



SCICONFIG
Configuration Tool
for Dolphin Adapter Cards

User's Guide

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Table of Contents

CHAPTER 1	Introduction	5
<hr/>		
CHAPTER 2	Sciconfig	6
<hr/>		
2.1	Adapter Card Configuration	6
2.1.1	Selecting Adapter Number	6
2.1.2	Selecting NodeId	6
2.2	Running Sciconfig Configuration Tool Interactively	8
2.2.1	Help Command	9
2.2.2	Config Command	10
2.2.3	Adapter Status	11
2.2.4	Get Link Frequency	12
2.2.5	Set Link Frequency	12
2.2.6	Get Non-Prefetch Memory Space Size	12
2.2.7	Get Prefetch Memory Space Size	12
2.2.8	Set Prefetch Memory Space Size	13
2.2.9	Get Topology Type	13
2.2.10	Set Topology Type	14
2.3	Running Sciconfig In Command Line Mode	15
2.3.1	Help Command	15
2.3.2	Command Line Examples	16
2.4	Checklist for the Adapter Configuration	19
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CHAPTER 3	Troubleshooting	20

1 Introduction

Sciconfig is a configuration tool for initial setup and reconfiguration of the Dolphin PCI-SCI Adapter cards. Before running the **sciconfig** program, the software package from Dolphin must be installed and the **pcisci** (IRM) driver must be running. For information on installing the software package, please refer to the Software Installation Guide.

Before using the Dolphin PCI-SCI adapter cards in an SCI cluster, each PCI-SCI Adapter card must be configured. The configuration is done by using the **sciconfig** utility included in the software package from Dolphin.

NOTE:

Sciconfig utility is a part of the Dolphin toolkit. It can only be used in conjunction with the IRM and SISCO drivers. It can not be used with any third party IRM incompatible drivers.

2 Sciconfig

2.1 Adapter Card Configuration

The configuration of a PCI-SCI adapter card consists of selecting adapter number and NodeId.

2.1.1 Selecting Adapter Number

Each adapter in a machine must be assigned an **adapter number** that must be unique within that particular machine. The legal **adapter numbers** are defined by the maximum number of adapter cards that the particular driver version supports. Hence, if the driver version supports up to 8 adapter cards in a single machine, then the set of legal **adapter numbers** is 0 - 7. The legal range of **adapter numbers** will be displayed by **sciconfig**.

2.1.2 Selecting NodeId

Adapter nodeIds must be selected carefully. Each adapter in an SCI ringlet must have a unique nodeId. Available nodeIds are in the range 4 to 1020 and must be multiples of 4 (i.e. 4, 8, 12, 16). NodeIds do not have to be assigned continuously. If you are connecting multiple SCI rings together using the modular SCI switch from Dolphin, NodeIds on each ringlet must be kept within the nodeId sub-ranges and each ringlet must be connected to the corresponding switch port. Make sure that the nodeIds are within the same range as shown in table 1.

Different adapter cards in the same machine may have the same nodeId as long as they are not connected to the same SCI system.

Port number	NodeId range
0	4 - 60
1	68 - 124
2	132 - 188
3	196 - 252
4	260 - 316
5	324 - 380
6	388 - 444
7	452 - 508
8	516 - 572
9	580 - 636
10	644 - 700
11	708 - 764
12	772 - 828
13	836 - 892
14	900 - 956
15	964 - 1020

Table 1 Legal nodeId configuration range for adapter cards connected to switches.

2.2 Running Sciconfig Configuration Tool Interactively

When starting the **sciconfig** program, the following output will appear for an unconfigured Adapter card:

sciconfig

Available commands :

```
=====
config          Configure adapter card
identify        Identify Dolphin PCI-SCI adapter(s) in the system
read-config     Read configuration parameters from Flash
show-cards      Display adapter cards in the system
get-link-frequency  Get SCI link frequency
set-link-frequency  Set SCI link frequency
get-prefetch-mem-size  Get adapter card Prefetch space memory size.
set-prefetch-mem-size  Set adapter card Prefetch space memory size.
get-nonprefetch-mem-size  Get adapter card Non-Prefetch space memory size.
get-topology-type  Get adapter card topology type.
set-topology-type  Set adapter card topology type.
help            This command
q              Quit program
=====
```

```
Number of valid configured adapter cards      : 0
Number of unconfigured adapter cards          : 1
```

```
-----
Card Number          : 1
Adapter Number       : --
NodeId               : --
Serial Number        : 202
Adapter type         : D330
Status               : Unconfigured
-----
```

2.2.1 Help Command

Sciconfig card 1 > *help*

Available commands :

```
=====
config          Configure adapter card
identify        Identify Dolphin PCI-SCI adapter(s) in the system
read-config     Read configuration parameters from Flash
show-cards      Display adapter cards in the system
get-link-frequency  Get SCI link frequency
set-link-frequency Set SCI link frequency
get-prefetch-mem-size  Get adapter card Prefetch space memory size.
set-prefetch-mem-size  Set adapter card Prefetch space memory size.
get-nonprefetch-mem-size Get adapter card Non-Prefetch space memory size.
get-topology-type  Get adapter card topology type.
set-topology-type  Set adapter card topology type.
help            This command
q              Quit program
=====
```

2.2.2 Config Command

To configure the adapter card, run the '*config*' command.

Sciconfig card 1 > *config*

Adapter Number (0 - 2) : 0

Local NodeId (4 - 1020) : 4

Configuration was successful.

Card Number	: 1
Adapter Number	: 0
Serial Number	: 202
NodeId	: 4
Max. outstanding SCI transactions	: 16
Adapter type	: D330
SCI Link frequency	: 166 MHz
Non-prefetch space mem size	: 16 MB
Prefetch space mem size	: 64 MB
Topology autodetect	: Enabled
Topology type	: Ring/Switch
Status	: Configured

Sciconfig card 1 >

Sciconfig card 1 >*quit*

The driver will automatically be reloaded when you exit the *sciconfig* utility program. The configured values has taken effect.

NOTE:

If an error message occurs when you exit the *sciconfig* program, you have to reboot the machine to ensure correct operation.

2.2.3 Adapter Status

To verify that the adapter configuration is written to the adapter card, use the “**read-config**” command.

Sciconfig card 1 > *read-config*

```

Card Number : 1
Adapter Number : 0
Serial Number : 202
NodeId : 4
Max. outstanding SCI transactions : 16
Adapter type : D330
SCI Link frequency : 166 MHz
Non-prefetch space mem size : 16 MB
Prefetch space mem size : 64 MB
Topology autodetect : Enabled
Topology type : Ring/Switch
Status : Configured
  
```

The “**show-cards**” command list the status information for each adapter in the machine.

Sciconfig card 1 > *show-cards*

```

Number of valid configured adapter cards : 1
Number of unconfigured adapter cards : 0
  
```

```

-----
Card Number : 1
Adapter Number : 0
Serial Number : 202
NodeId : 4
Max. outstanding SCI transactions : 16
Adapter type : D330
SCI Link frequency : 166 MHz
Non-prefetch space mem size : 16 MB
Prefetch space mem size : 64 MB
Topology autodetect : Enabled
Topology type : Ring/Switch
Status : Configured
  
```

The software installation procedure for the node is now complete and the PCI-SCI adapter card is fully configured to run the utilities and programs within the software package. You must go through the same installation procedure for each node in the system.

2.2.4 Get Link Frequency

This command gets the SCI Link frequency on selected SCI port.

```
Sciconfig card 1 >get-link-frequency
SCI Link frequency      : 166 MHz
```

2.2.5 Set Link Frequency

This command sets the SCI Link frequency on selected SCI Link port. If the adapter card has more than one SCI link, it is necessary to configure each SCI link independently.

```
Sciconfig card 1 >set-link-frequency
Select SCI Link port number: [ 0 - 1 ] : 0
```

1. SCI link Frequency: 100 MHz (default on D320/D321/D323)
2. SCI link Frequency: 166 MHz (default on D33x)
3. SCI link Frequency: 83 MHz (test mode)
4. SCI link Frequency: 125 MHz (test mode)
5. SCI link Frequency: 200 MHz (test mode)
6. SCI link Frequency: 250 MHz (test mode)

```
Select SCI link frequency: [ 1 - 6 ] : 2
SCI Link frequency for card number 1: 166 Mhz
Configuration of the link frequency was successful.
```

2.2.6 Get Non-Prefetch Memory Space Size

This command gets the non-prefetch memory size allocated to the adapter card.

```
Sciconfig card 1 >get-non-prefetch-mem-size
Non-Prefetch space mem size      : 16 MB
```

2.2.7 Get Prefetch Memory Space Size

This command gets the prefetch memory size allocated to the adapter card.

```
Sciconfig card 1 >get-prefetch-mem-size
Prefetch space mem size          : 16 MB
```

2.2.8 Set Prefetch Memory Space Size

This command sets the prefetch memory space size.

NOTE:

On some systems there might be problems if you allocate too large prefetch memory size. If the selected prefetch memory size is 1 GB, the machine might not boot. It's not recommended to select 1 GB unless you are sure that the system can handle large prefetch memory sizes. If large prefetch memory size is required on all the adapter cards in your system, please make sure that one adapter card is working properly with the large prefetch memory size before you continue.

Sciconfig card 1 *>set-prefetch-mem-size*

1. Prefetch memory size: 16 MB
2. Prefetch memory size: 32 MB
3. Prefetch memory size: 64 MB
4. Prefetch memory size: 128 MB
5. Prefetch memory size: 256 MB
6. Prefetch memory size: 512 MB
7. Prefetch memory size: 1 GB

Select Prefetch space memory size: [1 - 7] : 2

Selected prefetch space memory size for card number 1: 32 MB

A reboot of the machine is required to make the changes take effect.

2.2.9 Get Topology Type

This command gets the topology type.

Sciconfig card 1 *>get-topology-type*

Topology autodetect : Enabled
Topology type : Ring/Switch

2.2.10 Set Topology Type

This command sets the topology type and should only be used in special cases. The **set-topology-type** should be used only when

- i) the D335 or D339 adapter card (2D-topology) are used in an SCI ring/switch configuration.
- i) the D330 or D333 adapter card are used in a 2D-mesh topology.

The default value for the adapter cards are **topology autodetect**. 2D-adapter cards (D335/D339) are automatically configured to “2D-mesh” topology and 1D-adapter cards (D330/D333) are automatically configured to “ring/switch” topology.

Sciconfig card 1 >*set-topology-type*

1. Enable topology autodetect (default)
2. Set ring/switch topology routing
3. Set 2D-Mesh topology routing

Select topology routing: [1 - 3] : 1

The selected topology is configured successfully.

NOTE:

A reboot of the machine is required to make the changes take effect.

2.3 Running Sciconfig In Command Line Mode

The *sciconfig* program can also be used in command line mode. With the command line mode, it is possible to configure an adapter card without entering interactive configuration mode. Hence, it can be used in scripts etc.

2.3.1 Help Command

The *sciconfig -h* is the help command when used in command line mode.

```
>sciconfig -h
```

Usage of sciconfig

```
sciconfig -c <cardno> -a <adapterno> -n <nodeid> [-v]
sciconfig -h
sciconfig -l          [ -v ]
sciconfig -ga        [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig -gn        [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig -gst       [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig -gsn       [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig -glf       [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig -gnpms     [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig -gpms      [ -c <cardno > ] [ -a <adapterno> ] [ -v ]
sciconfig            : Enter interactive mode
-c <cardno>          : Select adapter card
-a <adapterno>       : Set adapter number
-n <nodeid>          : Set nodeId
-v                  : Verbose output
-h                  : This helpscreen
-l                  : List adapter status
-ga                 : Get adapter number
-gn                 : Get nodeId
-gst                : Get maximum number of outstanding SCI transactions
-gsn                : Get serial number
-gpms               : Get Prefetch space memory size
-spms <mem size>    : Set Prefetch space memory size
-gnpms              : Get Non-Prefetch space memory size
-snpms <mem size>   : Set Non-Prefetch space memory size
-glf                : Get SCI link frequency
-slf <link freq>    : Set SCI link frequency
```

2.3.2 Command Line Examples

All the command examples listed below can be used in verbose mode by specifying **-v**. If the verbose mode **-v** is not specified, only the requested value is returned.

The exit values for **sciconfig** program when used in command line mode are

- 0** : Successful configuration
- 1** : The adapter card is not configured. Could not get the information.
- 2** : Illegal operation. Some of the parameters are not within the legal range.
- 3** : The pcisci driver (IRM) is not running.

2.3.2.1 Configure the Adapter Card

The example below shows how to configure an adapter card using the command line option.

```
>sciconfig -c 1 -a 0 -n 4 -v  
Configuration was successful!
```

This command will configure adapter card 1 to the following values:

```
Adapter number      : 0  
NodeId              : 4
```

The exit value for a valid configured adapter card is 0. If an error occurs during the configuration, the exit value from **sciconfig** is either -1 or -2.

2.3.2.2 Get NodeId

The **-gn** command gets the nodeId for the selected adapter card.

```
>sciconfig -c 1 -gn -v  
Card 1 - NodeId: 4
```

or

```
>sciconfig -c 1 -gn  
4
```

2.3.2.3 Get Adapter Number

The **-ga** command gets the adapter number for the selected adapter card.

```
>sciconfig -c 1 -ga -v  
Card 1 - Adapter number: 0
```

2.3.2.4 Get Number of Max. Outstanding SCI Transactions

The **-gst** command gets the maximum number of outstanding SCI transactions for the selected adapter card.

```
>sciconfig -c 1 -gst -v  
Card 1 - Number of max. outstanding SCI transactions: 16
```

The default number of maximum outstanding SCI transactions is 16 for the D33x adapter card family.

2.3.2.5 Get Serial Number

The **-gsn** command gets the nodeId for the selected adapter card.

```
>sciconfig -c 1 -gsn -v  
Card 1 - Serial number: 202
```

2.3.2.6 Get Non-Prefetch Memory Space Size

The **-gnpms** command gets the non-prefetch memory size allocated to the adapter card.

```
>sciconfig -c 1 -gnpms -v  
Card 1 - Non-Prefetch space size: 16 MB
```

2.3.2.7 Get Prefetch Memory Space Size

The **-gpms** command gets the prefetch memory size allocated to the adapter card.

```
>sciconfig -c 1 -gpms -v  
Card 1 - Prefetch space size: 16 MB
```

2.3.2.8 Set Prefetch Memory Space Size

The **-spms** command sets the prefetch memory space size. The value must be specified in MB.

```
sciconfig -c 1 -spms 16 -v
```

Card 1 - Prefetch space memory size is set to 16 MB.

The machine must be rebooted to make the selected prefetch memory space size valid.

2.3.2.9 Get Adapter Card Status

This command shows the number of adapter cards in the machine and returns the configuration status (configured /unconfigured).

```
>sciconfig -l -v
```

Configured/Unconfigured/Total = 1 0 1

2.3.2.10 Get the SCI Link-Frequency

The **-glf** command gets the link frequency on the SCI link.

```
>sciconfig -c 1 -glf -v
```

Card 1 - Link frequency: 166 MHz

2.3.2.11 Set the SCI Link-Frequency

The **-slf** command sets the link frequency on the SCI link. The default SCI link frequency for D33x adapter cards is 166 MHz.

```
>sciconfig -c 1 -slf 166 -v
```

Card 1 - Link frequency: 166 MHz

2.4 Checklist for the Adapter Configuration

If you are installing the PCI-SCI Adapter card for the first time, make sure that you have done the following:

- ✓ Configured the PCI-SCI adapter cards using unique adapter numbers for each adapter card in the machine.
- ✓ Restarted the computers after the adapter cards are configured. This will make the configuration take effect.

3 Troubleshooting

If the **sciconfig** displays the following error message:

ERROR - The PCI-SCI driver is not running.

To be able to configure the adapter cards, start the PCI-SCI driver

it is necessary to reinstall the driver. For information on installing the software package, refer to the Software Installation Guide.

For further assistance, please visit our local WEB-site

<http://www.dolphinics.com>

or e-mail our technical support group:

pci-support@dolphinics.com