



Cisco 7200-I/O-GE+E and Cisco 7200-I/O-2FE/E Input/Output Controllers

This feature module describes the two new variants of the Cisco 7200 I/O card. The Cisco 7200-I/O-GE+E provides one Gigabit Ethernet port and one Ethernet port. The Cisco 7200-I/O-2FE/E provides two autosensing Fast Ethernet 10/100 Mb ports.

This document includes the following sections:

- Feature Overview
- Supported Platforms
- Supported Standards, MIBs, and RFCs
- Configuration Tasks
- Monitoring and Maintaining the Cisco 7200-I/O GE+E and Cisco 7200-2FE/E
- Configuration Examples
- Command Reference

Feature Overview

The Cisco 7200-I/O-GE+E is an Input/Output controller that provides one Gigabit Ethernet and one Ethernet port. It is equipped with a GBIC receptacle for 1000 megabits per second (Mbps) operation and an RJ-45 receptacle for 10 Mbps operation.

The Cisco 7200-I/O-2FE/E is an Input/Output controller that provides two autosensing Fast Ethernet ports and is equipped with two RJ-45 receptacles for 10/100 Mbps operation.

I/O controllers support the following features:

- Dual EIA/TIA-232 channels for local console and auxiliary ports
- NVRAM for storing the system configuration and environmental monitoring logs
- Two PC Card slots that hold Flash disks or Flash memory cards for storing the default Cisco IOS software image
- Flash memory for storing the boot helper image
- Two environmental sensors for monitoring the cooling air as it enters and leaves the chassis

Benefits

The Cisco 7200-I/O-GE+E and Cisco 7200-I/O-2FE/E provide a cost effective method for introducing Gigabit Ethernet connectivity or dual Fast Ethernet connectivity for WAN aggregation type services, without having to sacrifice a port adapter slot.

Restrictions

- The Cisco 7200 2 FE/E does not operate with the following Network Processor Engines: NPE-100, NPE-150, NPE-175, or NPE-200.
- The Cisco 7200-I/O-GE+E does not operate with the following Network Processor Engines: NPE-100, NPE-150, NPE-175, NPE-200, or NPE-225.
- The Gigabit Ethernet interface on the Cisco 7200-I/O-GE+E operates at full duplex and cannot be configured for half-duplex mode.
- The Ethernet interface on the Cisco 7200-I/O-GE+E operates at a fixed speed of 10 Mbps.

Related Features and Technologies

- C7200-I/O-FE-MII(=)—I/O controller with the Fast Ethernet port equipped with a single MII receptacle
- C7200-I/O-FE(=)—I/O controller with the Fast Ethernet port that is equipped with an MII receptacle and an RJ-45 receptacle
- uBR7200-I/O(=)—I/O controller model with no Ethernet ports
- uBR7200-I/O-FE(=)—I/O controller with the MII and RJ-45 Fast Ethernet receptacles

Related Documents

- *Input/Output Controller Replacement Instructions*

Supported Platforms

- Cisco 7200 VXR routers

Supported Standards, MIBs, and RFCs

Standards

No new or modified standards are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

For descriptions of supported MIBs and how to use MIBs, see the Cisco MIB web site on CCO at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

RFCs

No new or modified RFCs are supported by this feature.

Configuration Tasks

See the following sections for configuration tasks for the Cisco 7200-I/O-GE+E and the Cisco 7200-I/O-2FE/E feature. Each task in the list indicates if the task is optional or required.

- Configuring the Interface Transmission Mode (Optional)
- Configuring Interface Speed (Optional)
- Configuring the Ethernet, Fast Ethernet, and Gigabit Ethernet Interfaces (Required)
- Verifying the Configuration (Optional)



Note

For Cisco 7200 VXR routers used as router shelves in AS5800 Universal Access Servers, use the *router-shelf/slot/port* command format for all interface commands.

Configuring the Interface Transmission Mode

This section describes the procedure for configuring the interface transmission mode. The Fast Ethernet and Ethernet interfaces on the Cisco 7200-I/O-2FE/E are duplex auto by default.

	Command	Purpose
Step 1	Router(config)# configure terminal	Enters configuration mode and specifies that the console terminal is the source of the configuration subcommands.
Step 2	Router(config-if)# interface fastethernet 0/0¹	Selects the Fast Ethernet interface to configure.
Step 3	Router(config-if)# duplex full	Changes the Fast Ethernet interface port transmission mode to full duplex from autonegotiation.

1. Use the **interface fastethernet** *router-shelf/slot/port* command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.

Configuring Interface Speed

To configure the two autosensing Ethernet/Fast Ethernet interfaces on the C7200-I/O-2FE/E, use the **speed** command. The default interface speed is auto. The following procedure configures the C7200-I/O-2FE/E for a speed of 10 Mbps:

	Command	Purpose
Step 1	Router# configure terminal	Enters configuration mode and specifies that the console terminal is the source of the configuration subcommands.
Step 2	Router# interface ethernet 0/1 ¹	Selects the Ethernet interface to configure.
	Router# interface fastethernet 0/0 ²	Selects the Fast Ethernet interface to configure.
Step 3	Router# speed 10	Sets the Ethernet or FastEthernet interface speed to 10 Mbps.

1. Use the **interface ethernet *router-shelf/slot/port*** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.
2. Use the **interface fastethernet *router-shelf/slot/port*** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.

Configuring the Ethernet, Fast Ethernet, and Gigabit Ethernet Interfaces

The following procedure explains a basic configuration for an Ethernet, Fast Ethernet, or Gigabit Ethernet interface on a C7200-I/O-GE+E or a C7200-I/O-2FE/E.

	Command	Purpose
Step 1	Router# configure terminal	Enters configuration mode and specifies that the console terminal is the source of the configuration subcommands.
Step 2	Router(config)# interface gigabitethernet 0/0 ¹	Selects the Gigabit Ethernet interface on the I/O controller in slot 0 in port adapter slot 0 to configure.
	Router(config)# interface ethernet 0/1 ²	Selects the Ethernet interface on the I/O controller in slot 0 in port adapter slot 1 to configure.
	Router(config)# interface fastethernet 0/1 ³	Selects the Fast Ethernet interface on the I/O controller in slot 0 in port adapter slot 2 to configure.
Step 3	Router(config-if) # ip address 10.1.1.10 255.255.255.0	Assigns an IP address and subnet mask to the interface (if IP routing is enabled on the system).
Step 4	Router(config-if) # duplex auto	Changes the Fast Ethernet interface port transmission mode to autonegotiation.
Step 5	Router#(config-if) # Ctrl-Z Router#	Exits configuration mode and returns to the EXEC command interpreter prompt.

1. Use the **interface gigabitethernet *router-shelf/slot/port*** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.
2. Use the **interface ethernet *router-shelf/slot/port*** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.

3. Use the **interface fastethernet router-shelf/slot/port** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.

Verifying the Configuration

Use the **show interfaces {ethernet | fastethernet | gigabitethernet}** command to verify that the interface and line protocol are in the correct state (up) and the transmission mode is configured on the interface. You can configure full, half, or auto transmission mode for Ethernet and Fast Ethernet interfaces. You can configure forced transmission mode for Gigabit Ethernet interfaces. The following example displays sample output for a **show interfaces gigabitethernet** command.

```
Router# show interfaces gigabitethernet 0/0
GigabitEthernet0/0 is up, line protocol is up
  Hardware is 82543 (Livengood), address is 00d0.ffb6.4c00 (bia 00d0.ffb6.4c00)
  Internet address is 10.1.1.0/0
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex mode, link type is autonegotiation, media type is SX
  output flow-control is on, input flow-control is on
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input 00:00:04, output 00:00:03, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy:fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    2252 packets input, 135120 bytes, 0 no buffer
    Received 2252 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
  2631 packets output, 268395 bytes, 0 underruns
  0 output errors, 0 collisions, 2 interface resets
  0 babbles, 0 late collision, 0 deferred
  0 lost carrier, 0 no carrier, 0 pause output
  0 output buffer failures, 0 output buffers swapped out
```

Monitoring and Maintaining the Cisco 7200-I/O GE+E and Cisco 7200-2FE/E

Use the following commands to monitor and maintain the Gigabit Ethernet or Ethernet interfaces on the Cisco 7200-I/O-GE+E:

Command	Purpose
Router# show controllers ethernet	Displays hardware and software information about the Ethernet interface.
Router# show interfaces ethernet slot/port ¹	Displays information about the Ethernet interface on the router.
Router# show controllers gigabitethernet	Displays hardware and software information about the Gigabit Ethernet interface.
Router# show interfaces gigabitethernet slot/port ²	Displays information about a Gigabit Ethernet interface on the router.

1. Use the **show interfaces ethernet router-shelf/slot/port** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.
2. Use the **interface gigabitethernet router-shelf/slot/port** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.

Use the following commands to monitor and maintain the Fast Ethernet or Ethernet interfaces on the Cisco 7200-2FE/E:

Command	Purpose
Router# show controllers ethernet	Displays hardware and software information about the Ethernet interface.
Router# show interfaces ethernet slot/port ¹	Displays information about an Ethernet interface on the router.
Router# show controllers fastethernet	Displays hardware and software information about the Fast Ethernet interfaces.
Router# show interfaces fastethernet	Displays information about a Fast Ethernet interface on the router.

1. Use the **show interfaces ethernet router-shelf/slot/port** command for a Cisco 7200 VXR used as a router shelf in an AS5800 Universal Access Server.

Configuration Examples

This section provides the following configuration examples:

- Configuring the Gigabit Ethernet Interface on the Cisco 7200-I/O-GE+E
- Configuring Autonegotiation on the Cisco 7200-I/O-2FE/E

Configuring the Gigabit Ethernet Interface on the Cisco 7200-I/O-GE+E

The following example configures the Gigabit Ethernet interface on the Cisco 7200-I/O-GE+E. The following commands are configured on slot 0, port 0.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface gigabitethernet 0/0
Router(config-if)# ip address 1.1.1.10 255.255.255.252
Router(config-if)# negotiation auto
Router(config-if)# end
```

Configuring Autonegotiation on the Cisco 7200-I/O-2FE/E

The following example configures the Fast Ethernet interface on the Cisco 7200-I/O-2FE/E for fully enabled autonegotiation:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# interface fastethernet 0/0
Router(config-if)# duplex auto
Router(config-if)# speed auto
```

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.1 command reference publications.

- **interface gigabitethernet**
- **negotiation**
- **show controllers gigabitethernet**
- **show interfaces gigabitethernet**

interface gigabitethernet

To configure a Gigabit Ethernet interface and enter interface configuration mode, use the **interface gigabitethernet slot/port** global configuration command.

interface gigabitethernet slot/port

To configure a Gigabit Ethernet interface and enter interface configuration mode on a Cisco 7200 VXR router used as a router-shelf in an AS5800 Universal Access Server, use the **interface gigabitethernet router-shelf/slot/port** global configuration command.

interface gigabitethernet router-shelf/slot/port

Syntax Description

<i>shelf</i>	Router shelf in a Cisco AS5800 Universal Access Server.
<i>slot</i>	Slot number of the interface.
<i>port</i>	Port number on the interface.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.0(7)S, 12.0(6)T	This command was introduced.
12.1(3a)E	Support for the Cisco 7200-I/O-GE+E controller was introduced.
12.0(14)S	Support for the Cisco 7200-I/O-GE+E controller was introduced on the S train.

Usage Guidelines

Many features are enabled on a per-interface basis. The **interface gigabitethernet** interface configuration command modifies the operation of the Gigabit Ethernet interface on the Cisco 7200-I/O-GE+E.

Examples

```
Router(config)# interface gigabitethernet 0/0
Router(config-if)#
```

Related Commands

Command	Description
show interface gigabitethernet slot/port	Displays information about the Gigabit Ethernet interface.

negotiation

On the Gigabit Ethernet port of the Cisco 7200-I/O-GE+E to configure speed, duplex, and flow control, use the **negotiation {forced | auto}** interface configuration command. Use the **no negotiation auto** command to disable automatic negotiation.

negotiation {forced | auto}

Syntax Description	forced	The Gigabit Ethernet interface is 1000/full-duplex only and flow control is disabled.
	auto	The autonegotiation protocol configures the speed, duplex, and automatic flow-control of the Gigabit Ethernet interface.

Defaults Negotiation auto

Command Modes Interface configuration

Command History	Release	Modification
	11.1 CC	This command was introduced.
	12.0(7)S, 12.0(6)T	The forced keyword was included.
	12.1(3a)E	Support for the Cisco 7200-I/O-GE+E controller was introduced.
	12.0(14)S	Support for the Cisco 7200-I/O-GE+E controller was introduced on the S train.

Usage Guidelines The **negotiation** command is applicable only to the Gigabit Ethernet interface of the Cisco 7200-I/O-GE+E. The **negotiation auto** command is used instead of the **duplex** and **speed** commands (which are used on Ethernet and Fast Ethernet interfaces) to automatically configure the duplex and speed settings of the interfaces. The **negotiation forced** command is used to configure the Gigabit Ethernet interface to be 1000/full-duplex only and to disable flow-control. The Gigabit Ethernet interface of the Cisco 7200-I/O-GE+E is restricted to 1000 Mbps/full duplex only. Autonegotiation only negotiates to these values.

Examples The following example configures the Gigabit Ethernet interface of the Cisco 7200-I/O-GE +E to auto negotiate:

```
configure terminal
interface gigabitethernet 0/0
negotiation auto
```

Related Commands

Command	Description
show interface gigabitethernet	This command displays status information about the Gigabit Ethernet interface.

show controllers gigabitethernet

To display initialization block information, transmit ring, receive ring, and errors for the interface controllers about the Gigabit Ethernet interface of the Cisco 7200-I/O-GE+E, use the **show controllers gigabitethernet** privileged EXEC command.

```
show controllers gigabitethernet slot/port
```

Syntax Description

<i>slot</i>	Slot number on the interface.
<i>port</i>	Port number on the interface.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(3a)E	This command was introduced.
12.0(14)S	Support for the Cisco 7200-I/O-GE+E controller was introduced on the S train.

Usage Guidelines

This command is used on the Cisco 7200-I/O-GE+E to display hardware and software information about the Gigabit Ethernet interface. The I/O controller is always found in slot 0.

Examples

The following example displays sample output of the **show controllers gigabitethernet** command:

```

Router# show controllers gigabitethernet 0/0
Interface GigabitEthernet0/0 (idb 0x627D8344)
Hardware is i82543 (Livengood) A1
network connection mode is AUTO
network link is up
loopback type is none
SERDES is enabled (TBI mode), GBIC is enabled
GBIC type is 1000BaseSX
idb->lc_ip_turbo_fs=0x604A82B0, ip_routecache=0x1(dfs=0/mdfs=0), max_mtu=1524
i82543_ds=0x627DA094, registers=0x3C100000, curr_intr=0
rx cache size=2000, rx cache end=1744, rx_nobuffer=0
i82543 MAC registers:
CTRL =0x0ACC0004, STATUS=0x00000FAB, CTRL_X=0x000048E0, IMS =0x00000096
RCTL =0x0042803A, RDBAL =0x2000E000, RDBAH =0x00000000, RDLEN =0x00001000
RDH =0x000000CB, RDT =0x000000CA, RDTR =0x00000000
TCTL =0x000400FA, TDBAL =0x20010000, TDBAH =0x00000000, TDLEN =0x00001000
TDH =0x00000057, TDT =0x00000057, TIPG =0x00600806
ETT =0x00000000, TXDMAC=0x00000001
TXCW =0xC00001A0, RXCW =0xDC004120, FCRTX =0x0000AFF0, FCRTL =0x80001200
FCAH =0x00000100, FCAL =0x00C28001, FCT =0x00008808, FCTTV =0x00000080
RDFH =0x00000BFA, RDFT =0x00000BFA, RDFPC =0x00000000
TDFH =0x00001EBA, TDFT =0x00001EBA, TDFPC =0x00000000
RX is normal, enabled TX is normal, enabled
Device status = full-duplex, link up
AN status = done(RF:0 , PAUSE:2 ), bit sync OK, rx idle stream, rx invalid
symbols, rx idle char
GBIC registers:
Register 0x00: 01 00 01 00 00 00 01 00
Register 0x08: 00 00 00 00 0D 00 00 00
Register 0x10: 32 1E 00 00 4D 65 74 68
Register 0x18: 6F 64 65 20 45 6C 65 63
Register 0x20: 2E 20 20 20 00 00 00 00
Register 0x28: 4D 47 42 43 2D 32 30 2D
Register 0x30: 34 2D 31 2D 53 20 20 20
Register 0x38: 31 30 30 30 00 00 00 55
Register 0x40: 00 0A 00 00 41 4A 42 48
Register 0x48: 47 30 36 30 20 20 20 20
Register 0x50: 20 20 20 20 30 30 30 33
Register 0x58: 32 30 20 20 00 00 00 61
PartNumber:MGBC-20-4-1-S
PartRev:G
SerialNo:AJBHG060
Options: 0
Length(9um/50um/62.5um):000/500/300
Date Code:000320
Gigabit Ethernet Codes: 1
PCI configuration registers:
bus_no=0, device_no=8
DeviceID=0x1001, VendorID=0x8086, Command=0x0156, Status=0x0230
Class=0x02/0x00/0x00, Revision=0x01, LatencyTimer=0xFC, CacheLineSize=0x20
BaseAddr0=0x48100000, BaseAddr1=0x00000000, MaxLat=0x00, MinGnt=0xFF
SubsysDeviceID=0x1001, SubsysVendorID=0x8086
Cap_Ptr=0x000000DC Retry/TRDY Timeout=0x00000000
PMC=0x00220001 PMCSR=0x00000000
I82543 Internal Driver Variables:
rxring(256)=0x2000E000, shadow=0x627DA3F0, head=203, rx_buf_size=512
txring(256)=0x20010000, shadow=0x627DA81C, head=87, tail=87
chip_state=2, pci_rev=1
tx_count=0, tx_limited=0
rx_overnrun=0, rx_seq=0, rx_no_enp=0, rx_discard=0
throttled=0, enabled=0, disabled=0
reset=17(init=1, check=0, restart=3, pci=0), auto_restart=18

```

```

link_reset=0, tx_carrier_loss=1, fatal_tx_err=0
isl_err=0, wait_for_last_tdt=0
HW addr filter:0x627DB048, ISL disabled, Promiscuous mode on
Entry= 0: Addr=0000.C000.4000
(All other entries are empty)
i82543 Statistics
CRC error          0          Symbol error      7
Missed Packets    0          Single Collision  0
Excessive Coll    0          Multiple Coll     0
Late Coll         0          Collision          0
Defer             0          Receive Length    0
Sequence Error    0          XON RX            0
XON TX           0          XOFF RX           0
OFF TX           0          FC RX Unsupport  0
Packet RX (64)   11510       Packet RX (127)  17488
Packet RX (255)  1176        Packet RX (511)  7941
Packet RX (1023) 738         Packet RX (1522) 18
Good Packet RX   38871       Broadcast RX      0
Multicast RX     0          Good Packet TX    5208
Good Octets RX.H 0          Good Octets RX.L 5579526
Good Octets TX.H 0          Good Octets TX.L 513145
RX No Buff       0          RX Undersize      0
RX Fragment      0          RX Oversize       0
RX Octets High   0          RX Octets Low     5579526
TX Octets High   0          TX Octets Low     513145
TX Packet        5208       RX Packet         38871
TX Broadcast     1796       TX Multicast      330
Packet TX (64)   1795       Packet TX (127)  3110
Packet TX (255)  0          Packet TX (511)  300
Packet TX (1023) 3          Packet TX (1522) 0
TX Underruns     0          TX No CSR         0
RX Error Count   0          RX DMA Underruns 0
RX Carrier Ext   0
TCP Segmentation 0          TCP Seg Failed    0

```

Related Commands

Command	Description
show controllers ethernet	Displays software and hardware information about an Ethernet interface.
show controllers fastethernet	Displays software and hardware information about a Fast Ethernet interface.

show interfaces gigabitethernet

To check the status and configuration settings of the Gigabit Ethernet interface of the Cisco 7200-I/O-GE+E, use the **show interfaces gigabitethernet** privileged EXEC command.

show interfaces gigabitethernet *slot/port*

Syntax Description

<i>slot</i>	Slot number on the interface.
<i>port</i>	Port number on the interface.

Defaults

No default behavior or values.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(3a)E	This command was introduced.
12.0(14)S	Support for the Cisco 7200-I/O-GE+E controller was introduced on the S train.

Usage Guidelines

This command is used on the Cisco 7200-I/O-GE+E to display the configuration status of the Gigabit Ethernet interface. Slot 0 is always reserved for the Gigabit Ethernet port on the I/O controller

Examples

The following example displays sample output of the **show interfaces gigabitethernet** command:

```
Router# show interfaces gigabitethernet 0/0
GigabitEthernet0/0 is up, line protocol is up
  Hardware is 82543 (Livengood), address is 00d0.ffb6.4c00 (bia 00d0.ffb6.4c00)
  Internet address is 11.1.1.3/8
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex mode, link type is autonegotiation, media type is SX
  output flow-control is on, input flow-control is on
  ARP type:ARPA, ARP Timeout 04:00:00
  Last input 00:00:04, output 00:00:03, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy:fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    2252 packets input, 135120 bytes, 0 no buffer
    Received 2252 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog, 0 multicast, 0 pause input
    0 input packets with dribble condition detected
  2631 packets output, 268395 bytes, 0 underruns
  0 output errors, 0 collisions, 2 interface resets
  0 babbles, 0 late collision, 0 deferred
  0 lost carrier, 0 no carrier, 0 pause output
  0 output buffer failures, 0 output buffers swapped out
```

Related Commands

Command	Description
show controllers gigabitethernet	This command displays initialization block information, transmit ring, receive ring, and errors for the interface controllers about a Gigabit Ethernet interface.

■ show interfaces gigabitethernet