CHAPTER 6

In-Band Management

The Catalyst 2800 can be managed in-band through any SNMP-compatible workstation or through Telnet. This chapter describes how to use the MIBs supplied on the Catalyst 2800 diskettes. The Catalyst 2800 supports standard SNMP MIB II objects as well as SNMP extensions designed to maximize the Catalyst 2800's manageability and configurability.

The complete set of Catalyst 2800 MIB objects are listed by function in the "Standard MIBs and MIB Extensions" section in this chapter. These MIB objects and other SNMP-based management techniques are described in a separate manual, the *Catalyst 2000 MIB Reference Manual*, available on request from Cisco Systems.

Using Telnet

You can use any Telnet TCP/IP package to invoke the management console. The Catalyst 2800 supports up to seven simultaneous Telnet sessions. See the "Out-of-Band Management" chapter for details on the use of the management console.

Network Management Platforms

Although you can manage the Catalyst 2800 with any SNMP-compatible workstation, precompiled MIBs are supplied with the Catalyst 2800 for the following management platforms:

- SunNet Manager
- Novell NMS
- HP OpenView SNMP Management Platform

Note Before beginning, the Catalyst 2800 must be configured for SNMP management. To do this, you must assign an IP address to the Catalyst 2800 using the IP Configuration Menu, described in the "IP Configuration" section in the "Out-of-Band Management" chapter. You can also use the Bootstrap protocol (BOOTP) described in the "Configuring the Catalyst 2800 for SNMP Management with BOOTP" section in this chapter.

Configuring the Catalyst 2800 for SNMP Management with BOOTP

The Catalyst 2800 must be configured with an IP address before it can make available any in-band management. You can assign an individual address to each Catalyst 2800, or you can use the BOOTP protocol to maintain a centralized database of such addresses.

A host machine with a BOOTP server program is needed to use BOOTP. A database containing a list of physical MAC addresses and corresponding IP addresses must be set up on this host. Other information such as the corresponding subnet masks, default gateway addresses and host names, can also be stored in the database but are optional. The Catalyst 2800 must be able to access the BOOTP server through one of its ports.

After a system reset, the Catalyst 2800 looks into its non-volatile random access memory (NVRAM) for a configured IP address, and if it exists, a default gateway address and IP subnet mask.

If an IP address has not been configured, the Catalyst 2800 transmits a BOOTP broadcast request to all of its ports having a physical connection, requesting a mapping for its physical MAC address. A valid response will include the IP address, which is mandatory, along with the subnet mask, the default gateway and the host name, which are all optional.

The reception of a valid BOOTP response immediately activates the rest of the system's protocol suite, without requiring a system reset. The information is also saved in the NVRAM so the next reset will not have to redeploy BOOTP.

As long as its IP address remains undiscovered, the Catalyst 2800 will re-send BOOTP requests for thirty minutes.

For more information about using BOOTP, refer to the BOOTP server documentation.

Standard MIBs and MIB Extensions

The following pages list the actions you use to manage and configure a Catalyst 2800, and the MIB objects associated with each action. A complete description of the objects, their defaults, and possible values is included in the *Catalyst 2000 MIB Reference Manual* available from Cisco Systems.

Following are the five supported MIBs:

- Catalyst 2800 enterprise-specific MIB
- Module MIB
- RFC1493 (Bridge MIB)
- RFC1512 (FDDI MIB)
- RFC1317 (RS-232 MIB)

Catalyst 2800 Enterprise-Specific MIB

Table 6-1 Catalyst 2800 MIB Objects

Action	Associated MIB Objects
View Self Test Results	`sysInfoPOSTResult` `sysInfoPOSTPortFailedPostMap`

View System Information	`sysInfoFwdEngineRevision`
	`sysInfoBoardRevision`
	`sysInfoTotalNumberOfPorts`
	`sysInfoNumberOfSwitchPorts`
	`sysInfoNumberOfInstalledModules`
	`sysInfoNumberofSwitchPorts`
	`sysInfoNumberOfSharedPorts`
	`sysInfoAddrCapacity`
	`sysInfoRestrictedStaticAddrCapacity`

View/Configure RS-232 Port for an Attached Modem	`netMgmtModemInitString`
	`netMgmtModemAutoAnswer`
	`netMgmtModemDialString`
	`netMgmtModemDialDelay`

Action	Associated MIB Objects
View/Configure Logon Security	netMgmtConsolePasswordThresh netMgmtConsoleSilentTime netMgmtConsoleInactTime
View/Configure Switching Mode	sysConfigSwitchingMode sysConfigMulticastStoreAndForward
View/Configure Port Monitoring Mode	sysConfigMonitor sysConfigMonitorPort sysConfigHigherProtocolMonitor swPortMonitoring
View/Configure Virtual LAN Information	vlanMaxSupported vlanAllowMembershipOverlap
View/Configure Virtual LAN Membership	vlanIndex vlanName vlanMemberPorts vlanMemberIndex vlanMemberPortIndex vlanMemberPortOfVlan
View/Configure Address Security	swPortAddressingSecurity swPortAddressTableSize swPortSecuredAddressViolations sysConfigAddressViolationAlert sysConfigAddressViolationAction
View/Configure Performance Information	sysInfoBuffersUsed sysInfoMaxBuffers sysInfoUtilDisplay swPortTxQueueFullDiscards swPortRxNoBufferDiscards bandwidthUsageCurrent bandwidthUsageMaxPeakEntries bandwidthUsagePeakInterval bandwidthUsagePeakRestart bandwidthUsageCurrentPeakEntry bandwidthUsagePeakIndex bandwidthUsageStartTime bandwidthUsagePeak bandwidthUsagePeakTime

Action	Associated MIB Objects
View/Configure Port Characteristics	swPortIndex swPortName swPortMediaCapability swPortControllerRevision swPortMtu swPortSpeed swPortConnectorType sysConfigPort25Connector swPortFullDuplex
View/Configure Port Address Status	swPortNumberOfLearnedAddresses swPortNumberOfStaticAddresses swPortEraseAddresses swPortFloodUnregisteredMulticasts swPortFloodUnknownUnicasts
View Port Receive Statistics	swPortRxStatIndex swPortRxTotalOctets swPortRxTotalOctetsWraps swPortRxTotalFrames swPortRxUnicastFrames swPortRxUnicastOctets swPortRxUnicastOctetsWraps swPortRxBroadcastFrames swPortRxBroadcastOctets swPortRxBroadcastOctetsWraps swPortRxMulticastFrames swPortRxMulticastOctets swPortRxMulticastOctetsWraps swPortRxForwardedFrames swPortRxFilteredFrames swPortRxNoBufferDiscards swPortRxFCSErrors swPortRxAlignmentErrors swPortRxFrameTooLongs swPortRxRunts
View/Configure Port Status	swPortStatus swPortAdminStatus swPortLastStatus swPortStatusChanges swPortLinkbeatStatus swPortLinkbeatLosses swPortJabberStatus swPortJabbers

Action	Associated MIB Objects
View Port Transmit Statistics	swPortTxStatIndex swPortTxTotalOctets swPortTxTotalOctetsWraps swPortTxTotalFrames swPortTxUnicastFrames swPortTxUnicastOctets swPortTxUnicastOctetsWraps swPortTxBroadcastFrames swPortTxBroadcastOctets swPortTxBroadcastOctetsWraps swPortTxMulticastFrames swPortTxMulticastOctets swPortTxMulticastOctetsWraps swPortTxDeferrals swPortTxSingleCollisions swPortTxMultipleCollisions swPortTxLateCollisions swPortTxExcessiveCollisions swPortTxExcessiveDeferrals swPortTxExcessiveCollisions16s swPortTxExcessiveCollisions4s swPortTxQueueFullDiscards swPortTxErrors
View/Configure Collision Histograms	swPortTxCollIndex swPortTxCollCount swPortTxCollFrequencies
View/Configure Spanning-Tree Protocol	sysConfigEnableSTP
View/Configure for In-Band Management	netMgmtIpAddress netMgmtDefaultGateway netMgmtIpSubnetMask vlanIpAddress vlanIpSubnetMask
View/Configure Set Clients	netMgmtSetClientIndex netMgmtSetClientAddr netMgmtSetClientStatus

Action	Associated MIB Objects
View/Configure Trap Clients and Traps	netMgmtTrapClientIndex netMgmtTrapClientAddr netMgmtTrapClientComm netMgmtTrapClientStatus netMgmtEnableLinkTraps netMgmtEnableAuthenTraps logonIntruder topologyChange switchDiagnostic newRoot
View/Configure Firmware Upgrades	upgradeFirmwareSource upgradeEPROMRevision upgradeFlashSize upgradeFlashBankStatus upgradeTFTPServerAddress upgradeTFTPLoadFilename upgradeTFTPInitiate upgradeAutoExecute upgradeTFTPAccept
Reset System	sysConfigReset sysConfigDefaultReset
Clear Port Statistics	sysConfigClearPortStats swPortClearStatistics

Module MIB

Table 6-2 Module MIB Objects

Action	Associated MIB Objects
View/Configure High-Speed Modules	esModuleCapacity esModuleIndex esModuleStatus esModuleAdminStatus esModuleDescr esModuleID esModuleVersion esModuleObjectID esModulePortCapacity esModuleReset esModuleLastStatusChange esModuleCollisionPeriods esModulePortTable esModulePortIndex esModulePortDescr esModulePortAdminStatus esModulePortAutoPartitionState esModulePortOperStatus esModulePortLinkbeatStatus esModulePortConnectorType esModulePortReceivePeriods
FDDI Portion of Module MIB	
View FDDI POST Results	fmCfgPOSTResult fmCfgPOSTTest fmCfgPOSTLoopbackResult
Reset FDDI Module	fmCfgResetToFactoryDefaults fmCfgResetModule
View/Configure FDDI to Ethernet Frame Translation	fmCfgNovellFDDISNAPTranslation fmCfgUnmatchedSNAPDestination
View/Configure SMT Authorization	fmCfgAuthorizationChecking fmCfgAuthorizationString
View/Configure FDDI Module Firmware Status	fmCfgFirmwareVersion fmCfgBOOTCodeVersion fmCfgFlashStatus

Action	Associated MIB Objects
View FDDI Translation to Ethernet Statistics	fmXlateToEthIndex fmXlateToEthNovellSnapToRaw8023Frames fmXlateToEthNovellSnapToEthIIFrames fmXlateToEthNovellSnapToSnapFrames fmXlateToEthAppleTalkSnapToSnapFrames fmXlateToEthIpSnapForFragmentationFrames fmXlateToEthIpSnapFragmentedFrames fmXlateToEthBridgeTunnelToEthIIFrames fmXlateToEthOtherSnapToEthIIFrames fmXlateToEthOtherSnapToSnapFrames fmXlateToEth8022To8022Frames
View FDDI Translation to FDDI	fmXlateToFDDIIndex fmXlateToFDDINovellRaw8023ToSnapFrames fmXlateToFDDINovellEthIIToSnapFrames fmXlateToFDDINovellSnapToSnapFrames fmXlateToFDDIEthIIToBridgeTunnelFrames fmXlateToFDDIEthIIToSnapFrames fmXlateToFDDIOtherSnapToSnapFrames fmXlateToFDDI8022To8022Frames
View FDDI Frame Filtering Statistics	fmFilterIndex fmFilterFcsInvalidFrames fmFilterDataLengthFrames fmFilterErrorIndFrames fmFilterFddiFifoOverrunFrames fmFilterFddiInternalErrorFrame fmFilterNoEndDelimitFrames fmFilterNoLlcHeaderFrames fmFilterSourceRouteFrames fmFilterNoSnapHeaderFrames fmFilterTooLargeFrames fmFilterNovellSnapFilteredFrames fmFilterCantFragmentFrames fmFilterBadIpHeaderFrames fmFilterRingDownDiscards fmFilterNovellOtherFilteredFrames
View FDDI Performance Information	fmFilterNoBufferSpaceFrames fmCfgUnmatchedSNAPDestination

Bridge MIB (RFC 1493)

Table 6-3 Bridge MIB Objects

Action	Associated MIB Objects
View Spanning-Tree Protocol Status	dot1dStpTimeSinceTopologyChange dot1dStpTopChanges dot1dStpDesignatedRoot dot1dStpMaxAge dot1dStpHelloTime dot1dStpHoldTime dot1dStpFowardDelay dot1dStpProtocolSpecification dot1dStpRootCost dot1dStpRootPort
View/Configure Spanning-Tree Protocol Parameters when this Bridge is Acting as Root	dot1dBridgeHelloTime dot1dBridgeMaxAge dot1dBridgeForwardDelay
View/Configure Spanning-Tree Protocol Parameters	dot1dStpPriority
View/Configure Per Port Spanning-Tree Protocol Status	dot1dStpPortPriority dot1dStpPortState dot1dStpPortEnable dot1dStpPortPathCost dot1dStpPortDesignatedRoot dot1dStpPortDesignatedCost dot1dStpPortDesignatedBridge dot1dStpPortDesignatedPort dot1dStpPortForwardTransitions
View/Configure Address Aging Parameters	dot1dTpLearnedEntryDiscards dot1dTpAgingTime
View/Configure the Forwarding Database of the Bridge	dot1dTpFdbAddress dot1dTpFdbPort dot1dTpFdbStatus
View/Configure the Static Address Table	dot1dStaticAddress dot1dStaticReceivePort dot1dStaticAllowedToGoTo dot1dStaticStatus

FDDI MIB (RFC 1512)

Table 6-4 FDDI MIB Objects

Action	Associated MIB Objects
View SMT Information	fddimibSMTStationId fddimibSMTOpVersionId fddimibSMTMIBVersionId fddimibSMTMACCts fddimibSMTNonMasterCts fddimibSMTConnectionPolicy fddimibSMTBypassPresent fddimibSMTECMState fddimibSMTCFState fddimibSMTRemoteDisconnectFlag fddimibSMTStationStatus
View/Configure SMT Information	fddimibSMTNotify
View MAC Information	fddimibMACFrameStatusFunctions fddimibMACAvailablePaths fddimibMACUpstreamNbr fddimibMACDownstreamNbr fddimibMACOldUpstreamNbr fddimibMACOldDownstreamNbr fddimibMACDownstreamPORTType fddimibMACTReq fddimibMACTNeg fddimibMACFrameErrorThreshold

Action	Associated MIB Objects
View MAC Traffic Statistics	fddimibMACFrameCts fddimibMACCopiedCts fddimibMACTransmitCts fddimibMACErrorCts fddimibMACLostCts fddimibMACTokenCts fddimibMACTvxExpiredCts fddimibMACNotCopiedCts fddimibMACLateCts fddimibMACRingOpCts fddimibMACNotCopiedRatio fddimibMACNotCopiedFlag
View PORT Information	fddimibPORTMyType fddimibPORTNeighborType fddimibPORTConnectionPolicies fddimibPORTCurrentPath fddimibPORTAvailablePaths fddimibPORTPMDClass fddimibPORTLCTFailCts fddimibPORTLemRejectCts fddimibPORTLemCts fddimibPORTPCMState

RS-232 MIB (RFC1317)

Table 6-5 RS-232 MIB Objects

Action	Associated MIB Objects
View RS-232 Port Input/Output Signals	rs232InSigPortIndex rs232InSigName rs232InSigState rs232InSigChanges rs232OutSigPortIndex rs232OutSigName rs232OutSigState rs232OutSigChanges
View/Configure RS-232 Port Characteristics	rs232Number rs232PortIndex rs232PortType rs232PortInSigNumber rs232PortOutSigNumber rs232PortInSpeed rs232PortOutSpeed
View/Configure RS-232 Async Port Characteristics	rs232AsyncPortIndex rs232AsyncPortBits rs232AsyncPortStopBits rs232AsyncPortParity rs232AsyncPortAutobaud
View RS-232 Async Port Statistics	rs232AsyncPortParityErrs rs232AsyncPortFramingErrs rs232AsyncPortOverrunErrs

MIB Installation in a Novell NMS Environment

This section describes how to load and integrate the Catalyst 2800 MIB extensions into Novell's NetWare Management System (NMS). These files are located with the NMS profiles on the Catalyst 2800 DOS-formatted diskette included with the Catalyst 2800. The diskette contains the following MIB files:

cat2000.mib	Catalyst 2800 MIB extensions written in the ASN.1 language.
module.mib	Module MIB extensions written in ASN.1
rfc1317.mib	Definitions of managed objects for RS-232-like devices as defined in RFC-1317. Also written in ASN.1
rfc1493.mib	Definitions of managed objects for 802.1d bridge devices. Also written in ASN.1.
rfc1512.mib	Definitions of managed objects for Station Management v7.3 in ASN.1.

The files with *.prf* are NMS profiles. They are described in the "Using the Supplied NMS Profiles" section in this chapter and can be integrated into Novell NMS after performing Steps 1 and 2 in the following procedure. These instructions are specific to Novell NMS version 2.0 and 2.1. For other versions or for additional information, consult your Novell NMS documentation.

Step 1 Copy the MIB files. Using the DOS **copy** command, transfer the *cat2000.mib*, *module.mib*, *rfc1493.mib* and *rfc1317.mib* files to the current NMS directory. For a standard NMS installation, this directory is usually `\nms\snmpmibs\current`.

Step 2 From the NMS main window, select the **Tools>SNMP MIB Compiler** command. Confirm this action by selecting **OK** to compile all current MIB definitions. For the compilation to succeed, any existing browser windows must first be closed.

Step 3 Select the **Tools>SNMP MIB Browser** command from the NMS main window to view and set the Catalyst 2800 MIB objects.

Step 4 Select the **Add** button to invoke the Profile Editor for creating a new profile. The names of all the available Catalyst 2800 scalar and table objects should now be listed in the Group Attribute Choices box of the Profile Editor window.

Step 5 Choose the objects or tables to be added to the new Profile's Attribute Selection box as appropriate.

Step 6 Enter a name and a description for the Profile, a community string, and a display attribute as needed.

Step 7 Click **Save** to store the named Profile to disk.

Step 8 Enable the Catalyst 2800 enterprise-specific traps: to activate or deactivate the ability to receive and process any type of traps at the NMS station, the **Fault>Alarm Disposition** command must be used. Refer to the *NMS User's Guide* for detailed information.

With a properly configured Catalyst 2800 on an accessible local network, you are now ready to browse and set the Catalyst 2800 objects included in this Profile.

Using the Supplied NMS Profiles

The Catalyst 2800 diskette contains a number of NMS profiles that have been set up with Catalyst 2800 MIB objects. These files are provided for convenience and can be used without change. Steps 1 and 2 listed above must be completed before these profiles can be used.

Copy the files **.prf* to the directory `\nms\snmpmibs\profiles` for a standard NMS installation. The supplied profiles are:

Profile	MIB Objects
15	1
fs2syscf.prf	sysConfig group
fs2port.prt	port group
fs2rstat.prf	swPortRxStatTable
fs2tstat.prf	swPortTxStatTable group
fs2upg.prf	upgrade group
fs2netma.prf	netMgmt group
fs2setcl.prf	netMgmtSetClientTable
fs2trpcl.prf	netMgmtTrapClientTable
fs2bwtab.prf	bandwidthUsagePeakTable
fs2vlan.prf	vlan group
fs2vltab.prf	vlanTable
fs2vlmem.prf	vlanMemberTable
fs2bandw.prf	bandwidthUsage group
fsmodbas.prf	esModuleBasic
fsmodgrp.prf	esModuleGroup
fsmodprt.prf	esModulePortGroup
fsfmcfg.prf	fmCfgTable

Profile	MIB Objects
fsfmeth.prf	fmXlateToEthTable
fsfmfddi.prf	fmXlateToFDDITable
fsfmfilt.prf	fmFilterTable
1dstatic.prf	dot1dStaticTable
1dbase.prf	dot1dBase group
1dbasepo.prf	dot1dBasePortTable
1dstp.prf	dot1dStp group
1dstppor.prf	dot1dStpPortTable
1dtp.prf	dot1dTp group
1dtpport.prf	dot1dTpPortTable
1dtpfdb.prf	dot1dTpFdbTable

MIB Installation in a SunNet Manager Environment

This section describes how to load, integrate, and use the Catalyst 2800 MIB extensions with SunNet Manager. These files are archived in TAR format on the Unix TAR diskette included with the Catalyst 2800. The diskette contains the following files as well as their precompiled versions, known as schema files.

cat2000.mib	Catalyst 2800 MIB extensions written in the ASN.1 language.
module.mib	Module MIB extensions written in ASN.1

rfc1317.mib	Definitions of managed objects for RS-232-like devices as defined in RFC-1317. Also written in ASN.1.
rfc1493.mib	Definitions of managed objects for 802.1d bridge devices. Also written in ASN.1.
rfc1512.mib	Definitions of managed objects for Station Management v7.3 in ASN.1.

The schema files can be immediately integrated into SunNet Manager without additional compilation, following the instructions below. These instructions are specific to SunNet Manager versions 2.1 and 2.2. For other versions or for additional information, consult your SunNet Manager documentation.

Step 1 Insert the Catalyst 2800 Unix TAR diskette into the floppy drive of the SunNet Manager workstation.

Step 2 Use TAR to extract the MIB files.

SunNet Manager is typically installed in the default directory `/opt/SUNWconn/snm` or in the directory designated by the environment variable *$SNMHOME*.

Using the Unix TAR command, extract all files on the Catalyst 2800 UNIX diskette into the directory `$SNMHOME/agents` on the SunNet Manager workstation, as follows:

```
cd $SNMHOME/agents
tar xvf /dev/fd0
```

On some Unix platforms, the name of the floppy device may be different. On SunOS 5.3, it may be necessary to stop the Volume Manager before the TAR diskette can be read. Become the root user and type:

```
/etc/init.d/volmgt stop
cd $SNMHOME/agents
tar xvf /dev/rdiskette
/etc/init.d/volmgt start
```

The following schemas are also included on the diskette:

cat2000.mib.schema

cat2000.mib.oid

cat2000.mib.traps

module.mib.schema

module.mib.oid

rfc1317.mib.schema

rfc1317.mib.oid

rfc1493.mib.schema

rfc1493.mib.oid

rfc1493.mib.traps

rfc1512.mib.schema

rfc1512.mib.oid

Step 3 Set up the SunNet Manager SNMP target configuration file.

Locate the keyword *na.snmp.hostfile* in the file `/etc/snm.conf`. This keyword points to the file the SNMP proxy agent and SNMP trap proxy use to obtain target-specific information. In this file, add an entry for each target Catalyst 2800 that is to be managed. The relevant schema file names to be specified are:

cat2000.mib.schema

cat2000.mib.traps

module.mib.schema

rfc1317.mib.schema

rfc1493.mib.traps

rfc1512.mib.schema

Refer to the SunNet Manager Reference manual for a detailed specification of the file named by the keyword *na.snmp.hostfile.*

Step 4 Integrate the Catalyst 2800 MIB files into SunNet Manager.

If the SunNet Manager application has not been started, start it now.

a Select the **File>Load>Management Database** command from the menu and then:

b Select the *cat2000.mb.schema* item and then **Load**

c Select the *module.mib.schema* item and then **Load**

d Select the *rfc1317.mib.schema* item and then **Load**

e Select the *rfc1493.mib.schema* item and then **Load**

f Select the *rfc1512.mib.schema* item and then **Load**

The SunNet Manager will now understand the Catalyst 2800 enterprise-specific MIB and trap schemas, and the RFC-1317, RFC-1493, and RFC-1512 MIB schemas.

Step 5 Manage the Catalyst 2800 via the SunNet Manager Discover Tool.

Use the SunNet Manager Discover tool to locate and map the Catalyst 2800. Once the Catalyst 2800 is discovered and added as an icon to the network map, set up the icon properties to process the Catalyst 2800 schema, and the RFC-1317, RFC-1493 and RFC-1512 schemas. These schemas will be displayed with the names *FASTSWITCH-2000-MIB, ES-MODULE-MIB, RFC1317-MIB, BRIDGE-MIB,* and *FDDI-SMT73-MIB*, respectively, on the icon properties window.

Step 6 Click on the boxes to the left of *FASTSWITCH-2000-MIB, ES-MODULE-MIB, RFC1317-MIB, BRIDGE-MIB* and *FDDI-SMT73-MIB* to enable management using these schemas.

Step 7 Type **localhost** on the proxy line to use the local SNMP proxy agent.

The Catalyst 2800 is now manageable using the various facilities provided by SunNet Manager including the Quick Dump, Data Report, Event Report and Set Request facilities.

MIB Installation for HP OpenView SNMP Management Platform

This section describes how to load, integrate, and use the Catalyst 2800 MIB extensions with the HP OpenView SNMP Management Platform. The MIB extension files are archived on the Unix TAR diskette included with the Catalyst 2800.

cat2000.mib	Catalyst 2800 MIB extensions written in the ASN.1 language.
module.mib	Module MIB extensions written in ASN.1.
rfc1317.mib	Definitions of managed objects for RS-232-like devices as defined in RFC-1317. Also written in ASN.1.
rfc1493.mib	Definitions of managed objects for 802.1d bridge devices. Also written in ASN.1.
rfc1512.mib	Definitions of managed objects for Station Management v7.3 in ASN.1.

These instructions are specific to version 3.31 of the HP OpenView SNMP Management Platform for SunOS 4.1.x or 5.x. For other versions or additional information, consult your applicable HP OpenView documentation.

Step 1 Insert the Catalyst 2800 Unix TAR diskette into the floppy drive of the HP OpenView workstation.

Step 2 Use TAR to extract the MIB files.

HP OpenView MIB files are typically installed in the default directory /usr/OV/snmp_mibs. Using the Unix TAR command, extract all files on the Catalyst 2800 UNIX diskette into the directory /usr/OV/snmp_mibs on the HP OpenView workstation as follows:

```
cd /usr/OV/snmp_mibs
tar xvf /dev/fd0
```

On some UNIX platforms, the name of the floppy device may be different. On SunOS 5.3, it may be necessary to stop the Volume Manager before the TAR diskette can be read. Become the root user and type:

```
/etc/init.d/volmgt stop
cd /usr/OV/snmp_mibs
tar xvf /dev/rdiskette
/etc/init.d/volmgt start
```

Step 3 Integrate the Catalyst 2800 MIB files into HP OpenView.

If the HP OpenView SNMP Platform application has not been started, start it now.

a Select the **Options>Load/Unload MIBs: SNMP** command from the menu.

b Select **Load.**

c Select the */usr/OV/snmp_mibs/cat2000.mib* item and click **OK.**

d Again, select **Load.**

e Select the */usr/OV/snmp_mibs/module.mib* item and click **OK.**

f Select **Load.**

g Select the */usr/OV/snmp_mibs/rfc1317.mib* item and click **OK.**

h Select **Load.**

i Select the */usr/OV/snmp_mibs/rfc1493.mib* item and click **OK.**

j Select **Load.**

k Select the */usr/OV/snmp_mibs/rfc1512.mib* item and click **OK.**

The HP OpenView SNMP Platform will now understand the Catalyst 2800 enterprise-specific MIB, the RFC-1512 MIB, RFC-1493 MIB, and the RFC-1317 MIB.

Step 4 Manage the Catalyst 2800 via the MIB Browser.222

The Catalyst 2800 can now be managed using the HP OpenView MIB Browser tool. From the OpenView menu, select the **Monitor>MIB Values:Browse MIB:SNMP** command. A MIB Browser window will pop up where MIB objects can be viewed and set for any SNMP ready device.

Trap Clients and Traps

A trap client is a management workstation configured to receive and process traps. The Catalyst 2800 supports up to four trap clients with separate community strings. At least one trap client must be defined before any traps are generated. See the "Network Management (SNMP) Configuration" section in the "Out-of-Band Management" chapter for instructions on defining trap clients. See the "Standard MIBs and MIB Extensions" section in this chapter for the MIB objects to use.

The Catalyst 2800 can generate the following traps:

warmStart	Generated when the Catalyst 2800 is reset, or after the completion of a firmware upgrade where the new firmware is immediately selected for execution. This could be performed in-band or out-of-band with the management console.
coldStart	Generated upon a power-on reset.
linkDown	Produced whenever a port changes to a suspended or disabled state due to spanning tree blocking of a redundant path, secure address violation, loss of linkbeat, jabber error, or by management intervention. The trap frame carries the index value of the port.
linkUp	Generated when a port changes status from disabled or suspended to enabled.
authenticationFailure	Generated when the Catalyst 2800 receives an SNMP message that is not accompanied by a valid community string.
newRoot	The Catalyst 2800 sends this bridge-standard trap when it becomes the new root of the spanning tree.

topologyChange	From the bridge MIB, this trap is sent by the Catalyst 2800 when any of its ports change from the learning to the forwarding state, or from the forwarding state to the blocking state.
logonIntruder	An enterprise-specific trap produced whenever the management console receives repeated logon failures due to invalid passwords. You can define the number of invalid passwords permitted before this trap is produced.
switchDiagnostic	The Catalyst 2800 generates this enterprise-specific trap when it does not pass all of the POST tests. Some POST failures are fatal and could prevent the generation of this trap.