



GoWide G.shdsl Serial AAL1 Network Termination Unit

User Manual



097-91072-01
Issue 3
June 2003

Symmetricom, Inc.
2300 Orchard Parkway
San Jose, CA 95131-1017

<http://www.symmetricom.com>

Copyright © 2003 Symmetricom, Inc.
All rights reserved. Printed in U.S.A.

All product names, service marks, trademarks, and registered trademarks
used in this document are the property of their respective owners.

Notice

If this equipment appears to cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

- Turn the equipment "OFF" and "ON".
- Connect the equipment to an outlet on a circuit different from which the receiver is connected.

Note: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

Approvals

Safety: EN60950, UL 1950, C/UL to CSA 22.2 No.950, TUV, IC CS03

Emissions: EN55022/CISPR22 Class B

Immunity: EN55024

CE Mark

ETS 300019 1.3, class 3.2 (operational), 2.3 (transport), 1.2 (storage)

EN 60950 Amendment 4 and EN 41003. NT is class II

EN 300 386-2, EMC directive 89/336/EEC

ITU K.21

Warning: Use a minimum of 26AWG line cord for the DSL connection.

This page intentionally left blank.

Chapter 1 Product Description

Product Description	14
GoWide 2.3 Serial AAL1	14
GoWide 4.6 Serial AAL1	14
GoWide Serial AAL1 Specifications	15
GoWide Serial AAL1 Top Panel	16
GoWide Serial AAL1 Rear Panel	17

Chapter 2 Installation

Hardware Installation	20
---------------------------------	----

Chapter 3 Configuration and Maintenance

Configuration and Maintenance Scenarios	24
Changing the Password	24
Setting the GoWide Serial AAL1 System Clock	24
Configuring the IP Address	24
Static IP Address	25
Dynamic IP Address	25
Remote Access Configuration	26
How to Clear Bridge/Router Settings	27
RFC1483 Bridge Configuration	27
RFC1483 Router Configuration	28
IPoA Router Configuration	29
Configuring Ports	30
SHDSL Port Configuration	30
Serial Port Configuration	31
Configuring AAL1 Traffic Groups	32
AAL1 Parameters	33
Traffic Parameters	33
Configuring a SDT Traffic Group	34
Configuring the OAM LLID	35
Saving and Viewing the Configuration	35
Restoring Factory Defaults	37

Default Settings	38
Upgrading the GoWide Firmware	39
Upgrading the Firmware Using BOOTP	40
Before Beginning the Procedure	40
BOOTP Upgrade Procedure	41
Upgrading the Firmware Using TFTP	42
Before Beginning the Procedure	42
TFTP Upgrade Procedure	42
Upgrading the Firmware Using FTP	43
Before Beginning the Procedure	43
FTP Upgrade Procedure	44

Chapter 4 SNMP Configuration

Overview	48
The SNMP Configuration Files	48
In This Chapter	49
How to Configure SNMP on the GoWide	50
How to Modify the snmpd.cnf File	51
Add the Values of sysName sysDescr, sysLocation, sysContact, sysObjectID, and snmpEnableAuthenTraps	51
Add the vacmContextEntry	52
Define the Users	52
Define the Views of the MIB Tree	53
Define the Groups for SNMPv3	54
Map the Users to the Groups	55
Define a Notification	55
Define a Set of Network Addresses to which a Notification should be Sent	56
Define Parameters to Use when Sending Notifications to Each of the Target Addresses Identified in the Previous Section	57
Configuring Communities for SNMPv1 or SNMPv2c Messages	58
Troubleshooting	60

Chapter 5 Performance Monitoring and Status

Alarms, LED Indicators, and Performance	62
PVC Manager List Group	62
Port Performance and Status	62
G.shdsl	62
Serial	63
BUN Attributes	63
Alarm Status	63
Alarm Types and Descriptions	64
Alarm Severity and Assignment	64
Current and Historic Logs	65
LED Indicators	66
Power LEDs	66
Sync LEDs	66
Activity LEDs	66
Link LED	66
Alarm LED	66

Chapter 6 Console Commands

Console Command Overview	68
Console Port	68
Executing a Console Command	68
Command Summary Table	69
General-Usage Console Commands	70
exit (Exit Console Command Mode)	70
help (Console Command help)	70
home (Go to home Directory)	70
restart (Restart the System)	71
Alarm Handler (ah) Commands	72
reset (Reset Alarm Severity/Description to Default)	72
set (Set Alarm Severity/Description)	72
show (Show Alarm Configuration File)	73
Alarm Logger (al) Commands	74
clearlog (Clear Specified Log)	74
delentry (Delete Log Entry)	75

getlatest (Get Latest Alarm Entry)	75
getnext (Get Next Alarm Entry)	76
getsize (Get Maximum Size of Log)	77
setsize (Set Maximum Size of Log)	77
show (Show Alarm Entries)	78
PVC Manager (pvcn) Commands - General	80
help (Display PVCN Command Help)	80
info (Display Switch Information)	80
version (Display PVCN Version Number)	80
PVC Manager (pvcn) Commands - OAM-Related	81
OAM Command Arguments	81
ccactivate (Activate CC)	81
ccdeactivate (Deactivate CC)	82
ccdisable (Disable CC)	82
ccenable (Enable CC)	82
ccenableauto (Auto-Accept CC Activate Enable)	83
ccglobalaccept (Global Accept CC)	83
ccstart (Start CC without Handshaking)	83
ccstop (Stop CC without Handshaking)	84
faultbegin (Declare a Fault State)	84
faultdisable (Disable Fault Management)	85
faultenable (Enable Fault Management)	85
faultend (Clear a Fault State)	85
faultunwatch (Turn Off Non-Intrusive Fault Monitoring)	86
faultwatch (Turn On Non-Intrusive Fault Monitoring)	86
lbdisable (Disable Loopback)	86
lbenable (Enable Loopback)	87
lbsend (Send a Loopback Cell)	87
lbstats (Display Loopback Statistics)	88
myllid (Set Local Loopback Location ID)	88
oaminfo (Display OAM Information)	89
oamlist (List OAM Settings)	90
pmactivate (Activate PM)	90
pmdeactivate (Deactivate PM)	91
pmdisable (Disable PM)	91
pmenable (Enable PM)	92

pmenableauto (Auto-Accept PM Activate Enable)	92
pmglobalaccept (Global Accept PM)	92
pmstart (Start PM without Handshaking)	93
pmstats (Display PM Statistics)	93
pmstop (Stop PM without Handshaking)	94
segmclr (Clear Segment Sinkpoint)	94
segmset (Set Segment Sinkpoint)	95
PVC Manager (pvcn) Commands - Traffic-Related	96
aal1 pfm (Display AAL1 Performance Statistics)	96
aal1 pfp (Set the AAL1 Partial Fill Pattern)	97
ap (Create/Modify an AAL1 Parameter Set)	97
ap delete (Delete an AAL1 Parameter Set)	98
ap list (Display AAL1 Parameter Set Details)	98
calcr (Calculate Peak Cell Rate)	99
delete (Delete Traffic Group)	99
list (List Traffic Groups)	100
sdt (Create SDT Group)	101
show (Show Traffic Group Details)	102
tp ABR (Create/Modify ABR Traffic Parameters)	103
tp CBR (Create/Modify CBR Traffic Parameters)	104
tp delete (Delete a Traffic Parameter)	104
tp list (List Traffic Parameters)	104
tp NRTVBR (Create/Modify NRTVBR Traffic Parameters)	105
tp UBR (Create/Modify UBR Traffic Parameters)	106
tp VBR (Create/Modify VBR Traffic Parameters)	106
Real Time Clock (rtc) Commands	108
set (Set the Real Time clock)	108
show (Show Current System Time)	108
version (Display RTC Version Number)	109
Serial Port (serial) Commands	110
dtralm (Enable/Disable DTR Alarm Logging)	110
loopback (Enable/Disable Serial Loopback)	110
set (Display/Set Serial Interface Attribute)	110
G.shdsl Port (shdsl) Commands	114
atm (Display/Reset ATM Cell Counters)	114
debug (Display G.shdsl Debug Information)	114

info (Display SHDSL Version Information)	115
loopback (Enable/Disable G.shdsl Loopback)	116
pfm (Display G.shdsl Line Performance)	116
set (Display/Set G.shdsl Attribute)	117
startup (Enable/Disable G.shdsl Port)	118
status (Display G.shdsl Line Status)	118
Command Summary	121

Chapter 7 Interface Pin Assignments and Connectivity

Interface Pin Assignments	138
Craft (DB-9) Interface	138
SHDSL Interface	138
Craft (RJ-45) Interface	138
Serial Interface	139
Serial Interface Connectivity	141
V.35 Interface Cable Requirements	141
V.36 Interface Cable Requirements	142
X.21 Interface Cable Requirements	143

Chapter 8 G.shdsl Configuration

G.shdsl Configuration	146
---------------------------------	-----

Appendix A SNMP MIB Implementation

Overview	148
SNMP Implementation Details Tables	148
GoWide MIB Implementation	150
ATM MIB	150
Implementation Summary	150
Implementation Details	150
ATMF-CES-MIB	154
Implementation Summary	154
Implementation Details	155

E1 MIB	161
Implementation Summary	161
Implementation Details	161
MIB-II	165
Implementation Summary	165
Implementation Details	165
RS-232 MIB	168
Implementation Summary	168
Implementation Details	169
SHDSL MIB	172
Implementation Summary	172
Implementation Details	172
SYMM-ATM-IF-PHYS-MIB	180
Implementation Summary	180
Implementation Details	180
SYMM-DSL-CPE-MIB	181
Implementation Summary	181
Implementation Details	181
SYMM-SERIAL-IF-MIB	183
Implementation Summary	183
Implementation Details	183

This page intentionally left blank.

Product Description

This chapter provides a description of the GoWide Serial AAL1.

Product Description

1

Symmetricom's GoWide family of products enable high performance broadband-over-copper voice and data services for businesses and telco providers. The GoWide family of products provide Internet and Intranet access, as well as LAN Extension, Cellular Backhaul, E1 PRI, E1 Circuit Emulation, and Nx64K Serial connectivity. These products are all based on the worldwide G.shdsl (ITU-T G991.2) standard which provides advantages such as unrivalled rate/reach, excellent tolerance to noise and bridged taps. These advantages enable Service Providers to provide increased end user satisfaction at low system cost. Symmetricom leverages the G.shdsl international standard for widespread interoperability with major DSLAM manufacturers.

The GoWide G.shdsl Serial AAL1 family, referred to collectively as GoWide Serial AAL1, provides small to medium enterprises (SMEs) the ability to connect equipment which utilizes a serial interface to an existing ATM infrastructure. At the carrier side of the connection, the GoWide Serial AAL1 provides ATM AAL1 network termination services over industry standard G.shdsl. At the enterprise side, the GoWide Serial AAL1 provides Nx64K V.35, V.36, or X.21 serial termination.

In addition to providing network termination services, the GoWide Serial AAL1 can be set up to provide bridge and IP routing services, utilizing Ethernet on the LAN side and ATM via G.shdsl transport on the WAN side. The following ATM transport protocols are supported: IP over ATM (IPoA), and RFC 1483. ITU-T I.610 support provides continuity checking, fault monitoring and management, loopback, and performance monitoring OAM functionality on the ATM connection.

This User Manual covers the following members of the GoWide Serial AAL1 family of products:

GoWide 2.3 Serial AAL1

The GoWide 2.3 Serial AAL1 includes a single two-wire G.shdsl port, providing an adaptive data rate of 192 Kbps to 2.312 Mbps.

GoWide 4.6 Serial AAL1

The GoWide 4.6 Serial AAL1 includes two two-wire G.shdsl ports. The unit can be configured either in two-wire mode or four-wire mode, providing an adaptive data rate of 192 Kbps to 2.312 Mbps (two-wire mode) or 384 Kbps to 4.608 Mbps (four-wire mode). Four-wire mode can also be used to extend the reach of lower data rates beyond the typical coverage area of a two-wire SHDSL service. Similarly, four-wire mode enables a user to configure a more restrictive power spectrum density and retain enough bandwidth for serial applications.

GoWide Serial AAL1 Specifications

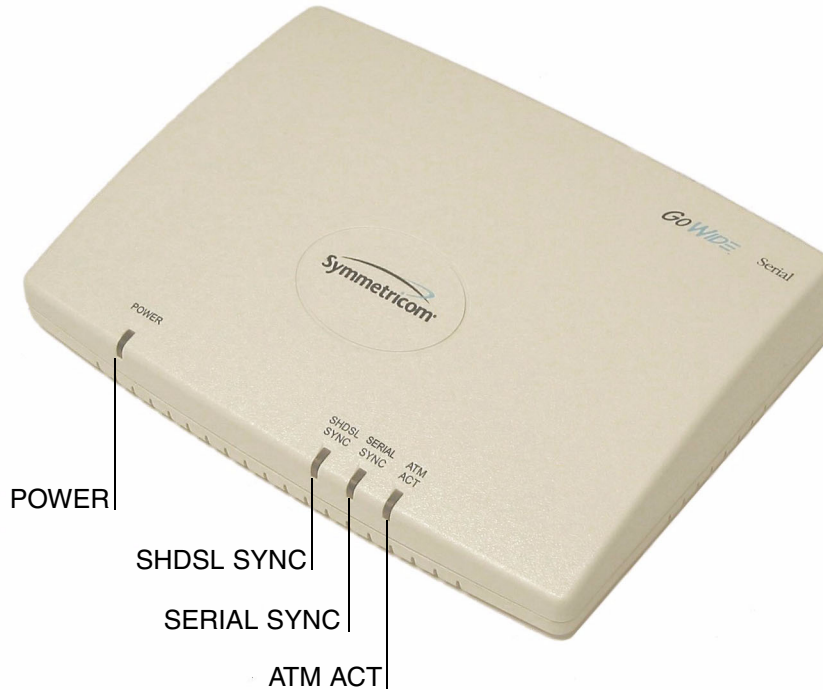
Refer to the current product data sheet, available from Symmetricom, for the latest specifications.

GoWide Serial AAL1 Top Panel

1

Figure 1 shows the GoWide Serial AAL1 top panel.

Figure 1. GoWide Serial AAL1 Top Panel



The GoWide Serial AAL1 top panel includes four status indicators as described in Table A.

Table A. Top Panel Status Indicators

LEDs	COLOR	EXPLANATION
POWER	GREEN	ON: Device has power
		OFF: Device has no power
SHDSL SYNC*	GREEN	ON: SHDSL port(s) are synchronized
		OFF: SHDSL port(s) are disabled
SERIAL SYNC	GREEN	ON: The Serial port is synchronized
		OFF: The Serial port is disabled
ATM ACT	GREEN	ON: Device has AAL1 activity
		OFF: Device has no AAL1 activity

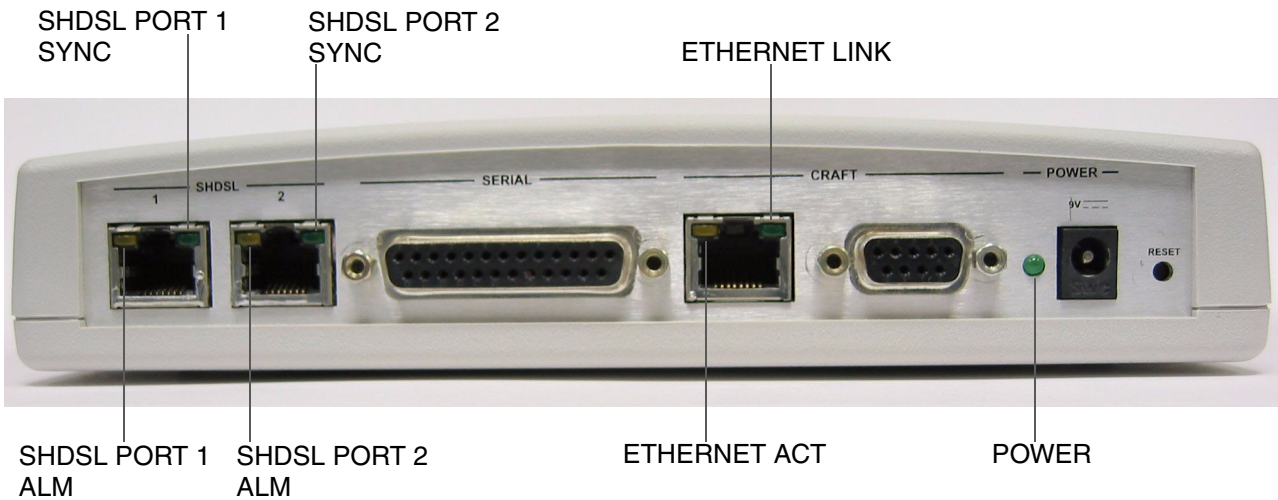
* When the SHDSL SYNC LED is blinking, the SHDSL port(s) are in handshake mode.

GoWide Serial AAL1 Rear Panel

Figure 2 shows the GoWide Serial AAL1 rear panel.

Note: Figure 2 shows the rear panel of the GoWide 4.6 Serial AAL1 unit. On the GoWide 2.3 Serial AAL1 rear panel, the SHDSL 2 connector is not present.

Figure 2. GoWide Serial AAL1 Rear Panel



The GoWide Serial AAL1 rear panel includes the status indicators described in Table B.

Table B. Rear Panel Status Indicators

LEDs	COLOR	EXPLANATION
SHDSL PORT 1 ALM	YELLOW	ON: Alarm state on this SHDSL port
		OFF: No alarm
SHDSL PORT 1 SYNC*	GREEN	ON: This SHDSL port is synchronized
		OFF: This SHDSL port is disabled
SHDSL PORT 2 ALM <i>(GoWide 4.6 only)</i>	YELLOW	ON: Alarm state on this SHDSL port
		OFF: No alarm
SHDSL PORT 2 SYNC* <i>(GoWide 4.6 only)</i>	GREEN	ON: This SHDSL port is synchronized
		OFF: This SHDSL port is disabled
ETHERNET ACT	YELLOW	ON: Ethernet port has activity
		OFF: Ethernet port has no activity

Table B. Rear Panel Status Indicators (Cont'd)

LEDs	COLOR	EXPLANATION
ETHERNET LINK	GREEN	ON: Ethernet port has a link
		OFF: Ethernet port has no link
POWER	GREEN	ON: Device has power
		OFF: Device has no power

* When SHDSL SYNC LED is blinking, the SHDSL ports are in handshake mode.

Installation

This chapter provides installation-related information for the GoWide Serial AAL1.

Hardware Installation

Figure 3 shows the cable connections to the GoWide Serial AAL1 rear panel. Hardware installation is described in Procedure A.

Note: Figure 3 shows the rear panel of the GoWide 4.6 Serial AAL1 unit. On the GoWide 2.3 Serial AAL1 rear panel, the SHDSL 2 connector is not present.

Figure 3. GoWide Serial AAL1 Rear Panel Cable Connections



Procedure A. GoWide Serial AAL1 Hardware Installation

Step	Procedure
1	Check that the Ethernet card and the TCP/IP protocol are installed on the PC before beginning connection.
2	Connect the Ethernet cable from the GoWide Serial AAL1's RJ-45 "CRAFT" port to the PC's NIC card or the server's NIC card. <i>Note:</i> If the Ethernet cable is to be permanently connected, a shielded cable must be used.
3	Connect the serial cable from the GoWide Serial AAL1's DB-9 "CRAFT" port to the PC's serial port or the server's serial port.
4	Connect an appropriate serial cable from the GoWide Serial AAL1's DB-25 "SERIAL" port to the serial port on the equipment being connected. <i>Note:</i> Recommended serial cables are described in the section entitled "Serial Interface Connectivity" in Chapter 7.
5	Connect one end of an SHDSL cable to the DSL jack and the other end to the "SHDSL 1" port on the back of the GoWide Serial AAL1.
6	Connect one end of a second SHDSL cable to the DSL jack and the other end to the "SHDSL 2" port on the back of the GoWide Serial AAL1. <i>Note:</i> Connection of a second SHDSL cable is only necessary when installing a GoWide 4.6 Serial AAL1 unit for use in 4-wire mode.
7	Connect one end of the AC adapter power cord to an AC outlet and the other end to the "POWER" receptacle on the GoWide Serial AAL1.

.....

Procedure A. GoWide Serial AAL1 Hardware Installation (Cont'd)

Step	Procedure
8	The GoWide Serial AAL1 Power LED must be a steady green. The SHDSL LEDs will initially be blinking green and will become steady green once the connection is established.

End of Procedure



This page intentionally left blank.

Configuration and Maintenance

This chapter explains specific tasks or scenarios and provides sample commands for resolving or completing GoWide Serial AAL1 tasks.

Chapter 3

Configuration and Maintenance Scenarios

Changing the Password

After the system has booted up, the password needs to be set up before configuring the other functions on the GoWide Serial AAL1.

Note: The password must be a minimum of 4 alphabetic characters.

Enter the old password:

```
flashfs password <old password>
```

Enter the new password:

```
flashfs config password <new password>
```

Setting the GoWide Serial AAL1 System Clock

When the GoWide Serial AAL1 unit is used for the first time, the clock is not set. The user is required to setup the correct value for the system clock before proceeding to setup other sections of the system.

To set the system clock, use the following command:

```
10.0.0.1> rtc set 12/02/2002 14:50:00 GMT+08:00 no daysave
```

Use the show command to make sure the time is set correctly.

```
10.0.0.1> rtc show
```

```
RTC: read 12/02/2002 06:51:17
```

```
date: Monday, December 02 2002  time: 02:51:17 PM GMT+08:00  
Daylight saving time is off
```

Once the system date and time are set correctly, the system clock will maintain the time and date even if the power is removed from the unit.

The battery for the GoWide Serial AAL1 system clock should last 10 years without external power being applied. The length of the battery life, however, is affected by environmental factors.

Configuring the IP Address

The GoWide Serial AAL1 unit supports static IP addresses as well as dynamically allocated addresses. The dynamically allocated address requires the presence of a DHCP server. The DHCP server must be configured correctly, so that it will supply the GoWide Serial AAL1 with a proper IP address. The configuration of the DHCP

server is beyond the scope of this manual. Please contact the system administrator for more details.

Static IP Address

The GoWide Serial AAL1 can be configured to use a static IP address (see Procedure B).

Note: The GoWide Serial AAL1 has a default static IP address of 10.0.0.1.

Procedure B. Configuring a Static IP Address

Step	Procedure										
1	<p>The first step is to locate the IP device configured on the GoWide Serial AAL1 system. At the console, type the following command:</p> <pre>10.0.0.1>ip device list</pre> <table border="1"><thead><tr><th>#</th><th>name</th><th>type</th><th>dev file</th><th>IP address</th></tr></thead><tbody><tr><td>device</td><td>ethernet</td><td>ether</td><td>//edd</td><td>mtu 1500 mss 0 10.0.0.1</td></tr></tbody></table> <p><i>Note:</i> If no interface is found, the following message appears on the screen:</p> <pre>00:b0:ae:00:30:bc>ip device list</pre> <pre>No interfaces have been defined</pre>	#	name	type	dev file	IP address	device	ethernet	ether	//edd	mtu 1500 mss 0 10.0.0.1
#	name	type	dev file	IP address							
device	ethernet	ether	//edd	mtu 1500 mss 0 10.0.0.1							
2	<p>The current device must be removed so that a new one can be added. To complete the following step, the user must note the name of the IP device in the previous step.</p> <pre>10.0.0.1>ip device delete ethernet</pre> <p>Note that once the IP device is deleted, the prompt shows the MAC address rather than the IP address.</p>										
3	<p>To add a new IP device with a new static IP address, execute the following command.</p> <pre>00:b0:ae:00:30:bc>ip device add ethernet ether //edd 10.0.0.1</pre> <p>Once the command is issued, the prompt shows the new static IP address.</p>										

End of Procedure

Dynamic IP Address

The dynamically allocated IP address requires the existence of a DHCP server. Procedure C describes the steps involved in changing the IP device setting to dynamic IP.

Procedure C. Dynamic IP Address

Step	Procedure										
1	Connect the Ethernet cable from the GoWide Serial AAL1's RJ-45 "CRAFT" port to the DHCP Server's NIC card.										
2	Locate the IP device configured on the GoWide Serial AAL1 system. At the console, type the following command: <pre>10.0.0.1>ip device list</pre> <table border="1"><thead><tr><th>#</th><th>name</th><th>type</th><th>dev file</th><th>IP address</th></tr></thead><tbody><tr><td>device</td><td>ethernet</td><td>ether</td><td>//edd</td><td>mtu 1500 mss 0 10.0.0.1</td></tr></tbody></table> <p><i>Note:</i> If the IP address field already indicates DHCP, then no further configuration is required.</p>	#	name	type	dev file	IP address	device	ethernet	ether	//edd	mtu 1500 mss 0 10.0.0.1
#	name	type	dev file	IP address							
device	ethernet	ether	//edd	mtu 1500 mss 0 10.0.0.1							
3	The current device must be removed so that a new one can be added. To complete the following step, the user must note the name of the IP device in the previous step. <pre>10.0.0.1>ip device delete ethernet</pre> <p><i>Note:</i> that once the IP device is deleted, the prompt shows the MAC address rather than the IP address.</p>										
4	To add a new IP device with DHCP capability, execute the following command. <pre>00:03:ae:00:30:bb> ip device add ethernet ether //edd dhcp</pre>										
5	Once the IP device is initialized, a DHCP client request must be sent to retrieve a proper IP address. This takes between 2 and 10 seconds. <pre>03:ae:00:30:bb> dhcpclient reset</pre> <pre>dhcpclient: Reset request acknowledged. Reset imminent.</pre>										
6	After 10 seconds, press [Enter]. The prompt will now contain the new IP address. <i>Example:</i> <pre>192.168.190.110></pre>										

End of Procedure

Remote Access Configuration

The GoWide Serial AAL1 can be configured as a bridge or a router to transport traffic over the G.shdsl link to and from the RJ-45 "Craft" (Ethernet) port. The following examples describe the various configurations. It is important to make sure that all previous bridge and router configurations are removed before attempting the following examples. Also note that the PVC used for passing traffic should be UBR (unspecified bit rate). The PCR (peak cell rate) can be adjusted to tweak performance. The VPI and VCI settings may be different at the two ends.

How to Clear Bridge/Router Settings

In order to configure the GoWide in bridge or router mode, it is best to clear the previous settings. First check the IP and bridge module to see if any existing devices were created; use the 'device' commands to list the devices.

```
10.0.0.1> ip device
```

and

```
10.0.0.1> bridge device
```

If any devices were created, they will resemble the following:

#	name	type	dev file		IP address
device	ethernet	ether	//edd	mtu 1500 mss 0	10.0.0.1
device	ipoa	atm	//bun	mtu 1500 mss 0	10.0.1.2

Once the devices are listed, use the names of the devices to remove them using the following commands:

```
10.0.0.1>ip device delete [name of the device]
```

```
10.0.0.1>bridge device delete [name of the device]
```

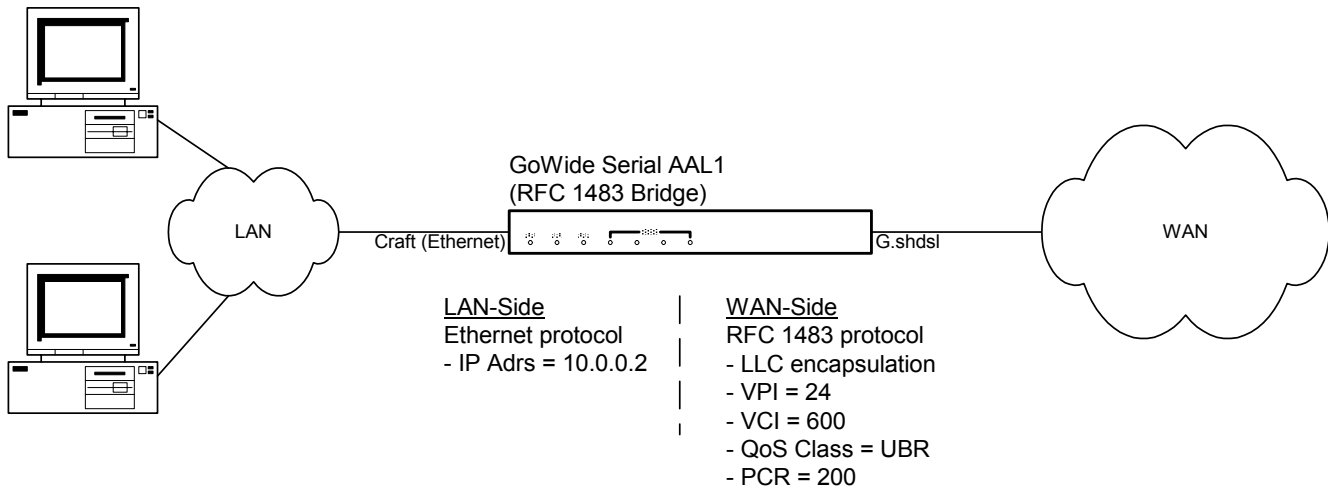
For example, to remove the device with the name "ipoa," issue the following command:

```
10.0.0.1> ip device delete ipoa
```

RFC1483 Bridge Configuration

The following section describes how to configure the GoWide Serial AAL1 in RFC1483 bridge mode. The mode can be configured as llcbridged or vcmuxbridged. Figure 4 shows the GoWide Serial AAL1 in an example RFC 1483 Bridge configuration.

Figure 4. GoWide Serial AAL1 RFC 1483 Bridge Configuration



GoWide Serial AAL1 Configuration

```
ip device add bridge ether //bridge 10.0.0.2
```

```
bridge device add edd
```

```
bridge device add //bun/port=shdsl/rfc1483=true/mode=llcbridged/  
vpi=24/vci=600/class=ubr/pcr=200
```

To remove the bridge configuration, use the following commands:

```
ip device delete bridge
```

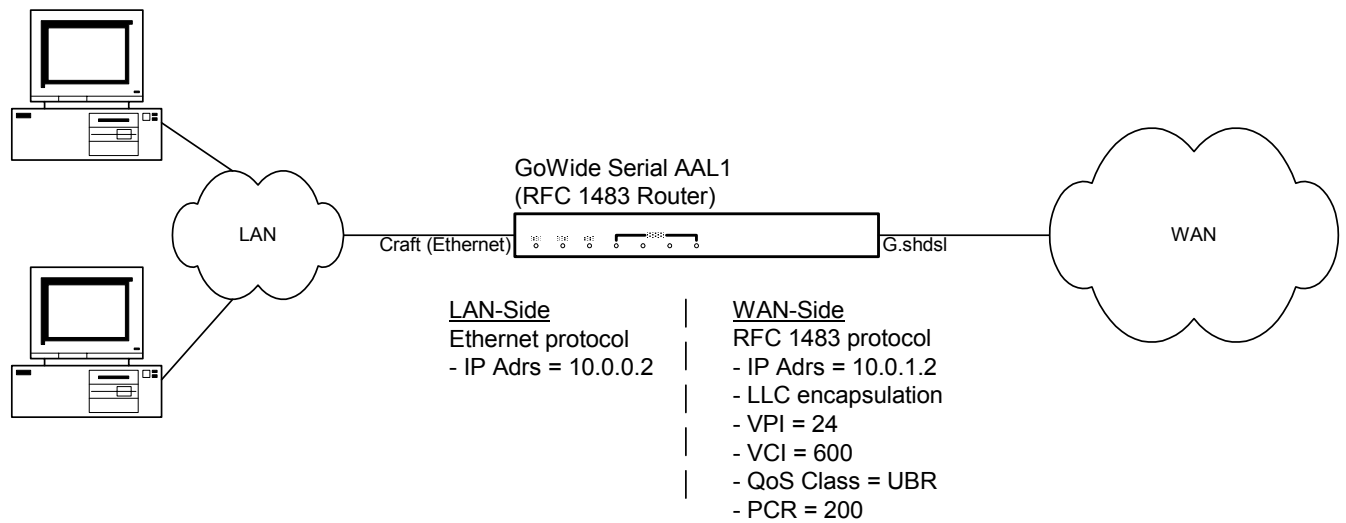
```
bridge device delete edd
```

```
bridge device delete //bun/port=shdsl/rfc1483=true/mode=llcbridged/  
vpi=24/vci=600/class=ubr/pcr=200
```

RFC1483 Router Configuration

The following section describes how to configure the GoWide Serial AAL1 in RFC1483 router mode. The mode can be configured as llcrouted or vmuxrouted. Figure 5 shows the GoWide Serial AAL1 in an example RFC 1483 Router configuration.

Figure 5. GoWide Serial AAL1 RFC 1483 Router Configuration



GoWide Serial AAL1 Configuration

```
ip device add myrouter ptp //bun/port=shdsl/rfc1483=true/
mode=llcrouted/vpi=24/vci=600/pcr=200/class=ubr 10.0.1.2
```

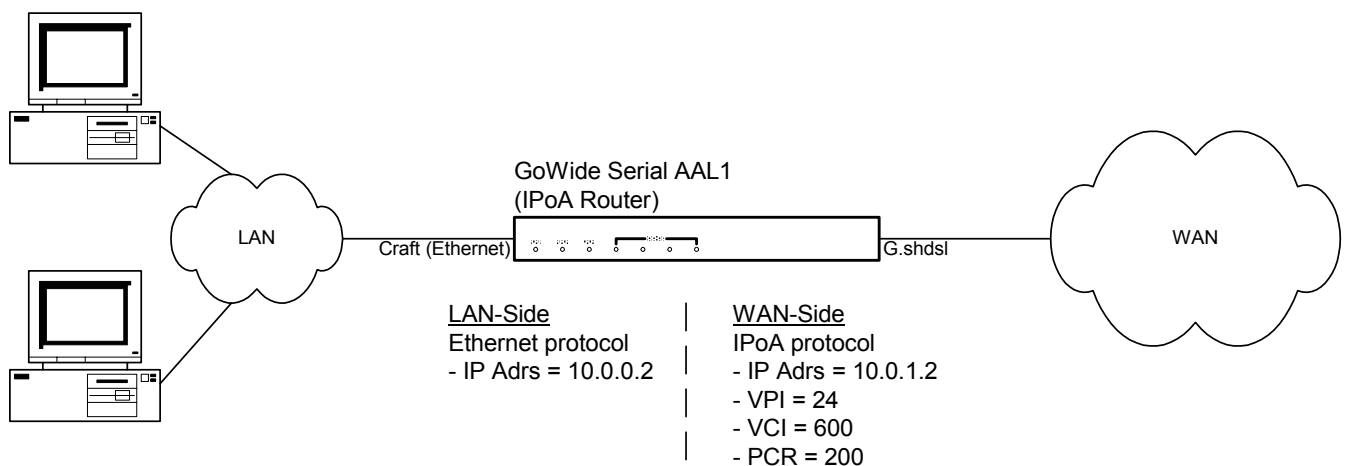
To remove the previous router configuration, use the following commands:

```
ip device delete myrouter
```

IPoA Router Configuration

The following section describes how to configure the GoWide Serial AAL1 in IPoA router mode. Figure 6 shows the GoWide Serial AAL1 in an example IPoA Router configuration.

Figure 6. GoWide Serial AAL1 IPoA Router Configuration



GoWide Serial AAL1 Configuration

```
ip device add ipoa atmpvc //atm 10.0.0.2  
ip ipatm pvc add ipoa shdsl 24/600 pcr 200
```

To remove the IPOA routed configuration, use the following the commands:

```
ip ipatm pvc flush  
ip device delete ipoa
```

Configuring Ports

When the GoWide Serial AAL1 is powered up for the first time, it has already established a set of default attributes for the physical ports. These default attributes do not always satisfy the network environment in which the unit is installed. Therefore, the user must alter the default port attributes in order for the GoWide Serial AAL1 to be integrated into the network.

Two sample configurations are provided below. One configuration is for the SHDSL ports, since operation on the SHDSL ports are slightly different. The second configuration will be for the Serial port.

SHDSL Port Configuration

SHDSL port configuration can be accomplished through a set of SHDSL console commands. Procedure D describes a process where some SHDSL port attributes are changed.

Note: Refer to Chapter 5 for detailed syntax of the commands used in the procedure.

Procedure D. Configuring the SHDSL Port

Step	Procedure
1	<p>Disable the SHDSL line or lines. Doing so ends all traffic activity on the SHDSL lines. Using the “shdsl startup disable” command shuts down the SHDSL port or ports. This is necessary because the SHDSL line attributes are used during handshaking, therefore, changing them when the lines are synched up has no meaning.</p> <pre>10.0.0.1> shdsl startup disable Forced Line Deactivate! SHDSL HTU-CO Line-1: Line Status -- Disconnect SHDSL HTU-CO Line-1: Line is forced to disconnect SHDSL HTU-CO Line-2: Line Status -- Disconnect SHDSL HTU-CO Line-2: Line is forced to disconnect</pre> <p>Note: The above command output is for a GoWide 4.6 Serial AAL1 unit in which four-wire mode is currently active. The “Line-2” command output messages would never be shown for a GoWide 2.3 Serial AAL1 unit, or a GoWide 4.6 Serial AAL1 unit in two-wire mode.</p>

Procedure D. Configuring the SHDSL Port

Step	Procedure
2	<p>Configure the line attributes with the "set" command. In the example in this step, the HTUType is changed to CPE.</p> <pre>10.0.0.1> shdsl set htutype cpe HTUType HTU-CPE</pre>
3	<p>Certain attributes are only valid for the GoWide 4.6 Serial AAL1 unit. LineType is one such attribute. In the example in this step, the LineType is changed from 4-wire mode to 2-wire mode.</p> <pre>10.0.0.1> shdsl set linetype 2 LineType = Two-Wire</pre>
4	<p>Use the "set" command to ensure that the attributes are set as required by the installation environment.</p> <pre>10.0.0.1> shdsl set [Current Setting] HTUType HTU-CPE LineType = Two-Wire ClockSource = NTR RefClock 8k Line RateMode = Adaptive Standard = Annex_A Standard AutoDetect ---- Enable BTextactSupport ---- Disable ANFPSupport ---- Disable PowerBackoff Enable Asymmetric_PSD = Disable SNRThreshold Disable AttenuationThreshold Disable LoopbackTimeout = 0 minutes RemoteEOCRequest ---- Enable Target Margin = CM 4 SM 11</pre>
5	<p>Re-enable the SHDSL line or lines to initiate the sync process with the DSLAM.</p> <pre>10.0.0.1> shdsl startup enable</pre>

End of Procedure

Serial Port Configuration

The Serial port is configured in the same fashion as the SHDSL ports, except that the serial connection does not have to be brought down in order to change the attributes. Procedure E illustrates how to change the Serial port attributes.

Procedure E. Configuring the Serial Port

Step	Procedure
1	<p>Use the "set" command with the "mode" attribute to set the mode (serial interface standard) of the Serial port. The following example sets the interface standard of the Serial port to V.35.</p> <pre>10.0.0.1> serial set mode v35 Mode : v35</pre>
2	<p>Use the "set" command with no attribute to display the attributes relevant to the interface mode that is currently set.</p> <pre>10.0.0.1> serial set ----- Mode : v35 Interface : dce Clock : 31X64k TXC_INV : auto (disable) SCTE_INV : na RXC_INV : disable ----- Control Leads Input : RTS : disable DTR : disable RL : disable LL : disable Output : CTS : enable DSR : enable DCD : active TM : disable -----</pre>
3	<p>Use the "set" command with the necessary attributes to modify the serial port setup as is required.</p> <p><i>Note:</i> Refer to "Set" in the "Serial" section of <i>Chapter 5, Console Commands</i> for information on the various attributes that can be set for each of the serial interface standards.</p>

End of Procedure

Configuring AAL1 Traffic Groups

After the Serial and SHDSL port interfaces are set up correctly and no alarms are active, AAL1 traffic groups can be created. A properly configured AAL1 traffic group ensures that the GoWide unit can provide the bandwidth and a quality of service that is adequate for the serial traffic on the ATM flow.

An AAL1 traffic group specifies the virtual circuit (VPI and VCI) that the traffic will take through the ATM network, as well as the AAL1 parameters and traffic

parameters used. The remainder of this section explains AAL1 parameters and traffic parameters, and provides an example of how to set up an AAL1 traffic group.

AAL1 Parameters

AAL1 parameters are parameters that should be configured before creating traffic groups. Traffic groups in the GoWide Serial AAL1 are created for carrying the serial data stream into ATM AAL1 traffic, and the AAL1 parameters are used by the AAL1 cell creation function. The AAL1 parameters include Cell Delay Variation Tolerance (cdvt), Transmit Conditioned Data (txdata), Receive Conditioned Data (rxdata), Receive Queue Conditioned Data (rxqdata), and Partial Fill Cell Size (pf). Refer to the PVC Manager section in Chapter 5 - Console Commands, for the syntax and description of the AAL1 parameter (*ap*) command.

Traffic Parameters

Traffic parameters are used during the creation of traffic groups. Therefore, traffic parameters should be configured before traffic groups. The system contains default traffic parameters, however, these traffic parameters might not suit all needs. The user has the option of modifying the default or creating new ones. The details of creating different types of traffic parameters are documented in the PVC Manager section in Chapter 5 - Console Commands.

Note: It is assumed that the user creates traffic parameters for each type of traffic. Also, a special, pre-defined traffic parameter setting exists called *default*.

Procedure F shows how to configure traffic parameters.

Procedure F. Configuring Traffic Parameters

Step	Procedure
1	Create a CBR traffic parameter with the name <i>extp</i> and a peak cell rate of 3415: 10.0.0.1> pvcm tp extp CBR 3415
2	Show the newly created traffic parameter 10.0.0.1> pvcm tp list all extp (CBR 3415)

End of Procedure

Special Traffic Parameter

default: The default traffic parameter is a special traffic parameter. It can be used to create connections. The user can change the default traffic parameter, then configure other connections using the default traffic parameter. The default traffic parameter can be modified without having to delete the traffic group it is used in. For other traffic parameters, the traffic group must be deleted before the traffic parameter can be modified.

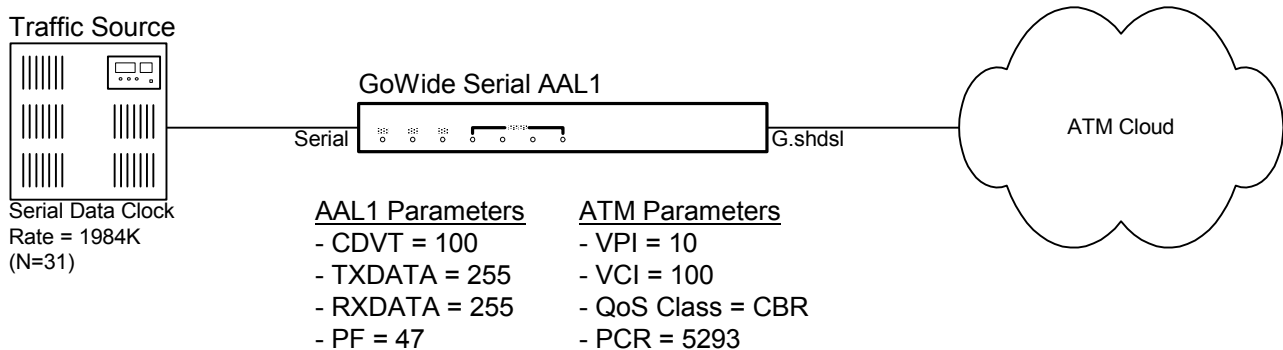
Configuring a SDT Traffic Group

Once an AAL1 parameter and traffic parameter have been set up, a SDT AAL1 traffic group can be configured. The following example shows how to create a traffic group. In the example, a bidirectional SDT (Structured Data Transfer) ATM flow is created between the G.shdsl and the Serial port of the GoWide using the *sdt* command. The serial traffic is encapsulated into ATM SDT AAL1 cells and transmitted over VPI 10 and VCI 100 of the G.shdsl port.

Note: When an AAL1 traffic group is created using the *sdt* command, a constant bit rate (CBR) traffic parameter should be used. This is shown in the following example.

Figure 4 shows the GoWide Serial AAL1 in an example serial traffic configuration.

Figure 7. Serial Traffic Example Configuration



Procedure G shows how to configure the traffic group for this example.

Procedure G. Configuring a SDT Traffic Group

Step	Procedure
1	<p>Create an AAL1 parameter set named <i>aal1param</i> with a <i>cdvt</i> of 100, <i>txdata</i> and <i>rxdata</i> setting of 255, and <i>pf</i> of 47:</p> <pre>10.0.0.1>pvcn ap aalparam 100 255 255 47</pre>
2	<p>Calculate the peak cell rate to be used in the traffic parameter setting. The serial data clock rate of the Traffic Source is 1984K (31x64K), so 31 is used for the <i>num_chan</i> parameter of the <i>calcr</i> command. The partial fill cell size (<i>pf</i>) is as specified in the AAL1 parameter set in Step 1:</p> <pre>10.0.0.1>calcr 31 47 Cell rate = 5293</pre>
3	<p>Create a constant bit rate (CBR) traffic parameter with the name <i>cbrtp</i> using the peak cell rate calculated in Step 2:</p> <pre>10.0.0.1>pvcn tp cbrtp CBR 5293</pre>

Procedure G. Configuring a SDT Traffic Group (Cont'd)

Step	Procedure
4	<p>Create the SDT traffic group with the name <i>tgroup</i> using the AAL1 parameter set and CBR traffic parameter created above. The ATM traffic will flow bidirectionally on the PVC specified by VPI 10 and VCI 100:</p> <pre>10.0.0.1>pvcm sdt tgroup serial shdsl 10 100 cbrtp aallparam</pre>
<i>End of Procedure</i>	

Configuring the OAM LLID

OAM loopback is used by the GoWide Serial AAL1 system to determine if the far end unit is operating correctly. OAM loopback cells are sent out per PVC to the far end unit. The far end unit will match the OAM Loopback location Identifier (LLID) and loop the cell back. If OAM cells are lost, the loss of that AAL1 channel is indicated.

The LLID contains 16 octets. The convention of LLID is defined in ITU standard (ITU-T I.610). If the user enters less than 16 octets, the system will complete the LLID by appending 0's for the full 16 octets.

"myllid" (my LLID) is the OAM LLID of the GoWide Serial AAL1 system currently being provisioned. The LLID is a 16-octet item based on the ITU standard (ITU-T I.610). The following example illustrates how to provision "myllid".

```
10.0.0.1> pvcm myllid 1.2.3.45.67.89.ab.cd.ef
```

If less than 16 octets is entered, as in the above example, the system appends 0's. To display the LLID after it is set, execute the "myllid" command without the LLID string.

```
10.0.0.1> pvcm myllid
llid = 1.2.3.45.67.89.ab.cd.ef.0.0.0.0.0.0.0
```

Saving and Viewing the Configuration

Changes to the unit's configuration are saved in temporary memory, however, they are not saved to flash (permanent) memory unless a command is issued specifically to do so. When the unit is powered off, any configuration changes that were not saved to flash memory are lost, and the unit's configuration reverts to the last configuration that was saved.

To save the unit's configuration to flash memory, use the following command:

```
10.0.0.1>config save
```

Note: The configuration save operation will take several seconds to complete. The save operation is complete when the message "Configuration saved" is displayed.

The unit's configuration can be viewed using the following command:

```
10.0.0.1>config print
```

```
Module 'bridge':  
Active configuration:  
Filter age time: 300
```

```
No stored configuration  
# Spanning tree configuration  
bridge spanning enable
```

```
Module 'nat':  
event 2
```

```
Module 'shdsl':  
HTUType HTU-CPE  
set Standard AutoDetect Enable  
set RateMode Adaptive  
set Standard = Annex A  
set LineType = Auto  
set PowerBackoff Enable  
set Asymmetric_PSD = Disable  
set SNRThreshold = 0  
set AttenuationThreshold = 0  
set LoopbackPeriod = 0 minutes  
set RemoteRequest Enable
```

```
Module 'serial':
```

```
-----  
Mode      : v35  
Interface : dce  
Clock     : 31X64k  
TXC_INV   : auto  
SCTE_INV  : na  
RXC_INV   : disable  
Loopback  : disable  
DTR Alarm : disable  
-----
```

```
Control Leads  
Output    :  
CTS       : enable  
DSR       : enable  
DCD       : active  
TM        : disable  
-----
```

```
Module 'portcli':
```

```
Module 'pvcm':  
myllid ff.ff.ff.ff.ff.ff.ff.ff.ff.ff.ff.ff.ff.ff.ff.ff
```

```
Module 'ip':  
device add ethernet ether //edd mtu 1500 10.0.0.1  
  
subnet add ethernet.home . 10.0.0.0 ff:ff:ff:00
```

```

rip send    ethernet 2
rip accept  ethernet 1 2

relay ethernet ethernet

ipatm lifetime 60

# IP host table:

# Port table:
l2tp        1701/UDP
router      520/UDP
snmp        161/UDP
tftp        69/UDP
http        80/TCP
telnet      23/TCP

# SNMP configuration:
access write [password]

```

The *config print* command issued with no arguments lists the unit's configuration on a module-by-module basis. To list the configuration of a particular module, include the module name on the command line. The following example lists the configuration of the serial module:

```

10.0.0.1>config print serial

Module 'serial':
-----
Mode       : v35
Interface  : dce
Clock      : 31X64k
TXC_INV    : auto
SCTE_INV   : na
RXC_INV    : disable
Loopback   : disable
DTR Alarm  : disable
-----
Control Leads
Output     :
CTS        : enable
DSR        : enable
DCD        : active
TM         : disable
-----

```

Restoring Factory Defaults

The GoWide Serial AAL1 can be set to the factory default settings using the RESET switch, which is recessed within the unit's rear panel.



To reset the GoWide Serial AAL1, press the RESET button and hold it down for 5 seconds while the unit is on. Once the RESET button is released, the unit will restart and the settings will revert to the factory default settings.

Note: When the unit is reset using the above procedure, its mode of operation, password, and IP Address will all be changed to the respective default setting. If you want to reboot or restart the GoWide Serial AAL1, *do not* use the RESET switch; unplug the unit's power and reconnect it instead.

Default Settings

- IP Address : 10.0.0.1
- Password : password
- Language : English

Upgrading the GoWide Firmware

Symmetricon periodically makes upgrades to the GoWide's firmware available to customers.

You can check to see if a firmware upgrade is available for your GoWide by contacting Symmetricon's Customer Assistance Center (CAC), or checking the Online Support section of the Support page on the Symmetricon Web site.

To determine the current version of firmware running on your GoWide, restart it using the *restart* console command. In the following sample output, which appears on the console when the GoWide is restarted, the firmware version information is shown in bold font:

```
10.0.0.1> restart

MAC 00:b0:ae:00:30:d

StartUp from [Bootp/Flash/Emergency] , , ,
NB
SDRAM size = 0x800000
Current file system: 0x20000 - 0x200000 (1920 kBytes)
NPn
Starting image at 0x00010020
Found valid boot information block
FPGA version is 39
FPGA is up and running

-----
Power On Self Test
-----
Memory [ OK ]
Flash 2M . [ OK ]
FPGA .. [ OK ]
LED [ NA ]
SHDSL . [ OK ]

Reset from software

NP software version is 0x00000800 (reply took 8us)

GoWide Serial AAL1 version x.xx (Date)
Copyright (c) 2002 Symmetricon Inc
```

Note: In the above output, *x.xx* represents the unit's firmware version number, and *Date* represents the date of the firmware version.

The remainder of this section provides the following three methods for upgrading the firmware of the GoWide system:

- BOOTP (Boot Protocol)

- TFTP (Trivial File Transfer Protocol)
- FTP (File Transfer Protocol)

The method to use is a matter of personal choice. Certain procedures require cables or third-party software applications not required for other procedures. Read each procedure to determine which one is appropriate for your situation.

Upgrading the Firmware Using BOOTP

This section provides information on updating firmware using a BOOTP download procedure. The procedure is a generic Windows-based procedure for updating the firmware on the GoWide Serial AAL1 using the boot protocol (BOOTP).

Before Beginning the Procedure

- You must obtain a firmware image file from Symmetricom, which should be stored on the system that will be used to download the image to the GoWide. Contact Symmetricom's Customer Assistance Center (CAC) or check the Online Support section of the Support page on the Symmetricom Web site to ensure that you have the correct firmware image file.
- The procedure uses a BOOTP server application. BOOTP server applications are available for Windows-based systems. You must obtain and install a BOOTP server application on the system that will be used to download the firmware image to the GoWide.
- When the BOOTP server application launches, the user must enter the MAC address of the GoWide unit. The application then automatically determines a valid IP address for the device, which is temporary and assigned only for the duration of the BOOTP transfer. It does not interfere with other devices on the network even if they have the same IP address.

If the MAC address of the GoWide unit is not known, connect the GoWide's RJ-45 "Craft" (Ethernet) port to the NIC card of the system that will be used to download the firmware image, then follow the steps as shown below to obtain it:

- On the download PC, click "Start" > "Run...", then type the following command in the Run window that appears:

```
telnet <IP>
```

Where <IP> is the IP address of the GoWide Serial AAL1, which is 10.0.0.1 by default.

- Enter the Administrator's password (the default password is "password").
password: *****
logged on; type '@close' to close connection
- Type the following console command:
10.0.0.1> chips info

- The MAC address will be shown on the screen, as in the following example (the actual MAC address will be different):

```
GoWide Serial AAL1 version x.xx (Date)
Machine Name:
MAC address: 0:b0:ae:0:30:da
```

Note: In the above command output, *x.xx* represents the unit's firmware version number, and *Date* represents the date of the firmware version.

BOOTP Upgrade Procedure

Procedure H describes how to upgrade the GoWide unit's firmware using BOOTP.

Procedure H. Upgrading the GoWide Firmware Using BOOTP

Step	Procedure
1	Connect the GoWide Serial AAL1's RJ-45 "Craft" (Ethernet) port using an Ethernet cable to the NIC card on the PC.
2	Connect a serial cable from the PC's serial port to the GoWide Serial AAL1's DB-9 "Craft" port.
3	Launch the BOOTP server application on the PC.
4	Provide the following information to the BOOTP server application: <ul style="list-style-type: none"> - The MAC address of the GoWide Serial AAL. - The path in the PC's directory structure where the firmware image file is stored, and its filename. <p><i>Note:</i> Ensure that the MAC address is properly entered into the BOOTP server. If it is not correct, the GoWide will not boot properly from the server.</p>
5	Activate the BOOTP server.
6	On the PC, launch a terminal emulation application, such as Hyper Terminal or ProComm , and set the connection as follows: <ul style="list-style-type: none"> - Bits per second: 9600 - Data bits: 8 - Parity: None - Stop bits: 1 - Flow control: None
7	Disconnect, then reapply power to the GoWide Serial AAL1.
8	The words StartUp from [Bootp/Flash/Emergency] ,,, will appear in the terminal application. Immediately press the 'b' character on the keyboard. This will initiate the Firmware update sequence on the GoWide Serial AAL1. A series of dots across the screen indicates that the file is being downloaded.
9	After the system reboots, enter the system password, then issue the following command to update the firmware: <pre>flashfs update</pre>

Procedure H. Upgrading the GoWide Firmware Using BOOTP (Cont'd)

Step	Procedure
10	Wait for the Flash update to complete. When the Flash update completes, the message "done" appears in the terminal emulation window and the prompt returns.

End of Procedure

Upgrading the Firmware Using TFTP

This section provides information on updating the firmware on the GoWide Serial AAL1 using the trivial file transfer protocol (TFTP).

Before Beginning the Procedure

- You must obtain the latest TFTP-specific archive file from Symmetricom. The file is a Zip archive file which typically has the file name **tftp.zip**. The file should be stored on the system that will be used to download the image to the GoWide. Contact Symmetricom's Customer Assistance Center (CAC) or check the Online Support section of the Support page on the Symmetricom Web site to ensure that you have the correct TFTP archive file.
- The procedure uses an Unzip application to extract the necessary upgrade files from the archive file. Zip/Unzip applications are available for Windows and Linux-based systems. You must obtain and install an UnZip application on the system that will be used to download the firmware image to the GoWide, or extract the upgrade files on another machine, and load them onto the system that will be used to download the firmware image to the GoWide.

TFTP Upgrade Procedure

Procedure I describes how to upgrade the GoWide unit's firmware using TFTP.

Procedure I. Upgrading the GoWide Firmware Using TFTP

Step	Procedure
1	Connect the GoWide Serial AAL1's RJ-45 "Craft" (Ethernet) port using an Ethernet cable to the NIC card on the download PC.
2	Ensure that the TFTP archive file is stored on the download PC. This file typically has the file name <i>tftp.zip</i> .

Procedure I. Upgrading the GoWide Firmware Using TFTP

Step	Procedure
3	<p>Unzip the TFTP archive file using the Unzip application. The following five files will be extracted from the archive file and placed into a folder named tftp:</p> <p>image image.comp tftplock.key tftpdownload.sh tftpdownload.BAT</p>
4	<p>Open an operating system command prompt window or similar utility, then change the directory to the tftp directory.</p>
5	<p>If necessary, open the tftplock.key file using a text editing program and edit the password to match the currently set GoWide password.</p> <p><i>Note:</i> The password set in the tftplock.key file is <code>password</code>, which is the system's default password.</p>
6	<p>If using a Linux machine, go to the next step and skip Step 8. If using a Windows machine, go to Step 8.</p>
7	<p>On the Linux machine, run tftpdownload.sh [gowide ip_adrs] under <i>bash</i> to initiate the upgrade.</p> <p><i>Note:</i> <i>bash</i> refers to the GNU Bourne-Again Shell.</p> <p>Example: <code>tftpdownload.sh 192.168.180.11</code></p>
8	<p>On the Windows machine, run tftpdownload.BAT [gowide ip_adrs] to initiate the upgrade.</p> <p>Example: <code>tftpdownload.BAT 192.168.180.11</code></p> <p>As the upgrade progresses, a series of "Transfer..." messages will appear, followed by a "Download Completed" message, and the message "GoWide is updating flash. Wait until it reboots itself."</p>
9	<p>Wait until the GoWide restarts.</p>
<i>End of Procedure</i>	

Upgrading the Firmware Using FTP

This section provides information on updating the firmware on the GoWide Serial AAL1 using the file transfer protocol (FTP).

Before Beginning the Procedure

- You must obtain the latest FTP-specific archive file from Symmetricom. The file is a Zip archive file which typically has the file name **ftp.zip**. The file should be stored on the system that will be used to download the image to the GoWide. Contact Symmetricom's Customer Assistance Center (CAC) or check the Online Support section of the Support page on the Symmetricom Web site

to ensure that you have the correct FTP archive file.

- The procedure uses an Unzip application to extract the necessary upgrade files from the archive file. Zip/Unzip applications are available for Windows and Linux--based systems. You must obtain and install an UnZip application on the system that will be used to download the firmware image to the GoWide, or extract the upgrade files on another machine, and load them onto the system that will be used to download the firmware image to the GoWide.

FTP Upgrade Procedure

Procedure J describes how to upgrade the GoWide unit's firmware using FTP.

Procedure J. Upgrading the GoWide Firmware Using FTP

Step	Procedure
1	Connect the GoWide Serial AAL1's RJ-45 "Craft" (Ethernet) port using an Ethernet cable to the NIC card on the download PC.
2	Ensure that the FTP archive file is stored on the download PC. This file typically has the file name <i>ftp.zip</i> .
3	Unzip the FTP archive file using the Unzip application. The following five files will be extracted from the archive file and placed into a folder named ftp : image image.comp ftpdownload.sh ftpdownload.BAT
4	Open an operating system command prompt window or similar utility, then change the directory to the ftp directory.
5	If using a Linux machine, go to the next step and skip Step 7. If using a Windows machine, go to Step 7.
6	On the Linux machine, run ftpdownload.sh [gowide ip_adrs] [password] under <i>bash</i> to initiate the download. Note: <i>bash</i> refers to the GNU Bourne-Again Shell. Example: <code>ftpdownload.sh 192.168.180.11 password</code>
7	On the Windows machine, run ftpdownload.BAT [gowide ip_adrs] [password] to initiate the download. Example: <code>ftpdownload.BAT 192.168.180.11 password</code> When the download completes, the prompt returns.
8	Telnet to the GoWide from the PC, and execute the following console command to upgrade the firmware: <code>flashfs update</code> When the Flash update completes, the message "done" appears and the prompt returns.

Procedure J. Upgrading the GoWide Firmware Using FTP

Step	Procedure
9	Execute the following console command to restart the GoWide: <code>restart</code> <i>Note:</i> Once the <code>restart</code> command executes, the telnet connection will be lost.
10	Wait until the GoWide restarts.
<i>End of Procedure</i>	

.....

This page intentionally left blank.



SNMP Configuration

This chapter describes how to configure SNMP on the GoWide.

Note: SNMP is available in version 2.0 and greater of the system firmware.

Overview

The GoWide implementation of the Simple Network Management Protocol (SNMP) allows network management using SNMP versions 1, 2c, and 3. The following summarizes the differences between the three versions of SNMP:

- Both SNMPv1 and SNMPv2c have community strings for authentication.
- SNMPv2c provides expanded data types (64 bit counters), improved efficiency and performance (get-bulk operator), confirmed event notification (inform operator), richer error handling (errors and exceptions), improved sets, especially row creation and deletion, and fine-tuning of the data definition language.
- SNMPv3 provides enhanced security with the authentication and privacy protocols.

The SNMP Configuration Files

GoWide contains a configuration file, named *snmpd.cnf*, that is used to configure SNMP on the GoWide platform. The *snmpd.cnf* file is a plain-text file that is read by the SNMP Agent on the GoWide when the system restarts.

GoWide contains a factory default SNMP configuration file named *snmpd.cnf.bak*. To configure SNMP on the GoWide, the *snmpd.cnf.bak* file is retrieved from the unit using TFTP, modified, renamed *snmpd.cnf*, and saved to the unit.

Figure 8 shows the *snmpd.cnf.bak* file.

4

Figure 8. GoWide *snmpd.cnf.bak* File

```
sysDescr "SNMPv3 for GoWide Products"
sysLocation "not set"
sysName "not set"
sysContact "support@symmetricom.com"
sysObjectID 1.3.6.1.4.1.9070.1.2.2.1
snmpEnableAuthenTraps 1

### The default configuration is SNMPv3 with v1 traps

# add a context to allow access for the SNMP functionalities
vacmContextEntry guest
vacmContextEntry admin

# Define a "public" community for v1/v2c:

snmpCommunityEntry 1 public public localSnmpID - - nonVolatile

# Define "guest" user with no authentication
usmUserEntry localSnmpID guest usmNoAuthProtocol usmNoPrivProtocol \
    nonVolatile - -
# Define "admin" user with authentication
```



```

. . . . .
usmUserEntry localSnmpID admin usmHMACMD5AuthProtocol usmNoPrivProtocol \
    nonVolatile - "admin"

# Define an "All" view of the whole tree:
vacmViewTreeFamilyEntry All 1 - included nonVolatile

# Define "read all" and "write all" groups for v3:
vacmAccessEntry v1ReadAllGroup - snmpv1 noAuthNoPriv exact All - All \
    nonVolatile
vacmAccessEntry v2ReadAllGroup - snmpv2c noAuthNoPriv exact All - All \
    nonVolatile
vacmAccessEntry v3ReadAllGroup - usm noAuthNoPriv exact All - All \
    nonVolatile
vacmAccessEntry v3WriteAllGroup - usm authNoPriv exact All All All \
    nonVolatile

# Map the users to groups:
vacmSecurityToGroupEntry snmpv1 public v1ReadAllGroup nonVolatile
vacmSecurityToGroupEntry snmpv2c public v2ReadAllGroup nonVolatile
vacmSecurityToGroupEntry usm guest v3ReadAllGroup nonVolatile
vacmSecurityToGroupEntry usm admin v3WriteAllGroup nonVolatile

# Define a notify entry called "TrapReceiver" for traps:
snmpNotifyEntry myNotifyEntry TrapReceiver trap nonVolatile

# Define 10.0.0.11 as the target for "TrapReceiver" for v1:
snmpTargetAddrEntry v1Target snmpUDPDomain 10.0.0.11:0 1500 3 TrapReceiver \
    v1Params nonVolatile 255.255.255.255:0

# Define the parameters for sending traps in v1 mode:
snmpTargetParamsEntry v1Params 0 snmpv1 public noAuthNoPriv nonVolatile

```

In This Chapter

This chapter contains the following sections:

- *How to Configure SNMP on the GoWide*, explains how to configure SNMP on the GoWide by modifying the SNMP configuration file (snmpd.cnf).
- *Troubleshooting*, provides some general troubleshooting information relative to using SNMP with the GoWide.

How to Configure SNMP on the GoWide

Procedure K explains how to configure SNMP on the GoWide.

Procedure K. Configuring SNMP on the GoWide

Step	Procedure
1	Connect an Ethernet cable between the computer and the GoWide unit.
2	Connect a Serial cable between the computer and the GoWide unit.
3	Create a plain-text file on the computer named "tftpload.key." The tftpload.key file must contain a single line which contains the word password.
4	Use the following commands on the computer to retrieve a copy of the snmpd.cnf.bak file from the GoWide unit. <pre>tftp -i <GoWide-unit ipaddress> put tftpload.key tftp -i <GoWide-unit ipaddress> get snmpd.cnf.bak</pre>
5	Rename the snmpd.cnf.bak file that is now on the computer as "snmpd.cnf."
6	Prepare the snmpd.cnf file that is on the computer with users and the trap destinations using the instructions given in the following section entitled <i>How to Modify the snmpd.cnf File</i> .
7	Use the following commands on the computer to copy the modified snmpd.cnf file to the GoWide unit. <pre>tftp -i <GoWide-unit ipaddress> put tftpload.key tftp -i <GoWide-unit ipaddress> put snmpd.cnf</pre>
8	Using a terminal emulation program, enter the following command at the console to commit the new snmpd.cnf file to persistent (flash) memory. <pre>flashfs update <password></pre>
9	Enter the following command at the console to reboot the system. <pre>restart</pre>
10	After the system reboots, open the snmpd.cnf file using the "fm cat snmpd.cnf" console command to check if the file is exactly the same as the one that was loaded. You can alternatively get the file using tftp and then compare the file with the one that was put. If both the files are not identical, there is a syntax error in the snmpd.cnf file. Review the file and instructions in the section entitled <i>How to Modify the snmpd.cnf File</i> to figure out and correct the error.

End of Procedure

How to Modify the snmpd.cnf File

The snmpd.cnf file is the configuration file for the GoWide SMNP Agent. In the file, comments start with a # character, and in the examples given below. "Each line in the configuration file has the format:

```
TAG VALUE
```

where *TAG* is a keyword and *VALUE* is a valid configuration value. Entries may be continued across multiple lines by using a back-slash (\). White space (tabs, spaces, line-feeds, carriage-returns) and blank lines in the file are ignored. Values which are strings containing white space must be delimited with quotation marks (")."

To have a general understanding of the parameter names used in the settings, refer to RFC 2570 through RFC 2575.

Note: If the snmpd.cnf file is not present, contents of the snmpd.cnf.bak file are written to snmpd.cnf when the unit restarts. To remove or change entries in snmpd.cnf file, the user should always use snmp delete/set commands.

Add the Values of sysName sysDescr, sysLocation, sysContact, sysObjectID, and snmpEnableAuthenTraps

Syntax:

```
sysName <name>  
sysDescr <description>  
sysLocation <location>  
sysContact <contact>  
sysObjectID <OID>  
snmpEnableAuthenTraps {0 | 1}
```

Description:

The sysDescr, sysLocation, sysContact, sysObjectID, and snmpEnableAuthenTraps must be assigned according to the definitions given in RFC 1213.

"sysDescr should include the full name and version identification of the system's hardware type, software operating-system, and networking software. It is mandatory that this only contain printable ASCII characters."

"sysObjectID is the vendor's authoritative identification of the network management subsystem contained in the entity. This value is allocated within the SMI enterprises subtree (1.3.6.1.4.1) and provides an easy and unambiguous means for determining 'what kind of box' is being managed. For example, if vendor 'Flintstones, Inc.' was assigned the subtree 1.3.6.1.4.1.4242, it could assign the identifier 1.3.6.1.4.1.4242.1.1 to its 'Fred Router'."

"sysContact is the textual identification of the contact person for this managed node, together with information on how to contact this person."

"sysLocation is the physical location of this node (e.g., 'telephone closet, 3rd floor')."

"sysName is the administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name."

"snmpEnableAuthenTraps determines whether or not authentication failure traps are sent to the SNMP manager. If the value is 1, authentication failure traps are sent to the SNMP manager, otherwise, authentication failure traps are not sent to the SNMP manager."

Example:

```
sysName "GoWide"  
sysDescr "SNMPv3 test config for GoWide 9.2"  
sysLocation "Symmetricom"  
sysContact "support@symmetricom.com"  
sysObjectID 1.3.6.1.4.1.9070.1.2.2.1  
snmpEnableAuthenTraps 1
```

Add the vacmContextEntry

Syntax:

```
vacmContextEntry <name>
```

Description:

Adds the specified vacm context entry.

Example:

```
# Add a context "guest" to allow access  
vacmContextEntry guest  
  
# Add a context "admin" to allow access  
vacmContextEntry admin
```

Define the Users

Syntax:

```
usmUserEntry usmUserEngineID usmUserName usmUserAuthProtocol \  
usmUserPrivProtocol usmUserStorageType usmTargetTag AuthKey
```

Description:

usmUserEntry is the tag for this command.

usmUserEngineID is localSnmpID.

usmUserName is a human readable string representing the name of the user. This is the user based security model dependent security ID.

usmUserAuthProtocol can take the value of "usmNoAuthProtocol" or "usmHMACMD5AuthProtocol".

usmUserPrivProtocol is always usmNoPrivProtocol.

usmUserStorageType is nonVolatile.

usmTargetTag is a human readable string that is used to select a set of entries in the snmpTargetAddrTable for source address checking. If the SNMP entity does not have a command responder application, or if the SNMP entity should not perform source address checking, then this field should contain a dash (-).

AuthKey is an Octet String represented as a sequence of hexadecimal numbers separated by colons. Each octet is within the range 0x00 through 0xff. If usmUserAuthProtocol is usmNoAuthProtocol, then this user does not have an AuthKey, and this field should contain a dash (-).

Examples:

Configuration for no authentication:

```
usmUserEntry localSnmpID guest usmNoAuthProtocol usmNoPrivProtocol \  
nonVolatile - -
```

Configuration for authentication:

```
usmUserEntry localSnmpID admin usmHMACMD5AuthProtocol usmNoPrivProtocol \  
nonVolatile - admin
```

Define the Views of the MIB Tree

Syntax:

```
vacmViewTreeFamilyEntry vacmViewTreeFamilyViewName \  
vacmViewTreeFamilySubtree vacmViewTreeFamilyMask \  
vacmViewTreeFamilyType vacmViewTreeFamilyStorageType
```

Description:

vacmViewTreeFamilyEntry is the tag for this command.

vacmViewTreeFamilyViewName is a human readable string representing the name of the family of view subtree.

vacmViewTreeFamilySubtree is an OBJECT IDENTIFIER that identifies a subtree of the MIB, for example, "1.3.6.1.4.1.9070." This value and the vacmViewTreeFamilyMask are used to determine if an OBJECT IDENTIFIER is in this family of view subtrees.

vacmViewTreeFamilyMask is an Octet String represented as a sequence of hexadecimal numbers separated by colons. Each octet is within the range 0x00 through 0xff. A zero length Octet String is represented by a - .

vacmViewTreeFamilyType is "included" or "excluded" and indicates if the vacmViewTreeFamilySubtree is explicitly accessible or not accessible in this family of view subtree.

vacmViewTreeFamilyStorageType is always "nonVolatile".

Examples:

Define an "All" view of the whole tree:

```
vacmViewTreeFamilyEntry All 1 - included nonVolatile
```

Define an "enterprise" view of tree

```
vacmViewTreeFamilyEntry enterprise 1.3.6.1.4.1.9070 - included \  
nonVolatile
```

Note: Upon restarting, the system rewrites the snmpd.cnf file so that the vacm-ViewTreeFamilyEntry entries are not in the sequence that is presented in this manual. No adverse effects result from this reorganization of entries.

Define the Groups for SNMPv3

Syntax:

```
vacmAccessEntry vacmGroupName vacmAccessContextPrefix \  
vacmAccessSecurityModel vacmAccessSecurityLevel \  
vacmAccessContextMatch vacmAccessReadViewName \  
vacmAccessWriteViewName vacmAccessNotifyViewName \  
vacmAccessStorageType
```

Description:

vacmAccessEntry is the tag for this command.

vacmGroupName is a human readable string which is the group name.

vacmAccessContextPrefix is a human readable string which is an entire or partial context name used to match the context name in (or derived from) a management request. A dash (-) represents the default context.

vacmAccessSecurityModel is "snmpv1" for SNMPv1, "snmpv2c" for SNMPv2c, or "usm" for SNMPv3.

vacmAccessSecurityLevel is "noAuthNoPriv" for no authentication and no privacy, and "authNoPriv" is for MD5 authentication with no privacy.

vacmAccessContextMatch is "exact".

vacmAccessReadViewName is a vacmViewTreeFamilyViewName (defined by at least one vacmViewTreeFamilyEntry) identifying the view subtrees accessible for Get, GetNext, and GetBulk Requests.

vacmAccessWriteViewName is a vacmViewTreeFamilyViewName(defined by at least one vacmViewTreeFamilyEntry) identifying the view subtrees accessible for set requests.

vacmAccessNotifyViewName is a vacmViewTreeFamilyViewName (defined by at least one vacmViewTreeFamilyEntry) identifying the view subtrees from which objects may be included as VarBinds in Trap messages and Inform requests.

vacmAccessStorageType is "nonVolatile".

Examples:

Define "read all" and "write all" groups for v3:

```
vacmAccessEntry v3ReadAllGroup - usm noAuthNoPriv exact All - \
All nonVolatile
vacmAccessEntry v3WriteAllGroup - usm noAuthNoPriv exact All All \
All nonVolatile
```

Map the Users to the Groups

Syntax:

```
vacmSecurityToGroupEntry vacmSecurityModel vacmSecurityName \
vacmGroupName vacmSecurityToGroupStorageType
```

Description:

vacmSecurityToGroupEntry is the tag for this command.

vacmSecurityModel is "snmpv1" for SNMPv1, "snmpv2c" for SNMPv2c, or "usm" for SNMPv3.

vacmSecurityName is a human readable string that is the principal ("principal" is a SNMPv3 user or a SNMPv2c or SNMPv1 community string).

vacmGroupName is a human readable string that is the group name. The group name is defined by at least one vacmAccessEntry.

vacmSecurityToGroupStorageType is "nonVolatile".

Example:

Map the user "admin" to "v3WriteAllGroup"

```
vacmSecurityToGroupEntry usm admin v3WriteAllGroup nonVolatile
```

Define a Notification

Syntax:

```
snmpNotifyEntry snmpNotifyName snmpNotifyTag snmpNotifyType \
snmpNotifyStorageType
```

Description:

snmpNotifyEntry is the tag.



snmpNotifyName is a human readable string representing the name of this notification.

snmpNotifyTag is a human readable string that is used to select a set of entries in the snmpTargetAddrTable.

snmpNotifyType is "trap".

snmpNotifyStorageType is "nonVolatile".

Example:

Define a notify entry called "myNotifyEntry" for traps:

```
snmpNotifyEntry myNotifyEntry TrapReceiver trap nonVolatile
```

Define a Set of Network Addresses to which a Notification should be Sent

Syntax:

```
snmpTargetAddrEntry snmpTargetAddrName snmpTargetAddrTDomain \  
snmpTargetAddrTAddress snmpTargetAddrTimeout snmpTargetAddrRetryCount \  
snmpTargetAddrTagList snmpTargetAddrParams \  
snmpTargetAddrStorageType tgtAddressMask
```

Description:

snmpTargetAddrEntry is a tag for this command.

snmpTargetAddrName is a human readable string representing the name of this target.

snmpTargetAddrTDomain is an OID that indicates the network type.

snmpTargetAddrTAddress is a valid address in the snmpTarget AddrTDomain.

snmpTargetAddrTimeout is an integer, which identifies the expected maximum round trip time (in hundredths of seconds) for communicating with the snmpTargetAddrTAddress.

snmpTargetAddrRetryCount is an integer that identifies the number of times the SNMP will attempt to retransmit an Inform when a response is not received.

snmpTargetAddrTagList is a quoted string containing one or more tags. These tags correspond to the value of snmpNotifyTag in the snmpNotifyTable.

snmpTargetAddrParams is a human-readable string that is used to select a set of entries in the snmpTargetParamsTable.

snmpTargetAddrStorageType is "nonVolatile".

tgtAddressMask is a bit field mask for the snmpTargetAddrTAddress and appears in the local configuration datastore in the same format as the snmpTargetAddrTAddress.

Example:

```
# Define 10.0.0.11 as the target for "TrapReceiver" for v1:
```

```
snmpTargetAddrEntry v1Target 1.3.6.1.6.1.1 10.0.0.11:0 1500 3 \  
TrapReceiver v1Params nonVolatile 255.255.255.255:0
```

Note: Upon restarting, the system writes an extra space and zero (" 0") after the `tgtAddressMask` parameter in the `snmpd.cnf` file. These extra characters can be left in the file; they have no adverse effects.

Define Parameters to Use when Sending Notifications to Each of the Target Addresses Identified in the Previous Section

Syntax:

```
snmpTargetParamsEntry snmpTargetParamsName snmpTargetParamsMPModel \  
snmpTargetParamsSecurityModel snmpTargetParamsSecurityName \  
snmpTargetParamsSecurityLevel snmpTargetParamsStorageType
```

Description:

`snmpTargetParamsEntry` is a tag for this command.

`snmpTargetParamsName` is a human readable string representing the name of this parameter.

`snmpTargetParamsMPModel` is 0 for SNMPv1, 1 for SNMPv2c, or 3 for SNMPv3. The value of this field together with the value of `snmpTargetParamsSecurityModel` indicates which type of notification should be sent.

`snmpTargetParamsSecurityModel` is "snmpv1" for SNMPv1, "snmpv2c" for SNMPV2c, or "usm" for SNMPv3. The value of this field together with the value of `snmpTargetParamsMPModel` indicates which type of notification should be sent.

`snmpTargetParamsSecurityName` is a human readable string that is the principal ("principal" is a SNMPv3 user, or a SNMPv2c or SNMPv1 community string) to be used in the notification.

`snmpTargetParamsSecurityLevel` identifies the security level of the notification to send. This should be either "noAuthNoPriv" or "authNoPriv."

`snmpTargetParamsStorageType` is "nonVolatile".

Example:

```
# Define the parameters for sending traps in v1 mode:
```

```
snmpTargetParamsEntry v1Params 0 snmpv1 public noAuthNoPriv nonvolatile
```

Configuring Communities for SNMPv1 or SNMPv2c Messages

Syntax:

```
snmpCommunityEntry snmpCommunityIndex snmpCommunityName \  
snmpCommunitySecurityName snmpCommunityContextEngineID \  
snmpCommunityContextName snmpCommunityTransportTag \  
snmpCommunityStorageType
```

Description:

snmpCommunityEntry is a tag for this command.

snmpCommunityIndex is a human readable string which is an arbitrary index. The value of this field is unimportant, other than it must be unique from other values in this field in other snmpCommunityEntries.

snmpCommunityName is the community string, which may be a human readable string or a hexadecimal representation containing unprintable characters.

For example, if the community string was the word "public" with an unprintable '<bell>' character (ASCII code 7) at the end, then the value of this field would be 70:75:62:6c:69:63:07 (the ASCII codes for 'p', 'u', 'b', 'l', 'i', 'c' and '<bell>').

snmpCommunitySecurityName is a human readable string which identifies the security name for this community string. This string should appear in at least one vacmSecurityToGroupEntry to assign the community string (principal) to an access control group.

For example, if the community string was the word "public" with an unprintable '<bell>' character 7 (ASCII code 7) at the end, then the value of this field could be "public", or it could be any other arbitrary string containing only printable characters.

snmpCommunityContextEngineID is a display string, always "localSnmpID".

snmpCommunityContextName is the SNMPv3 context implied by the community string. A dash (-) in this field represents the default context.

snmpCommunityTransportTag is a human readable string that is used to select a set of entries in the snmpTargetAddrTable for source address checking. Entries in the snmpTargetAddrTable are selected if the value of snmpCommunityTransportTag appears in the list of (space-separated) tags in snmpTargetAddrTagList. If the SNMP entity should not perform source address checking, then this field should contain a dash (-).

snmpCommunityStorageType is "nonVolatile".

Example:

To receive SNMPv1 requests from exactly one SNMP manager station

```
snmpCommunityEntry 61 targetV1Community targetV1Community localSnmpID \  
- whereValidRequestsOriginate nonVolatile
```

```
.....  
vacmAccessEntry myV1Group - snmpv1 noAuthNoPriv exact All All All \  
nonVolatile
```

```
vacmSecurityToGroupEntry snmpv1 targetV1Community myV1Group nonVolatile  
vacmViewTreeFamilyEntry All iso - included nonVolatile  
snmpTargetAddrEntry myV1Manager_allRequests snmpUDPDomain 10.0.0.11:0 0 \  
0 whereValidRequestsOriginate - nonVolatile 255.255.255.255:0
```

To send SNMPv1 trap messages to exactly one manager station

```
vacmAccessEntry myV1Group - snmpv1 noAuthNoPriv exact All All All \  
nonVolatile  
vacmSecurityToGroupEntry snmpv1 targetV1Community myV1Group \  
nonVolatile  
vacmViewTreeFamilyEntry All iso - included nonVolatile  
snmpNotifyEntry myTrap whereMyNotificationsGo trap nonVolatile  
snmpTargetAddrEntry myV1Manager_allNotifications snmpUDPDomain \  
10.0.0.11:0 100 3 whereMyNotificationsGo myV1ExampleParams nonVolatile \  
1.2.3.4:0  
snmpTargetParamsEntry myV1ExampleParams 0 snmpv1 targetV1Community \  
noAuthNoPriv nonVolatile
```

Troubleshooting

This section provides some general troubleshooting information relative to using SNMP with the GoWide.

- If SNMP queries time out, check if the GoWide can be pinged, as there could be a problem with network connectivity.
- If SNMP queries time out, yet the GoWide shows ping connectivity, check the snmpd.cnf file using the "fm cat snmpd.cnf" console command. Read the file to check if it is exactly the same as the file that was loaded. Do a "tftp get" to get the file and then read it using a text editor. If errors are present in the file, then after rebooting, the file will not remain the same as the one loaded.
- If variables from the system group cannot be obtained using get, or if SNMP times out, check the snmpd.cnf file. This file should contain the settings that allow queries for snmpv1/v2c/v3.
- If the SNMP manager or the trap receiver cannot be opened, check if any process is open on port 161/162.
- If traps cannot be received on a particular manager, check to see if the snmpd.cnf file on the GoWide unit is configured to send traps to that destination. When the GoWide unit restarts, a cold start trap must be received.

Performance Monitoring and Status

*This chapter provides performance monitoring
and status information on the GoWide Serial
AAL1.*

Alarms, LED Indicators, and Performance

PVC Manager List Group

The PVC Manager is used to create different traffic groups. The PVCM command "list" can be used to display the current groups that are created.

```
10.0.0.1> pvcm list
Traffic groups:
ex2 (sdt)
```

The list command, combined with the group name, can be used to examine the group in detail. This version of the command also provides some information regarding the number of cells that have been switched in that particular group.

```
10.0.0.1> pvcm list ex2
Input group:
  port  vp    vc    cells    port
  shdsl 10   100  2033906 ==>  serial

Output group:
  port    port    vp    vc    cells
  serial ==>  shdsl  10   100  2033906
```

Port Performance and Status

G.shdsl

The console contains a number of commands which provide information on the SHDSL link status and the performance. Refer to Chapter 5 – Console Commands, for detailed information regarding SHDSL console commands.

The **Set** command, used without any parameters, displays a list of SHDSL attributes that can be adjusted for the handshake process. This command is useful if the line is having trouble syncing up with the DSLAM, in which case adjusting one of these parameters might improve that. The following shows the list of SHDSL attributes for HTUType = CO:

```
10.0.0.1> shdsl set

[Current Setting]
HTUType HTU-CO
LineType = Two-Wire
Line Payload Rate = 2304 (36N, 0I)
ClockSource = NTR RefClock 8k
Line RateMode = Adaptive
Standard = Annex_A
PowerBackoff Enable
Asymmetric_PSD = Disable
```

```
SNRThreshold Disable
AttenuationThreshold Disable
LoopbackTimeout = 0 minutes
RemoteEOCRequest ---- Enable
Target Margin = CM 4 SM 11 RCM 4 RSM 11
```

The **status** command displays the line status of the SHDSL port. This includes the SNR (Signal to noise ratio), attenuation, and a number of other line status indications. This information also includes the line status information received from the remote unit via the EOC (embedded operations channel).

The **pfm** command displays the path performance information. This information consists of ES (errored second), SES (severely errored seconds), UAS (unavailable seconds), CRC, and LOSW (loss of sync word seconds). This includes performance information from the local unit as well as the remote unit.

The **atm** command provides ATM cell counter information on the SHDSL port and also the ATM switch counter.

Serial

The **set** command, used without any parameters, displays a list of attributes relevant to the serial interface standard that is currently set. This command can also be used to change some of those attributes.

The **loopback** command is used to enable or disable serial interface loopback.

The **dtralm** command is used to determine whether or not the system logs a Data-Terminal-Ready (DTR) alarm when it detects that the DTR signal on the serial port is not asserted.

BUN Attributes

The physical ports (Serial, SHDSL, Ethernet) contain attributes that indicate the status of the port as well as performance data. The "bun show port <port_name>" command can be used to display the port attributes.

Alarm Status

It is preferred that alarm information be read from the alarm handler. Table C shows a list of the alarms.

Table C. Alarms Acronyms

Module	Alarms
Serial	LOD (<i>V.35/V.36 interfaces only</i>)
G.shdsl	LOL, BRB, LOSW, ATTEN, SNRM, NTRF ^a
AAL1	UR, OR
OAM	OAMRDI, OAM AIS

a.NTRF is not applicable in the current version of GoWide Serial AAL1.

Alarm Types and Descriptions

Table D lists all alarm types that are currently supported in GoWide Serial AAL1.

Table D. Alarm Types and Descriptions

Alarm Type	Description
LOD	Loss of DTR (<i>V.35/V.36 interfaces only</i>)
LOL	Loss of Link
BRB	New DSL Rate Below Required Bandwidth
LOSW	Loss of Sync Word
ATTEN	Attenuation Alarm
SNRM	Signal to Noise Ratio Margin Alarm
NTRF	<i>Currently not supported.</i>
UR	AAL1 PVC UNDERRUN Condition
OR	AAL1 PVC OVERRUN Condition
OAMRDI	OAM RDI Condition
OAM AIS	OAM AIS Condition

Alarm types in the GoWide Serial AAL1 system might be different in different software versions. The console command "ah show" can be used to view all alarm types that are currently supported and the severity for each alarm type.

Refer to the AH SHOW command section in Chapter 5 – Console Commands for details.

Alarm Severity and Assignment

By default, the severity for all alarm types is set to MINOR. The user can change the severity of a particular alarm to CRITICAL, MAJOR or NON (NON_ALARM), using the

"**ah set <alarm type> <severity> [<description>]**" console command. For example, the user can type "**ah set lol critical**" to set the severity of the LOL alarm to CRITICAL.

Refer to the *ah set* command section in Chapter 5 – Console Commands for details.

Current and Historic Logs

All major failures on the GoWide Serial AAL1 system generate alarms. The alarms that have been generated will be logged into the Current Log or Historic Log. The Current Log contains all active alarms and the Historic Log contains all cleared alarms.

Alarms are listed with the following attributes:

- Event ID (eid): This is the ID for each alarm with an integer value starting at 1.
- Service Affecting (sa): This shows whether the alarm is service affecting or not. The value will be shown as "sa" (service affecting) or "na" (non-service affecting).
- Color (col): This specifies the "color" of the alarm. A red alarm is an alarm that originates due to problems locally, while a yellow alarm is an alarm that originates as a result of problems at a remote device. A color of "none" indicates that no color has been defined for the alarm.
- Severity: This indicates the severity of an alarm. There are four levels of severity: CRITICAL, MAJOR, MINOR, and NON_ALARM. This is a user configurable field. The default is MINOR for all alarm types, unless the user has set it to a different one.
- Alarm Type (type): See the "Alarm Types and Descriptions" section above for all alarm types currently available in the system.
- Module ID (mod_id): This indicates which module the alarm was generated from.
- Link ID (lid): This indicates which port the alarm was generated from (if applicable).
- Set Time: This indicates when the alarm was generated.

Note: The following attribute is only included in the Historic Log.

- Clear Time: This indicates when the alarm was cleared.

Among these attributes, Alarm Type and Module ID are searchable attributes, which can be used to refine the search. The console command for the search is "**al show <logId> [oam] [<type*> <mid*>]**". The fields in "[]" are optional. If no attributes are provided in the "**al show clog/hlog**" command, all alarm entries will be listed.

Note: The **[oam]** field can be included to display only OAM-related alarms.

For example, the user can type "al show clog ur serial" to list all the alarms where the type is UR and the module ID is SERIAL.

Refer to the *al show* command section in Chapter 5 – Console Commands for details.

LED Indicators

There are five types of LED indicators (LEDs) in the GoWide Serial AAL1 system.

Power LEDs

The green Power LED on the top of the unit, and the green Power LED on the rear panel of the unit, indicate whether or not power is applied to the system.

Sync LEDs

The green SYNC LEDs on the top of the unit (SHDSL SYNC and SERIAL SYNC), and the green G.shdsl Sync LEDs on the RJ-45 "SHDSL 1" and "SHDSL 2" connectors on the rear panel of the unit, indicate whether or not the physical layer is in sync with the remote unit.

Note: The "SHDSL 2" connector is not present on the GoWide 2.3 Serial AAL1 unit.

Activity LEDs

The green ATM ACT (activity) LED on the top of the unit indicates that an ATM cell is being transmitted.

The yellow Ethernet Act (activity) LED on the RJ-45 "Craft" (Ethernet) connector on the rear panel of the unit indicates activity on the Ethernet port.

Link LED

The green Ethernet Link LED on the RJ-45 "Craft" (Ethernet) connector on the rear panel of the unit indicates that the Ethernet port is linked.

Alarm LED

The yellow G.shdsl Alarm LEDs on the RJ-45 "SHDSL 1" and "SHDSL 2" connectors on the rear panel of the unit indicate alarm conditions exist on the G.shdsl ports.

Note: The "SHDSL 2" connector is not present on the GoWide 2.3 Serial AAL1 unit.

Console Commands

This chapter provides information on a selection of the console commands used by the GoWide Serial AAL1.

Console Command Overview

Note: This chapter describes the commands that the user has access to and are needed for accessing/setting up/troubleshooting the GoWide Serial AAL1.

The GoWide Serial AAL1 console interface is organized as a directory tree. The topmost directory contains a list of key modules and key commands. The user can type the "**help**" command to see a list of these modules and commands. Commands can be issued by typing the name of the command; sometimes arguments must be supplied. Within each module, there are commands that are associated with that module. To enter a module, simply enter the module name. The "**help**" command can be used to see the list of the commands under that module. To return to the top level, use the "**home**" command.

Console Port

The console port is located on the rear panel of the GoWide Serial AAL1. It is labeled "CRAFT" and is a standard DB-9 RS-232 port. The default configuration for the console connection is: 9600 8N1. Once the console connection is established, all the commands stated in this section can be used.

Executing a Console Command

Console commands are grouped hierarchically according to the firmware module that they are associated with. For example, all console commands associated with the PVC Manager module exist within the *pvc* group, which is at the root (home) level of the command hierarchy.

A console command is executed the same way commands are executed in DOS or UNIX; simply type the name of the command followed by any arguments, as follows:

```
<command name> <argument 1> .. <argument n>
```

Commands can be executed from the root (home) level by typing the group name followed by the command name and arguments, as in the following example:

```
10.0.0.1> pvc aallpfm
```

Note: The root (home) level of the command hierarchy is indicated by the 10.0.0.1> prompt.

Alternatively, commands can be executed at the group level by first typing the group name to drop into the group level of the command hierarchy, then entering the command name and arguments, as in the following example:

```
10.0.0.1> pvc  
10.0.0.1 pvc>aallpfm
```

To return to the root (home) level, use the *home* command:

```
10.0.0.1 pvcm>home
10.0.0.1>
```

Command Summary Table

Table T, located at the end of this chapter, provides a brief summary of all console commands in the command hierarchy.

The remainder of this chapter explains usage of the various commands and their arguments. The user can also use the “help” command, explained below, to display the usage of a given command.

General-Usage Console Commands

The following are some of the common commands that are used to navigate and use the GoWide Serial AAL1 console:

exit (Exit Console Command Mode)

Syntax:

```
exit
```

Description:

This command exits out of console command mode. Once console command mode has been exited, the user must enter the password when prompted to re-enter console command mode. The *exit* command can only be issued when the current position is the home directory.

help (Console Command help)

Syntax:

```
help <command>
```

Description:

This command is a multi-purpose command. The help command can function as a directory listing command or as a help command. When typed without an argument, the help command lists the modules and commands available in the current directory. When the help command is issued with the name of a command, help information relevant to the command will be displayed on the screen.

home (Go to home Directory)

Syntax:

```
home
```

Description:

This command is used to return to the home directory. Home is the topmost level. This is where the user starts out when the system is first powered up. At the home directory, the user can view all the different commands and modules offered by the system. The home command can only be issued if the current position is not the home directory. If the home command is issued in the home directory, an error is returned.

restart (Restart the System)

Syntax:

```
restart
```

Description:

This command forces the system to restart. This command exists in the home directory; therefore the restart command can only be issued in the home directory.

Alarm Handler (ah) Commands

The Alarm Handler (ah) handles raw alarms generated by the lower drivers and other processes. It generates a unique ID for each active alarm, adds a time stamp to any active or cleared alarm, and sends it to the Alarm Logger, where it is logged and sent to the Alarm Forwarder for further processing.

The Alarm Handler contains commands to set or reset the severity and description values for a particular alarm, which changes them in the configuration file, and to show the contents of the configuration file.

The configuration file, *alarm.conf*, which is saved in flash memory, stores the severity level and a brief description for each alarm that is set. The default severity value is **MINOR** for all alarms and there is a default description text string for each alarm.

When the system starts, it first checks for the *alarm.conf* file. If it exists, the severity and description values are read from the file. Otherwise, the default values are used.

Note: After changing the configuration file, if the user wants the changes to persist after the system reboots, the "**config save**" command must be issued from the Console.

reset (Reset Alarm Severity/Description to Default)

Syntax:

```
reset <alarm_type>
```

Description:

This command resets the severity and description of the specified alarm type to its default values. Valid parameter values are as follows:

<alarm_type>: LOD; LOL; BRB; LOSW; ATTEN; SNRM; NTRF; UR; OR; OAMRDI; OAMAIIS.

Note: The NTRF alarm is not applicable in the current version of GoWide Serial AAL1.

Example:

```
reset LOL
```

Resets the severity and the description of the LOL alarm to its default values.

set (Set Alarm Severity/Description)

Syntax:


```
set <alarm_type> <severity> [<alarm_description>]
```

Description:

This command sets the alarm severity level, and optionally, the alarm description for an given alarm type. Valid parameter values are as follows:

<alarm_type>: LOD; LOL; BRB; LOSW; ATTEN; SNRM; NTRF; UR; OR; OAMRDI; OAM AIS.

Note: The NTRF alarm is not applicable in the current version of GoWide Serial AAL1.

<severity>: critical; major; minor; non.

<alarm_description>: A text string. The alarm type's default description is used if this parameter is missing.

Example:

```
set LOL critical LOSS OF LINK
```

Sets the severity of the LOL alarm to "critical," and the description to "LOSS OF LINK".

show (Show Alarm Configuration File)

Syntax:

```
show
```

Description:

This command shows alarm configure file (*alarm.conf*).

Example:

```
show
```

```
----- start of alarm.conf -----
  LOD :    minor : Loss of DTR
  LOL :    minor : Loss of Link
  BRB :    minor : New DSL Rate Below Required Bandwidth
  LOSW :   minor : Loss of Sync Word
  ATTEN :  minor : Attenuation alarm
  SNRM :   minor : Signal to Noise Ratio Margin alarm
  NTRF :   minor : Network Timing Recovery Failure
  UR :     minor : AAL1 PVC UNDERRUN Condition
  OR :     minor : AAL1 PVC OVERRUN Condition
  OAMRDI : minor : OAM RDI Condition
  OAM AIS : minor : OAM AIS Condition
===== end of alarm.conf =====
```

Alarm Logger (al) Commands

The Alarm Logger (al) logs all alarms. If an active alarm exists, the Alarm Logger logs it into the Current Log. Once the alarm is cleared, the Alarm logger removes the corresponding alarm from the Current Log and enters it into the Historic Log.

Note: The two logs are stored in memory, not as files in flash memory.

Using Alarm logger commands, users can view detailed information about alarms, such as what type of alarm they are, the ID of the modules that generated them, the link ID they come from, the times they were generated or cleared (for cleared alarms only), etc. The log entries are listed with the most recent alarm at the top of the listing.

Users can retrieve information from the two logs and perform some operations to manage the logs. By providing some attribute values, the logs can be searched for particular pattern matches, or all possible alarm entries can be shown.

The maximum number of alarm entries stored in each log is **500** for Current Log and **1500** for the Historic Log. The sizes of the logs can be set to any number between 1 and the maximum. When the logs reach maximum capacity, any new incoming alarms will cause the oldest alarms to be deleted.

Caution: Operations like *delentry*, *setsize*, and *clearlog*, which change the characteristics of the Current Log, can cause unexpected results if active alarms are manually removed.

clearlog (Clear Specified Log)

Syntax:

```
clearlog <logId>
```

Description:

Removes all alarm entries from the log specified by <logId>.

Example:

clearlog clog

Removes all alarm entries from the Current Log.

Table E lists the elements used in the *clearlog* valid value set.

Table E - Clearlog Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <code>clog</code> (Current Log) or <code>hlog</code> (Historic Log).

delentry (Delete Log Entry)

Syntax:

```
delentry <logId> <eid*> [<type> <mid>]
```

Description:

Deletes the alarm entry that matches the fields provided.

Example:

delentry clog 3

Deletes the alarm entry in the current log that has the event identifier “3.”

Table F lists the elements used in the *delentry* valid value set.

Table F. Delentry Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <i>clog</i> (Current Log) or <i>hlog</i> (Historic Log).
<eid>	The Event Identifier: This can be an unsigned integer number except zero. Note: If <eid>=0, then <type> and <mid> are required arguments.
<type>	The Alarm Type: This can be LOD, LOL, BRB, LOSW, ATTEN, SNRM, UR, OR, OAMRDI, or OAM AIS.
<mid>	The Module ID: This can be either SERIAL or SHDSL.
0	Wild card: Use 0 as a wild card character when inputting the <eid> argument. When 0 is included in place of <eid>, then <type> and <mid> are required arguments.

getlatest (Get Latest Alarm Entry)

Syntax:

```
getlatest <logId> [<eid*> <type*> <mid*>]
```

Description:

Returns the latest alarm entry that matches the fields provided.

Examples:

getlatest clog

Finds the latest alarm in Current Log.

getlatest hlog 0 LOL

Finds the latest alarm in Historic Log that is of the type “LOL.”

Table G lists the elements used in the *getlatest* valid value set.

Table G. Getlatest Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <code>clog</code> (Current Log) or <code>hlog</code> (Historic Log).
<eid>	The Event Identifier: This can be an unsigned integer number, or zero (0) as a wild card. Note: If 0 is used as a wild card for <i>eid</i> , then the following two arguments are required (not optional).
<type>	The Alarm Type: This can be LOD, LOL, BRB, LOSW, ATTEN, SNRM, UR, OR, OAMRDI, or OAMAS.
<mid>	The Module ID: This can be either SERIAL or SHDSL.
0	Wild card: Use 0 as a wild card character when inputting non-trailing command arguments. When 0 is included in place of a non-trailing argument value, the argument will not be searched and any value will match it.

getnext (Get Next Alarm Entry)

Syntax:

```
getnext <logId> [<type*> <mid*>]
```

Description:

This command returns the next alarm entry that matches the fields provided, searching from the next entry that the current pointer points to.

Note: Where the current pointer points to depends on the last operation to set the current pointer. To make sure that *getnext* finds the expected entry, always enter *getlatest* first with the same parameters as *getlatest*. This operation resets the current pointer to the first entry of the log.

Example:

getnext clog

Finds the next latest alarm in the Current Log.

getnext hlog 0 serial

Finds the next alarm in Historic Log that was generated by the Serial module.

Table H lists the elements used in the `getnext` valid value set.

Table H. Getnext Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <code>clog</code> (Current Log) or <code>hlog</code> (Historic Log).
<type>	The Alarm Type: This can be LOD, LOL, BRB, LOSW, ATEN, SNRM, UR, OR, OAMRDI, or OAMAS.
<mid>	The Module ID: This can be either SERIAL or SHDSL.
0	Wild card: Use 0 as a wild card character when inputting non-trailing command arguments. When 0 is included in place of a non-trailing argument value, the argument will not be searched and any value will match it.

getsize (Get Maximum Size of Log)

Syntax:

```
getsize <logId>
```

Description:

Returns the currently set maximum size for the log specified by <logId>.

Example:

getsize hlog

Gets the currently set maximum size of the Historic Log.

Table I lists the elements used in the `getsize` valid value set.

Table I - Getsize Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <code>clog</code> (Current Log) or <code>hlog</code> (Historic Log).

setsize (Set Maximum Size of Log)

Syntax:

```
setsize <logId> <size>
```

Description:

Sets the maximum log size for the log specified by <logId>.

Example:

setsize clog 99

Sets the Current Log maximum size to 99.

Table J lists the elements used in the *setsize* valid value set.

Table J. Setsize Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <code>clog</code> (Current Log) or <code>hlog</code> (Historic Log).
<size>	The Log Size: This can be a positive integer between 1 and the maximum size of the log, inclusive (500 for the Current Log, and 1500 for the Historic Log).

show (Show Alarm Entries)

Syntax:

```
show <logId> [oam] [<type*> <mid*>]
```

Description:

Lists all alarm entries in the log specified by <logID> and the optional parameters.

Example:

10.0.0.1> al show clog

```
eid sa    col severity  type mod_id lid          set_time
-----
  1 sa    none   minor    LOL  SHDSL   1 26/12/02 14:55:52
```

Lists all alarm entries in the Current Log.

10.0.0.1> al show clog oam

```
id sa severity  type  Group Name      Port  Flags          Set Time
-----
  1 na    minor  OAMRDI group1      shdsl F5-SEGM 29/09/02 13:58:31
```

Lists all OAM-related alarm entries in the Historic Log.

Table K lists the elements used in the *show* valid value set.

Table K. Show Valid Value Set

Value	Description
<logId>	The Log Identifier: This can be either <code>clog</code> (Current Log) or <code>hlog</code> (Historic Log).
oam	If this option is included on the command line, only OAM-related alarms in the specified log will be shown.

Table K. Show Valid Value Set (Cont'd)

Value	Description
<type>	The Alarm Type: This can be LOD, LOL, BRB, LOSW, ATTEN, SNRM, UR, OR, OAMRDI, or OAMAIIS.
<mid>	The Module ID: This can be either SERIAL or SHDSL.
0	Wild card: Use 0 as a wild card character when inputting non-trailing command arguments. When 0 is included in place of a non-trailing argument value, the argument will not be searched and any value will match it.

PVC Manager (pvcm) Commands - General

The PVC Manager (PVCM) manages the switch traffic groups. Its functionality includes establishing switching between ports, creating traffic and switching parameters, and a number of OAM functions.

This section explains the general-purpose PVCM console commands.

help (Display PVCM Command Help)

Syntax:

```
help [<command>]
```

Description:

This command prints help information for the named PVCM command.

info (Display Switch Information)

Syntax:

```
info
```

Description:

This command prints detailed information about the switch, such as buffering information, present ports, etc.

version (Display PVCM Version Number)

Syntax:

```
version
```

Description:

This command displays the version number of the PVCM module.

PVC Manager (pvcm) Commands - OAM-Related

The PVC Manager (PVCM) manages the switch traffic groups. Its functionality includes establishing switching between ports, creating traffic and switching parameters, and a number of OAM functions.

This section explains the OAM-related PVCM console commands.

OAM Command Arguments

For the OAM-related commands in this section, the arguments (where applicable) have the following meanings:

<code>port</code>	Name of the G.shdsl ATM port.
<code>vpi</code>	Numerical Virtual Path Identifier, or 'any'
<code>vci</code>	Numerical Virtual Channel Identifier, or 'any'
<code>flags</code>	One or both of <code>f4 f5</code> and one or both of <code>etoe segm</code> in any order.

Notes:

- 1 Some OAM-related commands have restrictions on the `flags` imposed by the OAM module.
- 2 For F4 streams, the `vci` argument must be 'any'.

ccactivate (Activate CC)

Syntax:

```
ccactivate <port> <vpi> <vci> <flags> [tx|rx]
```

Description:

This command sends a continuity checking activate request on the specified OAM flow.

Note: If `tx|rx` is not specified, both directions will be activated.

Example:

```
ccactivate shdsl 0 any f4 etoe tx
```

See also:

```
ccdeactivate
```

ccdeactivate (Deactivate CC)

Syntax:

```
ccdeactivate <port> <vpi> <vci> <flags> [tx|rx]
```

Description:

This command sends a continuity checking deactivate request on the specified OAM flow.

Note: If tx|rx is not specified, both directions will be deactivated.

Example:

```
ccdeactivate shdsl 0 any f4 etoe tx
```

See also:

```
ccactivate
```

ccdisable (Disable CC)

Syntax:

```
ccdisable <port> <vpi> <vci> <flags>
```

Description:

This command disables reception of activate requests on the specified OAM flow.

Example:

```
ccdisable shdsl 0 any f4 etoe
```

See also:

```
ccenable
```

ccenable (Enable CC)

Syntax:

```
ccenable <port> <vpi> <vci> <flags>
```

Description:

This command enables reception of activate requests on the specified OAM flow.

Example:

ccenable shdsl 0 any f4 etoe

See also:

ccdisable

ccenableauto (Auto-Accept CC Activate Enable)

Syntax:

ccenableauto <port> <vpi> <vci> <flags>

Description:

This command enables automatic acceptance of received activate requests on the specified OAM flow.

Example:

ccenableauto shdsl 0 any f4 segm

See also:

ccdisableauto

ccglobalaccept (Global Accept CC)

Syntax:

ccglobalaccept

Description:

This command toggles the unit's global accept/reject behavior on reception of a CC activate request. By default, the unit's global accept/reject behavior is set to accept CC activate requests once CC is enabled on a given flow.

Example:

ccglobalaccept

ccstart (Start CC without Handshaking)

Syntax:

ccstart <port> <vpi> <vci> <flags> [tx|rx]

Description:

This command starts transmission and/or reception of continuity checking cells on the specified OAM flow.

Note: If `tx|rx` is not specified, transmission starts in both directions.

Example:

```
ccstart shdsl 0 any f4 segm rx
```

See also:

```
ccstop
```

ccstop (Stop CC without Handshaking)

Syntax:

```
ccstop <port> <vpi> <vci> <flags> [tx|rx]
```

Description:

This command stops transmission and/or reception of continuity checking cells on the specified OAM flow.

Note: If `tx|rx` is not specified, transmission stops in both directions.

Example:

```
ccstop shdsl 0 any f4 segm rx
```

See also:

```
ccstart
```

faultbegin (Declare a Fault State)

Syntax:

```
faultbegin <port> <vpi> <vci> <flags>
```

Description:

This command declares a fault state on the specified OAM flow.

Note: Before a fault state can be declared on a given OAM flow, fault management must be enabled on that flow using the `faultenable` command.

Example:

```
faultbegin shdsl 0 19 f5 segm
```

See also:

faultenable
faultend

faultdisable (Disable Fault Management)

Syntax:

```
faultdisable <port> <vpi> <vci> <flags>
```

Description:

This command turns off fault management for the specified OAM flow.

Example:

```
faultdisable shdsl 0 19 f5 segm
```

See also:

faultenable

faultenable (Enable Fault Management)

Syntax:

```
faultenable <port> <vpi> <vci> <flags>
```

Description:

This command turns on fault management for the specified OAM flow.

Example:

```
faultenable shdsl 0 19 f5 segm
```

See also:

faultdisable

faultend (Clear a Fault State)

Syntax:

```
faultend <port> <vpi> <vci> <flags>
```

Description:

This command clears a fault state on the specified OAM flow.

Example:

```
faultend shdsl 0 19 f5 segm
```

See also:

```
faultbegin
```

faultunwatch (Turn Off Non-Intrusive Fault Monitoring)

Syntax:

```
faultunwatch <port> <vpi> <vci> <flags>
```

Description:

This command turns off non-intrusive fault monitoring for the specified OAM flow.

Example:

```
faultunwatch shdsl 0 any f4 etoe
```

See also:

```
faultwatch
```

faultwatch (Turn On Non-Intrusive Fault Monitoring)

Syntax:

```
faultwatch <port> <vpi> <vci> <flags>
```

Description:

This command turns on non-intrusive fault monitoring for the specified OAM flow.

Example:

```
faultwatch shdsl 0 any f4 etoe
```

See also:

```
faultunwatch
```

lbdisable (Disable Loopback)

Syntax:

```
lbdisable <port> <vpi> <vci> <flags>
```

Description:

This command disables loopback for the specified OAM flow.

Example:

lbdisable shdsl 0 any f4 etoe

See also:

lbenable
lbstats

lbenable (Enable Loopback)

Syntax:

```
lbenable <port> <vpi> <vci> <flags> [myllid|<llid>]
```

Description:

This command enables loopback for the specified OAM flow, with an optional loopback location identifier (LLID). If no LLID is specified, loopback is enabled on the OAM flow with the default LLID, which consists of 16 octets of all 1's. If an LLID is specified, enter it in hexadecimal format, using "dot notation" to separate octets. Any LLID that is specified is padded with zeros to the full 16 octets. If *myllid* is specified, loopback is enabled on the OAM flow with the LLID set with the *myllid* command.

Examples:

lbenable shdsl 0 any f4 etoe

lbenable shdsl 0 22 f5 segm 11.12.13

lbenable shdsl 0 36 f5 etoe myllid

See also:

lbdisable
myllid

lbsend (Send a Loopback Cell)

Syntax:

```
lbsend <port> <vpi> <vci> <flags> [<llid>]
```

Description:

This command sends out a loopback cell for the specified OAM flow, with an optional loopback location identifier (LLID). If no LLID is specified, the loopback cell

is sent out with the default LLID, which consists of 16 octets of all 1's. If an LLID is specified, enter it in hexadecimal format, using "dot notation" to separate octets. Any LLID that is specified is padded with zeros to the full 16 octets.

The command returns immediately – the response (or lack of response) is indicated by the arrival of a message from the OAM process, which appears in the event log.

Examples:

lbsend shdsl 0 any f4 etoe

lbsend shdsl 0 22 f5 segm 11.12.13

lbstats (Display Loopback Statistics)

Syntax:

```
lbstats <port> <vpi> <vci> <flags>
```

Description:

This command displays loopback statistics for a specified OAM flow. This command is valid only if loopback is enabled for the specified flow.

Example:

lbstats shdsl 0 any f4 etoe

```
Statistics for port shdsl vpi 0 vci any flags = f4 etoe  
Loopback requests received = 5  
Loopback requests dropped = 1
```

See also:

lbenable

myllid (Set Local Loopback Location ID)

Syntax:

```
myllid [<llid>]
```

Description:

This command sets the OAM loopback location ID (LLID) of this unit. The command issued without the argument displays the currently set LLID.

Table L lists the elements used in setting local OAM loopback location ID.

Table L. Set Local OAM Loopback Location ID (LLID)

Command Argument	Description
<llid>	<p>The OAM loopback location identifier (LLID). Enter the LLID in hexadecimal format, using "dot notation" to separate octets, as in the following example:</p> <p>A1.29.FF.46.B6.76.33.E2.44.53.8A.69.DA.21.FB.33</p> <p>If an LLID is entered that does not contain all 16 octets, it is padded by the system with zeros to the full 16 octets.</p> <p><i>Note:</i> The default LLID is 16 octets of all '1's.</p>

Examples:

myllid 1.2.3.45.67.89.ab.cd.ef

This command sets LLID.

myllid

```
llid: 1.2.3.45.67.89.ab.cd.ef.0.0.0.0.0.0.0
```

This command displays LLID.

oaminfo (Display OAM Information)

Syntax:

```
oaminfo <port> <vpi> <vci>
```

Description:

This command displays information about the specified VC/VP. Note that no flags are necessary – information about all the flows matching the specified port, vpi, and vci is displayed.

Example:

oaminfo shdsl 0 any

```
port shdsl vpi 0 vci any settings 0x10
                                F4-ETOE F4-SEGM F5-ETOE F5-SEGM
loopback                        y
cc                                y
cc auto
fault
fault non-intrusive
segment sinkpoint               y
pm
```



```
pm auto y
```

See also:

oamlist

oamlist (List OAM Settings)

Syntax:

```
oamlist
```

Description:

This command lists information about all flows that have any OAM settings.

Example:

oamlist

```
port shdsl vpi 0 vci any settings 0x4000041 F4_ETOE F4_SEGM
port shdsl vpi 0 vci 22 settings 0x2 F5_ETOE
```

See also:

oaminfo

pmactivate (Activate PM)

Syntax:

```
pmactivate <port> <vpi> <vci> <flags> <txblk> <rxblk> [tx|rx]
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command sends a performance monitoring activate request on the specified OAM flow. The variables <txblk> and <rxblk> are the transmit and receive block sizes, respectively.

Note: If tx|rx is not specified, performance monitoring will be activated in both directions.

Example:

```
pmactivate shdsl 0 any f4 etoe 128 128 tx
```

See also:

pmdeactivate

pmdeactivate (Deactivate PM)

Syntax:

```
pmdeactivate <port> <vpi> <vci> <flags> [tx|rx]
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command sends a performance monitoring deactivate request on the specified OAM flow.

Note: If tx|rx is not specified, performance monitoring will be deactivated on both directions.

Example:

```
pmdeactivate shdsl 0 any f4 etoe
```

See also:

pmactivate

pmdisable (Disable PM)

Syntax:

```
pmdisable <port> <vpi> <vci> <flags>
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command disables reception of performance monitoring activate requests on the specified OAM flow.

Example:

```
pmdisable shdsl 0 22 f5 etoe
```

See also:

pmenable

pmenable (Enable PM)

Syntax:

```
pmenable <port> <vpi> <vci> <flags>
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command enables reception of performance monitoring activate requests on the specified OAM flow.

Example:

```
pmenable shdsl 0 22 f5 etoe
```

See also:

```
pmdisable
```

pmenableauto (Auto-Accept PM Activate Enable)

Syntax:

```
pmenableauto <port> <vpi> <vci> <flags>
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command enables automatic acceptance of received performance monitoring activate requests on the specified OAM flow.

Example:

```
pmenableauto shdsl 0 any f4 segm
```

See also:

```
pmdisable
```

pmglobalaccept (Global Accept PM)

Syntax:

```
pmglobalaccept
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command toggles the unit's global accept/reject behavior on reception of a PM activate request. By default, the unit's global accept/reject behavior is set to accept PM activate requests once PM is enabled on a given flow.

Example:

pmglobalaccept

pmstart (Start PM without Handshaking)

Syntax:

```
pmstart <port> <vpi> <vci> <flags> <txblk> <rxblk> [tx|rx]
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command starts transmission and/or reception of performance monitoring cells on the specified OAM flow. The variables <txblk> and <rxblk> are the transmit and receive block sizes, respectively.

Note: If tx|rx is not specified, transmission starts on both directions.

Example:

pmstart shdsl 0 any f4 segm 256 256 rx

See also:

pmstop

pmstats (Display PM Statistics)

Syntax:

```
pmstats <port> <vpi> <vci> <flags>
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command displays performance monitoring statistics for the specified connection.

Example:

pmstats shdsl 0 333 f5 etoe

```
Statistics for port shdsl vpi 0 vci 333 flags = f5 etoe
TUC0+1  0
TUC0     0
TRCC0+1  0
TRCC0    0
SECBC    0
```

pmstop (Stop PM without Handshaking)

Syntax:

```
pmstop <port> <vpi> <vci> <flags> [tx|rx]
```

Description:

Caution: Performance monitoring functionality is not supported in the current version of GoWide firmware. Integrity of the performance monitoring console commands has not been verified.

This command stops transmission and/or reception of performance monitoring cells on the specified OAM flow.

Note: If tx|rx is not specified, transmission stops on both directions.

Example:

pmstop shdsl 0 any f4 segm rx

See also:

```
pmstart
```

segmclr (Clear Segment Sinkpoint)

Syntax:

```
segmclr <port> <vpi> <vci> <flags>
```

Description:

This command clears the GoWide ATM interface node's status as a segment sinkpoint for the specified OAM flow.

Example:

segmclr shdsl 0 any f4 segm

See also:

segmset

segmset (Set Segment Sinkpoint)

Syntax:

```
segmset <port> <vpi> <vci> <flags>
```

Description:

This command sets the GoWide ATM interface node's status as a segment sinkpoint for the specified OAM flow.

Example:

segmset shdsl 0 any f4 segm

See also:

segmclr

PVC Manager (pvcm) Commands - Traffic-Related

The PVC Manager (PVCM) manages the switch traffic groups. Its functionality includes establishing switching between ports, creating traffic and switching parameters, and a number of OAM functions.

This section explains the traffic-related PVCM console commands.

aal1pfm (Display AAL1 Performance Statistics)

Syntax:

```
aal1pfm
```

Description:

This command displays AAL1 performance statistics. The system keeps statistics for the most recent 15 minutes of operation, as well as for the most recent 24 hours of operation. After the running time of the 15-minute or 24-hour timer has elapsed, it resets and all related statistical counters reset, then begin counting again. Table M lists the AAL1 performance statistics that are monitored by the system and can be viewed using the *aal1pfm* command:

Table M. AAL1 Performance Statistics Monitored with the aal1pfm Command

AAL1 Statistic	Description
Cells Transmitted	A count of cells that have been transmitted.
Cond Cells Transmitted	A count of conditioned cells that have been transmitted.
Cells Reassembled	A count of received, reassembled cells.
Header Errors	A count of AAL1 header errors detected, including those corrected. Header errors include correctable and uncorrectable CRC, as well as bad parity.
Lost Cells	A count of cells that were detected as lost.
Buffer Overrun	A count of the occurrences of receive buffer overflows.
Buffer Underrun	A count of the occurrences of receive buffer underflows.
Buffer Underrun Second	A count of the seconds during which a receive buffer underflow was occurring.
Pointer Parity Errors	A count of the occurrences of SDT pointer parity errors.
Pointer Reframes	A count of the number of times that the AAL1 reassembler found that an SDT pointer was not where it was supposed to be, and had to reacquire a pointer.

Example:

aal1pfm

```
AAL1 Performance (Elapsed Time) 15 minutes (500) 24 hours (75200)
```


Cells Transmitted	85105	12799758
Cond Cells Transmitted	0	0
Cells Reassembled	85105	12799758
Header Errors	0	0
Lost Cells	0	0
Buffer Overrun	0	0
Buffer Underrun	0	0
Buffer Underrun Second	0	0
Pointer Parity Errors	0	0
Pointer Reframes	0	0

aal1pfp (Set the AAL1 Partial Fill Pattern)

Syntax:

```
aal1pfp <pfp>
```

Description:

This command sets the pattern for padding bytes used in partially filled AAL1 cells, when partial cell fill is specified using the *ap* command.

Table N describes the command argument.

Table N. aal1pfp Command Argument

Command Argument	Description
<pfp>	The AAL1 partial fill pattern for each byte of padding used in partially filled AAL1 cells. The range is from 0x00h to 0xFFh.

Example:

```
aal1pfp aa
```

This command sets the AAL1 partial fill pattern to 0xAA (binary 10101010).

See also:

```
ap
```

ap (Create/Modify an AAL1 Parameter Set)

Syntax:

```
ap <name>|default <cdvt> <txdata> <rxdata> <rxQdata> [<pfp>]
```

Description:

This command creates or modifies a named AAL1 parameter set, or modifies the default.

<cdvt>: cell delay variation tolerance. This decides the size of receive buffer. The cdvt range is from 25 to 255.

<txdata>: transmit conditioned data, 8-bits of 64K (single timeslot) data, which is used when the Serial interface is under a DTR alarm condition. The txdata range is from 0x00h to 0xFFh.

<rxdata>: receive conditioned data, 8-bits of 64K (single timeslot) data, which is used when the PVC is under an UNDERRUN alarm condition. The rxdata range is from 0x00h to 0xFFh.

<rxQdata>: receive queue conditioned data, 8-bits of 64K (single timeslot) data, which is used when the PVC is under a lost cell alarm condition. The rxQdata range is from 0x00h to 0xFFh.

<pf>: partial fill cell size. The valid range is from 33 to 47.

Example:

```
ap ex1 100 255 255 47
```

See also:

sdt

ap delete (Delete an AAL1 Parameter Set)

Syntax:

```
ap delete <name>
```

Description:

This command deletes a named AAL1 parameter set.

Example:

```
ap delete srts1
```

ap list (Display AAL1 Parameter Set Details)

Syntax:

```
ap list <name>|all [verbose]
```

Description:

This command displays details about a specified AAL1 parameter set, or all AAL1 parameter sets. If *verbose* is specified, the display provides more detailed information about the AAL1 parameter set.

Example:

```
ap list default verbose
Name:          default
cdvt:         127
txdata:       255
rxdata:       255
rxQdata:      255
pf:           47
```

calcr (Calculate Peak Cell Rate)

Syntax:

```
calcr <num_chan> <pf>
```

Description:

This command calculates the PCR (peak cell rate) value to be used for traffic parameter settings. When an SDT traffic group is created, the associated PCR value of its traffic parameter must be correct. If the PCR is too small, AAL1 cells will be dropped.

The parameters are as follows:

<num_chan> - The number of 64K timeslots available to be used. The valid range is 1 to 31.

<pf> - Partial fill cell size. The valid range is from 33 to 47.

Example:

```
calcr 31 47
Cell rate = 5293
```

See also:

```
sdt
tp
```

delete (Delete Traffic Group)

Syntax:

```
delete <name> [in|out]
```

```
delete all
```

Description:

This command deletes a named traffic group, or all traffic groups.

If **in** | **out** option is not specified, then the whole traffic group with the specified name is deleted, including the switching paths.

If the **in | out** option is specified, then the specified **in|out** group will be deleted. The switching path(s) within the group will be removed at the same time. If both input and output groups are deleted, the traffic group will be removed.

Table O lists the elements used to delete the whole group or a port from the group.

Table O. Delete the Whole Group or a Port from the Group

Command Argument	Description
<name>	The name of a traffic group created by the sdt command.
in out	Specifies the input or output sdt group. If this option is not selected, the command will apply to both input and output groups.
all	Specifies that all input and output groups are to be deleted.

Examples:

delete pr1 in

This command deletes the input group of traffic group "pr1".

delete pr1

This command deletes traffic group "pr1".

delete all

This command deletes all traffic group(s).

list (List Traffic Groups)

Syntax:

```
list [<name>]
```

Description:

This command lists a named traffic group, or all existing traffic groups.

If the optional traffic group <name> is not specified, this command lists all existing traffic groups. If the optional traffic group <name> is specified, this command prints the details of input/output groups within the traffic group.

Table P lists the elements of listing traffic groups.

Table P. List Traffic Groups

Command Argument	Description
<name>	Traffic group name.

Examples:

list

This command lists all traffic groups.

list pr1

This command lists all the ports and switching paths of both the input and output groups of the traffic group "pr1".

sdt (Create SDT Group)

Syntax:

```
sdt <name> [in|out] <serial_port> <dsl_port> <vpi> <vci> <tp> <ap>
```

Description:

This command creates an input or output SDT AAL1 group specified by "**in|out**", for the traffic group specified by <name>. If the SDT traffic group does not already exist, a new SDT traffic group is created.

The SDT traffic group can contain up to two groups, one for input (specified by "**in**") and one for output (specified by "**out**").

If the "**in|out**" option is not specified, then this command creates both input and output groups with the same parameters. Thus the same VPI/VCI and port will be used for SDT traffic in both directions.

Table Q lists the elements used in creating a SDT group.

Table Q. Create SDT Group

Command Argument	Description
<name>	The name of the traffic group. Each traffic group can have up to two switching groups, one for input (specified by " in ") and one for output (specified by " out "). The <name> can be used in other commands such as delete , show , etc.

Table Q. Create SDT Group (Cont'd)

Command Argument	Description
in out	It specifies if the group is an input group or an output group. In general, the output port of the input group and the input port of the output group is a non-SHDSL port, while the input port of the input group and the output port of output group is an SHDSL port. If this option is not selected, both input group and output group will be created.
<serial_port>	Input Serial port of the group.
<dsl_port>	Output G.shdsl port of the group.
<vpi>	VPI number associated with <DSL port>.
<vci>	VCI number associated with <DSL port>.
<tp>	Specifies the traffic parameter to be used. <tp> can be a user defined name or "default". <i>Note:</i> When creating an SDT AAL1 traffic group, a constant bit rate (CBR) traffic parameter should be used. Refer to <i>tp CBR</i> in this chapter for the command used to create this type of traffic parameter.
<ap>	Specifies the AAL1 parameter to be used. <ap> can be a user defined name or "default".

Examples:

sdt pr5 **in** serial shdsl 30 300 tp2 ap2

This command creates a switching traffic group "pr5", and an input group within "pr5". The input group contains input G.shdsl port "shdsl" and output non-G.shdsl port "serial".

sdt pr6 serial shdsl 40 400 tp2 ap2

This command creates a switching traffic group "pr6", and both input and output groups within "pr6". The input group contains input G.shdsl port "shdsl" and output non-G.shdsl port "serial", while the output group contains input non-G.shdsl port "serial" and output G.shdsl port "shdsl". The input and output groups are symmetrical.

See also:

ap
calcr
tp

show (Show Traffic Group Details)

Syntax:

show <name> in|out

Description:

This command prints the details of the specified traffic group, including traffic, switch, and AAL1 parameters.

Table R lists the elements of showing information of traffic groups.

Table R. Show Information of a Traffic Group

Command Argument	Description
<name>	Name of a traffic group.
in out	Specifies the input or output group.

Examples:

show pr1 in

This command displays the detailed information of the input group of traffic group "pr1".

tp ABR (Create/Modify ABR Traffic Parameters)

Syntax:

tp <name>|default ABR <pcr01> <mcr01>

Description:

This command creates or modifies a named available bit rate (ABR) traffic parameter, or modifies the default. There is one type of ABR traffic parameter that can be specified:

ABR

pcr01 - Peak Cell Rate for CLP=0
mcr01 - Minimum Cell Rate

Note: The above Conformance Definition conforms to ATM Forum Traffic Management Specification AF-TM-0121.000.

Examples:

tp abr1 **ABR** 12000 7000

See also:

calcr
sdt

tp CBR (Create/Modify CBR Traffic Parameters)

Syntax:

```
tp <name>|default CBR <pcr01>
```

Description:

This command creates or modifies a named constant bit rate (CBR) traffic parameter, or modifies the default. There is one type of CBR traffic parameter that can be specified:

CBR.1

pcr01 - Peak Cell Rate for CLP=0+1

Note: The above Conformance Definition conforms to ATM Forum Traffic Management Specification AF-TM-0121.000.

Examples:

```
tp cbr1 CBR 12000
```

See also:

```
calcr  
sdt
```

tp delete (Delete a Traffic Parameter)

Syntax:

```
tp delete <name>
```

Description:

This command deletes a named traffic parameter.

Examples:

```
tp delete ubr1
```

tp list (List Traffic Parameters)

Syntax:

```
tp list <name>|all [verbose]
```

Description:

This command displays details about a specified traffic parameter, or all traffic parameters. If verbose is specified, the display will provide detailed information about the traffic parameter.

Example:

tp list default verbose

```
Name:                default
Class:               UBR (UBR.1)
Peak Cell Rate:     5453 (CLP 0+1)
Tagging:             No
```

tp NRTVBR (Create/Modify NRTVBR Traffic Parameters)

Syntax:

```
tp <name>|default NRTVBR <pcr01> <scr> <mbs> 0|1 [tag]
```

Description:

This command creates or modifies a named non-real-time variable bit rate (NRTVBR) traffic parameter, or modifies the default. There are three types of NRTVBR traffic parameter that can be specified, differentiated by the mix of flag (0|1) and tag parameters on the command line (pcr01, scr, and mbs are always specified on the command line):

VBR.1 [command issued with flag (0|1) parameter set to 1, and tag not specified]

pcr01 - Peak Cell Rate for CLP=0+1
scr - Sustainable Cell Rate for CLP=0+1
mbs - Maximum Burst Size for CLP=0+1
The tagging option is not applicable

VBR.2 [command issued with flag (0|1) parameter set to 0, and tag not specified]

pcr01 - Peak Cell Rate for CLP=0+1
scr - Sustainable Cell Rate for CLP=0
mbs - Maximum Burst Size for CLP=0
The tagging option is not active

VBR.3 [command issued with the flag (0|1) parameter set to 0, and tag specified]

pcr01 - Peak Cell Rate for CLP=0+1
scr - Sustainable Cell Rate for CLP=0
mbs - Maximum Burst Size for CLP=0
The tagging option is active

Note: The above three Conformance Definitions conform to ATM Forum Traffic Management Specification AF-TM-0121.000.

Examples:

```
tp nrtvbr3 NRTVBR 10000 8000 10 1
```

See also:

calcr
sdt

tp UBR (Create/Modify UBR Traffic Parameters)

Syntax:

```
tp <name>|default UBR <pcr01> [tag]
```

Description:

This command creates or modifies a named unspecified bit rate (UBR) traffic parameter, or modifies the default. There are two types of UBR traffic parameter that may be specified, differentiated by the presence or absence of the `tag` parameter on command line:

UBR.1 [command issued with `tag` not specified]

pcr01 - Peak Cell Rate for CLP=0+1
The tagging option is not active

UBR.2 [command issued with `tag` specified]

pcr01 - Peak Cell Rate for CLP=0+1
The tagging option is active

Note: The above two Conformance Definitions conform to ATM Forum Traffic Management Specification AF-TM-0121.000.

Examples:

```
tp ubr1 UBR 40000
```

See also:

calcr
sdt

tp VBR (Create/Modify VBR Traffic Parameters)

Syntax:

```
tp <name>|default VBR <pcr01> <scr> <mbs> 0|1 [tag]
```

Description:

This command creates or modifies a named real-time variable bit rate (VBR) traffic parameter, or modifies the default. There are three types of VBR traffic parameter that can be specified, differentiated by the mix of flag (0|1) and `tag` parameters on the command line (`pcr01`, `scr`, and `mbs` are always specified on the command line):

VBR.1 [command issued with flag (0|1) parameter set to 1, and tag not specified]

pcr01 - Peak Cell Rate for CLP=0+1
scr - Sustainable Cell Rate for CLP=0+1
mbs - Maximum Burst Size for CLP=0+1
The tagging option is not applicable

VBR.2 [command issued with flag (0|1) parameter set to 0, and tag not specified]

pcr01 - Peak Cell Rate for CLP=0+1
scr - Sustainable Cell Rate for CLP=0
mbs - Maximum Burst Size for CLP=0
The tagging option is not active

VBR.3 [command issued with the flag (0|1) parameter set to 0, and tag specified]

pcr01 - Peak Cell Rate for CLP=0+1
scr - Sustainable Cell Rate for CLP=0
mbs - Maximum Burst Size for CLP=0
The tagging option is active

Note: The above three Conformance Definitions conform to ATM Forum Traffic Management Specification AF-TM-0121.000.

Examples:

tp vbr3 VBR 10000 8000 10 0 tag

See also:

calcr
sdt

Real Time Clock (rtc) Commands

The real time clock module is used to maintain the clock value while the system is powered off. The real time clock module contains a battery that powers the RTC even though there is no power to the system. The battery is able to sustain the time for nearly 10 years.

Whenever the system is powered up, the GoWide Serial AAL1 system time value will be set from the real time clock value. When the system is first powered on, the user will need to enter the correct value of the time. From then on, the real time clock will maintain the clock until the user decides to change it.

set (Set the Real Time clock)

Syntax:

```
set [{<mm>/<dd>/<yyyy> <hh>:<mm>:<ss> | GMT[+|-]<hh>:<mm>}  
    [[no] daysave]]
```

Description:

This command sets the GoWide Real Time Clock. The command issued without any arguments displays the current RTC information. The set command can also be used to set the year, month, date, time, and time zone all with one command. The set command only accepts time in 24 hour format.

Example:

```
10.0.0.1>rtc set 12/05/2002 09:31:00 GMT+08:00 no daysave  
RTC: save 12/05/2002 01:31:00  
RTC: read 12/05/2002 01:31:00  
  
date: Thursday, December 05 2002   time: 09:31:00 AM GMT+08:00  
Daylight saving time is off
```

show (Show Current System Time)

Syntax:

```
show
```

Description:

This command displays the current GoWide system time.

Example:

```
10.0.0.1> rtc show  
RTC: read 12/04/2002 08:51:08  
  
date: Wednesday, December 04 2002   time: 04:51:08 PM GMT+08:00
```

.....
Daylight saving time is off

version (Display RTC Version Number)

Syntax:

version

Description:

This command displays the RTC module version number.

Serial Port (serial) Commands

The Serial port is one of the two primary interfaces on the GoWide Serial AAL1. The console supports number of commands that can configure the port attributes and provide performance information regarding the ports.

Note: The ? can be used as argument for any of these commands. The ? argument will show the syntax for each of the commands. For example “10.0.0.1> serial set ?”

dtralm (Enable/Disable DTR Alarm Logging)

Syntax:

```
dtralm [<enable> | <disable>]
```

Description:

This command enables or disables logging of Data-Terminal-Ready (DTR) alarms. If enabled, the system logs a DTR alarm when it detects that the DTR control signal on the serial port is not asserted (low) or absent, and subsequently clears the alarm when the DTR control signal is asserted (high). If disabled, the system does not log DTR alarms. The command issued without any arguments will display the current DTR alarm logging enabled/disabled status.

loopback (Enable/Disable Serial Loopback)

Syntax:

```
loopback [<enable> | <disable>]
```

Description:

This command enables or disables serial interface loopback. The command issued without any arguments will display the current loopback enabled/disabled status.

set (Display/Set Serial Interface Attribute)

Syntax:

```
set [<attribute name> <attribute value>]
```

or...

```
set [<mode attribute> <attribute name> <attribute value>]
```

Description:

Without any arguments, the set command displays serial interface attribute settings that are relevant to the interface standard (mode) that is set, as shown below:

10.0.0.1>serial set

```
-----  
Mode : v35  
Interface : dce  
Clock : 31X64k  
TXC_INV : auto (disable)  
SCTE_INV : na  
RXC_INV : disable  
-----
```

Control Leads

```
Input :  
RTS : disable  
DTR : disable  
RL : disable  
LL : disable
```

Output :

```
CTS : enable  
DSR : enable  
DCD : active  
TM : disable  
-----
```

10.0.0.1>serial set

```
-----  
Mode : v36  
Interface : dce  
Clock : 31X64k  
TXC_INV : auto (disable)  
SCTE_INV : na  
RXC_INV : disable  
-----
```

Control Leads

```
Input :  
RTS : disable  
DTR : disable  
RL : disable  
LL : disable
```

Output :

```
CTS : enable  
DSR : enable  
DCD : active  
TM : disable  
-----
```

10.0.0.1>serial set

```
-----  
Mode : x21  
Interface : dce  
Clock : 31X64k  
TXC_INV : auto (disable)  
SCTE_INV : na  
RXC_INV : disable  
-----
```

```

-----
Control Leads
Input      :
C          : disable

Output     :
I          : enable
-----

```

Some of the attributes can be changed with the set command by using the set command with an attribute name and attribute value, or in some cases, a mode attribute, attribute name and attribute value as arguments. This usage of the set command is shown below:

```

set mode {{v35}}|{{v36}}|{{x21}}
set clock {{n; n = 1 .. 31}}
set txc_inv {{auto}}|{{disable}}|{{enable}}
set scte_inv {{auto}}|{{disable}}|{{enable}}
set rxc_inv {{disable}}|{{enable}}
set v35 cts {{disable}}|{{enable}}|{{active}}
set v35 dsr {{disable}}|{{enable}}
set v35 dcd {{disable}}|{{enable}}|{{active}}
set v35 tm {{disable}}|{{enable}}
set v36 cts {{disable}}|{{enable}}|{{active}}
set v36 dsr {{disable}}|{{enable}}
set v36 dcd {{disable}}|{{enable}}|{{active}}
set v36 tm {{disable}}|{{enable}}
set x21 i {{disable}}|{{enable}}|{{active}}

```

Table S gives a description of each attribute that can be specified with the set command, and the default value (if applicable).

Table S. Serial Interface Attributes

Mode Attribute	Attribute Name	Description	Default Value
	mode	Sets the interface standard of the Serial port. v35 sets the interface standard to V.35, v36 sets the interface standard to V.36, and x21 sets the interface standard to X.21.	v35
	clock	Sets the transmit and receive data clock rate. The attribute value can be an integer between 1 and 31. The actual transmit/receive data clock rate is 64K times this attribute value setting.	31
	txc_inv	Determines whether or not the transmit data clock is inverted. If set to <i>disable</i> , the transmit data clock is not inverted. If set to <i>enable</i> , the transmit data clock is inverted. If set to <i>auto</i> , the GoWide automatically chooses the appropriate transmit data clock phase. <i>Note:</i> This setting is valid only if the GoWide unit type is set to CPE. If the unit type is set to CO, this setting is not applicable.	auto

Table S. Serial Interface Attributes

Mode Attribute	Attribute Name	Description	Default Value
	scte_inv	Determines whether or not serial clock transmit external (SCTE) is inverted. If set to <i>disable</i> , SCTE is not inverted. If set to <i>enable</i> , SCTE is inverted. <i>Note:</i> This setting is valid only if the GoWide unit type is set to CO. If the unit type is set to CPE, this setting is not applicable.	auto
	rxc_inv	Determines whether or not the receive data clock is inverted. If set to <i>disable</i> , the receive data clock is not inverted. If set to <i>enable</i> , the receive data clock is inverted.	disable
v35 or... v36	cts	Determines the state of the Clear-To-Send serial interface control signal. If set to <i>disable</i> , the CTS signal is set to not asserted (low). If set to <i>enable</i> , the CTS signal is set to asserted (high). If set to <i>active</i> , the CTS signal responds to the received Request-To-Send handshake signal.	enable
v35 or... v36	dsr	Determines the state of the Data-Set-Ready serial interface control signal. If set to <i>disable</i> , the DSR signal is set to not asserted (low). If set to <i>enable</i> , the DSR signal set to asserted (high).	enable
v35 or... v36	dcd	Determines the state of the Data-Carrier-Detect serial interface control signal. If set to <i>disable</i> , the DCD signal is set to not asserted (low). If set to <i>enable</i> , the DCD signal is set to asserted (high). If set to <i>active</i> , the DCD signal responds to the detection of a valid DSL carrier, which occurs after DSL linkup occurs.	active
v35 or... v36	tm	Determines the state of the Test Mode serial interface control signal. If set to <i>disable</i> , the TM signal is set to not asserted (low). If set to <i>enable</i> , the TM signal is set to asserted (high).	disable
x21	i	Determines the state of the Indication serial interface control signal. If set to <i>disable</i> , the I signal is set to not asserted (low). If set to <i>enable</i> , the I signal is set to asserted (high). If set to <i>active</i> , the I signal responds to the received Control (C) handshake signal.	enable

G.shdsl Port (shdsl) Commands

The G.shdsl ports constitute one of the two primary interfaces on the GoWide Serial AAL1. The GoWide 2.3 Serial AAL1 unit contains one G.shdsl port on its rear panel. The GoWide 4.6 Serial AAL1 unit contains two G.shdsl ports on its rear panel, and the unit can be configured to operate in two-wire (single port) or four-wire (two port) mode.

The console supports a number of “SHDSL” commands that can configure the port attributes and provide performance information regarding the G.shdsl ports.

Note: The ? can be used as argument for any of these commands. The ? argument will show the syntax for each of the commands. For example “10.0.0.1> shdsl set ?”

atm (Display/Reset ATM Cell Counters)

Syntax:

```
atm [reset interval]
```

Description:

This command displays the ATM cell counters. The “reset interval” argument will reset the ATM interval counters.

debug (Display G.shdsl Debug Information)

Syntax:

```
debug
```

Description:

This command displays G.shdsl debug information.

Example:

The following example displays G.shdsl debug information for a GoWide 4.6 Serial AAL1 unit (a GoWide 2.3 Serial AAL1 unit will not display line-2 debug information).

```
10.0.0.1> shdsl debug

[line-1]
[Debug Show]
ShowStatus ---- Disable
ShowCell ---- Disable
ShowSNR ---- Disable
ShowTransmitEOC ---- Disable
ShowReceivedEOC ---- Disable

[DSP Interrupt Count]
```

```
Valid      = 120
Error      = 0

[Framer Interrupt Count]
Total      = 134840
Receive    = 134840

[EOC Transfer Count]
Transmit Request = 0
Transmit success = 0
Transmit Drops   = 0
Received success = 0
Received Drops   = 0
Received CRC Err = 0
Received TanspErr= 0
Received len Err = 0

[line-2]
[Debug Show]
ShowStatus ---- Disable
ShowCell ---- Disable
ShowSNR ---- Disable
ShowTransmitEOC ---- Disable
ShowReceivedEOC ---- Disable

[DSP Interrupt Count]
Valid      = 0
Error      = 0

[Framer Interrupt Count]
Total      = 0
Receive    = 0

[EOC Transfer Count]
Transmit Request = 0
Transmit success = 0
Transmit Drops   = 0
Received success = 0
Received Drops   = 0
Received CRC Err = 0
Received TanspErr= 0
Received len Err = 0
```

info (Display SHDSL Version Information)

Syntax:

```
info
```

Description:

Displays the SHDSL driver version as well as the SHDSL software version.

loopback (Enable/Disable G.shdsl Loopback)

Syntax:

```
loopback <enable | disable | repeater | all | digital | analog>
```

Description:

This command enables and disables the SHDSL loopback. The enable argument enables loopback toward the network if the unit is configured as a CPE and the disable argument disables loopback toward the network if the unit is configured as a CPE. If the unit is configured as a CO, it sends an EOC message to the CPE unit to enable or disable loopback. The repeater argument issues a command to the first repeater to request a loopback. The all argument requests all units on that loop to loopback. The digital argument initiates a digital loopback test, and the analog argument initiates an analog loopback test.

pfm (Display G.shdsl Line Performance)

Syntax:

```
pfm [<1 | 2 | all | reset interval>]
```

Note: The 1 and 2 arguments apply to the GoWide 4.6 Serial AAL1 only.

Description:

This command displays the line performance. The command issued without any arguments will display the line performance of both loops in the GoWide 4.6 Serial AAL1 unit or the loop line performance in the GoWide 2.3 Serial AAL1 unit. With the argument set to 1 or 2 (GoWide 4.6 Serial AAL1 only), the command will display the line performance for the specified loop. With the argument set to all, the performance display will include all units. With the “reset interval” argument, the interval counters will be reset.

Example:

The following example displays the line performance of both loops in a GoWide 4.6 Serial AAL1 unit (a GoWide 2.3 Serial AAL1 unit will not display line-2 performance information):

```
10.0.0.1> shdsl pfm
```

```
[line-1]
RemoteEOCRequest ---- Enable
      | Interval      Global      Local      Remote
-----+-----
Seconds: | 00153518      00153518      00153464      00153464
-----+-----
CRC:      | 00000000      00000000      00000000      00000000
LOSWS:    | 00000000      00000000      00000000      00000000
-----+-----
```

```

ES:      | 00000000    00000000    00000000    00000000
SES:     | 00000000    00000000    00000000    00000000
UAS:     | 00000000    00000000    00000000    00000000

```

```

[line-2]
RemoteEOCRequest ---- Enable
          | Interval      Global      Local      Remote
-----+-----
Seconds: | 00153518    00153518    00153464    00153464
-----+-----
CRC:     | 00000000    00000000    00000000    00000000
LOSW:    | 00000000    00000000    00000000    00000000
-----+-----
ES:      | 00000000    00000000    00000000    00000000
SES:     | 00000000    00000000    00000000    00000000
UAS:     | 00000000    00000000    00000000    00000000

```

set (Display/Set G.shdsl Attribute)

Syntax:

```
set [<attribute_name> <attribute_value>]
```

Description:

```

Usage: set HTUType {CO|CPE}
       set linetype {4 Wire|2 Wire|Auto} (GoWide 4.6 Serial AAL1 only)
       set ratemode {fixed|adaptive}
       set standard Annex {A|B}
       set standard autodetect {enable|disable}
       set BTextactSupport {enable|disable}
       set ANFPSupport {enable|disable}
       set powerbackoff {enable|disable}
       set asymmetric {disable|R1|R2|SYM} - AnnexA R1(776), R2(1544)
                                           AnnexB R1(2304), R2(2048)

       set SNRThreshold xx dB
       set AttenuationThreshold xx dB
       set LoopbackTimeout xx minutes
       set remoteEOCrequest {enable|disable}
       set targetmargin CM SM

```

Without any arguments, the set command displays G.shdsl line attribute settings. The attribute values can be changed as well with the set command. Simply use the set command with the attribute name and attribute value as arguments. The usage table in the previous paragraph shows all the attributes that can be set using the set command.

Example 1:

Display the current G.shdsl settings:

```
10.0.0.1> shdsl set
```

```
[Current Setting]
HTUType HTU-CPE
LineType = Two-Wire
ClockSource = NTR RefClock 8k
Line RateMode = Adaptive
Standard = Annex_A
Standard AutoDetect ---- Enable
BTextactSupport ---- Disable
ANFPSupport ---- Disable
PowerBackoff Enable
Asymmetric_PSD = Disable
SNRThreshold Disable
AttenuationThreshold Disable
LoopbackTimeout = 0 minutes
RemoteEOCRequest ---- Enable
Target Margin = CM 4 SM 11
```

Example 2:

Set the HTU type to CO instead of CPE:

```
10.0.0.1> shdsl set htutype co
HTUType HTU-CO
```

startup (Enable/Disable G.shdsl Port)

Syntax:

```
startup <enable | disable | restart | remote | download | driver>
```

Description:

This command enables and disables the G.shdsl port. If the G.shdsl port is enabled, it will proceed to handshake with the remote side until it successfully enters the DATA mode. The enable argument enables the line. If the G.shdsl port is already in DATA mode, the disable argument will shutdown the line. The restart argument restarts the line from the local side and the remote argument requests the remote side to perform a restart. The download argument runs the DSP download test, and the driver argument runs the DSP driver test.

status (Display G.shdsl Line Status)

Syntax:

```
status [<1 | 2 | all | inventory>]
```

Note: The 1 and 2 arguments apply to the GoWide 4.6 Serial AAL1 only.

Description:

This command displays the line status. The command issued without any arguments will display the status of both loops in the GoWide 4.6 Serial AAL1 unit

or the loop line status in the GoWide 2.3 Serial AAL1 unit. With the argument set to 1 or 2 (GoWide 4.6 Serial AAL1 only), the command will display the loop status for the specified loop. With the argument set to all, the status display will include repeaters. The command issued with the inventory argument will display the inventory result of the local and remote unit.

Example 1:

The following example displays the line status of both loops in a GoWide 4.6 Serial AAL1 unit (a GoWide 2.3 Serial AAL1 unit will not display line-2 status information):

```
10.0.0.1> shdsl status
```

```
[line-1]
```

	Local Unit	Remote Unit
Line Status:	Connected	
Payload Rate:	2304	
Loss Sync Detected:	NO	
Loss Sync Failure:	NO	NO
SNR (dB) :	40.9	
SNR Margin:	16	15
SNR Alarm:	NO	NO
Attenuation:	01.7	02
Attenuation Alarm:	NO	NO
ATM Status:	ok	ok
HEC Error:	00	00
Power BackOff :	06	07
Tip/Ring Reversal:	NO	YES

```
[line-2]
```

	Local Unit	Remote Unit
Line Status:	Disconnected	
Payload Rate:	2304	
Loss Sync Detected:	NO	
Loss Sync Failure:	NO	NO
SNR (dB) :	50.0	
SNR Margin:	00	00
SNR Alarm:	NO	NO
Attenuation:	00.0	00
Attenuation Alarm:	NO	NO
ATM Status:	ok	ok
HEC Error:	00	00



```
Power BackOff      : |          00          00
Tip/Ring Reversal: |          NO          NO
```

Example 2:

The following example displays the inventory status of both loops in a GoWide 4.6 Serial AAL1 unit (a GoWide 2.3 Serial AAL1 unit will not display line-2 status information):

```
10.0.0.1> shdsl status inventory

[line-1]
---- Local Unit ----
G.SHDSL Standard = 1, EOC Version = 6
Vendor Id          : 0x01b5544d534c0000
Vendor Model Number : GW Ser AAL1
Vendor Serial Number : 222222222222
Vendor List Number  :
Vendor Issue Number :
Software Version    : 1.00
Equipment Code      :
Vendor Other Info   : GLS1.7.1 C1

[line-2]
---- Local Unit ----
G.SHDSL Standard = 1, EOC Version = 6
Vendor Id          : 0x01b5544d534c0000
Vendor Model Number : GW Ser AAL1
Vendor Serial Number : 222222222222
Vendor List Number  :
Vendor Issue Number :
Software Version    : 1.00
Equipment Code      :
Vendor Other Info   : GLS1.7.1 C1
```


Command Summary

Table T provides a brief summary of all console commands in the GoWide Serial AAL1 command hierarchy.

Caution: Do not attempt to use any command in the following table unless a full description of the command exists in the previous sections of this chapter, or you are experienced in using the command.

The following table provides a brief description of every console command that is included in the GoWide Serial AAL1 console interface. The table is provided for convenience only. Many console commands, if used improperly by inexperienced users, can cause erratic system behavior or damage.

Table T. Console Command Summary

Group	Command	Description
aal1	[<command>]	Sends a command to the AAL1 process.
ah	reset <alarm_type>	Resets the severity level and description to the default value for the specified alarm.
	set <alarm_type> <severity> [<alarm_description>]	Sets the severity level and description of the specified alarm.
	show	Shows the alarm configuration file.
al	clearlog <logId>	Removes all alarm entries from the specified log.
	delentry <logId> <eid> [<type> <mid>]	Deletes the specified alarm entry from the specified log.
	getlatest <logId> [<eid*> <type*> <mid*>]	Gets the latest alarm entry that matches the specified search criteria from the specified log.
	getnext <logId> [<type*> <mid*>]	Gets the next alarm entry that matches the specified search criteria from the specified log.
	getsize <logId>	Gets the currently set log size of the specified log.
	setsize <logId> <size>	Sets the log size of the specified log.
	show <logId> [oam] [<type*> <mid*>]	Shows the alarm entries in the specified log that match the specified search criteria.
atm	info	Displays information about the ATM driver.
	pool	Shows the ATM queue information.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
bridge	config <command>	<i>This command is currently unsupported.</i>
	device [<options>]	device add <device> - Adds the specified device to the bridge configuration. device delete <device> - Deletes the specified device from the bridge configuration. device list - Lists the devices that are currently attached to the bridge.
	etherstype [<port> "any" "ip" "pppoe"]	Enables filtering of Ethernet packets according to the ETHER_TYPE field in the header. Packets of the specified type are sent on the specified port. Packets of all types are always received.
	filter	Displays the filtering database.
	filterage [<age>]	Sets or displays the filter age.
	flush [<port>]	Flushes the filtering database on the specified port(s).
	info	Shows the bridge version (this command is the same as <i>version</i>).
	interface [<sub-command>]	Accesses the specified ethernet support library sub-command for the bridge itself.
	portfilter [<source_port> "all" <dest ports>]	Sets or displays the ports to forward to.
	spanning [<options>]	spanning enable/disable - Enables or disables the spanning tree process. spanning event [1..5] - Sets the level of event reporting. spanning forwarddelay [<time>] - Reads or sets the time (in seconds) in which the bridge remains in the listening or learning states. spanning hellotime [<time>] - Reads or sets the time (in seconds) after which the spanning tree process sends notification of topology changes to the root bridge. spanning info - Displays the version number of the spanning tree implementation. spanning maxage [<time>] - Reads or sets the maximum age of received spanning tree protocol information before it is discarded. spanning port <number> - Controls the configuration of the bridge's ports as far as the operation of the spanning tree protocol is concerned. Options are: port <number> disable: disables a port. port <number> enable: enables a port. port <number> pathcost: reads or sets the cost of using this port. port <number> priority: Reads or sets the priority of the port. spanning priority [0..65535] - Reads or sets the priority of the bridge. spanning status - Reports the status of the spanning tree. spanning version - Displays the version number of the spanning tree implementation.
	status	Displays the status of the bridge.
	version	Shows the bridge version (this command is the same as <i>info</i>).

Table T. Console Command Summary (Cont'd)

Group	Command	Description
buffer	info [<name>]	Shows or sets the current buffer pool.
	list	Lists the buffer pools.
	show [<n>]	Shows the specified buffer in the current pool, or all buffers in use.
	steal <n>	Steals <n> buffers from the current pool. (Set <n>=0 to reset)
	version	Displays the buffer version information.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
bun	build	Shows build information.
	config <config_spec>	Enters the specified manual configuration request.
	help [<command>]	Displays a summary of the specified BUN command.
	list all open channels <port_name>	Displays all open channels on the specified port.
	list channels <port_name>	Displays enabled channels on the specified port.
	list classes	Lists the available port classes.
	list config	Displays all configuration requests.
	list devices	Displays the registered driver devices.
	list objects	Displays all data objects.
	list ports	Displays registered ports.
	list spices	Displays all available spices.
	reset port <port_name>	Resets the hardware for the specified port.
	set channel <portname> <channelnumber> / <attribute> = <value>	Sets the specified channel attribute of the specified channel on the specified port.
	set port <port_name> / <attribute> = <value>	Sets the specified port attribute of the specified port.
	set system	Sets the system attributes.
	show channel <port_name> <channel_number>	Displays channel information for the specified channel on the specified port.
	show class <classname>	Lists the members of the specified port class.
	show device <device_name> ...	Displays information for the specified device.
	show port <port_name>	Displays information for the specified port.
show system	Displays the system attributes.	
version	Shows the bun software version.	

Table T. Console Command Summary (Cont'd)

Group	Command	Description
chips	cpu	Prints the percentage of CPU cycles used.
	debug	Enters the debug process.
	exit	Aborts from ATMos.
	help [<command>]	Displays a summary of the specified chips command.
	info	Prints version information and the machine's MAC address.
	mem	Lists the memory used on a process-by-process basis.
	rb <addr>	Reads the byte at the specified address.
	rh <addr>	Reads the half-word at the specified address.
	rw <addr>	Reads the word at the specified address.
	stack	Lists the stack usage on a process-by-process basis.
	tell <process> <string>	Sends the specified string to the specified process using a TELL message.
	wb <addr> <val>	Writes the byte specified by <val> to the specified address.
	wh <addr> <val>	Writes the half-word specified by <val> to the specified address.
ww <addr> <val>	Writes the word specified by <val> to the specified address.	
cmd	password	<i>This command is the same as flashfs password.</i>
	set	<i>This command is the same as flashfs config.</i>
	version	Displays the CMD version.
config	list	Lists all currently registered modules.
	print [low medium high] [<module>]	Prints (displays) the current configuration of the specified module with the specified level of detail.
	reset [<module>]	Resets the configuration of the specified module to the default settings.
	resource [<process> [<resource> [<value>]]]	Shows the process information for processes that have been registered.
	save	Saves the unit's configuration to flash memory.
	version	Displays the config version.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
dhcpclient	config [<i><options></i>]	config - Displays the current DHCP client configuration file. config add <i><text line></i> - adds the specified line to the DHCP client configuration file. config flush - Deletes the contents of the DHCP client configuration file. config delete - Deletes a line from the end of the DHCP client configuration file. confirm - Confirms the changes to the DHCP client configuration file.
	help [<i><command></i>]	Displays a summary of the specified dhcpclient command.
	pool	Shows the DHCP client memory pool allocation status.
	reset	Resets and restarts the DHCP client.
	status [<i>all</i>]	Shows the status of the active DHCP client lease, or all leases.
	trace	Activates trace option(s).
	untrace	Deactivates trace option(s).
edd	duplex {enable disable}	Enables or disables full duplex.
	event [<i><level></i>]	Sets event logging to the specified level.
	interface [<i>id</i>] <i><command></i>	Processes the specified interface command for the specified device identifier (<i>id</i>).
	status	Displays the ethernet device status.
	version	Displays the edd version.
ethernet	duplex {enable disable}	Enables or disables full duplex.
	event [<i><level></i>]	Sets event logging to the specified level.
	interface [<i>id</i>] <i><command></i>	Processes the specified interface command for the specified device identifier (<i>id</i>).
	status	Displays the ethernet device status.
	version	Displays the edd version.
event {help next previous recent show unshow}	help - Shows help for the command. n next - Shows the next part of the event buffer. p previous - Shows the previous part of the event buffer. r recent - Shows the most recent part of the event buffer. show - Enables the display of events as they occur. unshow - Disables the display of events as they occur.	

Table T. Console Command Summary (Cont'd)

Group	Command	Description
flashfs	cat <file>	Shows the contents of the specified file.
	config [<new_password>]	Displays the flash configuration, or sets your password to a new password.
	default [<partition>]	Shows/sets the default partition.
	format [<partition>]	Formats the specified partition.
	fsck [<partition>]	File system check (checks the integrity of the specified FLASH partition).
	id <x>	Displays the chip ID for the specified device.
	info	Displays file system information.
	ls [-l]	Lists the FLASHFS files. (Use [-l] to show more detail.)
	partitions	Lists the current valid partitions.
	password <old_password>	Enters your old password for update.
	trace [0..4]	Shows and sets the tracing level.
	update [<partition>]	Commits the ISFS files to FLASH in the specified partition.
version	Displays the FLASHFS version number.	
wipe [<partition>]	Irreversibly erases the FLASH contents.	
fm	append <file> [<text>]	Appends the specified text to the specified file.
	cat <file>	Shows the contents of the specified file.
	cp <file1> <file2>	Copies <i>file1</i> to <i>file2</i> .
	default <fs>	Sets the specified filing system as the default.
	fsinfo	Displays file system information.
	info <file>	Displays information about the specified file.
	ls [-l -L]	Lists the files. (Use [-l] and [-L] to show increasing level of detail.)
	mv <file1> <file2>	Renames <i>file1</i> to <i>file2</i> .
	rm <file>	Removes (deletes) the specified file.
version	Displays the file manager (fm) version number.	
fpga	read <gid>-<reg>	Reads the value at the specified group ID and register.
	reload	Reloads the FPGA.
	write <gid>-<reg> value	Writes the specified value to the specified group ID and register.
	version	Displays the FPGA hardware and software version numbers.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
ftpd		<i>No associated user commands. This group is included for FTP downloads.</i>
ip	? [all <command>]	? - Lists available IP commands. ? all - Lists all IP commands and their syntax. ? <command> - Lists the syntax for the specified IP command.
	arp [help <cmd>]	arp help - Lists the arp sub-commands that are available. arp <cmd> - Executes the specified arp sub-command.
	config [save]	Displays the IP configuration, or saves the IP configuration to flash.
	device [<options>]	device [list] - Lists the interface definitions. device add <i/f> <type> <file> [mtu <size>] [mss <size>] [<IPAddr> dhcp] - Creates the specified interface definition. device delete <i/f> - Removes the specified interface definition. device flush - Removes all interface definitions.
	disable [<i/f>]	Prevents the use of all interfaces, or just the specified interface.
	enable [<options>]	enable [<i/f> [mtu <size>] [mss <size>] [<IPAddr>]] or... enable [<i/f> [mtu <size>] [<IPAddr>]] - Enables the use of all interfaces, or the specified interface. - Sets the address of the specified interface as specified. - Sets the MTU for the specified interface. - Sets the TCP MSS for the specified interface.
	help [all <command>]	help - Lists available IP commands. help all - Lists all IP commands and their syntax. help <command> - Lists the syntax for the specified IP command.
	ipatm [help <cmd>]	ipatm help - Lists the ipatm sub-commands that are available. ipatm <cmd> - Executes the specified ipatm sub-command.
	nat {add delete} <i/f>	nat add <i/f> - Installs NAT on the specified interface. nat delete <i/f> - Uninstalls NAT from the specified interface.
	norelay [all <i/f name> [<i/f name>] [forward]]	Turns off forwarding between the specified interfaces, or turns off all forwarding.
ping <host> [<ttl> [<size>]]	Requests echo from the specified host.	
relay [all <i/f name> [<i/f name>] [forward]]	Displays forwarding, or sets forwarding between the specified interfaces.	
rip [help <command>]	rip help - Lists the rip sub-commands that are available. rip <cmd> - Executes the specified rip sub-command.	

Table T. Console Command Summary (Cont'd)

Group	Command	Description
ip (Cont'd)	route [<i><options></i>]	route add <dom name> a.b.c.d <relay> [am:bm:cm:dm [<i><cost></i> [<i><timeout s></i>]]] - Defines or edits the specified IP forwarding route. route delete <dom name> - Deletes the specified route. route flush - Deletes all routes.
	routes	Shows the IP forwarding routes.
	snmp [help <i><command></i>]	snmp help - Lists the snmp sub-commands that are available. snmp <cmd> - Executes the specified snmp sub-command.
	stats [help <i><command></i>]	stats help - Lists the stats sub-commands that are available. stats <cmd> - Executes the specified stats sub-command.
	subnet [<i><options></i>]	subnet add <net name> <i/f name> a.b.c.d am:bm:cm:dm - Creates the specified subnet definition. subnet delete <net name> - Deletes the specified subnet definition. subnet flush - Deletes all subnet definitions.
	tcpclamp [<i><options></i>]	tcpclamp add <i/f> [mss <size>] [icmp] - Enables TCP MSS clamping on the specified interface. tcpclamp delete <i/f> [mss <size>] - Disables TCP MSS clamping from the specified interface.
	version	Displays the IP software version number.
isfs	trace [0..3]	Shows and sets the tracing level.
	version	Displays the ISFS version number.
nat	event [1..5]	Shows and sets the current event tracing level.
	inbound [<i><options></i>]	inbound help - Lists the inbound sub-commands that are available. inbound list - Lists all rules. inbound add <i/f name> <port>/<proto> <new IP> - Adds a rule. inbound delete <rule num> - Deletes the specified rule. inbound flush - Deletes all rules.
	info	Shows information about the configured NAT options.
	interfaces	Displays the IP router ports on which NAT is currently enabled.
	protocols	Lists the protocols supported via Application Level Gateways.
	sessions <i/f name> [summary all]	Lists active sessions for the specified interface.
	stats <i/f name> [reset]	Shows statistics for the specified interface.
	version	Displays the NAT version number.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
oam	config	Shows the current storable OAM configuration.
	dl	Dumps the contents of the lookup tables.
	trace <util fault cc loopback all none >	Shows and sets the OAM tracing.
	version	Displays the OAM process version number.
pvcm	aal1pfm	Prints AAL1 performance statistics.
	aal1pfp <pfp>	Sets the AAL1 partial fill cell pattern to the specified value.
	ap <name> default <cdvt> <txdata> <rxdata> <rxQdata> [<pf>]	Creates or modifies the specified AAL1 parameter set, or modifies the default.
	ap delete <name>	Deletes the specified AAL1 parameter set.
	ap list <name> all [verbose]	Lists information for all AAL1 parameter sets, or the specified AAL1 parameter set.
	calcr <num_chan> <pf>	Calculates the cell rate for SDT mode based on the provided information.
	ccactivate <port> <vpi> <vci> <flags> <dir>	Sends a continuity checking activate request on the specified OAM flow.
	ccdeactivate <port> <vpi> <vci> <flags> <dir>	Sends a continuity checking deactivate request on the specified OAM flow.
	ccdisable <port> <vpi> <vci> <flags>	Disables reception of continuity checking activation requests on the specified OAM flow.
	ccenable <port> <vpi> <vci> <flags>	Enables reception of continuity checking activation requests on the specified OAM flow.
	ccenableauto <port> <vpi> <vci> <flags>	Enables automatic acceptance of continuity checking activation requests on the specified OAM flow.
	ccglobalaccept	Toggles automatic acceptance/rejection of continuity checking activation requests.
	ccstart <port> <vpi> <vci> <flags> <dir>	Starts a flow of continuity checking cells in the specified direction on the specified OAM flow, without the need for activation/deactivation handshaking.
ccstop <port> <vpi> <vci> <flags> <dir>	Stops the flow of continuity checking cells in the specified direction on the specified OAM flow, without the need for activation/deactivation handshaking.	

Table T. Console Command Summary (Cont'd)

Group	Command	Description
pvc (Cont'd)	delete <name> [in out]	Deletes the specified traffic group.
	faultbegin <port> <vpi> <vci> <flags>	Declares a fault state on the specified OAM flow.
	faultdisable <port> <vpi> <vci> <flags>	Disables fault management on the specified OAM flow.
	faultenable <port> <vpi> <vci> <flags>	Enables fault management on the specified OAM flow.
	faultend <port> <vpi> <vci> <flags>	Clears the fault state on the specified OAM flow.
	faultunwatch <port> <vpi> <vci> <flags>	Turns fault monitoring off for the specified OAM flow.
	faultwatch <port> <vpi> <vci> <flags>	Turns fault monitoring on for the specified OAM flow.
	help [all <command>]	help - Lists available pvc commands. help all - Lists all pvc commands and their syntax. help <command> - Lists the syntax for the specified pvc command.
	info	Displays information about the switch.
	lbdisable <port> <vpi> <vci> <flags>	Disables loopback on the specified OAM flow.
	lbenable <port> <vpi> <vci> <flags>	Enables loopback on the specified OAM flow.
	lbsend <port> <vpi> <vci> <flags> <llid>	Sends a loopback cell on the specified OAM flow.
	lbstats <port> <vpi> <vci> <flags>	Displays loopback statistics for the specified OAM flow.
	list [<name>]	Lists traffic groups, or detailed information on the specified traffic group.
	myllid [<llid>]	Sets or gets the OAM loopback location identifier of the unit.
	oaminfo <port> <vpi> <vci>	Displays OAM setting information for the specified flow.
oamlist	Lists all OAM setups.	
pmactivate <port> <vpi> <vci> <flags> <txblock> <rxblock> <dir>	Sends a performance monitoring activate request on the specified OAM flow.	

Table T. Console Command Summary (Cont'd)

Group	Command	Description
pvcm (Cont'd)	pmdeactivate <port> <vpi> <vci> <flags>	Sends a performance monitoring deactivate request on the specified OAM flow.
	pmdisable <port> <vpi> <vci> <flags>	Disables reception of performance monitoring activation requests on the specified OAM flow.
	pmenable <port> <vpi> <vci> <flags>	Enables reception of performance monitoring activation requests on the specified OAM flow.
	pmenableauto <port> <vpi> <vci> <flags>	Enables automatic acceptance of performance monitoring activation requests on the specified OAM flow.
	pmglobalaccept	Toggles automatic acceptance/rejection of performance monitoring activation requests.
	pmstart <port> <vpi> <vci> <flags> <txblock> <rxblock> <dir>	Starts a flow of performance monitoring cells in the specified direction on the specified OAM flow, without the need for activation/deactivation handshaking.
	pmstats <port> <vpi> <vci> <flags>	Displays performance monitoring statistics for the specified OAM flow.
	pmstop <port> <vpi> <vci> <flags> <dir>	Stops the flow of performance monitoring cells in the specified direction on the specified OAM flow, without the need for activation/deactivation handshaking.
	sdt <name> [in out] <serial port> <DSL port> <vpi> <vci> <tp> <ap>	Creates the specified SDT AAL1 group with the specified characteristics.
	segmclr <port> <vpi> <vci> <flags>	Clear's the status of the unit's ATM interface node as a segment sinkpoint for the specified OAM flow.
	segmset <port> <vpi> <vci> <flags>	Sets the unit's ATM interface node as a segment sinkpoint for the specified OAM flow.
	show <name> in out	Shows details of the specified traffic group, including traffic, switch, and AAL1 parameters.
	tp <name> default ABR <pcr01> <mcr01>	Creates or modifies the specified available bit rate (ABR) traffic parameter, or modifies the default.
	tp <name> default CBR <pcr01>	Creates or modifies the specified constant bit rate (CBR) traffic parameter, or modifies the default.
tp delete <name>	Deletes the specified traffic parameter.	
tp list <name> all [verbose]	Displays details about a specified traffic parameter, or all traffic parameters.	

Table T. Console Command Summary (Cont'd)

Group	Command	Description
pvcn (Cont'd)	tp <name> default NRTVBR <pcr01> <scr> <mbs> 0 1 [tag]	Creates or modifies the specified non-real time variable bit rate (NRTVBR) traffic parameter, or modifies the default.
	tp <name> default UBR <pcr01> [tag]	Creates or modifies the specified unspecified bit rate (UBR) traffic parameter, or modifies the default.
	tp <name> default VBR <pcr01> <scr> <mbs> 0 1 [tag]	Creates or modifies the specified real time variable bit rate (VBR) traffic parameter, or modifies the default.
	version	Displays the PVC Manager version number.
restart		Restarts the system.
rtc	set MM/DD/YYYY hh:mm:ss {GMT[+ -]]hh:mm} {[no] daysave}	Sets the real time clock as specified.
	show	Shows the current real time clock setting.
	version	Displays the Real Time Clock version number.
serial	dtralm [<enable> <disable>]	Enables or disables logging of Data-Terminal-Ready (DTR) alarms.
	loopback [<enable> <disable>]	Enables or disables serial interface loopback.
	set [<attribute name> <attribute value>]	Displays the specified serial interface attribute settings, or sets the specified attribute setting.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
shdsl	atm [reset interval]	Displays or resets the ATM cell counters.
	debug	Displays G.shdsl debug information.
	info	Displays the G.shdsl driver version as well as the G.shdsl software version.
	loopback <enable disable repeater all digital analog>	Enables or disables G.shdsl loopback as specified by the argument.
	pfm [<1 2 all reset interval>]	Displays the line performance for both loops, or the specified loop. <i>Note:</i> 1 and 2 apply to the GoWide 4.6 Serial AAL1 only.
	set [<attribute name> <attribute value>]	Displays the specified G.shdsl interface attribute settings, or sets the specified attribute setting.
	startup <enable disable restart remote download driver>	Enables or disables the G.shdsl port as specified by the argument.
	status [<1 2 all inventory>]	Displays the line status of both loops (no argument), the specified loop (1 or 2), both loops including repeaters (all), or the inventory result of the local and remote unit (inventory). <i>Note:</i> 1 and 2 apply to the GoWide 4.6 Serial AAL1 only.
snmp	? [all <command>]	? - Lists available SNMP commands. ? all - Lists all SNMP commands and their syntax. ? <command> - Lists the syntax for the specified SNMP command.
	access [<options>]	access <password> [read write] <community> [<IP addr>] - Allows read-only or read-write access. access <password> delete <community> [<IP addr>] - Revokes the specified access. access <password> flush - Revokes all accesses. access <password> list - Lists allowed accesses.
	config <password> [save]	Displays the SNMP configuration, or saves the configuration to flash.
	help [all <command>]	help - Lists available SNMP commands. help all - Lists all SNMP commands and their syntax. help <command> - Lists the syntax for the specified SNMP command.
	trap	trap <password> add <community> <IP addr> [<port>] - Adds the specified trap destination. trap <password> delete <community> <IP addr> [<port>] - Deletes the specified trap destination. trap <password> flush - Deletes all trap destinations. trap <password> list - Lists trap destinations.
	version	Displays the SNMP version number.

Table T. Console Command Summary (Cont'd)

Group	Command	Description
switchctrl	flow <port> <vpi> <vci>	Prints the specified flow.
	help [all <command>]	help - Lists available Switch Control commands. help all - Lists all Switch Control commands and their syntax. help <command> - Lists the syntax for the specified Switch Control command.
	trace [debug] [connect] [all]	Displays or sets the specified tracing.
	unicast <port> <vpi> <vci>	Prints the unicast structure for the specified flow.
	untrace [debug] [connect] [all]	Displays or unsets the specified tracing.
	version	Displays the Switch Control version number.
tftp	connect <addr hostname>	Sets the IP address or host for TFTP transfers.
	get <file> [<local file>]	Gets the specified file from the remote host.
	list	Lists the currently active TFTP connections.
	put <file> [remote file]	Puts the specified file onto the remote host.
	trace [+flag] [-flag] [-*][help]	Sets the specified TFTP trace options.
	version	Displays the TFTP version number and trace status.
uptime		Displays the time that the system has been running.
version		Displays the system software version.

.....

This page intentionally left blank.

Interface Pin Assignments and Connectivity

This chapter provides information on GoWide Serial AAL1 interface pin assignments, and serial port connectivity information.

Interface Pin Assignments

Craft (DB-9) Interface

The console port (DB-9) interface pin assignments are listed in Table U. *Pins that are not included in the table are not connected (NC).*

Table U. Console Port Interface Pin Assignments

Signal Name	Pin
TXD	2
RXD	3
GND	5

SHDSL Interface

The digital subscriber line (RJ-45) interface pin assignments are listed in Table V.

Table V. Digital Subscriber Line (RJ-45) Interface Pin Assignments

Signal Name	Pin
NC	1
NC	2
NC	3
Tip	4
Ring	5
NC	6
NC	7
NC	8

Craft (RJ-45) Interface

The Ethernet (RJ-45) interface pin assignments are listed in Table W. *Pins that are not included in the table are not connected (NC).*

Table W. Ethernet (RJ-45) Interface Pin Assignments

Signal Name	Pin
RD +	1
RD -	2
TD +	3
TD -	6

Serial Interface

The Serial (DB-25) interface functions as a DCE interface. Pin assignments are listed in Table X.

Table X. Serial (DB-25) Interface Pin Assignments

Signal Name	Pin	Signal Source ^a
<i>(Shield)</i>	1	
TXD_A	2	DTE
RXD_A	3	DCE
RTS_A	4	DTE
CTS_A	5	DCE
DSR_A	6	DCE
<i>(Ground)</i>	7	
DCD_A	8	DCE
RXC_B	9	DCE
DCD_B	10	DCE
SCTE_B	11	DTE
TXC_B	12	DCE
CTS_B	13	DCE
TXD_B	14	DTE
TXC_T	15	DCE
RXD_B	16	DCE
RXC_A	17	DCE
LL	18	DTE

Table X. Serial (DB-25) Interface Pin Assignments (Cont'd)

Signal Name	Pin	Signal Source ^a
RTS_B	19	DTE
DTR_A	20	DTE
RL	21	DTE
DSR_B	22	DCE
DTR_B	23	DTE
SCTE_A	24	DTE
TM	25	DCE

a.DCE - The GoWide G.shdsl Serial AAL1 is the source of the signal.

DTE - The other end of the serial connection is the source of the signal.

Serial Interface Connectivity

The GoWide Serial AAL1's external serial data interface is provided via a 25-pin female DB-25 connector on its rear panel, labeled "SERIAL." This serial interface is configurable electrically for compatibility with the V.35, V.36, and X.21 interface standards, however, external adapter cables are necessary for physical compatibility with those standards. The remainder of this section explains interface cable requirements for each of the supported interface standards.

V.35 Interface Cable Requirements

For V.35 DCE connectivity, an external adapter cable is required to map signals from the female DB-25 connector on the GoWide Serial AAL1 to a female M-34 connector. Symmetricom recommends that the following adapter cable be used:

- Cable, 25 Pin D-Sub/34M Socket (Symmetricom Part Number 060-91072-01)

Table Y provides connector pin mapping information for the cable.

Table Y. V.35 Interface Cable Connector Pin Mapping

Cable Connector Type			
DB-25 Male		M-34 Female	
Pin	Signal Name	Pin	Signal Name
1	<i>(Shield)</i>	A	FG
2	TXD_A	P	SCa
3	RXD_A	R	RDa
4	RTS_A	C	RTS
5	CTS_A	D	CTS
6	DSR_A	E	DSR
7	<i>(Ground)</i>	B	SG
8	DCD_A	F	DCD
9	RXC_B	X	SCRb
10	DCD_B		
11	SCTE_B	W	SCTEb
12	TXC_B	AA	SCTb
13	CTS_B		
14	TXD_B	S	SCb

Table Y. V.35 Interface Cable Connector Pin Mapping (Cont'd)

Cable Connector Type			
DB-25 Male		M-34 Female	
Pin	Signal Name	Pin	Signal Name
15	TXC_A	Y	SCTa
16	RXD_B	T	RDb
17	RXC_A	V	SCRa
18	LL	L	LL
19	RTS_B		
20	DTR_A	H	DTR
21	RL	N	RL
22	DSR_B		
23	DTR_B		
24	SCTE_A	U	SCTEa
25	TM	NN	TM

V.36 Interface Cable Requirements

For V.36 DCE connectivity, an external adapter cable is required to map signals from the female DB-25 connector on the GoWide Serial AAL1 to a female DB-37 connector. Symmetricom recommends that the following adapter cable be used:

- Cable, 25 Pin D-Sub/37 Socket D-Sub (Symmetricom Part Number 060-91072-03)

Table Z provides connector pin mapping information for the cable.

Table Z. V.36 (RS-449) Interface Cable Connector Pin Mapping

Cable Connector Type			
DB-25 Male		DB-37 Female	
Pin	Signal Name	Pin	Signal Name
1	(Shield)	1	
2	TXD_A	4	SDa
3	RXD_A	6	RDa

Table Z. V.36 (RS-449) Interface Cable Connector Pin Mapping (Cont'd)

Cable Connector Type			
DB-25 Male		DB-37 Female	
Pin	Signal Name	Pin	Signal Name
4	RTS_A	7	RSa
5	CTS_A	9	CSa
6	DSR_A	11	DMa
7	(Ground)	19	SG
8	DCD_A	13	RRa
9	RXC_B	26	RTb
10	DCD_B	31	RRb
11	SCTE_B	35	TTb
12	TXC_B	23	STb
13	CTS_B	27	CSb
14	TXD_B	22	SDb
15	TXC_A	5	STa
16	RXD_B	24	RDb
17	RXC_A	8	RTa
18	LL	10	LL
19	RTS_B	25	RSb
20	DTR_A	12	TRa
21	RL	14	RL
22	DSR_B	29	DMb
23	DTR_B	30	TRb
24	SCTE_A	17	TTa
25	TM	18	TM

X.21 Interface Cable Requirements

For X.21 DCE connectivity, an external adapter cable is required to map signals from the female DB-25 connector on the GoWide Serial AAL1 to a female DB-15 connector. Symmetricom recommends that the following adapter cable be used:

- Cable, 25 Pin D-Sub/15 Socket D-Sub (Symmetricom Part Number 060-91072-02)

Table AA provides connector pin mapping information for the cable.

7

Table AA. X.21 Interface Cable Connector Pin Mapping

Cable Connector Type			
DB-25 Male		DB-15 Female	
Pin	Signal Name	Pin	Signal Name
1	(Shield)	1	
2	TXD_A	2	Ta
3	RXD_A	4	Ra
4	RTS_A	3	Ca
5	CTS_A	5	Ia
6	DSR_A		
7	(Ground)	8	G
8	DCD_A		
9	RXC_B		
10	DCD_B		
11	SCTE_B		
12	TXC_B	13	Sb
13	CTS_B	12	Ib
14	TXD_B	9	Tb
15	TXC_A	6	Sa
16	RXD_B	11	Rb
17	RXC_A		
18	LL		
19	RTS_B	10	Cb
20	DTR_A		
21	RL		
22	DSR_B		
23	DTR_B		
24	SCTE_A		
25	TM		

G.shdsl Configuration

This chapter provides information on specific instances of G.shdsl configuration.

G.shdsl Configuration

Only expert users should change the G.shdsl settings. The default settings are shown in Table AB.

Table AB. G.shdsl Default Settings

Item	Setting
Unit Type	CPE
Standard	Auto
Asymmetric PSD	Disable
Power Backoff	Enable

The Unit Type is set as a Network Termination Unit, Customer Premise Equipment (CPE), which enables the unit to be connected to a Central Office (CO) unit, usually a DSLAM.

The Standard is set to Auto, but can be manually changed to either Annex A or Annex B.

The Asymmetric PSD (Power Spectral Density) allows the selection of the type of power spectral density mask the transceiver will use. The possible values are R1 (768 kbps for Annex A), R2 (1544 kbps for Annex A) or Disable (use symmetric PSD).

The Power Backoff is set to Enable, which allows the transmit power on the DSL link to be reduced by 6 dB when the estimated power loss is 6 dB or less.

SNMP MIB Implementation

This appendix provides details on the various MIB objects that are implemented on the GoWide.

Note: SNMP is available in version 2.0 and greater of the system firmware.

App. A

Overview

This appendix contains the following sections:

- *GoWide MIB Implementation*, describes the MIBs that are supported on the GoWide platform.

SNMP Implementation Details Tables

The following sections contain a series of tables that list important information on each supported MIB object.

The following information is provided in the ATM MIB tables (Table AD through Table AG) and MIB-II tables (Table AO and Table AP):

- *Object* - The name of the SNMP object, as defined in the MIB definition.
- *Syntax* - The object type (syntax), as defined in the MIB definition.
- *Access Mode* - The access mode, as defined in the MIB definition.
- *Supported Mode* - The access mode, as supported on the GoWide platform.
- *Comments* - Any additional comments, such as the value range, etc.

The following information is provided in the ATMF-CES-MIB tables (Table AH through Table AJ) and the SYMM-DSL-CPE-MIB tables (Table BH through Table BJ):

- *Object* - The name of the SNMP object, as defined in the MIB definition.
- *Syntax* - The object type (syntax), as defined in the MIB definition.
- *Access Mode* - The access mode, as defined in the MIB definition.
- *Supported Mode* - The access mode, as supported on the GoWide platform.
- *Description* - A description of the object.
- *Comments* - Any additional comments, such as the value range, etc.

The following information is provided in the E1 MIB, RS-232 MIB, SYMM-ATM-IF-PHYS-MIB, and SYMM-SERIAL-IF-MIB tables (Tables AK through AN, AQ through AU, BG, and BK):

- *Object* - The name of the SNMP object, as defined in the MIB definition.
- *Syntax* - The object type (syntax), as defined in the MIB definition.
- *Access Mode* - The access mode, as defined in the MIB definition.
- *Supported Mode* - The access mode, as supported on the GoWide platform.

- *Comments* - Additional comments, such as supported values when they are different from the values defined in the MIB definition.
- *Console Command* - The console command which can be used to change or view the attribute that is equivalent to the defined SNMP object.
 - For objects having the supported access mode “read-write,” a representative command string, including the attribute (in parentheses) to be set or read, is given.
 - For objects having the supported access mode “read-only,” the representative command string is given, and the label of the applicable attribute that is returned is shown in parentheses on the next line.

The following information is provided in the SHDSL MIB tables (Table AV through Table BF):

- *Object* - The name of the SNMP object, as defined in the MIB definition.
- *Syntax* - The object type (syntax), as defined in the MIB definition.
- *Access Mode* - The access mode, as defined in the MIB definition.
- *Supported Mode* - The access mode, as supported on the GoWide platform.

Note: In cases where SNMP Object names in the “Object” column are wider than the table cells which contain them, they are hyphenated. These hyphens are not part of the object names.

GoWide MIB Implementation

Table AC indicates the MIBs that are relevant to the various GoWide infrastructure products. A check mark (✓) in a given table cell under a product header indicates that the MIB indicated in the first column of the table is supported on that product.

Table AC. MIBs Supported

MIB	Product		
	GoWide EI AALI	GoWide EI ATM	GoWide Serial AALI
ATM MIB	✓	✓	✓
ATMF-CES-MIB	✓		✓
EI MIB	✓	✓	
MIB-II	✓	✓	✓
RS-232 MIB			✓
SHDSL MIB	✓	✓	✓
SYMM-ATM-IF-PHYS-MIB		✓	
SYMM-DSL-CPE-MIB	✓	✓	✓
SYMM-SERIAL-IF-MIB			✓

ATM MIB

Implementation Summary

The ATM MIB is defined in RFC 2515, *Definitions of Managed Objects for ATM Management*. Only the get functions are supported for get/set (read-write) objects in the supported groups. The following ATM MIB tables and groups are supported:

- ATM Interface Configuration Parameters Table
- ATM Traffic Descriptor Parameter Group
- ATM Interface Virtual Link VCL Configuration Group
- AAL5 Connection Performance Statistics Group

Implementation Details

Table AD lists the implementation details for each ATM Interface Configuration Parameters Table object.

Table AD. ATM Interface Configuration Parameters Table Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments
atmInterfaceConf-Entry	AtmInterface-ConfEntry	Not-accessible	Not-accessible	
atmInterfaceMax-Vpcs	INTEGER (0..4096)	Read-write	Read-only	This value is always returned as 0, because switching is not implemented
atmInterfaceMax-Vccs	INTEGER (0..65536)	Read-write	Read-only	This value is returned as 8 since the number of PVC's supported are 8
atmInterfaceConf-Vpcs	INTEGER (0..4096)	Read-only	Read-only	This value is always returned as 0, because switching is not implemented
atmInterfaceConf-Vccs	INTEGER (0..65536)	Read-only	Read-only	This value includes the OAM channels
atmInterfaceMax-ActiveVpiBits	INTEGER (0..12)	Read-write	Read-only	This value is always returned as 0, because switching is not implemented
atmInterfaceMax-ActiveVciBits	INTEGER (0..16)	Read-write	Read-only	This value is returned as 3, since we have a maximum of 8 PVCs
atmInterfaceIcmiVpi	AtmVplIdentifier	Read-write	Not supported	
AtmInterfaceIcmiVci	AtmVclIdentifier	Read-write	Not supported	
atmInterface-AddressType (<i>deprecated</i>)	INTEGER 1 - private 2 - nsapE164 3 -nativeE164 4 - other	Read-only	Not supported	
AtmInterface-AdminAddress (<i>deprecated</i>)	AtmAddr	Read-only	Not supported	
atmInterfaceMy-NeighborIpAddress	IpAddress	Read-write	Not supported	
atmInterfaceMy-NeighbourIrfName	DisplayString	Read-write	Not supported	
atmInterface-CurrentMaxVpiBits	INTEGER (0..12)	Read-only	Read-only	
atmInterface-CurrentMaxVciBits	INTEGER (0..16)	Read-only	Read-only	
atmInterfaceSubscr-Address	AtmAddr	Read-write	Not supported	



Table AE lists the implementation details for each ATM Traffic Descriptor Parameter Group object.

Table AE. ATM Traffic Descriptor Parameter Group Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments
atmTrafficDescr-ParamEntry	AtmTraffic-DescrParam-Entry	Not-accessible	Not-accessible	
atmTrafficDescr-ParamIndex	AtmTraffic-DescrParam-Index	Not-accessible	Not-accessible	
atmTrafficDescr-Type	OBJECT IDENTIFIER	Read-create	Read-only	
atmTrafficDescr-Param1	Integer32	Read-create	Read-only	
atmTrafficDescr-Param2	Integer32	Read-create	Read-only	
atmTrafficDescr-Param3	Integer32	Read-create	Read-only	
atmTrafficDescr-Param4	Integer32	Read-create	Read-only	
atmTrafficDescr-Param5	Integer32	Read-create	Read-only	
atmTrafficQoSClass (<i>deprecated</i>)	INTEGER (0..255)	Read-create	Read-only	
atmTrafficDescr-RowStatus	RowStatus	Read-create	Read-only	
atmService-Category	AtmService-Category	Read-create	Read-only	
atmTrafficFrame-Discard	TruthValue	Read-create	Read-only	Always returns true

Table AF lists the implementation details for each ATM Interface Virtual Link VCL Configuration Group object.

Table AF. ATM Interface Virtual Link VCL Configuration Group Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments
atmVclEntry	AtmVclEntry	Not-accessible	Not-accessible	
atmVclVpi	AtmVplIdentifier	Not-accessible	Not-accessible	
atmVclVci	AtmVclIdentifier	Not-accessible	Not-accessible	
atmVclAdminStatus	AtmVorXAdminStatus	Read-create	Read-only	
atmVclOperStatus	AtmVorXOperStatus	Read-only	Read-only	
atmVclLastChange	AtmVorXLastChange	Read-only	Read-only	This value is always 0 since the system will be restarted after the last change.
atmVclReceive-TrafficDescrIndex	AtmTrafficDescrParamIndex	Read-create	Read-only	
atmVclTransmit-TrafficDescrIndex	AtmTrafficDescrParamIndex	Read-create	Read-only	
atmVccAalType	INTEGER Aal1(1) Aal34(2) Aal5(3) Other(4) Unknown(5) Aal2(6)	Read-create	Read-only	
AtmVccAal5Cpcs-TransmitSduSize	INTEGER (1..65535)	Read-create	Read-only	
AtmVccAal5Cpcs-ReceiveSduSize	INTEGER (1..65535)	Read-create	Read-only	
AtmVccAal5-EncapsType	INTEGER vcMultiplexRoutedProtocol(1) vcMultiplexBridgedProtocol8023(2) vcMultiplexBridgedProtocol8025(3) vcMultiplexBridgedProtocol8026(4) vcMultiplexLANemulation8023(5) vcMultiplexLANemulation8025(6) llcEncapsulation(7) multiprotocolFrameRelaySscs(8) other(9) unknown(10)	Read-create	Read-only	
atmVclCross-ConnectIdentifier	INTEGER (0..2147483647)	Read-only	Read-only	



Table AF. ATM Interface Virtual Link VCL Configuration Group Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments
atmVclRowStatus	RowStatus	Read-create	Read-only	
atmVclCastType	AtmConnCastType	Read-create	Read-only	
atmVclConnKind	AtmConnKind	Read-create	Read-only	

Table AG lists the implementation details for each AAL5 Connection Performance Statistics Group object.

Table AG. AAL5 Connection Performance Statistics Group Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments
aal5VccEntry	Aal5VccEntry	Not-accessible	Not-accessible	
aal5VccVpi	AtmVp-Indentifier	Not-accessible	Not-accessible	
aal5VccVci	atmVc-Indentifier	Not-accessible	Not-accessible	
aal5VccCrcErrors	Counter32	Read-only	Read-only	Always returned as 0
aal5VccSarTime-Outs	Counter32	Read-only	Read-only	Always returned as 0
aal5VccOverSized-SDU	Counter32	Read-only	Read-only	Always returned as 0

ATMF-CES-MIB

Implementation Summary

The ATMF-CES-MIB is defined in af-vtoa-0078.000, *Circuit Emulation Service Interoperability Specification Version 2.0 (January 1997)*. The following tables are supported:

- CES Configuration Table (atmfCESConfTable)
- CES Mapping Table (atmfCESMappingTable)

- CES Statistics Table (atmfCESStatisticsTable)

The following table is *not* supported:

- CES Active SVC Table (atmfCESActiveSVCTable)

Implementation Details

Table AH lists the implementation details for each atmfCESConfTable object.

Table AH. atmfCESConfTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmfCESAtmIndex	CES-Connection-Port	Read-create	Read-only	The value of this object is equal to MIB II's ifIndex value of the ATM port interface mapped through this CES IWF to a CBR interface. This value is overwritten whenever an active or passive SVC is established. The distinguished value 0 indicates that no ATM interface has been specified	
AtmfCESAtmVpi	VpiInteger	Read-create	Read-only	The value of this object is equal to the VPI used by the ATM VCL mapped through this CES IWF to a CBR interface. The value is overwritten whenever an active or passive SVC is established. The value is not relevant if no ATM interface has been specified (i.e., atmfCESAtmIndex is set to zero)	This is the SHDSL Vpi
atmfCESAtmVci	VciInteger	Read-create	Read-only	The value of this object is equal to the VCI used by the ATM VCL mapped through this CES IWF to a CBR interface. This value is overwritten whenever an active or passive SVC is established. The distinguished value 0 indicates that no ATM VCL has been specified	This is the SHDSL Vci

A

Table AH. atmfCESConfTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmfCESCbr-Service	INTEGER	Read-create	Read-only	Define if DSx/Ex service is as structured or unstructured. A structured(2) interface is some n*64kbKbps. An unstructured (1) interface is 1.544Mbps, 2.048Mbps, 6.312Mbps, 44.736 Mbps, or 34.368 Mbps. Unstructured(1) passes all bits through the ATM network. Structured(2) passes data bits through the ATM network, and may also pass signaling bits. At this time, only unstructured mode is defined for 44.736 Mbps and 34.368 Mbps services	
atmfCESCbrClock-Mode	INTEGER	Read-create	Read-only	Define if DSx/Esx service clocking mode. This maps into the transmit clock source of CBR interfaces. For structured modes, if present, this value must be set to synchronous(1)	There is no srts(2). Synchronous corresponds to NTR
atmfCESCas	INTEGER	Read-create	Read-only	This parameter selects which AALI format should be used. Basic does not carry CAS bits, and uses a single 125 usec frame. E1Cas, ds1SfCas, ds1EsCas and j2Cas carry CAS bits in a multiframe structure for E1, DS1 SF, DS1 ESF and J2 respectively. This applies to structured interfaces only. Default is basic(1). For unstructured interfaces, this value, if present must be set to the default of basic(1)	These are only applicable to SDT. The supported modes for SDT are basic (1) and e1Cas(2)
atmfCESPartialFill	INTEGER	Read-create	Read-only	If partial cell fill is used, the number of user octets per cell must be set with this number. Setting the parameter to zero disables partial cell fill, and causes all cells to be completely filled before they are sent.	The number range is from 33 to 46. If 47 is returned, it returned as 0

Table AH. atmfCESConfTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmfCESBufMax-Size	INTEGER	Read-create	Not supported	Define maximum size in 10 microsecond increments of the reassembly buffer. Some implementations may want to allow the maximum buffer size to be programmed to a size less than the physical limit to reduce the maximum delay through a circuit	
atmfCESCdvRxT	INTEGER	Read-create	Read-only	The maximum cell arrival jitter in 10 microsec increments that the reassembly process will tolerate in the cell stream without producing errors on the CBR interface	The values are from 15 to 255
atmfCellLoss-IntegrationPeriod	INTEGER	Read-create	Not supported	The time in milliseconds for the cell loss integration period. If the cells are continuously lost for this period of time, atmfCESCellLossStatus is set to Loss(2). The default definition is 2500	
atmfCESConnType	INTEGER	Read-create	Read-only	The type of ATM connectivity between associated CES IWF's. Valid values are other (none of the types specified below), pvc (supporting connectivity is a virtual connection), activeSvc (attempt calls whenever none established), and passiveSvc (accept calls)	The value returned is always 2, PVC mode
atmfCESLocalAddr	AtmAddr	Read-create	Not supported	The ATM address of the local CES IWF process. This address may be used by the automatic SVC establishment procedures to identify the intended recipient CES IWF of an incoming automatic SVC call request. Optionally, the MAX – ACCESS of this object may be read-only for those implementations where it is not desired to manually configure this address	



Table AH. atmCESConfTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmCESAdmin-Status	INTEGER	Read-create	Read-only	The desired administrative status of the CES interworking function. The up and down states indicate that the traffic flow is enabled or disabled respectively across the CES interworking function	We do not allow the admin status to go down.
atmCESOper-Status	INTEGER	Read-only	Read-only	The operational status of the CES interworking function. The up and down states indicate that the traffic flow is enabled or disabled respectively across the CES interworking function. The unknown state indicates that the state of the interworking function cannot be determined. The state will be down or unknown if the supporting CBR or ATM interfaces are down or unknown respectively	The oper status is always up

Table AI lists the implementation details for each atmCESMappingTable object.

Table AI. atmCESMappingTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmCESMapping-CbrIndex	Interface-Index	Read-only	Read-only	The value of this object is equal to MIB II's ifIndex value of the CBR interface, channel, or bundle that is being cross-connected to an ATM VCL. Examples of the ifType value for the CBR entity are ds1(18), ds3(30), ds0(81) or ds0bundle(82)	This value is the same as the atmCESCbrIndex value

Table AJ lists the implementation details for each atmCESStatisticsTable object.

Table AJ. atmfCESStatisticsTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmfCESReassCells	Counter-32	Read-only	Read-only	This count gives the number of cells played out to the CES Service Interface. It excludes cells that were discarded for any reason, including cells that were not used due to being declared misinserted, or discarded while the reassembler was waiting to achieve synchronization.	The value returned is for 15 minute and 24 hour counters. History counter is not supported
atmfCESHdrErrors	Counter-32	Read-only	Read-only	The count of the number of AALI header errors detected including those corrected. Header errors include correctable and uncorrectable CRC, plus bad parity.	
atmfCESPointer-Reframes	Counter-32	Read-only	Read-only	This records the count of the number of events in which the AALI reassembler found that an SDT pointer is not where it is expected, and the pointer must be reacquired. This count is meaningful only for structured CES modes, as unstructured CES modes do not use pointers. For unstructured CES modes, this count, if present, should indicate zero.	
atmfCESPointer-ParityErrors	Counter-32	Read-only	Read-only	This records the count of the number of events in which the AALI reassembler detects a parity check failure at the point where a structured data pointer is expected. This count is meaningful for structured CES modes, as unstructured CES modes do not use pointers. For unstructured CES modes, this count, if present, should indicate zero.	
atmfCESAaliSeq-Errors	Counter-32	Read-only	Not supported	Number of times that the sequence number of an incoming AALI TypeI SAR-PDU causes a transition from the 'sync' state to the 'out of sequence' state, as defined by ITU-T I.363.1.	



Table A.J. atmfCESStatisticsTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Description	Comments
atmfCESLostCells	Counter-32	Read-only	Read-only	Number of lost cells, as detected by the AALI sequence number processing for example. This records the count of the number of cells detected as lost in the network prior to the destination CES IWF AALI layer processing	
atmfCESMis-insertedCells	Counter-32	Read-only	Not supported	Number of AALI sequence violations which the AAL Convergence sublayer interprets as a misinserted cell, as defined by the ITU-T I.363.1	
atmfCESBufUnderflows	Counter-32	Read-only	Read-only	Number of buffer underflows. This records the count of the number of times the CES reassembly buffer underflows. In the case of a continuous underflow caused by a loss of ATM cell flow, a single buffer underflow should be counted. If the CES IWF is implemented with multiple buffers (such as a cell level buffer and a bit level buffer, then either buffer underflow will cause this count to be incremented	
atmfCESBufOverflows	Counter-32	Read-only	Read-only	Number of buffer overflows. This records the count of the number of times the CES reassembly buffer overflows. If the CES IWF is implemented with multiple buffers (such as a cell level buffer and a bit level buffer), then either buffer overflow will cause this count to be incremented.	
atmfCESCellLoss-Status	INTEGER	Read-only	Not supported	When cells are continuously lost for the number of milliseconds specified by atmfCESCellLossIntegration-Period, this value is set to loss(2). When cells are no longer lost, the value is set to noLoss(1).	

E1 MIB

Implementation Summary

The E1 MIB is defined in RFC 2495, *Definitions of Managed Objects for the DS1, E1, DS2 and E2 Interface Types*. The following groups, tables, and traps are supported:

- DS1 Near End Group
 - DS1 Configuration Table (dsx1ConfigTable)
 - DS1 Current Table (dsx1CurrentTable)
 - DS1 Interval Table (dsx1IntervalTable)
 - DS1 Total Table (dsx1TotalTable)
- DS1 Traps (dsx1LineStatusChange)

The E1 MIB also supports get functions in the MIB-II ifTable for the ifIndex, ifDescr, ifAdminStatus, ifOperStatus, and ifLastChange objects, and linkUp and linkDown traps are supported.

Implementation Details

Table AK lists the implementation details for each dsx1ConfigTable object.

Table AK. dsx1ConfigTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
dsx1LineIndex	Integer Range	read-only	read-only	ifIndex for E1; system dynamically assigned	na
dsx1IfIndex	Integer Range	read-only	read-only	ifIndex for E1; system dynamically assigned	na
dsx1TimeElapsed	Integer Range	read-only	read-only		el pfm (Seconds Elapsed)
dsx1ValidIntervals	Integer Range	read-only	read-only		na

Table AK. dsx1 ConfigTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
dsx1LineType	Enumerated	read-write	read-write	dsx1EI(4) == CCS_FAS + CRC disable; dsx1EICRC(5) == CCS_FAS + CRC enable; dsx1EIMF(6) == CAS_MFAS + CRC disable; dsx1EICRCMF(7) == CAS_MFAS + CRC enable; dsx1EIUnframed(9) == Unframing + CRC disable	e1 set (FrameFormat) e1 set (CRC)
dsx1LineCoding	Enumerated	read-write	read-only	always dsx1HDB3(3)	e1 set (LineCode)
dsx1SendCode	Enumerated	read-write	Not supported		
dsx1Circuit-Identifier	Octet String	read-write	Not supported		
dsx1Loopback-Config	Enumerated	read-write	read-write		e1 loopback
dsx1LineStatus	Integer Range	read-only	read-only	CARRIER_LOST(==dsx1LosOf-Signal), SYNC_LOST(==dsx1LosOf-Frame), BLUEALARM(==dsx1RcvAIS), YELLOWALARM(==dsx1Rcv-FarEndLOF), other alarms (==dsx1OtherFailure), and loopback(==dsx1LoopbackState)	e1 status (CARRIER_LOST, SYNC_LOST, BLUEALARM, YELLOWALARM)
dsx1SignalMode	Enumerated	read-write	read-write	bitOriented(3) == CAS_MFAS; messageOriented(4) == CCS_FAS;	e1 set (FrameFormat)
dsx1TransmitClock Source	Enumerated	read-write	read-only	Always returns throughTiming(3)	na
dsx1Fdl	Enumerated	read-write	Not supported		
dsx1InvalidIntervals	Integer Range	read-only	Not supported		
dsx1LineLength	Integer Range	read-write	Not supported		
dsx1LineStatus-LastChange	Time Stamp	read-only	read-only		na

Table AK. dsx1ConfigTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
dsx1LineStatus-ChangeTrapEnable	Enumerated	read-write	read-write		na
dsx1Loopback-Status	Enumerated	read-only	read-only	dsx1NearEndOtherLoopback(8) == Digital loopback;	e1 loopback
dsx1Ds1Channel-Number	Integer Range	read-only	Not supported		
dsx1Channelization	Enumerated	read-write	Not supported		

Table AL lists the implementation details for each dsx1CurrentTable object.

Table AL. dsx1CurrentTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
dsx1CurrentIndex	Integer Range	read-only	read-only	ifIndex for EI; system dynamically assigned	na
dsx1CurrentESs	Gauge	read-only	read-only		e1 pfm (ES)
dsx1CurrentSEsSs	Gauge	read-only	read-only		e1 pfm (SES)
dsx1CurrentSEFSs	Gauge	read-only	read-only		e1 pfm (SEFS)
dsx1CurrentUASs	Gauge	read-only	read-only		e1 pfm (UAS)
dsx1CurrentCSSs	Gauge	read-only	Not supported		
dsx1CurrentPCVs	Gauge	read-only	Not supported		
dsx1CurrentLESs	Gauge	read-only	read-only		e1 pfm (LES)
dsx1CurrentBESs	Gauge	read-only	Not supported		
dsx1CurrentDMs	Gauge	read-only	Not supported		
dsx1CurrentLCVs	Gauge	read-only	read-only		e1 status (Line Coding Violation)



Table AM lists the implementation details for each dsx1IntervalTable object.

Table AM. dsx1IntervalTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
dsx1IntervalIndex	Integer Range	read-only	read-only	ifIndex for EI; system dynamically assigned	na
dsx1Interval-Number	Integer Range	read-only	read-only		na
dsx1IntervalESs	Gauge	read-only	read-only		eI pfm (ES)
dsx1IntervalSESs	Gauge	read-only	read-only		eI pfm (SES)
dsx1IntervalSEFSs	Gauge	read-only	read-only		eI pfm (SEFS)
dsx1IntervalUASs	Gauge	read-only	read-only		eI pfm (UAS)
dsx1IntervalCSSs	Gauge	read-only	Not supported		
dsx1IntervalPCVs	Gauge	read-only	Not supported		
dsx1IntervalLESs	Gauge	read-only	read-only		eI pfm (LES)
dsx1IntervalBESs	Gauge	read-only	Not supported		
dsx1IntervalDMs	Gauge	read-only	Not supported		
dsx1IntervalLCVs	Gauge	read-only	read-only		eI status (Line Code Violation)
dsx1IntervalValid-Data	Truth Value	read-only	Not supported		

Table AN lists the implementation details for each dsx1TotalTable object.

Table AN. dsx1TotalTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
dsx1TotalIndex	Integer Range	read-only	read-only	ifIndex for EI; system dynamically assigned	na
dsx1TotalESs	Gauge	read-only	read-only		e1 pfm (ES)
dsx1TotalSEs	Gauge	read-only	read-only		e1 pfm (SES)
dsx1TotalSEFSs	Gauge	read-only	read-only		e1 pfm (SEFS)
dsx1TotalUAs	Gauge	read-only	read-only		e1 pfm (UAS)
dsx1TotalCSSs	Gauge	read-only	Not supported		
dsx1TotalPCVs	Gauge	read-only	Not supported		
dsx1TotalLEs	Gauge	read-only	read-only		e1 pfm (LES)
dsx1TotalBEs	Gauge	read-only	Not supported		
dsx1TotalDMs	Gauge	read-only	Not supported		
dsx1TotalLCVs	Gauge	read-only	read-only		e1 status (Line Code Violation)

MIB-II

Implementation Summary

MIB-II is defined in RFC 1213, *Management Information Base for Network Management of TCP/IP-based internets*. The System and Interfaces groups are supported.

Implementation Details

Table AO lists the implementation details for each System Group Table object.

Table AO. System Group Table

Object	Syntax	Access Mode	Supported Mode	Comments
sysDescr	Display String (0..255)	Read-only	Read-only	
sysObjectID	OBJECT-IDENTIFIER	Read-only	Read-only	
sysUpTime	TimeTicks	Read-only	Read-only	
sysContact	Display String (0..255)	Read-write	Read-write	
sysName	Display String (0..255)	Read-write	Read-write	
sysLocation	Display String (0..255)	Read-write	Read-write	

Table AP lists the implementation details for each Interfaces Group Table (ifTable) object.

Note: See the implementation summary and details under each MIB in this chapter for information on the specific ifTable objects that are implemented.

Table AP. Interfaces Group Table

Object	Syntax	Access Mode	Supported Mode	Comments
ifNumber	INTEGER	Read-only	Read-only	
ifEntry	IfEntry	Not-accessible	Not-accessible	
ifIndex	INTEGER	Read-only	Read-only	
ifDescr	DisplayString (0..255)	Read-only	Read-only	

Table AP. Interfaces Group Table (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments
ifType	<pre> INTEGER { other(1), -- none of the following regular1822(2), hdh1822(3), ddn-x25(4), rfc877-x25(5), ethernet-csmacd(6), iso88023-csmacd(7), iso88024-tokenBus(8), iso88025-tokenRing(9), iso88026-man(10), starLan(11), proteon-10Mbit(12), proteon-80Mbit(13), hyperchannel(14), fddi(15), lapb(16), sdlc(17), ds1(18), -- T-1 e1(19), -- european equiv. of T-1 basicISDN(20), primaryISDN(21) -- proprietary serial propPointToPointSerial(22), ppp(23), softwareLoopback(24), eon(25), -- CLNP over IP [11] ethernet-3Mbit(26), nsip(27), -- XNS over IP slip(28), -- generic SLIP ultra(29), -- ULTRA technologies ds3(30), -- T-3 sip(31), -- SMDS frame-relay(32) }</pre>	Read-only	Read-only	
ifMtu	INTEGER	Read-only	Read-only	
ifSpeed	Gauge	Read-only	Read-only	
ifPhysAddress	PhysAddress	Read-only	Read-only	
ifAdminStatus	INTEGER	Read-write	Read-write	The admin status can be changed i.e read-write only for EtherLike-MIB for GoWide 2.3 4-port, HDDSL2-SHDSL-MIB for all products
ifOperStatus	INTEGER	Read-only	Read-only	
ifLastChange	INTEGER	Read-only	Read-only	



Table AP. Interfaces Group Table (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments
ifInOctets	Counter	Read-only	Read-only	
ifInUcastPkts	Counter	Read-only	Read-only	
ifInNUcastPkts	Counter	Read-only	Read-only	
ifInDiscards	Counter	Read-only	Read-only	
ifInErrors	Counter	Read-only	Read-only	
ifInUnknown Protos	Counter	Read-only	Read-only	
ifOutcastPkts	Counter	Read-only	Read-only	
ifOutNucastPkts	Counter	Read-only		
ifOutDiscards	Counter	Read-only	Read-only	
ifOutErrors	Counter	Read-only	Read-only	
ifOutQLen	Gauge	Read-only	Read-only	
ifSpecific	OBJECT-IDENTIFIER	Read-only	Read-only	

RS-232 MIB

Note: This MIB should only be used when the SYMM-SERIAL-IF-MIB is not used. The RS-232 MIB and SYMM-SERIAL-IF-MIB are the same MIB. Symmetricom recommends that the SYMM-SERIAL-IF-MIB be used because it is a complete implementation, while the RS-232 MIB implementation is very limited.

Implementation Summary

The RS-232 MIB is defined in RFC 1659, *Definitions of Managed Objects for RS-232-like Hardware Devices using SMIv2*. The following object and tables are supported:

- “Generic RS-232 information” Object (rs232Number)
- RS-232 General Port Table (rs232PortTable)
- RS-232 Synchronous Port Table (rs232SyncPortTable)
- Input Signal Table (rs232InSigTable)
- Output Signal Table (rs232OutSigTable)

Implementation Details

Table AQ lists the implementation details for the rs232Number object.

Table AQ. rs232Number Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
rs232Number	Integer32	read-only	read-only	Always returns 1	na

Table AR lists the implementation details for each rs232PortTable object.

Table AR. rs232PortTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
rs232PortIndex	Integer32	read-only	read-only	hardcoded to 232; not implemented in ifTable	na
rs232PortType	Enumerated	read-only	read-only	supported values: rs422(3) (for v36 in the driver), v35(5), and x21(6)	serial set (Mode)
rs232PortInSig-Number	Integer32	read-only	Not supported		
rs232PortOutSig-Number	Integer32	read-only	Not supported		
rs232PortInSpeed	Integer32	read-write	read-write	Value in bits per second	serial set (clock) Note: Value is in 64K bits per second.
rs232PortOutSpeed	Integer32	read-write	read-write	Value in bits per second	serial set (clock) Note: Value is in 64K bits per second.
rs232PortInFlowType	Enumerated	read-write	Not supported		
rs232PortOutFlow-Type	Enumerated	read-write	Not supported		

Table AS lists the implementation details for each rs232SyncPortTable object.

Table AS. rs232SyncPortTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
rs232SyncPort-Index	Integer32	read-only	read-only	hardcoded to 232; not implemented in ifTable	
rs232SyncPort-ClockSource	Enumerated	read-write	read-only	always returns external(2)	na
rs232SyncPort-FrameCheckErrs	Counter32	read-only	Not supported		
rs232SyncPort-TransmitUnderrun-Errs	Counter32	read-only	Not supported		
rs232SyncPort-ReceiveOverrun-Errs	Counter32	read-only	Not supported		
rs232SyncPort-InterruptedFrames	Counter32	read-only	Not supported		
rs232SyncPort-AbortedFrames	Counter32	read-only	Not supported		
rs232SyncPortRole	Enumerated	read-write	read-only	always returns dce(2)	serial set (Interface)
rs232SyncPort-Encoding	Enumerated	read-write	Not supported		
rs232SyncPortRTS-Control	Enumerated	read-write	read-only	controlled(1) as driver active and constant(2) as driver enable	serial set (RTS_C) Note: The driver has another value, disable, which is not supported in SNMP.
rs232SyncPortRTS-CTSDelay	Integer32	read-write	Not supported		
rs232SyncPortMode	Enumerated	read-write	Not supported		
rs232SyncPortIdle-Pattern	Enumerated	read-write	Not supported		
rs232SyncPortMin-Flags	Integer32	read-write	Not supported		

Table AT lists the implementation details for each rs232InSigTable object.

Table AT. rs232InSigTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
rs232InSigPort-Index	Integer32	read-only	read-only	hardcoded to 232; not implemented in ifTable	na
rs232InSigName	Enumerated	read-only	read-only	Supported values: rts(1) and dtr(4); appears as an index	serial set (RTS_C, DTR) <i>Note:</i> Attributes RL, LL are not in SNMP.
rs232InSigState	Enumerated	read-only	read-only	Values: none(1) for attribute na, on(2) for attribute enable and off(3) for attribute disable	serial set (value for RTS_C, DTR) <i>Note:</i> In SNMP, rts/dtr appears as an index.
rs232InSigChanges	Counter32	read-only	Not supported		

Table AU lists the implementation details for each rs232OutSigTable object.

Table AU. rs232OutSigTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
rs232OutSigPort-Index	Integer32	read-only	read-only	hardcoded to 232; not implemented in ifTable	na
rs232OutSigName	Enumerated	read-only	read-only	Support values: cts(2), dsr(3) and dcd(6); appears as an index	serial set (CTS_I, DSR, DCD)
rs232InSigState	Enumerated	read-only	read-only	Values: none(1) for attribute na, on(2) for attribute enable and off(3) for attribute disable	serial set (Value for CTS_I, DSR, DCD) <i>Note:</i> In SNMP, cts/dsr/dcd appears as an index.
rs232InSigChanges	Counter32	read-only	Not supported		

SHDSL MIB

Implementation Summary

The SHDSL MIB is defined in RFC 3276, *Definitions of Managed Objects for High Bit-Rate DSL - 2nd generation (HDSL2) and Single-Pair High-Speed Digital Subscriber Line (SHDSL) Lines*. The following groups are supported:

- Span Configuration Table (hds12ShdslSpanConfTable)
- Span Status Table (hds12ShdslSpanStatusTable)
- Unit Inventory Table (hds12ShdslInventoryTable)
- Segment Endpoint Configuration Table (hds12ShdslEndpointConfTable)
- Segment Endpoint Current Status/Performance Table (hds12ShdslEndpointCurrTable)
- Segment Endpoint 15-Minute Interval Status/Performance Table (hds12Shdsl15MinIntervalTable)
- Segment Endpoint 1-Day Interval Status/Performance Table (hds12Shdsl1DayIntervalTable)
- Maintenance Table (hds12ShdslEndpointMaintTable)
- Unit Maintenance Table (hds12ShdslUnitMaintTable)
- Span Configuration Table (hds12ShdslSpanConfProfileTable)
- Segment Endpoint Alarm Configuration Profile Table (hds12ShdslEndpointAlarmConfProfileTable)

The SHDSL MIB also supports all set/get functions in the MIB-II ifTable for the ifIndex, ifDescr, ifType, ifSpeed, ifPhysAddress, ifAdminStatus, ifOperStatus, and ifLastChange objects.

Implementation Details

Table AV lists the implementation details for each hds12ShdslSpanConfTable object.

Table AV. hds12ShdslSpanConfTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12ShdslSpan-ConfNum-Repeaters	Unsigned-32 (0..8)	read-write	read-write

Table AV. hds12Shds1SpanConfTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hds12Shds1Span-ConfProfile	Snmp-AdminString (SIZE(1.. 32))	read-write	read-write
hds12Shds1Span-ConfAlarmProfile	Snmp-AdminString (SIZE(1.. 32))	read-write	read-write

Table AW lists the implementation details for each hds12Shds1SpanStatusTable object.

Table AW. hds12Shds1SpanStatusTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12Shds1Span-StatusNumAvail-Repeaters	Unsigned-32 (0..8)	read-only	read-only
hds12Shds1Span-StatusMax-AttainableLineRate	Unsigned-32 (0.. 41 2000)	read-only	read-only
hds12Shds1Span-StatusActualLine-Rate	Unsigned-32 (0.. 41 2000)	read-only	read-only
hds12Shds1Span-StatusTransmission-ModeCurrent	BITS [0-1]	read-only	read-only

Table AX lists the implementation details for each hds12Shds1InventoryTable object.

Table AX. hds12Shds1InventoryTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12Shds1InvIndex	INTEGER(1-10)	Not-accessible	Not-accessible
hds12Shds1Inv-VendorID	OCTET STRING (SIZE(8))	read-only	read-only



Table AX. hdsI2ShdsIInventoryTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsIInv-VendorModel-Number	OCTET STRING (SIZE(12))	read-only	read-only
hdsI2ShdsIInv-VendorSerial-Number	OCTET STRING (SIZE(12))	read-only	read-only
hdsI2ShdsIInv-VendorEOC-SoftwareVersion	Integer32	read-only	read-only
hdsI2ShdsIInv-StandardVersion	Integer32	read-only	read-only
hdsI2ShdsIInv-VendorListNumber	OCTET STRING (SIZE (3))	read-only	read-only
hdsI2ShdsIInv-VendorIssueNumber	OCTET STRING (SIZE (2))	read-only	read-only
hdsI2ShdsIInv-VendorSoftware-Version	OCTET STRING (SIZE (6))	read-only	read-only
hdsI2ShdsIInv-EquipmentCode	OCTET STRING (SIZE (10))	read-only	read-only
hdsI2ShdsIInv-VendorOther	OCTET STRING (SIZE (12))	read-only	read-only
hdsI2ShdsIInv-TransmissionMode-Capability	BITS [0,1]	read-only	read-only

Table AY lists the implementation details for each hdsI2ShdsIEndpointConfTable object.

Table AY. hdsI2ShdsIEndpointConfTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsI-EndpointSide	INTEGER [1-2]	Not-accessible	Not-accessible
hdsI2ShdsI-EndpointWirePair	INTEGER [1-2]	Not-accessible	Not-accessible

Table AY. hds12ShdslEndpointConfTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hds12Shdsl-EndpointAlarm-ConfProfile	SnmpAdminString (SIZE(0.. 32))	read-only	read-only

Table AZ lists the implementation details for each hds12ShdslEndpointCurrTable object.

Table AZ. hds12ShdslEndpointCurrTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12ShdslEndpoint-CurrAtn	Integer32 (-127.. 128)	read-only	read-only
hds12ShdslEndpoint-CurrSnr-Mgn	Integer32 (-127.. 128)	read-only	read-only
hds12ShdslEndpoint-Curr-Status	BITS [0-10]	read-only	read-only
hds12ShdslEndpoint-ES	Counter32	read-only	read-only
hds12ShdslEndpoint-SES	Counter32	read-only	read-only
hds12ShdslEndpoint-CRCAnomalies	Counter32	read-only	read-only
hds12ShdslEndpoint-LOWS	Counter32	read-only	read-only
hds12ShdslEndpoint-UAS	Counter32	read-only	read-only
hds12ShdslEndpoint-Curr15MinTime-Elapsed	Hds12Shdsl-PerfTimeElapsed	read-only	read-only
hds12ShdslEndpoint-Curr15MinES	PerfCurrentCount	read-only	read-only
hds12ShdslEndpoint-Curr15MinSES	PerfCurrentCount	read-only	read-only
hds12ShdslEndpoint-Curr15MinCRC-anomalies	PerfCurrentCount	read-only	read-only



Table AZ. hds12Shds1EndpointCurrTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hds12Shds1Endpoint-Curr15MinLOSWS	PerfCurrent-Count	read-only	read-only
hds12Shds1Endpoint-Curr15MinUAS	PerfCurrent-Count	read-only	read-only
hds12Shds1Endpoint-Curr1DayTime-Elapsed	Hds12Shds1-PerfTime-Elapsed	read-only	read-only
hds12Shds1Endpoint-Curr1DayES	Gauge32	read-only	read-only
hds12Shds1Endpoint-Curr1DaySES	Gauge32	read-only	read-only
hds12Shds1Endpoint-Curr1DayCRC-anomalies	Gauge32	read-only	read-only
hds12Shds1Endpoint-Curr1DayLOSWS	Gauge32	read-only	read-only
hds12Shds1Endpoint-Curr1DayUAS	Gauge32	read-only	read-only

Table BA lists the implementation details for each hds12Shds115MinIntervalTable object.

Table BA. hds12Shds115MinIntervalTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12Shds115Min-IntervalNumber	Unsigned32 (1..96)	Not-accessible	Not-accessible
hds12Shds115Min-IntervalES	PerfIntervalCount	read-only	read-only
hds12Shds115Min-IntervalSES	PerfIntervalCount	read-only	read-only
hds12Shds115Min-IntervalCRC-anomalies	PerfIntervalCount	read-only	read-only
hds12Shds115Min-IntervalLOSWS	PerfIntervalCount	read-only	read-only

Table BA. hds12Shds115MinIntervalTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hds12Shds115Min-IntervalUAS	PerfIntervalCount	read-only	read-only

Table BB lists the implementation details for each hds12Shds11DayIntervalTable object.

Table BB. hds12Shds11DayIntervalTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12Shds11Day-IntervalNumber	Unsigned32 (1..30)	Not-accessible	Not-accessible
hds12Shds11Day-IntervalMoniSecs	Hds12Shds1Perf-TimeElapsed	read-only	read-only
hds12Shds11Day-IntervalES	Gauge32	read-only	read-only
hds12Shds11Day-IntervalSES	Gauge32	read-only	read-only
hds12Shds11Day-IntervalCRC-anomalies	Gauge32	read-only	read-only
hds12Shds11Day-IntervalLOSWS	Gauge32	read-only	read-only
hds12Shds11Day-IntervalUAS	Gauge32	read-only	read-only

Table BC lists the implementation details for each hds12Shds1EndpointMaintTable object.

Table BC. hds12Shds1EndpointMaintTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hds12Shds1Maint-LoopbackConfig	INTEGER (1-3)	read-write	read-write
hds12Shds1Maint-TipRingReversal	INTEGER (1-2)	read-only	read-only



Table BC. hdsI2ShdsIEndpointMaintTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsIMaint-PowerBackOff	INTEGER (1-2)	read-write	read-write
hdsI2ShdsIMaint-SoftRestart	INTEGER (1-2)	read-write	read-write

Table BD lists the implementation details for each hdsI2ShdsIUnitMaintTable object.

Table BD. hdsI2ShdsIUnitMaintTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsIMaint-LoopbackTimeout	Integer32 (0..4095)	read-write	read-write
hdsI2ShdsIMaint-UnitPowerSource	INTEGER (1-2)	read-only	read-only

Table BE lists the implementation details for each hdsI2ShdsISpanConfProfileTable object.

Table BE. hdsI2ShdsISpanConfProfileTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsISpan-ConfProfileName	SnmpAdmin-String (SIZE(0..32))	Not-accessible	Not-accessible
hdsI2ShdsISpan-ConfWireInterface	INTEGER (1-2)	read-create	read-only
hdsI2ShdsISpan-ConfMinLineRate	Unsigned32 (0..41 2000)	read-create	read-only
hdsI2ShdsISpan-ConfMaxLineRate	Unsigned32 (0..41 2000)	read-create	read-only
hdsI2ShdsISpan-ConfPSD	INTEGER (1-2)	read-create	read-only
hdsI2ShdsISpan-ConfTransmission-Mode	INTEGER (1-2)	read-create	read-only

Table BE. hdsI2ShdsIspanConfProfileTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsIspan-ConfRemote-Enabled	INTEGER (1-2)	read-create	read-only
hdsI2ShdsIspan-ConfPowerFeeding	INTEGER (1-3)	read-create	read-only
hdsI2ShdsIspan-ConfCurrCond-TargetMarginDown	Integer32 (-10..21)	read-create	read-only
hdsI2ShdsIspan-ConfWorstCase-TargetMarginDown	Integer32 (-10..21)	read-create	read-only
hdsI2ShdsIspan-ConfCurrCond-TargetMarginUp	Integer32 (-10..21)	read-create	read-only
hdsI2ShdsIspan-ConfWorstCase-TargetMarginUp	Integer32 (-10..21)	read-create	read-only
hdsI2ShdsIspan-ConfUsedTarget-Margins	BITS (0-3)	read-create	read-only
hdsI2ShdsIspan-ConfReference-Clock	INTEGER (1-4)	read-create	read-only
hdsI2ShdsIspan-ConfLineProbe-Enable	INTEGER (1-2)	read-create	read-only
hdsI2ShdsIspan-ConfProfileRow-Status	RowStatus	read-create	read-only

Table BF lists the implementation details for each hdsI2ShdsIEndpointAlarmConfProfileTable object.

Table BF. hdsI2ShdsIEndpointAlarmConfProfileTable Implementation Details

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsIEndpoint-AlarmConfProfile-Name	SnmpAdmin-String (SIZE(1..32))	Not-accessible	Not-accessible



Table BF. hdsI2ShdsIEndpointAlarmConfProfileTable Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode
hdsI2ShdsIEndpoint-ThreshLoop-Attenuation	Integer32 (-127..128)	read-create	read-only
hdsI2ShdsIEndpoint-ThreshSNRMargin	Integer32 (-127..128)	read-create	read-only
hdsI2ShdsIEndpoint-ThreshES	Unsigned32 (0..900)	read-create	read-only
hdsI2ShdsIEndpoint-ThreshSES	Unsigned32 (0..900)	read-create	read-only
hdsI2ShdsIEndpoint-ThreshCRC-anomalies	Integer32	read-create	read-only
hdsI2ShdsIEndpoint-ThreshLOSWS	Unsigned32 (0..900)	read-create	read-only
hdsI2ShdsIEndpoint-ThreshUAS	Unsigned32 (0..900)	read-create	read-only
hdsI2ShdsIEndpoint-AlarmConfProfile-RowStatus	RowStatus	read-create	read-only

SYMM-ATM-IF-PHYS-MIB

Implementation Summary

The SymmAtmIfPhysMib is a Symmetricom-defined MIB under Symmetricom's Enterprise MIB. The following table is supported:

- symmAtmIfPhysTable

Implementation Details

Table BG lists the implementation details for each symmAtmIfPhysTable object.

Table BG. symmAtmIfPhysTable Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
symmAtmIfPhys-Index	Integer Range	read-only	read-only	ifIndex for EI; system dynamically assigned	na

Table BG. *symmAtmlfPhysTable* Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
<i>symmAtmlfPhys-ScramblingEnable</i>	Enumerated	read-write	read-write		el set (scrambler)
<i>symmAtmlfPhys-HecCosetEnable</i>	Enumerated	read-write	read-write		el set (coset)
<i>symmAtmlfPhys-CellType</i>	Enumerated	read-write	read-write		el set (cell)
<i>symmAtmlfPhys-TimeSlot</i>	Octet String	read-write	read-write		el set (timeslots)

SYMM-DSL-CPE-MIB

Implementation Summary

The *symmDslCpe* MIB is a Symmetricom-defined MIB under Symmetricom's Enterprise MIB. The following groups and traps *are* supported:

- *symmAssetGroup*
- *symmFwDownloadGroup*
- *symmFwDownloadMibTraps*
- *symmTrapsGroup*

Note: The *symmTrapsGroup* is deprecated with SNMPv3, which is the version used in the GoWide products. Trap destinations can now be added via the *snmp.cnf* file (refer to the chapter entitled *SNMP Configuration* for more information).

Implementation Details

Table BH lists the implementation details for each *symmAssetGroup* object.

Table BH. *symmAssetGroup* Implementation Details

Object	Syntax	Access Mode	Supported Mode	Description	Comments
<i>symmAssetSerial-Number</i>	Octet String	Read-only	Read-only		
<i>symmAssetClei-Code</i>	Octet String	Read-only	Read-only		

Table BH. symmAssetGroup Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Description	Comments
symmAssetModel	Octet String	Read-only	Read-only		
symmAssetHw-Revision	Octet String	Read-only	Read-only		
symmAssetSw-Revision	Octet String	Read-only	Read-only		
symmAssetTag	Octet String	Read-write	Read-write		The value of the symmAssetTag is saved in snmpd.cnf file and is persistent across reboots if a "flashfs update" is done

Table BI lists the implementation details for each symmFwDownloadGroup object.

Table BI. symmFwDownloadGroup Implementation Details

Object	Syntax	Access Mode	Supported Mode	Description	Comments
symmImageSource	IpAddress	Read-write	Read-write		
symmImageDownloadBegin	Integer (1..2)	Read-write	Read-write		

Table BJ lists the implementation details for each symmFwDownloadMibTraps object.

Table BJ. symmFwDownloadMibTraps Implementation Details

Object	Syntax	Access Mode	Supported Mode	Description	Comments
symmDownload-FailureAlarm	na	na		This provides a method for an agent implementing the enterprise mib to notify an NMS of an alarm condition	This alarm is sent with a value of 1 indicating a download failure

SYMM-SERIAL-IF-MIB

Implementation Summary

The SymmSerialIfMib is a Symmetricom-defined MIB under Symmetricom's enterprise MIB.

Implementation Details

Table BK lists the implementation details for each SymmSerialIfMib object.

Table BK. SymmSerialIfMib Implementation Details

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
symmSerialIfMode	Enumerated	read-write	read-write	Values:v35(1), v36(2), x21(3)	serial set (mode)
symmSerialIfInterface	Enumerated	read-write	read-only	always dce(1)	serial set (interface) Note: Always dce(1).
symmSerialIfClocking	Integer32	read-write	read-write	Value is in units of 64K bits per second	serial set (clock)
symmSerialIfTxclnv	Enumerated	read-write	read-write	Values: enable(1), disable(2), auto(3), na(4); 'auto' is for set-only; 'na' is for get-only	serial set (txc_inv) Note: When serial attribute settings are displayed on the console, the current value when 'auto' is selected is shown in parentheses.
symmSerialIfSctelnv	Enumerated	read-write	read-write	Values: enable(1), disable(2), auto(3), na(4); 'auto' is for set-only; 'na' is for get-only	serial set (scte_inv) Note: When serial attribute settings are displayed on the console, the current value when 'auto' is selected is shown in parentheses.
symmSerialIfRxclnv	Enumerated	read-write	read-write	Values: enable(1), disable(2), auto(3), na(4); 'auto' is for set-only; 'na' is for get-only	serial set (rxc_inv) Note: When serial attribute settings are displayed on the console, the current value when 'auto' is selected is shown in parentheses.

Table BK. SymmSerialIfMib Implementation Details (cont'd)

Object	Syntax	Access Mode	Supported Mode	Comments	Console Command
symmSerialIfLoopback	Enumerated	read-write	read-write	Values: enable(1), disable(2)	serial loopback
symmSerialIfDtrAlarm	Enumerated	read-write	read-write	Values: enable(1), disable(2), na(3); na(3) is for get-only	serial dtralm
symmSerialIfControlLeadCtsl	Enumerated	read-write	read-write	Values: enable(1), disable(2), active(3);	serial set (cts)
symmSerialIfControlLeadDsr	Enumerated	read-write	read-write	Values: enable(1), disable(2), na(3); na(3) is for get-only	serial set (dsr)
symmSerialIfControlLeadDcd	Enumerated	read-write	read-write	Values: enable(1), disable(2), active(3), na(4); na(4) is for get-only	serial set (dcd)
symmSerialIfControlLeadTm	Enumerated	read-write	read-write	Values: enable(1), disable(2), na(3); na(3) is for get-only	serial set (tm)
symmSerialIfControlLeadRtsC	Enumerated	read-write	read-only	Values: enable(1), disable(2)	serial set (RTS_C)
symmSerialIfControlLeadDtr	Enumerated	read-write	read-only	Values: enable(1), disable(2), na(3)	serial set (DTR)
symmSerialIfControlLeadRI	Enumerated	read-write	read-only	Values: enable(1), disable(2), na(3)	serial set (RL)
symmSerialIfControlLeadLI	Enumerated	read-write	read-only	Values: enable(1), disable(2), na(3)	serial set (LL)