



PA-FC-1G Fibre Channel Port Adapter

This document describes the PA-FC-1G fibre channel port adapter (PA-FC-1G), hereafter referred to as the PA-FC-1G.

Feature Specifications for the PA-FC-1G Fibre Channel Port Adapter

Feature History

| Release | Modification |
|------------|------------------------------|
| 12.2(13)ZD | This feature was introduced. |

Supported Platforms

Cisco 7200 VXR, Cisco 7401ASR

Determining Platform Support Through Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that are supported on specific platforms. To get updated information regarding platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. Under the release section, you can compare releases side by side to display both the features unique to each software release and the features in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

Availability of Cisco IOS Software Images

Platform support for particular Cisco IOS software releases is dependent on the availability of the software images for those platforms. Software images for some platforms may be deferred, delayed, or changed without prior notice. For updated information about platform support and availability of software images for each Cisco IOS software release, refer to the online release notes or, if supported, Cisco Feature Navigator.

Contents

- [Information About the PA-FC-1G Fibre Channel Port Adapter, page 2](#)
- [How to Configure the PA-FC-1G Fibre Channel Port Adapter, page 3](#)
- [Additional References, page 3](#)
- [Command Reference, page 5](#)

Information About the PA-FC-1G Fibre Channel Port Adapter

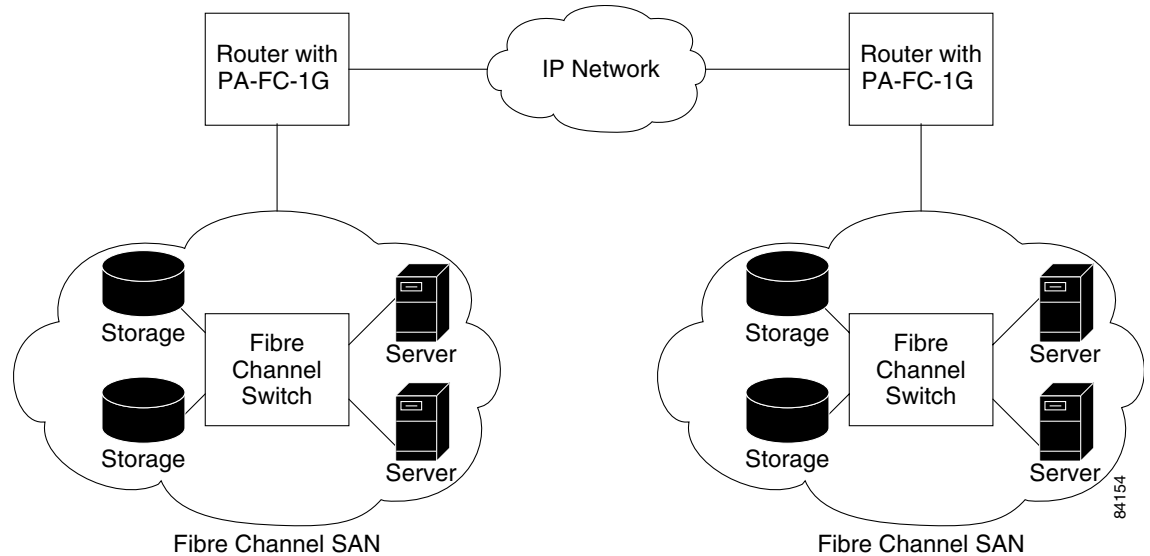
The PA-FC-1G is a single-width, Peripheral Component Interconnect (PCI) port adapter designed to tunnel fibre channel frames through TCP connections, guaranteeing reliable transport of storage area network (SAN) traffic over IP-based WANs.

The PA-FC-1G provides a single one gigabit fibre (1 Gb) channel interface to the external networks and a single PCI interface into 7200 VXR and 7401ASR routers. (See [Figure 1](#).) It offers an alternative technology to carry SAN traffic over long distances without requiring a dedicated fibre channel network and delivers aggregate throughput of up to 800 Mbps.

Fibre Channel Internet Protocol

The Fibre Channel over TCP/IP (FCIP) is a tunneling protocol that connects geographically distributed fibre channel storage area networks (SANs) transparently over local area networks (LANs), metropolitan area networks (MANs), and wide area networks (WANs).

Figure 1 FC SAN Traffic Over an IP Network



The Transmission Control Protocol (TCP) handles congestion control and congestion management, and data error recovery and data loss recovery for FCIP. TCP/IP handles transportation for FCIP, while maintaining fibre channel (FC) services.

How to Configure the PA-FC-1G Fibre Channel Port Adapter

This section contains the following sections:

- [Troubleshooting Tips, page 3](#)

Troubleshooting Tips

For troubleshooting information, see the [PA-FC-1G Fibre Channel Port Adapter Installation and Configuration Guide](#) document.

Additional References

The following sections provide additional references related to the PA-FC-1G Fibre Channel Port Adapter:

- [Related Documents, page 4](#)
- [Standards, page 4](#)
- [MIBs, page 4](#)
- [RFCs, page 5](#)
- [Technical Assistance, page 5](#)

Related Documents

| Related Topic | Document Title |
|---|--|
| Port adapter installation and configuration | PA-FC-1G Fibre Channel Port Adapter Installation and Configuration Guide |
| Port adapter hardware and memory configuration guidelines | Cisco 7200 Series Port Adapter Hardware Configuration Guidelines |
| Hardware installation and maintenance information | Cisco 7200 VXR Installation and Configuration Guide or the Cisco 7200 VXR Quick Start Guide Cisco 7401ASR Installation and Configuration Guide or the Cisco 7401ASR Quick Start Guide |
| Network processing engines or network services engines | Network Processing Engine and Network Services Engine Installation and Configuration |

Standards

| Standards ¹ | Title |
|--|-------|
| No new or modified standards are supported by this feature, and support for existing commands has not been modified by this feature. | — |

1. Not all supported standards are listed.

MIBs

| MIBs ¹ | MIBs Link |
|---|---|
| <ul style="list-style-type: none"> No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature. | To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml |

1. Not all supported MIBs are listed.

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

RFCs

| RFCs ¹ | Title |
|--|-------|
| No new or modified RFCs are supported by this feature. | |

1. Not all supported RFCs are listed.

Technical Assistance

| Description | Link |
|---|---|
| Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips and tools. Registered Cisco.com users can log in from this page to access even more content. | http://www.cisco.com/public/support/tac/home.shtml |

Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications.

- [debug fcpa](#)
- [dest-ip](#)
- [dest-port](#)
- [fc-tunnel](#)
- [inservice](#)
- [interface fcpa](#)
- [ip tos](#)
- [show controllers fcpa](#)
- [show fc-tunnel](#)
- [shut](#)
- [src-ip](#)
- [src-port](#)
- [tcp kad](#)
- [tcp mws](#)

debug fcpa

To enable debugging messages, use the **debug fcpa** command in privileged EXEC mode.

debug fcpa {module} {submodule}

Syntax Description

- Module options
 - all: all modules
 - cli: command line interface - PA-FC-1G interface configuration commands
 - cordova-driver: Gigabit Ethernet driver that interfaces with PA-FC-1G GMAC
 - fcap: fibre channel application - module that maintains the B_port state machine
 - fd: fibre channel frame distributor module that provides services to fcap & checks TCP connection health periodically
 - northstar-driver: driver that interfaces with Northstar ASIC and provides services to fibre channel and TCP
 - sm: session manager, the module responsible for TCP connection management, configuration management, and timer management
 - tcp: TCP library
- Submodule options
 - all: all submodules
 - errors: errors that occurred in the selected module
 - events: specific events information in the selected module
 - extra: not generally required, verbose
 - packets: packets handled by the selected module
 - states: information for the fibre channel, session manager, and TCP states

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(13)ZD | This command was introduced. |

Usage Guidelines

Under heavy traffic, do not enable **debug fcpa cordova-driver packets**, **debug fcpa northstar-driver events**, or **debug fcpa northstar-driver extra**, because these debug commands will degrade performance and make the console unusable.

Examples

The following example shows some possible variations of the **debug fcpa** command:

```
Router# debug fcpa all errors
Router# debug fcpa fd events
Router# debug fcpa fcap events
Router# debug fcpa fcap extra
Router# debug fcpa fd states
```

dest-ip

To specify the destination TCP tunnel IP address, use the **dest-ip** command.

dest-ip *IP address*

| Syntax Description | <i>IP address</i> | IP address of the destination TCP tunnel. |
|--------------------|-------------------|---|
|--------------------|-------------------|---|

| Defaults | No default behavior or values. |
|----------|--------------------------------|
|----------|--------------------------------|

| Command Modes | Privileged config |
|---------------|-------------------|
|---------------|-------------------|

| Command History | Release | Modification |
|-----------------|------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

| Usage Guidelines | Use this command to specify the IP address of the destination TCP tunnel. |
|------------------|---|
|------------------|---|

| Examples | The following example shows the dest-ip command: Router(config-if-fc-tunnel) # dest-ip 10.2.2.2 |
|----------|--|
|----------|--|

dest-port

To set the destination TCP port of the FCIP tunnel, use the **dest-port** command.

dest-port *port*

| | | |
|---------------------------|-------------|--|
| Syntax Description | <i>port</i> | Specifies the destination TCP port of the FCIP tunnel. |
|---------------------------|-------------|--|

| | | |
|-----------------|--------------------------------|--|
| Defaults | No default behavior or values. | |
|-----------------|--------------------------------|--|

| | | |
|----------------------|-------------------|--|
| Command Modes | Privileged config | |
|----------------------|-------------------|--|

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

| | |
|-------------------------|--|
| Usage Guidelines | Use this command to set the destination TCP port of the FCIP tunnel. The source and destination ports on one end of the TCP tunnel must match the destination and source ports on the other end of the TCP tunnel, respectively. |
|-------------------------|--|

| | |
|-----------------|---|
| Examples | The following example shows the dest-port command: |
|-----------------|---|

On one end of the tunnel:

```
Router(config-if-fc-tunnel)# src-port 2000
Router(config-if-fc-tunnel)# dest-port 3000
```

On the other end of the tunnel:

```
Router(config-if-fc-tunnel)# src-port 3000
Router(config-if-fc-tunnel)# dest-port 2000
```

fc-tunnel

To create an fc tunnel, use the **fc-tunnel** command in FCPA interface configuration mode. To disable the fc-tunnel, use the **no** form of this command.

fc-tunnel *name*

no fc-tunnel *name*

| Syntax Description | <i>name</i> | Name of the tunnel. |
|--------------------|-------------|---------------------|
|--------------------|-------------|---------------------|

| Defaults | No default behavior or values. |
|----------|--------------------------------|
|----------|--------------------------------|

| Command Modes | FCPA interface configuration |
|---------------|------------------------------|
|---------------|------------------------------|

| Command History | Release | Modification |
|-----------------|------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

| Usage Guidelines | Use this command to create a TCP tunnel. |
|------------------|--|
|------------------|--|

| Examples | The following example shows the fc-tunnel command: fc-tunnel abc |
|----------|--|
|----------|--|

inservice

To activate the TCP tunnel, use the **inservice** command. To disable the **inservice** command, use the **no** form of the command.

inservice

no inservice

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Privileged config.

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

Usage Guidelines Use this command to activate the TCP tunnel.

Examples The following example shows the **inservice** command:

```
Router(config-if-fc-tunnel)# inservice
```

interface fcpa

To change to FCPA interface configuration mode, use the **interface fcpa** command in privileged configuration mode.

interface fcpa *slot/port*

| Syntax Description | <i>slot/port</i> | Slot or port number. |
|--------------------|------------------|----------------------|
|--------------------|------------------|----------------------|

| Defaults | No default behavior or values. |
|----------|--------------------------------|
|----------|--------------------------------|

| Command Modes | Privileged config |
|---------------|-------------------|
|---------------|-------------------|

| Command History | Release | Modification |
|-----------------|------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

| Usage Guidelines | Use this command to specify the FCPA interface type. |
|------------------|--|
|------------------|--|

| Examples | The following example shows the interface fcpa command on a Cisco 7200 VXR router: Router(config)# interface fcpa 2/0 |
|----------|--|
|----------|--|

ip tos

To configure the type of service for the IP layer of the TCP tunnel, use the **ip tos** command. To disable the **ip tos** command, use the **no** form of the command.

```
ip tos tos
```

```
no ip tos
```

| Syntax | Description |
|------------|------------------|
| <i>tos</i> | Type of service. |

Defaults The default setting is 0.

Command Modes Privileged config

| Command History | Release | Modification |
|-----------------|------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

Usage Guidelines The **ip tos** command is used as part of the overall QoS design to prioritize traffic. For example, to give fibre channel over IP traffic a higher priority than web traffic, set the IP TOS for fibre channel over IP traffic to a number that is lower than the number assigned to IP TOS for web traffic. The lower the number, the higher the priority.

Examples The following example shows the **ip tos** command:

```
Router(config-if-fc-tunnel)# ip tos 0
```

show controllers fcpa

To show the operational states of the FC tunnel, use the **show fcpa** command in EXEC configuration mode.

show controllers fcpa *fc-interface-name*

| | |
|--------------------------|------------------------|
| <i>fc-interface-name</i> | Name of the FC tunnel. |
|--------------------------|------------------------|

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(13)ZD | This command was introduced. |

Examples

The following example shows the **show fc-tunnel** command:

```
Router# show controllers fcpa 3/0
Interface Fcpa3/0
Hardware is Fiber Channel over TCP
NS idb=0x62DF785C ds=0x62DF9904
Counters Info :
```

show fc-tunnel

To show the operational states of the FC tunnel, use the **show fcpa** command in EXEC configuration mode.

```
show fc-tunnel { fcpa | detail | fc-statistics | gmac-statistics | tcp statistics | tcpconn }
```

| Syntax Description | fcpa | Displays fiber channel statistics. |
|--------------------|-----------------|--|
| | detail | Displays detailed statistics. |
| | fc-statistics | Displays Northstar fiber channel statistics. |
| | gmac-statistics | Displays Northstar gmac statistics. |
| | tcp statistics | Displays global TCP statistics per FCPA. |
| | tcpconn | Displays TCP statistics. |

Defaults No default behavior or values.

Command Modes Privileged EXEC

| Command History | Release | Modification |
|-----------------|------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

Examples The following example shows the **show fc-tunnel** command:

```
Router# show fc-tunnel fc-statistics
```

shut

To shut down the PA-FC-1G interface, use the **shut** command. To enable the FCPA interface, use the **no** form of the command.

shut

no shut

Syntax Description This command has no arguments or keywords.

Defaults No default behavior or values.

Command Modes Privileged config

| Command History | Release | Modification |
|-----------------|------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

Usage Guidelines Use the **shut** command to shut down the PA-FC-1G interface.

Examples The following example shows the **shut** command:

```
Router(config-if-fc-tunnel) # shut
```


src-ip

To specify the source TCP tunnel IP address, use the **src-ip** command.

src-ip *ip address*

| | | |
|---------------------------|-------------------|--------------------------------------|
| Syntax Description | <i>IP address</i> | IP address of the source TCP tunnel. |
|---------------------------|-------------------|--------------------------------------|

| | | |
|-----------------|--------------------------------|--|
| Defaults | No default behavior or values. | |
|-----------------|--------------------------------|--|

| | | |
|----------------------|-------------------|--|
| Command Modes | Privileged config | |
|----------------------|-------------------|--|

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

| | | |
|-------------------------|--|--|
| Usage Guidelines | Use this command to specify the IP address of the source TCP tunnel. | |
|-------------------------|--|--|

| | | |
|-----------------|--|--|
| Examples | The following example shows the src-ip command: | |
| | Router(config-if-fc-tunnel)# src-ip 10.1.1.2 | |

src-port

To set the source TCP port of the FCIP tunnel, use the **src-port** command.

src-port *port*

| | | |
|---------------------------|-------------|---|
| Syntax Description | <i>port</i> | Specifies the source TCP port of the FCIP tunnel. |
|---------------------------|-------------|---|

| | |
|-----------------|--------------------------------|
| Defaults | No default behavior or values. |
|-----------------|--------------------------------|

| | |
|----------------------|--------------------|
| Command Modes | Privileged config. |
|----------------------|--------------------|

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

| | |
|-------------------------|---|
| Usage Guidelines | Use this command to set the source TCP port of the FCIP tunnel. The source and destination ports on one end of the TCP tunnel must match the destination and source ports on the other end of the TCP tunnel, respectively. |
|-------------------------|---|

| | |
|-----------------|--|
| Examples | The following example shows the src-port command: |
|-----------------|--|

On one end of the tunnel:

```
Router(config-if-fc-tunnel)# src-port 2000
Router(config-if-fc-tunnel)# dest-port 3000
```

On the other end of the tunnel:

```
Router(config-if-fc-tunnel)# src-port 3000
Router(config-if-fc-tunnel)# dest-port 2000
```

tcp kad

To customize the keepalive timer for the TCP tunnel, use the **tcp kad** command. To disable the **tcp kad** command, use the **no** form of the command.

tcp kad *kad*

no tcp kad

| | | |
|---------------------------|------------|------------------|
| Syntax Description | <i>kad</i> | Keepalive delay. |
|---------------------------|------------|------------------|

Defaults The default setting is 7200 seconds.

Command Modes Privileged config

| Command History | Release | Modification |
|------------------------|----------------|------------------------------|
| | 12.2(13)ZD | This command was introduced. |

Usage Guidelines Use this command to customize the keepalive timer for the TCP tunnel.

Examples The following example shows the **tcp kad** command:

```
Router(config-if-fc-tunnel)# tcp kad 9000
```

tcp mws

To customize the maximum window size for the TCP tunnel based on the delay across the WAN connection, use the **tcp mws** command. To disable the **tcp mws** command, use the **no** form of the command.

tcp mws *mws*

no tcp mws

Syntax Description

| | |
|------------|---|
| <i>mws</i> | Maximum window size for the TCP tunnel. |
|------------|---|

Defaults

The default setting is 32K.

Command Modes

Privileged config

Command History

| Release | Modification |
|------------|------------------------------|
| 12.2(13)ZD | This command was introduced. |

Usage Guidelines

Use this command to customize the maximum window size for the TCP tunnel based on the delay across the WAN connection.

Examples

The following example shows the **tcp mws** command:

```
Router(config-if-fc-tunnel)# tcp mws 64
```