CHAPTER 6

Configuring Ethernet and Fast Ethernet Software

This chapter describes the procedure used to configure the Fast Ethernet ports on the supervisor engine module, the Fast Ethernet switching module, and the Ethernet switching module using the command line interface.

Note For definitions of all commands discussed in this chapter, refer to the "Command Reference" chapter of the publication *Catalyst 5000 Series Configuration Guide and Command Reference*.

Default Configuration

The features you can customize have default values that will most likely suit your environment and probably need not be changed. The default values of these features are set as follows:

- No port name is configured for any port.
- All ports are set to normal priority level.
- All 10/100 Mbps Fast Ethernet Switching Module ports are set to auto.
- All 10 Mbps and 100 Mbps Ethernet and Fast Ethernet module ports are set to half duplex.

Customizing the Configuration

As the default configuration, all Ethernet ports are enabled. To configure the Ethernet ports, complete the tasks in the following sections:

- Setting the Port Name
- Setting the Port Priority Level
- Setting the Port Speed (for the 10/100 Mbps Fast Ethernet Switching module only)
- Setting the Port Transmission Type

See the end of this chapter for switch configuration examples.

Setting the Port Name

Assign a name to each port. To set a port name, perform the following steps in privileged mode:

Task	Command
Configure a name for a port. Figure 6-1 shows an example of the set port name command.	<pre>set port name mod_num/port_num [name_string]</pre>
Verify that the port name is correct. Figure 6-2 shows a sample display of the show port command. Port names are listed in the Name column.	<pre>show port mod_num/port_num</pre>

Figure 6-1 set port name Command Example

Console> (enable) set port name 1/1 Router Connection Port 1/1 name set. Console> (enable) set port name 1/2 Server 1 Port 1/2 name set.

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Port	ole> (enable Name	e) snow por	t Status	Vla	an Level	Duplex	Speed	Туре
1/1 1/2 2/1 2/2 2/3 2/4	Router Con Server 1	nection 1	ready ready ready disabled connect connect	2 1 10 10 10 10	high high norma norma norma norma	half half 1 half 1 half 1 half 1 half 1 half	100 100 10 10 10 10	100BaseTX 100BaseTX 10BaseT 10BaseT 10BaseT 10BaseT
2/23	0	0		0	0		0	0
2/24	0	0		0	0		0	0
Port	Align-Err	FCS-Err	Xmit-Eri	2	Rcv-Err			
 1 / 1					0			
1/2	0	0		0	0			
2/1	0	14		0	0			
$\frac{2}{2}$	0	0		0	0			
2/3	0	0		0	0			
2/4	0	0		0	0			
2/23	0	0		0	0			
2/24	0	0		0	0			
Port	Single-Col	Multi-Coll	Late-Col	Ll	Excess-Col	Carri-Ser	ns Gia	nts
1/1	0	0		0	0		0	1
1/2	0	0		0	0		0	_
2/1	0	0		0	0		0	0
2/2	0	0		0	0		0	0
2/3	0	0		0	0		0	0
2/4	0	0		0	0		0	0
•	<u>^</u>	<u>^</u>		0	•		0	ĉ
2/23	0	0		U	0		0	U
2/24	0	0		0	0		U	U

Figure 6-2 show port Command Display Sample

```
Last-Time-Cleared
------
Thu Jun 8 1995, 07:58:06
Console> (enable)
```

Setting the Port Priority Level

Configure the priority level of each port. When ports request simultaneous access to the switching bus, the Catalyst 5000 series switch uses the port priority level to determine the order in which ports have access to the switching bus. To set the priority level, perform the following steps in privileged mode:

Task	Command
Configure the priority level for each port. Figure 6-3 shows an example of the set port level command.	set port level mod_num/port_num normal high
Verify that the port priority level is correct. Figure 6-2 shows a sample display of the show port command. Port priority levels are listed in the Level column.	<pre>show port mod_num/port_num</pre>

Figure 6-3 set port level Command Example

Console> (enable) **set port level 1/1 high** Port 1/1 level set to high. Console> (enable) **set port level 1/2 high** Port 1/2 level set to high.

Setting the Port Speed

Configure the port speed for the 100BaseTX ports on the 10/100 Mbps Fast Ethernet Switching module if desired. To set the port speed for a port, perform the following steps in privileged mode:

Task	Command
Set the port speed of a port. Figure 6-4 shows an example of the set port speed command.	<pre>set port speed <mod_num port_num=""> <10/100/auto></mod_num></pre>
Verify that the port speed has been set correctly. Figure 6-2 shows a sample display of the show port command.	<pre>show port mod_num/port_num</pre>

Note Interfaces automatically configure themselves to operate at the proper speed and transmission type (simplex or duplex) when you set the port speed of a 10/100 Mbps Fast Ethernet Switching module to **auto**.

Figure 6-4 set port speed Command Example

```
Console> (enable) set port speed
Usage: set port speed <mod_num/port_num> <10 | 100 | auto>
Console> (enable) set port speed 2/1 auto
Port 2/1 speed set to auto-sensing mode.
Console> (enable) set port speed 2/2 10
Port 2/2 speed set to 10 Mbps.
Console> (enable) set port speed 2/3 100
Port 2/3 speed set to 100 Mbps.
```

Setting the Port Transmission Type

Figure 6-5	5	show	port	Con	nmai	nd Ex	ample			
Console> show port 4 a = auto-detect of speed	1									
Port Name	Sta	tus	Vla	n		Leve	l Duplex	Spee	ed Type	
4/1 FDDI A 4/2 FDDI B Ler Port CE-State Conn-State	sta con e Type	ndby nect Neig	1 1 Con	Est	Alm	Cut	half half Lem-Ct	100 100 Le	FDDI FDDI FDDI m-Rej-Ct	Tl-Min
4/1 isolated standby 4/2 isolated active Last-Time-Cleared	A B	ม บ บ	yes yes	9 9	 8 8	 7 7		0	0	61 1340000
Tues Aug 22 1995, 18:28 Console>	51									

Setting the Port Transmission Type

Set the transmission type to full or half duplex for the ports that will be used. To set the transmission type of a port, perform the following steps in privileged mode:

Task	Command
Set the transmission type of a port. Figure 6-6 shows an example of the set port duplex command.	set port duplex mod num/port num full half
Verify that the transmission type has been set correctly. Figure 6-2 shows a sample display of the show port command. The transmission type is listed in the Duplex column.	<pre>show port mod_num/port_num</pre>

Figure 6-6 set port duplex Command Example

Console> (enable) **set port duplex 2/1 half** Port 2/1 set to half-duplex. Console> (enable) **set port duplex 2/2 half** Port 2/2 set to half-duplex.

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Single Switch Configuration Example

A simple Catalyst 5000 series switch configure example is shown in Figure 6-7. The configuration shows a case that includes the following elements:

- 1 full-duplex Fast Ethernet connection to a router
- 13 half-duplex Fast Ethernet connections to servers (1 connection on card 1 and 12 connections on card 2)
- 12 half-duplex 10BaseFL Ethernet connections to servers
- 24 full-duplex 10BaseT Ethernet connections to network devices
- 24 half-duplex 10BaseT Ethernet connections to network devices
- Low traffic priority assignments for all 10BaseT and 10BaseFL connections
- High traffic priority assignments for all Fast Ethernet connections

For simplicity, this example shows all devices on each module as either full duplex or half duplex; however, each port on each module can be independently configured for either fullor half-duplex operation. Also, this example shows a direct correlation between port speed and traffic priority, although the two parameters are completely independent of one another. All ports are in VLAN 1, half duplex, normal priority as a default setting, so no customization is necessary for these parameters.







Port Name Example

The following example illustrates how to establish the port name for the Catalyst 5000 single switch configuration that is shown in Figure 6-7:

```
system1 (enable) set port name 1/1 Router Connection
Port 1/1 name set.
system1 (enable) set port name 1/2 Server 1
Port 1/2 name set.
system1 (enable) set port name 2/1 Server 2
Port 2/1 name set.
system1 (enable) set port name 2/2 Server 3
Port 2/2 name set.
system1 (enable) set port name 2/12 Server 13
Port 2/12 name set.
system1 (enable) set port name 3/1 Nodename 1
Port 3/1 name set.
system1 (enable) set port name 3/1 Nodename 2
Port 3/2 name set.
system1 (enable) set port name 3/1 Nodename 3
Port 3/3 name set.
system1 (enable) set port name 3/12 Nodename 12
Port 3/12 name set.
system1 (enable) set port name 4/1 Nodename 13
Port 4/1 name set.
system1 (enable) set port name 4/2 Nodename 14
Port 4/2 name set.
system1 (enable) set port name 4/3 Nodename 15
Port 4/3 name set.
system1 (enable) set port name 4/24 Nodename 36
Port 4/24 name set.
system1 (enable) set port name 5/1 Nodename 37
Port 5/1 name set.
system1 (enable) set port name 5/2 Nodename 38
Port 5/2 name set.
system1 (enable) set port name 5/3 Nodename 39
```

```
Port 5/3 name set.
.
.
.
system1 (enable) set port name 5/24 Nodename 60
Port 5/24 name set
```

Port Priority Level Example

The following example illustrates how to establish the port priority level for the Catalyst 5000 series switch provided in the single switch configuration example and shown in Figure 6-7:

```
system1 (enable) set port level 1/1 high
Port 1/1 level set to high.
system1 (enable) set port level 1/2 high
Port 1/2 level set to high.
system1 (enable) set port level 2/1 high
Port 2/1 level set to high.
system1 (enable) set port level 2/3 high
Port 2/3 level set to high.
.
.
.
system1 (enable) set port level 2/12 high
Port 2/12 level set to high.
.
.
system1 (enable) set port level 2/12 high
Port 2/12 level set to high.
.
.
.
system1 (enable) set port level 2/12 high
Port 2/12 level set to high.
.
.
.
system1 (enable) set port level 5/24 normal
Port 5/24 level set to normal.
```

Port Transmission Type Example

The following example illustrates how to set the port transmission type (half or full duplex) for the Catalyst 5000 series switch provided in the single switch configuration example and shown in Figure 6-7:

Multiple Switch VLAN Configuration Example

VLAN groups can be set up across multiple Catalyst 5000 series switches as shown in the example in Figure 6-8.



Figure 6-8 Multiple Catalyst 5000 Series VLAN Configuration

The trunks and VLANs for the Catalyst 5000 series switch 1 on the first floor were configured as follows:

System1> (enable) set vtp domain abc VTP: domain abc modified System1> (enable) set vlan 10 VTP: vlan addition successful System1> (enable) set vlan 10 2/1-4 VLAN 10 modified. VLAN 1 modified. VLAN Mod/Ports ____ _____ 10 2/1-4

```
System1> (enable) set vlan 20
VTP: vlan addition successful
System1> (enable) set vlan 20 2/5-24
VLAN 20 modified.
VLAN 1 modified.
VLAN Mod/Ports
____ _
   2/5-24
20
System1> (enable) set trunk 1/2 on
Port 1/2 mode set to on.
System1> (enable)
Mon May 6 1996, 18:22:07 Port 1/2 has become trunk.
System1> (enable) show trunk
Port Mode Status
_____
       _____
                 _____
1/1autonot-trunking1/2ontrunking
4/1-2 off not-trunking
Port
        Vlans allowed
_____
    1-1000
1/1
        1-1000
1/2
4/1-2 1-1000
        Vlans active
Port.
_____
1/1
       1
1/2
       1,10,20
4/1-2 1
System1> (enable) show port
Port Name Status Vlan Level Duplex Speed Type
---- ----- ------ ------ ------ ------
                 notconnect 1normalhalf100100BaseTXconnectedtrunknormalhalf100100BaseTXnotconnect 10normalhalf1010BaseTnotconnect 10normalhalf1010BaseTnotconnect 10normalhalf1010BaseTnotconnect 10normalhalf1010BaseTnotconnect 10normalhalf1010BaseTnotconnect 20normalhalf1010BaseTnotconnect 20normalhalf1010BaseT
1/1
1/2
2/1
2/2
2/3
2/4
2/5
2/6
```

Multiple Switch VLAN Configuration Example

.

.														
2/24 notconnect 20 normal half 10 10BaseT 4/1 notconnect 1 normal half 100 FDDI 4/2 notconnect 1 normal half 100 FDDI 4/2 notconnect 1 normal half 100 FDDI 4/2 notconnect 1 normal half 100 FDDI 100 0 0 0 0 0 0 11 0 0 0 0 0 0 2/2 0 0 0 0 0 0 0 2/3 0 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 1/1 0 0 0 0 0 0 0 0 1/1 0 0 0 0 0 0 0 0 <td>2/23</td> <td></td> <td>noto</td> <td>conne</td> <td>ect 20</td> <td></td> <td></td> <td>noi</td> <td>rmal</td> <td>half</td> <td>10</td> <td>10Ba</td> <td>aseT</td> <td></td>	2/23		noto	conne	ect 20			noi	rmal	half	10	10Ba	aseT	
4/1 notconnect 1 normal half 100 FDDI 4/2 notconnect 1 normal half 100 FDDI Port Align-Err FCS-Err Xmit-Err Rcv-Err 1/1 0 0 0 0 1/2 0 0 0 0 2/2 0 0 0 0 2/3 0 0 0 0 2/22 0 0 0 0 2/23 0 0 0 0 2/24 0 0 0 0 2/24 0 0 0 0 1/1 0 0 0 0 1/1 0 0 0 0 2/24 0 0 0 0 1/1 0 0 0 0 0 1/2 0 0 0 0 0 2/24 0 0 0 0 0 2/22 0 0 0 0	2/24	notconnect 20					noi	rmal	half	10	10Ba	ıseT		
4/2 notconnect 1 normal half 100 FDDI Port Align-Err FCS-Err Xmit-Err Rcv-Err 1/1 0 0 0 0 1/2 0 0 0 0 2/1 0 0 0 0 2/2 0 0 0 0 2/3 0 0 0 0 2/22 0 0 0 0 2/23 0 0 0 0 2/23 0 0 0 0 2/24 0 0 0 0 1/1 0 0 0 0 1/1 0 0 0 0 1/1 0 0 0 0 1/2 0 0 0 0 0 1/1 0 0 0 0 0 2/21 0 0 0 0 0 2/21 0 0 0 0 0 <t< td=""><td>4/1</td><td colspan="5">notconnect 1</td><td></td><td>noi</td><td>rmal</td><td>half</td><td>100</td><td>FDDI</td><td>-</td><td></td></t<>	4/1	notconnect 1						noi	rmal	half	100	FDDI	-	
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Port Align-Err FCS-Err Xmit-Err Rcv-Err 1/1 0 0 0 0 1/2 0 0 0 0 2/1 0 0 0 0 2/1 0 0 0 0 2/2 0 0 0 0 2/3 0 0 0 0 2/4 0 0 0 0 2/23 0 0 0 0 2/23 0 0 0 0 2/24 0 0 0 0 2/24 0 0 0 0 1/1 0 0 0 0 0 1/1 0 0 0 0 0 0 1/1 0 0 0 0 0 0 2/21 0 0 0 0 0 0 2/21														
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1/2	()	0		0			0					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2/1	()	0		0			0					
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2/4 0 0 0 0 2/22 0 0 0 0 2/23 0 0 0 0 2/24 0 0 0 0 Port Single-Col Multi-Coll Late-Coll Excess-Col Carri-Sens Runts Giants 1/1 0 0 0 0 1/1 0 0 0 0 0 1/1 0 0 0 0 0 2/24 0 0 0 0 0 1/1 0 0 0 0 0 1/2 0 0 0 0 0 2/2 0 0 0 0 0 2/3 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 2/23 0 0 0 0	2/3	()	0		0			0					
2/22 0 0 0 0 0 0 2/23 0 0 0 0 0 2/24 0 0 0 0 0 0 Port Single-Col Multi-Coll Late-Coll Excess-Col Carri-Sens Runts Giants 	2/4	()	0		0			0					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$														
2/22 0 0 0 0 0 2/23 0 0 0 0 Port Single-Col Multi-Coll Late-Coll Excess-Col Carri-Sens Runts Giants 														
2/22 0 0 0 0 2/23 0 0 0 0 2/24 0 0 0 0 Port Single-Col Multi-Coll Late-Coll Excess-Col Carri-Sens Runts Giants 1/1 0 0 0 0 1/2 0 0 0 0 2/1 0 0 0 0 2/2 0 0 0 0 0 0 2/3 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 2/23 0 0 0 0 0 0 0 0 2/24 0 0 0 0 0 0														
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1/2 0 0 0 0 0 - 2/1 0 0 0 0 0 0 0 2/2 0 0 0 0 0 0 0 2/3 0 0 0 0 0 0 0 0 2/4 0 0 0 0 0 0 0 0 2/22 0 0 0 0 0 0 0 0 2/23 0 0 0 0 0 0 0 0 2/24 0 0 0 0 0 0 0 0 Ler Port CE-State ConnState Type Neig Con Est Alm Cut Lem-Ct Lem-Rej-Ct Tl-Min			L Multi-Co	511 I 	Late-C	011	Exce	ess-(Col	Carri-S	ens Rui	nts (Jiant	s
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Port CE-State ConnState Type Neig Con Est Alm Cut Lem-Ct Lem-Rej-Ct Tl-Min	1/1 1/2 2/1 2/2 2/3 2/4 2/22 2/23 2/24	0 0 0 0 0 0 0 0 0 0 0 0 0	(((((((((((((((((((511 1 5 5 5 5 5 5 5 5 5 5 5 5 5	Late-C	0 0 0 0 0 0 0 0 0 0 0 0	Exc(Col 	Carri-S 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ens Rui	nts 0 0 0 0 0 0 0 0 0	Jiant	 0 0 0 0 0 0 0
4/1 isolated disabled A U no 9 8 7 0 0 40	 1/1 1/2 2/1 2/2 2/3 2/4 2/22 2/23 2/24	0 0 0 0 0 0 0 0 0 0 0 0	L Multi-Co	511 1 5 5 5 5 5 5 5 5 5 5 5 5 5	Late-C	oll 0 0 0 0 0 0 0 0 0 0 0 0	r		Col 	Carri-S 0 0 0 0 0 0 0 0 0 0 0 0	ens Rui	nts 0 0 0 0 0 0 0 0	Jiant	- - 0 0 0 0 0 0 0 0
4/1 isolated disabled A U no 9 8 7 U 0 40	 1/1 1/2 2/1 2/2 2/3 2/4 2/22 2/23 2/24 Port	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	connState	511 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Neig	oll 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	r Est	ess-0 0 0 0 0 0 0 0 0 0 0 0 0 0	Col Cut	Carri-S 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lem-Re	nts 0 0 0 0 0 0 0 0 0 0 0	Jiant	
4/2 isolated disabled B II no 9 8 7 0 040	 1/1 1/2 2/1 2/2 2/3 2/4 2/22 2/23 2/24 Port	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	connState	511 1 	Neig	oll 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	r Est	255-(0) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cut	Carri-S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lem-Re	nts (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	T1-1	

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Last-Time-Cleared ------Mon May 6 1996, 17:59:45

The trunks and VLANs for the Catalyst 5000 series switch 2 on the second floor were configured as follows. Switch 2 has the default VTP mode (**server**) and the management domain name is **abc**. Switch 2 is automatically configured with a trunk when the trunk is set on switch 1. Switch 2 learns about the VLANs set on switch 1 using VTP.

System2> (enable) Mon May 6 1996, 16:35:47 Port 1/2 has become trunk.

System2> Port	(enable) Mode	show trunk Status					
1/1 1/2	auto auto	not-trun trunking	cing				
Port	Vlans all	lowed					
1/1 1/2	1-1000 1-1000						
Port	Vlans act	cive					
1/1 1/2	1 1,10,20						
System2> Port Name	(enable)	show port Status	Vlan	Level	Duplex	Speed	Туре
1/1 1/2 2/1 2/2 2/3 2/4		notconnect connected notconnect notconnect connected	1 trunk 10 10 10 10	normal normal normal normal normal	half half half half half half	100 100 10 10 10 10	100BaseTX 100BaseTX 10BaseT 10BaseT 10BaseT 10BaseT
2/21 2/22 2/23 2/24		notconnect notconnect notconnect notconnect	20 20 20 20	normal normal normal normal	half half half half	10 10 10 10	10BaseT 10BaseT 10BaseT 10BaseT

Port A	lign-Err	FCS-Err	Xmit-Err	Rcv-Err			
1/1	 0	0	0		-)		
1/2	0	0	0	(C		
2/1	0	0	0	(C		
2/2	0	0	0	(C		
2/3	0	0	0	(C		
2/4	0	0	0	(C		
•							
•							
•							
2/19	0	0	0	0	0	0	0
2/20	0	0	0	0	0	0	0
2/21	0	0	0	0	0	0	0
2/22	0	0	0	0	0	0	0
2/23	0	0	0	0	0	0	0
2/24	0	0	0	0	0	0	0
Last-T:	ime-Clear	ed					
			_				

Multiple Switch VLAN Configuration Example

Mon May 6 1996, 16:04:07

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