ‘public’, is in fact internal cluster (private) network connection.

Step 8 Shutdown Node2.

Configuring Domain Controllers

Under WIndows 2000 Advanced Server and Windows 2003 Server, this procedure is not quite the same.

Windows 2000

Step 1 Configure Primary domain controller (Node1)

- Power on Node1 and log in. In “Configure your server” window select “Active Directory”.
- Select “Start the Active Directory Wizard” and “Next”.
  - Select “new domain” and “next”.
  - Select “create new domain tree” and “next”.
  - Select “create new forest of domain trees” and “next”.
  - Enter domain name (sdlcdomain.int) and next.
  - Accept short NetBIOS name and next
  - Accept default locations and next.
  - Accept default folder location and next

- OK to unable to find DNS server
- Yes to install DNS and next
- Select permissions “compatible only with windows 2000 servers” and “Next”. Set directory services restore mode password. Confirm and Next and Next
- Insert Windows 2000 Advanced Server CD and OK and Finish.

- Unselect show this screen at startup in Configure your server window.
- Remove CD.
- Restart Node1.

Note Make changes to domain user account information on Node1 at this time.

Step 2 Bring Node2 to the domain

- Power on Node2 and log in
- Right click My Computer and select Properties.
- Open Network Identification and Properties
- Select Domain and enter <domain name> and OK (sdlcdomain)
- Enter user name and password and OK (administrator and password)
- Wait for Welcome to domain and OK and OK to reboot and OK and Yes.
- Log on to domain as administrator.

Step 3 Set up Backup Domain Controller (Node2)

- In the Configure your server window select Active Directory.
- Select Start the Active Directory Wizard and Next
  - Select “additional domain controller” and next
  - Enter user name and password (administrator and password) and Next
  - Accept domain name and next
  - Accept default locations and next
  - Accept default folder location and next
  - Set “directory services restore mode password” (password). Confirm and Next.
- Finish and unselect Show this Screen at startup in Configure your server window. Restart.
- After restart, launch Start > Settings > Control panel > Add/Remove Programs > Add/Remove Windows Components > Networking Services > Details
- Select Domain Name System and OK and next
- Insert Windows 2000 Advanced Server SP4 CD and OK and Finish.
- Remove CD.
- Restart Node2.

Step 4 Review network settings on both nodes (Public and Private). Restore DNS to the values described in Step 2 on page 35 and Step 4 on page 35.

Step 5 Review the Domain Operations mode, it should be ‘Native’. Change if required.

- On Node1 open **Start > Programs > Administrative Tools > Active Directory Domains and Trusts**.
- Right-click <Domain name> > Properties > General.
- If **Domain operation mode** is *Native*, just close the dialog pane, otherwise press **Change mode** button and then **Yes** to confirm changing mode.

Windows 2003

Step 1 Configure Primary domain controller (Node1)

- Power Up Node1. Insert Windows 2003 Server CD. Start > Manage Your Server
  - Add or remove a role
  - Next. The wizard will detect network settings.
  - For Configure Server Wizard, select Continue.
  - Typical configuration for first server and Next
  - Enter full DNS name for new domain (SDLCDOMAIN.INT) and click Next. To confirm, click Next again.
  - Select 'No, it should not forward queries' and Next.
  - Review summary and Next.
  - Press OK to confirm restart when needed.
  - Choose 'Public' network.
  - Unselect "Enable security on the selected interface”. Next.
  - (for the PC with three and more network interfaces) Select ‘Private’ and Next.
  - Finish.
  - When the ‘ready-to-shutdown’ window appears remove Windows 2003 Server CD. Node1 will auto-restart and continue the setup.
  - Next. Finish, Close 'Manage Your Server'.
- Correct Network Settings for Node1, as described in Step 4 on page 37.

Step 2 Join Node2 to domain.

- Power up Node2. Start > My Computer (right-click) > Properties > Computer name.
- Add description (optional) and press Change.
- Choose domain and enter domain name (SDLCDOMAIN). OK. The domain admin login is required.
- OK. wait till the Node2 joins to domain.
- OK. 'You must restart' and OK.
- OK, OK, and Yes for restart Node2.

Step 3 Configure Backup Domain Controller on Node2

- After Node2 is power up log on into SDLCDOMAIN domain (Options button, change Node2 name SDLCCLUST2 to domain name SDLCDOMAIN) as domain admin.

- Start > Manage Your Server > Add or remove a role
  - Next. The wizard will detect network settings.
  - Choose Domain Controller (Active DIrectory) and Next.
  - Summary and Next and Next and Next.
  - Choose 'Additional domain controller' and Next.
  - Enter domain admin name/password and Next. Next.
  - Review the active directory DB and log folders (do NOT change unless necessary). Next.
  - Review the System Volume folder (do NOT change unless necessary). Next.
  - Enter domain admin password and confirm. Next.

CAUTION **Windows 2003 contains advanced security that strictly declines plain passwords like 'password', 'qwerty123', etc. The password must contain both letters and numbers or other symbols like '+' or '_' and its length must be at least 8 symbols.**

  - Review summary and Next. The wizard will install Active Directory service. Finish. Restart Now to complete.
- Finish configure Backup Domain Controller. Node2 is restarted. Log on as domain admin, then Finish.
- Insert Windows 2003 Server CD. Start > Manage Your Server > Add or remove a role.
  - Next. The wizard will detect network settings.
  - For Configure Server message, select continue.
  - Choose DNS Server and Next.
  - Summary and Next and Next.
  - Select 'Create forward lookup zone for small networks' and Next
  - Select 'An ISP maintains the zone...', as the Node2 is the secondary DNS, and Next.
  - Enter the zone name (any user-friendly, for example, SDLCZONE2) and Next.
  - Enter Master DNS (Node1 IP - 192.168.0.201), press Add, then Next.
  - Select 'No, it should not forward queries' and Next.
  - Finish, and Finish.
- Remove Windows 2003 CD and shutdown Node2.

Step 4 Review the Domain functional level, it should be ‘Windows 2000 native’. Change if required.

- On Node1 open **Start > Programs > Administrative Tools > Active Directory Domains and Trusts**.
- Right-click <Domain name> > Raise Domain Functional Level.
- If **Current domain functional level** is *Windows 2000 native*, just close the dialog pane, otherwise select ‘Windows 2000 native’ level and then **OK** and **OK** to confirm changing level.
- Restart Node1.

Setting Up the RAID disk

Same on both Windows 2000 and WIndows 2003.

Step 1 Prepare to Format RAID disk

- Power on RAID. Wait for RAID to perform POST.
- Right click “My Computer” and select “Manage”. Scan disk drives.
- Select “Disk Management”. *Write Signature Wizard* should start. Press “Next”.
- Select “Disk 1” to write a Signature (Initialize) and press “Next”.
- Unselect “Disk 1” to Upgrade, press “Next” and then “Finish”.
  Note: If you are using Windows 2000, it is Upgrade. If you are using Windows 2003 it is Convert.

Step 2 Format RAID

- Right click unallocated space and select “Create Partition”. Create Partition Wizard starts. Click Next.
- Select “Primary Partition” and press “Next”.
- Set maximum value in “Amount of Disk Space to Use” and press “Next”.
- Select “Assign a Drive Letter” and select “R:” and press “Next”.
- Select “Format this Partition with the Following Settings”
  - Set “File System” to “NTFS”
  - Set “Allocation Unit Size” to “Default”
  - Set “Volume Label” to “Cluster Raid”
- Select “Perform A Quick Format”
- Press “Next” and “Finish” and let format complete.

Step 3 Shutdown RAID. Power up Node2 and log in as Administrator for SDLCCLUSTER (cluster).

- Power on RAID. Wait for RAID to perform POST.
- Right click “My Computer” and select “Manage”. Scan disk drives.

Step 4 Join RAID disk.

- Select “Disk Management”.
- Right click “Cluster Raid”. Select “Change Drive Letter and Path”.
- Select “Edit” and “Assign Drive Letter” to “R”.
- Press OK. Press “Yes” to confirm.

Step 5 Shutdown Node2. The RAID is on.

Configuring Cluster Service

Windows 2000 Advanced Server and Windows 2003 Server require completely different procedures.

Windows 2000

Step 1 Power up Node1 and log in as Administrator to SDLC1 (this computer)

Step 2 Configure Cluster Service on Node1

- Select **Start > Settings > Control panel > Add/Remove Programs > Add/Remove Windows Components >> Cluster Service**. Press **Next**.
- Insert Windows 2000 Advanced Server SP4 CD and press OK. Cluster Service Configuration Wizard will start. Press “Next”.
    - Click “I Understand” and “Next”.
    - Select “The First Node in the Cluster” and “Next”.
    - Set cluster name to SDLCCLUSTER and “Next”.

 **CAUTION** **The cluster name must not be longer than 14 symbols.**

    - Set User Name and Password (“administrator” and “password”). Set Domain to “sdlcdomain” and “Next”.
    - Ensure that “R: Cluster Raid” is in managed disks and “Next”
    - Select “R: Cluster Raid” and “Next” and “Next”.
    - Set up Cluster Network
        - For Network Name “public” select “Enable this Network for Cluster Use”.
        - Select “All Communications (mixed network)” and “Next”.
        - For Network Name “private” select “Enable this network for cluster use”.
        - Select “Internal Cluster Communications Only (Private Network)” and “Next”.
        - Ensure that “private is at the top of Networks list and “Next”
        - Set “Cluster IP address” to <ip address> (192.168.0.222 in lab)
        - Set “Subnet Mask” to 255.255.255.0
        - Set “Network” to “public” and “Next”.
    - “Finish” and “OK” to Cluster Service Started Successfully.
- Finish and eject CD and close all windows and shutdown Node1

Step 3 Power up Node2 and log in as Administrator for SDLC2 (this computer)

Step 4 Configure Cluster Service on Node2.

- Select **Start > Settings > Control panel > Add/Remove Programs > Add/Remove Windows Components >> Cluster Service**. Press **Next**.
- Insert Windows 2000 Advanced Server SP4 CD and press OK.
- Power on Node1 and wait for <ctrl><alt><del> (log in) screen.

- On Node2 Cluster Service Configuration Wizard will start and Next
  - Click “I Understand” and “Next”.
  - Select “Second or Next Node in the Cluster” and “Next”.
  - Set cluster name as SDLCCLUSTER
  - Select “Connect to Cluster As”.
  - Set User Name and Password (“administrator” and “password”). Set Domain to “sdlcdomain” and “Next”.
  - Set password as “password” and “Next”.
  - “Finish” and “OK” and “Finish”.

Step 5 Remove CD and close all windows.

Step 6 Ensure the cluster works.

- Select Start > Programs > Administrative Tools > Cluster Administrator
- Select Groups > Cluster Group
- Select File > Move Group to verify the cluster is working properly
- Move group again and return ownership to Node1.

Step 7 Shutdown Node2

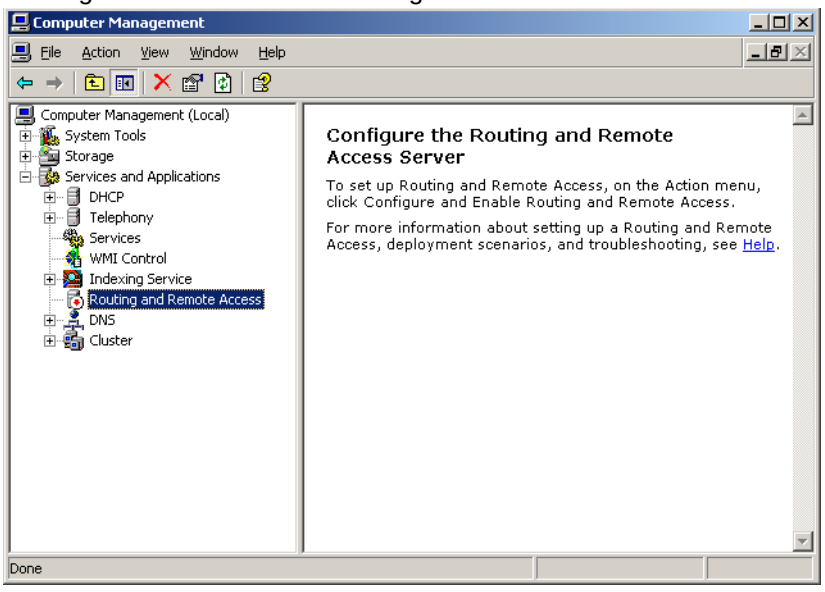
Windows 2003

Step 1 Prior to cluster installation, ensure that the routing and remote access are disabled.

- Right click on My Computer > Computer Management > Services and Applications

  The Computer Management screen appears.

Figure 12 Routing and Remote Access Configuration



- If the Routing and Remote Access is enabled, right-click on it and choose “disable.” No restart is required.

Step 2 Create Cluster on Node1.

- Start > Administrative Tools > Cluster Administrator
- Choose 'Create new cluster' and OK. Next. Enter cluster name (SDLCCLUSTER2003) and Next.

 **CAUTION** **The cluster name must not be longer than 14 symbols.**

- Review Node1 name and Next. The wizard will analyze an existing configuration.
- Next. Enter cluster IP (static, unique) and Next.
- Enter domain admin account & Password. Next.
- Review cluster summary and Next. Wizard creates a cluster.
- Next and Finish.

Step 3 Join Node2 to Cluster

- Power on Node2 and wait till it comes up. Wait circa 5 min until the virtual cluster name will be available from Node2. Switch to Node2.
- Start > Administrative Tools > Cluster Administrator. Choose 'Open Connection to cluster' and enter the cluster name (SDLCCLUSTER2003).
- OK. Then File > New > Node. Add new Node wizard starts.
- Next. Add, then Next. The wizard will analyze an existing configuration.
- Enter domain user account & password. Next.
- Review cluster summary and Next. Wizard adds node to a cluster.
- Next and Finish. The cluster is ready.

Step 4 Ensure the cluster works.

- Select Start > Administrative Tools > Cluster Administrator
- Select Groups > Cluster Group
- Select File > Move Group to verify the cluster is working properly
- Move group again and return ownership to Node1.

Installing Scalar DLC Software

Same as in plain Failover solution. See Installing Scalar DLC Software on page 28.

CAUTION **Do not install Scalar DLC Clustering until both nodes are fully installed with Scalar DLC.**

Note If required the user security policy can be modified on Primary domain controller (Node1) via **Start > Administrative Rules > Domain security policy**; choose **Account policies > Password policies**.

Post-install Checklist

- Nodes
  - Node1 computer name (14 symbols max)
  - Node1 public IP address
  - Node2 computer name (14 symbols max)
  - Node2 public IP address
  - public Subnet mask
  - public default Gateway = Node1 public IP
  - public preferred DNS = Node1 public IP
  - public alternate DNS = Node2 public IP
  - Node1 private IP address
  - Node2 private IP address
  - private subnet mask
  - private preferred DNS = Node1 private IP
  - private alternate DNS = Node2 private IP
  - Local administrator login name and password (same on both nodes)
  - Scalar DLC serial number (same on both nodes
- Cluster
  - name (14 symbols max)
  - IP address
  - Subnet mask = public Subnet mask
- Domain
  - name
  - domain admin name and password
  - directory services restore mode password
- Configuration
  - library SN

    - DB backup to RAID
    - DB backup to floppy
    - clients configured and tested
    - hardware configured and tested
    - email address settings
    - contact information
    - client type(s)
    - target card model
- License
    - Node1 SID
    - Node1 license string
    - Node2 SID
    - Node2 license string

Common Setup Notes

- If changes are made to the RAID or it is powered off/on a Hard Disk Changed message may appear during reboot.
    - F1 to enter bios
    - Esc without making changes
    - OK
- The above will also happen when using a Jump Drive.
- If a Jump Drive is in the USB during boot up an invalid disk error may happen
- Reset the time when finished with the installation.
- If the RAID is not new initialize it before starting it. The whole procedure takes approximately 6 hours.
- WinZip needs to be installed and is not by default
- Leave RAID off for a minimum of 20 seconds before powering back on
- Hang on boot up at ATI Rage SDRAM Bios is not an uncommon condition
- Immediately after the install is finished, if the cluster groups do not move from Node1 to Node2, shutdown Node1 and restart Node2. Make sure that Scalar DLC goes online for Node2, then restart Node1.
- SqlServerAgent service should be adjusted to use SDLC logon account, instead of using LocalSystem account. The form should be: <ClusterName>\SDLC (this can be taken from SDLC service parameters). This adjustment should be performed on both nodes.
- Set the event logs to overwrite when necessary. They will fill up often otherwise.
- If the Ethernet card is installed with Wake on Lan Feature, disable it.
- Typical user account security policy requires the password more than 6 symbols long and contained both numbers and letters in both small and capital.

4

Installing the Scalar DLC

The Scalar DLC software must be installed on a PC running Windows 2000 / 2003. 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.

The cluster solutions (both failover and self-domain) require the domain user with either local or domain administrator rights.

During the *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 51.
- Using the Scalar DLC setup engine install the required Software Components on page 52.
- After this is finished, install Scalar DLC Software on page 56.

Solution Checkup

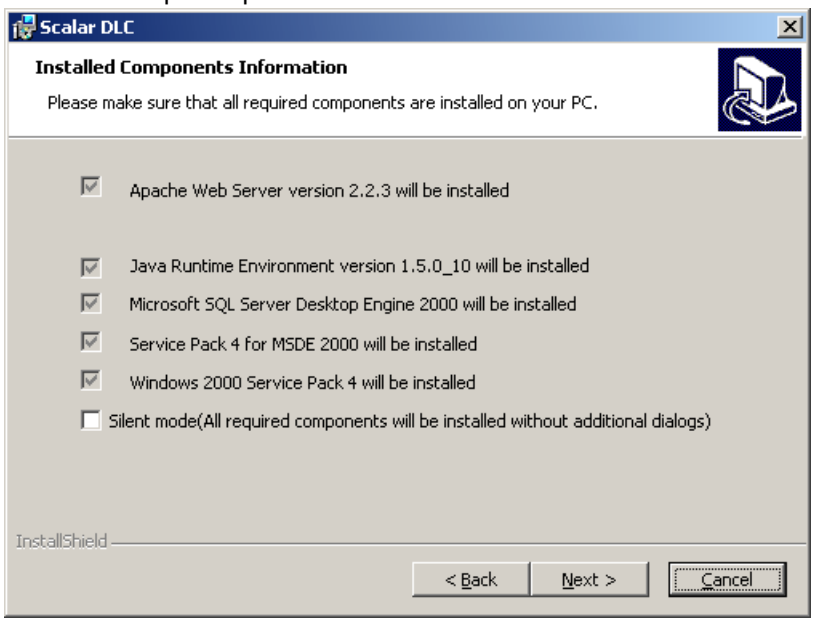
Make sure the appropriate solution is set up before installing the Scalar DLC.

See Setting Up the Standard Solution on page 9, Setting Up the Failover Solution on page 15, and Setting Up the Self-Domain Solution on page 37.

Software Components

Figure 13 on page 52 shows the components that are to be installed during the Scalar DLC setup process. The required components that are currently not installed are marked automatically for the installation.

Figure 13 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 (only for Windows 2000)
- Microsoft Internet Explorer ver. 6.0 or newer (only for Windows 2000)
- Java™ 2 Runtime Environment (Java 2) 1.4.2_09
- Secure Socket layer (SSL), optional
- Microsoft SQL Server 2000 Desktop Engine (MSDE 2000)
- MSDE 2000 Service Pack 4

Silent Mode

When a customer selects silent mode, all information that is required for the selected installation must be entered before the install process starts.

The install process continues until everything is complete, including automatically restarting the computer and logging on.

Note that the complete installation of both the required components and Scalar DLC software will take some time (circa 15-30 minutes).

Note It is recommended that you do not use silent mode when installing Scalar DLC failover / self-domain solution.

Windows Service Pack

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

Note

Scalar DLC supports the Win2000 SP4 developed by the Microsoft. This service pack can be used with all versions of Windows 2000 (Professional, Server, Advanced Server, etc.).

The SP1 for Windows 2003 is required for the Scalar DLC but not included onto the Scalar DLC Install CD. It must be installed with Windows 2003.

Disabling SYN Attack Detection Setting

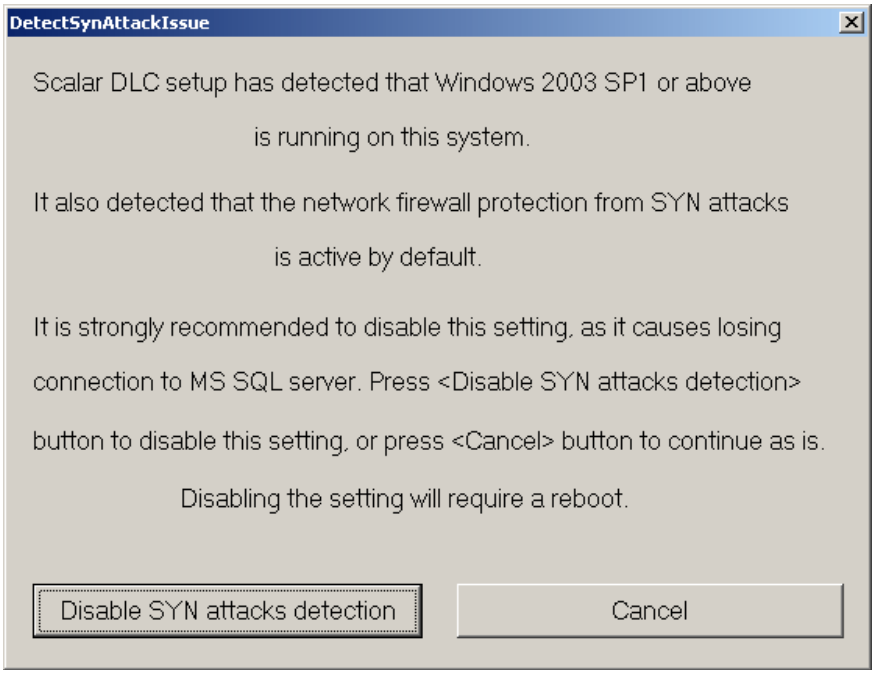
If you are running Windows 2003 with SP1 or later, prior to initiating the installation of the SDLC 2.7 software, the system automatically performs a check of the Windows registry to determine if a parameter for tuning the TCP/IP settings is enabled or disabled. This parameter handles firewall protection for SYN attacks. To prevent MS SQL conflicts and Scalar DLC abnormal termination, it is recommended that you disable the *SYN attack detection* setting.

After choosing **Software > Scalar DLC > Install**, you will be prompted to disable the detection parameters.

Note

If the parameter check starts on a Windows 2000, system, or a Windows system where the detection setting is already disabled, the parameter check will silently exit and the Scalar DLC installation will continue.

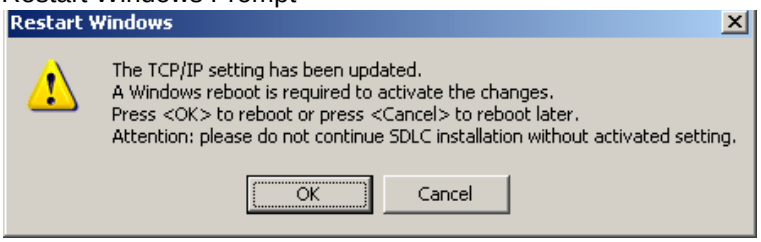
Figure 14 SYN Attack Detection Options



1 To disable the detection parameter, click **Disable SYN attack detection**. To continue without disabling the detection parameter, click **Cancel.**

2 If you choose to disable the SYN attack detection, you must reboot Windows to activate the changes.

Figure 15 Restart Windows Prompt



3 To reboot your Windows system immediately, click **OK**. To reboot later, click **Cancel**. If you do not reboot the system immediately after choosing to disable the SYN attack detection parameter, the parameter setting will remain enabled until the system is rebooted.

CAUTION **Do not continue with the Scalar DLC installation without rebooting and activating the new setting.**

Microsoft Internet Explorer

The Scalar DLC software is compatible with the MS IE browser 6.0 or newer version. The MS IE 6.0 installation kit is available. 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 2003 is not required.

Java 2 Runtime Environment

The Java 2 component installs over an existing Java runtime environment without producing a warning message. By default, the Java 2 is installed in the `<%SystemDrive%>\Program Files\Java\j2re1.5.2=0_10-windows-i586-p.exe\` directory. An advanced user can install the Java 2 to any directory desired, but this action is not recommended.

Note The Java 2 installation may request a restart. It is recommended that you reboot the PC.

Remove

Removing Java is performed via standard Windows Add/Remove Programs engine. A restart may be required afterwards.

Note It is recommended also to check `<%SystemDrive%>\Program Files\` afterwards. If Java folder is not removed, remove it manually.

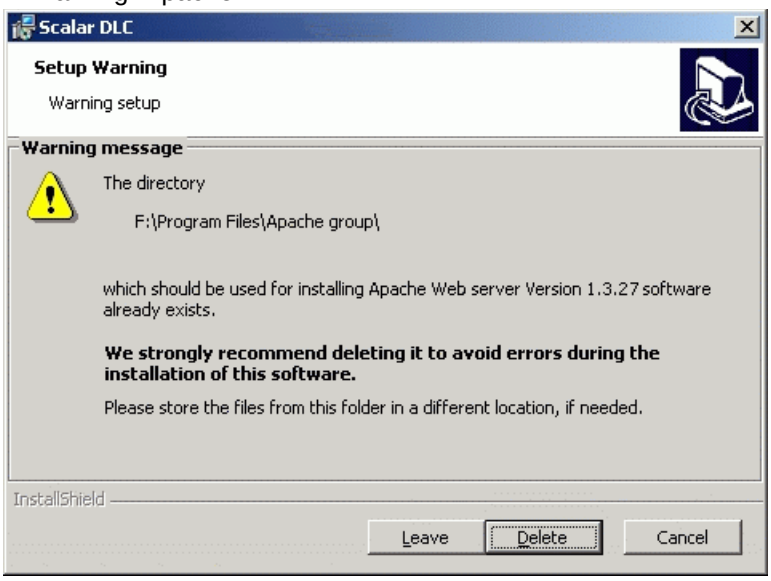
Apache HTTP Server

Note — The new Apache2 version is built within the Scalar DLC software and it cannot be installed or removed separately.

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

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

Figure 16 Warning: Apache



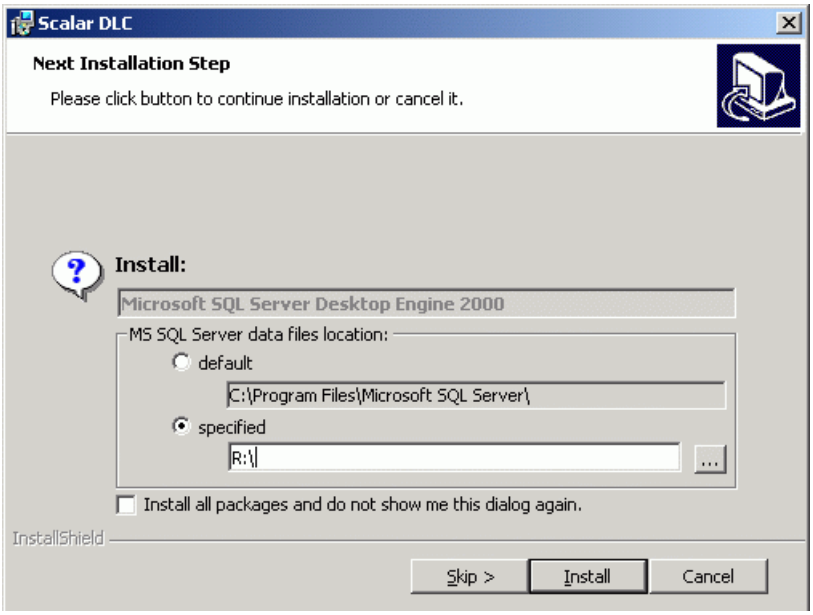
Microsoft SQL Server Desktop Engine 2000

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 Failover solution, the MS SQL 2000 should be installed on a shared disk (RAID - R:) to the ‘specified’ folder that must be shared, too.

Figure 17 MSDE 2000 Installation



MSDE 2000 Service Pack 4

The SP4 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 not install this service pack. Go to the http://www.microsoft.com instead, download the Service Pack 4 for MS SQL 2000, and install it manually

CAUTION

It is recommended that you install Service Pack 4 for MSDE 2000. Otherwise a security hole in MSDE 2000 remains open and could be used by internet viruses or worms (for example, Slammer).

Remove

Removing MSDE with the service pack is performed via standard Windows Add/Remove Programs engine. The MSDE SP4 separately cannot be removed. Restart is not required.

Scalar DLC Software

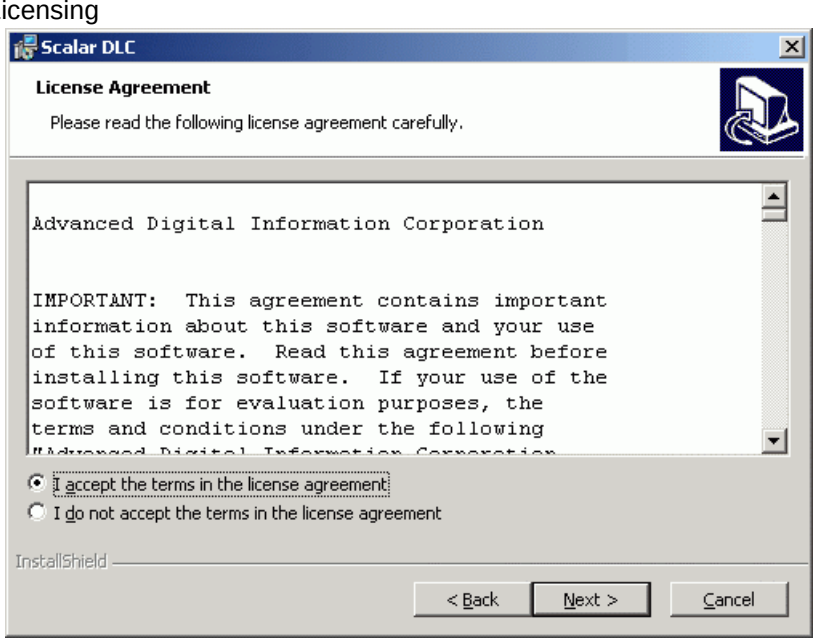
All Setup windows contain the following buttons:

- Back
- Next
- Cancel

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

Figure 18 Start Setup

Figure 19 Licensing



To continue the Scalar DLC Installation, accept the License Agreement. Click **Next** to proceed to the next screen (a copy of Figure 13 on page 52).

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

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

Figure 20 Personal Information

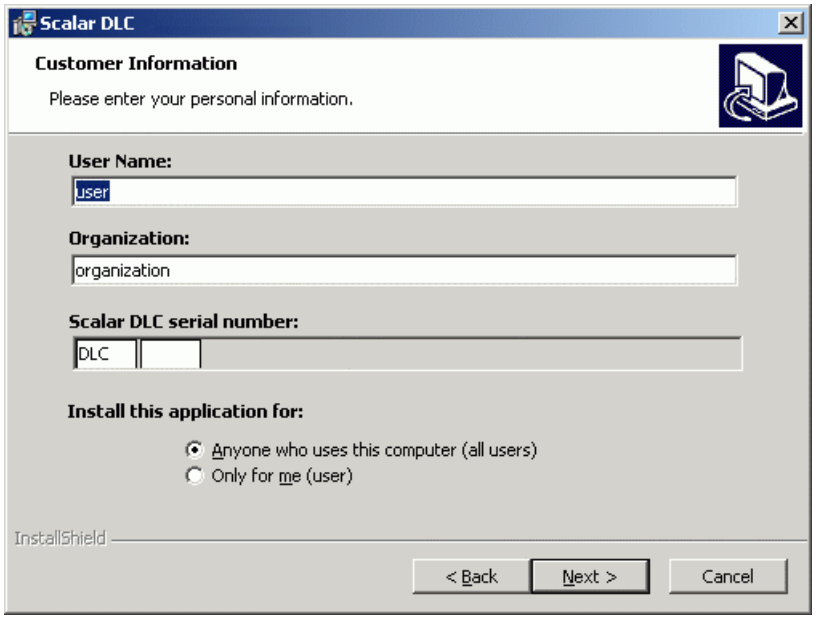
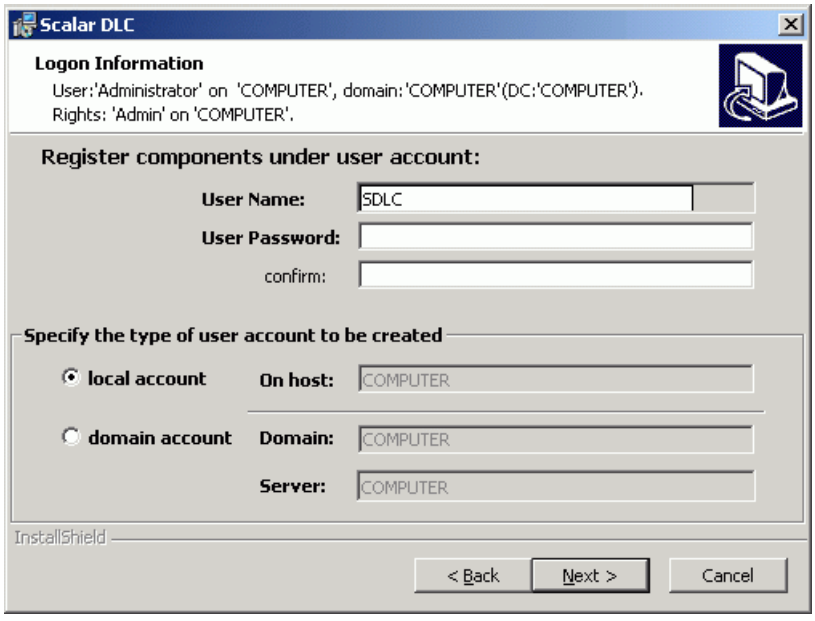


Table 5 Personal Information

Name	Operation	Description
User name	Enter	The user name (PC owner, by default).
Organization	Enter	The organization name (PC owner organization, by default)
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 21 for the local account, see Figure 22 on page 59 for the domain account, and see Figure 24 on page 60 for the registration.

Figure 21 Create Local User Account

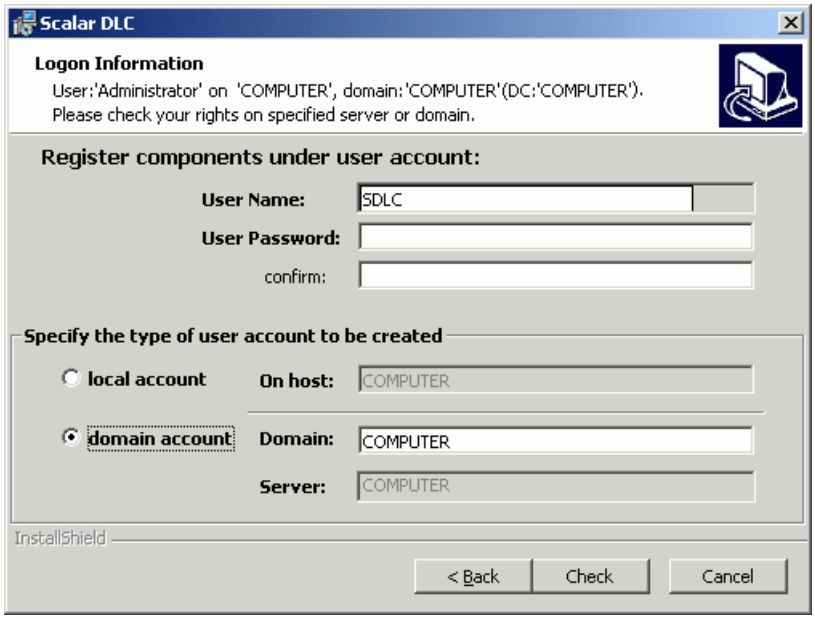


Enter the user account settings.

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.
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 22 Create Domain User Account

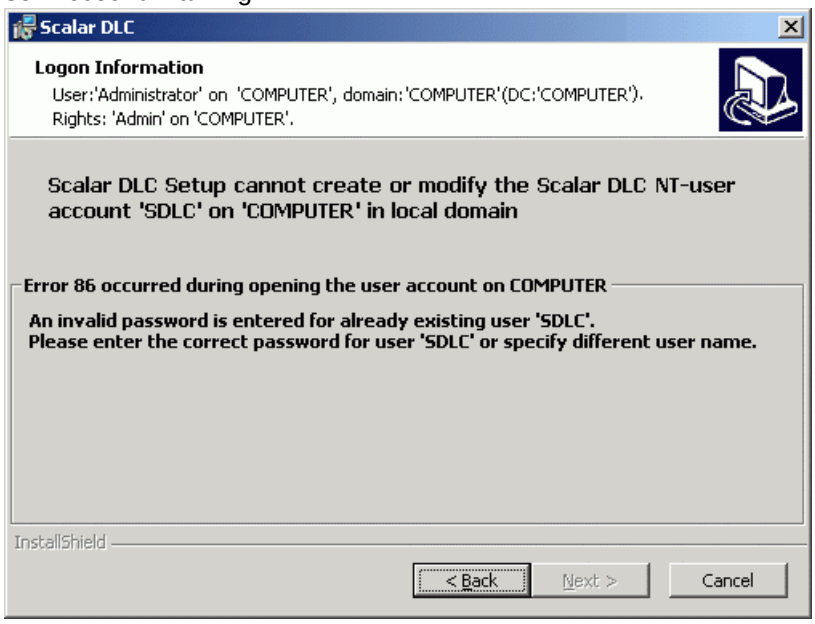


The user account should be entered in this window. Refer to Table 6 for the details. Click **Next** to proceed.

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

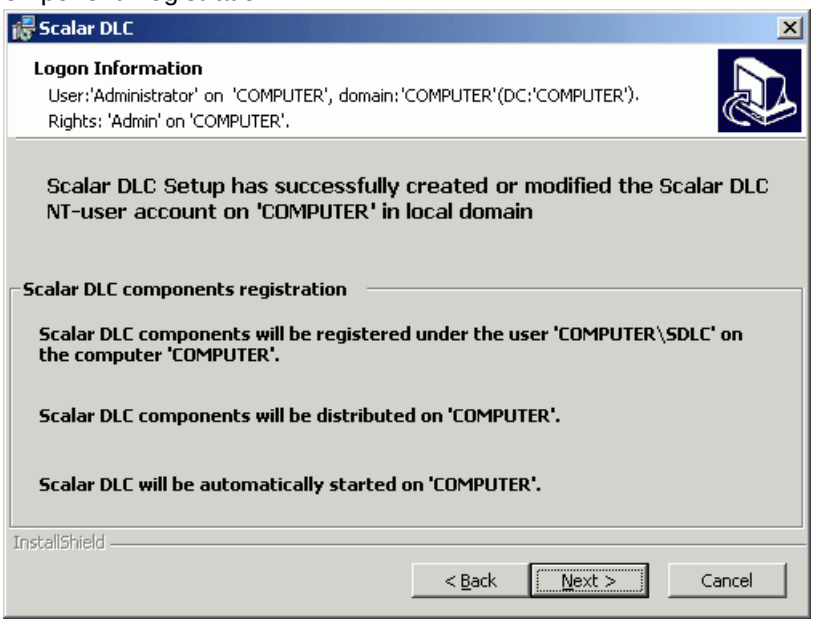
If the account name already exists and the password does not match the existing account’s password, the User Account warning appears. See Figure 23 on page 60. Otherwise, if the user account is created successfully, the Component Registration window appears. See Figure 24 on page 60.

Figure 23 User Account Warning



Go back and specify another user account or enter the correct password.

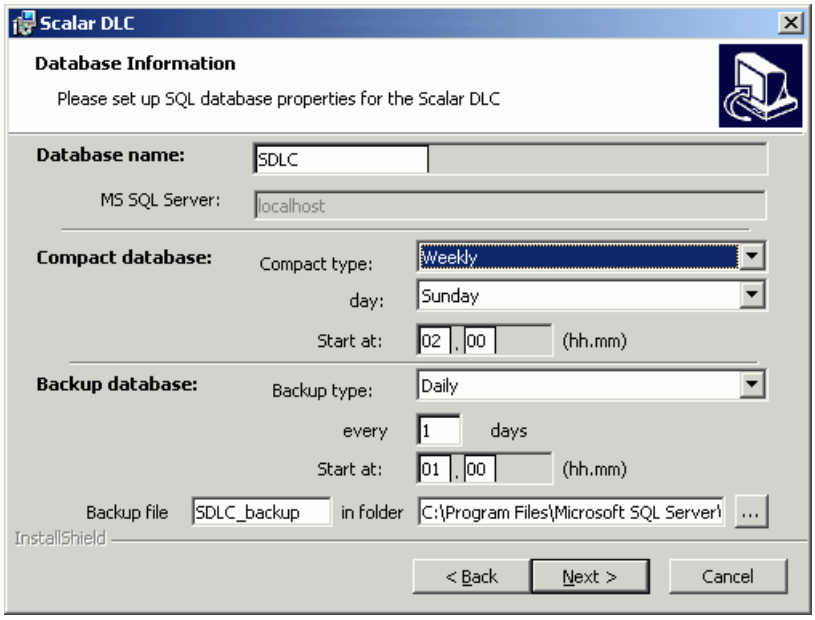
Figure 24 Component Registration



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 25 Database Information



CAUTION **When entering the backup directory information in the required setup screens and fields, make certain the backup directory information is accurate. After the installation is complete, verify that the backup directory path is correct.**

See Table 7 for the additional information.

Table 7 Database Information

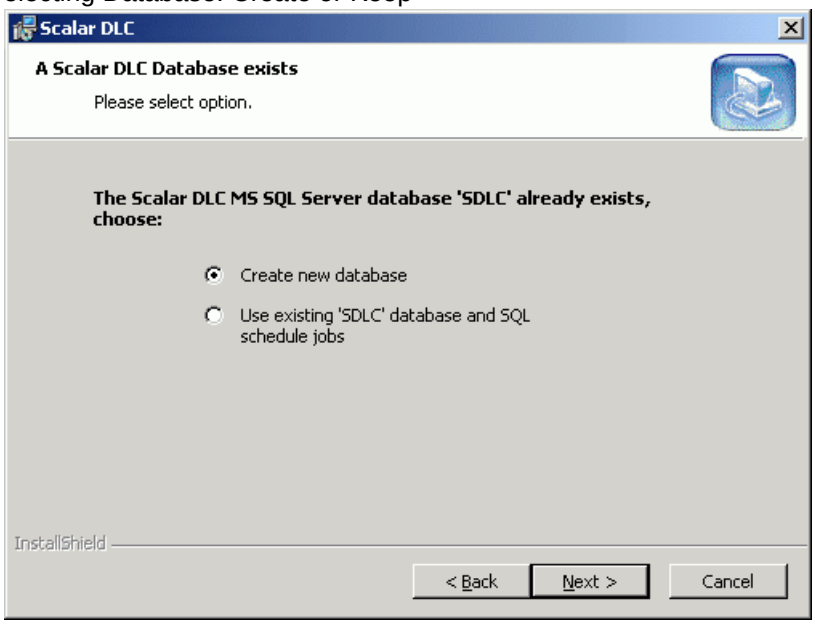
Name	Operation	Description
SDLC Database name	Enter	The default Scalar DLC database name, ‘SDLC’, will be used unless the user specifies another name.
MS SQL Server	Supplied	The default host name where the database should be created.
Compact	Select	The Compact Database schedule can be set here.
Backup	Select	The Backup Database schedule can be set here.
Backup file	Enter	Default database backup file, ‘SDLC_backup’ by default.
In folder	Select	Default database backup folder. The default is `%SystemDrive%\Program Files\Microsoft SQL Server\` (for standard solution) and `%RAIDDrive%\Program Files\Microsoft SQL Server\` (for failover or self-domain solution).

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, as the database backup folder and filename, though the database name itself 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 26 on page 62. If the database was created by an older version of Scalar DLC software, either update it or create a new, clean database. See Figure 27 on page 62.
If a new database is installed, the next window, Email Notifications settings, appears. See Figure 28 on page 63.

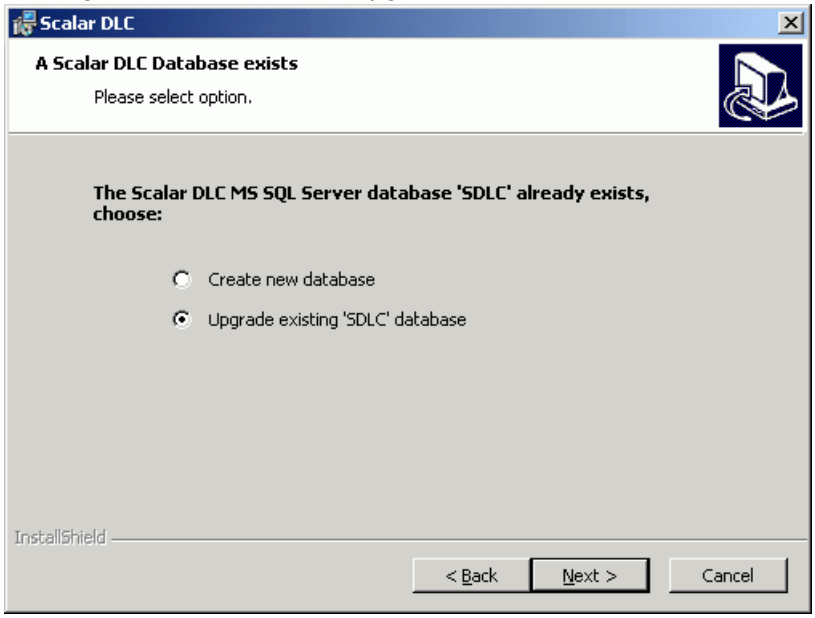
Figure 26 Selecting Database: Create or Keep



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 28 on page 63; otherwise, proceed to the final screen.

Figure 27 Selecting Database: Create or Upgrade



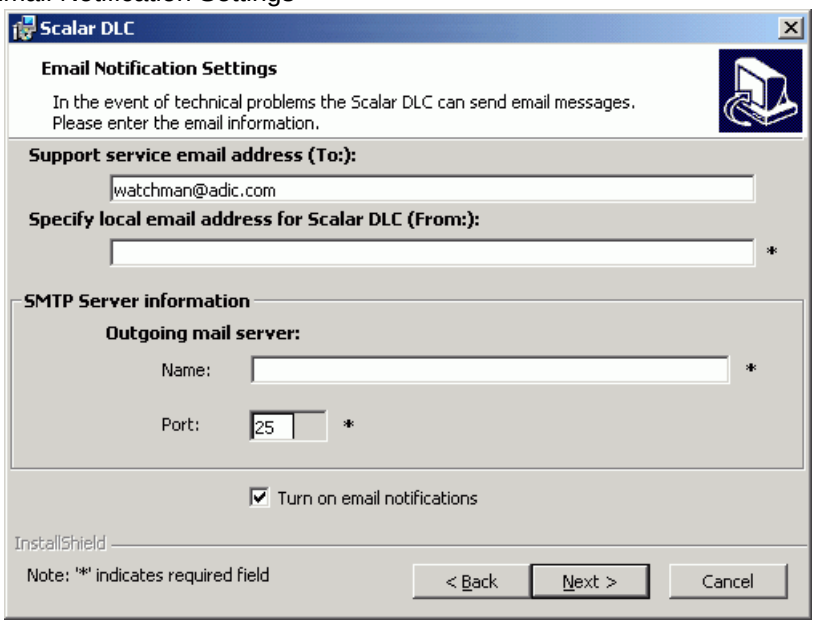
See Table 8 for the additional information.

Table 8 Database Upgrade

Old Scalar DLC Version	Additional activity
2.1	Reconfigure SCSI Target manually after the database upgrade. See Upgrading the Scalar DLC on page 82.
2.2, 2.2 SP1, 2.2 SP2, 2.2 SP3	Upgrade database.
2.3, 2.3 SP1, 2.3 SP2	Upgrade database.
2.4	Upgrade database.
2.5, 2.5 SP1, 2.5 SP2	Upgrade database.
2.6	Upgrade database.
2.7	Use existing database

If a new database is created, click **Next** to proceed to Figure 28 on page 63; otherwise, proceed to the final screen.

Figure 28 Email Notification Settings



Enter the email settings. See Table 9 for details.

Table 9 Email Notification Settings

Name	Operation	Description
Support service email address (To:)	Supplied	The email address for 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

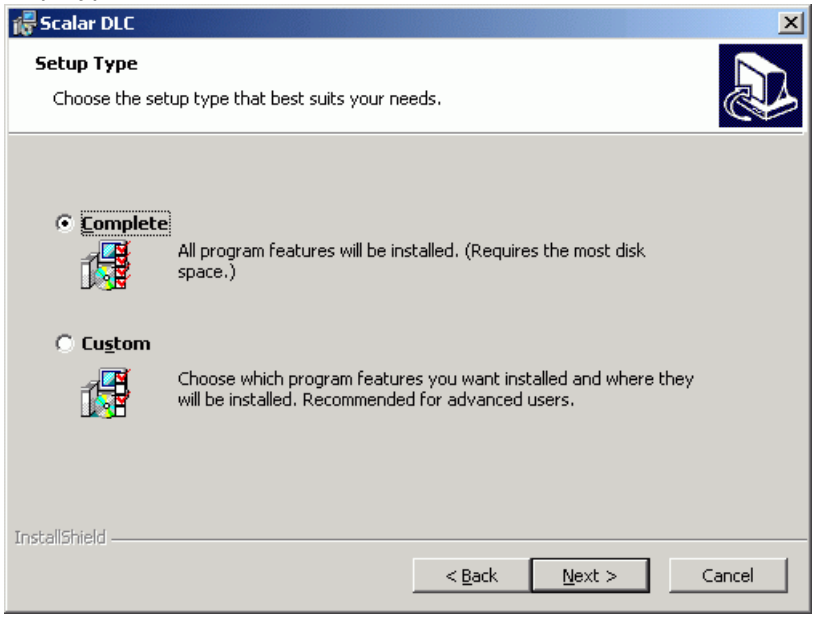
Name	Operation	Description
Turn on email notifications	Check	Turn the email notifications on if the box is checked.

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.
Sending of email notification itself (on/off) can be changed later in Management GUI (*Main Menu* > *Extended Service* > *Registration Information*)

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

Figure 29 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 30 for details.

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

Figure 30 Custom Setup

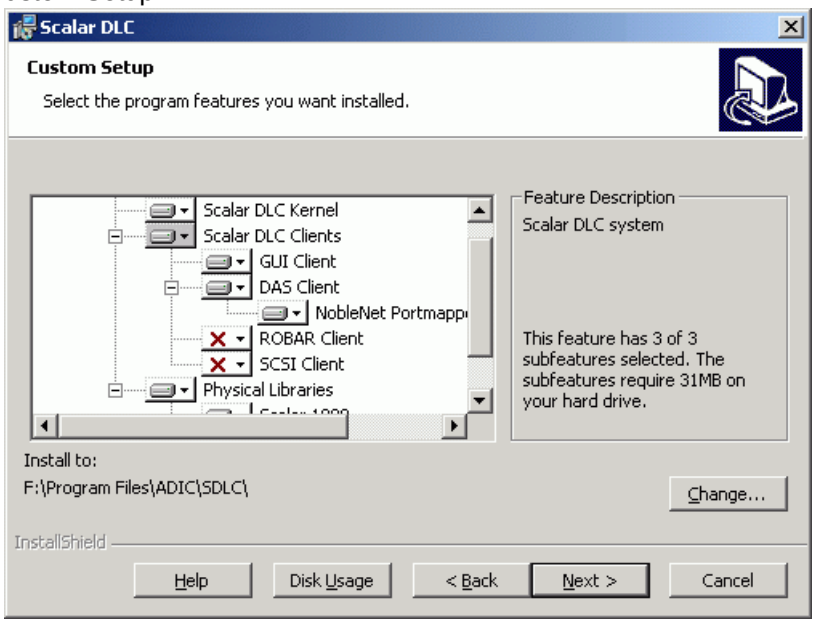


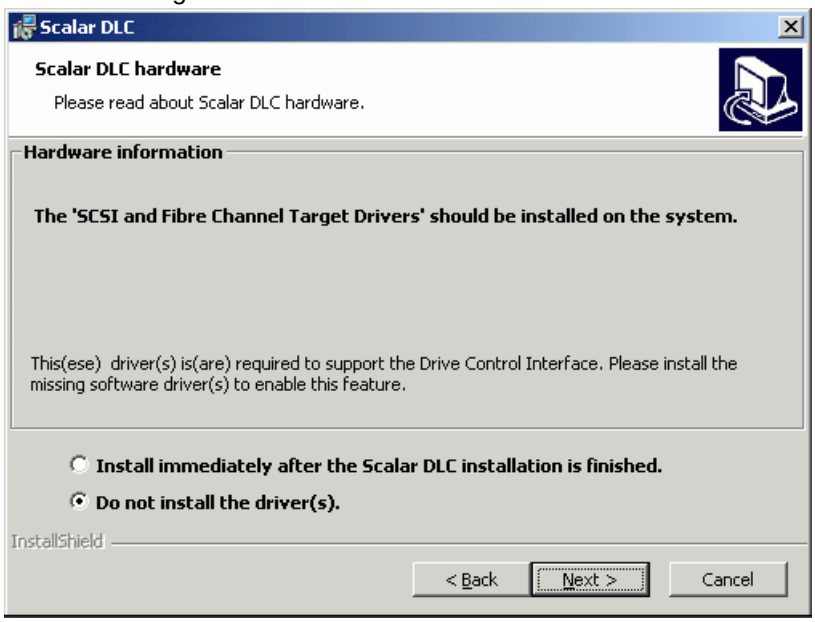
Table 10 Custom Setup

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 library. Installed always.
	Supplied Scalar 10K DA The support of Scalar 10K dual-aisle library. 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.	

CAUTION **If the Scalar DLC destination folder already exists ensure that it is empty. Never put any files in this folder because they will be removed with the Scalar DLC when the software is to be removed. See Add/Remove Scalar DLC Software on page 77.**

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

Figure 31 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).

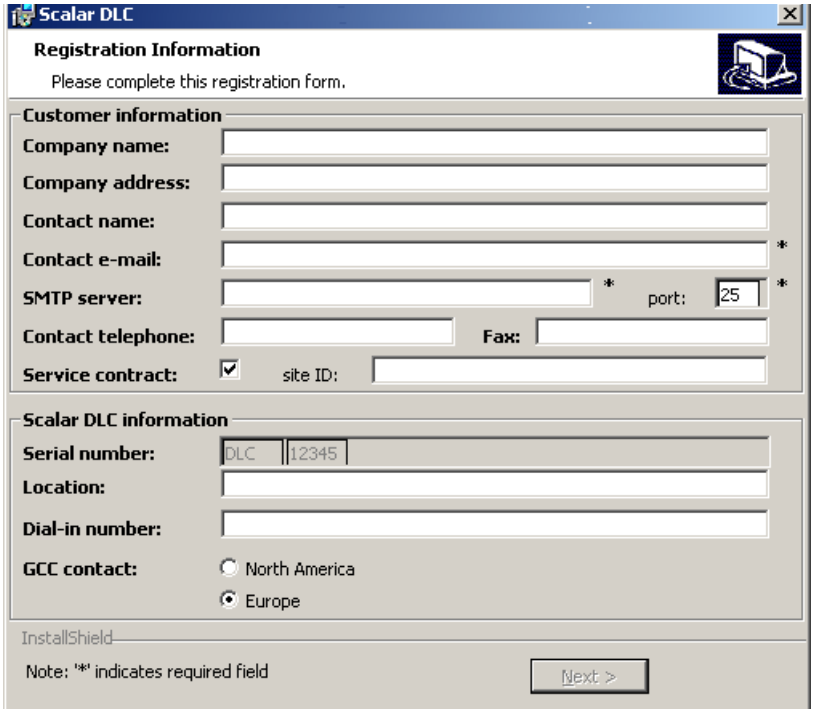
Note The SCSI/Fibre Channel Target drivers are needed to operate additional hardware (the SCSI card or FC card) required for using the Scalar DLC SCSI Target features. If this card is physically absent, the driver can be installed, but the Scalar DLC SCSI Target features will not work.

This request is shown every time the Scalar DLC SCSI Client component is selected for the installation. It recommended that you accept 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, see Installing the SCSI/FC Target Drivers on page 118.

After the Scalar DLC components are installed, enter the registration information. See Figure 32 on page 67.

Figure 32 Registration Form



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

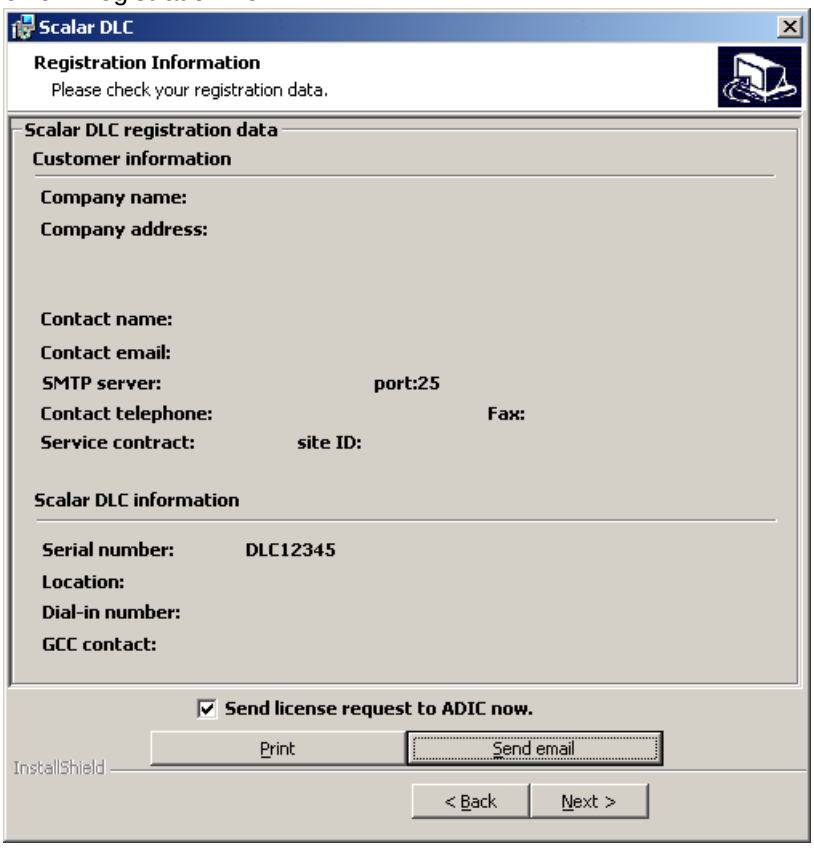
Table 11 Registration Form

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.
GCC contact	Select	The Scalar DLC GCC 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 33 Review Registration Form

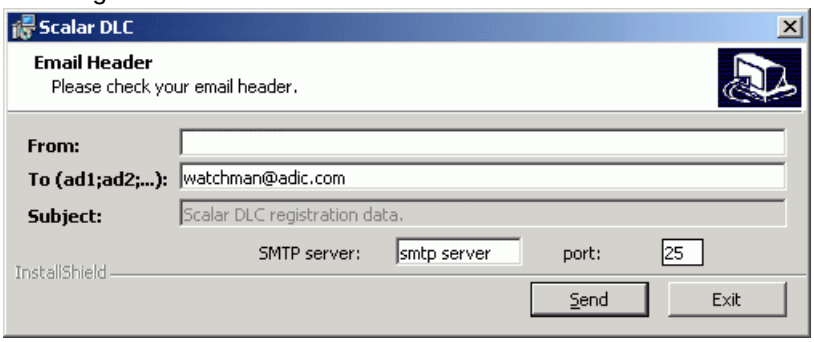


The request form can be printed out and/or send via email to customer support to obtain a license. See Table 12 for additional information.

Table 12 Review Registration Form

Name	Operation	Description
Send license request	Check	If checked, sends license request.
Print now	Click	Print the registration form for mail or fax delivery.
Send email	Click	Send the registration form via email (see Figure 34).

Figure 34 Email Registration Form



The email can be sent to any number of recipients. See Table 13 on page 69 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.

All activity concerning removing Scalar DLC software is described in Add/Remove Scalar DLC Software on page 77

5

DAS Client

The DAS Client software allows the customer to use DAS interface with the Scalar DLC.

Installing DAS Client

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

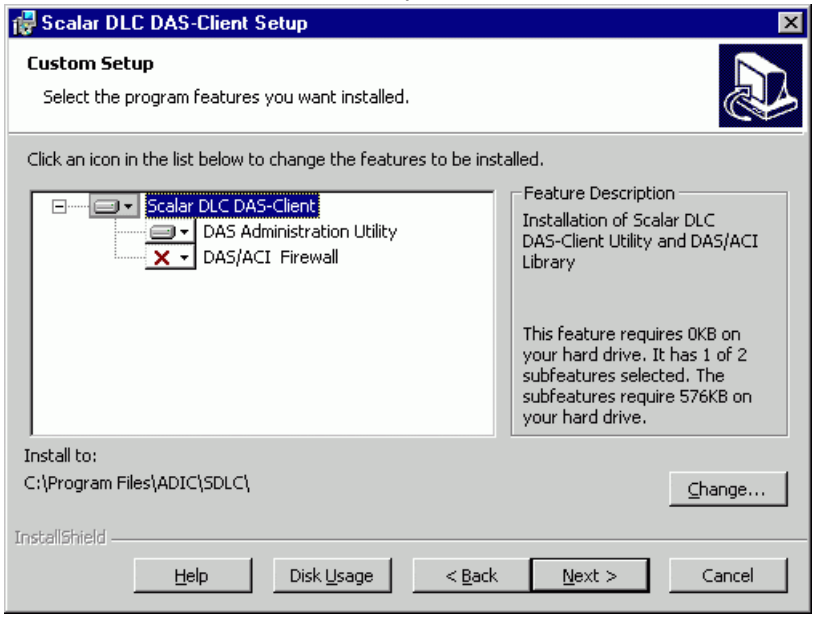
Step 1 Install the Scalar DLC software with the DAS support on the server PC. See Scalar DLC Software on page 56. The server PC requires a restart.

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.

- Figure 35 shows the DAS Client components selection during the installation of Scalar DLC DAS Client software.

Figure 35 Select Scalar DLC DAS Client Components

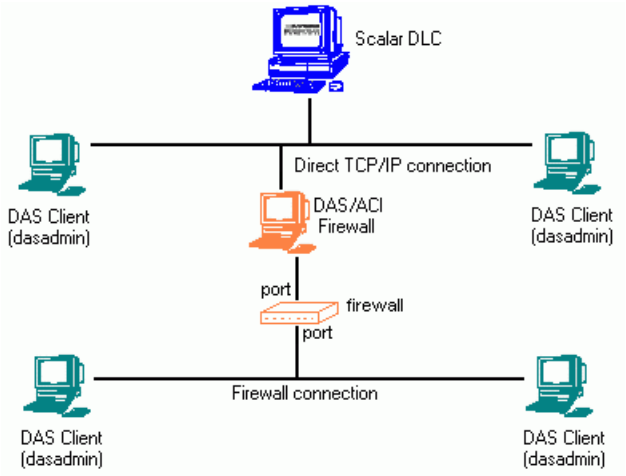


- The installation will place the selected components in the `<%SystemDrive%>\Program Files\ADIC\SDLC\` directory. Change the destination folder if it is required.
- The DAS Administration Utility should be installed on a PC that will run the DAS Client software. See Installing the DAS Administration Utility on page 73.
- 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. See Installing the DAS/ACI Firewall on page 74.

Note — The DAS/ACI firewall software can be installed directly on Scalar DLC host. In case of the Redundant solution, it should be installed on both cluster nodes.

- Figure 36 illustrates the typical network structure.

Figure 36 Scalar DLC DAS Client Network



- The installation configures appropriate server, client, and media type values (see Table 14).

Table 14 DAS Variables

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. See *DAS Administration Guide* for the details.

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

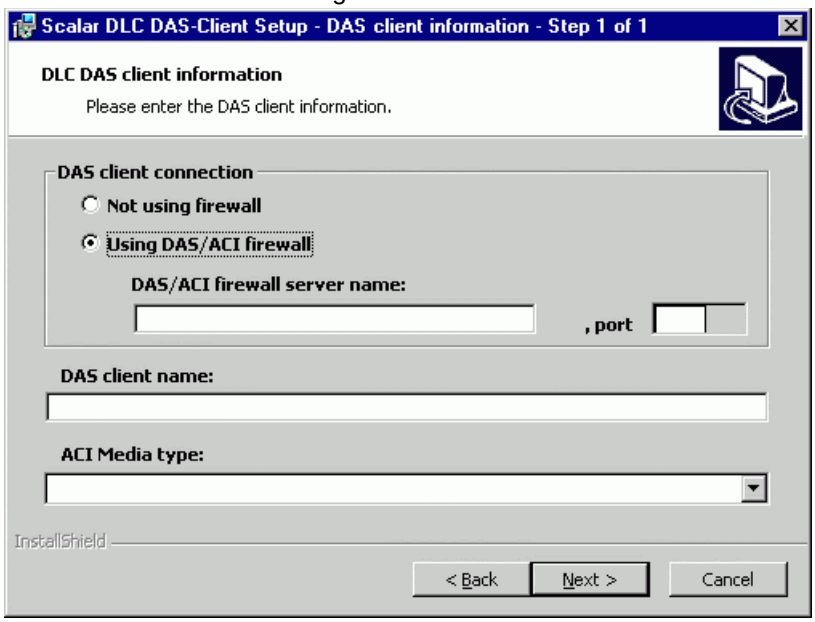
- Once the variables are set, the restart is requested. It is recommended that you accept the restart so that the Scalar DLC DAS-Client software works properly.

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

Installing the DAS Administration Utility

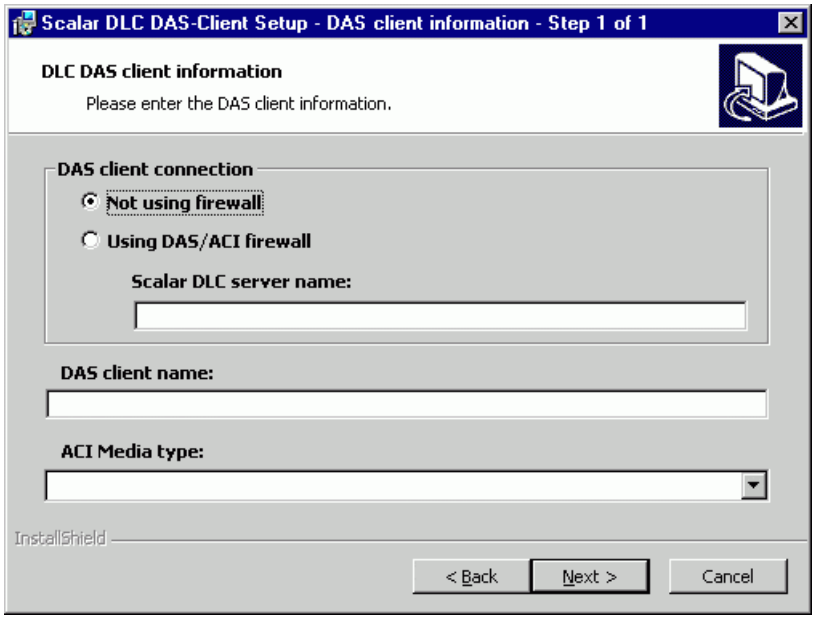
The connection settings must be entered during the installation of the *dasadmin* software. See Figure 37 for a firewall-based connection and see Figure 38 on page 74 for a direct (firewall-free) connection.

Figure 37 DAS Client Connections Using Firewall



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 72.
ACI Media type	Select	The default ACI media type. Refer to Table 14 on page 72.

Figure 38 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.

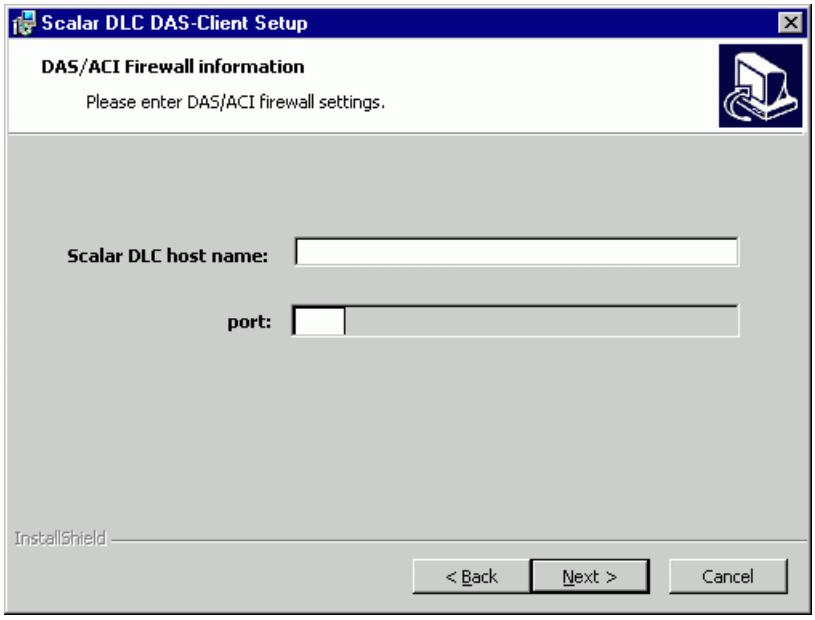
Installing the DAS/ACI Firewall

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 36 on page 72.

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 35 on page 71), select a DAS/ACI Firewall component. See Figure 39 on page 75 for a DAS/ACI Firewall settings screen.

Figure 39 DAS/ACI Firewall



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.

Removing DAS Client

Using Add-Remove Software, launch Scalar DLC DAS Client and remove the software.

6

Upgrade, Remove, Repair

- Add/Remove Scalar DLC Software on page 77 holds the basic instructions on Update, Remove, or Repair the Scalar DLC software.
- Upgrading the Scalar DLC on page 82 contains the detailed Upgrade instructions.
- Renaming and Repair on page 93 contains the detailed Repair instructions.

Add/Remove Scalar DLC Software

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

CAUTION **For the Failover and Self-domain solution make sure that the Add/Remove is launched on the active node. If not, cancel the operation, move Cluster group ownership to the current node, and start Add/Remove engine again.**

Note Before removing Scalar DLC software from any cluster node, launch SDLC Cluster Configurator and remove cluster configuration from the Scalar DLC resources (**Remove** button).

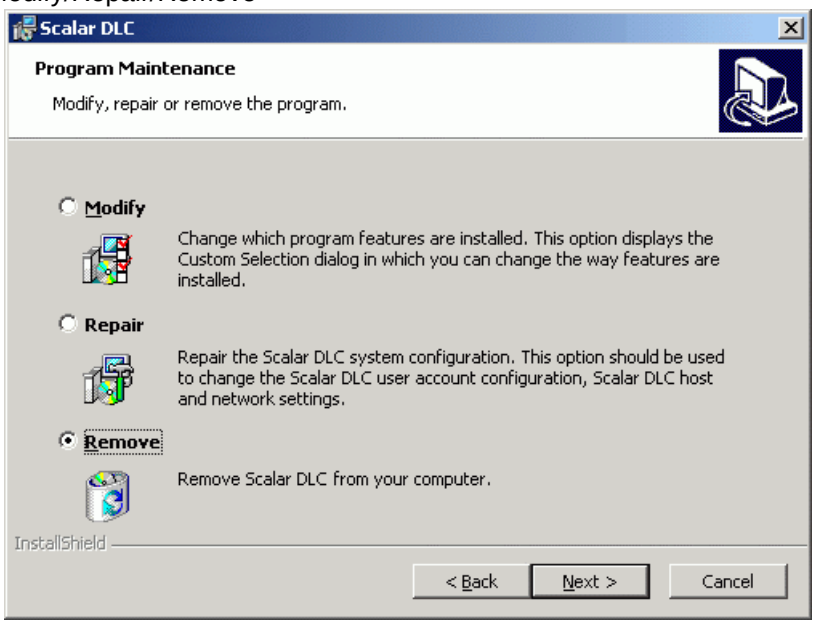
Note Local administrator rights are required to execute this procedure. Domain administrator rights are required if the Scalar DLC is installed under domain account and/or as the failover or self-domain solution.

Note The additional Repair instructions can be found at Renaming and Repair on page 93. Additional upgrade instructions can be found at Upgrading the Scalar DLC on page 82.

Figure 40 Starting the Scalar DLC Add/Remove

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

Figure 41 Modify/Repair/Remove



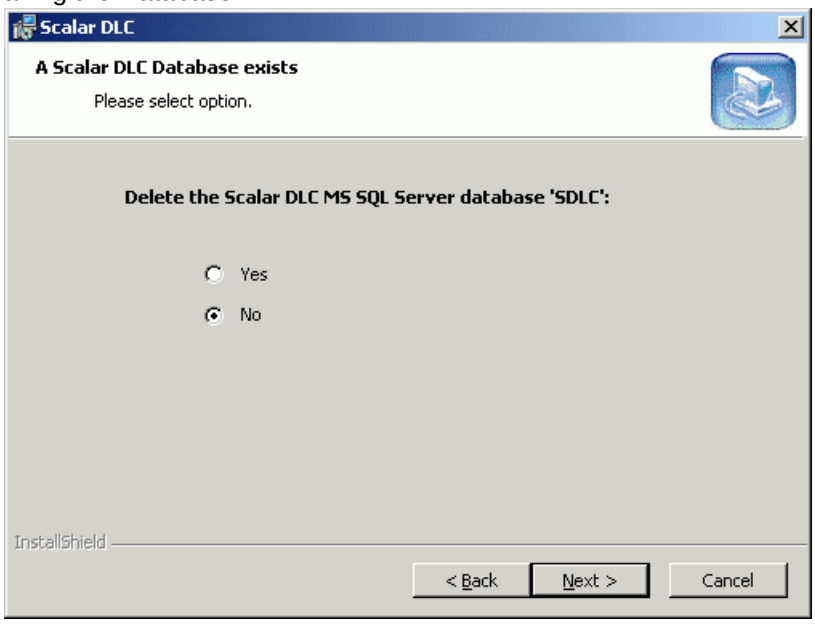
Specify the activity type and click **Next** to proceed.

Remove

CAUTION **After removing the Scalar DLC software, always remove its SCSI Target drivers, too. See Add/Remove SCSI Target Drivers on page 122.**

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. For installation information, refer to Installing the Scalar DLC on page 51

Figure 42 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 Java 2, 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.

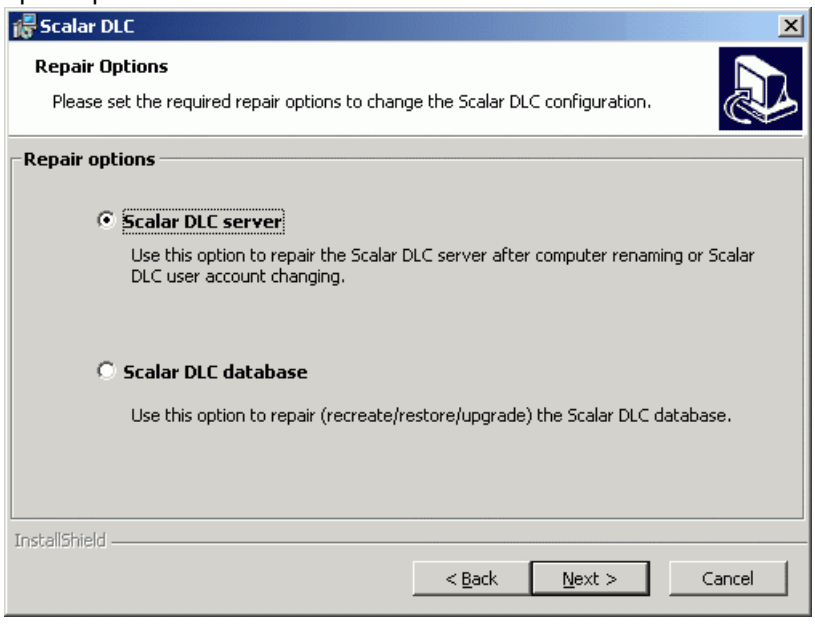
Note

To remove the required Scalar DLC software packages, 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.

Figure 43 Repair Options

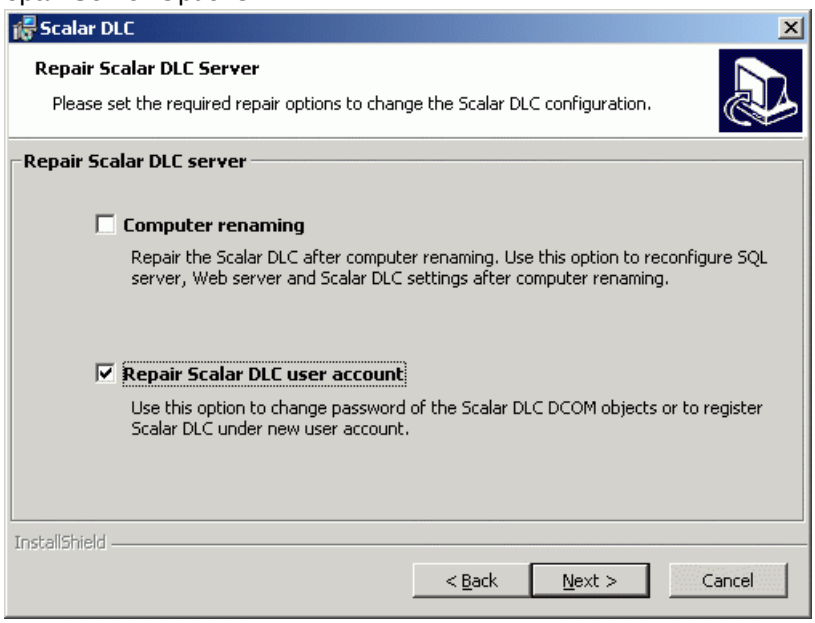


Choose either the Server option to repair damaged Scalar DLC software components (see Server on page 80), or Database option to repair the damaged Scalar DLC database (see Database on page 81). Click **Next** to proceed.

Server

The *Repair Scalar DLC Server* process allows you 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.

Figure 44 Repair Server Options



Select the repair options and click **Next** to proceed. See Table 15 for details.

Table 15 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. See User Account on page 80.

If the *Computer renaming* mode is selected, the *Repair* checks all needed software components. If no software upgrade is needed, the *Repair* process proceeds to the user account section. See 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 21 on page 58 for the local account, and Figure 22 on page 59 for the domain account.

See Table 6 on page 59 for the user account settings.

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

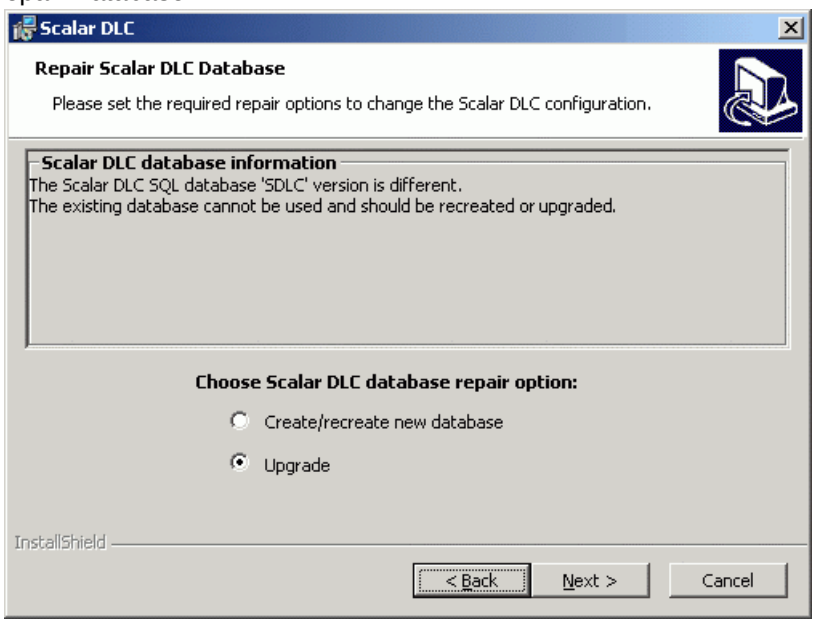
If the account name already exists and the password does not match the existing account's password, the User Account warning appears. See Figure 23 on page 60. Go back and specify correct password, or another user account.

If the account is repaired successfully, the Component Registration window appears. See Figure 24 on page 60.

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.

Figure 45 Repair Database

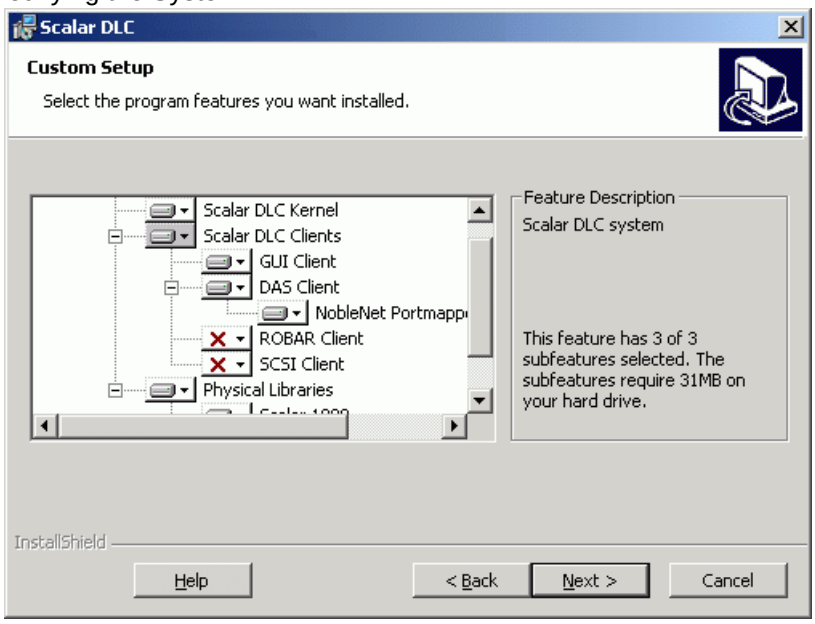


Choose either the "recreate database" option to acquire the new, clean database, or "upgrade" option to update existing database according to current standards (the upgrade details are described at Table 8 on page 63). Click **Next** to proceed to the upgrade and the final screen.

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.

Figure 46 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 adapter) being present on the PC.

After Add/Remove process is finished, it is recommended that you restart 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, see Simple Upgrade on page 84 or Advanced Upgrade on page 88. The instructions on which upgrade type is more preferable are located in Using Database from a Previous Version on page 83 and Upgrading from 2000 to 2003 on page 84. Note also the Upgrade Issues on page 92.

CAUTION **If you are upgrading from version 2.5 to version 2.6 or 2.7, you may be required to enter your license key information during the upgrade process.**

Note — If the MSSQL scripts fail to install during the upgrade process, you must reboot the system. After rebooting, restart the upgrade installation process.

CAUTION **Do not install Scalar DLC Clustering until both nodes are fully installed with Scalar DLC.**

CAUTION

To prevent Cluster failure:

- **Always perform the work on the active mode.**
  - **Use the Cluster Administrator tool (on any node) to control the active node and transfer ownership to other node, if necessary.**
  - **Reboot changes the nodes automatically. To continue the Scalar DLC installation after a required reboot, do not log onto the original node until ownership is returned to it through manual intervention from the Cluster Administrator on other node.**
- **When making or removing SDLC Cluster configuration, make certain both nodes are up and running, and that Scalar DLC is stopped on both nodes.**
- **Use the correct Scalar DLC Cluster Configuration utility.**
  If Scalar DLC 2.5 is installed, use SDLC_ClusterConfig from the Scalar DLC 2.5 CD; make certain it is not from the 2.7 CD.

Using Database from a Previous Version

If the customer has worked before with the older version of the Scalar DLC software, an upgrade must be performed in order to import the old database content to the new version. Use Table 16 to select the correct upgrade method.

Note

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

Table 16 Database Upgrade Methods

Old Database Version	Old Solution	New Solution	Preferable Upgrade Method
2.1	Standard	Standard	Advanced Upgrade on page 88.
		Failover	Advanced Upgrade on page 88.
2.2, 2.2 SP1, 2.2 SP2, 2.2 SP3	Standard	Standard	Advanced Upgrade on page 88.
		Failover	Advanced Upgrade on page 88.
2.3, 2.3 SP1, 2.3 SP2	Standard	Standard	Advanced Upgrade on page 88.
		Failover	Advanced Upgrade on page 88.
	Failover	Standard	Advanced Upgrade on page 88.
		Failover	Advanced Upgrade on page 88.
2.4	Standard	Standard	Simple Upgrade on page 84.
		Failover	Advanced Upgrade on page 88.
	Failover	Standard	Advanced Upgrade on page 88.
		Failover	Simple Upgrade on page 84.

Table 16 Database Upgrade Methods (Continued)

Old Database Version	Old Solution	New Solution	Preferable Upgrade Method
2.5, 2.5 SP1, 2.5 SP2	Standard	Standard	Simple Upgrade on page 84.
		Failover	Advanced Upgrade on page 88
	Failover	Standard	Advanced Upgrade on page 88
		Failover	Simple Upgrade on page 84.
2.6	Standard	Standard	Simple Upgrade on page 84.
		Failover	Advanced Upgrade on page 88
	Failover	Standard	Advanced Upgrade on page 88
		Failover	Simple Upgrade on page 84.
2.7	Standard	Standard	Simple Upgrade on page 84.
		Failover	Advanced Upgrade on page 88
	Failover	Standard	Advanced Upgrade on page 88
		Failover	Simple Upgrade on page 84.

Upgrading from 2000 to 2003

Plain upgrading the Scalar DLC from 2000 to 2003 platform is not supported, so if the customer wants to perform such operation, the setup order should be following:

Step 1 Backup the database to RAID disk, network resource or floppy (see Back up Scalar DLC Database on page 105).

Step 2 Install the Scalar DLC 2.7 from scratch on Windows 2003 platform (see Setting Up the Scalar DLC on page 9). Note that RAID needs no initialization in this case.

Step 3 Perform Recover database from old backup on page 112.

Simple Upgrade

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

CAUTION **It is strongly recommended to backup the Scalar DLC database to a file on a network resource or a floppy disk before launching Scalar DLC removing. If the Simple upgrade procedure fails, this backup file can be later used for the Advanced upgrade, as described in Advanced Upgrade on page 88.**

Note The procedure below is used for both Standard and Failover solutions. Unless one is specified, each operation is assumed to be executed on Node1.

Step 1 (For Scalar DLC ver. 2.1 only; for other versions, skip this step.)
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.

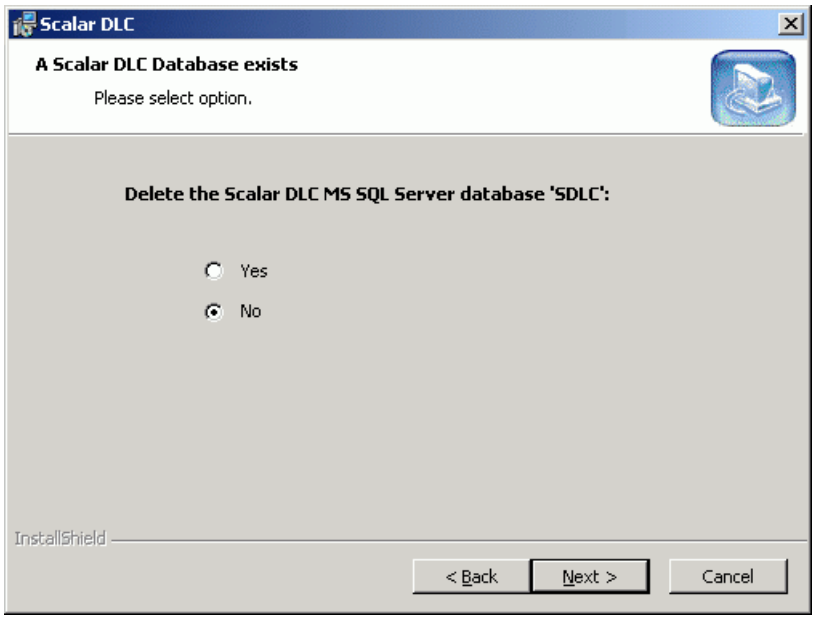
Step 2 (For Failover solution only; for Standard solution, skip this step.)
Remove Scalar DLC Cluster configuration.

- Insert Scalar DLC Install CD. Close Autorun. Run `<CD>:\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe`.
- Click **Remove SDLC Cluster Configuration** button. “OK” when complete

Step 3 Using Add-Remove Programs remove all following components.

- Remove all Scalar DLC Hot Fixes (mentioned separately from Scalar DLC itself) in descending order. Do not reboot now.
- Remove DAS Client software (if installed), as described in Removing DAS Client on page 75, and SCSI Target Drivers, as described in Add/Remove SCSI Target Drivers on page 122. Do not reboot now.
- 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 47). 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. Do not reboot.

Figure 47 Remove old Scalar DLC: do not delete the database



- (optional) Remove Apache and Java. The newer/latest versions will be installed with the Scalar DLC 2.7.

Note It is recommended also to check `<%SystemDrive%>\Program Files\` afterwards. If Java and Apache folders are not removed, remove them manually.

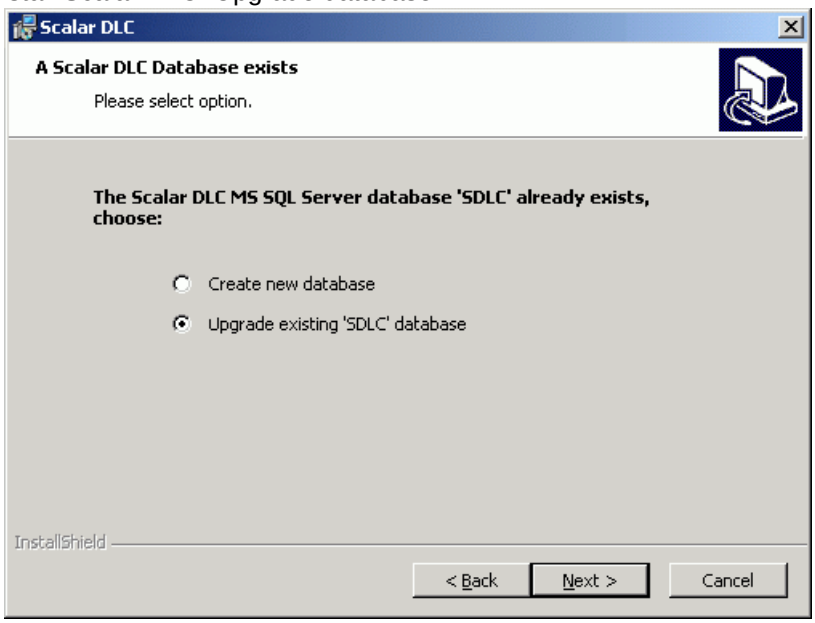
- Reboot.

Step 4 (For Failover solution only; for Standard solution skip this step.)
Repeat Step 3 on page 85 for the Node2.

Step 5 Insert Scalar DLC 2.7 Install CD. Install the Scalar DLC and all required components, as described in Installing the Scalar DLC on page 51.

- Follow the Scalar DLC installation sequence.
- During the installation of latest release the system informs that a database exists and requests whether the existing 'SDLC' database should be upgraded. Select "Upgrade" (see Figure 48) and proceed.
- (For Failover solution only; for Standard solution skip this substep.)
  When the Scalar DLC is installed on Node2, select "Use existing database" and proceed.

Figure 48 Install Scalar DLC: Upgrade database



- (optional) Install the required SCSI Target drivers (see Installing the SCSI/FC Target Drivers on page 118). Then configure/activate the SCSI/FC Target adapter(s) via SCSI Target Port Tool, as described in Activating Target Mode on page 121.
- (optional) Install DAS Client software if required (see Installing DAS Client on page 71).
- Reboot the PC.

Step 6 (For Failover solution only; for Standard solution skip this step.)
Repeat Step 5 on page 86 for the Node2.

Step 7 (For Failover solution only; for Standard solution skip this step.)
Restore Scalar DLC Cluster configuration.

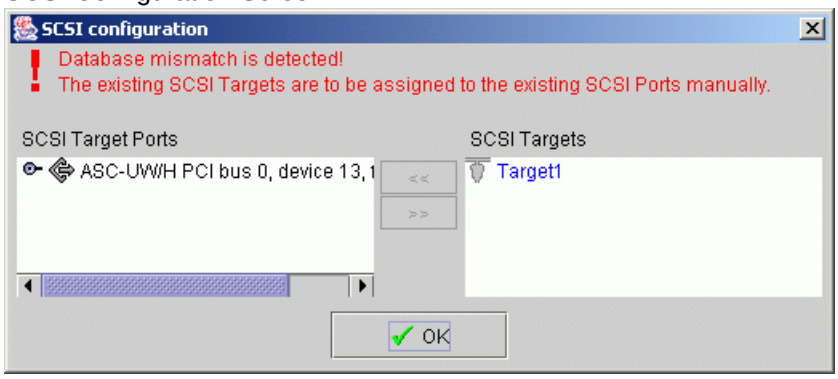
- Insert Scalar DLC Install CD. Close Autorun. Run
  `<CD>:\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe`
- Click **Make SDLC Cluster Configuration** button. "OK" when complete.

Step 8 Launch the Scalar DLC Manager (**Start > Programs > *ADIC* Distributed Library Controller > Scalar DLC Manager**).

Step 9 (For upgrade from Scalar DLC ver. 2.1 only, otherwise skip this step.)
Resolve Port-Target assignment.

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

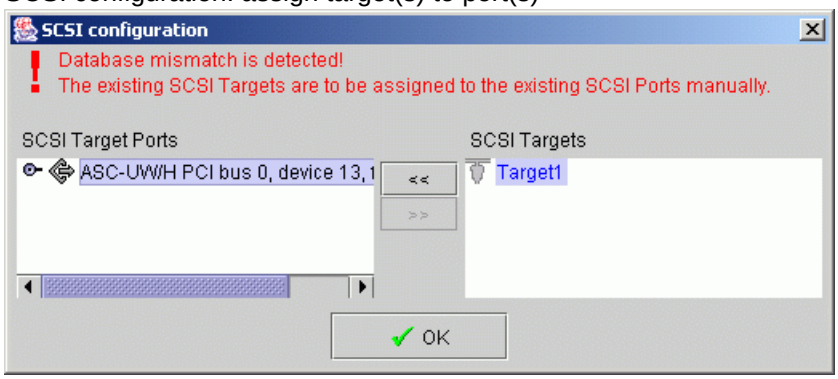
Figure 49 SCSI Configuration Screen



- 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.

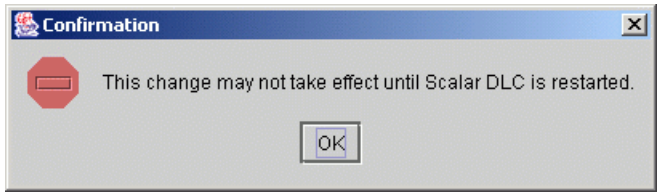
Note The two-port adapters are shown in the Management GUI as two different single-port adapters.

Figure 50 SCSI configuration: assign target(s) to port(s)



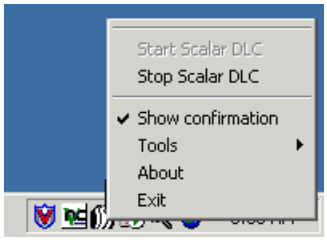
- After this is completed, click **OK**. A pop-up confirmation window opens.

Figure 51 Confirmation to Restart Scalar DLC



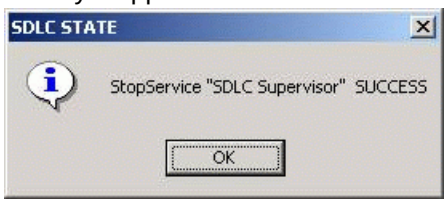
- Close the Scalar DLC Manager. Right-click on the three-penguin icon on the toolbar and select ‘Stop Scalar DLC’.

Figure 52 Access to Stop Scalar DLC



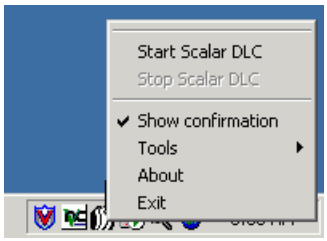
- The Scalar DLC software service will be stopped.

Figure 53 Scalar DLC is successfully stopped



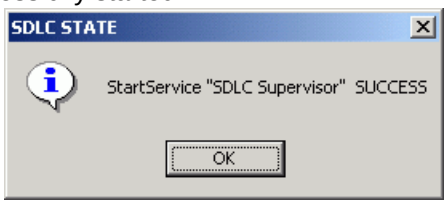
- Re-start Scalar DLC using the Scalar DLC icon on the toolbar.

Figure 54 Access to Start Scalar DLC



- After a successful start an appropriate message displays.

Figure 55 Scalar DLC is successfully started



Step 10 When the upgrade is complete verify that all target cards are correctly assigned and work properly.

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.

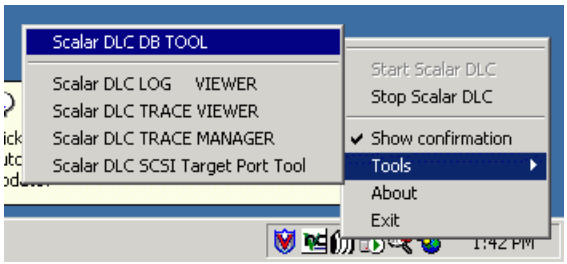
Note Only the Advanced upgrade procedure can restore the Scalar DLC configuration from standard (basic) to failover (redundant) solution, or vica verse.

Note The instruction below is applied for both Standard and Failover solution. Unless the other is specified, each operation is assumed to be executed on Node1.

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

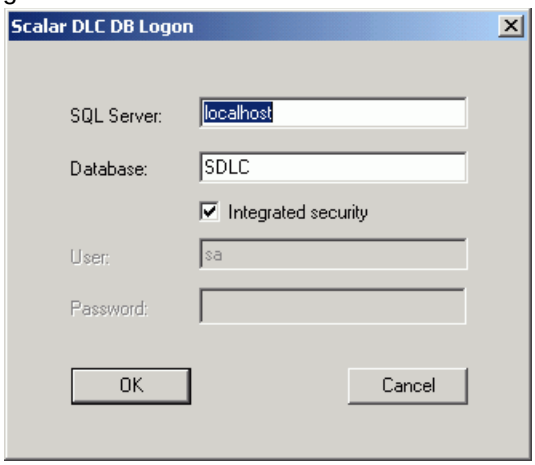
- On the toolbar there will be a small Three Penguin Icon. Right click this icon and select **Tools > Scalar DLC DB Tool**.

Figure 56 Access to DB Tool



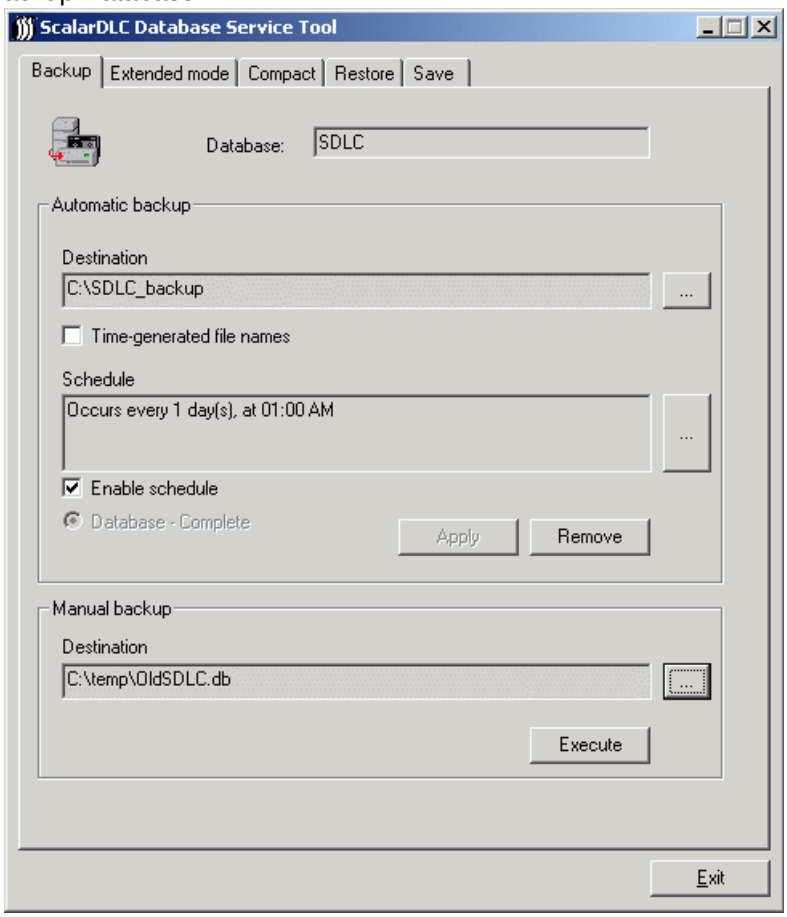
- Launch Scalar DLC DB Tool and log on (see Figure 57). If the Scalar DLC database has been installed under Trusted connection, only the local admin rights are required. If the Scalar DLC database has been installed under user account, either the SQL administrator logon name/ password, or the Scalar DLC SQL user name/password are required.

Figure 57 DB Tool Log On



- Backup the database to file (for example, "`OldSDLC.db`"). Keep this file in any temporary folder or at floppy disk.

Figure 58 Backup Database



Step 2 (For Failover solution only; for Standard solution skip this step.)
Remove Scalar DLC Cluster configuration.

- Insert Scalar DLC Install CD. Close Autorun. Run `<CD>:\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe`
- Click **Remove SDLC Cluster Configuration** button. “OK” when complete

Step 3 Using Add-Remove Programs remove all following components.

- Remove all Scalar DLC Hot Fixes (mentioned separately from Scalar DLC itself) in descending order. Do not reboot now.
- Remove DAS Client software (if installed), as described in Removing DAS Client on page 75, and SCSI Target Drivers, as described in Add/Remove SCSI Target Drivers on page 122. Do not reboot now.
- Remove the old release of Scalar DLC with the database. Do not reboot now.
- Remove Java and MS SQL 7.0. The newer/latest versions will be installed with the Scalar DLC 2.7.

Note It is recommended also to check `<%SystemDrive%>\Program Files\` afterwards. If Java and Apache folders are not removed, remove them manually.

- Reboot the PC.

Step 4 (For Failover solution only; for Standard solution skip this step.)
Repeat Step 3 on page 90 for the Node2.

Step 5 Insert Scalar DLC 2.7 Install CD. Install the Scalar DLC and all required components, as described in Installing the Scalar DLC on page 51.

- Install Java. Install MSDE 2000 if required (note that MSDE must be installed on RAID disk for the failover solution, use ‘specified’ and ‘R:”).
- Follow the Scalar DLC installation sequence till the Scalar DLC is installed with a new, clean database.
- (For Failover solution only; for Standard solution skip this substep.)
When the Scalar DLC is installed on Node2, select “Use existing database“ and proceed.
- (optional) Install the required SCSI Target drivers (see Installing the SCSI/FC Target Drivers on page 118). Then configure/activate the SCSI/FC Target adapter(s) via SCSI Target Port Tool, as described in Activating Target Mode on page 121.
- (optional) Install DAS Client software if required (see Installing DAS Client on page 71).
- Reboot the PC.

Step 6 (For Failover solution only; for Standard solution skip this step.)
Repeat Step 5 on page 91 for the Node2.

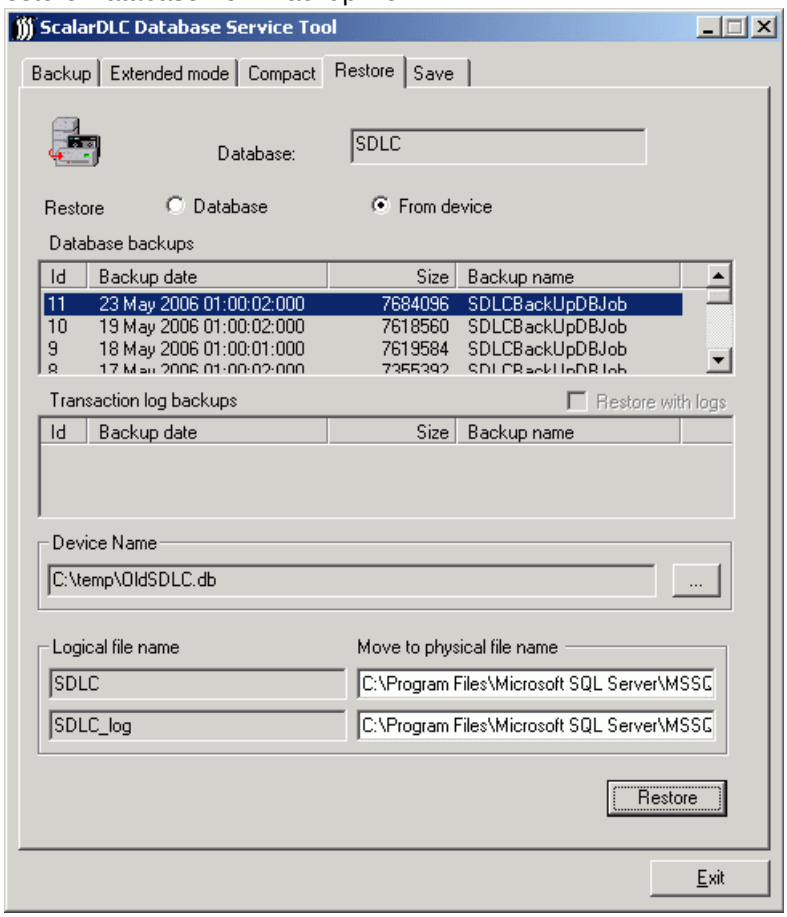
Step 7 (For Failover solution only; for Standard solution skip this step.)
Restore Scalar DLC Cluster configuration.

- Insert Scalar DLC Install CD. Close Autorun. Run
`<CD>:\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe`
- Click **Make SDLC Cluster Configuration** button. “OK” when complete.

Step 8 Restore the Database from Backup.

- Stop Scalar DLC supervisor (see Figure 52 on page 88). Launch Scalar DLC DB Tool (see Figure 56 on page 89).
- Log on the DB Tool (see Figure 57 on page 89). Open *Restore* tab and restore database from device (that is, from backup file "OldSDLC.db"), as shown in Figure 59 on page 92.

Figure 59 Restore Database from Backup file



Note Do not start Scalar DLC software at this time. It will not be functional.

- Launch **Add/Remove Scalar DLC > Repair > Repair database** mode (see Figure 45 on page 81). Select "Upgrade".
- When upgrade is finished, restart PC.

Step 9 Launch Scalar DLC Management GUI. If required, re-configure SCSI targets and LUNs (see Figure 49 on page 87 and Figure 50 on page 87).

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.

Installing Scalar DLC Service Packs

The Scalar DLC service pack usually comes on its own CD with its own build-in autorun.

Note that the service pack may contain fixes with features not documented in the Scalar DLC Reference Guide, so always check the readme and release notes that can be found on the Scalar DLC Service Pack CD.

CAUTION **Install only the latest Service Pack, as it includes the previous, too.**

Note The data in this section is valid for all latest Service Pack that will come after the released version of Scalar DLC. The latest version is 2.7.

CAUTION **After the Scalar DLC Database is restored from a backup file created before the service pack installation, always re-install the service pack again. Otherwise the Scalar DLC will not be functional.**

Standard Solution

Step 1 Close Management GUI and Event log. Stop Scalar DLC.

Step 2 Insert CD for Scalar DLC Service Pack. Select Install and Next and Next

Step 3 Select Yes to restart and Finish.

Step 4 Remove Scalar DLC SP CD. Restart.

Failover and Self-Domain Solution

Step 1 Shutdown Node2. Close Management GUI and Event log on Node1. Take Scalar DLC offline.

Step 2 Insert CD for Scalar DLC Service Pack. Select Install and Next and Next. Select Yes to restart and Finish.

Step 3 Remove Scalar DLC SP CD. Shutdown Node1.

Step 4 Start Node2. Repeat steps 2 - 4 for Node2.

Step 5 Start up Node1 then start up Node2.

Renaming and Repair

It is strongly recommended that you do not rename the PC or rebuild the PC network configuration after the Scalar DLC is successfully 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 Standard solution is installed, after the PC is renamed and/or the network configuration is changed, launch the Scalar DLC Repair engine. See Add/Remove Scalar DLC Software on page 77 and Repair on page 79.

For the Scalar DLC Failover and Self-domain solution the following additional procedures are required:

- Change Cluster IP Address and Domain Name on page 94.
- Change Scalar DLC Node Names on page 96.
- Change Cluster Name on page 98.

Note also the following

- Startup and Shutdown on page 104.
- Back up Scalar DLC Database on page 105.
- Restore Scalar DLC Database on page 106.
- Updating Drivers on page 106.
- Failure Recovery on page 109.

CAUTION

After either the DNS, or the name of cluster, or the names of cluster nodes are changed, and after the Scalar DLC software is successfully 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 IP Address and Domain Name

Step 1 Shutdown both nodes then power on Node1 and log in as Administrator for SDLC1 (this computer)

Step 2 Set public (mixed network) properties on Node1.

- Right click My Network Places and select Properties. Right click “public” and select properties. Select Internet Protocol (TCP/IP) and select Properties.
  - Set IP Address to <new ip address> (208.230.5.1 in lab).
  - Set Subnet mask.
  - Set Preferred DNS Server to <new DNS ip address> (208.230.5.4 in lab)
- OK and OK.
- (For Windows 2000 only; for Windows 2003 skip this substep.)
  Right click “public” and “Disable” then right click and “Enable”. Rename “public” if necessary.
- Right click My Computer and select Properties. Select Network Identification tab and Properties. Select “More Box” and Remove the “Primary DNS” suffix and “OK”.
  - Enter Domain Name without postfix and OK (customerdomain)
  - Enter name and Password for Domain user Account and OK (customeracct and customerpass)
  - OK when welcome to domain appears
- OK to reboot computer to take affect.
- OK in System Properties and Yes to restart computer

Step 3 Manage New Account on Node1.

- Log on Node1 as Administrator for SDLC1 (this computer)
- Right click My Computer and select Manage.
- Select “Local Users and Groups” and “Groups”. Right click Administrators and select Add to Group and Add.
- Look in <domain name.com>.

- Connect as <UserName> and <Password> and OK (customeracct in lab)
- Select <username [username@domainname.com]> (customeracct [customeracct@customerdomain.com]). Add and OK.
- Apply and Close and Shutdown Node1

Step 4 Power on Node2 and log in as Administrator for SDLC2 (this computer)

Step 5 Set ‘public’ (mixed network) properties on Node2.

- Right click My Network Places and select Properties. Right click “public” and select properties. Select Internet Protocol (TCP/IP) and select Properties.
  - Set IP Address to <new ip address> (208.230.5.2 in lab).
  - Set Subnet mask.
  - Set Preferred DNS Server to <new DNS ip address> (208.230.5.4 in lab)
- OK and OK.
- (For Windows 2000 only; for Windows 2003 skip this substep.)
  Right click “public” and “Disable” then right click and “Enable”.
- Right click My Computer and select Properties. Select Network Identification tab and Properties. Select “More Box” and Remove the “Primary DNS” suffix and “OK”.
  - Enter Domain Name without postfix and OK (customerdomain)
  - Enter name and Password for Domain user Account and OK (customeracct and customerpass)
  - OK when welcome to domain appears
- OK to reboot computer to take affect.
- OK in System Properties and Yes to restart computer

Step 6 Manage New Account on Node2.

- Log on Node2 as Administrator for SDLC2 (this computer)
- Right click My Computer and select Manage.
- Select “Local Users and Groups” and “Groups”. Right click Administrators and select Add to Group and Add.
- Look in <domain name.com>.
- Connect as <UserName> and <Password> and OK (customeracct in lab)
- Select <username [username@domainname.com]> (customeracct [customeracct@customerdomain.com]). Add and OK.
- Apply and Close and Shutdown

Step 7 Set Cluster Account on Node1.

- Power on Node1 and log in as Administrator for SDLC1 (this computer)
- Open My computer > Control Panel > Administrative tools > Services. Right click Cluster Service and select Properties and select Log On tab
- Set This Account to customerdomain\customeracct. Set Password and Apply
- OK to granted rights to log on and OK
- Right click cluster service and Select Start.

Step 8 Set Cluster Account on Node2.

- Power on Node2 and log in as Administrator for SDLC2 (this computer)
- Open My computer > Control Panel > Administrative tools > Services. Right click Cluster Service and select Properties and select Log On tab
- Set This Account to customerdomain\customeracct. Set Password and Apply
- OK to granted rights to log on and OK
- Right click cluster service and Select Start.

Step 9 Set Cluster IP Address

- On Node1 select Start > Programs > Administrative tools > Cluster administrator
- Select groups and cluster group. Right click Cluster IP Address and Properties and Parameters tab
  - Set IP to <cluster IP address> (208.230.5.3 in lab)
  - Set subnet mask
  - Set Network to “public” and Apply
- Yes to validate subnet mask and OK
- Right click Cluster IP address and Bring Online
- Right click Cluster Name and Bring Online

Change Scalar DLC Node Names

Step 1 Have both Scalar DLC computers powered up. Use the Passive node (SDLC2).

Step 2 Rename Node2

- Right click My Computer and select Properties. Select Network Identification tab and Properties.
- Enter New computer name and OK (SDLC22). Enter name and password for User account (customeracct/customerpass)
- OK and OK to reboot OK to System Properties and Yes to restart now
- On Active Node1 select Start > Programs > Administrative Tools > Cluster Administrator. Open Cluster. Right click Node2 and “Evict node”. Yes to Evict.
- Shutdown Node1. Log on Node2 as Administrator for SDLC2 (this computer)
- Open My Computer > Control panel > Add/Remove Programs > Add/Remove Windows Components.Unselect Cluster Services and Next and Finish and Yes to restart

Step 3 Join Renamed Host to Cluster

- Log on Node2 as Administrator for SDLC22 (this computer). Right click My Computer and select Manage > Disk Management. Verify that R: Cluster Raid is available.
- Open **My Computer > Control Panel > Add/Remove Programs > Add/Remove Windows Components > Cluster Service** and Next.
- Insert Windows 2000 Advanced Server / Windows 2003 Server CD and OK and Next and I Understand and Next. Select The Second Node and “Next”.
- Power on Node1 and log on as Administrator for SDLC1 (this computer). Select Start > Programs > Administrative Tools> Cluster Administrator. Verify that Cluster Service is started on Node1

- On Node2 enter cluster name to join.
    - Select Connect to Cluster as:
    - Set User name and password (customeracct/customerpass)
    - Set Domain name and Next
    - Reenter password and Next and Finish
- When gathering required hangs press <ctrl><alt><del> and select task manager and select applications. Select Microsoft SQL Server Desktop Engine and End Task. End Now and close Task Manager and finish
- Select Add/Remove windows components and next and finish. Close add/remove programs and reopen add/remove programs. Select Add/remove windows components.
- Select configure for cluster service and next and I understand and Next Select second node and Next. Enter cluster name and select Connect to cluster as:. Set user name and password (customeracct/customerpass). Set domain name and Next.
- On Node1 right click Node2 and “Evict” from cluster administrator. Yes to evict node
- On Node2 reenter password and Next. Finish and OK ---pause---

Step 4 Rename Node1

- On Node1 right click My Computer and select Properties > Network Identification tab > Properties. Enter New computer name (SDLC 11) and OK. Enter name and password for domain User account (customeracct\customerpass).
- OK and OK to reboot OK to System Properties and Yes to restart now
- Restart Node2 and log on as Administrator for SDLC22 (this computer)
- Select Start Button > Programs > Administrative Tools > Cluster Administrator. Open cluster. Right click Node1 and Evict node. Yes to Evict.
- Eject CD. Shutdown Node2
- Log on Node1 as Administrator for SDLC11 (this computer). Open My Computer > Control panel > Add/Remove Programs >Add/Remove Windows Components. Deselect Cluster Services and Next and Finish and Yes to restart.

Step 5 Join Renamed Node1 to Cluster

- Log on Node1 as Administrator for SDLC11 (this computer). Right click My Computer > Manage > Disk Management. Verify that R: Cluster Raid is available.
- Open My Computer > Control Panel > Add/Remove Programs > Add/Remove Windows components > Cluster Service. Press Next.
- Insert Windows 2000 Advanced CD and OK and Next. Select I Understand and Next. Select The Second Node and Next
- Power on Node2, log on as Administrator for SDLC22 (this computer). Select Start > Programs > Administrative Tools > Cluster Administrator. Verify that Cluster Service is started on Node2.
- On Node1 enter cluster name to join.
- Select Connect to Cluster as:
    - Set User name and password (customeracct/customerpass)
    - Set Domain name and Next
    - Reenter password and Next and Finish

- When gathering required information hangs press <ctrl><alt><del> and select task manager and select applications. Select Microsoft SQL Server Desktop Engine and End Task.End Now and close Task Manager and finish.
- Close add/remove programs and reopen add/remove programs. Select Add/Remove windows components > Configure Cluster Service. Next and I understand and Next. Select The Second Node and Next. Enter cluster name to join. Select Connect to Cluster as: Set domain user account and password (customeracct\customerpass). Set domain and Next
- On Node2 right click Node1 and Evict from cluster administrator. Yes to evict node
- On Node1 reenter password and Next and Finish ---pause---
- Ok to cluster service started successfully

Step 6 Repair Scalar DLC on both nodes.

- On Node2 open My computer > Control panel > Add/Remove programs > Scalar DLC > Change. Press Next.
- Select Repair and Next. Select Scalar DLC Server and Next. Select Computer Renaming and Next
- Leave entries alone and Check and Next. Verify successful component registration and Next and Install and Finish.
- OK to Fatal Error and Close
- In Cluster administrator select groups > cluster group. Right click SDLC Supervisor and bring Online.
- Shutdown Node2 and restart Node1.
- On Node1 open My computer > Control panel > Add/Remove programs > Scalar DLC > Change. Press Next.
- Select Repair and Next. Select Scalar DLC Server and Next. Select Computer Renaming and Next
- Leave entries alone and Check and Next. Verify successful component registration and Next and Install and Finish.
- OK to Fatal Error and Close
- In Cluster administrator select groups > cluster group. Right click SDLC Supervisor and bring Online.
- Eject CD. Start Node2. Restart Node1.

Change Cluster Name

Step 1 Open Cluster administrator > Groups > Cluster group.

Step 2 Right click cluster name and select Properties > Parameters > Rename.

Step 3 Set Cluster Name to <cluster name> and OK

Step 4 Apply and Ok to changes stored and OK.

Step 5 Cycle cluster name offline then online.

Replacing Old RAID

The following instruction is to be used in order to replace old ADTX RAID (J-series) with the new (P-series) hardware without removing Scalar DLC system.

Table 17 Swapping RAID Time Schedule

Procedure	Time
Initializing RAID on page 99	6 hr
Preparing RAID for Installation on page 99	15 min
Preparing Scalar DLC for RAID Replacement on page 100	15 min
Swapping Hardware on page 101	30 min
Configuring New External RAID on page 102	1 hr
Verify Correct RAID Changeover on page 104	10 min
Manually Rebuilding RAID on page 105	1 hr

Initializing RAID

CAUTION **The step is to be performed only for the hardware than is NOT fresh-from-factory. Not required when the RAID is clean and never used before.**

- Start from Main Menu and Press O
- Down arrow to Change Config and Press O
- Password is 1234
- Down arrow to Raid Config and Press O
- Down arrow to LU and Press O
- Down arrow to Initialize LU and Press O
- Select LU0 and Press O
- “Data will be lost” message shows and Press O
- Down arrow to Yes and Press O, press O
- Press X five times to show progress

Preparing RAID for Installation

- Power on RAID and wait for ready light.
- Press O to enter Main Menu
    - Down arrow to Change Config and press O
    - Password is 1234
    - Down arrow to SCSI and Press O
        - Channel 1 and Press O
        - Set to 0 and Press O

        - Answer Yes and Press O
        - Press O three times
        - Down arrow to Channel 2
        - Press O
        - Set to 0 and Press O
        - Answer Yes and Press O three times
    - Down arrow to Option Settings and Press O
    - Down arrow to Cache Settings and Press O
    - Down arrow to Write Cache and Press O
        - Change to Disabled and Press O
        - Answer Yes and Press O two times
    - Press X four times until back at Main Menu
- Down arrow to Shutdown
    - Press O
- Turn off RAID

Preparing Scalar DLC for RAID Replacement

Prerequisites

- Windows 2000 Advanced Server CD / Windows 2003 Server CD
- Scalar DLC 2.7 CD (it also contains latest Adaptec drivers for Windows)
- Domain User account and password. Domain Administrator account is NOT needed.
- Terminate Backup application access to Scalar DLC or disconnect Scalar DLC from the library.
- Cluster data (Cluster name, Cluster IP Address, Subnet mask) - use Cluster Administrator to obtain.

Instructions

- Make Node1 active. Switch to that console if needed. Close Scalar DLC management GUI and Log Viewer. Take Scalar DLC offline.
- Remove Cluster Configuration
    - Insert the Scalar DLC 2.7 CD into active node's CD-ROM drive.
    - Close the installation pop-up window by clicking OK.
    - Run <cd-drive>:\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe (The <cd-drive> is typically d:).
    - Click on the button "Remove SDLC Cluster Configuration" that is contained in the "SDLC Cluster Configurator" window popup.
    - Close the "SDLC Cluster Configuration" window.
    - Remove Scalar DLC CD from the CD-Drive.
- Verify that the Scalar DLC is not in Cluster mode
    - Open (start) cluster administrator.
    - Click on Groups > Cluster Group
    - Verify that only the following three items appear
        - Cluster IP Address

        - Cluster Name
        - Disk <Raid Disk> (This is typically R:)
- Create copy of RAID data
    - Create RAID directory on C: drive.
    - Copy MSSQL and Program Files folders from R:\ (RAID) to C:\RAID (on Node1).
    - Use Cluster Administrator to make Node2 active
        - Right Click on Cluster Group
        - Select move cluster
    - Switch to Node2
    - Create RAID directory on C: drive.
    - Copy MSSQL and Program Files folders from R:\ (RAID) to C:\RAID (on Node2).
- Remove Cluster Service
    - On Node2 launch Start > Settings > Control panel > Add/remove programs > Add / remove windows components.
    - Remove check mark to deselect Cluster Service.
    - Click on the Next button.
    - Click on the Finish button. When prompted, select "NO" to restarting the computer.
    - Power off Node2
        - Click on the "Start" menu on the tool bar
        - Select "Shutdown"
        - On the popup window, select "Shutdown"
        - Click on "OK"
        - Turn off the power switch.
    - Switch to Node1 console. Launch Start > Settings > Control panel > Add/remove programs > Add / remove windows components.
    - Remove check mark to deselect Cluster Service.
    - Click on the Next button.
    - Click on the Finish button. When prompted, select "NO" to restarting the computer.
    - Power off Node1
        - Click on the "Start" menu on the tool bar
        - Select "Shutdown"
        - On the popup window, select "Shutdown"
        - Click on "OK"
        - Turn off the power switch.

Swapping Hardware

- Turn off existing external RAID.
- Remove SCSI cables from each node to the old external RAID. These cables will not be used in the new RAID.

- Replace the old RAID with the new P-series RAID.
- Use the new vhdci cables to connect each node to new RAID.
  - Connect Node1 to SCSI channel 1.
  - Connect Node2 to SCSI channel 2.
  - Add terminators to each SCSI channel.

CAUTION **Do NOT power on the external RAID now.**

Configuring New External RAID

Step 1 Power on Node1. Prepare to set up RAID.

IGNORE the BIOS messages until the Adaptec Bios message appear.

CAUTION

IGNORE this message.

On NEI PC's, the following Adaptec message will appear:

```
Adaptec I2O Bios
© Copyright Adaptec Inc,
Hit <Ctrl-A> for Adaptec Setup, waiting for Devices
```

Then it will change to something like the following:

```
Adaptec I2O Bios
© Copyright Adaptec Inc,
Controller: 0xFe700000   IRQ11  2015S FW 3B05
Cyls.hds.sec
    Drive: (0,0,0) Adaptec   RAID-1
    Proc: (0,6.0)  Super      GEM318   0
Hit <Ctrl-A> for Adaptec Setup
```

Almost immediately, another Adaptec message for the 39160 SCSI HBA is displayed. Enter the Bios for the Adaptec 39160 using <Ctrl-A>.

Note Be careful at this point NOT to enter the configuration for the on-board NEI SCSI RAID controller. This does not apply to Dell Server PC's.

- At the "Channel Select" menu, select B bus and press <Enter>. The external RAID is typically on the B bus.
- From the "Options" menu, select "Configure / View SCSI controller settings" and press <Enter>
  - From this menu, scroll down to "SCSI Controller Termination". If this is NOT set to Automatic, change it as follows:
    - Press <Enter> to bring up a changes menu.
    - Scroll up to "Automatic"
    - Press <Enter> to save the changes. This should return back to the "Configuration Menu"
  - Scroll down to SCSI device configuration and press <Enter>.

- Set sync transfer rate to 160 for ALL table entries.
  - Press <Enter> on any "SYNC Transfer Rate" not at 160 to bring up a menu.
  - Select 160 from menu using arrow keys.
  - Press <Enter> when done.
- Repeat as needed to change any/all sync transfer rates.
- Exit this menu using the <Esc> key

- Press <Esc> to exit the Configuration Menu.
- In the "Save Changes Made" popup, select "Yes" and press <Enter> to continue.

- Press <Esc> to exit the "Options" menu".
- Press <Esc> to exit the "Channel Select" menu.
- On the "Exit Utility" popup menu, select "Yes" and press <Enter> to exit.

On NEI PC's, the HDD change message will appear. Clear this by:

- Pressing <F1> to enter the NEI System Bios
- Press <Esc> then OK.

Let the PC boot to Windows and Log in to Node1. Install the latest Adaptec SCSI HBA drivers (see Updating Drivers on page 106).

Step 2 Format RAID disk, as described in Setting Up the RAID on page 28 section from Step 2 on page 28 to Step 3 on page 28.

Step 3 From the "Start" button on the tool bar, shutdown the Node1 PC. Turn the RAID off. Power on Node2. Repeat Step 1 on page 102 for Node2.

Step 4 Turn on the RAID and wait for the ready light. Join RAID to Node2, as described in Step 5 on page 29.

Step 5 Shutdown Node2. Power up Node1 go to it and log on. Configure Cluster service, as described in Step 2 on page 29.

CAUTION

Right after setting up the Cluster Network settings, the system starts Cluster service, recognizes that the SQL server is already set up, and requests to upgrade the MS SQL to Cluster MS SQL.

- **Cancel the SQL Install while still at the "Preparing to Install" stage.**
- **Cancel the SQL install two MORE times QUICKLY.**

Step 6 After Cluster service starts successfully press Finish, eject CD, power up Node2 and log in. Configure Cluster service, as described in Step 4 on page 30.

CAUTION

Right after connecting to the Cluster as domain user, the system starts Cluster service, recognizes that the SQL server is already set up, and requests to upgrade the MS SQL to Cluster MS SQL.

- **Cancel the SQL Install while still at the "Preparing to Install" stage.**
- **Cancel the SQL install two MORE times QUICKLY.**

Step 7 After Cluster service starts successfully Finish, remove CD, and Verify the Cluster service, as described in Step 6 on page 31.

Step 8 Finish RAID Swapping

- Restore RAID data.
  - copy MSSQL and Program Files folders from C:\RAID to R:\ (RAID)
- Restore Scalar DLC Cluster Configuration
  - Insert Scalar DLC 2.7 CD.
  - Close the autorun popup install window.
  - Run <CD:>\Scalar_DLC\Cluster\SDLC_ClusterConfig.exe
  - Click Make SDLC Cluster Configuration
  - OK when complete
  - Close SDLC Cluster Configurator and remove Scalar DLC CD.
- Restart both nodes.

Verify Correct RAID Changeover

- Start Cluster Administrator program
- From the menu, select Groups -> Cluster Group
- Verify that the following resources are shown.
  - Cluster IP Address
  - Cluster Name
  - Disk R:
  - MSSQLSERVER
  - Noblenet Portmap
  - SDLC Supervisor
  - SQLSERVERAGENT
- Start Scalar DLC Manager
- Verify that the library configuration is correct.

Startup and Shutdown

The starting up and shutting down the Redundant Scalar DLC must be executed as follows.

Startup

Step 1 Power on RAID and wait for 30 seconds

Step 2 Power on Node1 and wait for windows starting message

Step 3 Power on Node2

Shutdown

Step 1 On passive node (Node2) launch **Start > Shutdown > Shutdown > OK**

Step 2 On active node (Node1) launch **Start > Shutdown > Shutdown > OK**

Step 3 Wait for both nodes to power down completely

Step 4 Turn off RAID.

Manually Rebuilding RAID

If a hard disk drive fails in the internal RAID on the SDLC server, the RAID rebuilding process should automatically restart when the failed hard disk drive is replaced. However, if the RAID rebuilding process does not automatically restart, the RAID alarms and the new hard disk drive displays two red LEDs. This can happen if the system is powered off or while the system is in BIOS Setup screen.

CAUTION **Do not change the position of the undamaged drive in the RAID. It is recommended that you replace a failed hard disk drive while the system is running in normal mode (powered ON and NOT in BIOS Setup screen). The RAID BIOS is only entirely operative in the normal mode state.**

Rebuilding the Internal RAID Manually

Step 1 Shut down the applications and reboot the system.

Step 2 When the **Hit for Adaptec Setup, Waiting for devices...”** message displays, press **Ctrl-A** on your keyboard. The Adaptec message then informs you that the Adaptec Setup will be entered after POST is complete.

Step 3 After entering Adaptec Setup, use the down arrow key on your keyboard to place your mouse cursor on the RAID item, and then press **Ctrl-R** to activate the RAID menu.

Step 4 In the RAID menu, select **Rebuild**. The rebuild process begins.

Since the RAID rebuilding process runs in the background, you can exit the RAID BIOS as soon as the rebuild process begins, but it is recommended that you wail until the drives are in synch before exiting the RAID BIOS. The rebuild process requires at least one hour.

Note The Rebuild menu will only be active if the system detects that the RAID requires rebuilding. In this case, the RAID status displays as “Degraded”.

Back up Scalar DLC Database

There are two almost equivalent methods, use either one. See *Scalar DLC Reference Guide, Tools and Utilities, Database Tool* for more details.

Backup to a local file

Step 1 On active node right click the penguins in the toolbar. Select **Tools > Scalar DLC DB tool**, then **OK**.

Step 2 Select *Backup* tab, *Manual backup,* and “...” in the Destination area.

Step 3 Specify a temp location on the C: drive. Enter file name and select **Save**.

Step 4 **Execute** and **OK** to successful completion and **Exit** the DB Tool.

Step 5 Go to temp location and zip the newly created file.

Step 6 Copy and paste zipped file either onto floppy disk or folder on RAID disk or network resource.

Save to archive file

Step 1 On active node right click the penguins in the toolbar. Select **Tools > Scalar DLC DB** tool, then **OK**.

Step 2 Select *Save* tab and "..." in the *Destination* area.

Step 3 Specify a destination location (both local and network resources are allowed). Enter file name and select **Save**.

Step 4 **Save** and **OK** to successful completion and **Exit** the DB Tool.

The zipped database file is stored on the location specified. Move or copy it anywhere if required.

Restore Scalar DLC Database

Step 1 Copy and paste archive file from either floppy disk or folder on RAID disk or network resource to the temp location (both local and network resources are allowed, using "C:\temp" is preferable).

Step 2 On the active node right click the penguins in the toolbar. Take Offline (or Stop) Scalar DLC and OK.

Step 3 Right click the penguins in the toolbar. Select **Tools > Scalar DLC DB tool**.

Step 4 Select *Restore* tab and select *From Device*.

Step 5 Select "..." in *Device Name* section. Select the <temp location> \ <database file> to use and **Open**.

Step 6 Set the *Move to physical file names* to "R:\Program Files\..." (if not set by default).

Step 7 Select **Restore** and **Restore** and **OK** and **Exit**.

Note If the backup is performed from the previous version of Scalar DLC, follow the Recover database from old backup on page 112.

Step 8 Right click the penguins in the toolbar. Bring Online (or Start) Scalar DLC and OK.

Updating Drivers

The following drivers may require an update during installing or upgrading the Scalar DLC and/or installing the new hardware.

Note — Check the version of the existing driver(s). Update only when the current version is lower than required, or when the driver is not installed at all.

Table 18 Drivers to Update

Hardware	Required version
Adaptec 39160 (SCSI for RAID)	6.4.630.100
QLA 2340 (Fibre Channel for library)	9.1.0.11
QLA 2342 (Fibre Channel for library)	9.1.0.11

Step 1 Download the latest driver(s). They can be found on Scalar DLC Install CD in the directory `Scalar_DLC\Drivers\Adaptec` and `Scalar_DLC\Drivers\Initiator\QLA234x`.

Step 2 Update drivers using: **My Computer > (right click) > Manage > Device Manager > SCSI and RAID controllers > (select adapter and right click) > Properties > Driver > Update Driver**. (on WIndows 2000 also “Driver Details“ button)

Note that for Adaptec and QLA 2342 there are two channels, both are to be updated.

Figure 60 RAID Adaptec 39160 Driver: Win2000

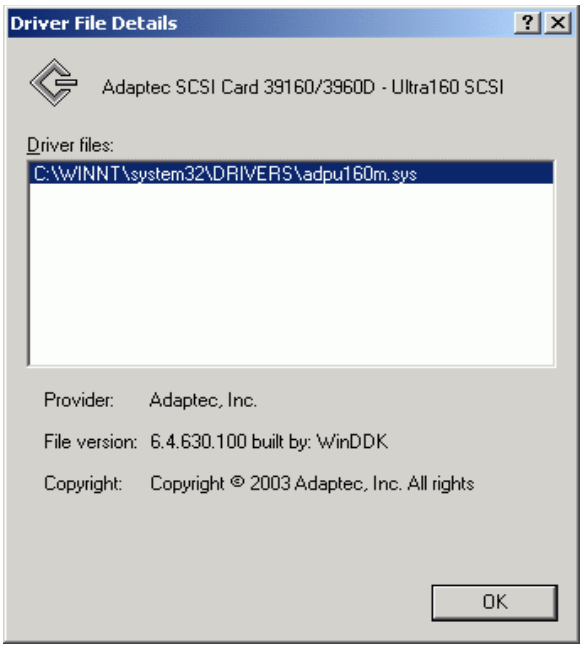


Figure 61 RAID Adaptec 39160 Driver: Win2003

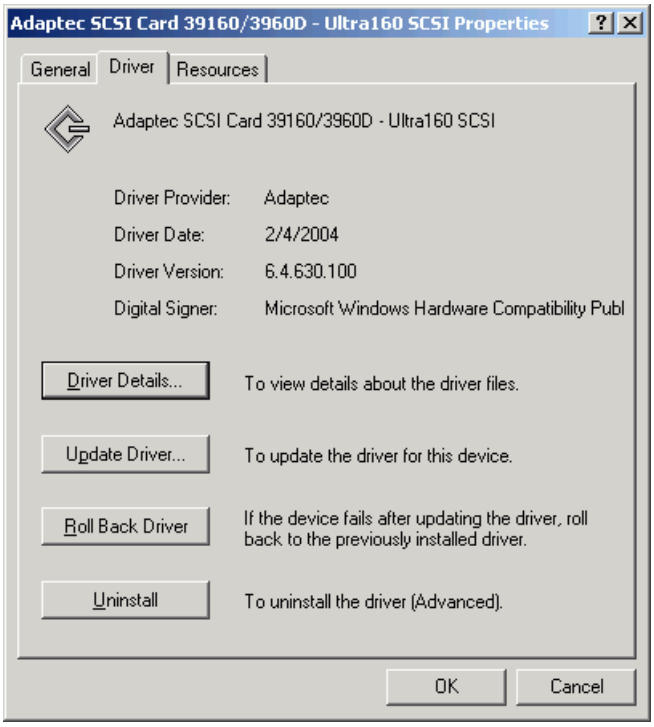
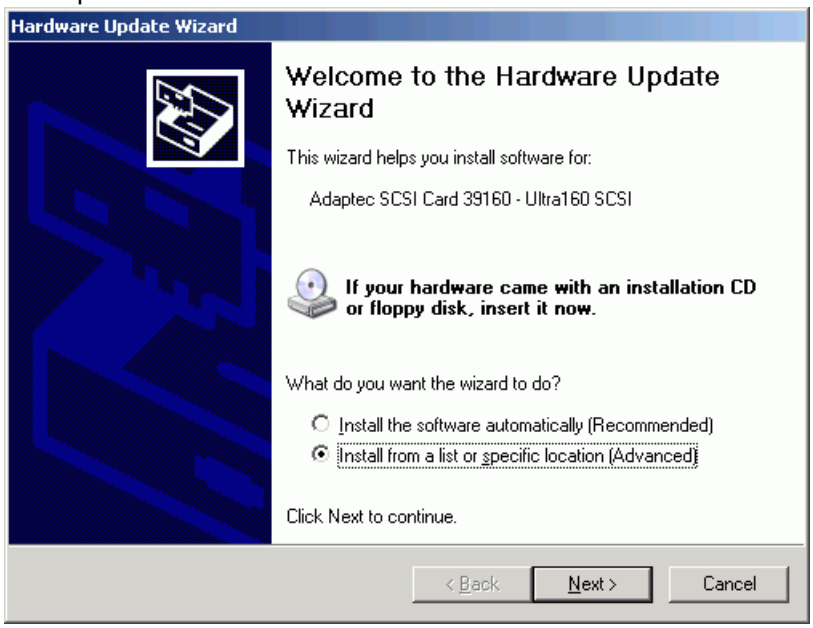


Figure 62 Update Adaptec Driver



Next. Insert Scalar DLC 2.7 CD. Select “Install driver from a list or specific location“.

The 2003 wizard shall find the driver on CD, the 2000 needs to be updated manually (**Display a list of known drivers > Have disk > (browse for a folder) > select driver**).

Step 3 Reboot if required.

Failure Recovery

The following steps are user in case of disk failure on Scalar DLC server.

One disk fails on server

On both Standard and Failover solution:

Step 1 Remove failed disk

Step 2 Insert new disk.

Step 3 Rebuild begins.

No failover or downtime. Approximate rebuild time is 20 minutes

Two disks fail in a server: standard solution

The computer is not operating and must be replaced.

Step 1 Install new disks on host.

Step 2 Boot up and insert windows recovery CD. Perform clean-install-from-scratch, as described in Setting Up the Standard Solution on page 9.

Note

On Windows 2000 use the same DNS name and IP address as has been used at the failed node.
On Windows 2003 use the same IP address as has been used at the failed node, but the other DNS name.

Step 3 Restore the Scalar DLC database from backup made on floppy or network resource, as described in Restore Scalar DLC Database on page 106.

Two disks fail in a server: failover and self-domain solution

The node is not operating and must be replaced. The working node is supposed NodeA, the old (failed) node that should be replaced is supposed NodeO, the new node that replaces NodeO is supposed NodeB.

NodeA online, RAID on, NodeO power off.

Note

Backup the database to RAID or local resource, as described in Back up Scalar DLC Database on page 105, just to be sure that the database will not be lost during repair. Would the database be damaged, after the install is finished do Restore Scalar DLC Database on page 106.

Step 1 On active node (NodeA) evict the damaged node (NodeO) from the cluster. Then run SDLC cluster configuration tool (from Scalar DLC CD) and remove cluster configuration.

Step 2 (For Self-domain solution only; for Failover solution skip this step.)
Detect whether NodeB should be installed as Backup or Primary domain controller.

- On NodeA launch **Start > Programs > Administrative Tools > Active Directory users and computers.**
- **Domain name (right-click) > Operations Masters**. Wait ~30 sec till the dialog opens.

- Select *PDC* tab and check *Operations Master* field.
  If Operations master is <NodeA>, then NodeA is a Primary domain controller, and NodeB should be installed as a Backup domain controller.
  If Operations master is <NodeO>, then NodeA is a Backup domain controller, and NodeB should be installed as a Primary domain controller.

Step 3 (For Self-domain solution on Win2003 only. For both Failover solution and Self-domain solution on Win2000 skip this step.)
On NodeA launch **Start > Programs > Administrative Tools > Active Directory users and computers,** select **Domain Controllers > <NodeO>, right-click** and **Delete** and **Yes** to confirm. Select 'This domain controller is permanently offline and can no longer be demoted...' and **Delete** and **Yes**. This will remove NodeO from the list of domain nodes.

Step 4 Shutdown NodeA, switch off RAID. Unplug all cables from old NodeO (power, network, SCSI, KVM). Remove NodeO (old, failed) from a rack. Remove SCSI cards from old NodeO and place them to a new NodeB.

Step 5 Insert new NodeB into a rack and connect all cables (power, network, SCSI, KVM).

Step 6 Start up NodeA. Install and configure Scalar DLC on NodeB as for the second node (Node2).

- For NodeB do Configuring SCSI for RAID and Library on page 23.
- (For Failover solution only; for Self-domain solution skip this substep.)
  For NodeB do Setting Up IP Address, Node Name, and Joining Domain on page 26.
- (For Self-domain solution only; for Failover solution skip this substep.)
  For NodeB do Setting Up Network, IP Address and Computer Names on page 39.

Note

On Windows 2000 use the same DNS name and IP address as has been used at the failed node.
On Windows 2003 use the same IP address as has been used at the failed node, but the other DNS name.

- (For Self-domain solution only; for Failover solution skip this substep.)
  Set Backup domain controller on NodeB as described in Configuring Domain Controllers on page 40 from Step 2 on page 41 for Windows 2000, or from Step 2 on page 42 for Windows 2003.
  If NodeB is to be set as Primary domain controller, do the following then.
  - On NodeB run **Start > Run > CMD** and type **ntdsutil**.
  - At the **ntdsutil** prompt type **roles**.
  - At the **fsmo maintenance** prompt, type **connections**.
  - At the **server connections** prompt, type **connect to server <NodeB name.Domain>**.
  - At the **server connections** prompt, type **quit**.
  - At the **fsmo maintenance** prompt, type **seize PDC**. Then click **Yes** to confirm.
  - At the **fsmo maintenance** prompt, type **seize RID master**. Then click **Yes** and **Yes** to confirm.
  - At the **fsmo maintenance** prompt, type **quit**.
  - At the **ntdsutil** prompt, type **quit**.
  - Restart NodeB.

- For NodeB do Setting Up the RAID on page 28 from Step 4 on page 29.
- Start up NodeA. For NodeB do Configuring Cluster Service on page 29 from Step 4 on page 30 (on Windows 2000) or from Step 3 on page 31 (on Windows 2003).
- On NodeA take Scalar DLC offline. On NodeB do Installing Scalar DLC Software on page 32, steps 3, 5 - 7.
- (optional) On NodeB do Building Client Connections on page 139.
- Take Scalar DLC online and proceed.

Scalar DLC chassis bad

Step 1 Power off failed node.

Step 2 Disconnect all cabling.

Step 3 Move all disk, SCSI cards and fibre cards to the new node.

Step 4 Reconnect cabling and power on new node.

One disk fails in the external RAID

Step 1 Remove the cover and unlock the disk.

Step 2 Remove failed disk and insert new disk

Step 3 Reconstruction will begin. Approximate reconstruction time is 6 hours

Step 4 Hit the up arrow until buzzer stop shows on display.

Step 5 Hit the yellow button twice

Two disk fail in the external RAID

Step 1 Replace both failed disks.

Step 2 Initialize the RAID. Initialization takes approximately 2 hours.

Step 3 Reinstall the Scalar DLC from scratch

Step 4 Restore database from the back up.

RAID controller fails

Step 1 Power down RAID

Step 2 Disconnect all cabling from RAID

Step 3 Remove all disk from failed RAID

Step 4 Insert disk into new RAID chassis

Step 5 Reconnect cabling and power on

Step 6 Run the Installation for ADTX RAID procedure

Step 7 Boot up servers

Step 8 Reboot after new devices are installed

Recover database from old backup

When the Scalar DLC database is lost and there is only the backup from previous version of Scalar DLC (for example, 2.4), the recovery is possible.

Step 1 Restore the Scalar DLC database from a backup, as described in Restore Scalar DLC Database on page 106.

CAUTION **Do NOT start the Scalar DLC now! It will not function.**

Step 2 Launch **Start > Settings > Control Panel > Administrative Tools > Add-Remove Programs > Scalar DLC** and press Change. The Scalar DLC Add/Remove engine starts, as described in Add/Remove Scalar DLC Software on page 77.

Step 3 Select Repair, then Scalar DLC database, then Upgrade (see Figure 45 on page 81). The database will be upgraded. Restart is required thereafter.

Step 4 After the restart, log on the Management GUI and review the existing configuration. It is possible that manual improvement is needed. See *Scalar DLC Reference Guide, Advanced Configuration* section for more details.

Step 5 After the configuration is performed, backup the new database to a archive file on RAID or floppy (see Back up Scalar DLC Database on page 105) and proceed the work.

Downgrading the Scalar DLC

In case of any serious inconvenience after upgrading Scalar DLC, it is possible to downgrade the Scalar DLC back to previous level (database backup from this 'previous/original level' is required).

Do the following.

Step 1 Using Add/Remove programs remove the Scalar DLC 2.7 software (see Remove on page 78) removing the database, too.

Step 2 From the same Add/Remove window, remove the Java software package.

Step 3 Review *<%System disk%>\Program Files* folder and remove 'SDLC' and 'Apache Group' folders manually if they are not removed.

Step 4 Install the original Scalar DLC. Apply all necessary Service packs and hot fixes (see Installing Scalar DLC Service Packs on page 92).

Step 5 Restore the database as described in Recover database from old backup on page 112

.

Note If Java folders are not removed, remove them manually.

Step 6 After restarting the Scalar DLC launch the complete inventory for a library.

7

SCSI/FC Target Drivers

The Scalar DLC software uses some SCSI and/or Fibre Channel adapters in Target mode to provide the customer access to the Scalar DLC via the SCSI.

SCSI and Fibre Channel Hardware

The SCSI and/or Fibre Channel adapters must be installed into the PCI-type slots as shown in Table 21 on page 116.

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

Before connecting SCSI Initiator (Scalar DLC / client host) and Target (Medium changer / Scalar DLC host) adapters with the SCSI cable, be sure that they match each other. See Table 19 for a description of adapters that are currently supported and see Table 20 on page 116 for a match description.

Table 19 SCSI and Fibre Channel Adapters

Adapter	Type	Connection (external)	Max cable length, m
LSI 20860	SCSI	50-pin high density SE	5
LSI 8751D	SCSI	68-pin high density HVD	25
LSI 8951U LSIU80LVD	SCSI	68-pin very high density LVD/SE	12(LVD) 5(SE)
QLA 2200	Fibre Channel	SC duplex multi-mode	-
QLA 2300 QLA 2310 QLA 2340 QLA 2342	Fibre Channel	Small form factor multi-mode optic LC	-
Local SCSI [a]	SCSI	-	-

a. The driver is designed 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 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, so 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. Local SCSI Target only emulates the adapter port and sure cannot operate in Initiator mode.

Table 20 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.

Table 21 SCSI/FC Adapters and PCI slots

Controller PN	Slot 1	Slot 2	Slot 3
Standard 3-01632-01		Adaptec 39160 (library)	Any target adapter (see Table 19 on page 115)
Dual 3-01632-02		Adaptec 39160 (RAID and library) [a]	Any target adapter (see Table 19 on page 115)
Standard 3-01632-03	Adaptec 39160 (library)	QLA 2340 / 42	Any target adapter (see Table 19 on page 115)
Dual 3-01632-04	Adaptec 39160 (RAID)	QLA 2342 (library)	Any target adapter (see Table 19 on page 115)

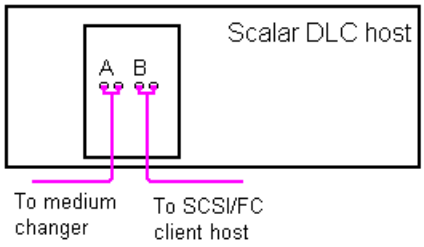
a. Adaptec 39160 is a two-channel SCSI adapter (see Two-channel Adapters on page 116) that is not used in Target mode.

Two-channel Adapters

Some adapters are designed as two-channel model so they are recognized by OS as two single-channel adapters. Device Manager shows two adapters, their Properties are, for example, PCI slot 2, Bus 1, Function 0 and PCI slot 2, Bus 1, Function 1 (note that the only difference is Function value).

For the Scalar DLC it means that it is technically possible to use single two-channel SCSI/FC adapter in both Initiator mode (Channel A / Port 1 - Function 0) to connect to the library medium changer, and in Target mode (Channel B / Port 2 - Function 1) to connect to the SCSI Client host (see Figure 63 on page 117). And of course, such two-channel adapters can be used for two different SCSI Clients, as if these clients were connected to the two different SCSI/FC target adapters, or as two single-channel initiator adapters if required.

Figure 63 Two-channel Adapter used for both library and client



The following adapters that Scalar DLC supports in Target mode are two-channel:

- QLA 2342

Using FC adapters as Initiators to connect to the library medium changer requires additional setup which is described in Host/Library Communication using Fibre Channel and SNC on page 135.

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. You can also access the required drivers at the `<%Scalar DLC Install_CD%>\Drivers\Initiator` folder.

Step 2 *During* setup/startup, the Windows 2000 / 2003 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* Windows 2000 / 2003 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 Fibre Channel 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 118.

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. See Add/Remove SCSI Target Drivers on page 122.

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

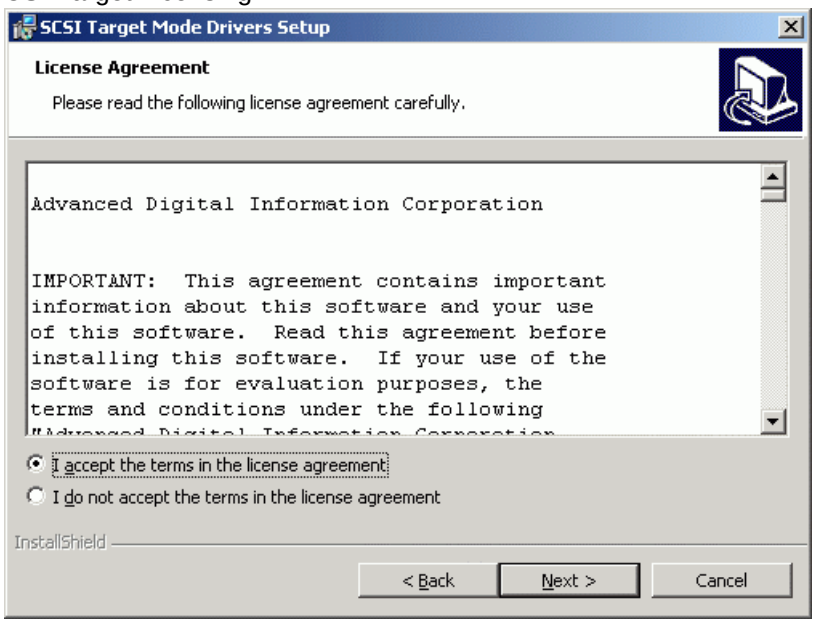
There should be the Initiator driver(s) activated in the system before the Target driver(s) are installed. See Initiator Driver on page 117 for the details.

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

Figure 64 SCSI Target Start Setup

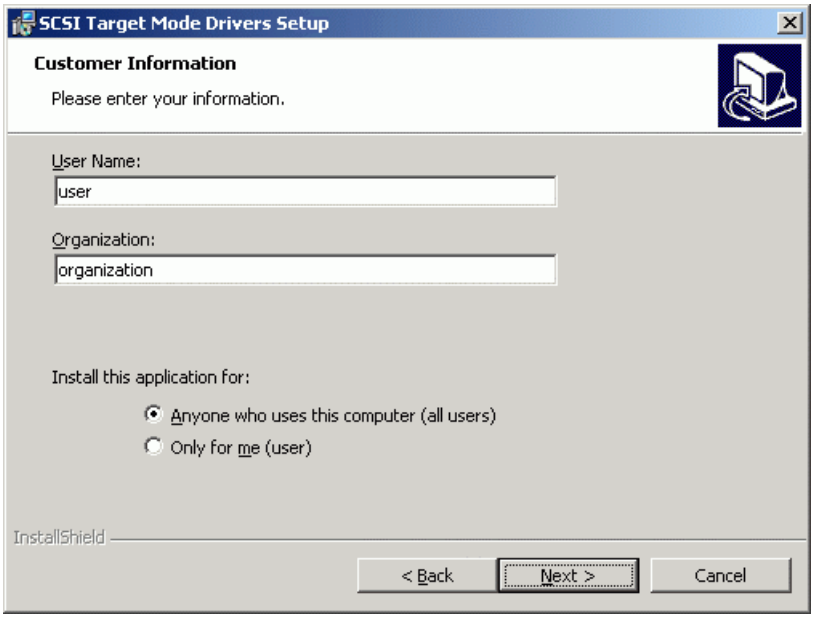
Click **Next** to proceed.

Figure 65 SCSI Target Licensing



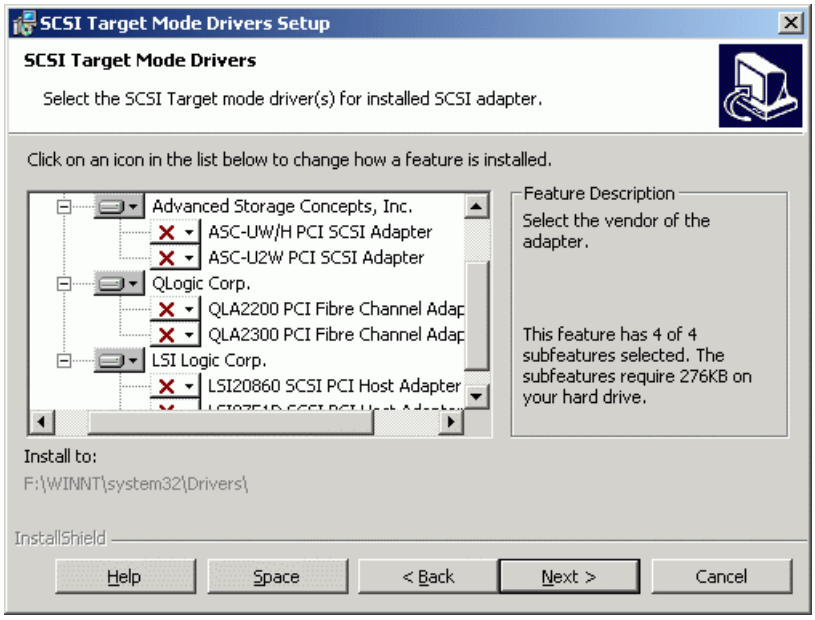
Accept the License Agreement and click **Next** to proceed.

Figure 66 Personal Information



Enter the customer's personal information. See Table 5 on page 58 for the meaning and required operation of the fields. Click **Next** to proceed.

Figure 67 Driver Selection



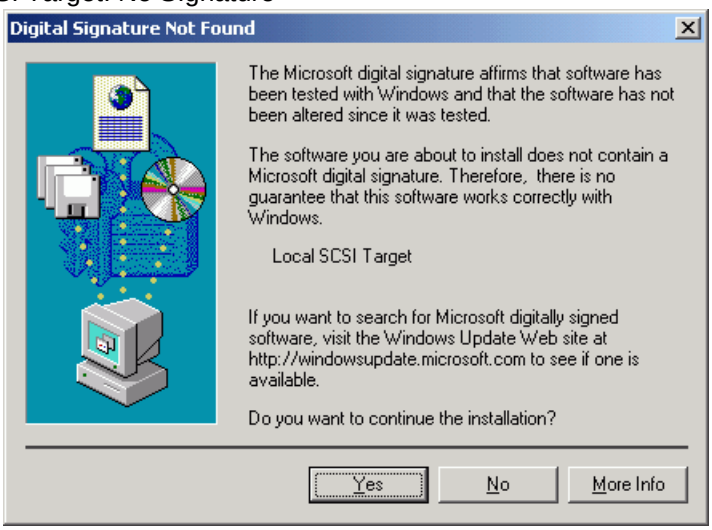
Click the driver to select it. See Table 22 for driver selection details and Table 19 on page 115 for SCSI and Fibre Channel adapters.

Table 22 Driver Selection

Name	Operation	Description
Drivers	Check	Mark/unmark the driver for installation. See Table 19 on page 115 for a description of SCSI and Fibre Channel adapters that could be used in the system.
Feature Description	Supplied	Driver name and disk requirements.

When the Local SCSI Target driver is installed, the following warning screen appears.

Figure 68 Local SCSI Target: No SIgnature



Press Yes and continue the installation: **ADIC** Local SCSI Target driver is not certified by Microsoft, no other failures in it are known currently.

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

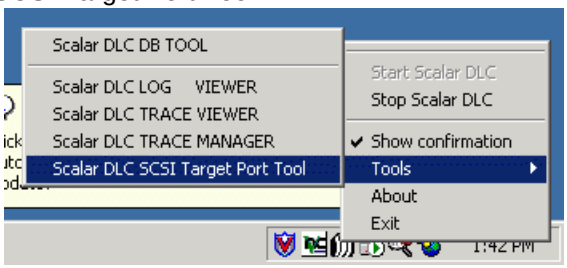
Note

After rebooting, the adapters that should operate in Target mode are disabled. To enable them, use the SCSI Target Port Tool. See Activating Target Mode on page 121.

Activating Target Mode

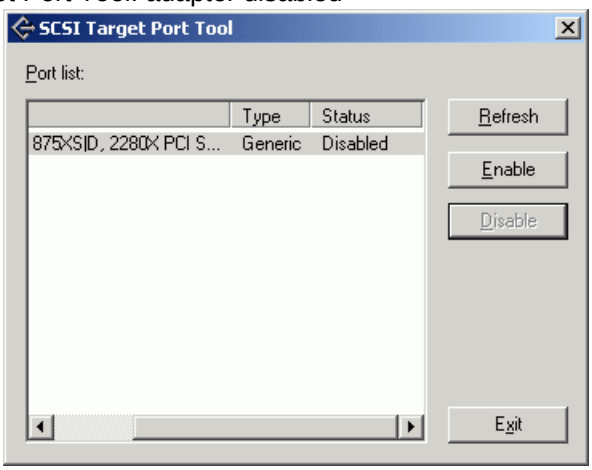
On the toolbar there will be a small three-penguin icon. Right click this icon and select **Tools > Scalar DLC SCSI Target Port Tool**.

Figure 69 Access to SCSI Target Port Tool



The SCSI Target Port tool opens.

Figure 70 SCSI Target Port Tool: adapter disabled

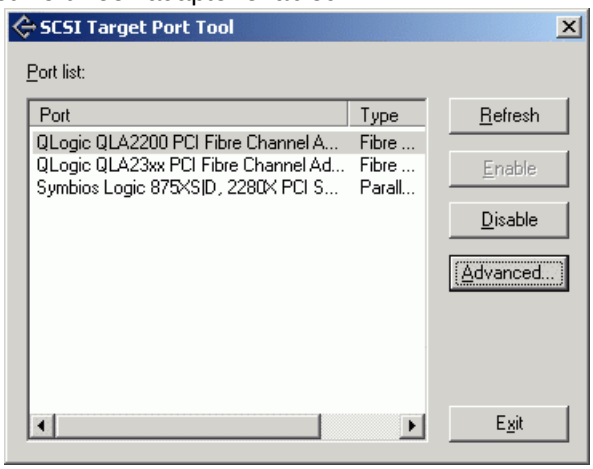


Click **Enable** to enable the required SCSI Adapter(s) (as in the figure below).

Note

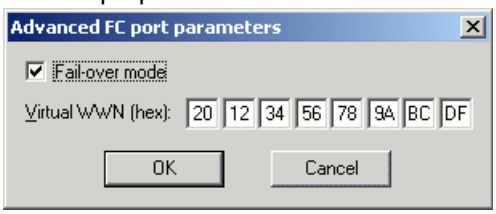
The two-channel adapters are shown in the SCSI Target Port Tool as two different single-channel adapters. See Two-channel Adapters on page 116.

Figure 71 SCSI Target Port Tool: adapter enabled



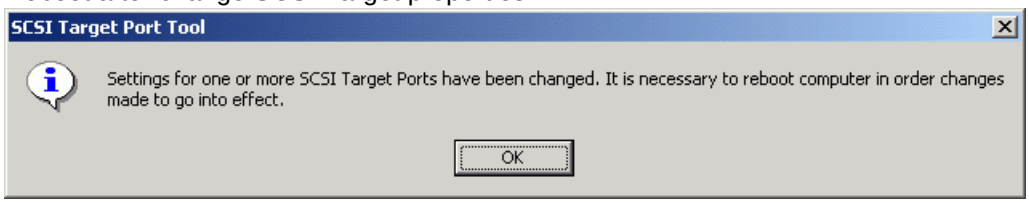
(only for the Fibre Channel) Click **Advanced** to resolve the virtual World-Wide Name (WWN) and make the adapter available for the Failover (cluster) mode work if it is required.

Figure 72 FC Adapter Advanced properties



After enabling the adapter(s) and exiting the SCSI Target Port Tool, reboot if it is prompted.

Figure 73 Reboot after change SCSI Target properties



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 *Scalar DLC 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.

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 (see Scalar DLC Software on page 56) 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 (see Installing the SCSI/FC Target Drivers on page 118).

8

Troubleshooting

This section contains useful general troubleshooting information if a customer encounters problems during installation or normal usage.

See Troubleshooting Applications on page 125 for information about third party applications.

See Force Restart on page 130 for the instructions on force restart the Scalar DLC PC after the installation.

See Scalar DLC Force Removing on page 130 for the instructions on force remove of the Scalar DLC software.

Troubleshooting Applications

The following topic describes some general troubleshooting notes.

Scalar DLC Installation

Issue: Blue screen after installing drivers for RAID or network adapter.

Solution: Drivers are installed wrong and conflict with the Windows hardware scan engine. Unplug RAID or network adapter, reboot, reinstall the driver, and then plug RAID/network on again.

Issue: Scalar DLC installation is launched but either not starts or shows Finish window without installing anything.

Solution: The registration of Install components may be broken. Launch the install fix script (<`Scalar DLC CD:>\Scalar_DLC\Tools\installfix.cmd`) and then start the Scalar DLC installation again.

Issue: Scalar DLC installation has been failed partially installing some components.

Solution: Remove all currently installed Scalar DLC components (see Software Components on page 52), restart the PC (restart both nodes for the failover solution), and start the installation again. On failover and self-domain solution ensure that the active node is used.

Issue: "Cannot get SQL server version" or "Cannot create or access database" error during Scalar DLC installation.

Solution: Ensure that the network is operating (**Start > Run > ping <domain name>**, or try to find any network resource), network adapter drivers are installed (**My computer (right-click) > Manage > Device Manager > Network adapters**), and the DHCP client service is up (**My computer (right-click) > Manage > Services and Applications > Services > DHCP**).

Issue: SCSI Target Driver installation started immediately after installing Scalar DLC software is failed for installing **ADIC** Local SCSI Target driver.

Solution: Restart the computer and launch the Target Driver installation from Autorun separately.

Issue: “JSDK service has not been stopped“ error during Scalar DLC removing.

Solution: Open Services. Change JSDK Service and SDLC Supervisor service from “automatic“ to “manual“. Reboot. Then launch Scalar DLC remove.

Issue: “Error 1325: APACHEDIR is not valid short file name“ error during Scalar DLC removing.

 Note This issue appears only for the Failover solution.

Solution: The current node does not own the cluster group. Open Cluster Administrator, execute Move Group, and launch Scalar DLC removing again.

Scalar DLC Database Utility

Issue: “COM exception: 0x80040E14; cannot add, delete, or modify a job...“ error when trying to modify the existing backup/compact SDLC database schedule.

 Note This issue appears only for the Failover solution.

Solution: This is the MS SQL bug: the configured schedule can be changed only from the same node where it has been created. Change the active node and try to change the schedule again.

Alternative Solution (when changing active node is either not possible or not desirable): Launch the MS SQL job fix script (`<Scalar DLC CD:>\Scalar_DLC\Tools\ChangeJobsOwnership.cmd`). Then start the DB Tool again and change the schedule.

Issue: Backup is scheduled to a local folder but does not executed as configured.

 Note This issue appears only for the Failover solution.

Solution: MS SQL installed on a cluster system requires the backup folder placed on a shared resource (RAID), so it could be accessed from either node. Ensure that the local resource is on RAID, otherwise reconfigure the backup settings.

Issue: “COM exception: 0x80040E14; cannot open backup device“ error during back up or restore Scalar DLC database on network resource.

Solution: Sometimes network backup / restore operations are not allowed because of local network security restrictions. Back up to floppy or local disk is recommended in this case, and then copy the backup to network resource manually.

When the error happens during restoring from a network resource, copy the backup file to floppy or local disk manually, and then restore it via DB tool from local/floppy resource.

Scalar DLC Online Help

Issue: Launched from a remote host, Scalar DLC Management GUI works fine but the html-based online help works with errors or does not work at all.

Solution: the issue may appear when the system default browser in not IE or Netscape. The current version of Scalar DLC has not intended to support browsers other than IE or Netscape, so make either of them the default browser on your system. Otherwise it is not guaranteed that all functions will work.

SCSI and Fibre Channel Target Mode Driver

The basic driver installation order is described in Installing the SCSI/FC Target Drivers on page 118.

PCI Slot Issues

Issue: 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, etc.)

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.

Solution: Swap 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

Issue: When 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.

Solution: either execute the 'ScsiRescan' issue from client side or reboot the SNC. When the Scalar DLC is up, the targets will be re-mapped.

Issue: SNC is used between the library (target) and Scalar DLC server (initiator). The Scalar DLC cannot see the library and receives 'Not connected' error.

Solution: Reboot the SNC each time the library or one of its robots is restarted. See Host/Library Communication using Fibre Channel and SNC on page 135 for the details.

SQL Server

Issue: The Scalar DLC supervisor does not start automatically because SQL Server Agent does not start.

Solution: Start SQL Server Agent service manually.

Step 1 Launch **Start > Settings > Control Panel > Administrative Tools > Services**.

Step 2 Find the **SQLSERVERAGENT** service and start it manually.

Step 3 Start Scalar DLC supervisor service either manually (from the same Services window) or via the Scalar DLC state icon (gray penguins) on the tool bar.

Client Applications

Mostly the settings of DAS/ACI applications and SCSI are covered here.

Legato Networker

If Legato Networker is executed from a Solaris, follow the steps here:

- Add the following four lines to the `/etc/rc2.d/S95` file:
  - DAS_CLIENT=*clientname*; export DAS_CLIENT (*clientname* is a name of DAS client (for example, *Client1*) representing the client application).
  - DAS_SERVER=*servername*; export DAS_SERVER (*servername* is a name of Scalar DLC PC (for example, *computer*).
  - ACI_MEDIA_TYPE=*mediatype*; export ACI_MEDIA_TYPE (*mediatype* is an ACI media type (for example, ACI_DECDLT) used by client application; use the value that corresponds the media present in the logical library configured by Scalar DLC; refer to *DAS/ACI Interfacing Guide*).
  - DAS_MEDIUM=*mediatype*; export DAS_MEDIUM (*mediatype* is the a DAS media type (for example, DECDLT) used by client application; use the value that corresponds the media present in the logical library configured by Scalar DLC).

HP Omniback

When using Omniback, follow the step here:

- Add the following entries to the *omnirc* file.
  - DAS_CLIENT=OMNIBACK_C1
  - DAS_SERVER=*host* where the *host* is the host name of the machine executing Scalar DLC (shown in the Management GUI in a broad black line)

DASADMIN

Issue: DAS Client cannot connect to the Scalar DLC server host.

Solution: Ensure the DAS client is configured to work from client host with server host. Refer to Installing the DAS Administration Utility on page 73. Also ensure there is no firewall between the client and server host, and if there is, make sure the DAS client connection is firewall-based and the DAS/ACI Firewall software is installed and configured. Refer to Installing the DAS/ACI Firewall on page 74.

Issue: Configuring a drive to a client/logical library does not allocate the drive.

Solution: ALLOCD command must be executed from the client side before the client can access the drive. Refer to *DAS Administration Guide*.

Example: *$dasadmin allocd DRIVE UP dasclient*

SCSI

Issue: MOVE command fails.

Solution: Moving cartridge to the home position of any other cartridge is not allowed when there is a client other than SCSI assigned to either the same logical library, or to the other logical library that has one or more shared partitions with the first one.

When there are only SCSI clients, the **Move** command that should place the cartridge to other cartridge home position will be accepted.

Note

The Management GUI will warn the admin if there will be an attempt to assign two different clients (for example, DAS and SCSI) either to one logical library, or to different logical libraries that has shared partitions. This assignment is not restricted, however.

- Check whether there should be a DAS or ROBAR client for the logical library used by the SCSI client. If not, remove the unnecessary clients.
- If the DAS or ROBAR clients are not to be removed, use only the slots that are empty, but not the home positions for the SCSI commands.

Issue: Executed on SCSI/FC client host the **Test Unit Ready** command returns *Adapter status 1 <Failure>*, although the adapter and connection with the Scalar DLC server are good.

Note

This issue typically appears only when the Scalar DLC client host operates under Windows 2000 or 2003.

Solution: Ensure that the library medium changer on the client host is *disabled*. See Disabling Library Medium Changer on page 141.

Issue: After upgrading from 2.3 or 2.4 to 2.6 or 2.7, only one Target based on Fibre Channel adapter is active. The SCSI clients assigned to the inactive targets cannot access the Scalar DLC.

Solution: There has been wrong Target-LUN mapping in older versions of Scalar DLC. The newest FC target drivers allows only one target with 255 LUNs to be active on FC adapter operating in Target mode.

Note

This issue can appear after upgrading the Scalar DLC database from 2.3 or 2.4. In 2.5 the Target-LUN mapping is the same as in 2.6 and 2.7.

To activate the SCSI Clients assigned to the non-active SCSI targets again, do the following:

Step 1 Using the Management GUI > Configuration > SCSI Target tab, locate all FC adapters that contain more than one Target.

Step 2 For each such FC adapter (for example, Adapter 1), locate the Target with minimal SCSI ID (for example, Target 0). This will be the only active Target of the FC adapter.

Step 3 Under this active Target, create as many LUNs as there are non-active Targets at the Adapter 1.

Step 4 Using Configuration > Clients tab, create SCSI clients based on the LUNs of active Target 0. Assign the logical library and check the Mode settings the same as they were for the non-active clients. That means, for each client based on non-active target must be created the duplicated SCSI client with same settings but based on the active Target (Target 0).

Step 5 Repeat Steps 1-4 for each FC adapter with multiple targets.

Step 6 After all SCSI clients are re-created, remove all SCSI clients based on non-active Targets and non-active Targets with their LUNs.

Now the SCSI/FC clients can access their resources.

Issue: After upgrade from 2.4 or earlier, and Scalar DLC reconfiguration (see above), the customer application based on FC Target still cannot access the Scalar DLC.

Solution: Scalar DLC version 2.3 and 2.4 have been released with the old Target driver microcode that uses auto-mapping LUN-to-Target engine. In Scalar DLC 2.5 and later, the new SCSI/FC Target microcode permits only manual mapping; automapping is not permitted.

Some backup applications can recover and continue to function, while others may need manual adjustment and reconfiguration. If your application cannot access Scalar DLC after the SCSI Targets are reconfigured, you may need to reconfigure your backup application, too.

Force Restart

Issue: The installation of Scalar DLC or another software package is finished, the dialog like “Your system is to be restarted now, press “yes’ to restart PC“ appears. But after pressing “yes” button the dialog vanished and the restart is not initiated.

Solution: *Ikernel.exe* object hangs. Stop it manually via Windows Task Manager (Processes > Ikernel.exe (right-click) > End Process). After the IKernel is stopped, restart the PC manually via **Start > Shutdown > Restart**.

Scalar DLC Force Removing

Sometimes removing the Scalar DLC by its standard way, as described in Add/Remove Scalar DLC Software on page 77, is not possible.

Issue: SQL server is stopped, Scalar DLC repair/update/remove fails.

Solution: Start the SQL Server Agent manually and then repeat the repair/update/remove operation.

Issue: RAID permanently goes to unplugged mode, MS SQL server cannot be started, Scalar DLC database cannot be accessed, Scalar DLC cannot be removed.

Note This issue appears only for the Failover solution.

Solution: First remove SQL server, then remove Scalar DLC.

Step 1 Remove SQL server from Node 1 (**Start > Settings > Control Panel > Administrative Tools > Add/Remove Programs**).

Step 2 Remove Scalar DLC software from Node 1 (now the standard operation must work). Accept the restart.

Step 3 Repeat Steps 1 - 2 for Node 2.

A

Advanced Setup Instructions

This section contains the topic on extended setup not covered in previous chapters.

Setting Up the Library

The following instructions applies to setting up the library media changer. The procedure can be done in any time when setting up the Scalar DLC, but before installing the Scalar DLC software itself.

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 scanner 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 Resolve the library SCSI IDs:

- Single-aisle:
  - On the library Operator panel, do the following: *Main* > *Setup* > *Library* > *SCSI* > *Target ID*.
  - Set the SCSI IDs on both buses to 3.
  - Restart the library so that the SCSI IDs take effect.
- Dual-aisle (Scalar 10K DA):
  - On the Operator panel for Robot 1 do the following: *Main* > *Setup* > *Library* > *SCSI* > *Target ID*.
  - Set the SCSI ID on both buses to 3.
  - On the Operator panel for Robot 2 do the following: *Main* > *Setup* > *Library* > *SCSI* > *Target ID*.
  - Set the SCSI ID on both buses to 4.
  - Restart the library so that the SCSI IDs take effect.

Step 3 Connect the library to the host

- Single-aisle:
  - Standard solution:
    - 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 (see Table 19 on page 115).**

    - On the PC, launch *My Computer* > *Manage* > *Device Manager* to verify that the Windows 2000/2003 machine can see the Library "Medium Changer".
  - Failover and Self-domain solution:
    - Connect the SCSI cable to the respective LVD/HVD controller 1 of the library and to the Scalar DLC Node1 SCSI HBA card.
    - Connect the SCSI cable to the respective LVD/HVD controller 2 of the library and to the Scalar DLC Node2 SCSI HBA card.

CAUTION **Make sure to install the proper voltage SCSI connections (see Table 19 on page 115).**

    - On both nodes, launch *My Computer* > *Manage* > *Device Manager* to verify that the Windows 2000/2003 machine can see the "Medium Changer" device.
- Dual-aisle (Scalar 10K DA):
  - Standard solution:
    - Plug Y-block connector with LVD/HVD-terminator to LVD/HVD controller 1 of the Robot 2.
    - Plug the Y-block connector to LVD/HVD controller 1 of the Robot 1.
    - Connect two Y-block connectors of Robot 1 and Robot 2 with the SCSI cable.
    - 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 (see Table 19 on page 115).**

- On the PC, launch *My Computer* > *Manage* > *Device Manager* to verify that the Windows 2000/2003 machine can see two "Medium Changer" devices.

- Failover and Self-domain solution:
  - Plug Y-block connector with LVD/HVD-terminator to LVD/HVD controller 1 of the Robot 2.
  - Plug the Y-block connector to LVD/HVD controller 1 of the Robot 1.
  - Connect two Y-block connectors of Robot 1 and Robot 2 with the SCSI cable.
  - Connect the SCSI cable to the respective LVD/HVD controller 1 of the library and to the Scalar DLC Node1 SCSI HBA card.
  - Plug Y-block connector with LVD/HVD-terminator to LVD/HVD controller 2 of the Robot 2.
  - Plug the Y-block connector to LVD/HVD controller 2 of the Robot 1.
  - Connect two Y-block connectors of Robot 1 and Robot 2 with the SCSI cable.
  - Connect the SCSI cable to the respective LVD/HVD controller 2 of the library and to the Scalar DLC Node2 SCSI HBA card.

CAUTION **Make sure to install the proper voltage SCSI connections (see Table 19 on page 115).**

- On both nodes, launch *My Computer* > *Manage* > *Device Manager* to verify that the Windows 2000/2003 machine can see two "Medium Changer" devices.

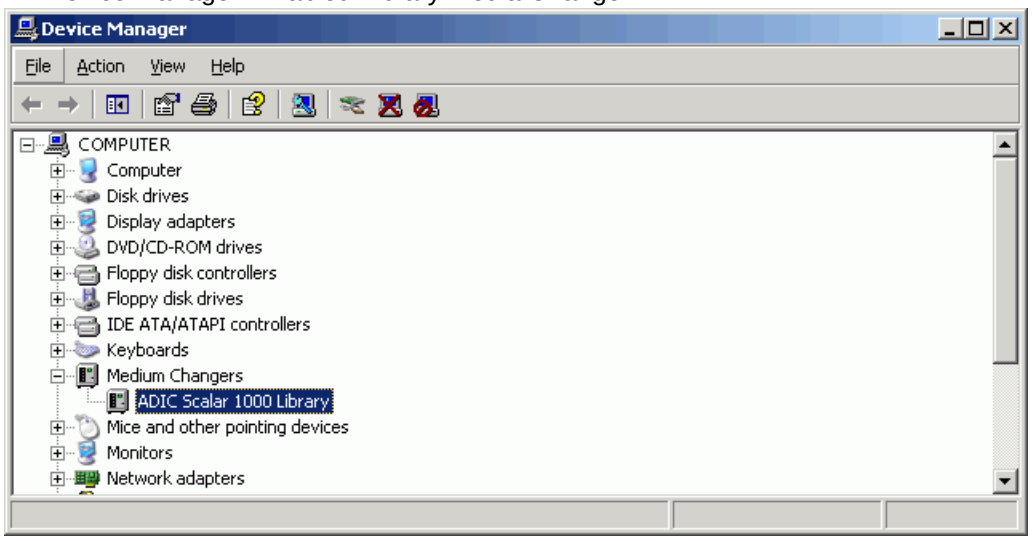
Step 4 Make sure that the created scheme matches the example.

Library	Solution	Example
Single-aisle	Standard	Figure 1 on page 10
Dual-aisle	Standard	Figure 2 on page 11
Single-aisle	Failover and Self-domain	Figure 4 on page 16
Dual-aisle	Failover and Self-domain	Figure 5 on page 17

Step 5 (This step is for Windows 2003 system only. On Windows 2000 skip this step)
Disable library Medium Changer (on both Nodes for failover and self-domain solution).

- Launch *My Computer* > *Manager* > *Device Manager* > *Medium Changers.* The list of medium changers will appear.

Figure 74 Device Manager: Enabled Library Media Changer

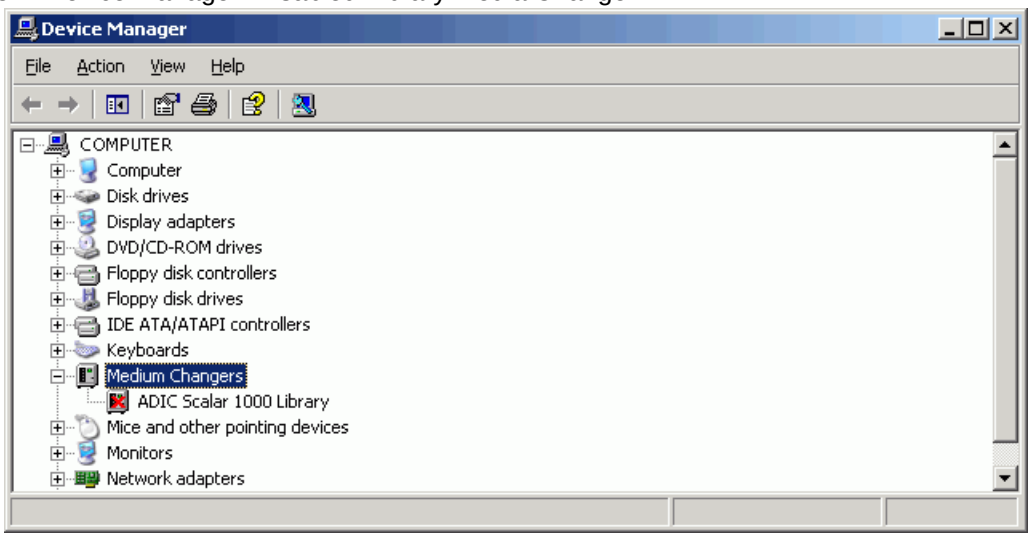


- Select the media changer that represents the library device (Scalar 10K or Scalar 100). By default it is *enabled*.

CAUTION **Never disable the media changers that are <u>not</u> mentioned in the list above.**

- Right-click and select *Disable* (or execute *Menu* > *Action* > *Disable*) to disable the library.

Figure 75 Device Manager: Disabled Library Media Changer



- Ensure that the library device is *disabled*. The Scalar DLC cannot be installed with the enabled media changer.
- Close Device Manager. No restart is required here.

Host/Library Communication using Fibre Channel and SNC

Usually the library use a SCSI to connect to the Scalar DLC host. However the SCSI cable length cannot exceed the sensibility limit (see Table 19 on page 115).

The Fibre Channel connection uses the same SCSI protocol and does not have length limitations, but most libraries have only SCSI adapters installed, no Fibre Channel. That is why the intermediate hardware between SCSI and FC is used in this case.

The Storage networking controller (SNC) can be used for both the dual-aisle and single-aisle libraries. Thus the distance between the Scalar DLC server and the SNC connected to the library can be far enough for the customer to place the hardware anywhere it would be useful.

See Table 1 on page 7 for a requirements for library, SNC, and AMC, and Table 21 on page 116 for the FC adapters used.

Installation and Configuration

Depending on the Scalar DLC Solution used see Standard Solution on page 137, or Failover and Self-Domain Solution on page 138. Then see SNC Setup on page 135 for setting up the SNC.

SNC Setup

After the host(s), library and its drives are *on*, and all cables are properly connected, configure the SNC. Use ADIC Management Console (AMC) to set up the SNC, and resolve ports, IP, connection type, zoning, and WWN. For more details see *SNC User's Guide* and *AMC User Guide*.

Channel Zoning

The SNC target ports (SCSI connected to the library) and initiator ports (FC connected to the Scalar DLC host) must be configured to use the same Channel Zoning. Otherwise the connection cannot be established.

Channel Topology

Point-to-point, *Fabric*, or *Arbitrated loop* topology can be used as Host-SNC connection.

World Wide Name

The SNC World Wide Name (WWN) must be set before it can be used for the library connection.

Failover and self-domain solution scheme with two SNC devices requires that both SNC have the same WWN (note that SNC messages are against such setup).

The WWN setup order is as follows.

Step 1 Connect a service terminal to the service port. Alternatively, connect a service computer to the network that the SNC is on or to the Ethernet port of the SNC.
For the location of these ports and instructions for connecting a service terminal, see *SNC User's Guide*.

Step 2 Issue the `wwnGlobalSet` command to establish a new base WWN.
Using the `wwnGlobalSet` command will update both the node name and port names.
The following messages are displayed:

```
This command will change the WWN for Fibre Channel Ports.
This should only be done when replacing a failed SNC. You should never
operate 2 FC devices that are set to the same WWN. This may destabilize
your SAN.
The unit will be rebooted after the WWN change.
Do you want to proceed (enter "yes" to continue) :
```

Step 3 Type the word `yes` and press **Enter**.
The following message is printed:

```
Enter the new WWN (or q to quit):
```

Step 4 Enter all eight bytes of the new WWN. Each byte of the entry should be delimited by colons. For example, enter:

```
00:00:00:30:8C:02:70:21
```

CAUTION **The `wwnGlobalSet` command requires that the first byte be entered as "00" even if `fcShowNames` displays "10" in that position.**

CAUTION **When entering the WWN, the firmware will confirm that the node ID and OUI match the existing values. This prevents a user from accidentally making the SNC appear as another vendor's device.**

Step 5 The first five bytes of the entry are checked. If the entry is valid, you are prompted for a password. Type the password `OverrideWWN` and press **Enter**.
This causes the SNC to reboot.

Step 6 When the SNC has rebooted, issue the `fcShowNames` command to verify the change. Verify that the output in the **Node Name** column is correct.

If only a single FC port is to be changed, use the `wwnPortSet` command to set the WWPN and WWNN for a single FC port.

Note If one of the WWN fails to change, run the `wwnPortSet` command again.

Also, AMC can be used to verify that the WWNs are detected correctly following the change. For the failover or self-domain solution, AMC will issue a warning message indicating duplicate WWNs have been detected. This means the setup is performed correct.

Standard Solution

Figure 76 Standard: SNC with the single-aisle

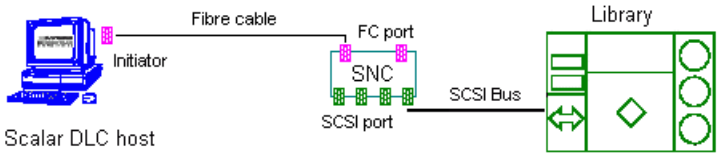
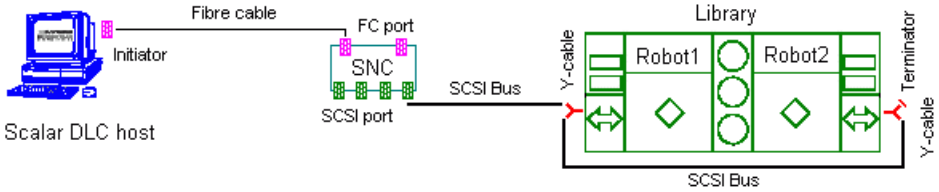


Figure 77 Standard: SNC with dual-aisle



Requirements

- Single Scalar DLC server (host) with (at least one) FC Initiator adapter
- SNC
- Single- or dual-aisle library.
- SCSI cables and terminators, FC cables
- Fibre Channel switch (optional)

Pre-Setup

Library is set up, the host is set up, all required services and drivers are installed. Before installing the Scalar SLC software. See Setting Up the Standard Solution on page 9.

Setup Roadmap

Step 1 Resolve the cabling, switch, etc. (Figure 76 and Figure 77 are examples of the whole structure). Note also Two-channel Adapters on page 116.

CAUTION **The FC Switch *zoning* feature needs to be properly set up too. Ports for Host and SNC must be in the same zone.**

Step 2 Using AMC, set up the SNC. See SNC Setup on page 135.

Step 3 Launch *My Computer > Manage > Device Manager* to verify that the Windows 2000/2003 machine can see the Library "Medium Changer"(two medium changers must be present for a dual-aisle library).

Step 4 Install Scalar DLC software and proceed the work. See Scalar DLC Software on page 56.

Failover and Self-Domain Solution

Figure 78 Failover: SNC with the single-aisle, switch scheme

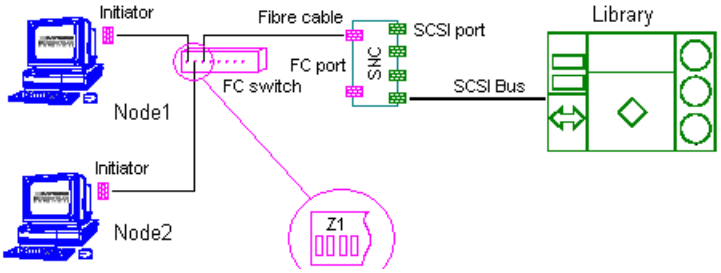


Figure 79 Failover: SNC with the single-aisle, two-port-scheme

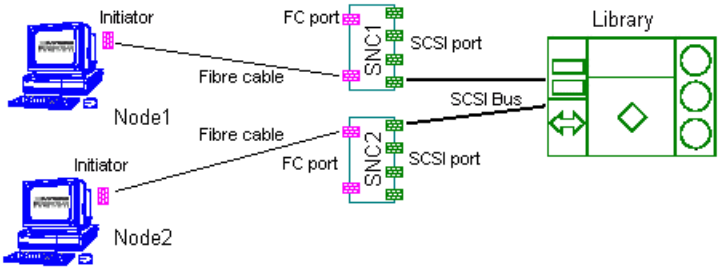


Figure 80 Failover: SNC with the dual-aisle, switch scheme

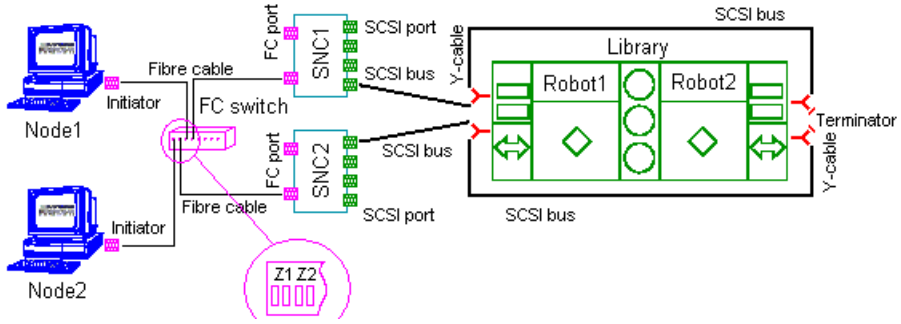
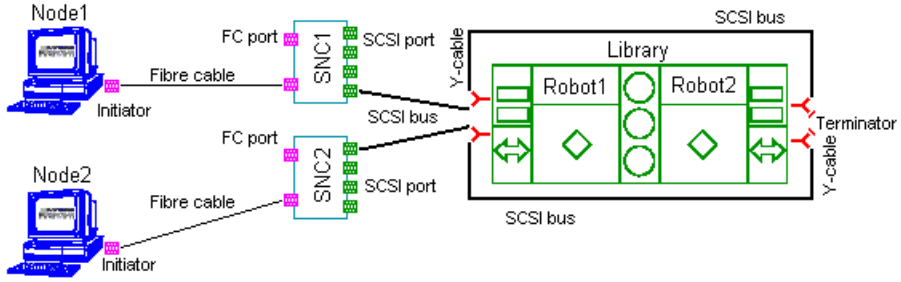


Figure 81 Failover: SNC with the dual-aisle, two-port-scheme



Requirements

- Two Scalar DLC servers (hosts), Node 1 and Node 2. Each host has (at least one) FC Initiator adapter
- Either two SNC devices or single SNC and FC Switch
- Single- or dual-aisle library
- SCSI cables and terminators, FC cables
- Fibre Channel switch (optional)

Pre-Setup

Library is set up, both nodes are set up, all required services and drivers are installed. Before installing the Scalar SLC software. See Setting Up the Failover Solution on page 15 or Setting Up the Self-Domain Solution on page 37.

Setup Roadmap

Step 1 Resolve the cabling, switch, etc. (Figure 78 on page 138, Figure 79 on page 138, Figure 80 on page 138 and Figure 81 on page 138 are examples of the whole structure). Note also Two-channel Adapters on page 116.

CAUTION

The FC Switch *zoning* feature needs to be properly set up too. On Figure 78 on page 138, all three ports must be in the same zone. On Figure 80 on page 138, ports for Node 1 and SNC1 must be in Zone1, and ports for Node 2 and SNC2 must be in Zone2.

Step 2 Using AMC, set up all SNC devices. See SNC Setup on page 135.

Step 3 On both nodes, launch *My Computer > Manage > Device Manager* to verify that the Windows 2000/2003 machine can see the Library "Medium Changer"(two medium changers must be present for a dual-aisle library).

Step 4 Install Scalar DLC software and proceed the work. See Scalar DLC Software on page 56.

Notes

Each time the library or one of its robots is restarted, the SNC must be restarted too. Otherwise even after the library/robot is up, the SNC does not see it, and the Scalar DLC reacts to the library/robot as ‘not ready’.

Building Client Connections

Additional activity may be required for the clients to connect to the Scalar DLC software.

DAS

Install the DAS Client software on the client PC. See Installing DAS Client on page 71. Ensure that there is valid TCP/IP connection between client and server, and proceed the work.

Standard Solution

Use the common Scalar DLC host name as DAS_SERVER value on the client host.

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.

Failover and Self-domain Solution

Use the common Cluster name (for example, SDLC-CLUSTER) as DAS_SERVER value on the client host.

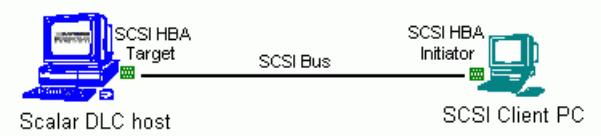
If a firewall exist between client and Cluster, the DAS/ACI Firewall should be installed either on PC in cluster domain or on both cluster nodes; in the second case, the DAS-ACI Firewall server name must be specified as common Cluster name (for example, SDLC-CLUSTER), too.

SCSI

Additional hardware requirements exist for the SCSI Clients based on either SCSI or Fibre Channel connection.

Standard Solution

Figure 82 Standard solution: SCSI Client Connection



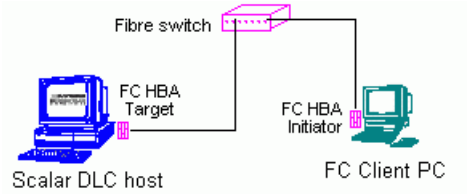
SCSI Requirements:

- 1 SCSI Target Adapter, as described in Table 19 on page 115.
- 1 middle length (2-3 m) SCSI cable (68 pins) (client connection)

Be sure that the client connection scheme matches the example (see Figure 82). The SCSI target adapter(s) on the Scalar DLC host must work in Target mode (see Activating Target Mode on page 121).

Note Two-channel Adapters on page 116 and Disabling Library Medium Changer on page 141.

Figure 83 Standard solution: Fibre Channel Client Connection



FC Requirements:

- 1 FC Target Adapter, as described in Table 19 on page 115.
- FC switch
- 1 FC cable (client connection)

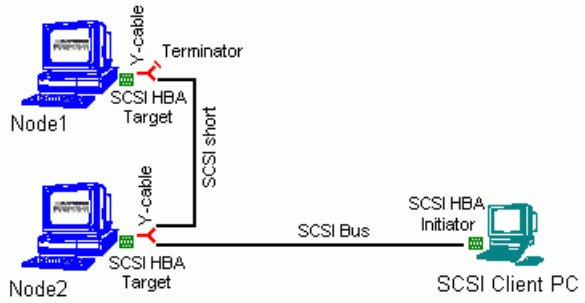
Be sure that the client connection scheme matches the example (see Figure 83). The FC target adapter(s) on the Scalar DLC host must work in Target mode, but not failover (see Activating Target Mode on page 121).

Note Two-channel Adapters on page 116 and Disabling Library Medium Changer on page 141.

Note — If two or more SCSI/FC Target Adapters are used, additional cables are required. All adapters used in Target mode must match Table 19 on page 115 and also must be activated as Targets, as described in Activating Target Mode on page 121.

Failover and Self-domain Solution

Figure 84 Failover solution: SCSI Client Connection



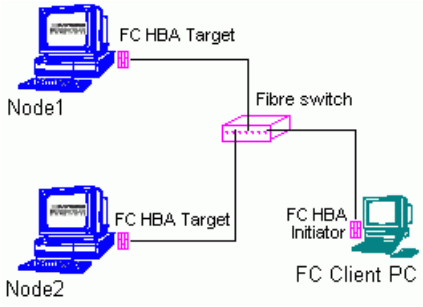
SCSI Requirements:

- 2 SCSI Target HBA, as described in Table 19 on page 115.
- 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 84). Both SCSI target adapters on the Scalar DLC hosts must work in Target mode (see Activating Target Mode on page 121).

Note Two-channel Adapters on page 116 and Disabling Library Medium Changer on page 141.

Figure 85 Failover solution: Fibre Channel Client Connection



FC Requirements:

- 2 FC Target Adapters, as described in Table 19 on page 115.
- FC switch
- 2 FC cables (client connection)

Be sure that the client connection scheme matches the example (see Figure 85). The FC target adapter(s) on the Scalar DLC hosts must work in Target mode, and failover (see Activating Target Mode on page 121).

Note Two-channel Adapters on page 116 and Disabling Library Medium Changer on page 141.

Disabling Library Medium Changer

After configuring the Scalar DLC and creating logical library and appropriate SCSI client (see *Scalar DLC Reference Guide*) the client machine will detect the Scalar DLC server as the real library Medium Changer. Disable it before starting the work with SCSI/FC client interface.

- Launch *My Computer* > *Manager* > *Device Manager* > *Medium Changers.* The list of medium changers will appear.

- Select the media changer that represents the library device (Scalar 10K or Scalar 100). By default it is *enabled*.

CAUTION **Never disable the media changers that are <u>not</u> mentioned in the list above.**

- Right-click and select *Disable* (or execute *Menu* > *Action* > *Disable*) to disable the library.
- Ensure that the library device is *disabled*. The Scalar DLC SCSI Client can not access the enabled media changer.
- Close Device Manager. No restart is required.

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 a valid ROBAR port is specified. The details are described in *Reference Guide, GUI Tabs* chapter, *ROBAR* and *ROBAR Client* sections.

Standard Solution

Set the HOST parameter to the Scalar DLC host name.

Failover and Self-domain Solution

Set the HOST parameter to the Cluster name (for example, SDLC-CLUSTER).

Installing SCSI/FC Target Adapters on a Live Machine

Note The following instruction is valid only for Failover and Self-domain solution.

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

Step 1 Node1 *passive*, Node2 *active*. The Scalar DLC operates on Node2.

Step 2 Shutdown Node1. Install the new SCSI/FC card into a free PCI slot (note what slot it is).

Step 3 Start Node1. 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). See Initiator Driver on page 117.

Step 4 Restart Node1. Install Target driver for a new adapter. See Installing the SCSI/FC Target Drivers on page 118.

Step 5 Restart Node1. Launch Scalar DLC SCSI Target Port Tool and enable the new SCSI card as Target. For the FC card, resolve the WWN (see Activating Target Mode on page 121).

Step 6 Restart Node1. Make Node1 *active*, Node2 *passive*. The Scalar DLC will operate on Node1.

Step 7 Repeat steps 2- 6 for Node2. The SCSI/FC adapters 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 passive node.

Securing the Scalar DLC

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

- For the information on securing the Windows 2003 operating system refer to http://www.nsa.gov/snac/downloads_win2003.cfm?MenuID=scg10.3.1.1
- For the information on securing the Windows 2000 operating system refer to http://www.nsa.gov/snac/downloads_win2000.cfm?MenuID=scg10.3.1.1
- 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:

Step 1 Install the latest Windows Hot Fixes and service pack. The current version is Service Pack 4 for Windows 2000 (SP1 for Windows 2003 Server). Both the Hot Fixes and service packs can be downloaded on http://www.microsoft.com.

Step 2 Install the SP4 for MSDE 2000.

Step 3 When installing the Scalar DLC, provide the user name and password according to the corporative security standards.

Step 4 Set up the web browser(s) 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 not 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. Refer to Installing DAS Client on page 71.

Antivirus Strategy

To ensure the Scalar DLC system remains virus-proof and worm-proof, perform the following security actions.

- After the Scalar DLC is successfully installed, install the antivirus software that matches the local corporative standard. The following products are typically used with the Scalar DLC:

  - McAfee® VirusScan® Enterprise 8.0i (refer to: http://www.mcafee.com/us/products/mcafee/antivirus/desktop/vs.htm)
  - McAfee® ePolicy Orchestrator® Anti-Virus Management system (refer to: http://isservices.tcd.ie/security/epol.php)

Note — Contact the local network administrator for the details on how to install and set up the antivirus software.

- After the antivirus software is successfully installed, provide the regular antivirus database update (either by periodical basis or automatically) to be sure the Scalar DLC system remains virus-proof. Install the appropriate patches and service packs when it is required.

Note — On the Scalar DLC Failover or Self-Domain solution it is recommended to launch the antivirus update on the *passive* node.

The same actions are to be performed on the client PC (the client side of Scalar DLC software, as shown in Figure 1 on page 3).

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