

# Configuring Ethernet and Fast Ethernet Software

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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.

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**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*.

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## 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 <b>set port name</b> command.	<b>set port name</b> <i>mod_num/port_num</i> [ <i>name_string</i> ]
Verify that the port name is correct. Figure 6-2 shows a sample display of the <b>show port</b> command. Port names are listed in the Name column.	<b>show port</b> <i>mod_num/port_num</i>

**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.
```

Figure 6-2 show port Command Display Sample

```

Console> (enable) show port
Port Name                               Status  Vlan    Level  Duplex  Speed  Type
-----
1/1 Router Connection                    ready   2       high   half    100    100BaseTX
1/2 Server 1                             ready   1       high   half    100    100BaseTX
2/1                                       ready   10      normal half    10     10BaseT
2/2                                       disabled 10      normal half    10     10BaseT
2/3                                       connect 10      normal half    10     10BaseT
2/4                                       connect 10      normal half    10     10BaseT
.
.
.
2/23                                     0       0       0       0       0       0
2/24                                     0       0       0       0       0       0

Port Align-Err  FCS-Err    Xmit-Err   Rcv-Err
-----
1/1             0          0          0          0
1/2             0          0          0          0
2/1             0          14         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
2/24           0          0          0          0

Port Single-Col Multi-Coll Late-Coll  Excess-Col Carri-Sens Giants
-----
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
.
.
.
2/23           0          0          0          0          0          0
2/24           0          0          0          0          0          0

```

## Setting the Port Priority Level

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```
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 <b>set port level</b> command.	<b>set port level</b> <i>mod_num/port_num</i> <b>normal   high</b>
Verify that the port priority level is correct. Figure 6-2 shows a sample display of the <b>show port</b> command. Port priority levels are listed in the Level column.	<b>show port</b> <i>mod_num/port_num</i>

**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.
```

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## 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 <b>set port speed</b> command.	<b>set port speed</b> <mod_num/port_num> <10/100/auto>
Verify that the port speed has been set correctly. Figure 6-2 shows a sample display of the <b>show port</b> command.	<b>show port</b> mod_num/port_num

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**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**.

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**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

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**Figure 6-5** show port Command Example

```
Console> show port 4
a = auto-detect of speed

Port Name                Status  Vlan      Level Duplex Speed  Type
-----
4/1  FDDI A                standby 1                half  100  FDDI
4/2  FDDI B                connect 1                half  100  FDDI
Ler
Port CE-State Conn-State Type Neig Con Est Alm Cut Lem-Ct Lem-Rej-Ct Tl-Min
-----
4/1  isolated standby  A  U  yes  9  8  7  0  0  61
4/2  isolated active  B  U  yes  9  8  7  0  0 1340000
Last-Time-Cleared
-----
Tues Aug 22 1995, 18:28:51
Console>
```

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

**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.
```

## 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:

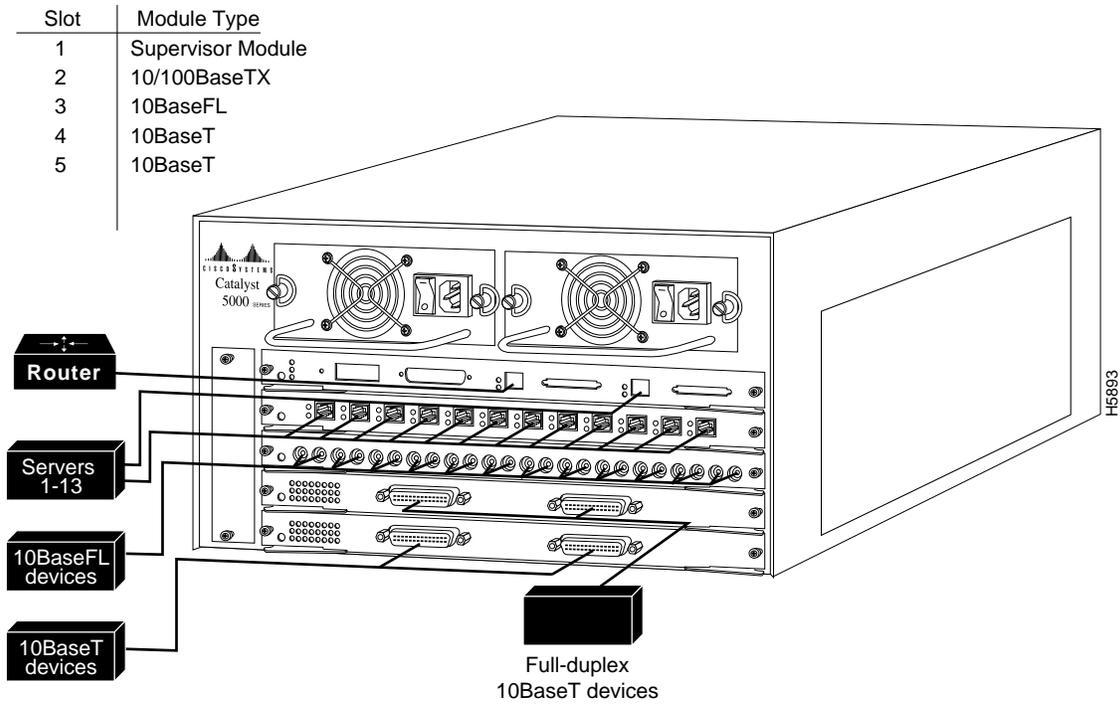
- 1 full-duplex Fast Ethernet connection to a router
- 13 half-duplex Fast Ethernet connections to servers (1 connection on card 1 and 12 connections on card 2)
- 12 half-duplex 10BaseFL Ethernet connections to servers
- 24 full-duplex 10BaseT Ethernet connections to network devices
- 24 half-duplex 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 full- or 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.

## Single Switch Configuration Example

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**Figure 6-7** Single Catalyst 5000 Series Switch Configuration



## 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
```

## Single Switch Configuration Example

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

## Port Transmission Type Example

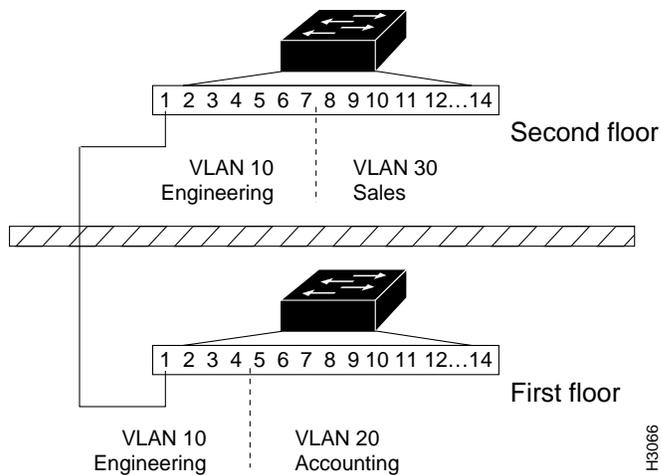
The following example illustrates how to set the port transmission type (half or full duplex) for the Catalyst 5000 series switch provided in the single switch configuration example and shown in Figure 6-7:

```
system1 (enable) set port duplex 1/1 full
Port 1/1 set to full-duplex.
.
.
.
system1 (enable) set port duplex 4/1 full
Port 4/1 set to half-duplex.
system1 (enable) set port duplex 4/2 full
Port 4/2 set to half-duplex.
system1 (enable) set port duplex 4/3 full
Port 4/3 set to half-duplex.
.
.
.
system1 (enable) set port duplex 4/24 full
Port 4/24 set to half-duplex.
```

## 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
```

## Multiple Switch VLAN Configuration Example

---

```
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
-----
20    2/5-24

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
-----
1/1      auto      not-trunking
1/2      on        trunking
4/1-2    off       not-trunking

Port      Vlans allowed
-----
1/1      1-1000
1/2      1-1000
4/1-2    1-1000

Port      Vlans active
-----
1/1      1
1/2      1,10,20
4/1-2    1

System1> (enable) show port
Port Name      Status      Vlan      Level  Duplex  Speed  Type
-----
1/1            notconnect  1          normal  half    100    100BaseTX
1/2            connected  trunk     normal  half    100    100BaseTX
2/1            notconnect  10         normal  half    10     10BaseT
2/2            notconnect  10         normal  half    10     10BaseT
2/3            notconnect  10         normal  half    10     10BaseT
2/4            connected  10         normal  half    10     10BaseT
2/5            notconnect  20         normal  half    10     10BaseT
2/6            notconnect  20         normal  half    10     10BaseT
```

## Multiple Switch VLAN Configuration Example

---

```

.
.
.
2/23          notconnect 20          normal  half   10 10BaseT
2/24          notconnect 20          normal  half   10 10BaseT
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
2/1            0           0           0           0
2/2            0           0           0           0
2/3            0           0           0           0
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           0           0           0           -
1/2            0           0           0           0           0           0           0           -
2/1            0           0           0           0           0           0           0           0
2/2            0           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

Port CE-State ConnState Type Neig Con Est Alm Cut Lem-Ct Lem-Rej-Ct Tl-Min
-----
4/1  isolated disabled  A  U   no  9  8  7    0           0  40
4/2  isolated disabled  B  U   no  9  8  7    0           0  40

```

## Multiple Switch VLAN Configuration Example

---

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> (enable) show trunk
Port      Mode      Status
-----
1/1       auto      not-trunking
1/2       auto      trunking
```

```
Port      Vlans allowed
-----
```

```
1/1       1-1000
1/2       1-1000
```

```
Port      Vlans active
-----
```

```
1/1       1
1/2       1,10,20
```

```
System2> (enable) show port
```

Port	Name	Status	Vlan	Level	Duplex	Speed	Type
1/1		notconnect	1	normal	half	100	100BaseTX
1/2		connected	trunk	normal	half	100	100BaseTX
2/1		notconnect	10	normal	half	10	10BaseT
2/2		notconnect	10	normal	half	10	10BaseT
2/3		notconnect	10	normal	half	10	10BaseT
2/4		connected	10	normal	half	10	10BaseT
.							
.							
.							
2/21		notconnect	20	normal	half	10	10BaseT
2/22		notconnect	20	normal	half	10	10BaseT
2/23		notconnect	20	normal	half	10	10BaseT
2/24		notconnect	20	normal	half	10	10BaseT

## Multiple Switch VLAN Configuration Example

---

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				
2/4	0	0	0	0				
.								
.								
2/19	0	0	0	0	0	0	0	0
2/20	0	0	0	0	0	0	0	0
2/21	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

Last-Time-Cleared  
-----  
Mon May 6 1996, 16:04:07