



Configuring FDDI 802.10 Trunks

This chapter describes how to configure Fiber Distributed Data Interface (FDDI) IEEE 802.10 VLAN trunks.



Note

For complete information on configuring FDDI/CDDI switching, see Chapter 39, “Configuring FDDI/CDDI Switching.”



Note

For complete syntax and usage information for the commands used in this chapter, refer to the *Command Reference* publication for your switch.

This chapter consists of these sections:

- Understanding How IEEE 802.10 Trunking Works, page 40-1
- Default FDDI 802.10 Trunk Configuration, page 40-3
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Understanding How IEEE 802.10 Trunking Works



Note

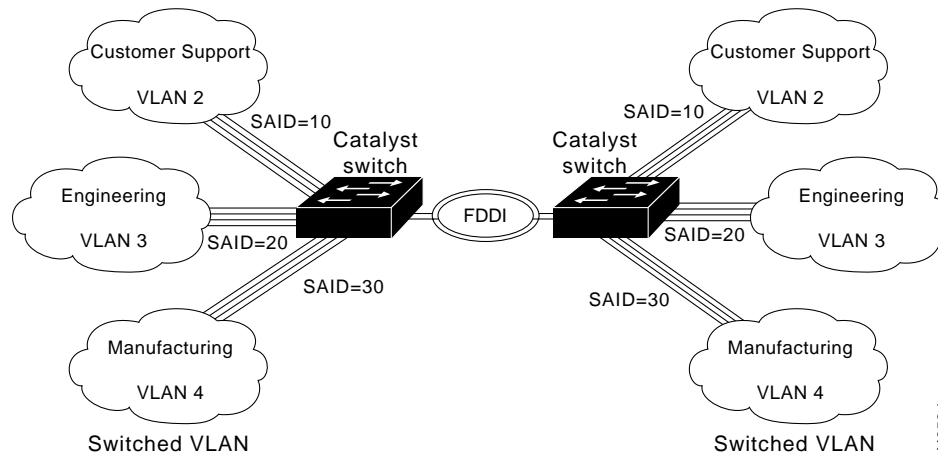
For complete information on configuring VLANs, refer to Chapter 11, “Configuring VLANs.”

You can extend VLANs across an FDDI backbone by multiplexing switched packets over a FDDI/CDDI interface using the 802.10 protocol. Catalyst 5000 family FDDI/CDDI interface links can operate as inter-switch trunks that provide broadcast control between configured VLANs. The 802.10 protocol encapsulates frames with a VLAN identifier and packet data according to the IEEE 802.10 specification. FDDI/CDDI interfaces that support 802.10 make selective forwarding decisions within a network domain based upon the VLAN identifier.

The VLAN identifier is a user-configurable four-byte Security Association Identifier (SAID). The SAID identifies traffic as belonging to a particular VLAN. The SAID also determines to which VLAN each packet is switched.

Figure 40-1 shows an example FDDI trunk configuration. In this example, the SAID ensures that packets destined for a particular VLAN are received on that VLAN after they are transmitted across the FDDI trunks.

Figure 40-1 FDDI Trunk Configuration



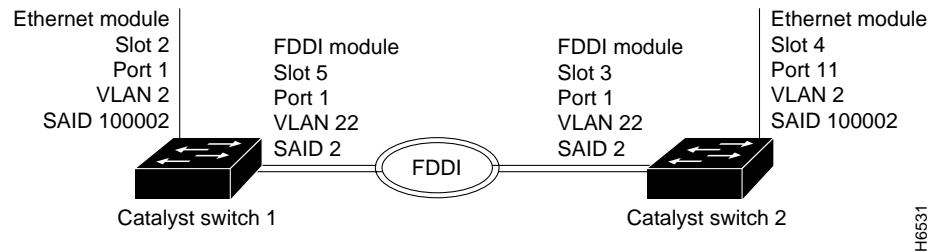
The VLAN Trunk Protocol (VTP) provides FDDI/CDDI module configuration for 802.10-based VLANs. VTP requires a protocol type (Ethernet, FDDI, or Token Ring) to be configured for each VLAN. A VLAN can only have one type associated with it. Each VLAN type must have its own unique identifier, and translations between different identifiers must be mapped. VTP advertises VLAN translation mappings to all switches in a management domain.

FDDI/CDDI modules integrate switched Ethernet and Fast Ethernet LANs into the FDDI network. To map an 802.10 FDDI VLAN to an Ethernet VLAN, you must map the 802.10 VLAN SAID to an Ethernet VLAN by mapping an Ethernet VLAN to an FDDI VLAN and assigning a SAID value to the FDDI VLAN.

If an FDDI/CDDI module receives a packet containing a VLAN SAID that maps to a locally supported Ethernet VLAN on the Catalyst 5000 family switch, the FDDI/CDDI module translates the packet into Ethernet format and forwards it across the switch backplane to the Ethernet module. FDDI/CDDI modules filter the packets they receive from reaching the backplane if the VLAN SAIDs in the packets do not map to a locally supported VLAN.

Figure 40-2 illustrates the configuration for forwarding a packet from the Ethernet module port 1 in slot 2 to the FDDI module port 1 in slot 5. For this example, you would specify the translation of Ethernet VLAN 2 to FDDI VLAN 22. FDDI VLAN 22 is translated automatically to Ethernet VLAN 2. The VLAN SAID must be identical on both FDDI modules. Because 802.10 FDDI/CDDI interface links can operate as inter-switch trunks, you can configure multiple VLAN translations over a link.

Figure 40-2 VLAN Identifiers for an FDDI 802.10 Configuration



FDDI/CDDI modules also support one native (nontrunk) VLAN, which handles all non-802.10 encapsulated FDDI traffic. You do not need to configure a translation number for the native VLAN because packets that are forwarded to the native VLAN do not contain VLAN identifiers. To map an Ethernet VLAN to an FDDI native VLAN, you must configure the FDDI port to be on the Ethernet VLAN. To do this, configure the Ethernet VLAN with the module number and port number of the FDDI-native VLAN.

Default FDDI 802.10 Trunk Configuration

Table 40-1 shows the FDDI/CDDI default configuration.

Table 40-1 FDDI 802.10 Trunk Default Configuration

Feature	Default Value
Native VLAN	VLAN 1
Ethernet-FDDI mapping	None
Trunking	Off
Allowed VLAN range	VLANs 1–1005

802.10 Trunk Configuration Guidelines

These recommendations apply to setting up an FDDI 802.10 configuration:

- You do not need to configure a translation number for the native VLAN. To map an Ethernet VLAN to an FDDI native VLAN, configure the Ethernet VLAN with the VLAN identifier (*vlan_num*), module number (*mod_num*), and port number (*port_num*) of the FDDI native VLAN, as described in the “Setting the Native VLAN on FDDI” section on page 39-5.
- Be aware that the native VLAN overrides any trunking-allowed VLANs. For example, if the VLAN range allowed for trunking is 1 through 1000, and the native VLAN is 1, VLAN 1 is not 802.10-encapsulated on the FDDI link.
- If you are connecting a Catalyst 5000 family switch to a Catalyst 1200 series switch, the following configuration is recommended:

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

Configuring FDDI 802.10 Trunks

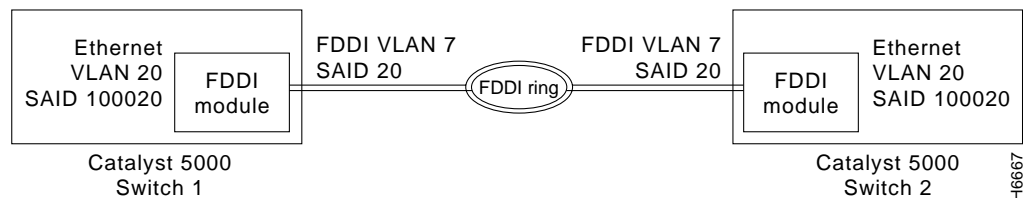
To set up an FDDI 802.10 VLAN trunk configuration, perform this task in privileged mode:

Task	Command
Step 1 Create an Ethernet VLAN.	set vlan <i>vlan_num</i>
Step 2 Create an FDDI VLAN.	set vlan <i>vlan_num</i> type fddi
Step 3 Map the Ethernet VLAN to the FDDI VLAN.	set vlan <i>ether_vlan</i> translation <i>fddi_vlan</i>
Step 4 Turn trunking on for the FDDI port.	set trunk <i>mod_num/port_num</i> on
Step 5 Repeat Steps 1–3 for additional VLANs you want carried over the trunk link.	
Step 6 Verify the trunk configuration.	show vlan trunk show trunk

FDDI 802.10 Trunk Configuration Example

Figure 40-3 shows two Catalyst 5000 family switches in an FDDI 802.10 VLAN configuration.

Figure 40-3 FDDI 802.10 Configuration Example



The following prerequisites apply to the FDDI 802.10 configuration example shown in :

- Before setting up an FDDI 802.10 VLAN configuration, complete the tasks in Chapter 11, “Configuring VLANs.”
- To connect Ethernet VLAN 20 in Switch 1 to Ethernet VLAN 20 in Switch 2, 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
 - Switches 1 and 2 to allow Ethernet VLAN 20 on the FDDI trunk
- Set up the native VLAN on FDDI according to the procedure in the “Setting the Native VLAN on FDDI” section on page 39-5.

After completing the tasks in “Configuring VLANs,” complete this task in privileged mode to set up the FDDI 802.10 VLAN configuration for VLAN 33:

	Task	Command
Step 1	Provide a VLAN number and activate a VLAN in the management domain.	set vlan 33
Step 2	Create a VLAN with the type FDDI.	set vlan 33 type fddi
Step 3	Map the Ethernet VLAN translation to an FDDI VLAN.	set vlan 333 translation 33 or set vlan 33 translation 333
Step 4	Turn trunking on for the FDDI port.	set trunk 1/1 on

After entering the **set vlan 33** command, you see this display:

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

This command 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 switches in the same management domain.

After entering the **set vlan vlan_num type fddi** command, you see this display:

```
Console> (enable) set vlan 333 type fddi (said 338)
VTP: vlan addition successful
```

After entering the **set vlan vlan_num translation vlan_num** command or the **set vlan vlan_num translation vlan_num** command, you see this display:

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

After entering the **set trunk 1/1 on** command, you see this display:

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



Note

You can enter the **set vlan** command to set up the native FDDI VLAN. The native VLAN overrides any trunking-allowed (802.10) VLANs. For example, if the VLAN range allowed for trunking is 1 through 1000 and the native VLAN is 1, VLAN 1 is not 802.10-encapsulated on the FDDI link.

To verify that the VLAN configuration is correct, including the mapping between Ethernet, FDDI, and Token Ring, enter the **show vlan** command and the **show trunk** command. After entering the **show vlan** command, you see this display:

```
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	1	1500	0	0	0	0	0	0
11	11	1500	0	0	0	0	111	0
22	22	1500	0	0	0	0	222	0
33	100033	1500	0	0	0	0	333	0
111	111	1500	0	0	0	0	11	0
222	222	1500	0	0	0	0	22	0
333	338	1500	0	0	0	0	33	0
1002	1002	1500	0	0	0	0	0	0
1003	1003	1500	0	0	0	0	0	0
1004	1004	1500	0	0	0	0	0	0
1005	1005	1500	0	0	0	0	0	0

```
Console> (enable)
```