PCI-2

ADAPTER CARD

INSTALLATION GUIDE

DOLPHIN INTERCONNECT SOLUTIONS

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1. Introduction

1.1 General Overview

The Dolphin Single-Slot PCI-2 Adapter Card is a high performance solution for clustering of personal computers, workstations and servers using the Scalable Coherent Interface (SCI) specification. Applications include clusters of systems for compute processing and high-availability database operations.

1.2 Product Components

1.2.1 Hardware Components

The following hardware components are available for setting up a 2-node or 4-node cluster:

- PCI-2 Adapter card - part # D308
- PCI-2 Adapter card - part # D310
- 1, 3 or 5 meter VHDCI (Very High Density Cable Interconnect) SCI Cable (part # D701)
- Switch MS-4 - part # D512
- Switch MS-6E - part # D515

1.3 PCI-2 Features

- Compliant with PCI specification 2.1, 32-bit, 33 MHz PCI bus operation
- Compliant with IEEE/ANSI 1596-1992 Scalable Coherent Interface (SCI) specification
- Low latency and high throughput data transfer using remote memory access.
- SCI interface with two unidirectional links each 400 MBytes/sec
- Operates with 1, 3 or 5 meter VHDCI SCI cables between nodes

2. Installing the PCI-2 Adapter Card

2.1 Getting Started

Open the shipping package to verify that you have received the items ordered. Inspect each item for damage.

CAUTION
Static electricity can damage integrated circuit components on the card. Do not remove the adapter from the anti-static bag until you have discharged any static electricity from your person by touching a grounded object. Maintain grounding by wearing the wrist strap provided when handling the adapter.

If everything is in order, you may now begin the installation by following the procedures described below.

2.2 Installation Steps

1. Inserting the PCI-2 Adapter Card
2. Interconnecting Two or Four Nodes

2.3 Inserting the PCI-2 Adapter Card

Insert the PCI-2 Card into a PCI bus slot as described below. PCI slots are colored white and shorter than ISA or EISA slots.

***Note**: For optimal performance in Pentium Pros with 450GX hostbridges, it is recommended that the card be inserted in one of the primary set of PCI slots directly connected to the 450GX chipset. See your computer manual for information on which slots are primary.*

1. Turn OFF the power to the computer and peripheral devices.

WARNING
Make sure the power is turned OFF before you continue. Ground yourself by touching an unpainted surface on the computer chassis before you open the computer case. Wear a wrist strap during the whole procedure of inserting the card.

2. Remove the cover from the computer.

3. Remove the screw and the metal filler bracket that covers the card-slot opening for the PCI slot you intend to use. Retain the screw for use in step 5.

4. Insert the card in a PCI bus slot. Press the card down firmly so the contacts are securely seated in the slot.

5. Secure the card bracket to the computer chassis with the screw from step 3.

6. Replace the cover on the computer.

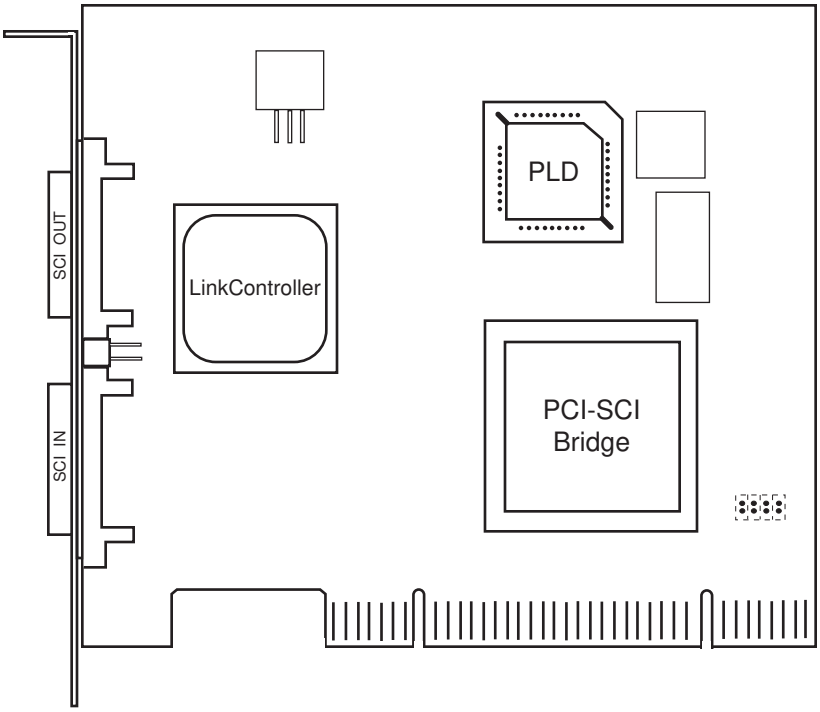


Figure 1 The PCI-2 Adapter Card

The PCI-2 Card has two connectors, one of which is marked *SCI IN* and the other *SCI OUT*. VHDCI SCI cables are used to connect them with another PCI-2 Card or with port connectors in Dolphin's Switch.

2.4 Interconnecting Two Nodes

Prerequisites: 2 PCI-2 Cards, 2 SCI cables.

Make sure that the power is turned off on the computers before proceeding.

Insert the cards into each of the computers according to section 2.3. The PCI-2 Adapter Card in each computer/node is interconnected to each other via two VHDCI SCI cables as shown in figure 2 below:

1. Insert one end of the first cable into the connector marked *SCI IN* on the card in one node.
2. Insert the other end of the cable into the connector marked *SCI OUT* on the card in the other node.
3. Insert one end of the second cable into the connector marked *SCI IN* on this card.
4. Insert the other end of the cable into the connector marked *SCI OUT* on the card in the first node.

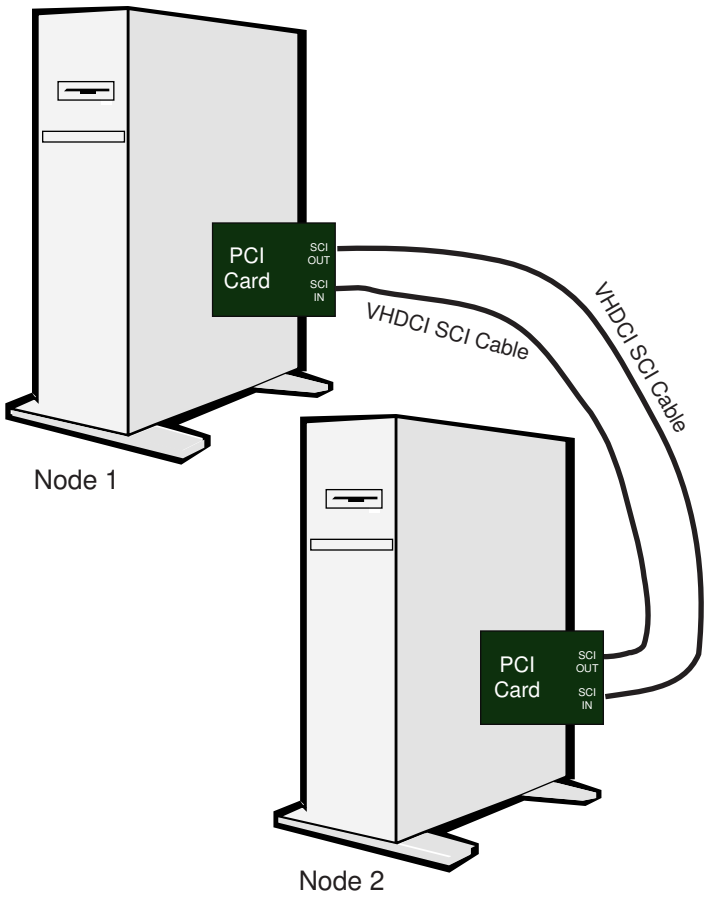


Figure 2 Interconnecting Two Nodes

2.5 Interconnecting Four Nodes

Prerequisites: 4 PCI-2 Cards, 8 SCI cables,
1 Switch MS-4 (D512).

Insert the cards into each of the four computers according to section 2.3. The PCI-2 Card in the computers/nodes are interconnected via Dolphin's switch as shown in figure 3 below. The switch has four ports 0 to 3, each with connectors marked *in* and *out*.

The VHDCI SCI cables are connected to the ports on the switch as shown below:

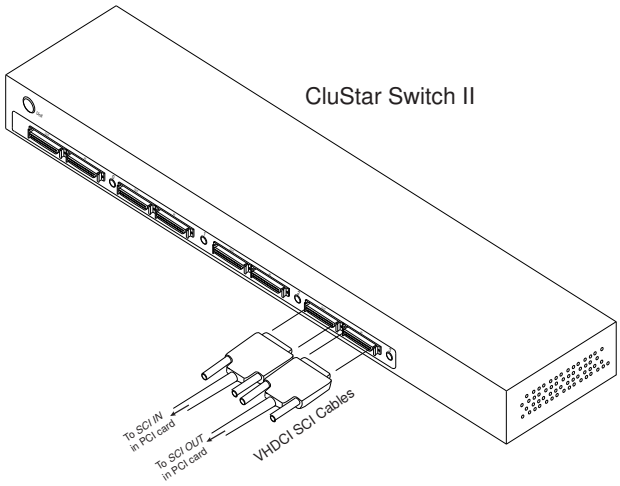


Figure 3 Front Panel of MS-4 (D512) Switch Showing Ports & Cable Connections

Make sure that the power is turned off on the computers and the switch before proceeding.

To interconnect four nodes do the following:

1. Insert one end of the first cable into the connector marked *SCI IN* on the card in the first node.
2. Insert the other end of the cable into the connector marked *out* on port 0 on the switch.
3. Insert one end of the second cable into the connector marked *SCI OUT* on the first card.
4. Insert the other end of the cable into the connector marked *in* on port 0 on the switch.
5. Repeat steps 1 to 4 for the second, third and fourth nodes with ports 1, 2 and 3 respectively on the switch.

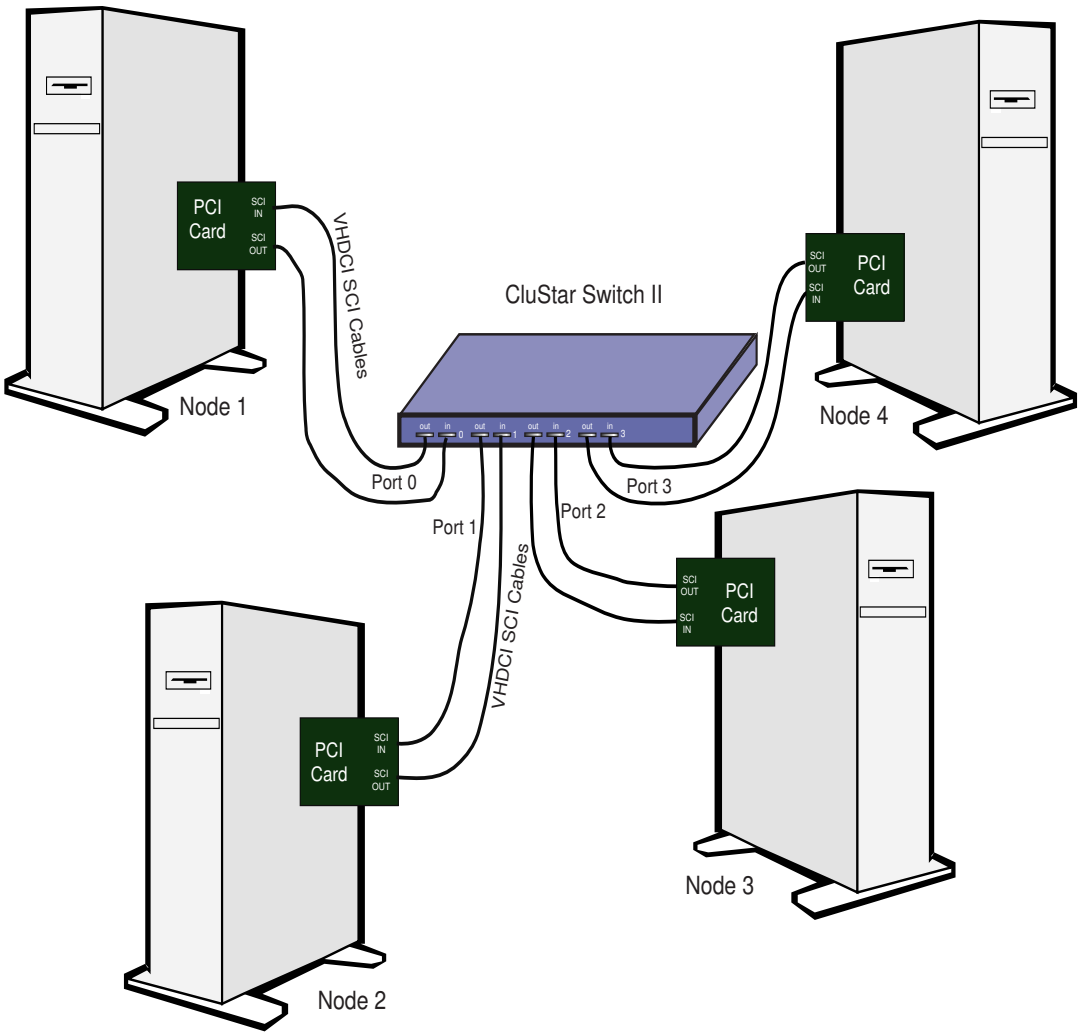


Figure 4 Interconnecting Four Nodes via the MS-4 (D512) Switch.

When the nodes are properly interconnected, you should turn on the power on the computers and the switch.

When the system is up and running, you should install the required software according to instructions in the *software* installation guide.

3. Varying the Memory Size

The memory size available for SCI mapped memory can be varied by setting the jumpers located at the lower right corner of the PCI-2 Adapter Card as shown in the figure below. One mapping page is 512 KB.

Note: The IRM driver consumes mapping pages for internal use such that not all pages are available for user mapping or for other drivers.

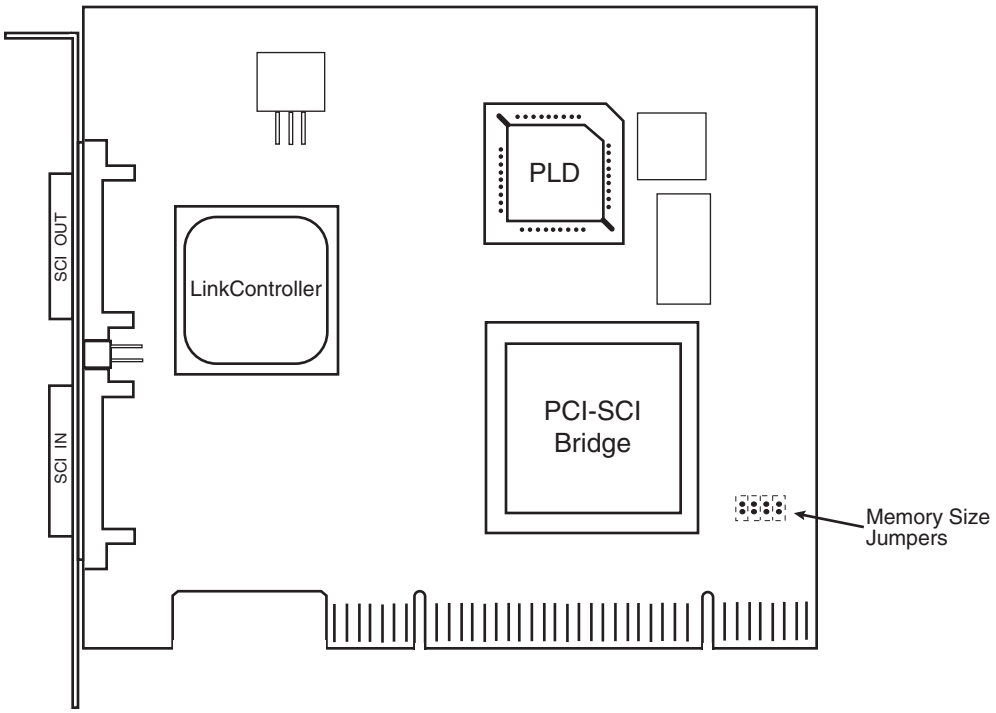


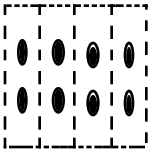
Figure 5 Location of the Memory Size Jumpers on the Card

3.1 Varying the Memory Size on Adapter Card D308

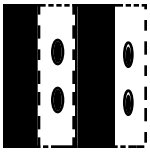
The jumper settings for IO (Base Address 1) and PREFETCH (Base Address 2) space mappings are as follows on a D308 adapter card:

Strap

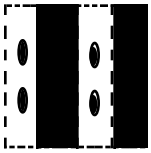
IO | **PREFETCH**



IO = 16 MB (32 pages)
PREFETCH = 16 MB (32 pages)



IO = 32 MB (64 pages)
PREFETCH = 32 MB (64 pages)



IO = 64 MB (128 pages)
PREFETCH = 64 MB (128 pages)

IO = 128 MB (256 pages)
PREFETCH = 128 MB (256 pages)

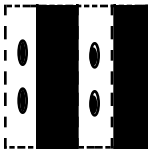
3.2 Varying the Memory Size on Adapter Card D310

The jumper settings for IO (Base Address 1) and PREFETCH (Base Address 2) space mappings are as follows on a D310 adapter card:

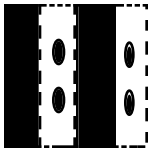
Strap

IO | **PREFETCH**

IO = 16 MB (32 pages)
PREFETCH = 16 MB (32 pages)



IO = 32 MB (64 pages)
PREFETCH = 32 MB (64 pages)



IO = 64 MB (128 pages)
PREFETCH = 64 MB (128 pages)

IO = 128 MB (256 pages)
PREFETCH = 128 MB (256 pages)