CHAPTER 8

CDDI and FDDI Module Software Configuration

Copper Distributed Data Interface (CDDI) is the implementation of Fiber Distributed Data Interface (FDDI) protocols over STP and UTP cabling. CDDI transmits over relatively short distances (about 100 meters), providing data rates of 100 Mbps, using a dual-ring architecture to provide redundancy. FDDI is a LAN standard, defined by ANSI X3T9.5, specifying a 100-Mbps token-passing network using fiber-optic cable, with transmission distances of up to 2 km. FDDI also uses a dual-ring architecture to provide redundancy. This chapter describes how to use the console port to configure the CDDI/FDDI ports of the Catalyst 5000 series switch.

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

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:

- All FDDI ports are enabled.
- The default IPX protocol translations are set as follows:
  - FDDI SNAP to Ethernet 802.3 RAW
  - FDDI 802.2 to Ethernet 802.3
  - Ethernet 802.3 RAW to FDDI SNAP

- The TL_MIN parameter is set to 40 microseconds.
- The TNotify parameter is set to 30 seconds.
- The TRequest parameter is set to 165,000 microseconds.
- The user data string, used to identify the FDDI module, is set to “Catalyst 5000.”
- IP fragmentation is enabled.
- ICMP unreachable messages are enabled.
- LER-Alarm is set to 8 (10^{-8}).
- LER-Cutoff is set to 7 (10^{-7}).

Customizing the Configuration

If needed, you can customize the preceding features to fit your particular configuration. Perform any of the following tasks that apply to your configuration. Each task is covered in a subsection that follows.

- Customizing the Default IPX Protocol Translations
- Setting the Minimum Time to Transfer the FDDI PHY Line State
- Setting the Interval between Neighbor Notification Frames
- Setting the Timer for Negotiating TRT
- Specifying the User Data String
- Disabling IP Fragmentation
- Setting the Link Error Rate Alarm
- Setting the Link Error Rate Cutoff
- Setting the Port Name
- Setting Up an FDDI 802.10 Configuration
- Rejecting MAC Address Learning (fddicheck)
- Disabling Automatic Packet Recognition and Translation (APART)

Customizing the Default IPX Protocol Translations

As a normal function, the Catalyst 5000 series switch can forward IPX packets received on FDDI ports to Ethernet ports, or it can forward IPX packets received on Ethernet ports to FDDI ports. To do this, the switch must be configured for specific IPX protocol translations. By default, the following IPX protocol translations are configured:

- FDDI SNAP to Ethernet 802.3 RAW
- FDDI 802.2 to Ethernet 802.3
- Ethernet 802.3 RAW to FDDI SNAP

You can customize these settings if your environment requires it.

Setting the FDDI SNAP to Ethernet Translation

The FDDI SNAP frame can be translated into the following Ethernet frames:

- Ethernet 802.3
- Ethernet SNAP
- Ethernet II
- Ethernet 802.3 RAW (default)

To specify the FDDI protocol to which Ethernet 8023RAW packets are translated, perform the following steps in privileged mode:

Task		Command
Step 1	Configure the appropriate translation protocol. See Figure 8-1 for an example.	**set bridge ipx snaptoether {8023 | SNAP | EII | 8023RAW }**
Step 2	Verify that the correct translation protocol was configured. See Figure 8-2 for an example.	**show bridge**

Figure 8-1 set bridge ipx snaptoether 8023 Command Example

```
Console> (enable) set bridge ipx snaptoether 8023
Bridge snaptoether default IPX translation set.
Console> (enable)
```

Figure 8-2 show bridge Command Example

```
Console> (enable) show bridge
APaRT Enabled
FDDICHECK Enabled
IP fragmentation Enabled
Default IPX translations:
    FDDI SNAP  to Ethernet     8023
    FDDI 802.2 to Ethernet     8023raw
    Ethernet 802.3 Raw to FDDI snap
Console> (enable)
```

Setting the FDDI 802.2 to Ethernet Translation

The FDDI 802.2 frame can be translated into the following Ethernet frames:

- Ethernet 802.3 (default)
- Ethernet SNAP
- Ethernet II
- Ethernet 802.3 RAW

To specify the Ethernet frame to which IPX FDDI SNAP packets are translated, perform the following steps in privileged mode:

Task		Command
Step 1	Configure the appropriate protocol translation. See Figure 8-3 and Figure 8-4 for examples.	**set bridge ipx 8022toether {8023 | SNAP | EII | 8023RAW }**
Step 2	Verify that the correct protocol translation was configured. See Figure 8-5 for an example.	**show bridge**

The following example sets the IPX translation protocol for FDDI 802.2 to 802.3:

Figure 8-3 set bridge ipx 8022 toether 8023 Command Example

```
Console> (enable) set bridge ipx 8022toether 8023
Module 4 8022toether translation set.
Console> (enable)
```

The following example sets the IPX translation protocol for FDDI SNAP to Ethernet SNAP:

Figure 8-4 set bridge ipx snaptoether snap Command Example

```
Console> (enable) set bridge ipx snaptoether snap
Module 4 snaptoether translation set
Console> (enable)
```

Figure 8-5 show bridge Command Example

```
Console> (enable) show bridge
APaRT Enabled
FDDICHECK Enabled
IP fragmentation Enabled
Default IPX translations:
    FDDI SNAP  to Ethernet     snap
    FDDI 802.2 to Ethernet     8023
    Ethernet 802.3 Raw to FDDI snap
Console> (enable)
```

Setting the Ethernet 802.3 RAW to FDDI Protocol

The Ethernet 802.3 RAW protocol can be translated into the following FDDI protocols:

- FDDI 802.2
- FDDI SNAP (default)
- FDDI RAW

To specify the FDDI frames to which 8023RAW Ethernet packets are translated, perform the following steps in privileged mode:

Task		Command
Step 1	Configure the appropriate protocol translation. See Figure 8-6 for an example.	**set bridge ipx 8023rawtofddi {8022 | SNAP | FDDIRAW}**
Step 2	Verify that the correct translation protocol was configured. See Figure 8-7 for an example.	**show bridge**

Figure 8-6 set bridge ipx 8023rawtofddi 8022 Command Example

```
Console> (enable) set bridge ipx 8023rawtofddi 8022
Module 4 8023rawtofddi translation set.
Console> (enable)
```

Figure 8-7 show bridge Command Example

```
Console> (enable) show bridge
FDDICHECK Enabled
IP fragmentation Enabled
Default IPX translations:
    FDDI SNAP  to Ethernet     snap
    FDDI 802.2 to Ethernet     8023
    Ethernet 802.3 Raw to FDDI 8022
Console> (enable)
```

Setting the Minimum Time to Transfer the FDDI PHY Line State

The TL_MIN parameter sets the minimum time to transmit an FDDI physical sublayer (PHY) line state before advancing to the next physical connection management (PCM) state. This setting affects the station and switch interoperability and might hinder the implementation of FDDI repeaters. By default, the TL_MIN parameter is set to 40

microseconds. Normally, you will not need to adjust this parameter. However, you can customize the TL_MIN setting if needed. To do this, perform the following steps in privileged mode:

Task		Command
Step 1	Set TL_MIN to a value between 40 and 1340006 microseconds. See Figure 8-8 for an example.	**set fddi tlmin** *mod_num/port_num usecs*
Step 2	Verify that TL_MIN was configured correctly. See Figure 8-9 for an example.	**show fddi**

Figure 8-8 set fddi tlmin Command Example

```
Console> (enable) set fddi tlmin 4/1 40
Port 4/1 tlmin set to 40.
Console> (enable)
```

Figure 8-9 show fddi Command Example

```
Console> show fddi
Mod  SMT User-Data               T-Notify  TReq
---  --------------------------  --------  -------
4    Engineering                 15        3500
5    abc                         20        150000

Port   Tlmin     Ler-CutOff  Ler-Alarm
-----  --------  ----------  ---------
4/1    40        10          11
4/2    40        10          11
5/1    40        10          11
5/2    40        9           12
Console>
```

Setting the Interval between Neighbor Notification Frames

The TNotify parameter sets the interval (in seconds) between neighbor notification frames. These frames are sent out to notify neighboring devices of FDDI module MAC addresses. Usually, the default setting of 30 seconds is sufficient. By shortening the interval, you cause more notification frames to be sent. However, if you need to adjust this setting, perform the following steps in privileged mode:

Task		Command
Step 1	Set TNotify to a value between 2 and 30 seconds. See Figure 8-10 for an example.	**set fddi tnotify** *mod_num time*
Step 2	Verify that TNotify was configured correctly. See Figure 8-11 for an example.	**show fddi**

Figure 8-10 set fddi tnotify Command Example

```
Console> (enable) set fddi tnotify 4/1 15
Module 4 tnotify set to 15.
Console> (enable)
```

Figure 8-11 show fddi Command Example

```
Console> show fddi
Mod  SMT User-Data               T-Notify  TReq
---  --------------------------  --------  -------
4    Engineering                 15        3500
5    abc                         20        150000

Port   Tlmin     Ler-CutOff  Ler-Alarm
-----  --------  ----------  ---------
4/1    40        10          11
4/2    40        10          11
5/1    40        10          11
5/2    40        9           12
Console>
```

Setting the Timer for Negotiating TRT

The TRequest parameter specifies the FDDI switch's desired value for the Token Ring Timer (TRT) for negotiating the TRT with other stations. The TRT is used to control ring scheduling during normal operation and to detect and recover from serious ring error situations. Whenever the TRT value expires, the station uses the TRequest value to negotiate with other stations for the lowest value. The default setting of 16,5000 microseconds is sufficient for most networks. However, if you need to modify this setting, perform the following steps in privileged mode:

Task		Command
Step 1	Set TRequest to a value between 2502 and 16,5000 microseconds. See Figure 8-12 for an example.	**set fddi treq** *mod_num time*
Step 2	Verify that TNotify was configured correctly. See Figure 8-13 for an example.	**show fddi**

Figure 8-12 set fddi trequest Command Example

```
Console> (enable) set fddi trequest 4 3500
Mac 4/1 treq set to 3500.
Console> (enable)
```

Figure 8-13 show fddi Command Example

```
Console> show fddi
Mod  SMT User-Data               T-Notify  TReq
---  --------------------------  --------  -------
4    Engineering                 15        3500
5    abc                         20        150000

Port   Tlmin     Ler-CutOff  Ler-Alarm
-----  --------  ----------  ---------
4/1    40        10          11
4/2    40        10          11
5/1    40        10          11
5/2    40        9           12
Console>
```

Specifying the User Data String

The **user-data** string identifies the user data string in the SMT MIB of an FDDI module. The default value is "Catalyst 5000." This value should be modified to a more meaningful description. To modify this parameter, perform the following steps in privileged mode:

Task		Command
Step 1	Enter a module number and a unique description or name to identify the FDDI module. Refer to Figure 8-14 for an example. See for an example.	**set fddi userdata** *mod_num userdata_string*
Step 2	Verify that the description or name was entered correctly. See Figure 8-15 for an example. See for an example.	**show fddi**

Figure 8-14 set fddi Command Example

```
Console> (enable) set fddi userdata 4 Engineering
Module 4 userdata set to Engineering.
Console> (enable)
```

Figure 8-15 show fddi Command Example

```
Console> show fddi
Mod  SMT User-Data               T-Notify  TReq
---  --------------------------  --------  -------
4    Engineering                 15        3500
5    abc                         20        150000

Port   Tlmin     Ler-CutOff  Ler-Alarm
-----  --------  ----------  ---------
4/1    40        10          11
4/2    40        10          11
5/1    40        10          11
5/2    40        9           12
Console>
```

Disabling IP Fragmentation

IP fragmentation allows the Catalyst 5000 series switch to fragment large FDDI IP frames (frames greater than 1514 bytes) into multiple smaller packets so that they can be transmitted on an Ethernet segment. By default, IP fragmentation is enabled. If you want the large packets to be dropped instead of fragmented, disable fragmentation:

Task		Command
Step 1	Disable IP fragmentation. See Figure 8-16 for an example.	**set ip fragmentation disable**
Step 2	Verify that IP fragmentation is set correctly. See Figure 8-17 for an example.	**show ip route**

To reenable IP fragmentation, perform the following steps in privileged mode:

Task		Command
Step 1	Enable IP fragmentation.	**set ip fragmentation enable**
Step 2	Verify that IP fragmentation is set correctly.	**show ip route**

Figure 8-16 set ip fragmentation disable Command Example

```
Console> (enable) set ip fragmentation disable
IP fragmentation disabled for module 4
Console> (enable)
```

Figure 8-17 show ip route Command Example

```
Console> (enable) show ip route
Fragmentation   Redirect   Unreachable
-------------   --------   -----------
disabled        enabled    disabled

Destination     Gateway         Flags   Use         Interface
--------------- --------------- ------  ----------  ---------
172.20.0.0      172.20.22.181   U               0  sc0
default         default         UH              0  sl0
Console> (enable)
```

Disabling ICMP Unreachable Messages

When enabled, the switch returns an ICMP unreachable message to the Internet source host whenever it receives an IP datagram that it cannot deliver. When disabled, the switch does not notify the Internet source host when it receives an IP datagram that it cannot deliver. You can disable *unreachable messages enabled* if desired. To do this, perform the following steps in privileged mode:

Task		Command
Step 1	Disable IP unreachable messages. See Figure 8-18 for an example.	**set ip unreachable disable**
Step 2	Verify that IP unreachable messages are disabled. Refer to Figure 8-19 for an example.	**show ip route**

To reenable IP unreachable messages, perform the following steps in privileged mode:

Task		Command
Step 1	Enable IP unreachable messages.	**ip unreachable enable**
Step 2	Verify that IP unreachable messages are enabled.	**show ip route**

Figure 8-18 set ip unreachable disable Command Example

```
Console> (enable) set ip unreachable disable
Console> (enable)
```

Figure 8-19 show ip route Command Example

```
Console> (enable) show ip route
Fragmentation   Redirect   Unreachable
-------------   --------   -----------
disabled        enabled    disabled
```

```
Destination     Gateway         Flags   Use         Interface
--------------- --------------- ------  ----------  ---------
172.20.0.0      172.20.22.181   U               0  sc0
default         default         UH              0  sl0
Console> (enable)
```

Setting the Link Error Rate Alarm

The LER-Alarm value defines the link error rate (LER) at which a link connection exceeds a preset alarm threshold. This value is used in the link error rate threshold test. The default setting of 8 (10^{-8}) link errors per second is sufficient for most networks. However, if you need to modify this setting, perform the following steps in privileged mode:

Task		Command
Step 1	Change the LER-Alarm setting. See Figure 8-20 for an example.	**set fddi alarm** *mod_num/port_num value*
Step 2	Verify that the LER-Alarm setting is correct. See Figure 8-21 for an example.	**show fddi**

Figure 8-20 set fddi alarm Command Example

```
Console> (enable) set fddi alarm 4/1 11
Port 4/1 alarm value set to 11.
Console> (enable)
```

Figure 8-21 show fddi Command Example

```
Console> show fddi
Mod  SMT User-Data               T-Notify  TReq
---  --------------------------  --------  -------
4    Engineering                 15        3500
5    abc                         20        150000
```

```
Port   Tlmin     Ler-CutOff  Ler-Alarm
-----  --------  ----------  ---------
4/1    40        10          11
4/2    40        10          11
5/1    40        10          11
5/2    40        9           12
Console>
```

Setting the Link Error Rate Cutoff

The LER-Cutoff value determines the link error rate (LER) at which a connection will be flagged as faulty. This value is used in the link error rate threshold test. The default setting of 7 (10^{-7}) is sufficient for most networks. However, if you need to modify this setting, perform the following steps in privileged mode:

Task		Command
Step 1	Change the LER-Cutoff setting. See Figure 8-22 for an example.	**set fddi cutoff** *mod_num/port_num value*
Step 2	Verify that the LER-Alarm setting is correct. See Figure 8-23 for an example.	**show fddi**

Figure 8-22 set fddi cutoff Command Example

```
Console> (enable) set fddi cutoff 4/1 10
Port 4/1 cutoff value set to 10.
Console> (enable)
```

Figure 8-23 show fddi Command Example

```
Console> show fddi
Mod  SMT User-Data               T-Notify  TReq
---  --------------------------  --------  -------
4    Engineering                 15        3500
5    abc                         20        150000
```

```
Port   Tlmin     Ler-CutOff  Ler-Alarm
-----  --------  ----------  ---------
4/1    40        10          11
4/2    40        10          11
5/1    40        10          11
5/2    40        9           12
Console>
```

Setting the Port Name

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

Task		Command
Step 1	Configure a name for a port. (See Figure 8-24.)	**set port name** *mod_num/port_num [name_string]*
Step 2	Verify that the port name is correct. (See Figure 8-25.)	**show port** *mod_num/port_num*

Figure 8-24 set port name Display Example

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

Figure 8-25 show port Command Example

```
Console> show port 4
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  11  10          0          0 40
4/2  isolated active     B    U    yes   9  11  10          0          0 1340000
Last-Time-Cleared
--------------------------
Tues Aug 22 1995, 18:28:51
Console>
```

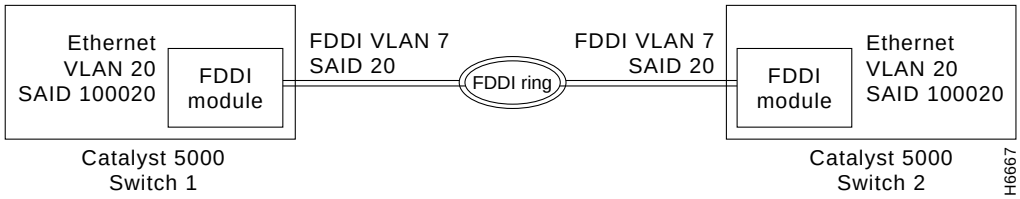
Setting Up an FDDI 802.10 Configuration

The FDDI module is basically an FDDI-Ethernet translation bridge. It translates packets on the external FDDI ring into Ethernet packets within the Catalyst 5000. That is, inside the Catalyst 5000 Ethernet VLAN packets are translated into FDDI VLAN packets and encoded in 802.10 format with a SAID value before they are transmitted across an external FDDI trunk to another Catalyst 5000. The Catalyst 5000 that receives the packets from the trunk decodes the 802.10 format using the SAID value and internally translates the FDDI VLAN packets into Ethernet VLAN packets. Each Ethernet VLAN requires a unique FDDI VLAN translation.

For example, to connect Ethernet VLAN 20 in switch 1 to Ethernet VLAN 20 in switch 2, as shown in Figure 8-26, you would use a VTP server to set up the configuration as follows:

- FDDI VLAN 7 with a SAID value of 20
- Ethernet VLAN 20 with a translation to FDDI VLAN 7
- Switch 1 and 2 to allow Ethernet VLAN 20 on the FDDI trunk

Figure 8-26 FDDI 802.10 Configuration Example



The Catalyst 1200 series switch is hardcoded with a specific VLAN-to-SAID configuration. Therefore, if you are connecting a Catalyst 5000 Ethernet VLAN to a Catalyst 1200 Ethernet VLAN, the SAID value of the FDDI VLAN must be the same value as the Ethernet VLAN. For example, if a Catalyst 1200 Ethernet VLAN value is 20, the translation FDDI VLAN SAID value must be 20.

Before setting up an FDDI 802.10 VLAN configuration, refer to the chapter "Configuring the Software" to set up a VTP domain; it is described in the section "Setting Virtual LANs (VLANs)." Also refer to the chapter "Configuring the Software" to set up trunks, as described in the section "Setting Trunks." After completing these tasks, perform the following steps in privileged mode to set up the FDDI 802.10 VLAN configuration:

Task	Command
Provide a VLAN number and activate a VLAN in the management domain. Refer to Figure 8-27 for an example. This creates a VLAN but does not assign it to a port. VTP advertises the VLAN to all available trunks of all types (such as Ethernet or FDDI) that are set to **on**, for all Catalyst 5000s in the same management domain.	**set vlan *vlan_num***
Assign the VLAN to an FDDI port. Provide the VLAN number, module number, and port number. Additionally use this commend to set up the native FDDI VLAN. Refer to Figure 8-28 for an example.	**set vlan *vlan_num mod_num/port_num***
Create a VLAN with type FDDI. See Figure 8-29 for an example.	**set vlan *vlan_num* type fddi**
Map the Ethernet VLAN translation to an FDDI VLAN. Refer to Figure 8-30 for an example.	**set vlan *ether_vlan_num* translation *fddi_vlan_num*** **set vlan *fddi_vlan_num* translation *ether_vlan_num***
Turn trunking on for the FDDI port. (See Figure 8-31.)	**set trunk *mod_num* /*port_num* on**

Task	Command
Verify that the VLAN configuration is correct, including the mapping between Ethernet, FDDI, and token ring. If you use the **show trunk** command after a 30 second delay, you will see a display of the new VLAN that have been added to all Catalyst 5000 series switches. Figure 8-32 shows a sample display of the **show vlan** command.	**show vlan [trunk | no trunk]** **show trunk**

Note The native VLAN overrides any "trunking-allowed" VLANs. For example, if the VLAN range allowed for trunking is 1-1000 and the **native** VLAN is 1, then VLAN 1 is not 802.10-encapsulated on the FDDI link.

The following examples add a new Ethernet and FDDI VLAN to the existing configuration.

Figure 8-27 set vlan Command Example to Create a VLAN

```
Console> (enable) set vlan 33
VTP: vlan addition successful
```

Figure 8-28 set vlan Command Example to Assign a VLAN to an Ethernet Port

```
Console> (enable) set vlan 33 2/13
VLAN 33 modified.
VLAN 1 modified.
VLAN  Mod/Ports
---- ----------------------
33    1/2
      2/13
      4/1-2


Console> (enable)
```

Figure 8-29 set vlan Command Example to Create an FDDI VLAN

```
Console> (enable) set vlan 333 type fddi
VTP: vlan addition successful
```

Figure 8-30 set vlan Command Example to Translate an Ethernet VLAN to an FDDI VLAN

```
Console> (enable) set vlan 33 translation 333
VTP: vlan modification successful
```

Figure 8-31 set trunk Command Example

```
Console> (enable) set trunk 1/1 on
Port 1/1 mode set to on.
Console> (enable)
```

Figure 8-32 show vlan Command Example

```
Console> (enable) show vlan
VLAN Name                        Type  Status    Mod/Ports
---- --------------------------- ----- --------- ----------------
1    default                     enet  active    1/1
                                                 2/3-4,2/7-12,2/14-16,2/18-24
11   VLAN0011                    enet  active    2/1-2
22   VLAN0022                    enet  active    2/5-6
33   VLAN0033                    enet  active    2/13,2/17
111  VLAN0111                    fddi  active
222  VLAN0222                    fddi  active
333  VLAN0333                    fddi  active
1002 fddi-default                fddi  active
1003 token-ring-default          tring active
1004 fddinet-default             fdnet active
1005 trnet-default               trnet active


VLAN SAID       MTU   RingNo BridgeNo StpNo Parent Trans1 Trans2
---- ---------- ----- ------ -------- ----- ------ ------ ------
1    100001     1500  0      0        0     0      0      0
11   100011     1500  0      0        0     0      111    0
```

```
22   100022     1500  0      0        0     0      222    0
33   100033     1500  0      0        0     0      333    0
111  100111     1500  0      0        0     0      11     0
222  100222     1500  0      0        0     0      22     0
333  33         1500  0      0        0     0      33     0
1002 101002     1500  0      0        0     0      0      0
1003 101003     1500  0      0        0     0      0      0
1004 101004     1500  0      0        0     0      0      0
1005 101005     1500  0      0        0     0      0      0
CAT4> (debug-eng)
Console> (enable)
```

Rejecting MAC Address Learning (fddicheck)

To cause an FDDI interface to reject the learning of MAC addresses that it previously learned from an Ethernet interface, perform the following steps in privileged mode:

Task	Command
Enable the **set bridge fddicheck** command. Refer to Figure 8-35 for an example.	**set bridge fddicheck enable**
Use the **show bridg**e command to determine if the **fddicheck** option is enabled. Refer to Figure 8-36 for an example.	**show bridge**

This feature requires information from the CAM. Therefore, disabling APART also automatically disables **fddicheck**. To enable **fddicheck**, first enable APART.

Figure 8-33 set bridge fddicheck Command Example

```
Console> (enable) set bridge fddicheck enable
FDDICHECK enabled
Console> (enable)
```

Figure 8-34 show bridge Command Example

```
Console> (enable) show bridge
APaRT Enabled
FDDICHECK Enabled
IP fragmentation Enabled
Default IPX translations:
    FDDI SNAP  to Ethernet     8023raw
    FDDI 802.2 to Ethernet     8023
    Ethernet 802.3 Raw to FDDI snap
Console> (enable)
```

Disabling Automatic Packet Recognition and Translation (APART)

To disable the software content-addressable memory (CAM) of the FDDI module, Packet Recognition and Translation (APART), and **fddicheck** command, perform the following steps in privileged mode:

Task	Command
Disable the software content-addressable memory (CAM) of the FDDI module. Refer to Figure 8-35 for an example.	**set bridge apart disable**
Verify that the software content-addressable memory (CAM) of the FDDI module, APART, and **fddicheck** command are disabled. Refer to Figure 8-36 for an example.	**show bridge**

This feature is typically used in an IP environment. It provides a slight performance increase. Disabling APART automatically disables **fddicheck**. When APART is disabled, FDDI-to-Ethernet translation values are the settings configured with the **set bridge IPX** command.

Figure 8-35 set bridge apart disable Command Example

```
Console> (enable) set bridge apart disable
APaRT disabled
Console> (enable)
```

Figure 8-36 show bridge Command Example

```
Console> (enable) show bridge
APaRT Disabled
FDDICHECK Disabled
IP fragmentation Enabled
Default IPX translations:
    FDDI SNAP  to Ethernet     8023raw
    FDDI 802.2 to Ethernet     8023
    Ethernet 802.3 Raw to FDDI snap
Console> (enable)
```

Single-Switch Configuration Example

A simple Catalyst 5000 series switch configuration example is shown in Figure 8-37. The configuration shows a case that includes the following elements:

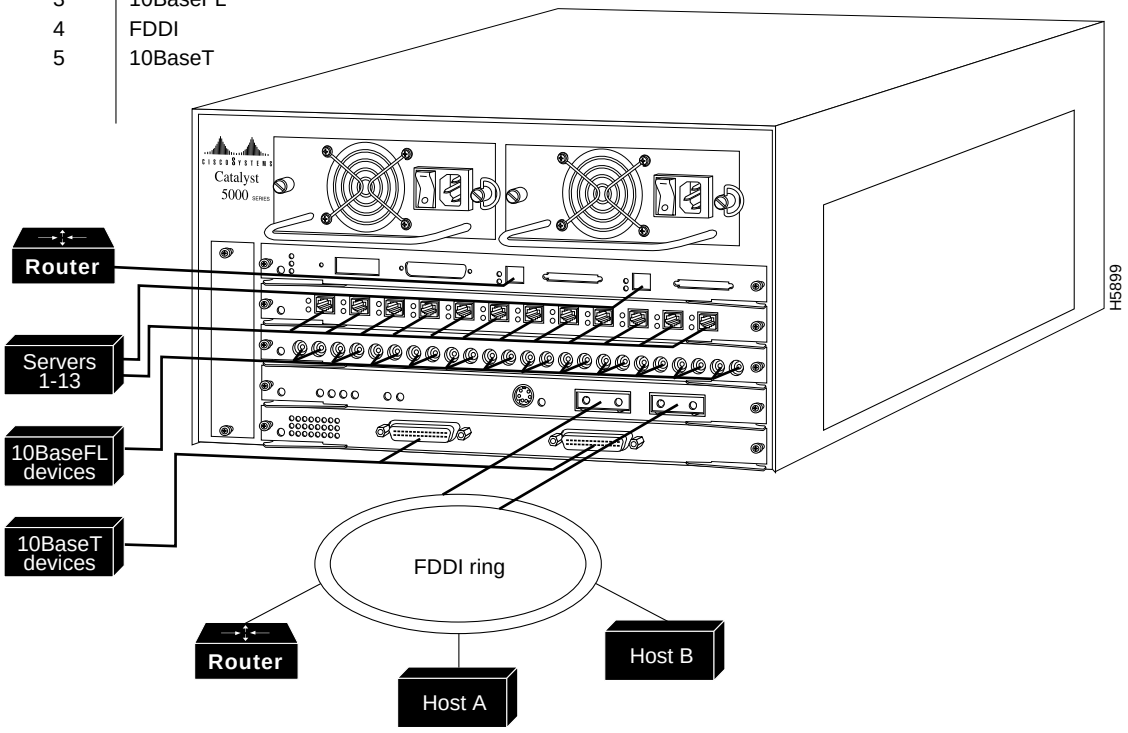
- 1 full-duplex Fast Ethernet connection to a router
- 13 half-duplex Fast Ethernet connections to servers (1 connection on card 1 and 12 connections on card 2)
- 12 half-duplex 10BaseFL Ethernet connections to servers
- 2 FDDI connections to an FDDI ring
- 24 half-duplex 10BaseT Ethernet connections to network devices
- User data string of “Engineering”

- FDDI SNAP to Ethernet 802.3 protocol translation for IPX data
- Remaining parameters set to default settings:
  - FDDI 802.2 to Ethernet 802.3.
  - Ethernet 802.3 RAW to FDDI SNAP.
  - TL_MIN parameter set to 62 microseconds.
  - TNotify parameter set to 30 seconds.
  - TRequest parameter set to 16,5000 microseconds.
  - IP fragmentation is enabled.
  - IP unreachable messages are enabled.

See the "Configuring Ethernet and Fast Ethernet Software" chapter of the *Catalyst 5000 Series Configuration Guide and Command Reference* for examples of the Ethernet settings.

Figure 8-37 Single Catalyst 5000 Series Switch Configuration

Slot	Module Type
1	Supervisor Module
2	10/100BaseTX
3	10BaseFL
4	FDDI
5	10BaseT

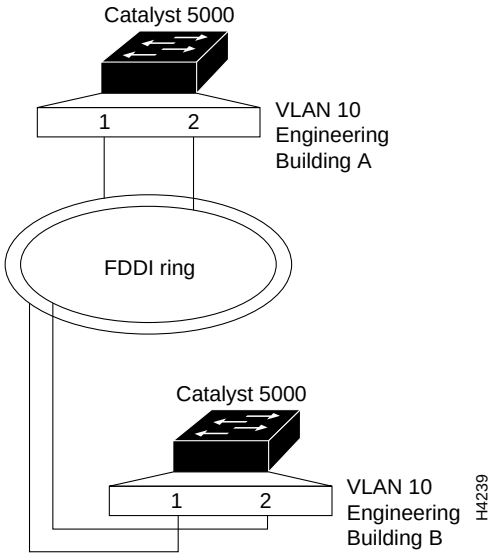


Multiple-Switch VLAN Configuration Without Trunking Example

VLAN groups can be set up across multiple Catalyst 5000 series switches without trunking if the switches have any two ports of the same VLAN connected, as shown in the example in Figure 8-38. You need to configure the VLANs individually for both switches using the **set vlan** command.

Note VLAN groups can also be set up across multiple Catalyst 5000 series switches using trunking, as previously described in the section "Setting Up an FDDI 802.10 Configuration" and shown in Figure 8-26.

Figure 8-38 Multiple Catalyst 5000 Series VLAN Configuration Without Trunking



Setting and Displaying VLANs for Buildings A and B

The following example sets VLAN 10 for the Catalyst 5000 series switch in building A:

```
System1> (enable) set vlan 10 4/1
VLAN 10 modified.
VLAN 1 modified.
VLAN  Mod/Ports
---- ----------------------
10    4/1-2
```

The following example sets VLAN 10 for the Catalyst 5000 series switch in building B:

```
System2> (enable) set vlan 10 4/1
VLAN 10 modified.
VLAN 1 modified.
VLAN  Mod/Ports
---- ----------------------
10    4/1-2
```

The following example commands display the VLAN setting for the Catalyst 5000 in building A:

```
System1> (enable) show vlan 10
VLAN Name                        Type  Status    Mod/Ports
---- --------------------------- ----- --------- ----------------
10   VLAN0010                    enet  active    4/1-2


VLAN SAID       MTU   RingNo BridgeNo StpNo Parent Trans1 Trans2
---- ---------- ----- ------ -------- ----- ------ ------ ------
10   100010     1500  0      0        0     0      0      0
System1> (enable) show vlan
VLAN Name                        Type  Status    Mod/Ports
---- --------------------------- ----- --------- ----------------
1    default                     enet  active    1/1-2
10   VLAN0010                    enet  active    4/1-2
20   VLAN0020                    enet  active    2/1-24
1002 fddi-default                fddi  active
1003 token-ring-default          tring active
1004 fddinet-default             fdnet active
1005 trnet-default               trnet active
```

```
VLAN SAID       MTU   RingNo BridgeNo StpNo Parent Trans1 Trans2
---- ---------- ----- ------ -------- ----- ------ ------ ------
1    100001     1500  0      0        0     0      0      0
10   100010     1500  0      0        0     0      0      0
20   100020     1500  0      0        0     0      0      0
1002 101002     1500  0      0        0     0      0      0
1003 101003     1500  0      0        0     0      0      0
1004 101004     1500  0      0        0     0      0      0
1005 101005     1500  0      0        0     0      0      0
System1> (enable)
```

The following example commands display the VLAN setting for the Catalyst 5000 in building B:

```
System2> (enable) show vlan 10
VLAN Name                        Type  Status    Mod/Ports
---- --------------------------- ----- --------- ----------------
10   VLAN0010                    enet  active    4/1-2


VLAN SAID       MTU   RingNo BridgeNo StpNo Parent Trans1 Trans2
---- ---------- ----- ------ -------- ----- ------ ------ ------
10   100010     1500  0      0        0     0      0      0
System2> (enable) show vlan
VLAN Name                        Type  Status    Mod/Ports
---- --------------------------- ----- --------- ----------------
1    default                     enet  active    1/1-2
10   VLAN0010                    enet  active    4/1-2
20   VLAN0020                    enet  active    2/1-24
1002 fddi-default                fddi  active
1003 token-ring-default          tring active
1004 fddinet-default             fdnet active
1005 trnet-default               trnet active


VLAN SAID       MTU   RingNo BridgeNo StpNo Parent Trans1 Trans2
---- ---------- ----- ------ -------- ----- ------ ------ ------
1    100001     1500  0      0        0     0      0      0
10   100010     1500  0      0        0     0      0      0
20   100020     1500  0      0        0     0      0      0
1002 101002     1500  0      0        0     0      0      0
1003 101003     1500  0      0        0     0      0      0
1004 101004     1500  0      0        0     0      0      0
1005 101005     1500  0      0        0     0      0      0
```