USER'S MANUAL

G.SHDSL Termination Unit

Comet 16xx Series

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Headquarters:
No. 25, Alley 15, Lane 120,
Sec. 1. Nei-Hu Rd,
Taipei 114, Taiwan
TEL: 886-2-26583000
FAX: 886-2-26583232

Beijing Branch:
3F, A Building,
113 Zhi Chun Lu,
HaiDian District,
Beijing, China
Zip Code: 100086
TEL: 86-10-62522081~87
FAX: 86-10-62522077

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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(2) This device must accept any interference received, including interference that may cause undesired operation.

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Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

CE COMPLIANCE

This product complies with the following standard of the Directive 1999/5/EC of the European Parliament and of the Council. of 9 March 1999 on Radio Equipment and Telecommunications Terminal Equipment and the mutual recognition of their conformity

Table 1: CE of Conformity

Safety	EMC
TBR21	EN5502
EN60950-	EN5502

About This Manual

This section guides you on how to use the manual effectively. The manual contains information needed to install, configure, and operate TAINET's Comet 16xx Series termination units. The summary of this manual is as follows:

Chapter 1: Overview

Describes Comet 16xx Series in several applications.

Chapter 2: Specifications

Describes the features, specifications and applications of Comet 16xx Series.

Chapter 3: Interfaces

Introduces all the interfaces, including front panel and rear pane of Comet 16xx Series.

Chapter 4: Installation

Assist user to install and verify the Comet 16xx Series Step-by-step.

Chapter 5: Operation of CID

Gives a description of the CID (Craft Interface Device).

Chapter 6: Operation of Web

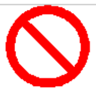
Gives a description of the Web Interface.

Appendix A: Trouble Report

Trouble Report Form

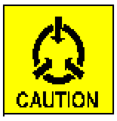
Symbols Used in This Manual

3 types of symbols are used throughout this manual. These symbols are used to advise the users when a special condition arises, such as a safety or operational hazard, or to present extra information to the users. These symbols are explained below:



Warning:

This symbol and associated text are used when death or injury to the user may result if operating instructions are not followed properly.



Caution:

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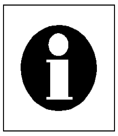

Note:

This symbol and associated text are used to provide the users with extra information that may be helpful when following the main instructions in this manual.

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Chapter 1. Overview

This chapter begins with a general description of Comet 16xx Series. Then, the chapter describes how to use TAINET Comet 16xx Series in several applications.

1.1 Overview

DSL (Digital Subscriber Loop) technologies increase the bandwidth capacity of existing ubiquitous telephone line (the local copper loops). G.SHDSL is designed for business applications, where high speed is required in both transmission directions. It provides symmetrical data rates of 192Kbps to 5.696Mbps in 2-wire with a transmission distance up to 10Kft using SHDSL technology. The data rates will be increased to 11.392Mbps in 4-wire link and 22.784Mbps in 8-wire link. The speed's obtainable using DSL technologies are tied to the distance between the customer premise and the Telco central office. Performance varies with loop characteristics, such as line conditions, loop distance, wire gauge, noise, and the number and locations of bridged taps and gauge changes. The G.SHDSL bit rate can be configured (or rate adapted) to adapt to the line conditions.

1.2 Applications

The SHDSL System consists of a central unit, CO (SHDSL Transceiver Unit - Central), at central office, and a remote unit, CPE (SHDSL Transceiver Unit - Remote), at customer premises.

The services are extended through the ubiquitous copper wires or leased lines with the technologies of G.SHDSL. Various interface extensions are supported on Comet: E1, DATA (V.35, V.36 / RS449, X.21, RS-530) and Ethernet.

Figure 1-1 shows a typical application. Figure 1-2 depicts the possible interface configurations. Comet automatically activates start-up when the power of the CO and CPE are enabled or after temporarily disconnecting the CO or CPE.

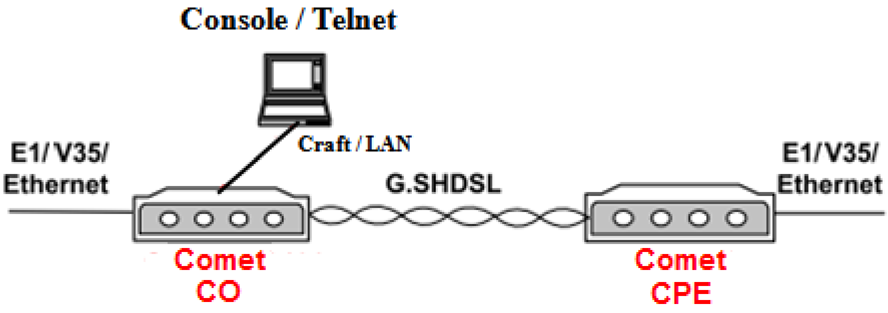

Console / Telnet
Craft / LAN
E1/ V35/
Ethernet
G.SHDSL
E1/V35/
Ethernet
Comet
CO
Comet
CPE

Figure 1-1 Application of Back-to-back

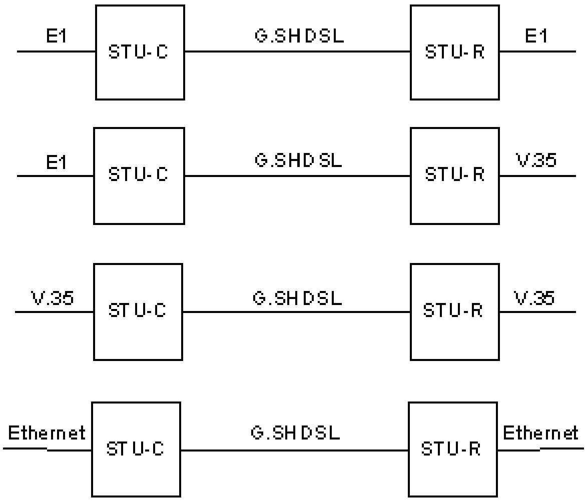

E1
STU- C
G.SHDSL
STU- R
E1
E1
STU- C
G.SHDSL
STU- R
V.35
V.35
STU-C
G.SHDSL
STU-R
V.35
Ethernet
STU-C
G.SHDSL
STU-R
Ethernet

Figure 1-2 Possible Interface Configuration of Comet System

Chapter 2. Specification

To let the user understand the TAINET Comet Series, this chapter begins with its main features. Then, the chapter continues to present SHDSL and SHDSL.bis interface, the network side interface, timing and synchronization, OAM (Operation, Administration and Maintenance) and technical specifications. The last part of this chapter is devoted to the applications of TAINET Comet 16xx Series in different networks.

2.1 Main Features

Listed below are the main features of the Comet 16xx Series:

- Listed below are the main features of the Comet 16xx Series.
- Support loop interface G.SHDSL and G.SHDSL.bis.
- Comet 16xx Series supports DTE interface: E1, DATA (V.35, X.21, RS-530, V.36 / RS449) and Ethernet.
- Carrying symmetrical 5.696 Mbps, 11.392Mbps, 22.784Mbps for up to 1.8 miles / 3 Km over 24-AWG single pair copper wire.
- Carrying symmetrical 2048 Kbps payload for up to 2.4 miles / 3.9 Km over 26-AWG single pair copper wire.
- Automatic line rate selection with Line Probe enabled.
- Support SHDSL and SHDSL.bis payload rates of n ×64Kbps, where n is 3 to 89 in 2 wires, where n is 6 to 178 in 4 wires, where n is 12 to 356 in 8 wires.
- Support Timing and Synchronization: Local (internal) timing, Line timing (loop received clock).
- For test and diagnostic purpose the Comet provides local and remote loopback function.
- Management by CID, Telnet and Web.
- Remote control / monitoring via Telnet and Ethernet.
- Remote in-band control / monitoring CPE via G.SHDSL EOC.

- Remote software upgrade via TFTP and Web.
- Support security link function of G.SHDSL interface.
- Comply with ITU-T G.991.2 and K.21.

2.2 SHDSL Interface

- Meet ITU-T G.991.2 relative requirements.
- Support Wetting Current function for feeding of a low current（between 1.0 mA and 20 mA）on the pair to mitigate the effect of corrosion of contacts.
- Support power back off functions.
- Modulation Method: 16-TCPAM, 32-TCPAM, 64-TCPAM and 128-TCPAM (16/32/64/128 levels Trellis Coded Pulse Amplitude Modulation).
- Physical Connection Type: Standard RJ-45 jack, 135 ohm balanced via 2 wires, 4 wires or 8 wires twisted pair.
- Port enabled / disabled configurable.
- Line Protection: meet ITU-T K.21 requirements.

2.2.1 E1 Interface

- Comply with G.703 Standard.
- Bit Rate: 2,048 Kbit / s ± 50 ppm.
- Frame Format: Unstructured or Structured framing, field selectable.
- Line Code: High Density Bipolar of Order 3 (HDB3).
- Impedance: Normal 120 ohms ± 5% resistive, symmetrical pair.
- Jitter performance: Meet ITU-T G.823 requirements.
- Normal Peak Voltage of a Mark (pulse): 3 V for 120 ohms. Peak Voltage of a Space (no pulse): 0 ± 0.3 V for 120 ohms.
- Normal Pulse Width: 244 ns ± 25ns.
- Ratio of the Amplitudes of Positive and Negative Pulse at the Center of Pulse Interval: 0.95 to 1.05.

- Ratio of the Widths of Positive and Negative Pulse at the Normal Half Amplitude: 0.95 to 1.05.
- Line Interface: 120 ohm (RJ-45 / RJ48C) balanced, 75 ohm (BNC).
- Physical Connection Type: Standard RJ-48C/RJ-45 jack (Balance) or BNC (Unbalance).
- Signal of input port was defined as above and can be modified by the characteristics of the interconnecting pair. The insertion loss of this pair at a frequency of 1024 kHz is in the range of 0 to 6 dB.
- Minimum Return Loss at the Input Port: 12 dB for 51 to 102 kHz, 18 dB for 102 to 2,048 kHz 14 dB for 2,048 to 3,072 kHz.

2.2.2 V.35 Interface

- Connector type: DB-25 female Connector with adapt cable convert to V.35/ V.11.
- V.35, V.11 software selectable.
- Line rate tolerance: 32 ppm.
- Clock rate: n x 64K (n =1 to 72).
- Clocking mode: DCE slave, DCE external (V.35/RS-530 only).
- Clock inversion support.
- Signal detect leads: DTR/ RTS.

2.3 Network Side Interface

2.3.1 Ethernet Interface

- Provide a 10/100 Base-Tx auto sensing and half/full duplex configurable Ethernet Interface.
- Comply with the IEEE 802.3 / IEEE 802.3u
- Physical Connection Type: Standard RJ-45 connector
- Operate as a self-learning bridge specified in the IEEE 802.1d full protocol transparent bridging function

- Supporting up to 2K(2048) MAC learning addresses
- Supporting Bridge filter function based on source MAC addresses
- Scalable Per Port Bandwidth Control (Step = 64K, up to 100M)
- Support packet length up to 1518/1522/1536 byte
- Support internal counter/PHY status output for management system
- Support VLAN priority feature by Port-Based of packets for traffic and management; Tag-Based is also supported
- Support 802.3x Flow Control pause packet for Full Duplex in case buffer is full

2.4 OAM

OAM (Operation, Administration and Maintenance) of the Comet 16xx Series is listed below:

- CID Console: command line operation
- Web management message interface
- Remote control / monitoring Comet 16xx Series via Telnet and Ethernet
- Remote in-band control/monitoring CPE via G.SHDSL EOC
- Remote Software Upgrade: Remotely via web interface with image file selection; Locally CID console terminal with TFTP protocol
- Configuration backup and restore to / from local nonvolatile memory
- Support default configuration setup
- Support Alarm Surveillance function
- Support Performance Monitoring function

2.5 Technical Specifications

Table 2-1 gives the technical specifications of the Comet 16xx Series.

Table 2-1 Technical Specifications of the Comet 16xx Series

DSL	
Modulation	TC-PAM16/TC-PAM32/TC-PAM64/TC-PAM128
Mode	Full duplex with echo cancellation
Number of loops	Single
Loop rate	N*64+8K(N=3~89) up to 5696Kbit/S (2 wire), (N=6~178) 11392Kbit/S (4 wire), (N=12~256) 22784Kbit/S (8 wire)
Loop impedance	135 ohms
Clock accuracy	± 32 ppm
Interface	
Module	**Data**
	V.35 Nx64 Kbps interface RS-530 Nx64 Kbps interface V.36 Nx64 Kbps interface X.21 Nx64 Kbps interface
	E1
	E1 G703 / G704 interface
	Ethernet
	10/100Base-Tx Auto sensing
	IEEE 802.3 / IEEE 802.3u
	IEEE 802.1d full protocol transparent bridging function
	Half and full duplex
Diagnostics	
Loop test	E1 LDL : E1 Local Digital Loopback V.35/V.11 LDL : V.35/V.11 Local Digital Loopback E1 RDL : E1 Remote Digital Loopback V.35/V.11 RDL : V.35/V.11 Remote Digital Loopback
Status	PWR : Power indicator

Indicators	DSL1-2 : DSL status indicator E1 : E1 status indicator V35 : V.35 status indicator CPE : CPE or CO site indicator LAN : Ethernet link indicator ALM : Alarm indicator TST : Test status indicator
Craft port	115200 BPS 8 bit data length None parity 1 stop bit 9-pin/D-sub/female connector
Ethernet port	10/100M BPS RJ-45 jack
Power Requirement	
Input	DC 12V ± 5%, Load=1.0A
Power Consumption	< 7 W
Environments	
Temperature	Operating +0℃ ~ +45℃ Storage -10℃ ~ 70℃
Humidity	Operating 90% non-condensing Storage 95% non-condensing

2.6 Applications

This section describes how to apply TAINET Comet 16xx Series in the network systems.

2.6.1 EFM Application

The Comet 16xx Series supports EFM applications. Figure 2-1 shows the general Point To Point applications using two Comet 16xx Series. One unit is configured as a central office site (CO) unit and the other is the customer premise equipment (CPE) unit.

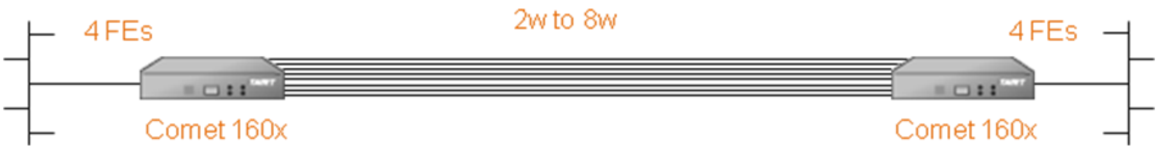

4 FEs
2w to 8w
4 FEs
Comet 160x
Comet 160x

Figure 2-1 Point To Point Application of the Comet 16xx Series with Ethernet I/F

2.6.2 TDM Application

The Comet 16xx Series also supports TDM application. Figure 2-2 shows the general TDM application where remote routers or PBX are interconnected via two Comet 16xx Series. One unit is configured as a central office site (CO) unit and the other is the customer premise equipment (CPE) unit.

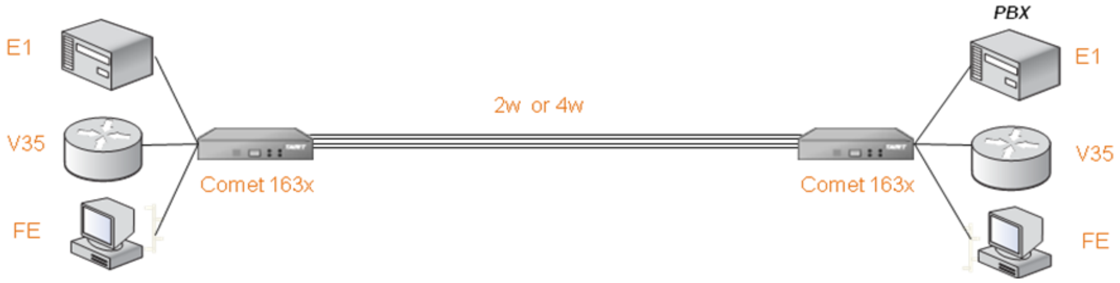

E1
V35
FE
2w or 4w
Comet 163x
Comet 163x
PBX
E1
V35
FE

Figure 2-2 TDM Application of the Comet 16xx Series with E1, V35 or FE I/F

Chapter 3. Interfaces

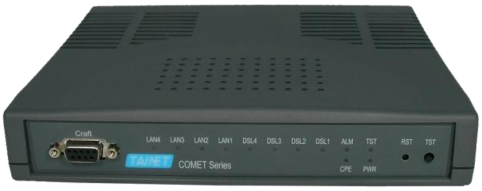
In this chapter, we will focus our attention on the interfaces of the Comet 16xx Series. First, the front panel of the Comet 16xx Series will be discussed. After that, we will examine in more detail the rear panel of the Comet 16xx Series.

3.1 Front Panel

The front panel of Comet 16xx Series, as illustrated in Figure 3-1, contains three main sections, Management port, status indicators and buttons. Via the front panel of Comet 16xx Series, users can perform the functions as listed below:

- Displaying system status
- Resetting the device and the alarm LED
- Managing Comet 16xx Series via Craft port

From the status indicators of front panel, users can obtain useful information to monitor the status of the Comet 16xx Series.



Comet 16xx Series

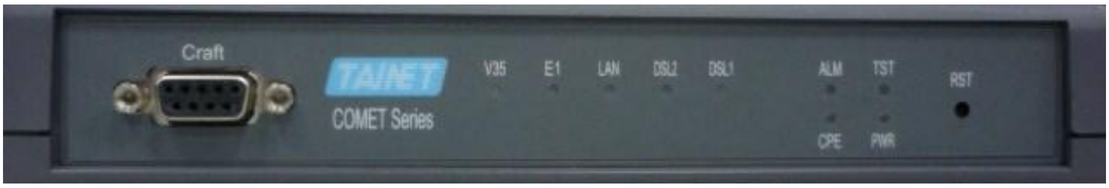


Figure 3-1 Front Panel of the Comet 16xx Series

3.1.1 Status Indicators

The status indicators of the Comet 16xx Series are depicted in Table 3-1. There are nine LEDs, which are PWR, TST, CPE, ALM, DSL1, DSL2, V35, E1 and LAN. These nine LEDs display the system status.

Table 3-1 Indicators on Front Panel

LED	GREEN	YELLOW	RED	Flashing	OFF
PWR	Power ON				Power OFF
TST		Testing			No Test
CPE	STU-R				STU-C
ALM	System Alarm occur				No Alarm
DSL1-2	DSL Link		DSL Alarm	DSL handshake	No Used
V35	In Service		V35 Alarm	Data tx/rx	No Used
E1	In Service		E1 Alarm	Data tx/rx	No Used
LAN	Ethernet Link		Full Duplex	Ethernet active	Link Down

3.1.2 The RST Button

There is only one Reset button to manually reset the device.

3.2 Rear Panel

Figure 3-2 illustrates the rear panel of the Comet 16xx Series. Users may connect the Comet 16xx Series to other devices or equipments via these interfaces.

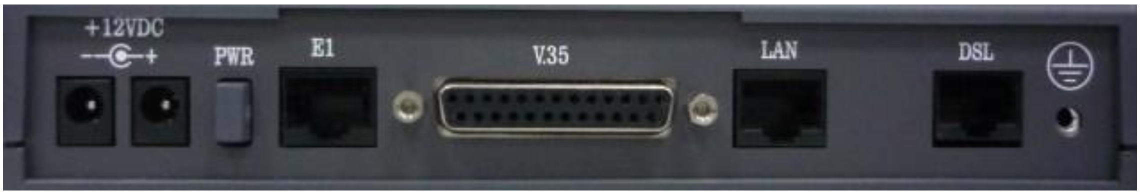


Figure 3-2 Rear Panel of the Comet 16xx Series

The following connectors/devices appear on the rear panel of the Comet 16xx Series.

- Power On/Off: The Comet 16xx Series' power switch
- Power Receptacle: Redundant power for a DC power cable
- E1 Interface: E1 / G.703 balanced interface (RJ-45)
- LAN: Ethernet ports for RJ-45 connector
- V.35 Interface: Data terminal equipment port
- DSL Jack: RJ-45 jack for SHDSL link

Chapter 4. Installation

In this chapter, we will present the installation guide for the Comet 16xx Series. It begins with a checklist for unpacking the shipping package.

4.1 Unpacking

The Comet 16xx Series' shipping package includes the following items:

- Comet 16xx Series standalone unit
- User's manual CD Pack
- AC to DC Power adapter

Chapter 5. Operation of Web

In this chapter, you will be introduced to the Web operation of Comet 16xx Series. The chapter starts with an overview of Comet 16xx Series' Web. In addition, each main menu item of the Comet 16xx Series' Web, such as Configuration, Maintenance, and Status will be discussed.

5.1 Overview

Please connect to the LAN port, the default management port on Comet 16xx Series, and enter the IP address as the URL in the Internet browser. For example, http://192.168.0.1 as mentioned to be the default IP address.

Comet 16xx Series supports the following Web browsers:

1. Internet Explorer 6+
2. FireFox 3+
3. Safari 4+
4. Chrome 4+

5.2 Login Page

In this page, the user needs to enter correct name and password. There are three built-in accounts with different privileges.

- Administrator - username: admin, password: admin
- User (Operator) - username: user, password: user
- Guest (Monitoring) - username: guest, password: guest

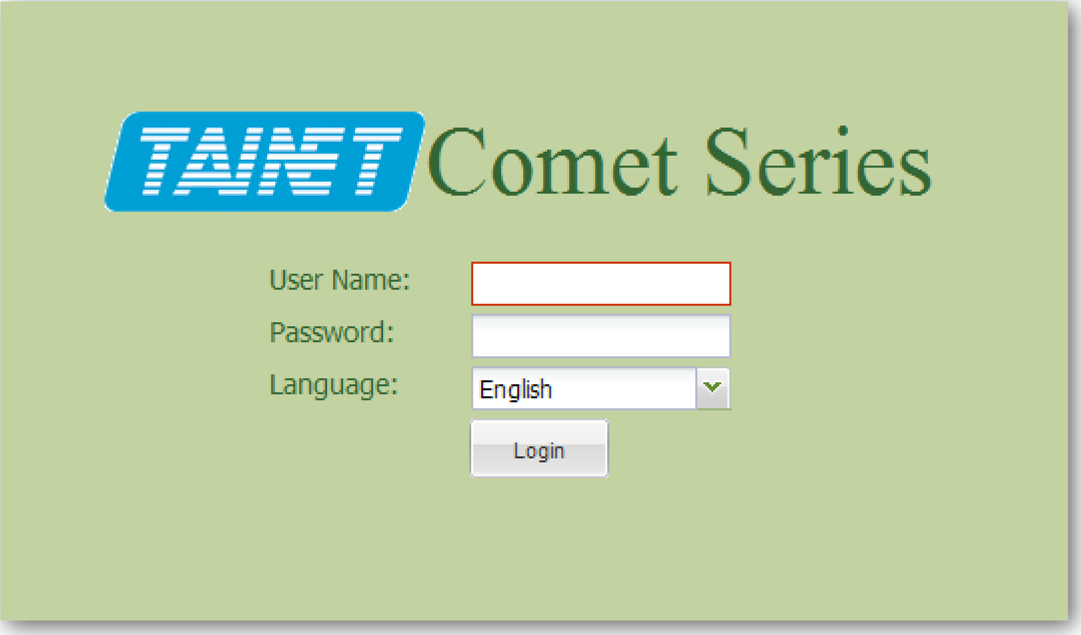

TAINET Comet Series
User Name:
Password:
Language:
English
Login

Figure 5-1 Login Page

Please use the following pull down menu option to select operation language.

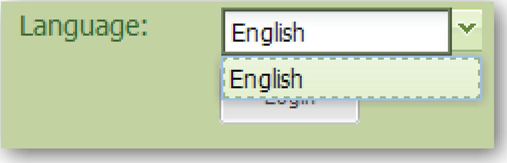

Language:
English
English

Figure 5-2 Language selection

5.3 Status

Local, remote and Ethernet status can be obtained in this section.

5.3.1 Local/Remote Status

For 4-wire model, there are two loop indexes: loop 1 and loop 2. Thus, for 2-wire model, only loop 1 is available. Comet 1608 supports up to 8-wire, there will be loop 1~4 available in Comet 1608.

The following information is shown: Line Status, Current Alarm, Current Performance, and Loopback Test Status (Only for CO side).

NOTE: For Comet 16xx Series 4-wire model, the total speed is the sum of

Loop 1 Line Rate and Loop 2 Line Rate.

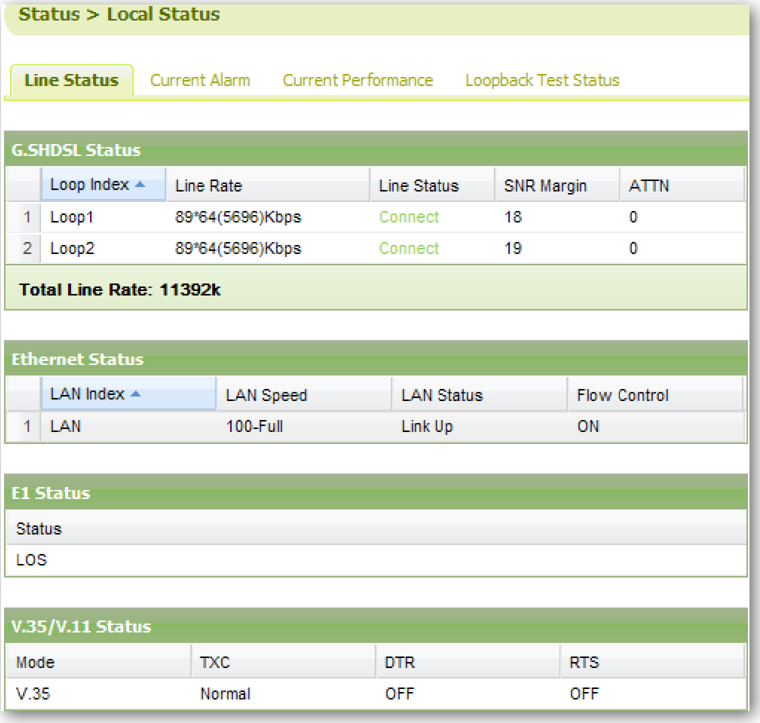
For example, if Loop 1 is 89*64k = 5696kbps, and Loop 2 is also 5696kbps. The total speed of this device is 5696k + 5695k=11392kbps.

The following interface status is shown in Line Status: G.SHDSL Status, Ethernet Status, E1 Status and V.35/V.11 Status.

G.SHDSL Status shows the following information: Loop Index, Line Rate, Line Status, SNR (Signal Noise Ratio) Margin and ATTN.

Ethernet Status shows the following information: LAN Index, LAN Speed, LAN Status and Flow Control.

V.35/V.11 Status shows the following information: Mode, TXC, DTR and RTS.



G.SHDSL Status

	Loop Index ▲	Line Rate	Line Status	SNR Margin	ATTN
1	Loop1	89*64(5696)Kbps	Connect	18	0
2	Loop2	89*64(5696)Kbps	Connect	19	0

Total Line Rate: 11392k

Ethernet Status

	LAN Index ▲	LAN Speed	LAN Status	Flow Control
1	LAN	100-Full	Link Up	ON

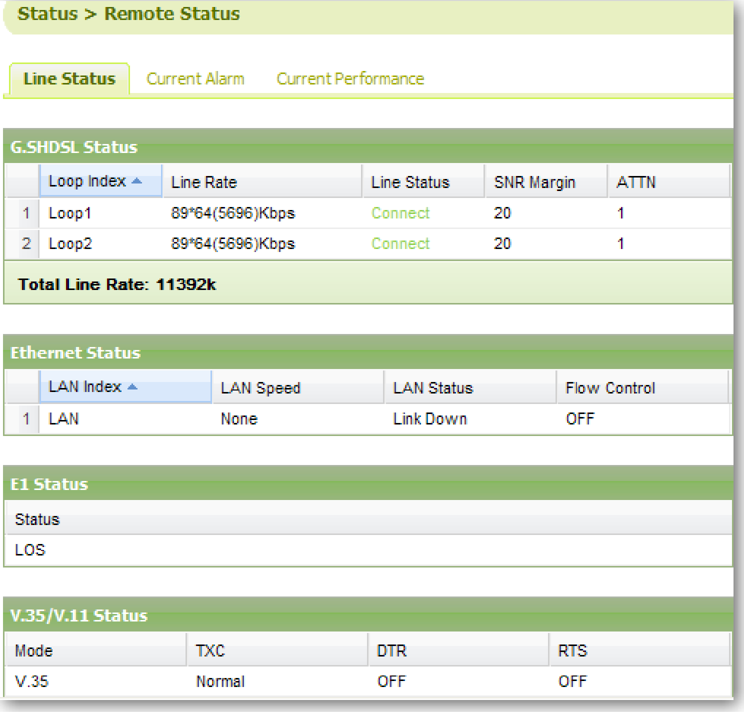
E1 Status

Status
LOS

V.35/V.11 Status

Mode	TXC	DTR	RTS
V.35	Normal	OFF	OFF

Figure 5-3 Local Status


Status > Remote Status
Line Status
Current Alarm
Current Performance

G.SHDSL Status

	Loop Index	Line Rate	Line Status	SNR Margin	ATTN
1	Loop1	89*64(5696)Kbps	Connect	20	1
2	Loop2	89*64(5696)Kbps	Connect	20	1

Total Line Rate: 11392k

Ethernet Status

	LAN Index	LAN Speed	LAN Status	Flow Control
1	LAN	None	Link Down	OFF

E1 Status

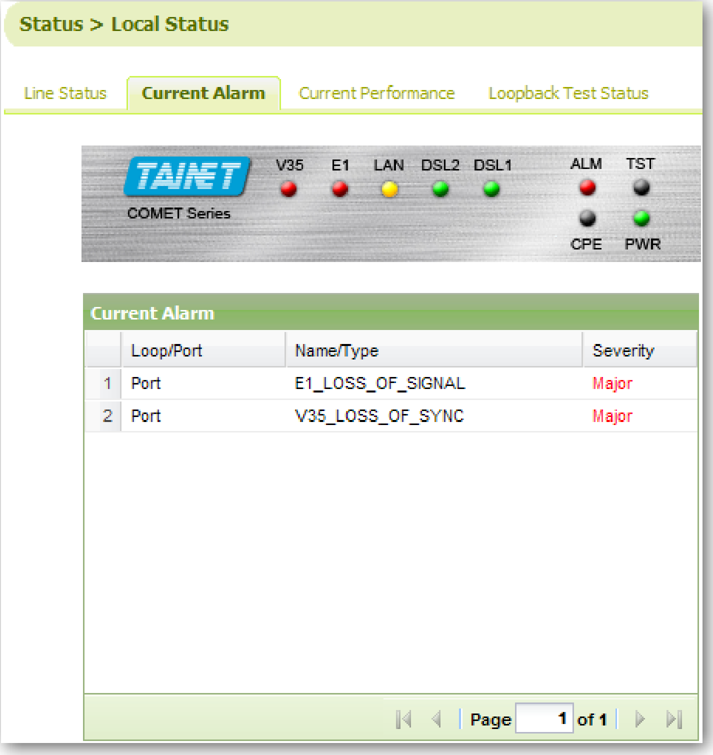
Status
LOS

V.35/V.11 Status

Mode	TXC	DTR	RTS
V.35	Normal	OFF	OFF

Figure 5-4 Remote Status

Current Alarm shows the following information: Loop/Port, Name/Type and Severity.


Status > Local Status
Line Status
Current Alarm
Current Performance
Loopback Test Status
TAINET
COMET Series
V35
E1
LAN
DSL2
DSL1
ALM
TST
CPE
PWR

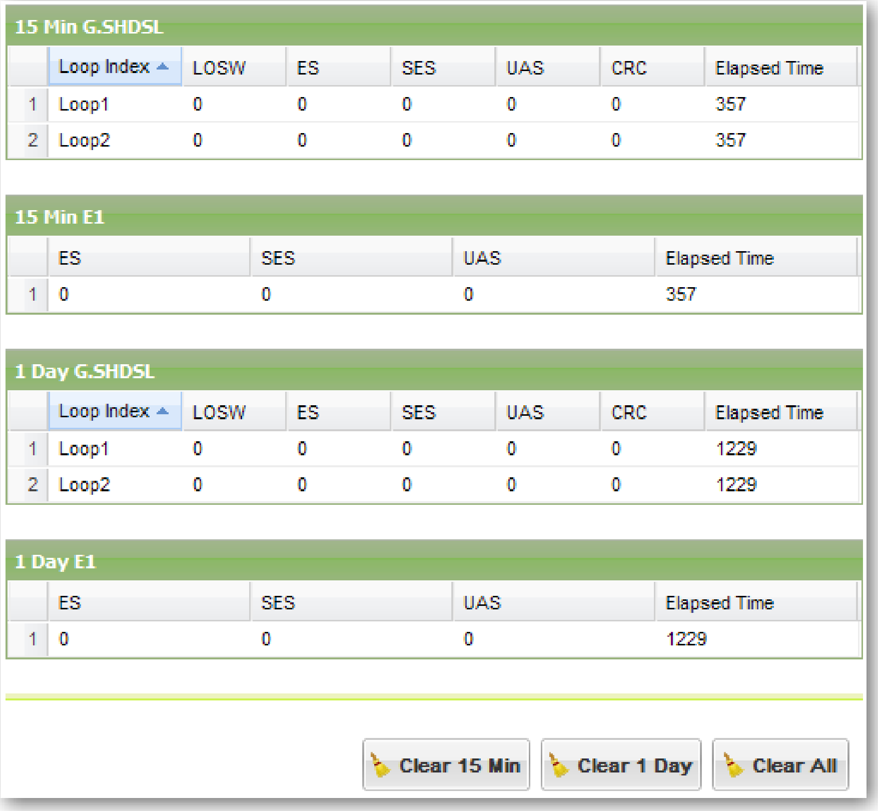
Current Alarm

	Loop/Port	Name/Type	Severity
1	Port	E1_LOSS_OF_SIGNAL	Major
2	Port	V35_LOSS_OF_SYNC	Major

Page 1 of 1

Figure 5-5 Current Alarm

Current Performance shows the current performance error of G.SHDSL and E1 in 15 minutes and 1 day duration.



15 Min G.SHDSL

	Loop Index ▲	LOSW	ES	SES	UAS	CRC	Elapsed Time
1	Loop1	0	0	0	0	0	357
2	Loop2	0	0	0	0	0	357

15 Min E1

	ES	SES	UAS	Elapsed Time
1	0	0	0	357

1 Day G.SHDSL

	Loop Index ▲	LOSW	ES	SES	UAS	CRC	Elapsed Time
1	Loop1	0	0	0	0	0	1229
2	Loop2	0	0	0	0	0	1229

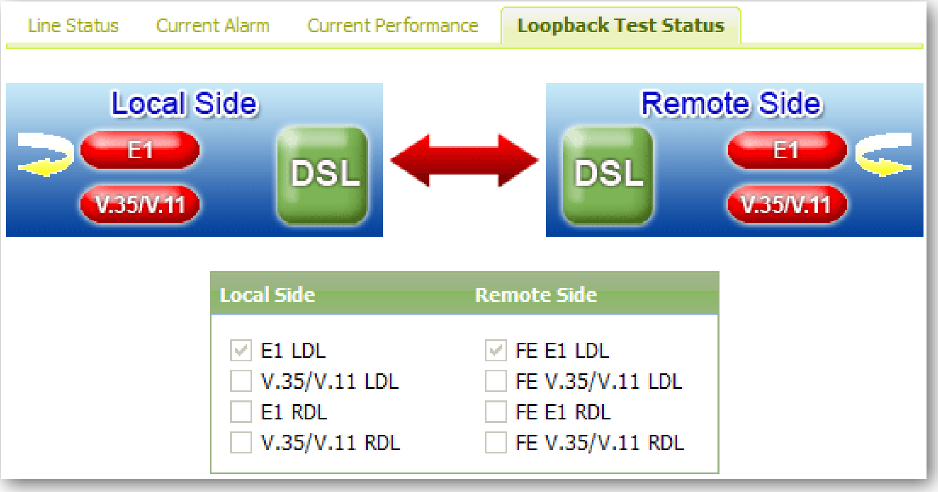
1 Day E1

	ES	SES	UAS	Elapsed Time
1	0	0	0	1229

Clear 15 Min
Clear 1 Day
Clear All

Figure 5-6 Current Performance

Loopback Test Status shows the type of loopback test currently being used.



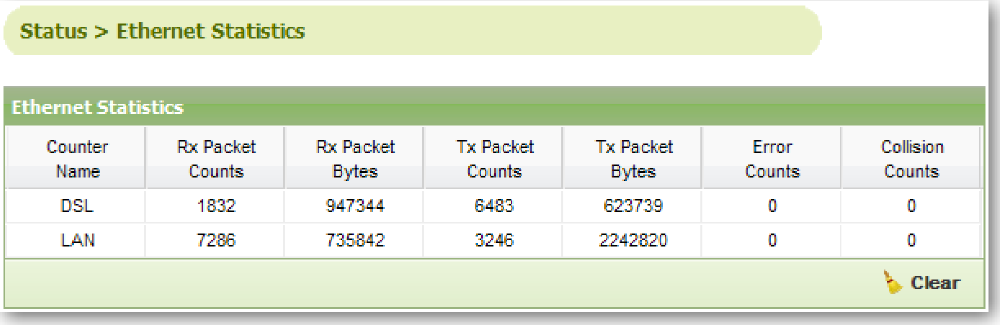
Line Status
Current Alarm
Current Performance
Loopback Test Status
Local Side
E1
V.35/V.11
DSL
Remote Side
DSL
E1
V.35/V.11

Local Side	Remote Side
☑ E1 LDL	☑ FE E1 LDL
☐ V.35/V.11 LDL	☐ FE V.35/V.11 LDL
☐ E1 RDL	☐ FE E1 RDL
☐ V.35/V.11 RDL	☐ FE V.35/V.11 RDL

Figure 5-7 Loopback Test Status

5.3.2 Ethernet Statistics

The following information is displayed: Counter Name, Rx Packet Counts, Rx Packet Bytes, Tx Packet Counts, Tx Packet Bytes, Error Counts and Collision Counts.


Status > Ethernet Statistics
Ethernet Statistics
Clear

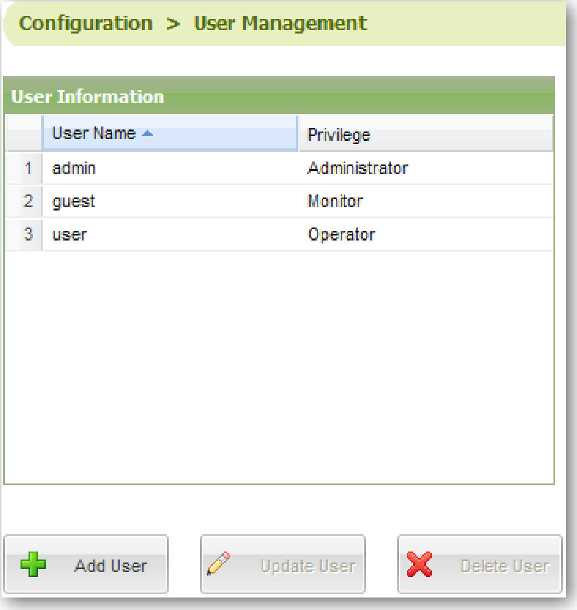
Counter Name	Rx Packet Counts	Rx Packet Bytes	Tx Packet Counts	Tx Packet Bytes	Error Counts	Collision Counts
DSL	1832	947344	6483	623739	0	0
LAN	7286	735842	3246	2242820	0	0

Figure 5-8 Ethernet Statistics

5.4 Configuration

5.4.1 User Management

There are three built-in users in Comet 16xx Series: Admin, Guest and User. The user can add, delete, and update user's name and password.

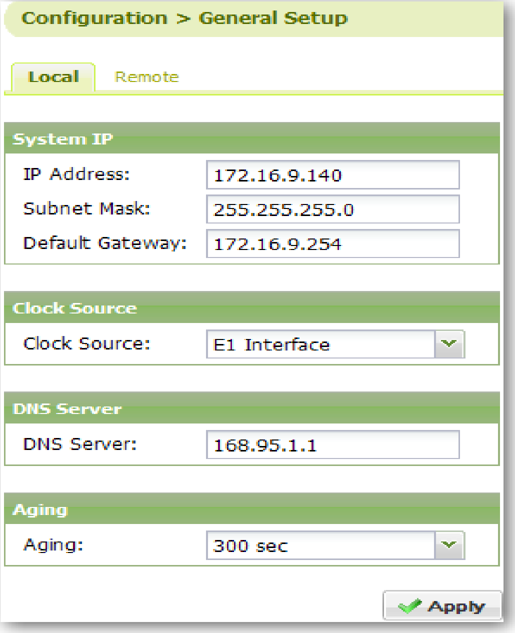

Configuration > User Management
User Information
Add User
Update User
Delete User

	User Name	Privilege
1	admin	Administrator
2	guest	Monitor
3	user	Operator

Figure 5-9 User Management

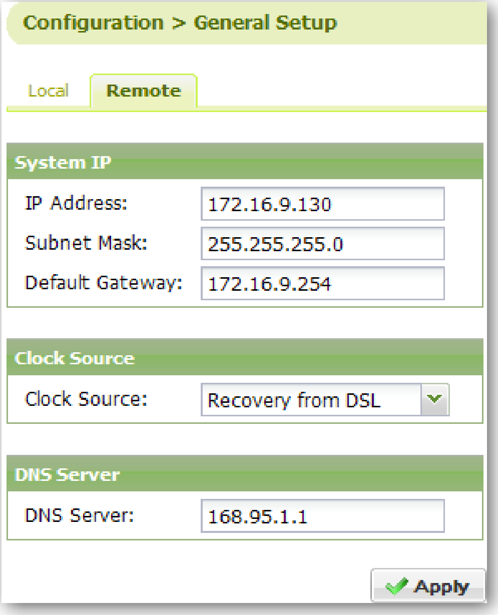
5.4.2 Local/Remote General Setup

Users can set up the system IP, Clock Source, DNS Server and Aging time (only for CO side). There are four clock sources available for the user to select: Internal, E1 Interface, V.35/V.11 and Recovery from DSL. The default clock source is Recovery from DSL. User can also set up the time to release a MAC (Aging time) at: 1 sec, 18 sec, 75 sec or 300 sec. The default aging time is 300 sec. Comet 16xx Series also allows the user to set up the IP address of CPE from CO.


Configuration > General Setup
Local
Remote
System IP
Clock Source
DNS Server
Aging
Apply

IP Address: 172.16.9.140
Subnet Mask: 255.255.255.0
Default Gateway: 172.16.9.254
Clock Source: E1 Interface
DNS Server: 168.95.1.1
Aging: 300 sec

Figure 5-10 Local General Setup

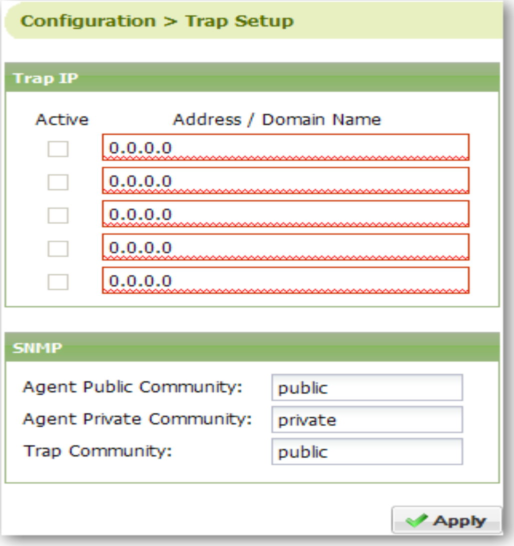

Configuration > General Setup
Local
Remote
System IP
Clock Source
DNS Server
Apply

IP Address: 172.16.9.130
Subnet Mask: 255.255.255.0
Default Gateway: 172.16.9.254
Clock Source: Recovery from DSL
DNS Server: 168.95.1.1

Figure 5-11 Remote General Setup

5.4.3 Trap Setup

The TrapIP Address can be configured here. There are five sets of TrapIP Address available. If DNS Server is set in General Setup, users can enter the domain name instead of IP address.



Configuration > Trap Setup

Trap IP

Active	Address / Domain Name
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0
☐	0.0.0.0

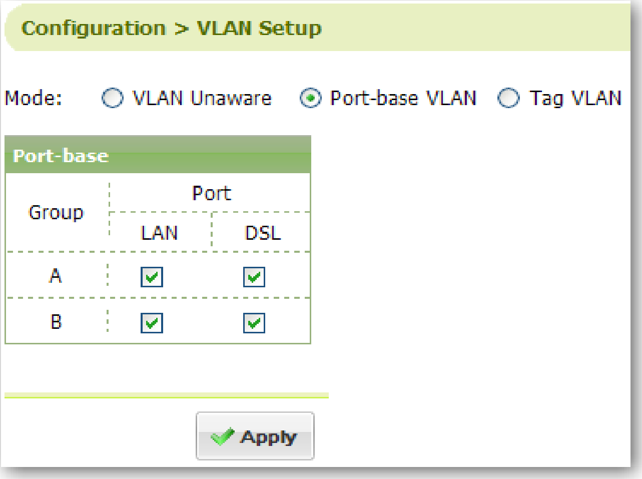
SNMP

Agent Public Community: public
Agent Private Community: private
Trap Community: public

Figure 5-12 Trap Setup

5.4.4 VLAN Setup

There are two modes of VLAN available on Comet 16xx Series: Port-base and Tag VLAN. In Tag VLAN, user can define his own VLAN table by adding, updating or deleting the VLAN tags. Once the Tag VLAN is enabled, only traffic with tags in the VLAN table will be allowed to enter Comet 16xx Series.



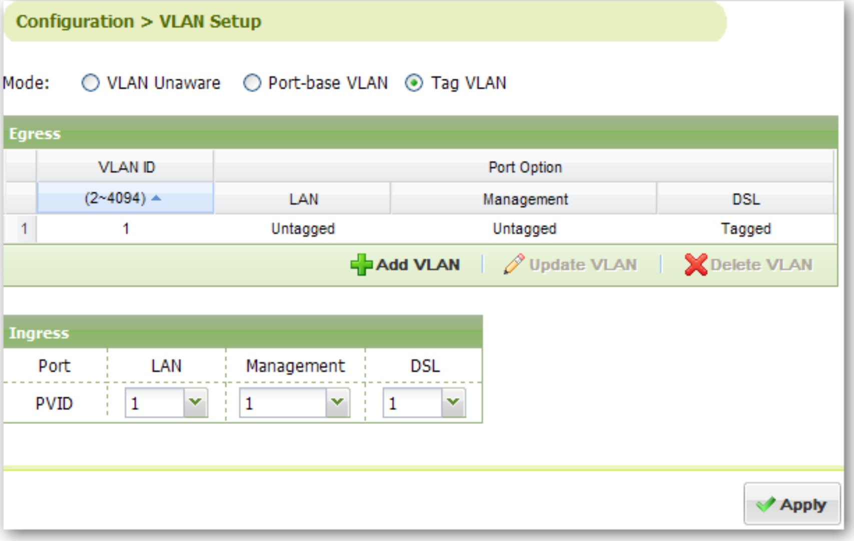
Configuration > VLAN Setup

Mode: ○ VLAN Unaware ● Port-base VLAN ○ Tag VLAN

Port-base

Group	Port LAN	Port DSL
A	☑	☑
B	☑	☑

Figure 5-13 Port-base VLAN



Configuration > VLAN Setup

Mode: ○ VLAN Unaware ○ Port-base VLAN ● Tag VLAN

Egress

	VLAN ID	Port Option		
	(2~4094)	LAN	Management	DSL
1	1	Untagged	Untagged	Tagged

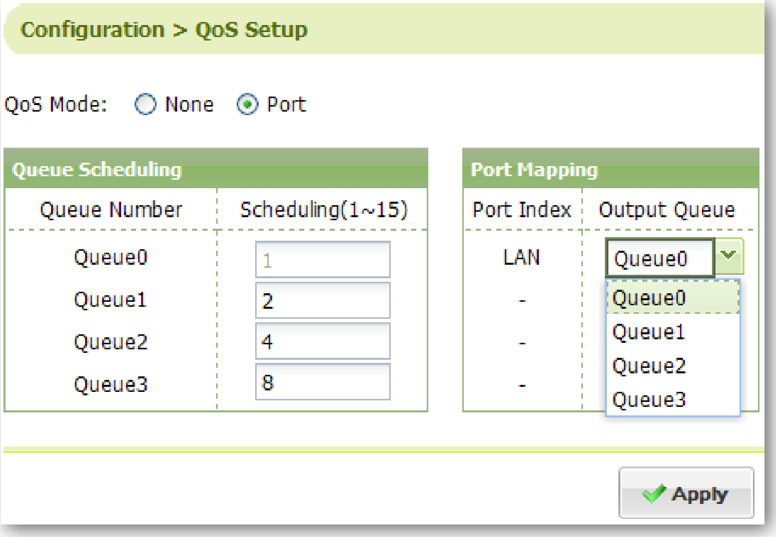
Ingress

Port	LAN	Management	DSL
PVID	1	1	1

Figure 5-14 Tag VLAN

5.4.5 QoS Setup

Comet 16xx Series supports QoS by port. There are four queues available for the user to define. User can set up the scheduling weight ranging from 1~15, the scheduling weight of queue0 is always 1.



Configuration > QoS Setup

QoS Mode: ○ None ● Port

Queue Scheduling

Queue Number	Scheduling(1~15)
Queue0	1
Queue1	2
Queue2	4
Queue3	8

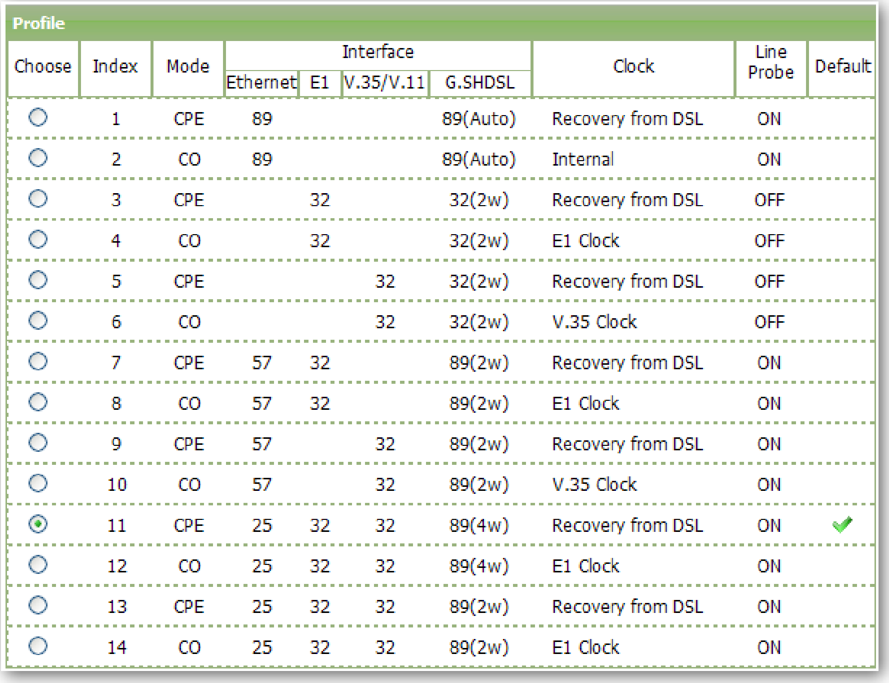
Port Mapping

Port Index	Output Queue
LAN	Queue0
-	
-	
-	

Figure 5-15 QoS by port

5.4.6 Load Local/Remote Profile

There are fourteen default profiles for the user to select. As shown in Figure 5-16, user can select CO or CPE with same settings. The default setting is profile 11 and the corresponding profile is profile 12.



Profile

Choose	Index	Mode	Interface				Clock	Line Probe	Default
			Ethernet	E1	V.35/V.11	G.SHDSL			
○	1	CPE	89			89(Auto)	Recovery from DSL	ON	
○	2	CO	89			89(Auto)	Internal	ON	
○	3	CPE		32		32(2w)	Recovery from DSL	OFF	
○	4	CO		32		32(2w)	E1 Clock	OFF	
○	5	CPE			32	32(2w)	Recovery from DSL	OFF	
○	6	CO			32	32(2w)	V.35 Clock	OFF	
○	7	CPE	57	32		89(2w)	Recovery from DSL	ON	
○	8	CO	57	32		89(2w)	E1 Clock	ON	
○	9	CPE	57		32	89(2w)	Recovery from DSL	ON	
○	10	CO	57		32	89(2w)	V.35 Clock	ON	
●	11	CPE	25	32	32	89(4w)	Recovery from DSL	ON	✓
○	12	CO	25	32	32	89(4w)	E1 Clock	ON	
○	13	CPE	25	32	32	89(2w)	Recovery from DSL	ON	
○	14	CO	25	32	32	89(2w)	E1 Clock	ON	

Figure 5-16 Load Profile

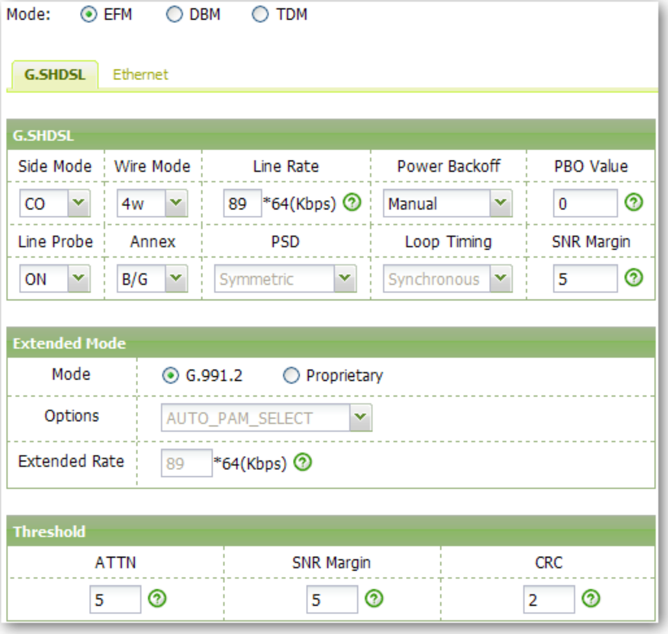
5.4.7 Local/Remote Setting

There are three modes to be selected by the users: EFM, DBM and TDM. In EFM mode, user can only modify the settings of G.SHDSL and Ethernet. E1 and V.35/V.11 modification will be available in DBM and TDM mode.

Line Probe: When it is set to ON, the device adjusts the DSL line data rate automatically according to (SNR Margin value). The DSL line quality is represented by SNR (Signal Noise Ratio) value, the higher the SNR value, the better the DSL line quality. When SNR value is very low, the DSL line might become disconnected.

SNR Margin: If the actual SNR value is lower than SNR margin value, the device will decrease the data rate to prevent SNR value from dropping so the DSL link is up.

However, users should aware of that there is a relationship between the data rate and connection distance. When the DSL line data rate goes higher, the DSL line connection distance becomes shorter and vice versa.



Mode: ● EFM ○ DBM ○ TDM

G.SHDSL

Side Mode	Wire Mode	Line Rate	Power Backoff	PBO Value
CO	4w	89 *64(Kbps)	Manual	0
Line Probe	**Annex**	**PSD**	**Loop Timing**	**SNR Margin**
ON	B/G	Symmetric	Synchronous	5

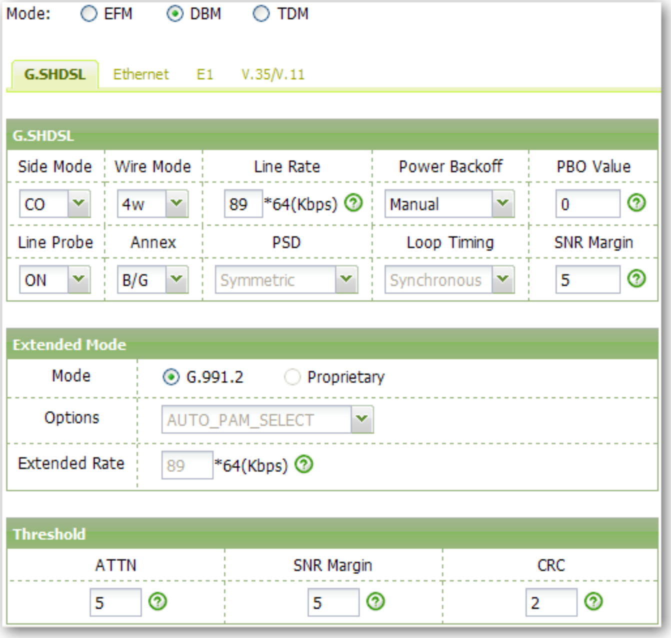
Extended Mode

Mode	● G.991.2 ○ Proprietary
Options	AUTO_PAM_SELECT
Extended Rate	89 *64(Kbps)

Threshold

ATTN	SNR Margin	CRC
5	5	2

Figure 5-17 Local/Remote setting EFM mode



Mode: ○ EFM ● DBM ○ TDM

G.SHDSL

Side Mode	Wire Mode	Line Rate	Power Backoff	PBO Value
CO	4w	89 *64(Kbps)	Manual	0
Line Probe	**Annex**	**PSD**	**Loop Timing**	**SNR Margin**
ON	B/G	Symmetric	Synchronous	5

Extended Mode

Mode	● G.991.2 ○ Proprietary
Options	AUTO_PAM_SELECT
Extended Rate	89 *64(Kbps)

Threshold

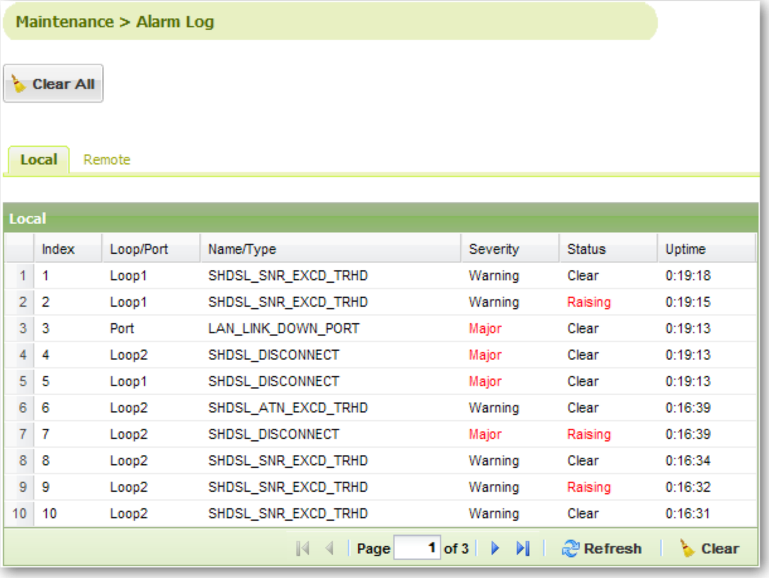
ATTN	SNR Margin	CRC
5	5	2

Figure 5-18 Local/Remote setting DBM mode

5.5 Maintenance

5.5.1 Alarm Log

The alarm history is dispalyed in this section. The user can manually refresh or clear the alarm log.

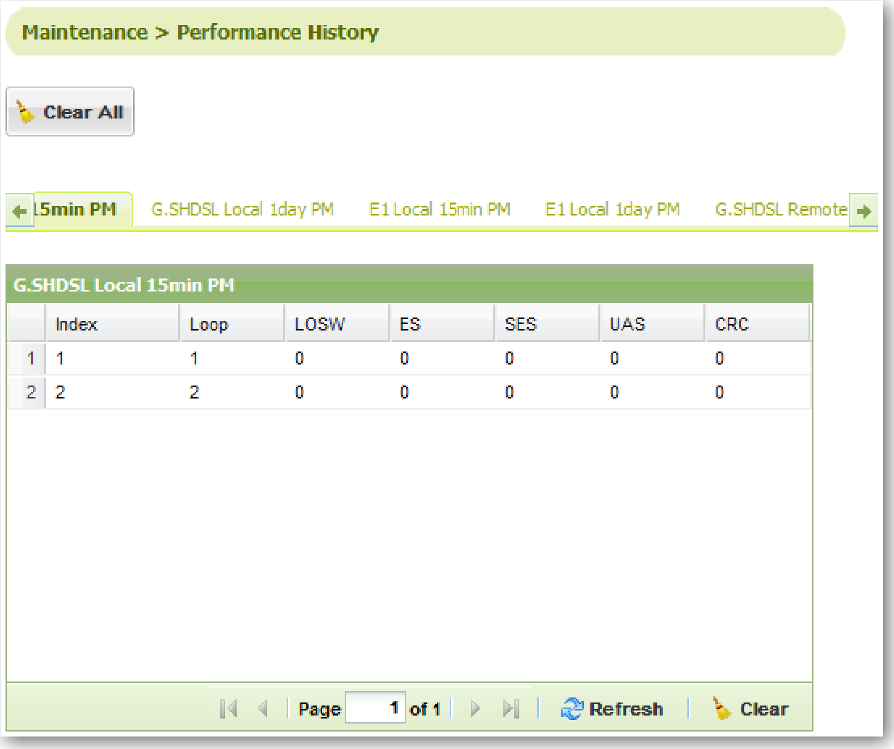

Maintenance > Alarm Log
Clear All
Local
Remote
Local
Page 1 of 3
Refresh
Clear

	Index	Loop/Port	Name/Type	Severity	Status	Uptime
1	1	Loop1	SHDSL_SNR_EXCD_TRHD	Warning	Clear	0:19:18
2	2	Loop1	SHDSL_SNR_EXCD_TRHD	Warning	Raising	0:19:15
3	3	Port	LAN_LINK_DOWN_PORT	Major	Clear	0:19:13
4	4	Loop2	SHDSL_DISCONNECT	Major	Clear	0:19:13
5	5	Loop1	SHDSL_DISCONNECT	Major	Clear	0:19:13
6	6	Loop2	SHDSL_ATN_EXCD_TRHD	Warning	Clear	0:16:39
7	7	Loop2	SHDSL_DISCONNECT	Major	Raising	0:16:39
8	8	Loop2	SHDSL_SNR_EXCD_TRHD	Warning	Clear	0:16:34
9	9	Loop2	SHDSL_SNR_EXCD_TRHD	Warning	Raising	0:16:32
10	10	Loop2	SHDSL_SNR_EXCD_TRHD	Warning	Clear	0:16:31

Figure 5-19 Alarm Log

5.5.2 Performance History

The performance history shows the errors that may occur on each loop during the 15 minutes and 1 day duration. Comet 16xx Series provides local / remote G.SHDSL and E1 performance history. The user can manually refresh or clear the performance history.


Maintenance > Performance History
Clear All
15min PM
G.SHDSL Local 1day PM
E1 Local 15min PM
E1 Local 1day PM
G.SHDSL Remote
G.SHDSL Local 15min PM
Page 1 of 1
Refresh
Clear

	Index	Loop	LOSW	ES	SES	UAS	CRC
1	1	1	0	0	0	0	0
2	2	2	0	0	0	0	0

Figure 5-20 Performance History

5.5.3 Software Upgrade

The local device can be upgraded using a TFTP server.

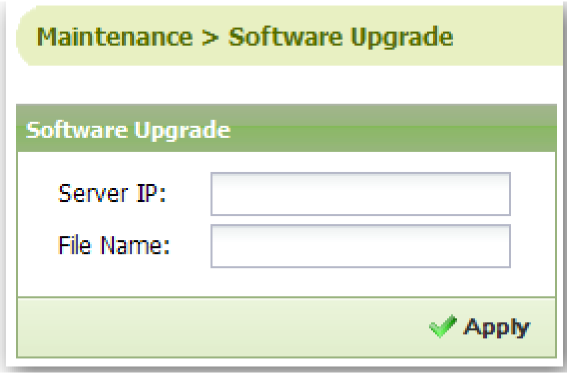
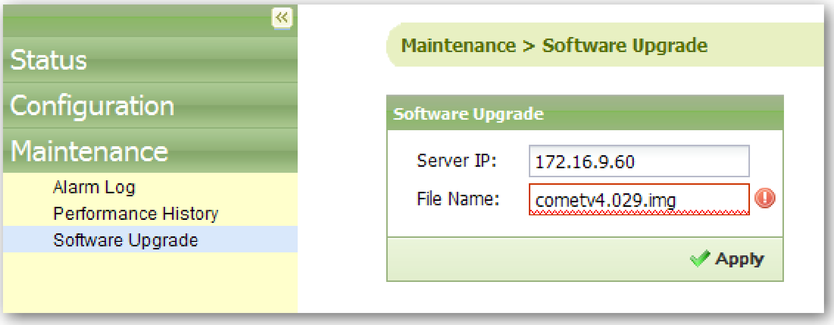

Maintenance > Software Upgrade
Software Upgrade
Server IP:
File Name:
Apply

Figure 5-21 Software Upgrade

Step 1: Input Server IP address and firmware file name.


Status
Configuration
Maintenance
Alarm Log
Performance History
Software Upgrade
Maintenance > Software Upgrade
Software Upgrade
Apply

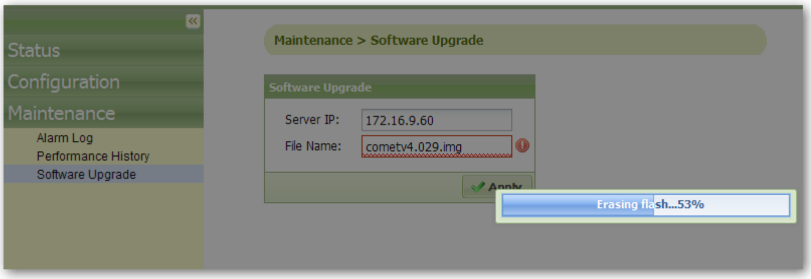
Server IP: 172.16.9.60
File Name: cometv4.029.img

Figure 5-22 Step 1 of Firmware Upgrade

Step 2: Delete all Temporary Internet files including Cookies.

IE Browser : Tools >> Internet Options >> General >> Delete Cookie, Delete Files

Step 3: Select "Apply" to start firmware upgrade.


Status
Configuration
Maintenance
Alarm Log
Performance History
Software Upgrade
Maintenance > Software Upgrade
Software Upgrade
Apply

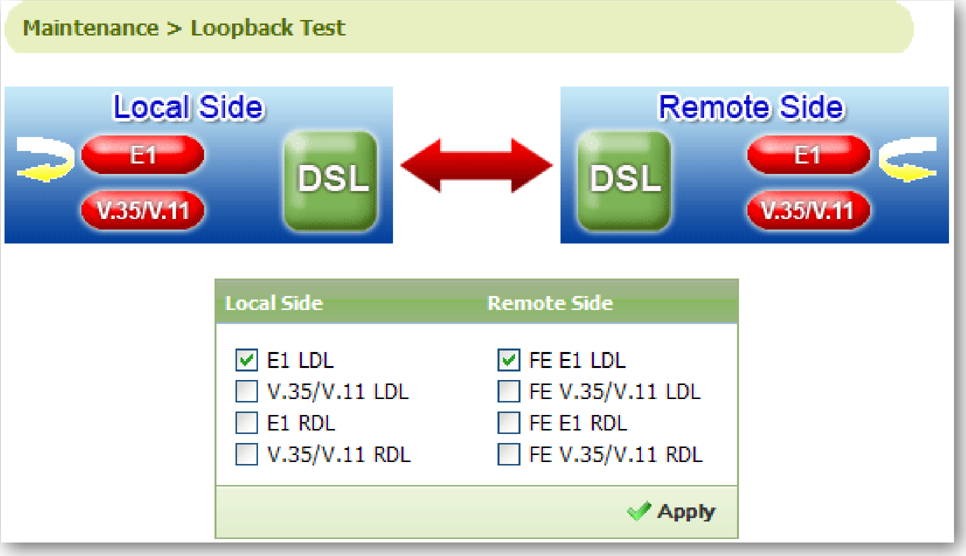
Server IP: 172.16.9.60
File Name: cometv4.029.img
Erasing flash...53%

Figure 5-23 Upgrading Firmware

After firmware upgrade complete, device will automatically reboot and return to the login page.

5.5.4 Loopback Test

Comet 16xx Series provides eight types of loopback test modes: E1 LDL, V.35/V.11 LDL, E1 RDL, V.35/V.11 RDL, FE E1 LDL, FE V.35/V.11 LDL, FE E1 RDL and FE V.35/V.11 RDL. Comet 16xx Series supports multiple loopback tests to be implemented concurrently.


Maintenance > Loopback Test
Local Side
E1
V.35/V.11
DSL
Remote Side
DSL
E1
V.35/V.11
Apply

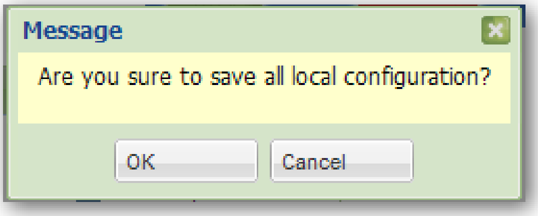
Local Side	Remote Side
☑ E1 LDL	☑ FE E1 LDL
☐ V.35/V.11 LDL	☐ FE V.35/V.11 LDL
☐ E1 RDL	☐ FE E1 RDL
☐ V.35/V.11 RDL	☐ FE V.35/V.11 RDL

Figure 5-24 Loopback Test

5.6 Save

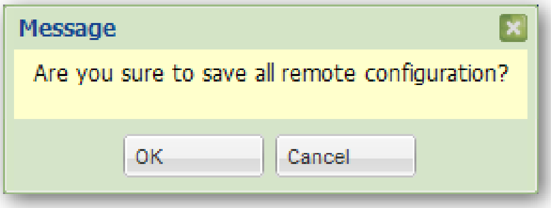
5.6.1 Local/Remote Save

Save all local/remote configurations.


Message
OK
Cancel

Are you sure to save all local configuration?

Figure 5-25 Local Save



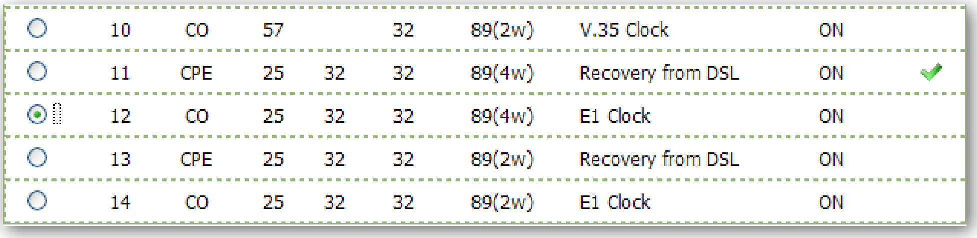
Are you sure to save all remote configuration?

Figure 5-26 Remote Save

5.7 Examples

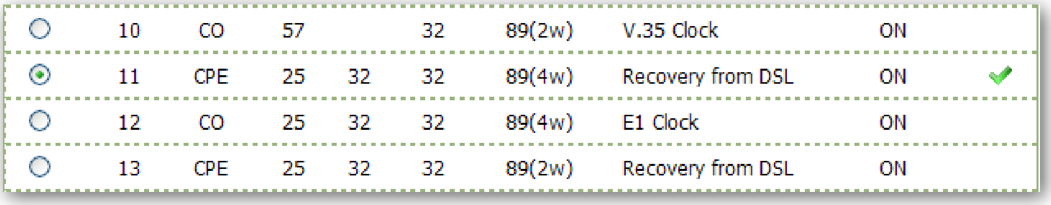
5.7.1 E1 to E1 Connection

Select profile index 12 for CO, profile index 11 for CPE.



○	10	CO	57		32	89(2w)	V.35 Clock	ON	
○	11	CPE	25	32	32	89(4w)	Recovery from DSL	ON	✓
●	12	CO	25	32	32	89(4w)	E1 Clock	ON	
○	13	CPE	25	32	32	89(2w)	Recovery from DSL	ON	
○	14	CO	25	32	32	89(2w)	E1 Clock	ON	

Figure 5-27 CO

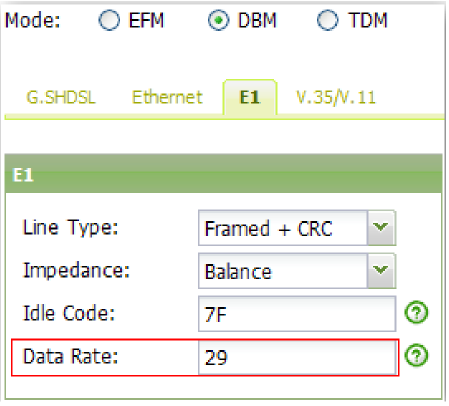


○	10	CO	57		32	89(2w)	V.35 Clock	ON	
●	11	CPE	25	32	32	89(4w)	Recovery from DSL	ON	✓
○	12	CO	25	32	32	89(4w)	E1 Clock	ON	
○	13	CPE	25	32	32	89(2w)	Recovery from DSL	ON	

Figure 5-28 CPE

Input the desired data rate.

Configuration >> Local Setting >> E1



Mode: ○ EFM ● DBM ○ TDM

Line Type: Framed + CRC

Impedance: Balance

Idle Code: 7F

Data Rate: 29

Figure 5-29 E1 Setting

Appendix A Pin Assignment

5.7.1.1 DSL RJ-45 Pin Assignment

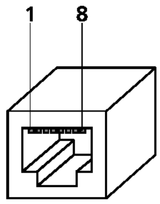


Figure 5-30 DSL RJ-45 Pin Assignment

Pin	8W	4W	2W
1	Tip(2)-		
2	Ring(2)-		
3	Tip(4)-	Tip(2)	
4	Tip(1)-	Tip(1)	Tip
5	Ring(1)-	Ring(1)	Ring
6	Ring(4)-	Ring(2)	
7	Tip(3)-		
8	Ring(3)-		

The pin assignment of G.SHDSL line is shown in Figure 5-30. The Comet 16xx Series supports LAN interface port as shown in Figure 5-31.

5.7.1.2 LAN RJ-45 Pin Assignment

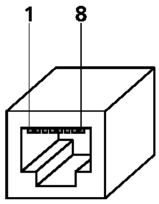


Figure 5-31 LAN RJ-45 Pin Assignment

Pin	Description
1	TD+
2	TD -
3	RD+
4	NC
5	NC
6	RD -
7	NC
8	NC

5.7.1.3 G.703 / E1 RJ-45 Pin Assignment

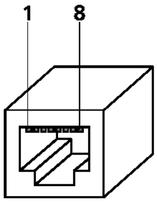


Figure 5-32 Balanced E1 RJ-45 Pin Assignment

Pin	Description
1	RX_ring
2	RX_tip
3	NC
4	Tx_ring
5	Tx_tip
6	NC
7	NC
8	NC

5.7.1.4 V.35 Pin Assignment

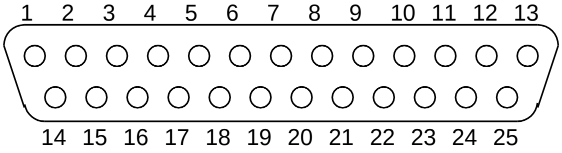

1 2 3 4 5 6 7 8 9 10 11 12 13
14 15 16 17 18 19 20 21 22 23 24 25

Figure 5-33 V.35 DB25 Pin Assignment

Pin	Description
1	FG
7	SG
4	RTS
5	CTS
6	DSR
8	DCD
20	DTR

Appendix B Trouble Report

Company	
Local Representation	
Purchase Order No	
Equipment Serial No	
Software Version	

Please describe: 1. Testing Network Structure 2. Configuration
3. Testing Network Equipment 4. Trouble Description

E-MAIL:

TEL:	FAX:
Signature:	Date: / /

TAINET COMMUNICATION SYSTEM CORP. FAX: 886-2-2658-3232
E-MAIL: **sales@tainet.net**