AMS LCT

Software Operation Guide

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AMS LCT
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Table of Contents

List of Figures

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List of Tables

Chapter 1 Preface

This preface describes the "*AMS LCT Software Operation Guide*" about how it is organized, and its document conventions. It contains the following topics.

- Purpose
- Organization
- Conventions

Purpose

The purpose of this guide is to provide detailed information and description of AMS (Advanced Management System) LCT(Local Craft Terminal) software, despite the variation in experience of the technicians. This document is intended to help them to operate the software and connect the D-Link DAS4 Series IP-DSLAM to the network as quickly as possible.

Organization

This guide contains the following chapters:

- Preface
- DAS4 Series Management System Overview
- Getting Started AMS
- Initiating the NE
- Profile Management
- Interface Port Management
- Connection Port Management
- Fast Provision Management
- Performance Management
- Fault Management
- Diagnosis Management
- General System Management
- Administrating and Maintenance
- Abbreviations and Acronyms
- Index

Conventions

This section describes the conventions used in this guide.

NE/NEs mentioned in this document means DAS4 Series IP-DSLAM. unless specifically indicated..

ADSL mentioned in this document covers ADSL, ADSL2, and ADSL2+, unless specifically indicated. The **ADSL** specified in this document complies with ITU-T Rec. G.992.1, G.992.2, G.992.3 and G.992.5.

SHDSL mentioned in this document complies with ITU-T Rec. G.991.2,

xDSL hereinafter is referred as both the ADSL and SHDSL, unless specifically indicated.

CLI Ex – The command line management with a local console or Telnet through in-band or out-of-band IP interface for CIT (Craft Interface Terminal) connection.

This sign indicates the **NOTICE**. A note contains helpful suggestions or reference relay on the topical subjects.

This sign indicates the **TIP**. Performing the information described in the paragraph will help you solve a problem. The tip information might not be troubleshooting or even an action, but could be useful information.

This sign indicates the **CAUTION**. In this situation, you might do something that could result in equipment damage or loss of data.

This sign indicates the DANGER. You are in situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Chapter 2 DAS4 Series Management System Overview

This chapter describes the AMS LCT user interface. This chapter contains the following sections:

- AMS LCT Overview
- AMS LCT Feature
- System Hardware and Software Requirement

AMS LCT Overview

AMS LCT is designed according to the following principles:

- Monitor and configure the network in real-time such as diagnostics, status gathering, service provision and NE reset
- Easy to maintain. The AMS LCT is designed on the PC platform and is compatible to Microsoft Windows 98SE/ME/2000/XP
- Easy to operate. The AMS LCT provides user-friendly configuration interface
- Various alarm severity levels are provided for all possible events/conditions

AMS LCT Features

The AMS LCT system supports various functions for the effective operation and maintenance of the NE. The system supports, fault management (FM), performance management (PM), configuration management (CM), and security management (SM) of DAS4 Series IP-DSLAM.

Real-time System Status Monitoring

The AMS LCT collects the SNMP traps for the discrete alarm, faceplate LEDs, and system failures in real time for monitoring and displays of the xDSL and network interfaces, and Fan, Power, and Alarm relay status.

The NE indicated with colors for different status by GUI interface. Any addition and deletion of element or plug-in unit of NE will automatically detect and reflected in AMS LCT.

Administration

Administrative function allows operator to plan or manage their NEs on the network.

Error Handling

When execution is not successful, error message will be displayed, and the operator has to configure problem entries and the process before proceeding further.

AMS LCT support function to depict the failure status of the NE in registered manage network.

System Hardware and Software Requirement

AMS LCT is designed on a high stability and reliability platform, for performing fluent in management. The AMS LCT recommends the hardware/software in list below to achieve the performance.

The recommend hardware & OS for AMS LCT:

- Pentium 4 1.6 GHz or higher
- 256 MB RAM
- 40 GB Hard disk
- 10/100 Base-T Ethernet network card

The Software require for AMS LCT System:

- Operating System – Microsoft Windows 98SE/ME/2000/XP (2000 is recommend)
- AMS Installation Package

Chapter 3 Getting Started AMS LCT

This chapter describes on how to install the AMS LCT, and provides the general navigating concept of AMS LCT to help you to quickly handle it.

This chapter contains the following sections:

- Installing the AMS LCT
- Starting AMS LCT Session
- Navigating in AMS Client
- Managing the Trap Log View
- Icon and LED Sign Overview
- Error Handling Dialog
- Data Exporting and Graphic Displaying

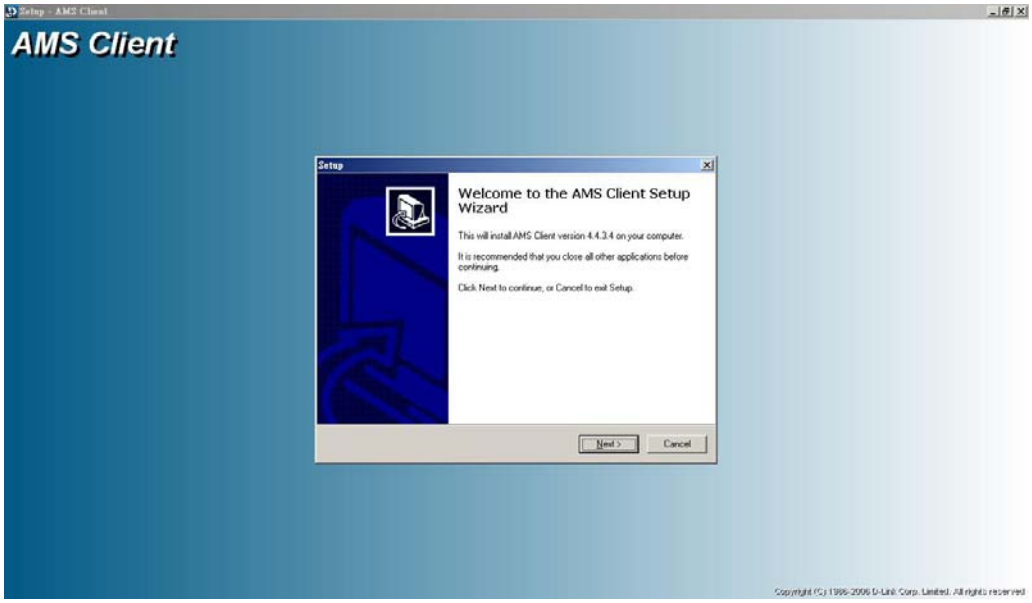
Installing the AMS LCT

Before installing the AMS LCT software, please make sure both of your requirement of hardware and software are completed with recommend specification list in “Chapter 2 System Hardware and Software Requirement”.

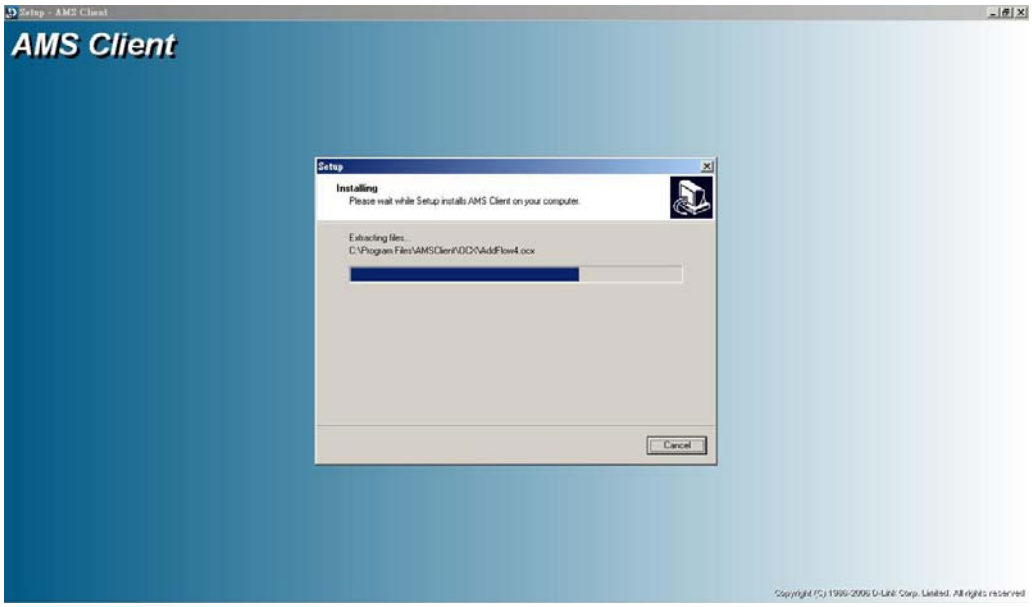
Step 1 Insert the ‘AMS Installation Package’ CD to your CD/DVD driver, from the directory of ‘**AMS_LCT**’ double click on the ‘**AMS_GUI_LCT_setupVx.x.x.x**’ executable file.

Step 2 Select ‘Yes’ from the launched window to continuous the installation.

Step 3 Click the ‘Next’ button to start the setup wizard.



Step 4 Identify the program directory and additional task before processing installation.



Step 5 Once the installation is completed, you will have an ‘AMS Client’ icon on your desktop, double click this icon to run the AMS Client software.

Step 6 Double click this icon on desktop to run the AMS Client software.

Starting a AMS LCT Session

Double click the ‘AMS Client’ icon on your desktop to launch the AMS LCT login dialog.

Use default user and community to access with read-write privilege.

User: **admin**
Community: **netman**

For default read-only privilege using:

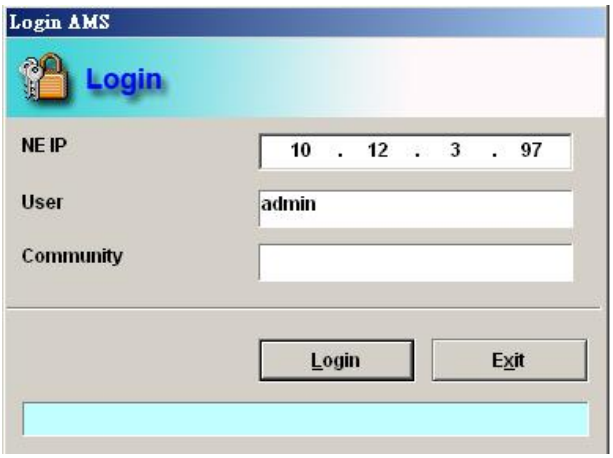
User: **guest**
Community: **public**

You can change the login account and privilege from CLI Ex mode or later from AMS LCT.

To start an AMS LCT session, follow these steps.

Step 1 Open AMS LCT session by double clicking the 'AMS Client' icon on the MS-Windows.
The Login window appears.

Figure 3-1 AMS LCT Login Dialog



Step 2 Specify NE IP address and enter the associated user name and SNMP community.

Step 3 Click **Login** to proceed.
If you enter an unknown user name or invalid community, the system will display an error message. To continue, click **OK**, and then enter a valid user name and SNMP community.
When you enter a valid user name and SNMP community, the session starts and the AMS LCT application appears.

NOTE Both the user name and SNMP community are case-sensitive.

NOTE If you don't have any account creates initially or you have trouble to login, please refer to DAS4 Series System Configuration Guide *"Chapter 2 Managing the Session Login Account"* to managing the user account, also refer to *"Chapter 3 Configuring the SNMP Manager"* to managing the SNMP community.

Navigating of AMS LCT

AMS LCT software uses familiar functionality and menus found in most MS-Windows-based graphical user interface. This section describes the functions available in AMS LCT.

Keyboard Commands

Certain Keyboard commands are available in AMS LCT. These commands serve as an alternative to mouse functionality.

Keyboard Command	Description
Operation	
Tab	Move among the fields in a window/dialog.
Arrow Keys	Scroll through the text in a data entry field or through the values of a list box.
Alt Key	Access a menu by typing the appropriate keyboard command.

Right Mouse Button

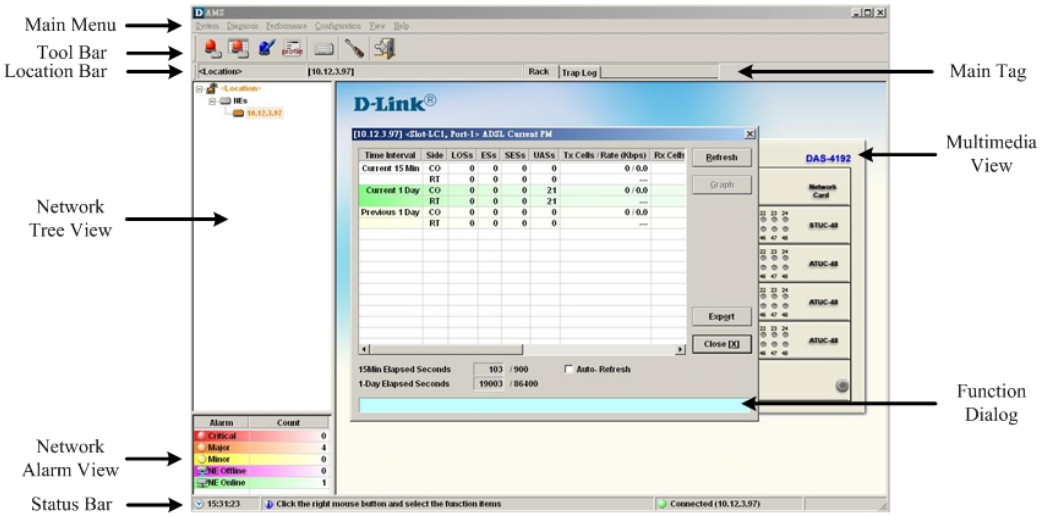
AMS LCT software provides right-click mouse functionality. By positioning the mouse cursor over an “NE object”, you can click the right mouse button to view the launched **Function Menu**. The **Function Menu** options available depend on selected “NE object”. You can then use the left or right mouse button to open the associated function dialog window.

The “NE object” denotes the NE entity, Shelf, Slot/Box, and Port displaying on the Rack tab of Multimedia View area or Network Tree View area.

AMS LCT Window Overview

The AMS LCT element window contains several parts; each part varies depending on the window in which you are viewing or configuring.

Figure 3-2 AMS LCT Operation Window



Managing the Trap Log View

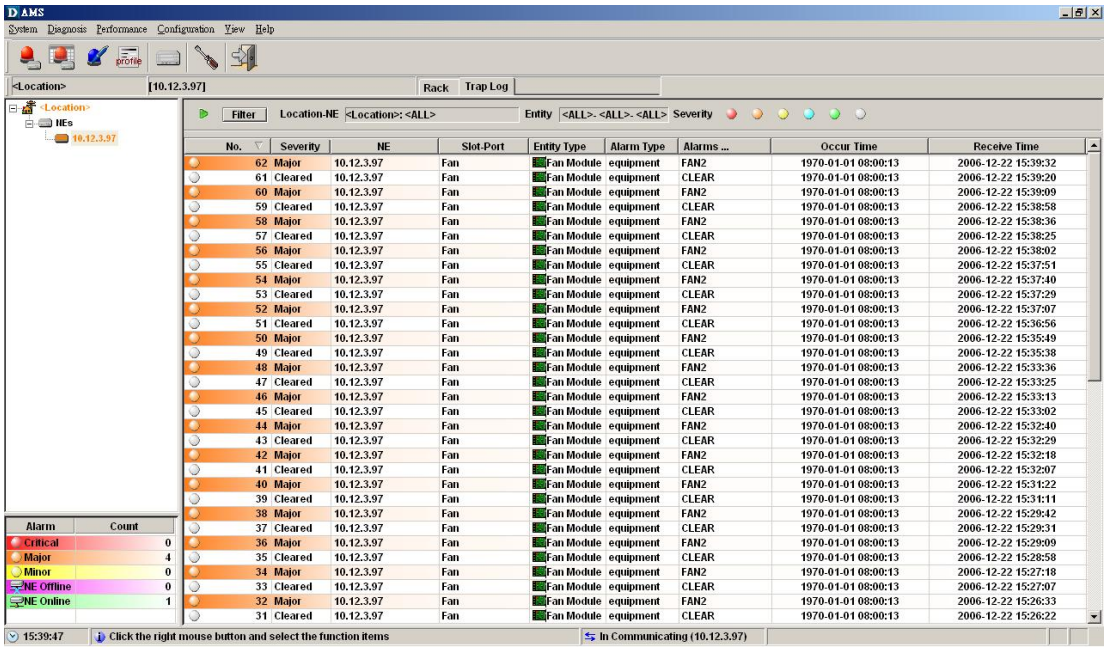
Click the ‘**Trap Log**’ tab view to display the system trap (alarm) information.

The NE would send SNMP traps to a designated host IP address when there is one or more status are changed. The “Trap Log” records and saves the SNMP traps on the host which is specified a trap station since the host logged in LCT.

Operator will not see the trap logs on LCT if the host IP address is not one of the trap stations.

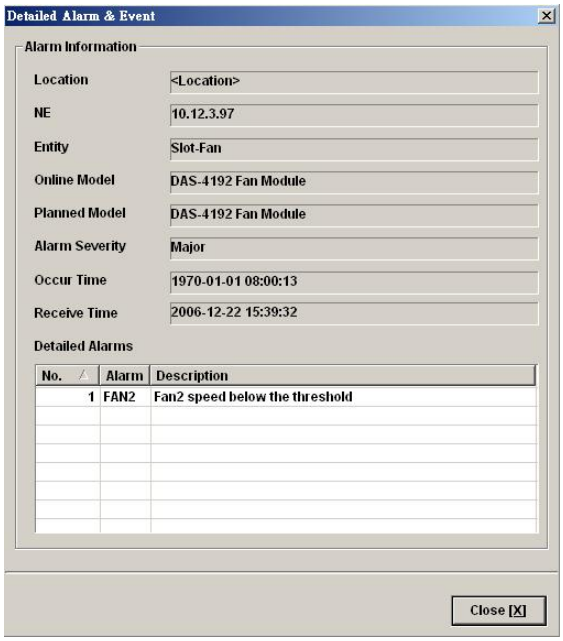
Chapter 4 “Configuring the SNMP Trap Manager” shows you how to configure the SNMP trap station.

Figure 3-3 AMS LCT Trap Log View



Select a specific trap from **List Table** and using right mouse button to launch the **Function Menu**, select ‘**Detail**’ to view the detailed alarm & event dialog.

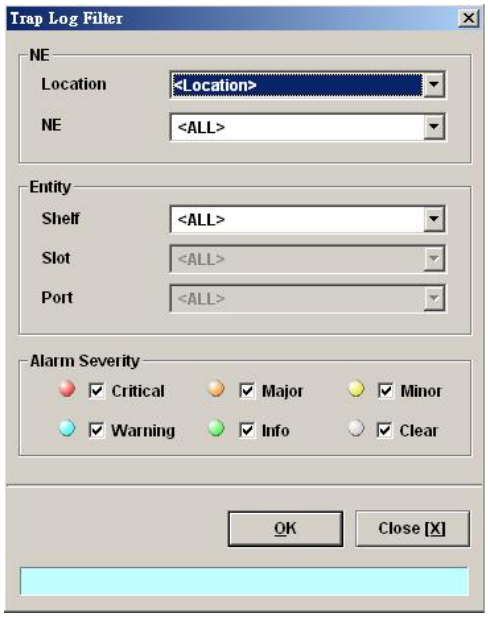
Figure 3-4 Detailed Alarm & Event Dialog



You can also select the ‘**Pause**’ or ‘**Reset**’ from launched **Function Menu** to stop refreshing traps or clearing all traps cached in the AMS LCT.

Click the ‘**Filter**’ button at top-left corner of ‘**Trap Log**’ tab view to open the Trap Log Filter dialog. Here you can define the rule of showing filtering new coming traps. This is a useful tool to filter out unnecessary traps.

Figure 3-5 Trap Log Filter Dialog



Icons and LED Sign Overview

Table 3-1 lists the icons and LED signs used inside the AMS LCT.

Table 3-1 Icon and LED Sign Description

Symbol	Description
Tool Combo-box	
	System active alarm (current alarm).
	System history alarm (history alarm).
	System alarm profile (alarm definition).
	System profile configuration.
	NE management.
	AMS LCT Options.
	Exit AMS LCT.

Table 3-1 Icon and LED Sign Description (Continued)

Symbol	Description
Status Combo-box	
	Hint information.
	PC data and time.
	Connection status. (idle, disconnected, in communication)
Network List View	
	Location contains Critical alarm
	Location contains major alarm
	Location contains minor alarm
	Location contains event alert
	Location contains no alarm
	NE root node.
	NE is disconnect
	NE is unknown
	NE contains critical alarm
	NE contains major alarm
	NE contains minor alarm
	NE contains events
	NE is in normal status
Network Alarm View	
	Critical Alarm
	Major Alarm
	Minor Alarm
	NE offline
	NE online
Rack View	
	Port disable or no such profile
	Port contains critical alarm
	Port contains major alarm
	Port contains minor alarm
	Port contains warning alarm
	Port contains no alarm / Port linked
	NC card in working mode (DAS4672 only)
	NC card in standby mode (DAS4672 only)
	NC / LC card type is mismatch
	NC / LC card not exist
	The LC board is operated in VLAN tag Pass-through enable mode.
	The LC board is operated in VC MUX mode.

Table 3-1 Icon and LED Sign Description (Continued)

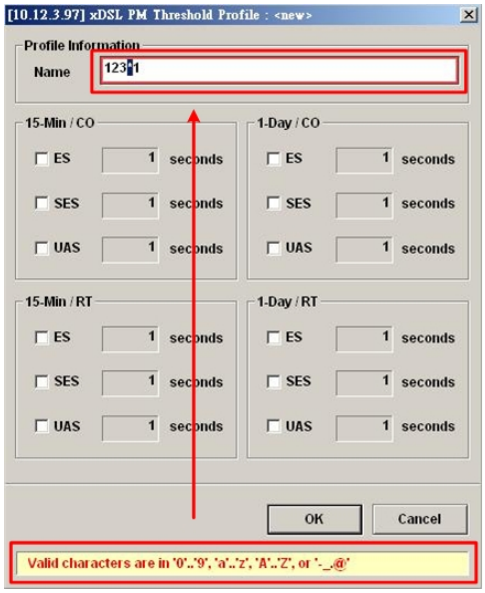
Symbol	Description
Trap Log View	
	Current Critical alarm
	Current Major alarm
	Current Minor alarm
	Current Event alarm
	Alarm clear / No alarm
	Identify as card alarm
	Identify as port alarm
Function Dialog	
	Indicates data in list table is active and valid.
	Indicates data in list table is inactive or invalid.
	Indicates the status of specific port in list table is link up.
	Indicates the status of specific port in list table is link down.
	Indicates the status of task is finished.
	Indicates the status of task is successful.
	Indicates the status of task is failed.
	Indicates the item is checked.
	Indicates the item is unchecked.
	Indicates the field is sorted by ascendant order in list table.
	Indicates the field is sorted by descendant order in list table.
	Indicates the field is sorted by another field in list table.
	Indicates the backup is automatically generated.
	Indicates the backup is manually generated.

Error Handling Dialog

AMS LCT provides the error handling dialog. Each dialog has a text block at button edge, this text block will shown error message and highlight the red rectangle at specifics box where contains invalid or illogical parameter. You must fix the error to proceed with the task.

The following figure depicts the example on how dialog performs the error handling.

Figure 3-6 Error Handling Message



Data Exporting and Graphic Displaying

AMS LCT provides the data exporting of dialog List Table information.

Figure 3-7 Export Dialog

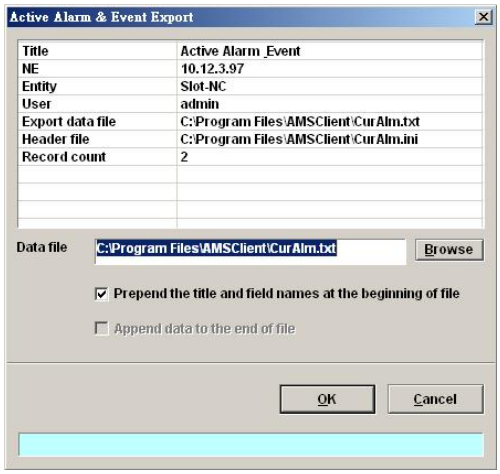


Table 3-2 Export Dialog Description

Field	Description
Data file	Data file location
Prefix the title and field names at the beginning of file	Check to add the title and fields on the front of output file.
Append data to the end of file	Check to append data to the end of output file.
Browse	Click to select the output file by way of file manager.

Figure 3-8 2D/3D Data Graph Displaying Dialog

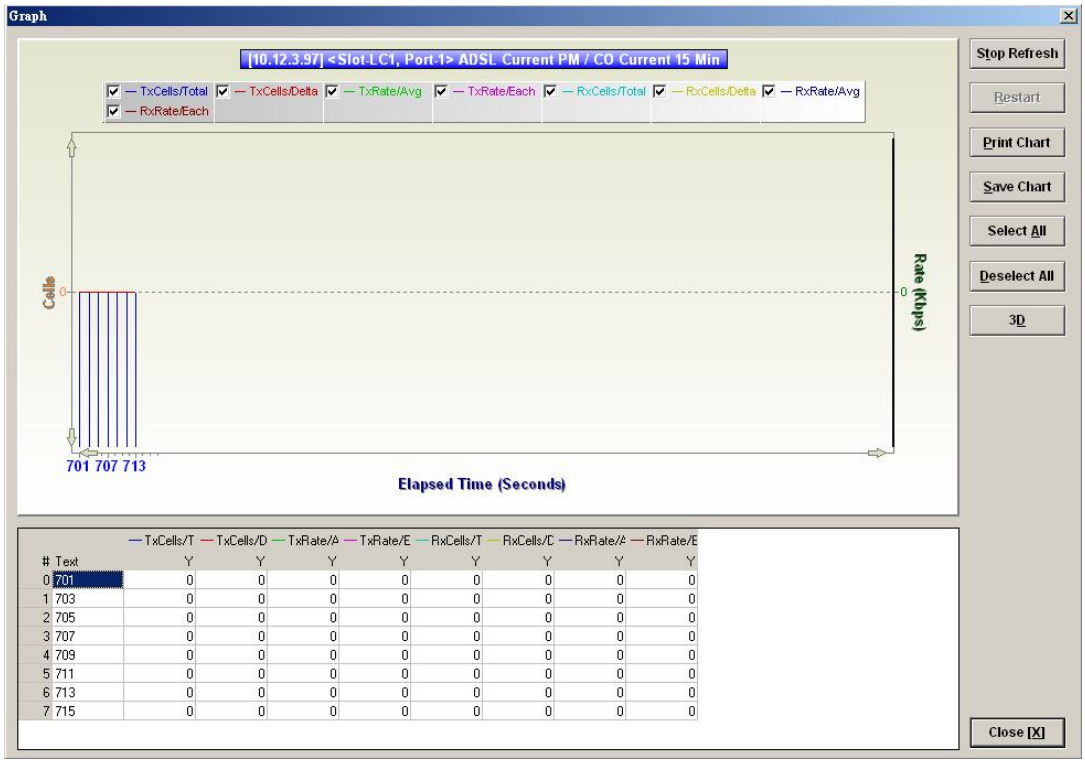


Table 3-3 2D/3D Data Graph Displaying Dialog Description

Field	Description
Stop Refresh	Click to stop refreshing the 2D/3D graph.
Restart	Click to restart refreshing the 2D/3D graph.
Print Chart	Click to print the chart diagram
Save Chart	Click to save the chart diagram in file.
Select All	Click to check all linear elements.
Deselect All	Click to uncheck all linear elements.
3D/2D	Click to toggle the style of chart diagram.
Close	Exit the data graph displaying Dialog.

Chapter 4 Initiating the NE

This chapter describes how to initially configure the DAS4 Series IP-DSLAMs before the advanced configuration depicted in the rest of this document.

This chapter contains the following sections:

- Constructing the NE Objects
- NE SNMP Management
- User Account Management
- Secured Host Management
- DNS Server Setting
- Time Server Setting
- NE Date and Time Management
- Saving the NE Configuration

Constructing the NE Objects

As the DAS4 Series IP-DSLAM provides the flexibility to be equipped with various card modules such as ADSL-LC (Line Card) and SHDSL-LC, constructing the NE board type of card module such as are the first task you need to perform.

Once the card modules to be equipped to the DAS4 Series IP-DSLAM are determined, you need to set the planned type according to their correspondent slot to secure the system operation. For any reason (removed or type error), if the planned type is not the same as the online type detected from the system, the board mismatch alarm message will be reported.

Step 1 From the '**Rack**' tab view, point the mouse cursor on the NE object (Shelf, NC slot, or LC slot), and then right click the mouse button to launch the function menu and then click '**Board Setting** on **Function Menu**' to open the **Board Setting List** Dialog, or click Diagnosis → Board Setting on **Main Menu** to open the **Board Setting List** Dialog as shown in Figure 4-1 and Table 4-1 depicts the related parameters.

Figure 4-1 Board Setting List Dialog

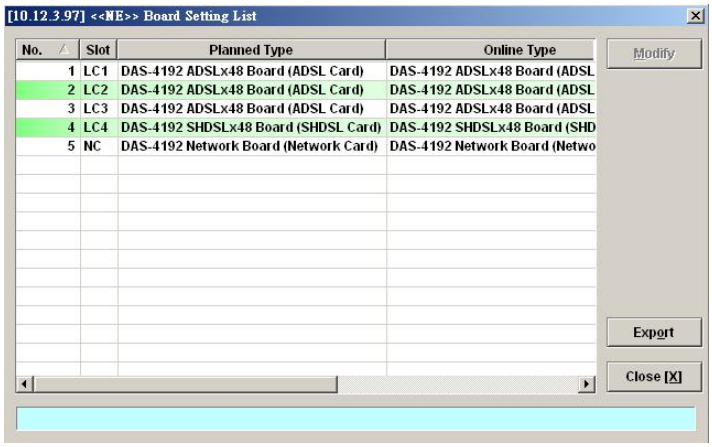
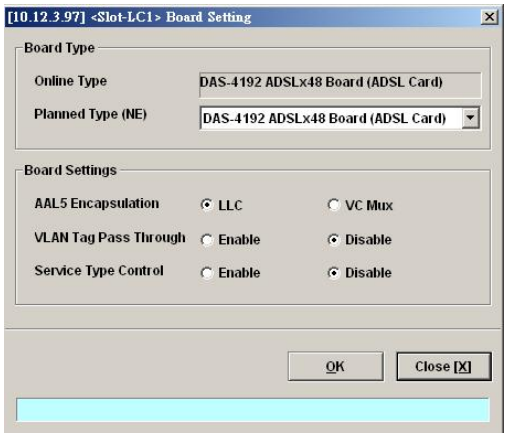


Table 4-1 Board Setting Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
Slot	This indicates the location of board.
Planned Type [Modify]	This indicates the board type planned to be equipped to the slot of DAS4 Series IP-DSLAM. If the planned type is mismatched (removed or type error) with online type detected from the system, the board mismatch alarm message will be reported.
Online Type	This indicates the observed board type of the card module in the slot (current type)
AAL5 Encap [Modify]	This indicates the AAL5 encapsulation mode, either “LLC” or “VC-MUX”(VC Based Multiplexing) per RFC-2684
VLAN Tag Pass Through [Modify]	This indicates the VLAN tab pass-through is enables or not. (per LC setting)
Service Type Control [Modify]	This indicates the “Service Type Control” function is enables or not. (per LC)
Function Button	
Modify	Selected the row and click ‘**Modify**’ button to perform the modification of specific item on the selected board.
Export	Click this button to save the contents of **Board Setting List** to the Personal Computer.
Close	Exit the **Board Setting List** Dialog.

Step 2 To modify the slot setting, click and highlight a slot from **Board Setting List** and click ‘**Modify**’ button to launch the **Board Setting** Dialog as shown in Figure 4-2

Figure 4-2 Board Setting Dialog



NOTE **Board Setting** Dialog allows you to define the line card (LC) AAL5 encapsulation mode, “VLAN Tag pass-through” mode and “Service Type Control” mode. Those functions indicate as per board, configuration affects the setting of all ports of selected LC.

AAL5 Encapsulation

The AAL5 encapsulation is defined in RFC 2684. It defined the encapsulation methods for transporting the routed and bridged Protocol Data Units (PDUs) across an native ATM network. RFC 2684 defines two encapsulation methods, “VC Based Multiplexing Encapsulation” and “LLC Encapsulation”

VLAN Tag Pass Through

The VLAN tag pass-through function provides transparent of the VLAN traffic from subscriber interface to network interface without VLAN tag attach, this allows subscriber deployed their own VLAN ID to associate in the network without double tag or replace the existing VLAN ID by system.

Service Type Control

The service type control can be enabled to provide control of PPPoE, DHCP or static IP on the line card.

NE SNMP Management

SNMP is an application-layer protocol that facilitates the exchange of management information between a NE and LCT. SNMP enables the administrators to manage the NE by the LCT. In the term of SNMP, the NE plays the role of SNMP agent and the LCT serves as the SNMP server. This section describes how to configure the SNMP (Simple Network Management Protocol) on the NE.

Beware of the SNMP community setting, this will affects the communication between the AMS LCT and NE, re-login the AMS LCT if the SNMP community has been modified.

Configuring the SNMP Trap Manager

SNMP Trap Manager records the hosts (any SNMP server, like LCT, AMS Server, and so on) to be notified whenever the NE encounters abnormalities. When a trap condition happens to the NE, the NE sends the corresponding SNMP trap message to the hosts (SNMP server) specified in the SNMP Manager IP Address List.

Follow the subsequent procedures to configure the NE's SNMP Manager.

Step 1 Click Configuration → NE Management → SNMP Managers on **Main Menu** to open the **NE SNMP Manager IP Address List** Dialog as shown in Figure 4-3 and Table 4-2 depicts the related parameters.

Figure 4-3 NE SNMP Manager IP Address List Dialog

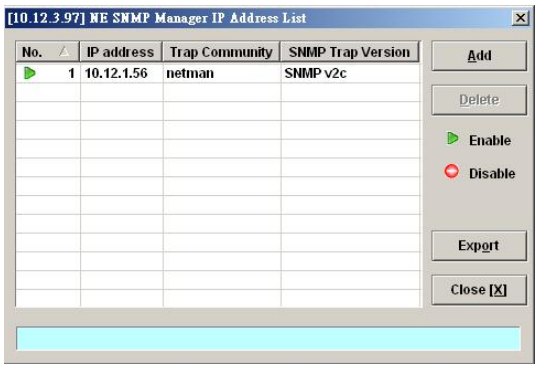


Table 4-2 NE SNMP Manager IP Address List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
IP address	This indicates the IP address (Server / Host IP) of SNMP Manager.
Trap Community	This specifies the SNMP trap community of NE (Send Trap).
SNMP Trap Version	This specifies the Trap version.
Function Button	
Add	Click this button to create a new SNMP Manager (Trap) IP Address.
Delete	Select a trap community from the list table to remove.
Export	Click this button to save the contents of **NE SNMP Manager IP Address List** to the Personal Computer.
Close	Exit the **NE SNMP Manager IP Address List** Dialog.

Step 2 Click '**Add**' button to create a new trap receiver host with community, while to remove the trap receiver, click and highlight a host in the list and click '**Delete**' button, as shown in Figure 4-4 and Table 4-3 depicts the related parameters.

Figure 4-4 Add NE SNMP Manager IP Address Dialog

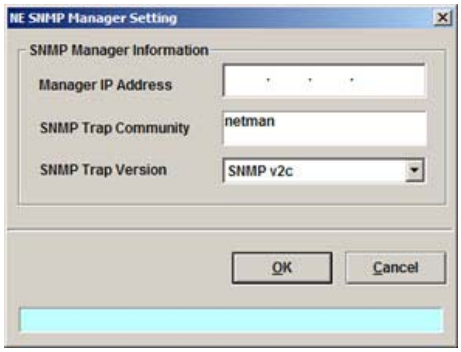


Table 4-3 Add NE SNMP Manager IP Address Dialog Description

Field	Description
IP address	This specifies the IP address (Server / Host IP) of SNMP Manager. **Valid values:** Any valid class A/B/C address
Trap Community	This specifies the SNMP trap community of NE (Send Trap). **Valid values:** String of up to 20 characters and any combination of printable characters ('A' – 'Z', 'a' – 'z', '0' – '9', '-', '_', '@').
SNMP Trap Version	This specifies the Trap version. **Valid values:** SNMP v2c

Configuring the SNMP Community

The SNMP community is a string representing the password to access the MIB of NE with the associated privilege. The NE supports two levels of privilege (Permission) as follows.

- Read / Write / Create – Allow the SNMP server to read and write all objects in the MIB, as well as the community strings.
- Read-only – Only allow the SNMP server to read all objects in the MIB except the community strings.

NOTE The community string definitions on your AMS LCT must match at least one of those community string definitions on the NE. Otherwise, the LCT is not allowed to access the NE.

Follow the subsequent procedures to configure the NE's SNMP Community.

Step 1 Click Configuration → NE Management → SNMP Community on **Main Menu** to open the **NE SNMP Community List** Dialog as shown in Figure 4-5 and Table 4-4 depicts the related parameters.

Figure 4-5 NE SNMP Community List Dialog

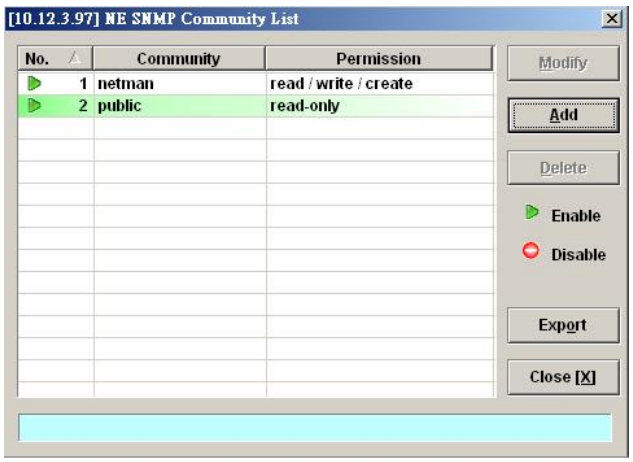


Table 4-4 NE SNMP Community List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
Community	This indicates the case-sensitive SNMP community name.
Permission	This indicates the permission of corresponding permission.
Function Button	
Modify	Select a SNMP community to modify.
Add	Click this button to create a new SNMP community of NE.
Delete	Select a SNMP community to remove.
Export	Click this button to save the contents of **NE SNMP Community List** to the Personal Computer.
Close	Exit the **NE SNMP Community List** Dialog.

Step 2 Click '**Add**' button to create a new SNMP community strings, while to remove the SNMP community strings, click and highlight a community in the list and click '**Delete**' button, as shown in Figure 4-6 and Table 4-5 depicts the related parameters.

Figure 4-6 Add NE SNMP Community Dialog

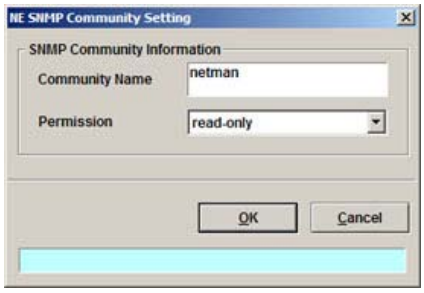


Table 4-5 Add NE SNMP Community Dialog Description

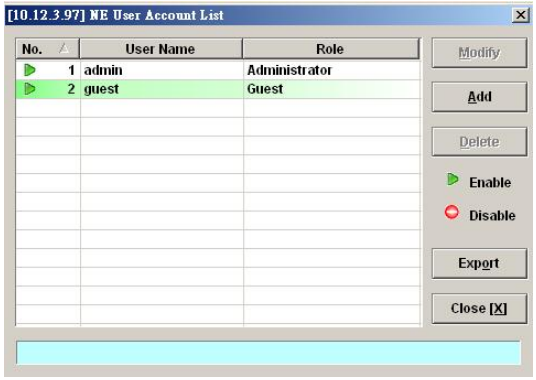
Field	Description
Community Name	This indicates the case-sensitive SNMP community name. **Valid values:** String of up to 20 characters and any combination of printable characters (‘A’ – ‘Z’, ‘a’ – ‘z’, ‘0’ – ‘9’, ‘-’, ‘_’, ‘@’).
Permission	This indicates the permission of corresponding permission. **Valid values:** read-only, read/write/create

User Account Management

Follow the subsequent procedures to configure the user account of the NE.

Step 1 Click Configuration → NE Management → NE User Account on **Main Menu** to open the **NE User Account List** Dialog as shown in Figure 4-7 and Table 4-6 depicts the related parameters.

Figure 4-7 NE User Account List Dialog



Step 2 Click ‘**Add**’ button to create a new user account, while to remove the user account, click and highlight a user name in the list and click ‘**Delete**’ button, as shown in Figure 4-8 and Table 4-7 depicts the related parameters.

Table 4-6 NE User Account List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
User Name	This indicates the user account name.
Role	This indicates the permission right of user group.
Function Button	
Modify	Select a user name from the list table to modify.
Add	Click this button to create a new user of NE.
Delete	Select a user from the list table to remove.
Export	Click this button to save the contents of **NE User Account List** to the Personal Computer.
Close	Exit the **NE User Account List** Dialog.

Figure 4-8 NE User Account Setting Dialog

Table 4-7 NE User Account Setting Dialog Description

Field	Description
User Name	This indicates the user account name. **Valid values:** String of up to 20 characters and any combination of printable characters (‘A’ – ‘Z’, ‘a’ – ‘z’, ‘0’ – ‘9’, ‘-’, ‘_’, ‘@’).
Password	This specifies the password.
Verification	This verifies the password again.
Role	This indicates the permission right of user group. Administrator – Owns privilege of Read/Write Guest – Owns only Read privilege

Secured Host Management

Follow the subsequent procedures to configure the secured (trusted) hosts allowed to access the NE.

Step 1 Click Configuration → NE Management → Secured Hosts on **Main Menu** to open the **NE Secured Host List** Dialog as shown in Figure 4-9 and Table 4-8 depicts the related parameters.

Figure 4-9 NE Secured Host List Dialog

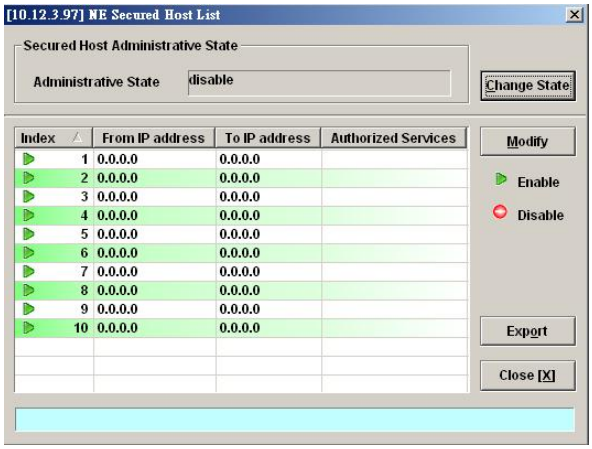
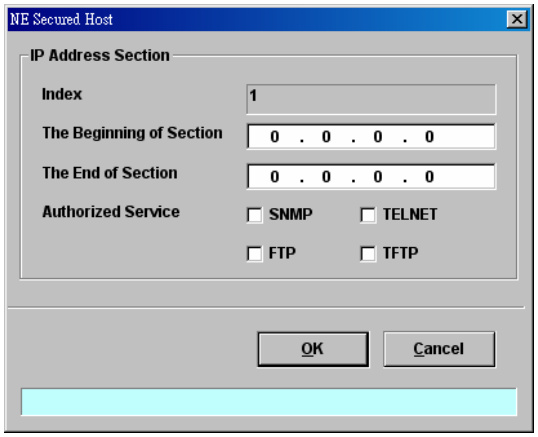


Table 4-8 NE Secured Host List Dialog Description

Field	Description
Secured Host Administrative State	
Administrative State	This indicates the state of NE secured host function. In case of enabled state, only the hosts of configured IP addresses are allowed to access the NE via the configured 'Authorized Services'.
List Table	
Index	This indicates the number of List Table.
From IP Address	This indicates the beginning of the IP address range of the secured hosts.
To IP Address	This indicates the end of the IP address range of the secured hosts.
Authorized Services	This indicates the services (any combination of SNMP, TELNET, FTP and TFTP) the specified secured hosts are allowed.
Function Button	
Change State	Click this button to enable or disable the secured host function.
Modify	Click this button to modify the specified secured host list.
Export	Click this button to save the contents of **NE Secured Host List** to the Personal Computer.
Close	Exit the **NE Secured Host List** Dialog.

Step 2 Click and highlight a row and click '**Modify**' button to modify the secured hosts, as shown in Figure 4-10 and Table 4-9 depicts the related parameters.

Figure 4-10 NE Secured Host Setting Dialog



Assign the IP range and check the authorized services (any combination of SNMP, TELNET, FTP and TFTP) of trusted hosts to be allowed.

Table 4-9 NE Secured Host Setting Dialog Description

Field	Description
IP Address Section	
Index	This indicates the index of IP address section under modifying.
The Beginning of Section	This specifies the beginning of the IP address section of the secured hosts.
The End of Section	This specifies the end of the IP address section of the secured hosts.
Authorized Service	Check the checkbox to select the authorized services.

NE Date and Time Management

Follow the subsequent procedures to configure the NE system time.

Click Configuration → NE Management → System Time on **Main Menu** to open the **NE System Time** Dialog as shown in Figure 4-11 and Table 4-10 depicts the related parameters.

Figure 4-11 NE System Time Dialog

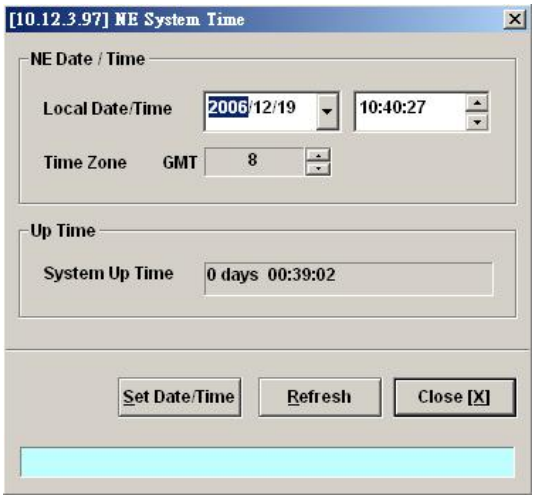


Table 4-10 NE System Time Dialog Description

Field	Description
Date / Time	
Local Date / Time	This indicates the current NE date and time.
Time Zone	
GMT	This indicates the time differences between the Greenwich Mean Time and the local time.
Up Time	
System Up Time	This indicates the period since the NE is rebooted last.
Function Button	
Set Date/Time	Click this button to apply the configured Local Date/Time.
Refresh	Click this button to refresh the Date/Time and Up Time information.
Close	Exit the NE System Time Dialog.

DNS Server Setting

The DNS Server is used for the resolution of domain name. In other words, the DNS replies the corresponding IP address to the URL.

Follow the subsequent procedures to configure the DNS Server.

Click Configuration → NE Management → DNS Servers on **Main Menu** to open the **NE DNS Server Setting** Dialog as shown in Figure 4-12 and Table 4-11 depicts the related parameters.

Figure 4-12 DNS Server Setting Dialog

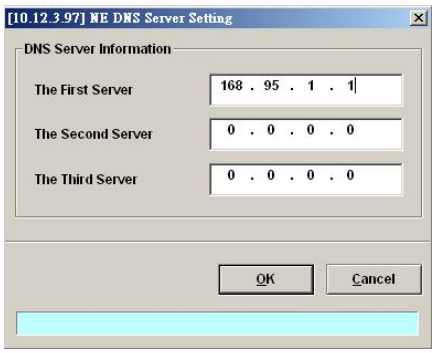


Table 4-11 DNS Server Setting Dialog Description

Field	Description
DNS Server Information	
The First Server	This specifies the first DNS server IP address.
The Second Server	This specifies the second DNS server IP address.
The Third Server	This specifies the third DNS server IP address.

Time Server Setting

Follow the subsequent procedures to configure the time servers.

Step 1 Click Configuration → NE Management → Time Servers on **Main Menu** to open the **Time Server Status** Dialog as shown in Figure 4-13 and Table 4-12 depicts the related parameters.

Figure 4-13 NE Time Server Status Dialog

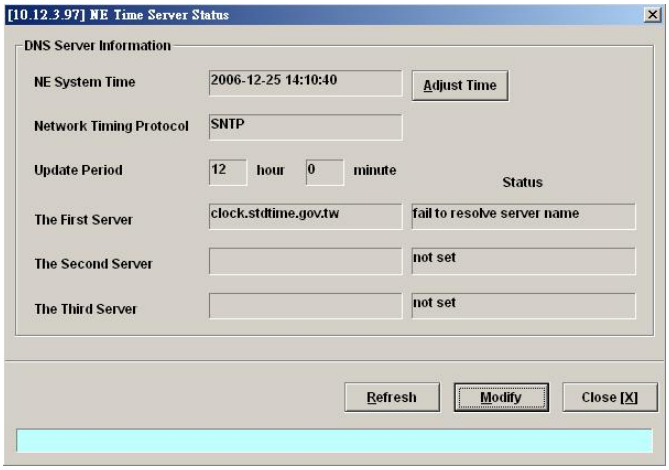


Table 4-12 NE Time Server Status Dialog Description

Field	Description
DNS Server Information	
NE System Time	This indicates the current NE system time.
Network Timing Protocol	This indicates the current network time protocol, SNTP or None.
Update Period	This indicates the time period between two consecutive synchronizations of the NE's local time with the time server.
The First Server	This indicates the first time server the NE tries to synchronize with.
The Second Server	This indicates the second time server the NE tries to synchronize with.
The Third Server	This indicates the third time server the NE tries to synchronize with.
Status	This indicates connection status between the NE and the time server.
Function Button	
Adjust Time	Click this button to enforce the NE to synchronize its local time with the time server immediately.
Refresh	Click this button to refresh this launched window.
Modify	Click this button to set the NE time servers.
Close	Exit the NE Time Server Status Dialog.

Step 2 Click '**Modify**' button to modify the Time Server information, as show in Figure 4-14 and Table 4-13 depicts the related parameters.

Figure 4-14 NE Time Server Setting Dialog

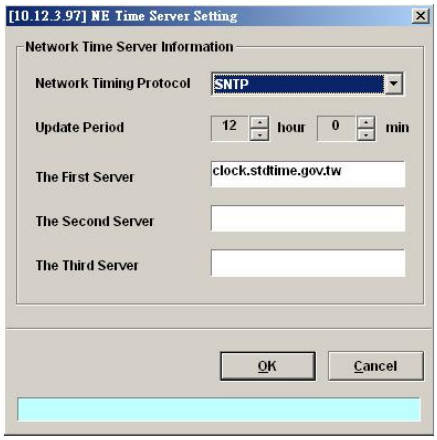


Table 4-13 NE Time Server Setting Dialog Description

Field	Description
Network Time Server Information	
Network Timing Protocol	This specifies the network timing protocol, either SNTP or None.
Update Period	This specifies the time period between two consecutive synchronizations of the NE's local time with the time server.
The First Server	This specifies the first time server the NE tries to synchronize with.
The Second Server	This specifies the second time server the NE tries to synchronize with.
The Third Server	This specifies the third time server the NE tries to synchronize with.

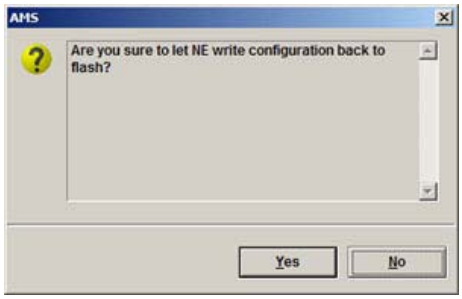
NOTE The NE will synchronize its local time with the first time server's time as a top priority. If the first time server fails to respond, the NE tries to synchronize it's local time with the second and third time server's time in sequence.

Saving the NE Configuration

Follow the subsequent procedures to save your NE configuration to Flash.

Click Configuration → NE Write Flash on **Main Menu** to open the **Write Flash Confirm** Dialog, or alternative select from the '**Rack**' tab view, point the mouse cursor on the NE object (Shelf, NC slot, or LC slot), and then right click the mouse button to launch the **Function Menu** and select '**Write Flash**' from this menu, as shown in Figure 4-15.

Figure 4-15 NE Write Flash Confirm Dialog



Chapter 5 Profile Management

This chapter describes the management of two kinds of profiles, data transport related profiles and alarm definition profile. The alarm definition profile defines the attributes of the report (alarm) of abnormality launched by the NE.

As to the data transport related profiles, they are

- xDSL Profile
- VLAN Profile

The xDSL Profile indicates the ADSL Profile and SHDSL Profile. It defines the attributes of the connection established via the xDSL subscriber loop. As to the VLAN Profile, it defines the attributes of services/applications applied to the xDSL subscriber.

Figure 5-1 and Table 5-1 help you to understand each profile and their interrelationship.

Figure 5-1 Interrelationship of Data Transport Related Profiles

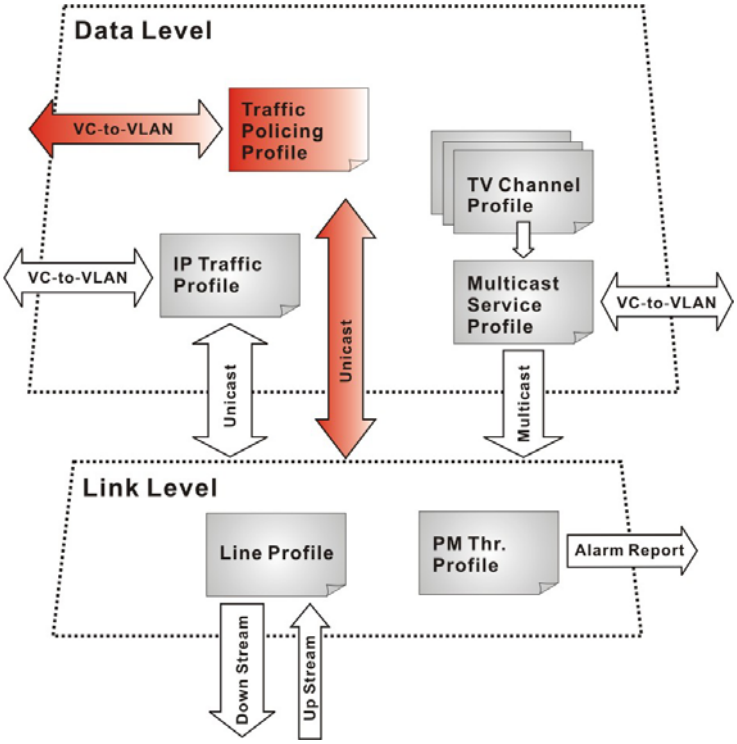


Table 5-1 Data Transport Related Profiles

Profile		Capacity	Level	Category	Description
XDSL Profile	Line Profile	60 sets	Link	Loop	Define the attributes of xDSL loop connection.
	PM Threshold Profile	60 sets	Link	Loop	Report the message if loop connection error across the threshold.
	Traffic Policing Profile	60 sets	Data	User Data	Define the rule of traffic policing for user data.
VLAN Profile	IP Traffic Profile	60 sets	Data	Unicast	Define the traffic bandwidth of Unicast connection.
	Multicast Service Profile	60 sets	Data	Multicast	A set of service selected from menu list.
	TV Channel Profile	800 sets	Data	Multicast	A menu list of multicast channel, it also defines the traffic bandwidth of Multicast connection.

To make Traffic Policing Profile take effect, it needs to set IP Traffic Profile properly. Please refer to the NOTE under Table 5-9.

To make a xDSL line works normally, the IP Traffic Profile is essential; Traffic Policing Profile is optional.

A profile is a named list of configuration parameters with a value assigned to each parameter. When you delete a profile you will affect the change on all port or connection using that profile. If you want to change a single port or a subset of ports, you can create another profile with desired parameters, and then assign the new profile to the desired port.

This chapter contains the following sections:

- Configuring the xDSL Profile
- Configuring the VLAN Profile
- Configuring the Alarm Definition Profile

At first, the usage of **Function Button** in the **ADSL Profile List Dialog** is described as follows. Click Configuration → Profile → ADSL Profile on **Main Menu** to open the **ADSL Profile List** Dialog. Figure 5-2 indicates the position of the **Function Button** by red rectangle.

Figure 5-2 xDSL Profile List Dialog Function Button

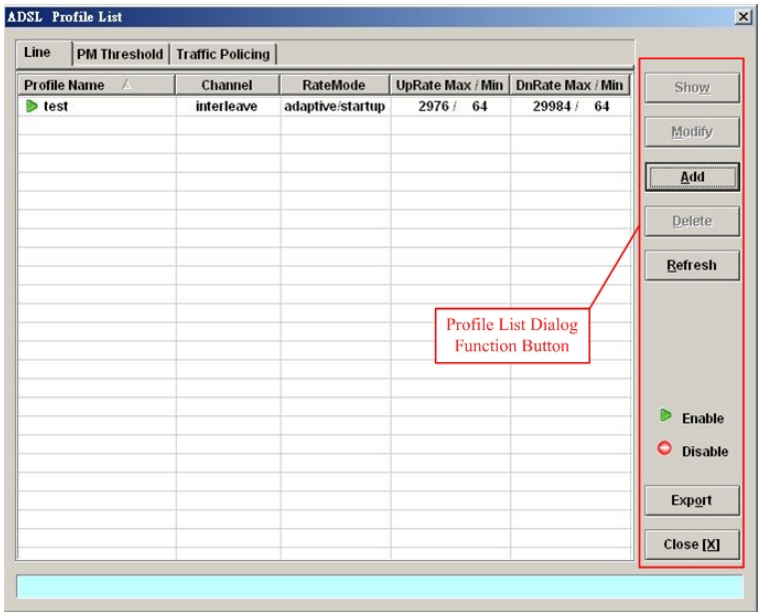


Table 5-2 xDSL Line Profile List Dialog Function Button

Field	Description
Show	Click this button to view the details of selected profile.
Modify	Click this button to modify the parameters of selected profile
Add	Click to add a new profile.
Delete	Click this button to delete the selected profile.
Refresh	Click to refresh the **xDSL Profile List**
Export	Click this button to save the contents of **xDSL Profile List** to the Personal Computer.
Close	Exit the **xDSL Profile List** Dialog.

Configuring the xDSL Profile

The xDSL profiles enable you to simplify the process to configure the different xDSL loops with the same loop/data connection attributes. For example, you may classify the subscribers to several categories like category of residential customers, category of small office customers, category of enterprise customers and so on. Each category of subscribers is with the same loop/data connection attributes. Different categories are with their specific attributes like the line speed and performance monitoring to secure their particular service quality. Once the profiles are created, you can easily assign the xDSL subscriber with the request xDSL loop attributes.

This section depicts the supported two types of xDSL profiles

- ADSL Profile
- SHDSL Profile

ADSL Profile

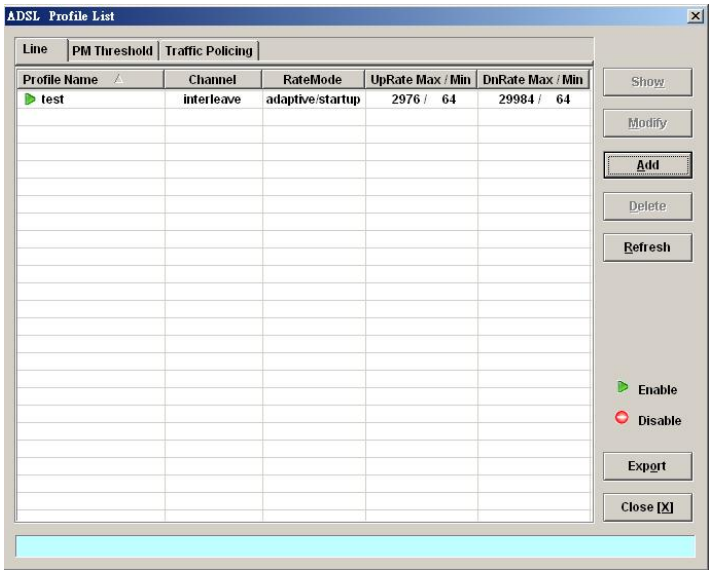
Three types of profiles are relative to the ADSL loop, which are Line Profile, Traffic Policing Profile and PM Threshold Profile.

Click Configuration → Profile → ADSL Profile on **Main Menu** to open the **ADSL Profile List** Dialog.

Line Profile

Click the **Line** tab in ADSL Profile List dialog to launch the **ADSL Profile List – Line Dialog** to configure the ADSL Line profile as shown in Figure 5-3.

Figure 5-3 ADSL Profile List – Line Dialog



Click ‘Modify’ or ‘Add’ button to generate a line profile. It is noted that each profile must have its unique profile name.

The line profile consists of the following groups of ADSL loop related parameters.

- Transmission Rate
- SNR margin
- PSD
- Power management
- INP

Transmission Rate

Click the **Transmission Rate tab** in **ADSL Line Profile List Dialog** to launch the **ADSL Line Profile– Transmission Rate Dialog as shown in** Figure 5-4. Table 5-3 depicts the related parameters.

Figure 5-4 Add ADSL Line Profile– Transmission Rate Dialog

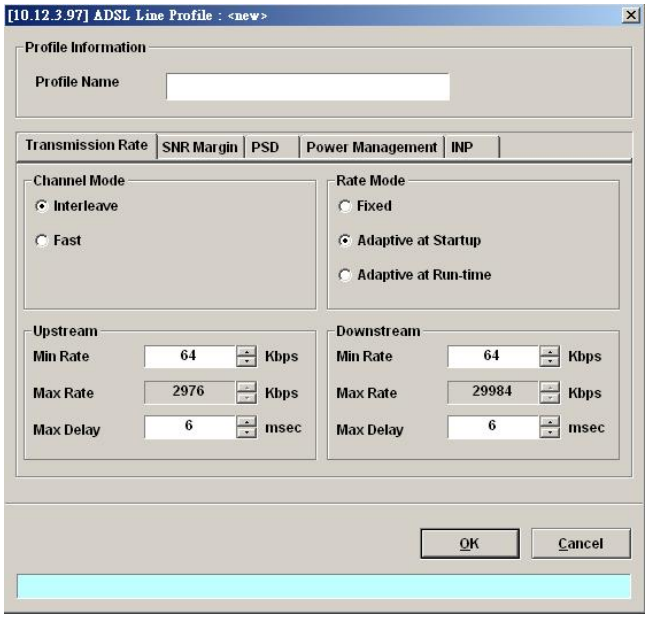


Table 5-3 Add Line Profile– Transmission Rate Dialog Description

Field	Description
Profile Information	
Profile Name	Enter to give a profile name
Channel Mode	
Interleave	Click to let the ADSL loop to be in the interleave mode. Interleave mode enhances the immunity to the impulse noise like lighting. However, its side effect is to introduce the transmission latency. Hence it is suitable for the time-insensitive data transmission, like file transfer. Its associated parameters are the 'Upstream/Downstream Max Delay'
Fast	Click to let the ADSL loop to be in the fast mode. Fast mode is suitable for the transmission of time-sensitive information such as audio.
Rate Mode	
Fixed	Click to let the ADSL loop to be of a fixed rate as specified by the 'Upstream/Downstream Min Rate'. In this mode, the NE will fail to establish the connection with ATU-R whenever it is not allowed in the physical loop environment. The failure may be due to the loop length, line quality, and so on.
Adaptive at Startup	Click to let the ADSL loop to be of the rate adapted in the range specified by the 'Upstream/Downstream Min/Max Rate'. In comparison with 'Adaptive at Run-time', the NE will re-try to establish a new lower-rate connection with the ATU-R whenever the NE or ATU-R detects 10 consecutive SESs (Severely Error Seconds) in this mode.
Adaptive at Run-time	Click to let the ADSL loop to be of the rate adapted in the range specified by the 'Upstream/Downstream Min/Max Rate'. In comparison with 'Adaptive at Startup', the NE will trigger the SRA (Seamless Rate Adaptation) process to change the line rates without losing the connection with ATU-R whenever the physical loop environment varies in this mode.

Table 5-3 Add Line Profile– Transmission Rate Dialog Description (Continued)

Field	Description
Upstream	
Min Rate	Choose the minimum rate for the ATU-R to transmits traffic
Max Rate	Choose the maximum rate for the ATU-R to transmits traffic
Max Delay	Choose the maximum interleaved delay in milliseconds. (interleave mode only) Interleaved delay applies only to the interleave channel and defines the mapping between subsequent input bytes at the inter-leaver input and their placement in the bit stream at the interleave output. Larger numbers provide greater separation between consecutive input bytes in the output bit stream, allowing for improved impulse noise immunity at the expense of payload latency.
Downstream	
Min Rate	Choose the minimum rate for the ATU-C to transmits traffic
Max Rate	Choose the maximum rate for the ATU-C to transmits traffic
Max Delay	Choose the maximum interleaved delay in milliseconds. (applied to the interleave mode only)

NOTE The associated parameters of the Rate Mode ‘Adaptive at Run-Time’ are as follows.
‘Upshift Noise Margin’, ‘Downshift Noise Margin’, ‘Upshift Time’ and ‘Downshift Time’

NOTE In the Rate Mode ‘Adaptive at Run-Time’, the NE will lose the connection with ATU-R if it fails to complete the SRA process to change the line rates

SNR Margin

Click the **SNR Margin tab** in **ADSL Line Profile List Dialog** to launch the **ADSL Line Profile– SNR Margin Dialog** as shown in Figure 5-5. Table 5-4 depicts the related parameters.

Figure 5-5 Add ADSL Line Profile– SNR Margin Dialog

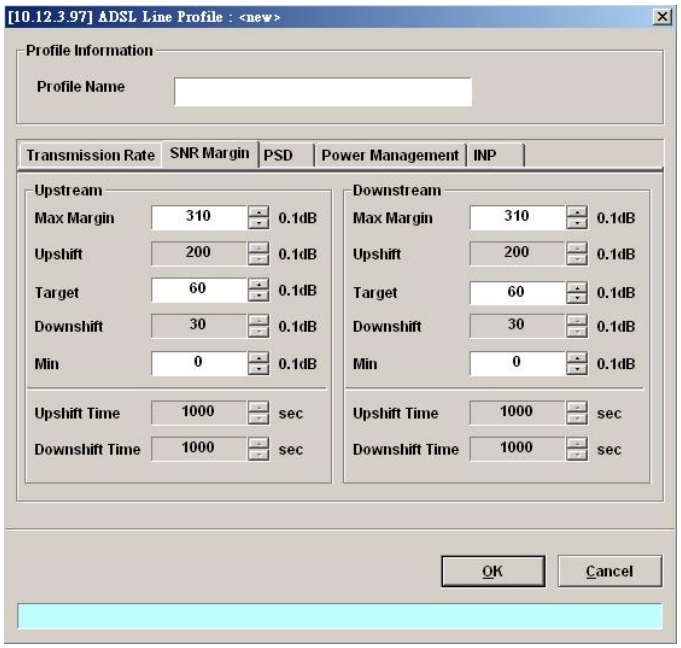


Table 5-4 Add Line Profile– SNR Margin Dialog Description

Field	Description
Upstream	
Downstream	
Max Margin	It specifies the maximum margin in 0.1 dB steps. Default value is 310.
Upshift	It specifies the up-shift margin in 0.1dB steps. Default value is 200
Target	It specifies the target margin in 0.1dB steps. Default value is 60.
Downshift	It specifies the downshift margin in 0.1 dB steps. Default value is 30
Min	It specifies the minimum margin in 0.1 dB steps. Default value is 0.
Upshift Time	It specifies the upshift time in sec. It defines the minimum time interval during which the upstream noise margin should stay above the Upshift SNR before the ATU-C triggers the SRA process to increase the line rate. Default value is 1000.Default value is 1000.
Downshift Time	It specifies the downshift time in sec. It defines the minimum time interval during which the upstream noise margin should stay above the Downshift SNR before the ATU-C triggers the SRA process to decrease the line rate. Default value is 1000.

'Upshift Noise Margin', 'Downshift Noise Margin', 'Upshift Time' and 'Downshift Time' are only applied to the Rate Mode 'Adaptive at Run-Time'.

Minimum Noise Margin ≤ Downshift Noise Margin ≤ Target Noise Margin ≤ Upshift Noise Margin ≤ Maximum Noise Margin.

PSD

Click the **PSD tab** in **ADSL Line Profile List Dialog** to launch the **ADSL Line Profile– PSD Dialog** as shown in Figure 5-6. Table 5-5 depicts the related parameters.

Figure 5-6 Add ADSL Line Profile– PSD Dialog

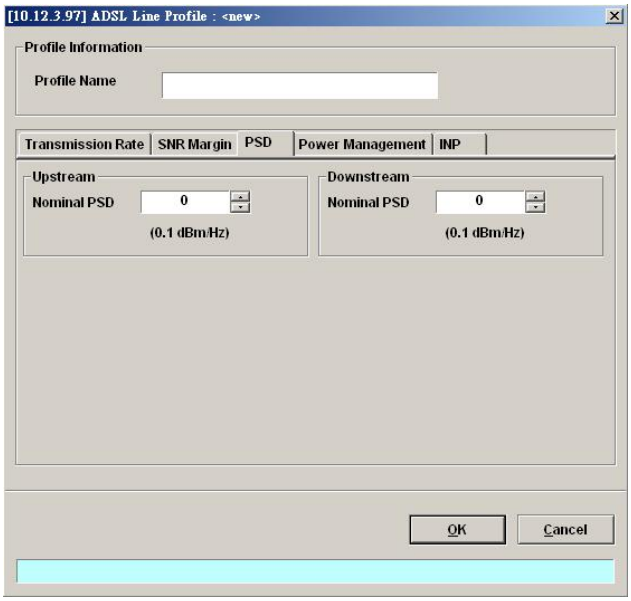


Table 5-5 Add Line Profile – PSD Dialog Description

Field	Description
Upstream	
Downstream	
Nominal PSD	It specifies the discrepancy with respect to the ITU-T G.992.3-defined MAXNOMPSD value. Its unit is 0.1 dBm/Hz. And its allowed range is from 40 to -400.

It is noted that the MAXNOMPSD settings are different for the following three protocol groups.

- G.992.1 Annex A and B; G.992.2 Annex A and G; G.992.3 Annex A, B and J;
- G.992.5 Annex A, B and M
- G.992.3 Annex L

To ease the configuration, the Nominal PSD is defined to be the discrepancy with respect to the MAXNOMPSD..

Power Management

In order to save power, G.992.3 and G.992.5 define the power management function. The operator can either configure the ADSL line Transmission (Tx) power be either manually or automatically managed.

The automatic power management function enables the ADSL line to automatically transfer from the L0 (full-on) state to the L2 (low power) state whenever the downstream net data rate is lower than expected. And it also enables the ADSL line to automatically transfer from the L2 state to the L0 state once the NE begins to drop the downstream data.

Click the **Power Management tab** in **ADSL Line Profile List Dialog** to launch the **ADSL Line Profile– Power Management Dialog** as shown in Figure 5-7. Table 5-6 depicts the related parameters.

Figure 5-7 Add ADSL Line Profile– Power Management Dialog

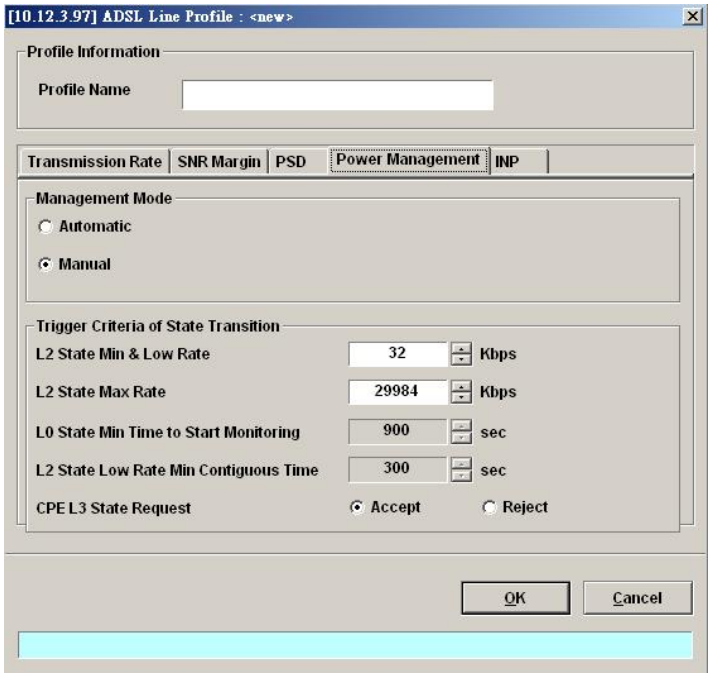


Table 5-6 Add Line Profile – Power Management Dialog Description

Field	Description
Management Mode	
Automatic – This mode enables the ADSL line to automatically transfer from the L0 (full-on) state to the L2 (low power) state whenever the downstream net data rate is lower than expected. And it also enables the ADSL line to automatically transfer from the L2 state to the L0 state once the NE begins to drop the downstream data.	
Manual –This mode allows the operator to manually force the specific ADSL line to transfer from the L2 state to the L0 state, and vice versa.	
Trigger Criteria Of State Transition	
L2 State Min & Low Rate	It specifies the minimum rate (manual mode) or Lowest criteria (auto mode) of L2 state. (See the Note below) Default value is 32.
L2 State Max Rate	It specifies the maximum rate of L2 state. (See the Note below) Default value is 29984.
L0 State Min Time to Start Monitoring	It specifies the minimum time (seconds) the ADSL line must stay at the L0 state. During this time interval, the ADSL line is not allowed to transfer to the L2 state. It is the so-called L0-TIME as defined in ITU-T G.997.1. (See the Note below) Default value is 900.
L2 State Low Rate Min Contiguous Time	It specifies the contiguous time interval for which the downstream mean net data rate is below the 'L2 State Min & Low Rate' on a ADSL line. (See the Note below) Default value is 300.
CPE L3 State Request	It specifies whether the ADSL port accepts L3 command from CPE or not. Default value is "Accept".

In order to let the ADSL line avoid going into and out of L2 too often, the following L0↔L2 state transition criterions are adopted by the NE.

L0→L2:

- The ADSL line must stay at the L0 state for a period specified by 'L0 State Min Time to Start Monitoring' (i.e., the L0-TIME as defined in ITU-T G.997.1)
- After the L0-TIME, the NE begins to computed the mean net-data rate for a period of 'L2 State Low Rate Min Contiguous Time' on a ADSL line.
- The ADSL line transfers to the L2 state once the computed mean net-data rate is below the 'L2 State Min & Low Rate'.
- Once an ADSL line is at the L2 state, its downstream ADSL line rate is in the range from 'L2 State Min & Low Rate' to 'L2 State Max Rate'.

L2→L0:

- The ADSL line immediately transfers to the L0 state once the NE detects packet loss on the ADSL line in the down stream direction.

INP

The INP (Impulse Noise Protection) defines the minimum protection symbol time both for upstream and downstream on this ADSL subscriber.

Click the **INP tab** in **ADSL Line Profile List Dialog** to launch the **ADSL Line Profile– INP Dialog** as shown in Figure 5-8. Table 5-7 depicts the related parameters.

Figure 5-8 Add ADSL Line Profile– INP Dialog

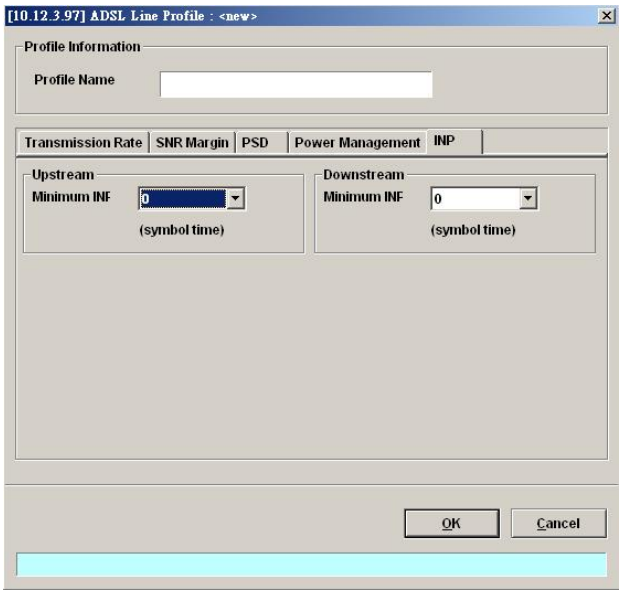


Table 5-7 Add Line Profile – INP Dialog Description

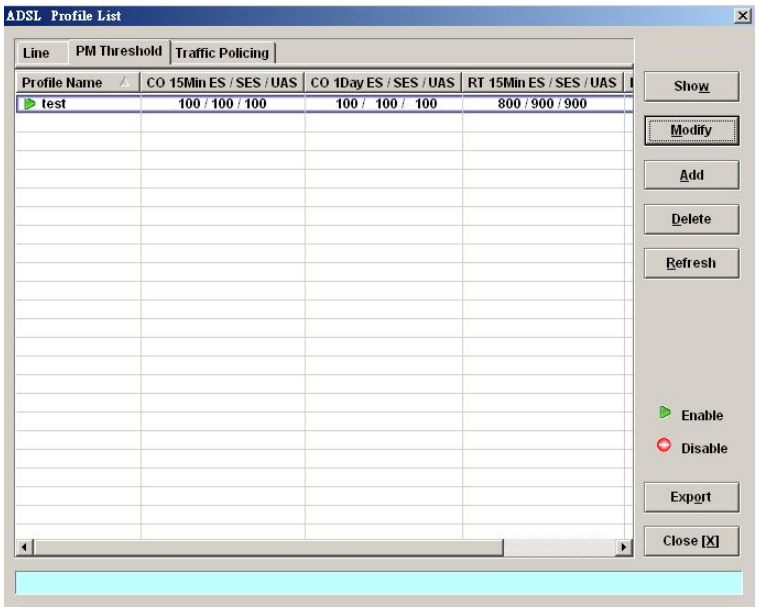
Field	Description
Upstream	
Downstream	
Minimum INP	It specifies the impulse noise protection symbol time in {0, 1/2, 1, 2, 4, 8, 16}.

PM Threshold Profile

The PM threshold profile sets the threshold values for the performance parameters associated with the ADSL line. The NE will report the threshold-over trap (i.e. TCA, Threshold-Crossing Alarm) to the AMS LCT when the specified performance threshold is over. Figure 5-9 shows ADSL PM

threshold profiles accommodated in the system and allows adding a new profile or deleting the existing profile, by system (NE) unit.

Figure 5-9 xDSL Profile List– PM Threshold Dialog



Click ‘Modify’ or ‘Add’ button to generate the PM threshold profile, each profile must have name individually. Figure 5-10 shows **Add ADSL PM Threshold Profile Dialog**, and Table 5-8 depicts the related parameters.

Figure 5-10 Add ADSL PM Threshold Profile Dialog

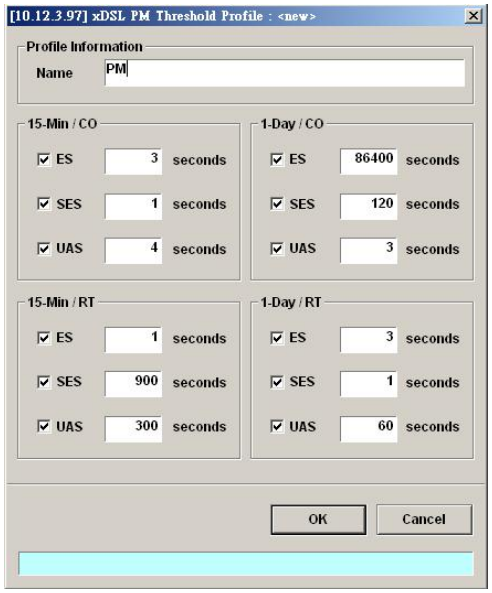


Table 5-8 Add PM Threshold Profile Field Description

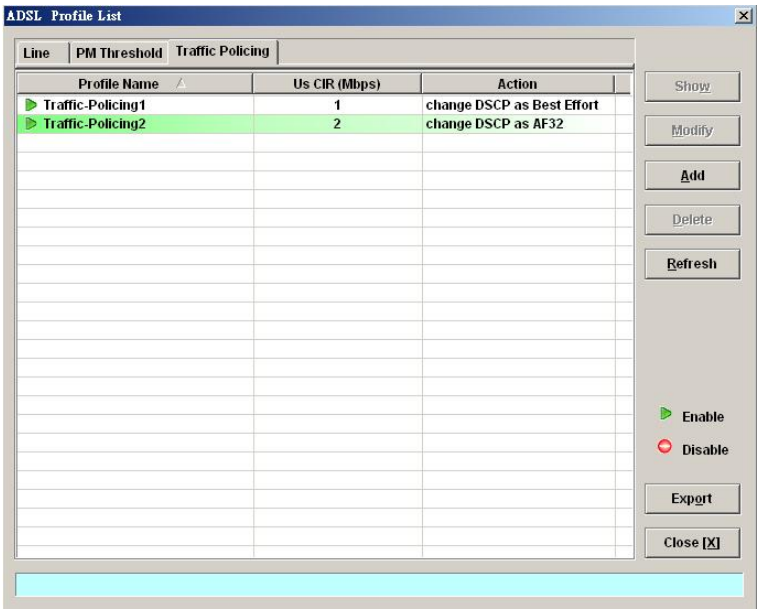
Field	Description
15-Min / CO	This field indicates the CO side errors. When the threshold is set to 10, the NE launches a trap (alarm) if the count of specific errors exceeds 10 during the last 15 minutes.
1-Day / CO	This field indicates the CO side errors. When the threshold is set to 10, the NE launches a trap (alarm) if the count of specific errors exceeds 10 during the last 1 day.
15-Min / RT	This field indicates the RT side (CPE) errors. When the threshold is set to 10, the NE launches a trap (alarm) if the count of specific errors exceeds 10 during the last 15 minutes.
1-Day / RT	This field indicates the RT side (CPE) errors. When the threshold is set to 10, the NE launches a trap (alarm) if the count of specific errors exceeds 10 during the last 1 day.
ES	It specifies the Error second (0 ~ 900 sec)
SES	It specifies the Several Error Second (0 ~ 900 sec)
UAS	It specifies the unavailable Second (0 ~ 900 sec)

Traffic Policing Profile

According to SLA (Service Level Agreements) between subscribers and ISP, the edge network equipment marks subscriber's traffic with different service level. The traffic policing profile serves to keep the rule to re-mark the subscriber's upstream traffic with designated DSCP values. The traffic policing profile is design to police on the unicast connection for user's upstream traffic; once it is created you can apply it to distinct xDSL line interfaces (see Chapter 6 xDSL Line Interface).

To set the traffic policing profile, click **Configuration → Profile → ADSL Profile → Traffic Policing Dialog**

Figure 5-11 xDSL Profile List– Traffic Policing Dialog



Click 'Modify' or 'Add' button to generate the Traffic Policing profile as shown in Figure 5-12, each profile must have a name individually. Table 5-9 depicts the related parameters.

Figure 5-12 Add Traffic Policing Profile Dialog

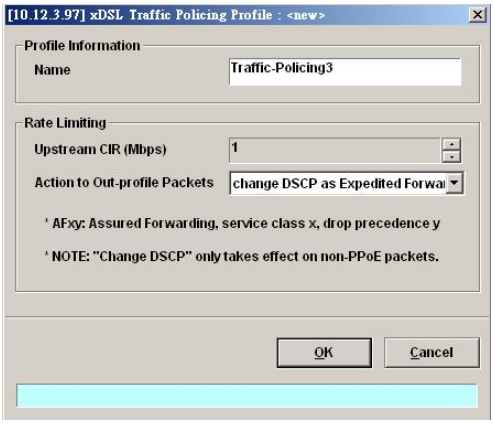


Table 5-9 Add Traffic Policing Profile Field Description

Field	Description
Profile Information	
Name	It specifies the name of traffic policing profile.
Rate Limiting	
Upstream CIR (Mbps)	It specifies the CIR (Commit Information Rate). Valid value is 0~2 Mbps.
Action to Out-profile Packets	It specifies the DSCP value to be set, drop packets or do nothing whenever the user's upstream traffic exceeds CIR.

The Service Type Control shall be enabled when Traffic Policing Profile is assign to xDSL subscribers (refer to Figure 6-2).

Please refer to Figure 6-10 for more details of Differentiated Service Code Point.

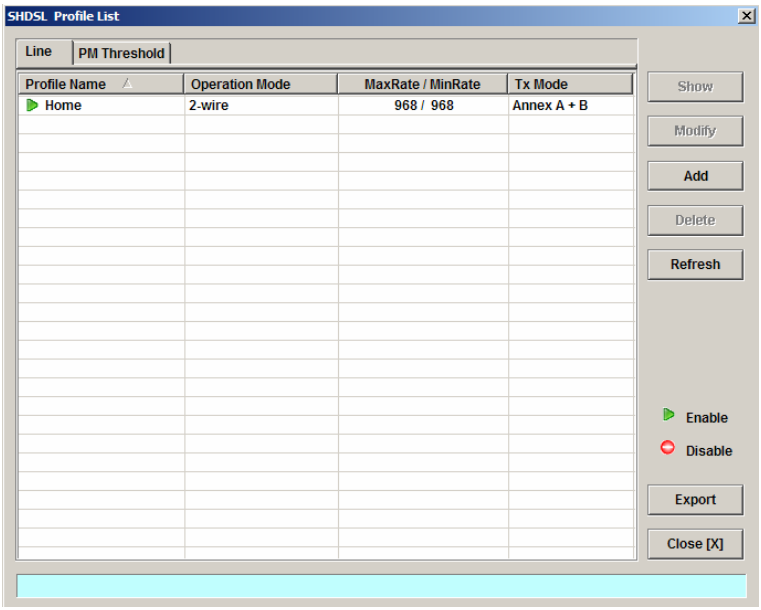
SHDSL Profile

Two types of profiles are related with the SHDSL loop, which are Line Profile and PM Threshold Profile.

Line Profile

The line profile contains parameter relate to the loop connection of SHDSL. Click the **Line** tab in **SHDSL Profile List Dialog** to launch the **SHDSL Profile List – Line Dialog** to configure the ADSL Line profile (see Figure 5-13).

Figure 5-13 SHDSL Profile List– Line Dialog



Click ‘Modify’ or ‘Add’ button to generate the line profile, each profile must have name individually.

The line profile consists of the following groups of SHDSL loop related parameters.

- Transmission Rate
- SNR margin
- Miscellaneous

Transmission Rate

Click the **Transmission Rate tab** in **SHDSL Line Profile Dialog** to launch the **SHDSL Line Profile– Transmission Rate Dialog** as shown in Figure 5-14. Table 5-10 depicts the related parameters.

Figure 5-14 Add SHDSL Line Profile– Transmission Rate Dialog

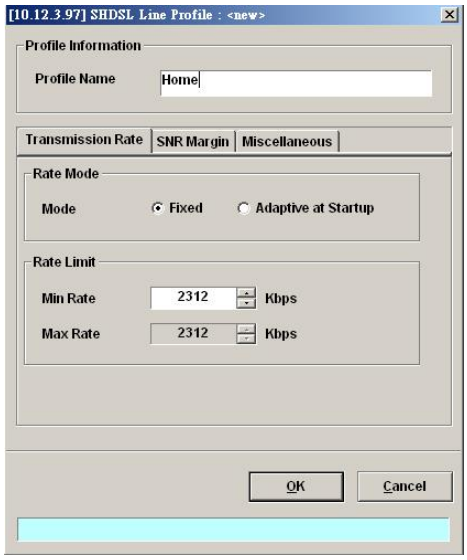


Table 5-10 Add SHDSL Line Profile– Transmission Rate Dialog Description

Field	Description
Profile Information	
Profile Name	Enter to give a profile name
Rate Mode	
Fixed	Click to let the SHDSL loop to be of a fixed rate as specified by the 'Min Rate'. In this mode, the NE will fail to establish the connection with STU-R whenever it is not allowed in the physical loop environment. The failure may be due to the loop length, line quality, and so on.
Adaptive at Startup	Click to let the SHDSL loop to be of the rate adapted in the range specified by the 'Min/Max Rate'.
Rate Limit	
Min Rate	Choose your minimum rate
Max Rate	Choose your maximum rate

SNR Margin

Click the **SNR Margin tab** in **SHDSL Line Profile Dialog** to launch the **SHDSL Line Profile–SNR Margin Dialog** as shown in Figure 5-15. Table 5-11 depicts the related parameters.

Figure 5-15 Add SHDSL Line Profile– SNR Margin Dialog

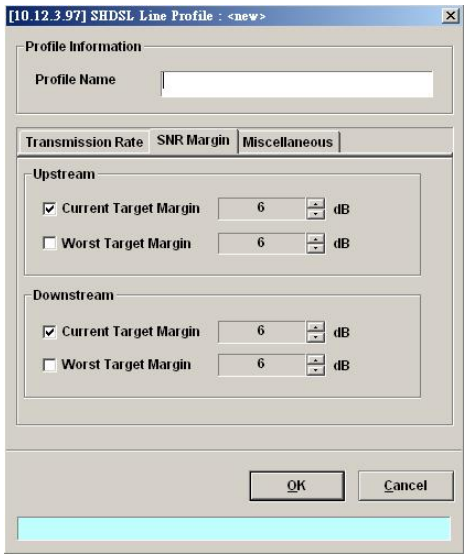


Table 5-11 Add SHDSL Line Profile - SNR Margin Dialog Description

Field	Description
Upstream / Downstream	
Current Target Margin	It specifies the current target margin. Default value is 6.
Worst Target Margin	It specifies the worst target margin. Default value is 6.

Miscellaneous

Click the **Miscellaneous tab** in **SHDSL Line Profile Dialog** to launch the **SHDSL Line Profile–Miscellaneous Dialog** as shown in Figure 5-16. Table 5-12 depicts the related parameters.

Figure 5-16 Add SHDSL Line Profile– Miscellaneous Dialog

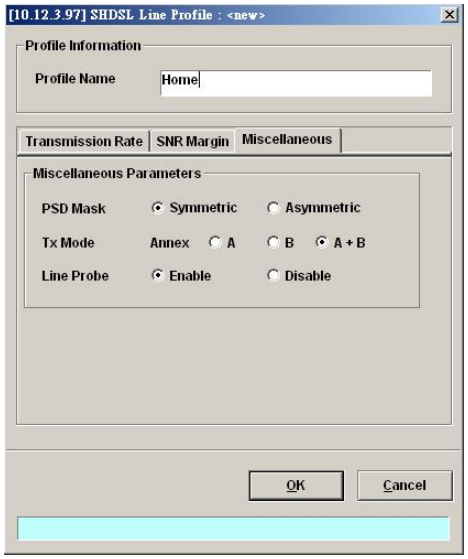


Table 5-12 Add SHDSL Line Profile– Miscellaneous Dialog Description

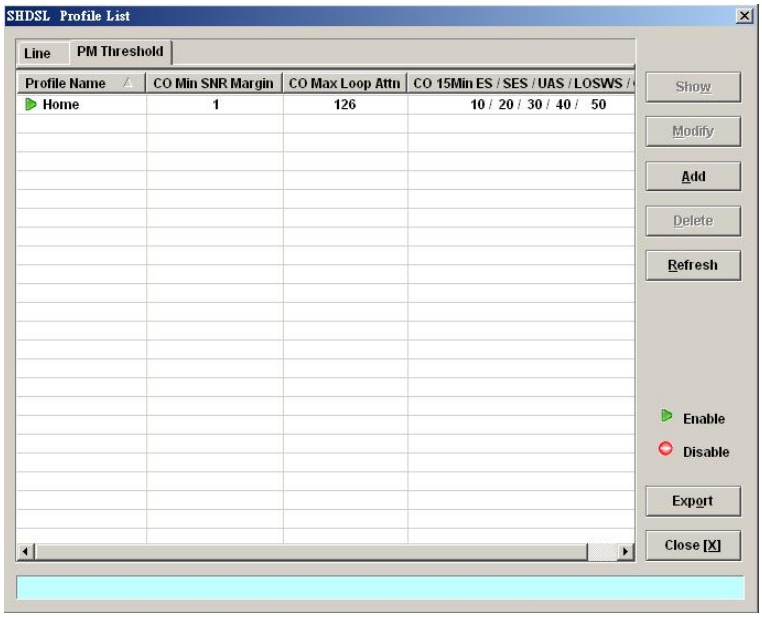
Field	Description
Miscellaneous Parameters	
PSD Mask	It specifies the setting of PSD Mask to be symmetric or asymmetric
Tx Mode	It specifies the setting of Tx mode. A: Indicates the ITU-T G.991.2 Annex A B: Indicates the ITU-T G.991.2 Annex B A+B: Compatible with ITU-T G.991.2 Annex A and Annex B.
Line Probe	Enable or disable the line probe state before training with STU-R. Enable: To make the 'line rate limit' up to 2312Kbps. Disable: To make the 'line rate limit' up to 1.5Mbps.

PM Threshold Profile

The PM threshold profile sets the threshold values for the error status generated in the ADSL line, and sets the system to report the threshold-over trap (alarm) to the AMS LCT when the set error threshold is over. Figure 5-17 lists SHDSL PM threshold profiles accommodated in the system and allows adding a new profile or deleting the existing profile, by system (NE) unit.

Click the **PM Threshold tab** to launch the **PM Threshold Dialog** as shown in Figure 5-17.

Figure 5-17 SHDSL Profile List– PM Threshold Dialog



Click ‘Modify’ or ‘Add’ button to generate the PM threshold profile, each profile must have a name individually. Figure 5-18 shows **Add SHDSL PM Threshold Profile Dialog**, and Table 5-13 depicts the related parameters.

Figure 5-18 Add SHDSL PM Threshold Profile Dialog

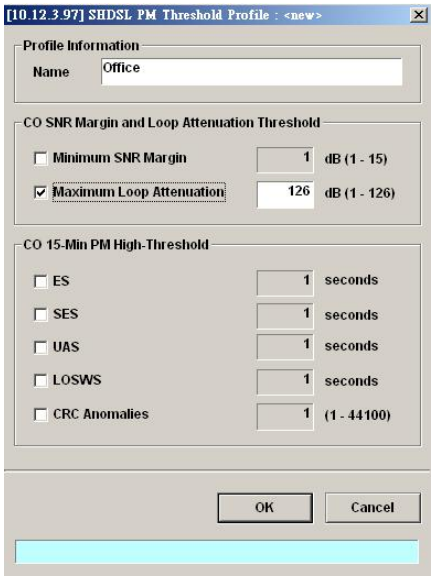


Table 5-13 Add SHDSL PM Threshold Profile Dialog Description

Field	Description
CO SNR Margin and Loop Attenuation Threshold	
This field indicates the minimum SNR margin and maximum loop attenuation. When the minimum SNR margin is set to 10, if the current SNR margin is below 10 dB, a trap (alarm) occurs. When the maximum loop attenuation is set to 100, if the current loop attenuation exceeds 100 dB, a trap (alarm) occurs.	
CO 15-Min PM High-Threshold	
This field indicates the CO side errors. When the threshold is set to 10, if the count of specific errors exceeds 10 seconds for the last error accumulateds, a trap (alarm) occurs.	
ES	It specifies the Error second (0 ~ 900 sec)
SES	It specifies the Several Error Second (0 ~ 900 sec)
UAS	It specifies the unavailable Second (0 ~ 900 sec)
LOSWS	It specifies the Loss of Synchronization Word Second (0 ~ 900 sec)
CRC Anomalies	It specifies the count of anomaly of Cyclic Redundancy Check (1 ~ 44100)

Configuring the VLAN Profile

VLAN Profile contains three categories of profiles; IP Traffic Profile, TV Channel Profile, and Multicast Service Profile.

As shown in Figure 5-1, NE forwards traffic on 2 kinds of connections, unicast connection and multicast connection, on the Data Level. For the unicast connection, it carries all traffic (unicast and broadcast) except multicast traffic. The attributes of unicast connection are specified by the IP Traffic Profile. As for the multicast connection, its attributes are specified by the TV Channel Profile. Moreover, the NE also supports to restrict the subscriber to receive a set of specific TV channels. Multicast Service Profile records the set of specific TV channels.

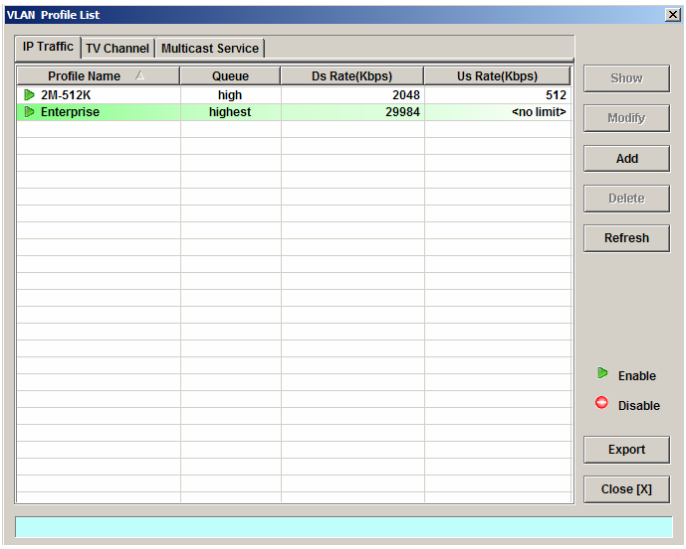
Click Configuration → Profile → VLAN Profile on **Main Menu** to open the **VLAN Profile List Dialog**.

IP Traffic Profile

The IP traffic profile is design to specify the traffic attributes of the PVC on the ADSL line. The operator can create the IP Traffic Profile according to the Service Level Agreement (SLA) and apply it to the corresponding VC-to-VLAN on demand. (see Chapter 7 VC-to-VLAN Configuration).

Click the **Line** tab in ADSL Profile List dialog to launch the **ADSL Profile List – Line Dialog** to configure the ADSL Line profile (see Figure 5-19).

Figure 5-19 VLAN Profile List– IP Traffic Dialog



Click ‘Modify’ or ‘Add’ button to generate the IP traffic profile, each profile must have a name individually. Figure 5-20 shows **Add xDSL IP Traffic Profile Dialog**, and Table 5-14 depicts the related parameters.

Figure 5-20 Add xDSL IP Traffic Profile Dialog

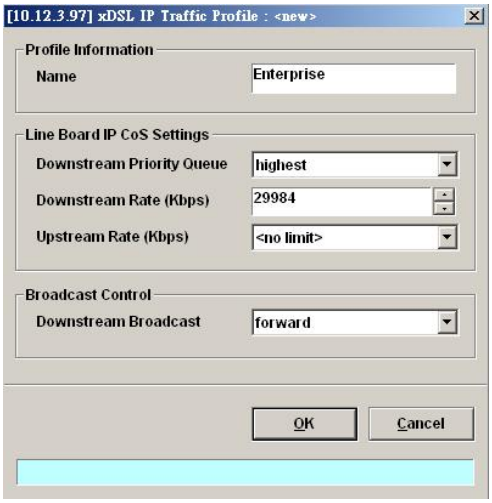


Table 5-14 Add xDSL IP Traffic Profile Dialog Description

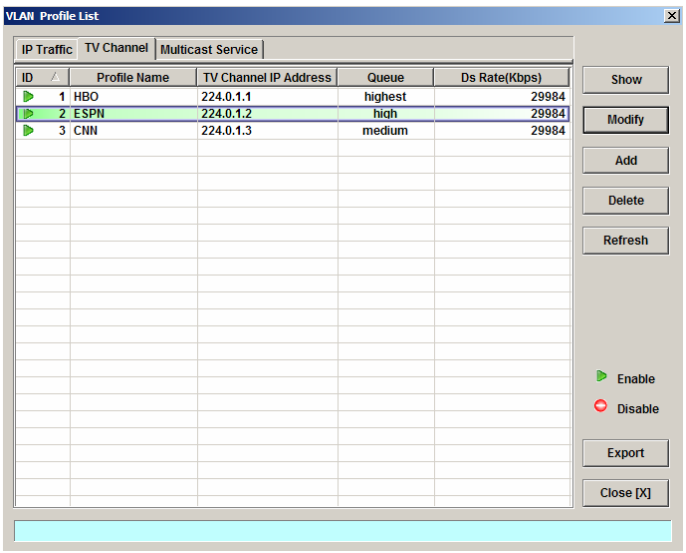
Field	Description
Profile Information	
Name	Enter the name for traffic profile.
Line Board IP CoS Setting	
Downstream Priority Queue (Kbps)	It specifies the downstream priority queue. Valid values are “Low”, “Medium”, “High” and “Highest”.
Downstream Rate (Kbps)	It specifies the maximum allowed downstream net-data rate. The drops drop packets whenever the downstream traffic exceeds the specified rate.
Upstream Rate (Kbps)	It specifies the maximum allowed upstream net-data rate. The drops drop packets whenever the user’s upstream traffic exceeds the specified rate. Valid values are “no limit”, “32”, “64”, “128”, “256”, “384”, “512”, “768”
Broadcast Control	
Downstream Broadcast	This indicates the rule (forward or drop) for downstream broadcast traffic.

TV Channel Profile

The TV channel profile sets value of multicast group IP and the associated downstream bandwidth resource, it is a menu list of the TV channel (multicast group) provided by the Content Service Provider (CSP) or Application Service Provider (ASP).

Click the **TV Channel tab** in **VLAN Profile List Dialog** to launch the **VLAN Profile List–TV Channel Dialog** as shown in Figure 5-21.

Figure 5-21 VLAN Profile List– TV Channel Dialog



Click ‘Modify’ or ‘Add’ button to generate the TV channel profile as shown in Figure 5-22, each profile must have name and profile ID individually. Table 5-15 depicts the related parameters.

Figure 5-22 Add xDSL TV Channel Profile Dialog

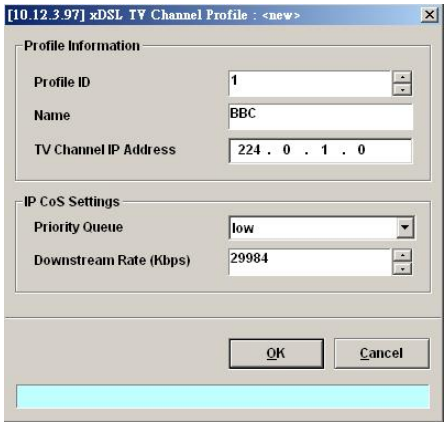


Table 5-15 Add xDSL TV Channel Profile Dialog Description

Field	Description
Profile Information	
Profile ID	It specifies the TV channel ID
Name	Enter the TV channel name
TV Channel IP Address	It specifies the IP address of TV channel (multicast group IP)
IP CoS Settings	
Priority Queue	This specifies the priority queue of TV Channel address. Valid values are “Low”, “Medium”, “High” and “Highest”.
Downstream Rate (Kbps)	It specifies the maximum allowed downstream net-data rate. The drops drop packets whenever the downstream traffic exceeds the specified rate.

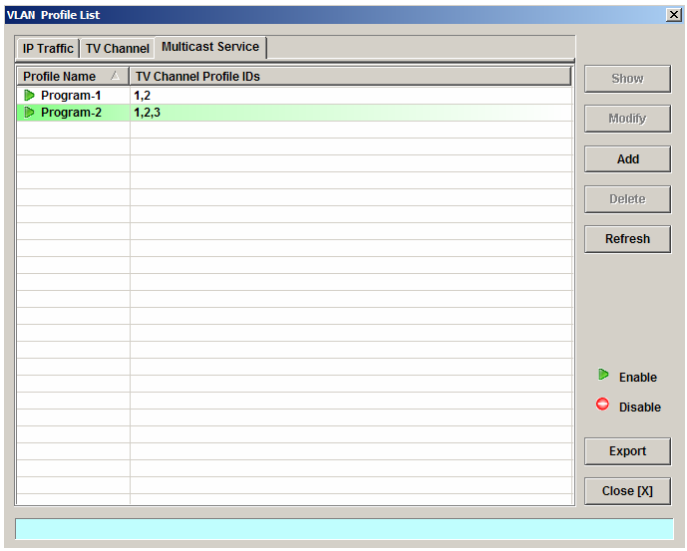
Multicast Service Profile

The multicast service profile is a set of TV channel profiles. Once the TV channel profiles are created, you can generate the multicast service profile to bind suitable TV channel profiles. Each multicast service profile is viewed as a service package for the subscriber to book. The operator then applies the booked multicast service profile to the distinct VC-to-VLAN associated with the subscriber. (see Chapter 7).

Whenever the subscriber clicks his remote controller to watch a TV channel transmitted via the ADSL line, the set-top-box sends the corresponding IGMP report packet. The NE will forward IGMP packet if its multicast IP hits the associated multicast service profile. Otherwise, the NE drops the IGMP packet. As a result, the subscriber is restricted to watch the TV programs that he booked.

Click the **Multicast Service tab** in **VLAN Profile List Dialog** to launch the **VLAN Profile List–Multicast Service Dialog** as shown in Figure 5-23.

Figure 5-23 VLAN Profile List– Multicast Service Dialog



Click ‘Modify’ or ‘Add’ button to generate the multicast service profile as shown in Figure 5-24, each profile must have name and profile individually. Table 5-16 depicts the related parameters.

Figure 5-24 Add xDSL Multicast Service Profile Dialog

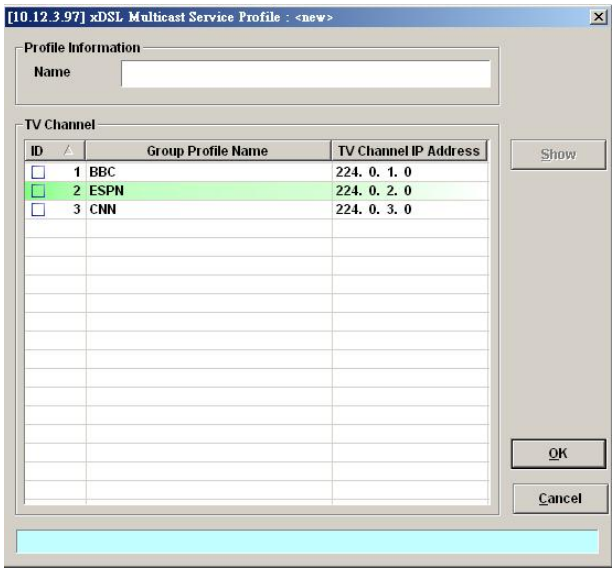


Table 5-16 Add Multicast Service Profile Dialog Description

Field	Description
Profile Information	
Name	Enter the multicast service profile name.
TV Channel	
ID	The serial number for group profile.
Group Profile Name	It specifies the group profile name
TV Channel IP Address	It specifies the multicast IP address
Show	Click this button to view the detail information from List Table.

Configuring the Alarm Definition Profile

The alarm definition profile allows you to define the rule of alarm element in system. Through this profile, you are able to change the severity of individual alarm element and decide to report it or not. Alarm element is specified in the class of module or port. Different types of model may present different alarm element.

Step 1 Click Configuration → Profile → Alarm Definition on **Main Menu** to open the **Alarm Definition List** Dialog as shown in Figure 5-25. Table 5-17 depicts the related parameters.

Figure 5-25 Alarm Definition List Dialog

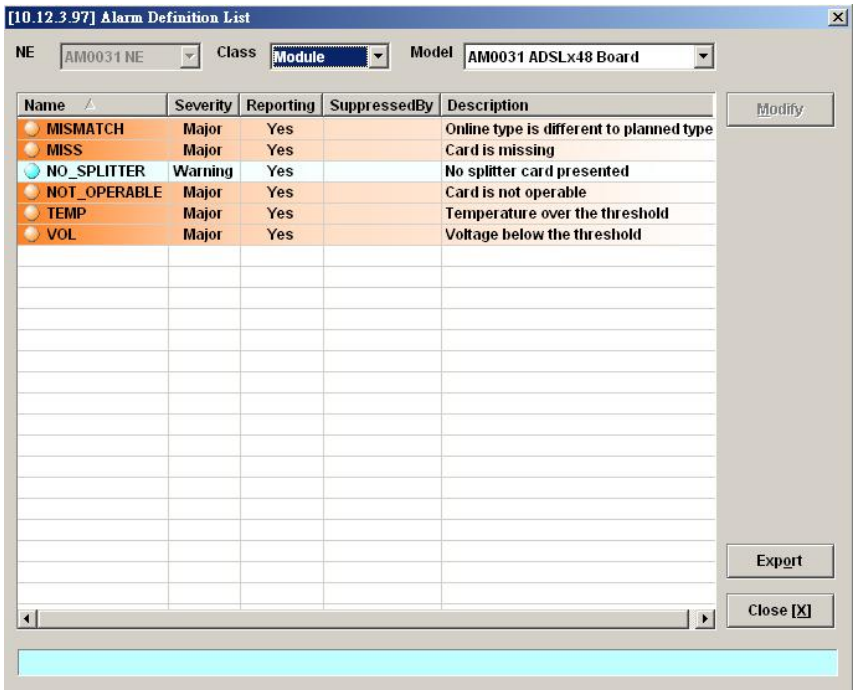


Table 5-17 Alarm Definition List Dialog Description

Field	Description
List Table	
Name	It specifies the alarm name.
Severity	It specifies the alarm severity.
Reporting	It specifies the reporting status.
Suppressed By	It specifies the rule of alarm suppression.
Description	It specifies the alarm description.
Top Combo-box	
NE	This indicates the current NE model.
Class	Use this combo-box to select the alarm class, module or port.
Model	Use this combo-box to select the card module or port module.
Function Button	
Modify	Select the item from List Table to modify.
Export	Click this button to save the contents of **Alarm Definition List** to the Personal Computer.
Close	Exit the **Alarm Definition List** Dialog.

Step 2 Click ‘Modify’ button to modify the Alarm Definition. Figure 5-26 shows **Modify Alarm Definition Dialog**, and Table 5-18 depicts the related parameters.

Figure 5-26 Modify Alarm Definition Dialog

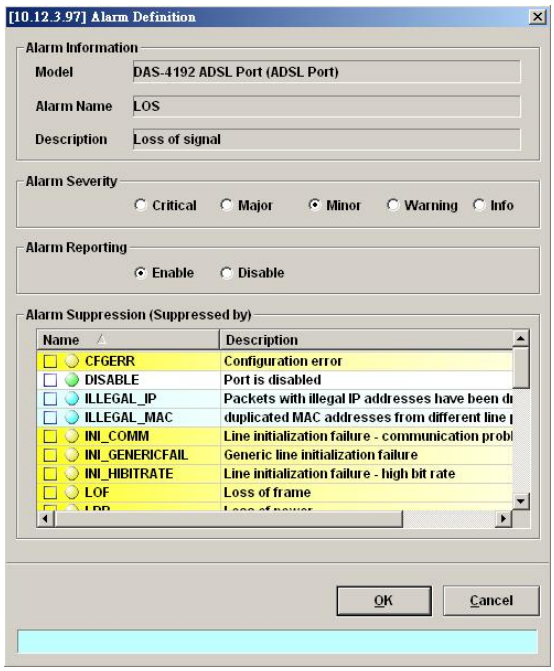


Table 5-18 Modify Alarm Definition Dialog Description

Field	Description
Alarm Information	
Model	It specifies current module name under modifying.
Alarm Name	It specifies the alarm name.
Description	This describes the current selected alarm.
Alarm Severity	Check the check box to set the alarm severity of the specified alarm.
Alarm Reporting	Enable or disable reporting of the specified alarm.
Alarm Suppression (Suppressed by)	
Name	Check the radio button to choose which the specified alarm to be suppressed by.
Description	This describes the alarm’s meaning.

The alarm suppression (suppressed by) allows you to mask specify alarms when there are sequences occurred at the same time, for example, if the LOF is suppressed by the LOS, due to loss of signal, the LOF will not be display on the screen but only LOS.

Chapter 6 Interface Port Management

This chapter describes system interface specification and standard supports. This chapter contains the following sections:

- xDSL Line Interface Management
- GE Network Interface Management

xDSL Line Interface

This section helps you to attach the profile to the xDSL line interfaces. The function buttons of xDSL Port List dialog provides shortcut of relative port setting. As the ADSL and SHDSL configuration are similar and hence illustrated together in this section.

Step 1 Click Configuration → xDSL → ADSL Port Setting on **Main Menu** to open the **ADSL Port List** Dialog as shown in Figure 6-1. Table 6-1 depicts the related parameters.
Or
Click Configuration → xDSL → SHDSL Port Setting on **Main Menu** to open the **SHDSL Port List** Dialog. Table 6-1 depicts the related parameters.

In comparison with the **ADSL Port List** Dialog, the **SHDSL Port List** Dialog does not support the following function

- Traffic Policing
- MC Channel

Figure 6-1 ADSL Port List Dialog

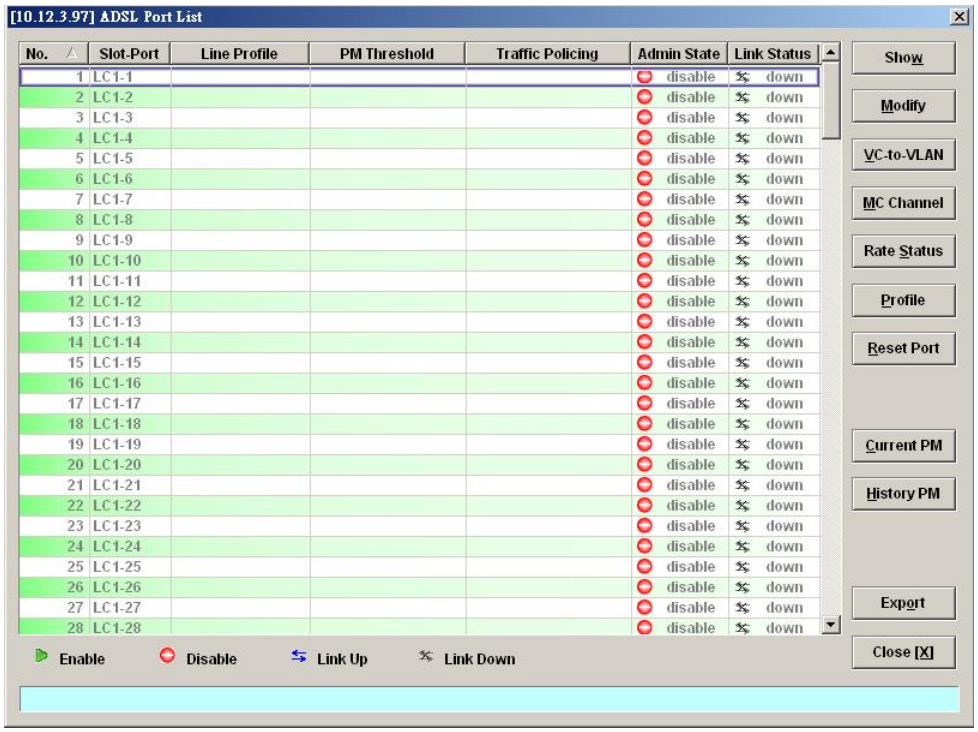


Table 6-1 xDSL Port List Dialog Description

Field	Description
List Table	
No.	This specifies the serial number of entry of List Table.
Slot-Port	This specifies the location of ADSL port
Line Profile	This specifies the line profile.
PM Threshold	This specifies the PM threshold profile.
Traffic Policing	This specifies the Traffic Policing profile. [Only for the **ADSL Port List** Dialog]
Admin State	This specifies the administrative status (enable or disable)
Link Status	It specifies the link connection status.
Function Button	
Show	Click this button to show.
Modify	Click this button to modify.
VC-to-VLAN	Click this button to configure the VC-to-VLAN parameters
MC Channel	Click this button to configure the multicast channel related parameters. [Only for the **ADSL Port List** Dialog]
Rate Status	Click this button to monitor the connection rate status.
Profile	Click this button to arrange the profile setting.
Reset Port	Click this button to reset port
Current PM	Click this button to view the current performance
History PM	Click this button to view the historical performance
Export	Click this button to save the contents of **ADSL Port List** to the Personal Computer.
Close	Exit the **ADSL Port List** Dialog.

Step 2 Click ‘Modify’ button to modify the ADSL port. Figure 6-2 shows **Modify ADSL Port Dialog**. Table 6-2 depicts the related parameters.

Figure 6-2 Modify ADSL Port Dialog

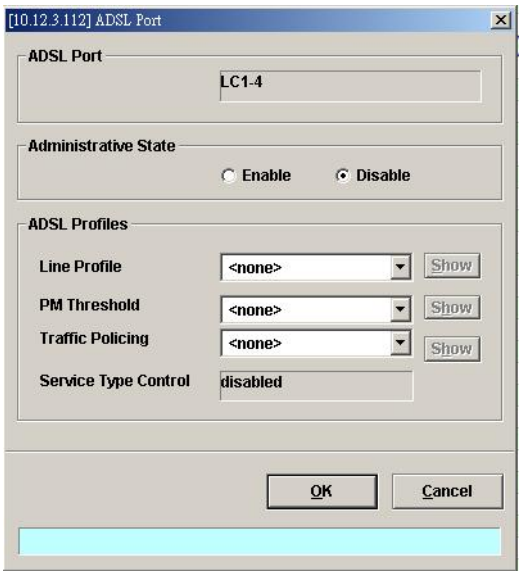


Table 6-2 Modify ADSL Port Dialog Description

Field	Description
ADSL Port	This indicates the current ADSL Port under modification.
Administrative State	Enable or disable the specified ADSL port.
ADSL Profiles	
Line Profile	Use this combo-box to select an existent ADSL line profile.
PM Threshold	Use this combo-box to select an existent PM Threshold profile.
Traffic Policing	Use this combo-box to select an existent Traffic Policing profile.
Service Type Control	This indicates the state of Service Type Control (STC) of the selected ADSL line card.
Function Button	
OK	Press this button to commit setting.
Cancel	Press this button to cancel setting.
Show	Click this button to show the specified profile.

Service Type Control (STC) only takes effect after the applied line card is reset.

To make the applied Traffic Policing Profile take effect, Service Type Control (STC) must be enabled.

For the SHDSL ports, follow the subsequent procedures.

Step 3 Click 'Modify' button to modify the SHDSL port. Figure 6-3 shows **Modify SHDSL Port Dialog**. Table 6-3 depicts the related parameters.

Figure 6-3 Modify SHDSL Port Dialog

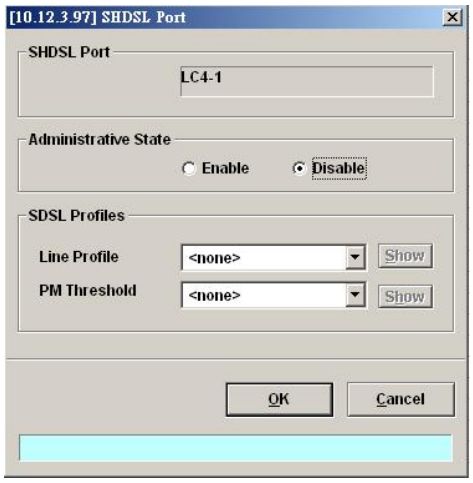


Table 6-3 Modify SHDSL Port Dialog Description

Field	Description
SHDSL Port	This indicates the current SHDSL Port which is under modifying.
Administrative State	Enable or disable the specified SHDSL port.
SHDSL Profiles	
Line Profile	Use this combo-box to select an existent SHDSL line profile.
PM Threshold	Use this combo-box to select an existent PM Threshold profile.
Function Button	
OK	Press this button to commit setting.
Cancel	Press this button to cancel setting.
Show	Click this button to show the specified profile.

GE Network Interface Management

There are two GE network interfaces, GE1 and GE2, for DAS4 series IP-DSLAM. GE1 is stated as the uplink GE port. All traffic from the xDSL line interface is forwarded to this interface by default. (i.e., the so-called port isolation) GE2 is stated as the subtended GE port, and it connects to other equipment and forward traffics to GE1 if none of LACP or RSTP is enabled.

Step 1 Point mouse pointer at GE port object, click mouse right button Trunk → Port Setting on launched **Menu** to open the **Trunk Port List** Dialog as shown in Figure 6-4 and Table 6-4 depicts the related parameters.

Figure 6-4 Trunk Port Dialog

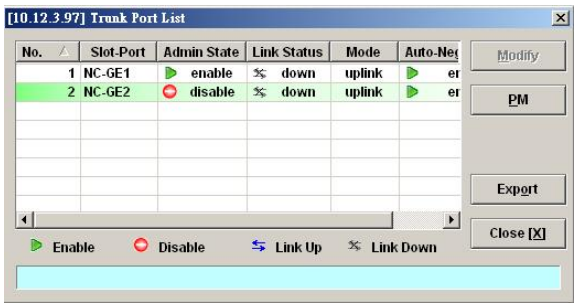


Table 6-4 Trunk Port Dialog Description

Field	Description
Trunk Port List Table	
No.	This indicates the serial number of entry of the List Table.
Slot-Port	This indicates the location of trunk GE port.
Admin State	This indicates the administrative state of GE port.
Link Status	This indicates the operational state of GE port.
Mode	This indicates the mode of GE port, be either an uplink port or a subtended port.
Auto Negotiation	This indicates the auto negotiation status of GE port.
Function Button	
Modify	Click this button to modify.
PM	Click this button to show GE port's performance statistics.
Export	Click this button to save the contents of **Trunk Port List** to the Personal Computer.
Close	Exit the **Trunk Port List** Dialog.

Step 2 Click 'Modify' button to modify the trunk port. Figure 6-5 shows the **Trunk Port Configuration Dialog**, and Table 6-5 depicts the related parameters.

Figure 6-5 Trunk Port Configuration Dialog

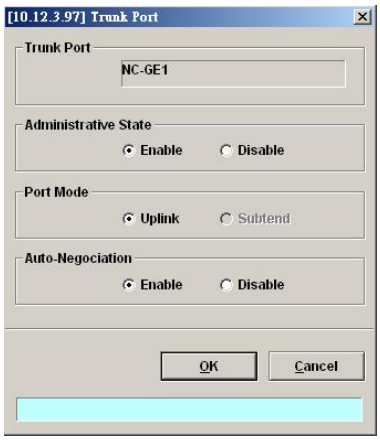
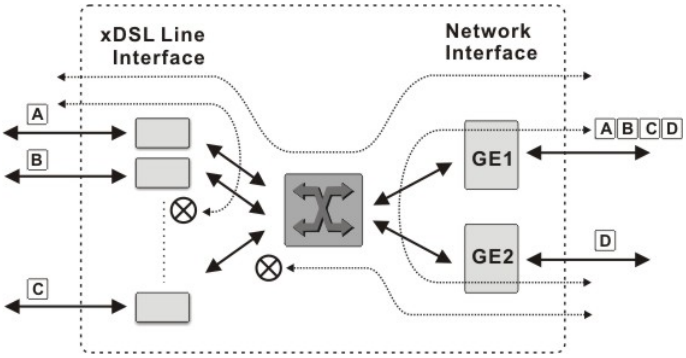


Table 6-5 Trunk Port Configuration Dialog Description

Field	Description
Trunk Port	This indicates the GE port under configuring.
Administrative State	Enable or disable the specified GE port.
Port Mode	Setting the GE port to uplink mode or subtended mode. Subtended mode is only available on GE2, GE1 is always the uplink port.
Auto-Negotiation	Enable or disable the auto-negotiation mode of the specified GE port.

Figure 6-6 GE Network Interface Packet Forward Illustrate



The DAS4 series IP-DSLAM support the so-called “Port Isolation”, all xDSL users can not communicate with each other.

Once the GE2 is configured as a subtended port, all the ingress traffic of GE2 is restricted to be forwarded to GE1.

Link Aggregation (Static / Dynamic)

Link aggregation is to aggregate the 2 GE ports to provide higher uplink bandwidth. This dialog allows you to configure both static link aggregation and LACP (IEEE802.3ad, Link Aggregation Control Protocol).

Follow the subsequent procedures to configure the related parameters.

Click Configuration → Trunk → Link Aggregation on **Main Menu** to open the **LACP for Trunk Port Dialog**. Figure 6-7 shows **LACP for Trunk Port Dialog**, and Table 6-6 depicts the related parameters.

Figure 6-7 LACP for Trunk Port Dialog

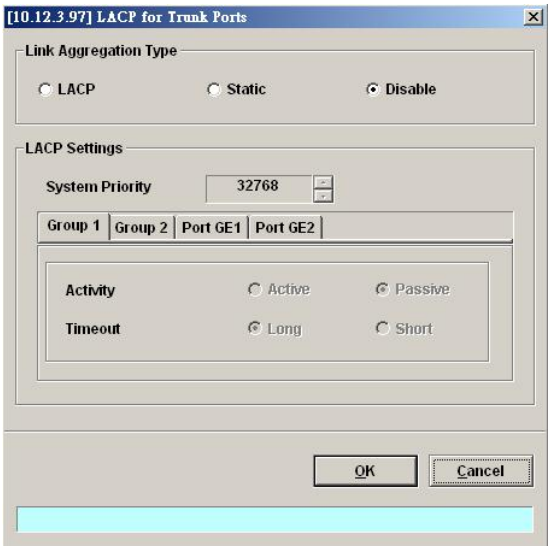


Table 6-6 LACP for Trunk Ports Dialog Description

Field	Description
Link Aggregation Type	
LACP	Set link aggregation type to “LACP” for GE ports.
Static	Set link aggregation type to “Static” for GE ports.
Disable	Check this radial button to forbid the GE ports to run any link aggregation function.
LACP Setting	
System Priority	It specifies the system priority required for the LACP.
Group1/Group2 (Tab)	
Activity	It specifies the activity of the GE ports of the specified group, active or passive, for the LACP. • **Passive**: The NE does not initiate LACP negotiation procedure on the specified group voluntarily, but waits for its LACP peer (in active state) initiates negotiation. The NE will form the aggregation link with its peer at the end of the negotiation procedure. • **Active**: The NE is willing to initiate the LACP negotiation procedure on the specified group and sends out an LACP packet voluntarily. The aggregation link will be formed if the other end is running in LACP active or passive mode.
Timeout	It specifies the interval of periodical transmitting LACP BPDU by the peer NE. If the NE does not receive the LACP BPDU after 3 consecutive specified intervals, the NE will remove the port from the aggregation link. For a busy aggregation link, it is recommended to set a short timeout to ensure that a disabled port is removed as soon as possible. Its value is either long (30 seconds) or short (1 second).
Port GE1/Port GE2 (Tab)	
LACP Group	It specifies which the LACP group of GE1/GE2 is.
Port Priority	It specifies the port priority of GE1/GE2.

RSTP Configuration

The RSTP protocol smartly prevents the loop connection in your uplink networks. It improves the Spanning Tree Protocol (STP) by reducing the fail-over time whenever there is network topology change. The configuration of RSTP is divided to 2 parts. One is the system-wise configuration, which is described in the subsection “Bridge”. The other one is the port-specific configuration, which is described in the subsection “Port GE1/Port GE2”.

Follow the subsequent procedures to configure the related parameters.

Click Configuration → Trunk → RSTP Setting on **Main Menu** to open the **Rapid Spanning Tree Protocol for Trunk Ports** Dialog

Bridge

Click the **Bridge tab** in **Rapid Spanning Tree Protocol for Trunk Ports Dialog** to launch the **Rapid Spanning Tree Protocol for Trunk Ports – Bridge Dialog** as shown in Figure 6-8. Table 6-7 depicts the related parameters.

Figure 6-8 Trunk RSTP Setting– Bridge Dialog

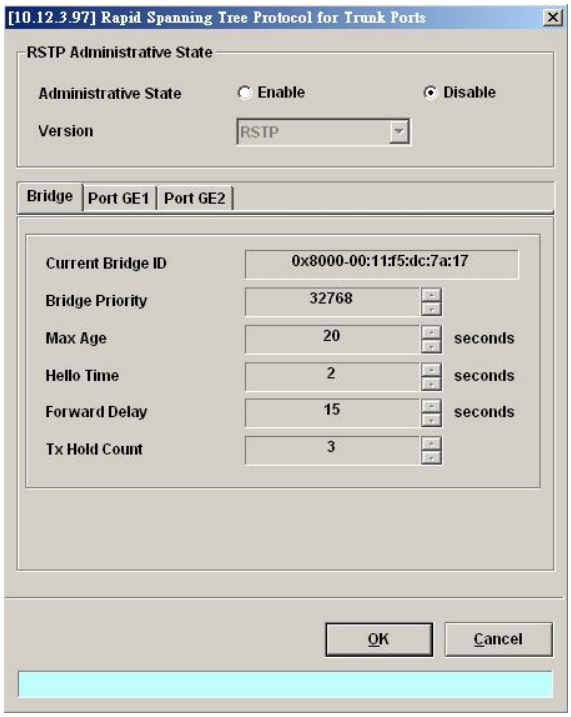


Table 6-7 Rapid Spanning Tree Protocol for Trunk Ports– Bridge Dialog Description

Field	Description
RSTP Administrative State	
Administrative State	Enable or disable the RSTP function for GE ports.
Version	This specifies the RSTP version the NE runs.
Bridge (Tab)	
Current Bridge ID	It indicates an unique 8-octet bridge ID which consists of a 2-octet Bridge Priority and a 6-octet MAC address.
Bridge Priority	It specifies the 2-octet bridge priority. If the given value is lower than all the other L2 devices', the NE is selected as the root bridge as defined in IEEE 802.1d/ 802.1w. Its valid range is through 0 to 61440 in steps of 4096
Max Age	It specifies the maximum age of STP/RSTP information learned from the network on any port before it is discarded.
Hello Time	It specifies the amount of time between the transmission of configuration bridge PDUs by this node on any port when it is the root of the spanning tree or trying to become so.
Forward Delay	This specifies the time value that controls how fast a port changes its spanning state when moving towards the Forwarding state. The value determines how long the port stays in the Learning states, which precede the Forwarding state. This value is also used, when topology change has been detected and is underway, to age all dynamic entries in the Forwarding Database.
Tx Hold Count	This specifies the value used by the port Transmit state machine to limit the maximum transmission rate.

It is noted that the following relationships have to be maintained.

2 x (***Forward Delay*** – 1 *second*) >= ***Max Age***
Max Age >= 2 x (***Hello Time*** + 1 *second*)

Port GE1/Port GE2

Click the **Port GE1/Port GE2** tab in **Rapid Spanning Tree Protocol Dialog** to launch the **Rapid Spanning Tree Protocol –Port GE1/Port GE2 Dialog** as shown in Figure 6-9. Table 6-8 depicts the related parameters.

Figure 6-9 Trunk RSTP Setting– Port GE1/Port GE2 Dialog

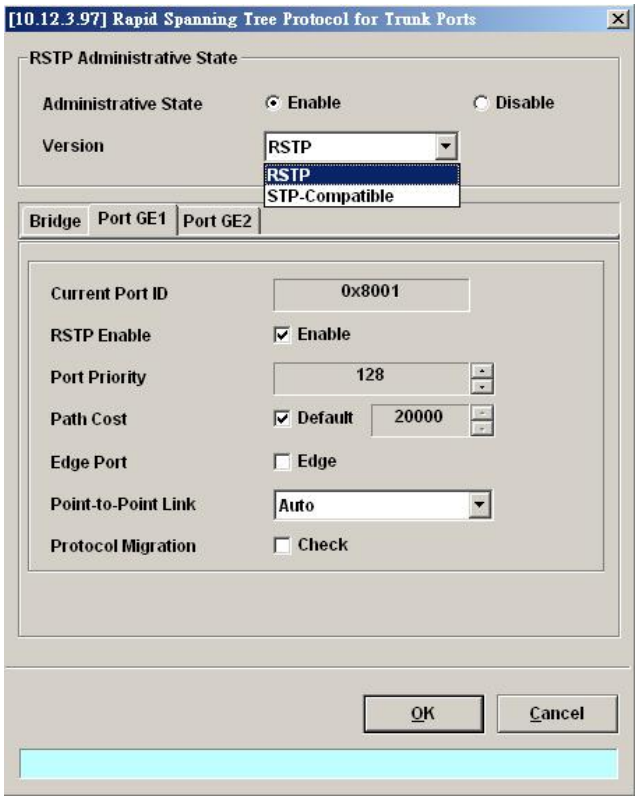


Table 6-8 RSTP for Trunk Ports– Port GE1/Port GE2 Dialog Description

Field	Description
RSTP Administrative State	
Administrative State	Enable or disable the RSTP function for GE ports.
Version	This specifies the RSTP version the NE runs.
Port GE 1 / Port GE 2 (Tab)	
Current Port ID	It specifies the GE1/GE2 port's port ID so far.
Port Enable	The current RSTP enabled/disabled status of the port
Port Priority	It specifies the port priority of a port. In the case that more than one ports form a loop in the NE, the RSTP/STP will block the ports of lower Port Priority (higher numerical value). Only the port of higher Port Priority (lower numerical value) is to be at the Forwarding state. Its valid range is through 0 to 240 in steps of 16
Path Cost	It specifies the contribution of this port to the path cost of paths towards the spanning tree root bridge. A port of higher speed should be configured with lower numerical value. When set it to be "default", its value follows the definition of IEEE 802.1d Table 17-3.
Edge Port	Check to let the port become edge port in spanning tree topology. An edge port on an RSTP switch will immediately transition to the forwarding state. However, the port will be a non-edge port if the NE receives RSTP BPDU on that port. And the port state and port role of the non-edge port will be determined by the RSTP hereafter.
Point-to-Point Link	Select YES to force this port always be treated as if it is connected to a point-to-point link. Select NO to let this port be treated as having a shared media connection. AUTO indicates that this port is considered to have a point-to-point link if it is an aggregator and all of its members are aggregately, or if the MAC entity is configured for full duplex operation, either through auto-negotiation or by management means.
Protocol Migration	Check to force this port to transmit RSTP BPDUs.

When set Path Cost to be "default", its value follows the definition of IEEE 802.1d Table 17-3 as follows.

When set Path Cost to be "default", its value follows the definition of IEEE 802.1d Table 17-3 as follows.

Link Speed	Recommended value	Recommended range	Range
<=100 Kb/s	200 000 000[a]	20 000 000–200 000 000	1–200 000 000
1 Mb/s	20 000 000[a]	2 000 000–200 000 000	1–200 000 000
10 Mb/s	2 000 000[a]	200 000–20 000 000	1–200 000 000
100 Mb/s	200 000[a]	20 000–2 000 000	1–200 000 000
1 Gb/s	20 000	2 000–200 000	1–200 000 000
10 Gb/s	2 000	200–20 000	1–200 000 000
100 Gb/s	200	20–2 000	1–200 000 000
1 Tb/s	20	2–200	1–200 000 000
10 Tb/s	2	1–20	1–200 000 000

CoS Configuration

In order for the NE to play the role of edge (boundary) node of a DiffServ domain, the NE supports the the configurable mapping among the following entities.

- IEEE 802.1p User Priority as configured in the VC-to-VLAN configuration.
- Queue (Traffic Class) on each uplink trunk GE port
- DiffServ Code Point (DSCP) of the IP frame to be forwarded via the uplink trunk GE port.

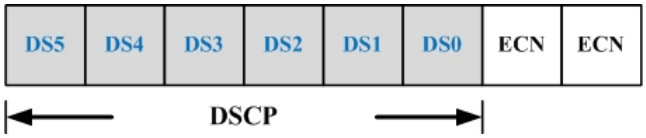
User priority: The IEEE 802.1p user priority is a label carried with the frame that communicates the requested priority to the next hop (bridge, router or end systems). Typically, the user priority is not modified in the intermediate hop. Thus, the user priority has end-to-end significance across bridged LANs.

Queue (traffic class): A bridge can be configured so that multiple queues are used to hold frames waiting to be transmitted on a given outbound port, in which case the traffic class is used to determine the relative priority of the queues. Whenever the bridge's physical port is configured as strict priority (SP), all waiting frames at a higher traffic class are transmitted before any waiting frames of a lower traffic class. As with access priority, traffic class is assigned by the bridge on the basis of incoming user priority.

Currently, the NE supports 8 traffic classes (queues) on its GE ports with the strict priority (SP) scheduling policy only.

Differentiated Service Code Point (DSCP): RFC 2474/2475 defines the DiffServ field, which replaces the Type of Service (ToS) field in the IPv4 header. It facilitates the network devices behind IP-DSLAM to fulfill the end-to-end QoS.
Figure 6-10 shows the DiffServ field.

Figure 6-10 DiffServ Field



The most significant six bits of DiffServ field are called DSCP. The network device classifies packets and marks them with appropriate DSCP value. According to these values, other network devices in the DiffServ domain can make decision for packets behavior and provide the Quality of Service properly.

A network device classify the priorities of traffic with 6 different levels, they are Express Forwarding (EF), Assured Forwarding Class 4 (AF4), Assured Forwarding Class 3 (AF3), Assured Forwarding Class 2 (AF2), Assured Forwarding Class 1 (AF1) and Best Effort (BE). These forwarding classes are represented by the first 3 bits of DSCP as shown in Table 6-9.
Moreover, the network device differentiates three drop precedence in AF4~AF1 respectively into last 3 bits of DSCP, they are Low Drop Precedence, Medium Drop Precedence and High Drop Precedence.

Table 6-9 DSCP: DS3~DS5 Bit Representation

Decimal representation of bits DS5, DS4 and DS3	Description
7	For link layer and routing protocol keep alive.
6	For using for IP routing protocols.
5	Express Forwarding (EF)
4	Assured Forwarding Class 4 (AF4)
3	Assured Forwarding Class 3 (AF3)
2	Assured Forwarding Class 2 (AF2)
1	Assured Forwarding Class 1 (AF1)
0	Best Effort (BF)

Expedited Forwarding: The code point of EF is 101110, the packets marked with EF is to be transmitted with highest priority, lowest drop probability.

Assured Forwarding: Assured Forwarding PHB is suggested for applications that require a better reliability than the best-effort service. There are 4 classes of AF. Within Each AF class, there are 3 drop precedences. In case of congestion, the drop precedence of a packet determines the relative importance of the packet within the AF class. Table 6-10 indicates the relationship of the 4 AF class.

Table 6-10 DSCP Class Relationship

	Class			
Drop	**AF1**	**AF2**	**AF3**	**AF4**
Low Drop Probability	001010 (AF11)	010010 (AF21)	011010 (AF31)	100010 (AF41)
Medium Drop Probability	001100 (AF12)	010100 (AF22)	011100 (AF32)	100100 (AF42)
High Drop Probability	001110 (AF13)	010110 (AF23)	011110 (AF33)	100110 (AF43)

Follow the subsequent procedure to configure the Trunk CoS mapping.

Click Configuration → Trunk → CoS Mapping on **Main Menu** to open the **CoS Priority – Queue Mapping Dialog** as shown in Figure 6-11. Table 6-11depicts the related parameters.

Figure 6-11 Trunk CoS Mapping and DSCP Re-mapping Dialog

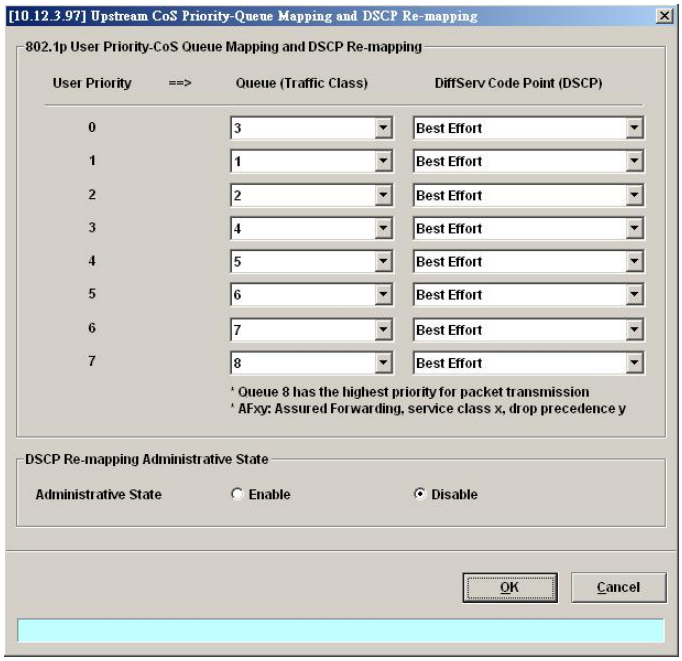


Table 6-11 Trunk CoS Mapping and DSCP Re-mapping Dialog Description

Field	Description
802.1p User Priority-CoS Queue Mapping and DSCP Re-mapping	
User Priority	This indicates the 802.1p user priority as configured in the VC-to-VLAN configuration
Queue (Traffic Class)	Use this combo-box to set the mapping relation between each 802.1p and CoS queues on the uplink trunk GE port
DiffServ Code Point (DSCP)	Use this combo-box to set the new DSCP value on the IP frame to be forwarded via the uplink trunk GE port.
DSCP Re-mapping Administrative State	
Administrative State	Enable or disable the DSCP Re-mapping function.

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Chapter 7 Connection Port Management

This chapter describes data channel connection and access services filter control.

This chapter contains the following sections:

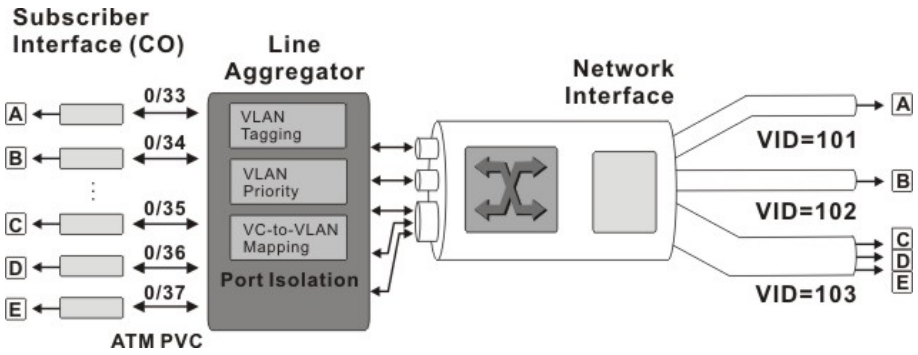
- VC-to-VLAN Configuration
- ISP Information for IP over ATM
- VLAN MAC Limit
- Packet Filtering
- Multicast Channel Configuration
- DHCP Services Configuration
- System Services Configuration

VC-to-VLAN Configuration

The DAS4 Series IP-DSLAM supports up to 8 PVCs per xDSL port and 4094 VLANs.

The VC-to-VLAN setting can easily define the multiple to one or one to one mapping; you can group different PVCs to a single VLAN ID as well as single PVC to one VLAN mapping. Figure 7-1 illustrates the basic principle for VLAN assignment in the DAS4 Series IP-DSLAM. As shown in Figure 7-1, the NE forwards five data flows, A~E, which may be either owned by the same subscriber or by different subscribers. It is noted that these five data flows are conveyed by five individual ATM PVCs, and they are grouped into 3 individual VLANs.

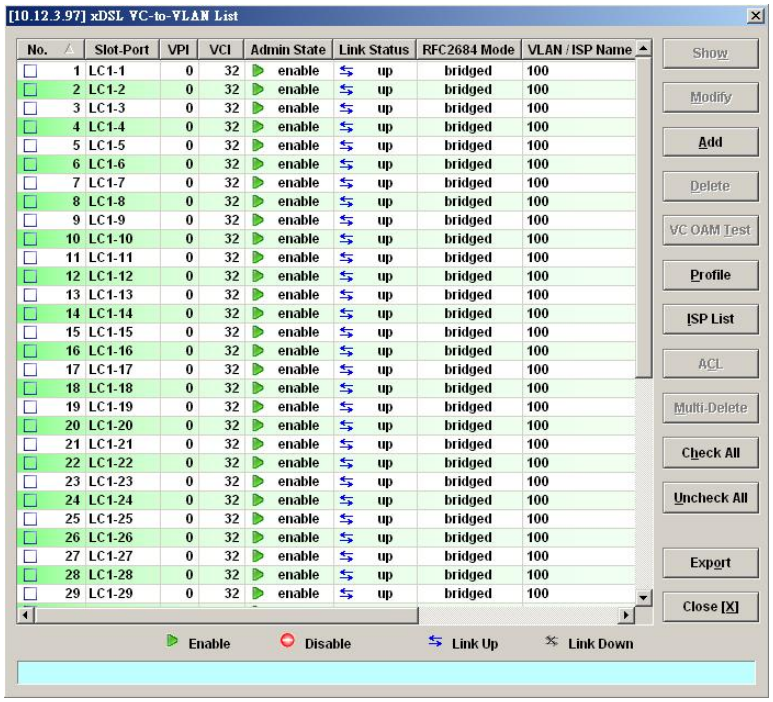
Figure 7-1 VC-to-VLAN Mapping Illustrate



Follow the subsequent procedure to manage your VC-to-VLAN connectivity on a specific xDSL port.

Step 1 Click Configuration → xDSL → VC-to-VLAN on **Main Menu** to open the **xDSL VC-to-VLAN List** Dialog as shown in Figure 7-2.

Figure 7-2 xDSL VC-to-VLAN List Dialog



Step 2 Click on the 'Add' button on the right hand side of Figure 7-2 to display the window (Figure 7-3) for adding new PVC and configuring the associated setting. Note that the configuration tabs are not exact the same for the RFC2684 bridged mode and routed mode. Figure 7-3 ~ Figure 7-8 show the corresponding configuration dialogs. Click either one tab to launch the corresponding dialog to configure the parameters. Table 7-1 depicts the related configuration parameters

If the configuration dialogs are the same for both the bridged mode and routed mode, Figure 7-3 ~ Figure 7-8 only show the ones in the bridged mode without any additional description. Otherwise, Figure 7-3 ~ Figure 7-8 show the configuration dialogs with description to indicate it. The rule of description also applies to Table 7-1.

Figure 7-3 xDSL VC-to-VLAN Setting – IP Traffic Dialog

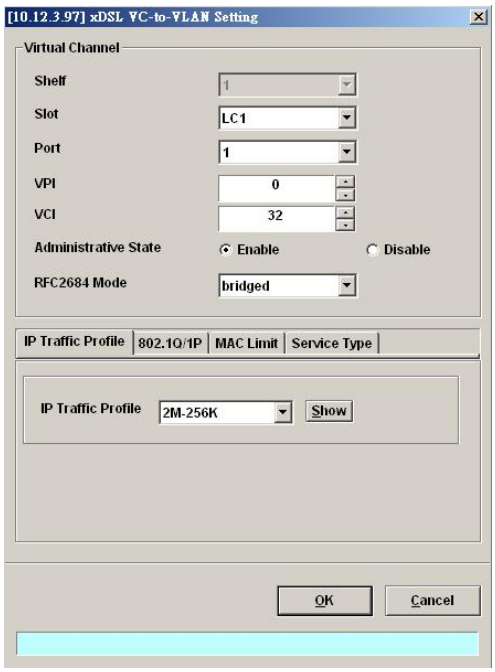


Figure 7-4 xDSL VC-to-VLAN Setting – 802.1Q/1P Dialog (only for the RFC2684 bridged mode)

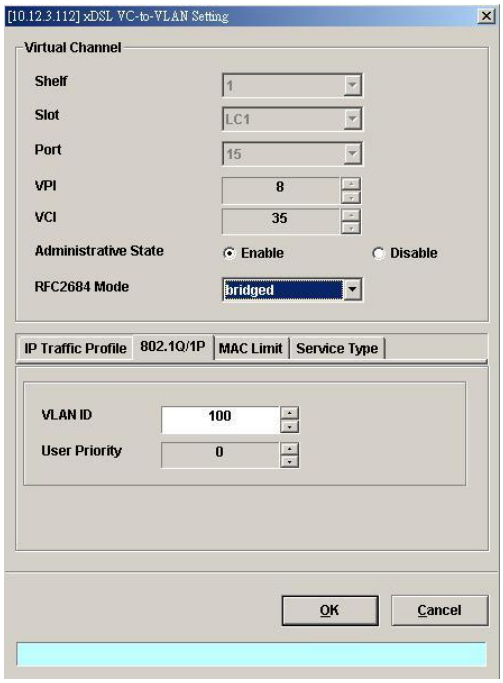


Figure 7-5 xDSL VC-to-VLAN Setting –802.1P Dialog (only for the RFC2684 routed mode)

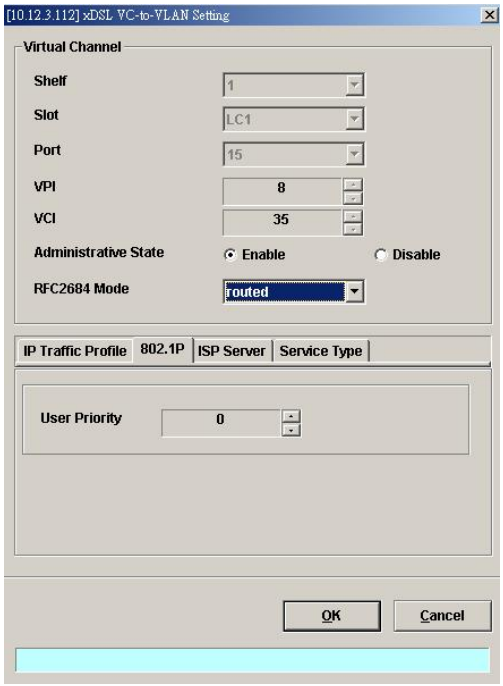


Figure 7-6 xDSL VC-to-VLAN Setting – MAC Limit Dialog (only for the RFC2684 bridged mode)

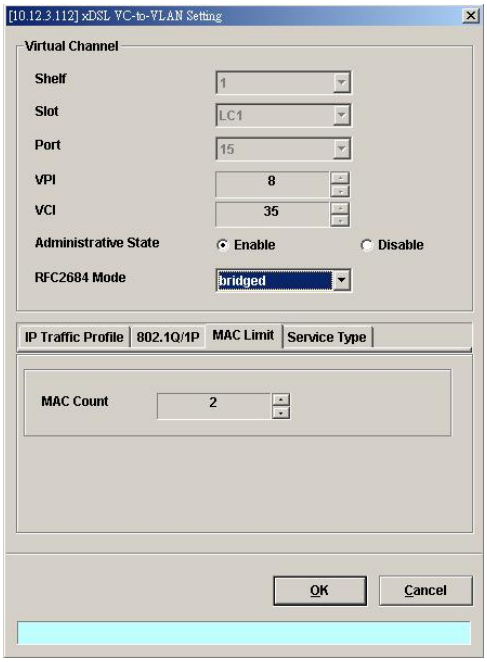


Figure 7-7 xDSL VC-to-VLAN Setting – ISP Server Dialog (only for the RFC2684 routed mode)

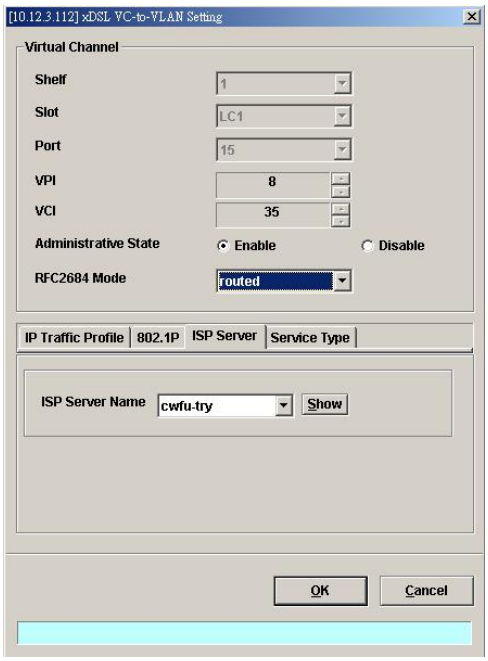
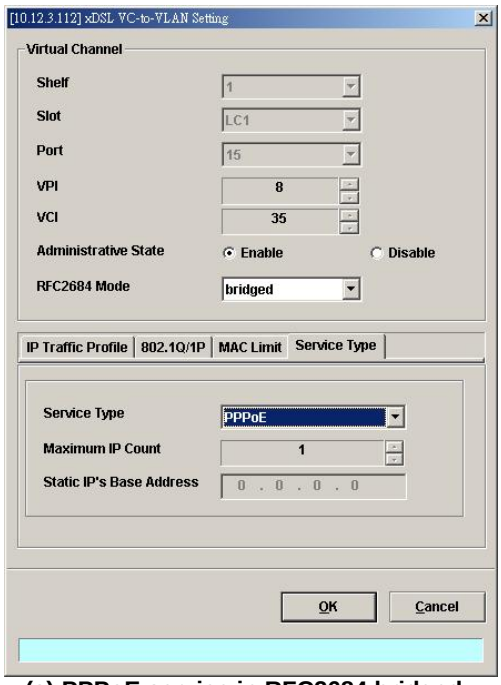
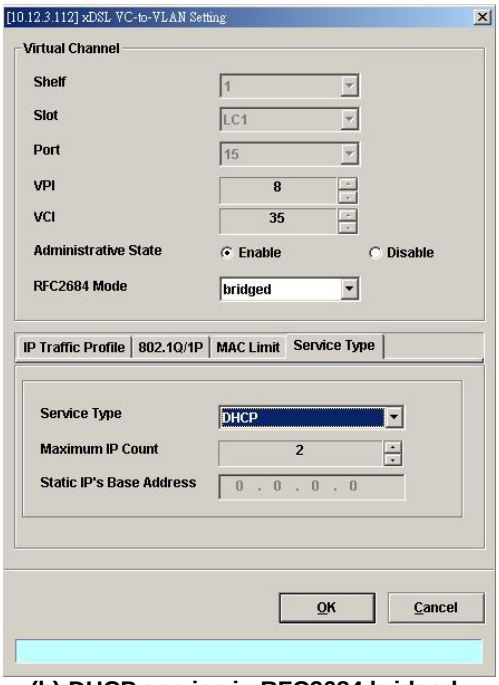


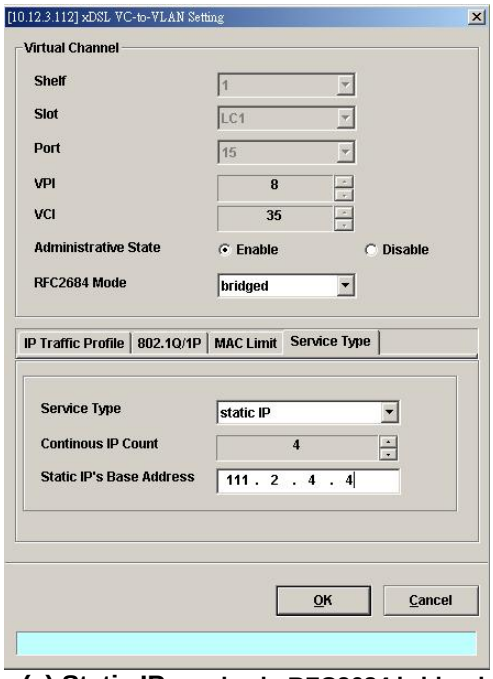
Figure 7-8 xDSL VC-to-VLAN Setting – Service Type Dialog



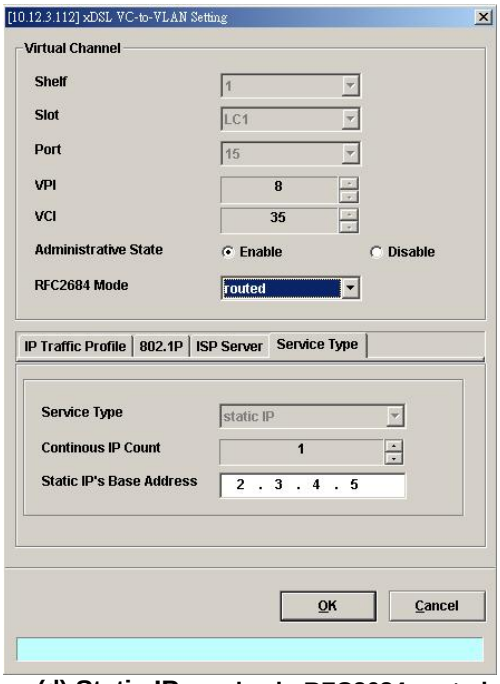
(a) PPPoE service in RFC2684 bridged mode



(b) DHCP service in RFC2684 bridged mode



(c) Static IP service in RFC2684 bridged mode



(d) Static IP service in RFC2684 routed mode

Table 7-1 xDSL VC-to-VLAN Setting Description

Field	Description
Virtual Channel	
Shelf, Slot, Port	This specifies the shelf-slot-port.
VPI	It specifies the VPI value
VCI	It specifies the VCI value
Administrative State	It specifies the state of this VC-VLAN to enable or disable.
RFC2684 Mode	It specifies the RFC 2684 mode, (Bridge or Route)
IP Traffic Profile Dialog	
IP Traffic Profile	This specifies the IP traffic profile
802.1Q/1P Dialog [only for RFC2684 bridged mode]	
VLAN ID	This specifies the VLAN ID value
User Priority	This specifies the VLAN priority
802.1P Dialog [only for RFC2684 routed mode]	
User Priority	This specifies the VLAN priority of corresponding VC-to-VLAN connection.
ISP Server Dialog [only for RFC2684 routed mode]	
ISP Server Name	It specifies the ISP server name as specified in the section 'ISP Information for IP over ATM' of Chapter 7.
MAC Limit Dialog [only for RFC2684 bridged mode]	
MAC Count	This specifies the number of subscriber's MACs allowed for the corresponding VC-to-VLAN connection.
Service Type Dialog	
Service Type	This specifies the service type to be allowed on the PVC of individual subscriber. The following three service types are supported now. ● PPPoE ● DHCP ● Static IP
Maximum IP Count [only for DHCP Service]	This indicates the number of IP to be allowed while DHCP is selected
Continuous IP Count [only for Static IP Service]	This indicates the number of IP to be allowed while Static IP is selected
Static IP's Basic Address [only for Static IP Service]	This specifies the base of the IP address if the service type is Static IP

Whenever the service type is specified as "Static IP Service", it is noted that the following relationship should be maintained.

IP Address Increment/Port ≥ Continuous IP Count

Enabling the Service Type Control makes the NE to provide the IP/MAC anti spoofing function.

In the case that the subscriber acquires his IP address dynamically via PPPoE or DHCP, the NE will block the subscriber's traffic before a valid IP address assigning. Once the subscriber possesses a valid dynamic or static IP, the NE will just forward the packet of valid source IP/MAC addresses. IN other words, the NE drops the subscriber's traffic of invalid source IP/MAC addresses.

Access Control List

Step 1 Select a port in **VC to VLAN List dialog** and click “ACL” button on the right hand side of Figure 7-2 to configure the Access Control List option of the selected port. Figure 7-9 illustrated the **VC-to-VLAN Access Control List dialog**, and Table 7-2 depicts the related parameters. Figure 7-10 illustrated the window for adding new MAC into the access control list.

Figure 7-9 VC-to-VLAN Access Control List dialog

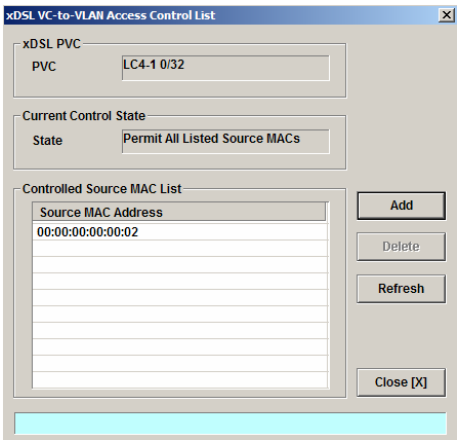


Table 7-2 VC-to-VLAN Access Control List Dialog Description

Field	Description
xDSL PVC	
PVC	This indicates the specified xDSL port and specified PVC.
Current Control State	
State	This indicates the current access control state of the specified PVC.
Controlled Source MAC List	
Source MAC Address	This indicates the MAC address under controlling.
Function Button	
Add	Click this button to add or modify the role of access control.
Delete	Click this button to delete the specified access control entry.
Refresh	Click this button to refresh the access control state.
Close	Exit the Access Control List Dialog.

Step 2 Click ‘Add’ button to launch the **xDSL Access Control Dialog.** Figure 7-10 shows the **xDSL Access Control Dialog,** and Table 7-3 depicts the related parameters.

Figure 7-10 Add xDSL Access Control Dialog

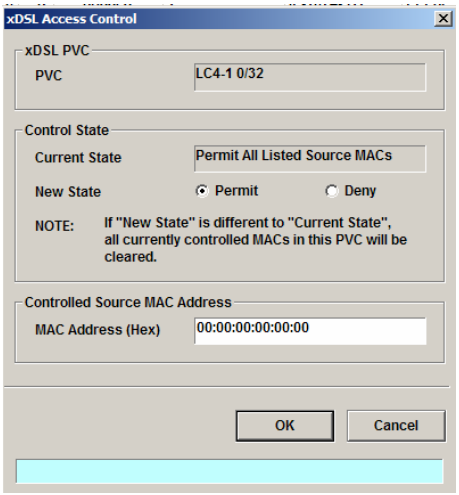


Table 7-3 Add xDSL Access Control Dialog Description

Field	Description
Control State (Add)	
Current State	This indicates the current access control state of the specified PVC.
New State	Check the radio button to select the role of new state.
Controlled Source MAC Address (Add)	
MAC Address (Hex)	This specifies the MAC address under controlling.

NOTE The roles of access control function, Deny and Permit, are repulsive, i.e. a “deny” role will be replaced while a new role “permit” is be configured.

Users can review the access control list from the menu combo-box. Follow the subsequent procedures to review the access control list configuration.

Click Configuration → xDSL → Access Control List on **Main Menu** to open the **xDSL Access Control List** Dialog as shown in Figure 7-11 and Table 7-4 depicts the related parameters.

Figure 7-11 xDSL Access Control List

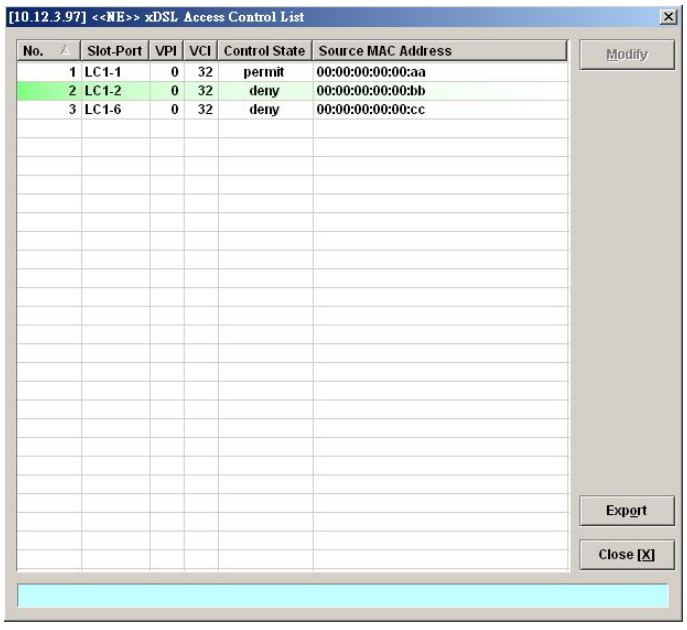


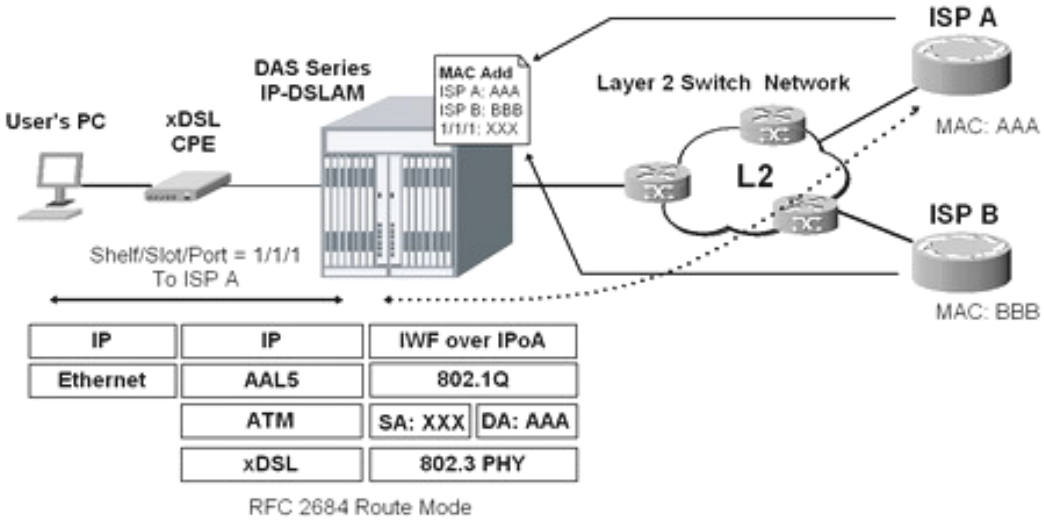
Table 7-4 xDSL Access Control List Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the access control list.
Slot-Port	This indicates the location of xDSL port.
VPI	This indicates the VPI of the specified xDSL subscriber.
VCI	This indicates the VCI of the specified xDSL subscriber.
Control State	This indicates the control state of access control of the specified xDSL subscriber.
Source MAC Address	This indicates the source MAC address which is under controlling of the specified xDSL subscriber.
Function Button	
Modify	Click this button to open the VC-to-VLAN Access Control List.
Export	Click this button to save the contents of **xDSL Access Control List** to the Personal Computer.
Close	Exit the **xDSL Access Control List** Dialog.

ISP Information for IP over ATM

For some application, configure RFC 2684 routed mode is necessary. In the RFC 2684 routed mode, IP packets are directly encapsulated, i.e., no MAC layer is presented. Through the IWF (Inter-Work Function) of IPoA of IP-DSLAM, it needs to append the Ethernet MAC layer for particular subscriber interface, the source MAC address is specially generate by IP-DSLAM, and the destination MAC address is the next-hop router toward the ISP's service router's. Figure 7-12 illustrates an example of the IWF in the case of RFC 2684 routed mode. It is noted that the NE determines the destination MAC address by the ARP protocol.

Figure 7-12 RFC 2684 Route Mode Connection Method



Follow the subsequent procedure to launch the ISP Information dialog to resolve the MAC address by just specifying the ISP's IP address.

Step 1 Click Configuration → xDSL → ISP Info for IP over ATM on **Main Menu** to open the **xDSL ISP List for IP over ATM** Dialog as shown in Figure 7-13 and Table 7-5 depicts the related parameters.

Figure 7-13 xDSL ISP List for IPoA Dialog

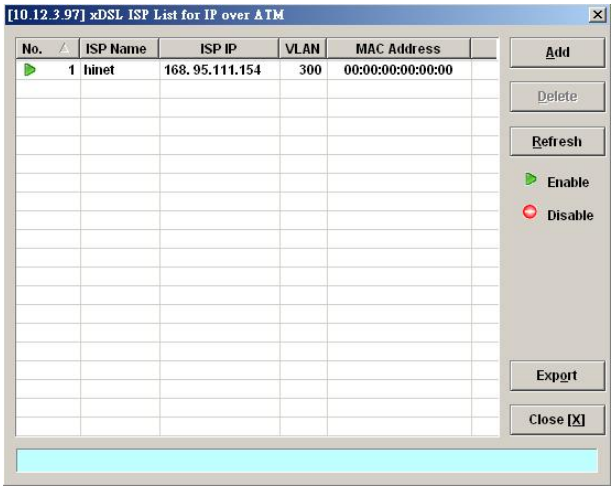


Table 7-5 xDSL ISP List for IPoA Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
ISP Name	It specifies the ISP name.
ISP IP	It specifies the ISP router IP.
VLAN	It specifies the VLAN grouping number for ISP connection.
MAC Address	It specifies the MAC address of connection.
Function Button	
Add	Click this button to add new connection
Delete	Click this button to remove the connection
Refresh	Click this button to refresh the List Table
Export	Click this button to save the contents of **xDSL ISP List for IPoA** to the Personal Computer.
Close	Exit the **xDSL ISP List for IPoA** Dialog.

Step 2 Click 'Add' button to launch the **xDSL ISP for IPoA Dialog.** Figure 7-14 shows **xDSL ISP for IPoA Dialog,** and Table 7-6 depicts the related parameters.

Figure 7-14 Add xDSL ISP for IPoA Dialog

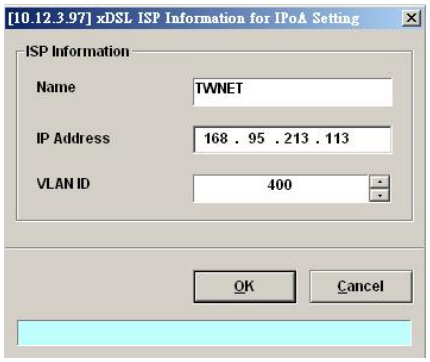


Table 7-6 Add xDSL ISP for IPoA Dialog Description

Field	Description
ISP Information	
Name	This specifies the ISP name.
IP Address	This specifies the ISP router IP.
VLAN ID	This specifies the VLAN grouping number for ISP connection.

VLAN MAC Limit

To limit the MAC address of each VLAN, the users can enable the MAC limiting function and configure the upper limit of allowed MAC for one VLAN.

Step 1 Click Configuration → xDSL → VLAN MAC Limit on **Main Menu** to open the **VLAN MAC Limit** Dialog as shown in Figure 7-15 and Table 7-7 depicts the related parameters.

Figure 7-15 VLAN MAC Limit List Dialog

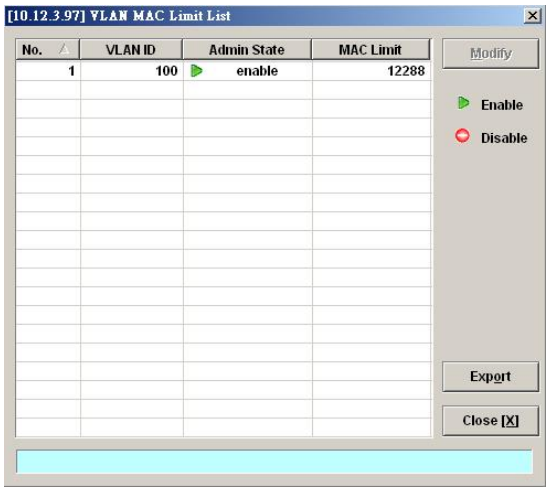


Table 7-7 VLAN MAC Limit List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
VLAN ID	It specifies the VLAN.
Admin State	It specifies the administrative state.
MAC Limit	It specifies the number of MACs allowed for the corresponding VC-to-VLAN connection.
Function Button	
Modify	Click this button to open the MAC limit configure dialog.
Export	Click this button to save the contents of **VLAN MAC Limit List** to the Personal Computer.
Close	Exit the **VLAN MAC Limit List** Dialog.

Step 2 Click 'Modify' button to launch the **VLAN MAC Limit Configure Dialog.** Figure 7-16 shows **VLAN MAC Limit Configure Dialog,** and Table 7-8 depicts the related parameters.

Figure 7-16 VLAN MAC Limit Configure Dialog

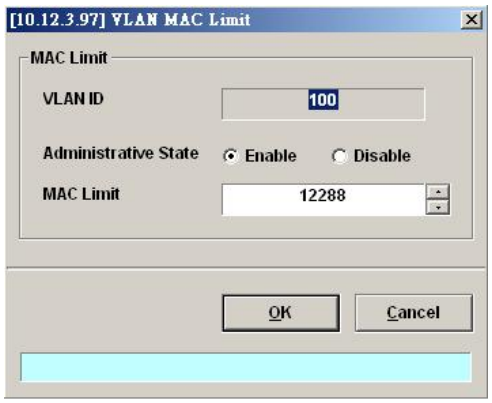


Table 7-8 VLAN MAC Limit Setting Dialog Description

Field	Description
MAC Limit (Modify)	
Administrative State	Enable or disable the MAC limit function. Default state is "disable".
MAC Limit	This specifies the number of MAC allowed for the VLAN, from 5 ~ 50000. Default value is 12288.

Packet Filtering

The packet filtering function allows you to forward or drop the name server protocol traffics received (NetBIOS and NetBEUI) on the subscriber interfaces.

Follow the subsequent procedures to configure the related parameters.

Click Configuration → xDSL → Packet Filter on **Main Menu** to open the **Packet Filtering**

Dialog as shown in Figure 7-17 and Table 7-9 depicts the related parameters.

Figure 7-17 Packet Filtering Dialog

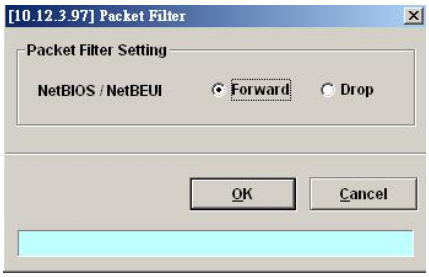


Table 7-9 Packet Filtering Dialog Description

Field	Description
Packet Filtering Setting	
NetBIOS/NetBEUI	Set the packet filtering function to “forward” or “drop” for NetBIOS and NetBEUI packets.

Multicast Channel Configuration

To forward the multicast stream, you are required to establish a VC-to-VLAN tunnel and specify the associated multicast service profile.

Follow the subsequent procedures to configure the related parameters.

Step 1 Click Configuration → xDSL → Multicast Service on **Main Menu** to open the **xDSL Multicast Channel** Dialog.

Step 2 Click on the ‘Modify’ or ‘Add’ button on the right hand side of Figure 7-18 to open the window (Figure 7-19) for adding new multicast channel and configure the associated setting.

In Figure 7-19, it is noted that two individual tabs (Multicast Service Profile and MAC Limit) are provided to set the Multicast Channel related parameters. Click either one **tab** to launch the corresponding dialog to configure the parameters. Table 7-10 depicts the related parameters

Figure 7-18 xDSL Multicast Channel List Dialog

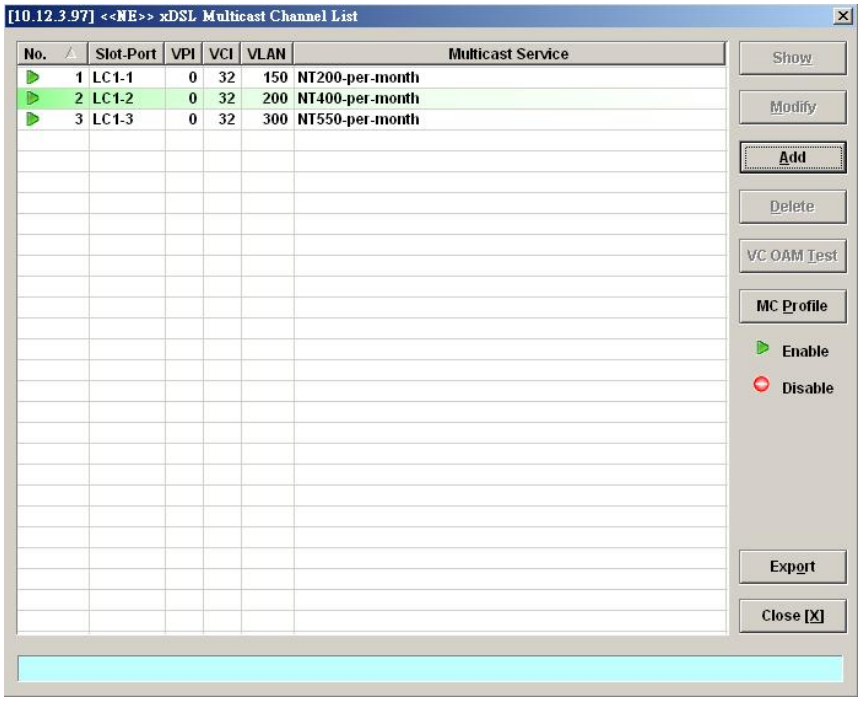


Figure 7-19 xDSL Multicast Channel Setting Dialog

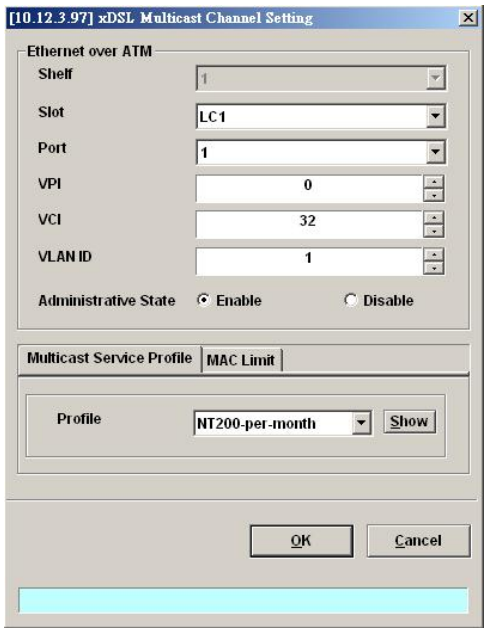


Table 7-10 xDSL Multicast Channel Setting Description

Field	Description
Ethernet over ATM	
Shelf, Slot, Port	This specifies the physical connection information
VPI	This specifies the VPI values
VCI	This specifies the VCI values
VLAN ID	This specifies the multicast VLAN ID
Administrative State	Enable or disable the specified multicast channel.
Multicast Service Profile Dialog	
Profile	This specifies the multicast service profile.
MAC Limit Dialog	
Stream Count	This specifies the allowed number of multicast streams to be forwarded via the VC-to-VLAN connection.

System Services Configuration

The system services configuration covers the following settings.

- MAC Aging for Bridged Services
- DHCP Service Configuration
- PPPoE Sub-option Configuration
- xDSL Port Agent ID List
- IGMP Service Configuration

MAC Aging for Bridged Services

The MAC aging time sets the lifetime for the learned MAC address. A specific MAC address will be dropped when aging out until it get learning again. Disable this function will keep the learned MAC addresses permanent in the learning table.

Click Configuration → xDSL → MAC Aging on **Main Menu** to open the **MAC Aging** Dialog as shown in Figure 7-20 and Table 7-11 depicts the related parameters.

Figure 7-20 MAC Aging Setting Dialog

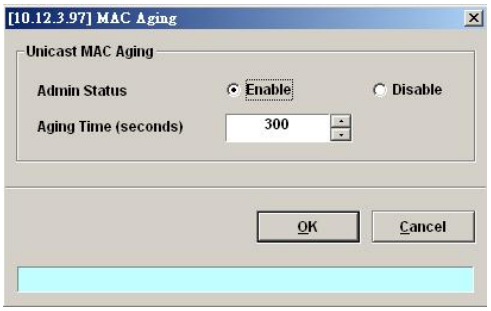


Table 7-11 MAC Aging Setting Dialog Description

Field	Description
Unicast MAC Aging	
Admin Status	This specifies the administration status
Aging Time (seconds)	This specifies the MAC aging time. Default value is 300 seconds.

DHCP Service Configuration

Four dialogs are related to the DHCP Service Configuration.

- DHCP Setting
- DHCP Server List for DHCP Relay
- DHCP Broadcast Control

DHCP Setting

The DHCP relay intercepts the DHCP request packets from subscriber interface and forwards them to the specified DHCP server. In the opposite direction, the DHCP relay transfers the DHCP reply packets from DHCP server to the specified xDSL subscriber.

The setting of DHCP option 82 contents is performed by configuring the xDSL Port Agent ID

Follow the subsequent procedures to configure the related parameters.

Click Configuration → xDSL → DHCP → DHCP Setting on **Main Menu** to open the **DHCP Setting** Dialog as shown in Figure 7-21 and Table 7-12 depicts the related parameters.

Figure 7-21 DHCP Setting Dialog

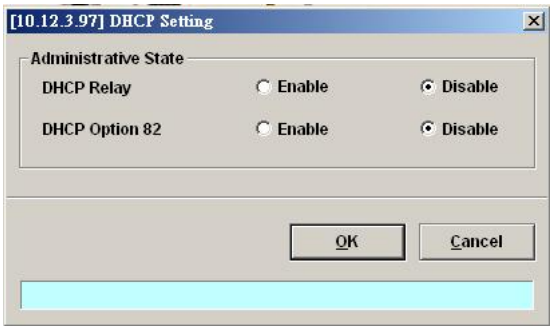


Table 7-12 DHCP Setting Dialog Description

Field	Description
DHCP Relay	Enable or disable the DHCP Relay function.
DHCP Option82	Enable or disable the DHCP option 82 function. Enable: The relayed DHCP packet is to be appended with the configured DHCP option 82 information as specified in the xDSL Port Agent ID List

DHCP Server List for DHCP Relay

Click Configuration → xDSL → DHCP → DHCP Server for DHCP Relay on **Main Menu** to open the **DHCP Server List for DHCP Relay** Dialog as shown in Figure 7-22 and Table 7-13 depicts the related parameters.

Figure 7-22 DHCP Server List for DHCP Relay Dialog

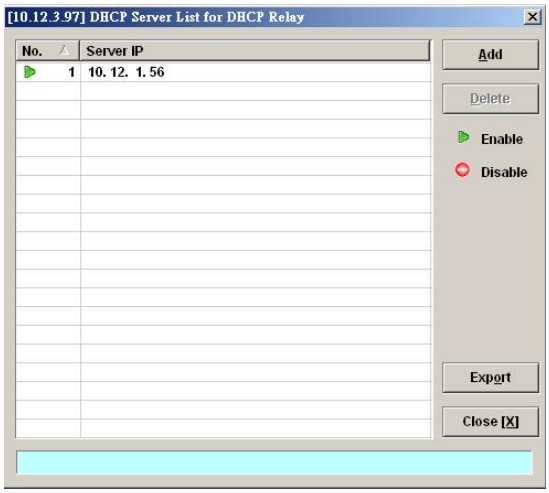


Table 7-13 DHCP Server List for DHCP Relay Dialog Description

Field	Description
Table List	
No.	This indicates the serial number of entry of the List.
Server IP	This specifies the DHCP server IP address.
Function Button	
Add	Click this button to add a new DHCP server IP address.
Delete	Click this button to delete a specified DHCP server.
Export	Click this button to save the contents of **DHCP Server List** to the Personal Computer.
Close	Exit the **DHCP Server List for DHCP Relay** table dialog.

DHCP Broadcast Control

Users can set the DHCP broadcast packet rate limit and set the action applied to the out-of-profile traffic.

Click Configuration → xDSL → DHCP → DHCP Broadcast Control on **Main Menu** to open the **DHCP Broadcast Control s** Dialog as shown in Figure 7-23. Table 7-14 depicts the related parameters.

Figure 7-23 DHCP Broadcast Control Dialog

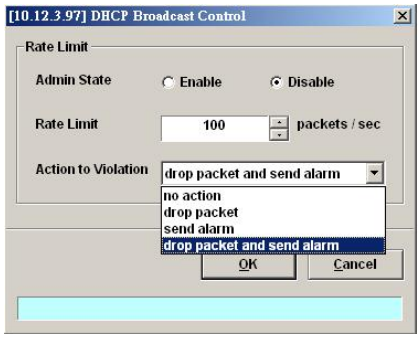


Table 7-14 DHCP Broadcast Control Dialog - Description

Field	Description
Rate Limit	
Admin State	Enable or disable the DHCP broadcast control. The default setting is “disable”.
Rate Limit	This specifies the rate limit based on packets per second. Available value is 1 ~ 100000 (packet per second). Default value is 100 packets per second.
Action to Violation	This specifies the action to be taken for the packets over the limit. “No action”, “Drop packet”, “Send alarm” and “Drop packet and send alarm”.

NOTE When the action is set to be either “Send alarm” and “Drop packet and send alarm”, the NE will launch SNMP traps to the SNMP trap managers as specified in the section “Configuring the SNMP Trap Manager” in Chap 4.

PPPoE Sub-option Configuration

PPPoE sub-option has similar mechanism as DHCP option 82. The NE can insert Circuit ID and Remote ID in all upstream PPPoE discovery stage packets, i.e. the PADI, PADR and upstream PADT packets. Figure 7-24 illustrates the enable/disable window for this functionality.

NOTE The setting of PPPoE sub-option contents is performed by configuring the xDSL Port Agent ID

Follow the subsequent procedures to configure the related parameters.

Click Configuration → xDSL → PPPoE on **Main Menu** to open the **PPPoE setting** Dialog as shown in Figure 7-24 and Table 7-15 depicts the related parameters.

Figure 7-24 PPPoE Sub-option Setting Dialog

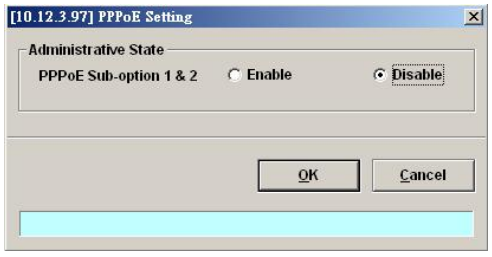


Table 7-15 PPPoE Sub-option Setting Dialog Description

Field	Description
Administrative State	
PPPoE Sub-option 1 & 2	Enable or disable the PPPoE sub-option function. Enable: The relayed PPPoE packet is to be appended with the configured PPPoE Sub-option 1 &2 information as specified in the xDSL Port Agent ID List Default value is “Disable”.

xDSL Port Agent ID List

The xDSL Port Agent ID List keeps the Agent Circuit ID (intended for circuits terminated by the system hosting the Relay agent) and Agent Remote ID (intended to identify the remote host end of a circuit). The NE allows the operator to specify Agent Remote ID with an ASCII string of up to 63 characters. As to the Agent Circuit ID, it is not permitted to be modified. The format of Agent Circuit ID is as follows.

“NE-InbandIP-userSrcMAC atm slot-port:VPI.VCI”

Here is one example Agent Circuit ID

“IP_DSLAM-100.168.3.97-00:11:d8:80:93:23 atm 3-1:100.33”,

which represents

NE’s inband IP=100.168.3.97,

MAC address of subscriber’s personal computer (or the CPE)= 00:11:d8:80:93:23,

slot = 3, port = 1, vpi = 100, vci = 33.

xDSL Port Agent ID is to be inserted into either all upstream DHCP messages sent by the client or all upstream PPPoE discovery stage packets

Follow the subsequent procedures to configure the xDSL Port Agent ID.

Step 1 Click Configuration → xDSL → Port Agent ID on **Main Menu** to open the **xDSL Port Agent IDs** Dialog as shown in Figure 7-25 and Table 7-16 depicts the related parameters. To modify the

Step 2 Click and highlight a row and click ‘**Modify**’ button to modify the Agent Remote ID.

Figure 7-25 xDSL Port Agent ID List

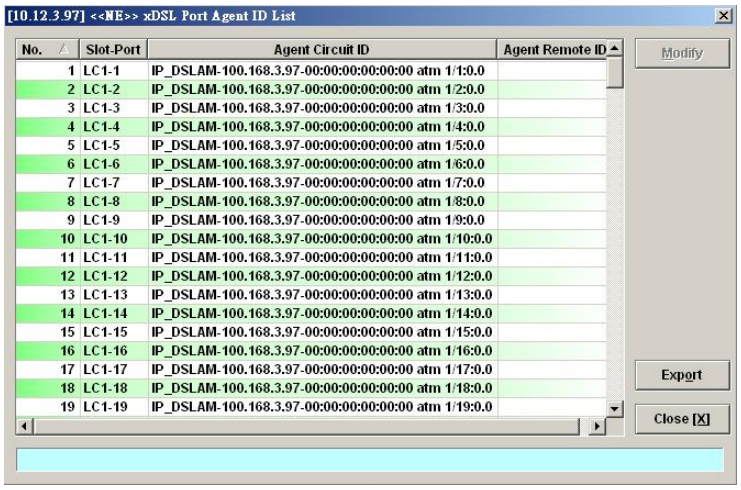


Table 7-16 xDSL Port Agent IDs Dialog Description

Field	Description
Table List	
No,	This indicates the number of Table List.
Slot-Port	This indicates the slot-port address.
Agent Circuit ID	This indicates the agent circuit ID of the specified xDSL subscriber. Its format is as follows. "NE-InbandIP-userSrcMAC atm slot-port:VPI.VCI"
Agent Remote ID	This indicates the agent remote ID of the specified xDSL subscriber. It is an ASCII string of up to 63 characters.
Function Button	
Modify	Click this button to modify the selected xDSL port's agent ID.
Export	Click this button to save the contents of **xDSL Port Agent ID List** to the Personal Computer.
Close	Exit the **xDSL Port Agent ID List** Dialog.

IGMP Service Configuration

Follow the subsequent procedures to configure the IGMP snooping and IGMP proxy related parameters.

Click Configuration → xDSL → IGMP Snooping / Proxy on **Main Menu** to open the **IGMP Snooping / IGMP Proxy Setting** Dialog as shown in Figure 7-26 and Table 7-17 depicts the related parameters.

Figure 7-26 IGMP Snooping / IGMP Proxy Setting Dialog

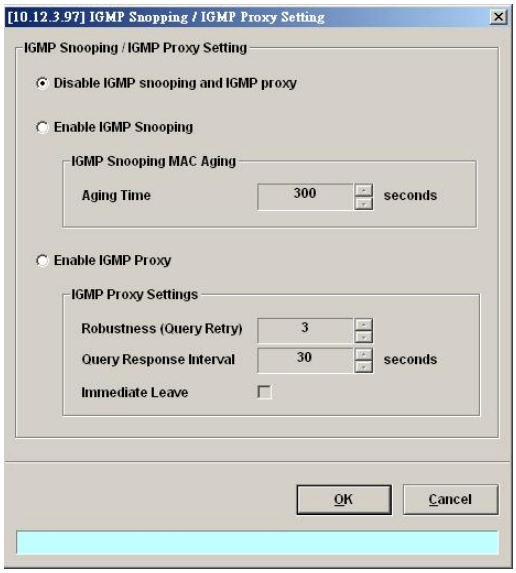


Table 7-17 IGMP Proxy Setting Dialog Description

Field	Description
IGMP Snooping / IGMP Proxy Setting	
Disable IGMP snooping and IGMP proxy	This disables the IGMP Snooping and Proxy functionality. (Default)
Enable IGMP Snooping	This enables the IGMP Snooping functionality.
Enable IGMP Proxy	This enables the IGMP Proxy functionality.
IGMP Snooping MAC Aging	
Aging Time	This specifies the aging time of snooped legal multicast group MAC address.
IGMP Proxy Setting	
Robustness (Query Retry)	This specifies the IGMP Robustness retry times. Available value is 1 ~ 5 (times).
Query Response Interval	This specifies the period between the NE send 2 consecutive IGM queries to the xDSL subscriber. Available value is 1 ~ 30 (seconds).
Immediate Leave	This specifies the immediate leave.

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Chapter 8 Fast Provision Management

This chapter describes the Fast Provision function. Through this function, you are able to efficiently apply the profiles to a mass of xDSL subscriber ports.

This chapter contains the following sections:

- Interface and VC-VLAN Fast Provisioning
- Multicast Service Fast Provisioning

Interface and VC-VLAN Fast Provisioning

The AMS LCT provides a fast provision function that helps you to build-up the principal connection setting of interface ports in fast and efficient way. Through this function, you can apply the profile and VC-to-VLAN setting to a mass of xDSL subscriber interfaces simultaneously, instead of configuring the individual subscriber interfaces one by one.

Follow the subsequent procedure to configure the interface fast provision.

Step 1 Click Configuration → xDSL → Fast Provision → Port & VC-to-VLAN on **Main Menu** to open the **xDSL Port & VC-to-VLAN Fast Provision** Dialog as shown in Figure 8-1.

Note that the configuration tabs are not exact the same for the RFC2684 bridged mode and routed mode. Figure 8-1 ~ Figure 8-7 show the corresponding configuration dialogs. Click either one tab to launch the corresponding dialog to configure the parameters. As to the description of the configuration parameters, please refer to Table 8-1.

It is noted that the configuration dialog may be different between the RFC2684 bridged mode and routed mode. If the configuration dialogs are the same for both the bridged mode and routed mode, Figure 8-1 ~ Figure 8-7only show the ones in the bridged mode without any additional description. Otherwise, Figure 8-1 ~ Figure 8-7show the configuration dialogs with description to indicate it. The rule of description also applies to Table 8-1.

Figure 8-1 xDSL Port & VC-to-VLAN Fast Provision – Port Setting Dialog

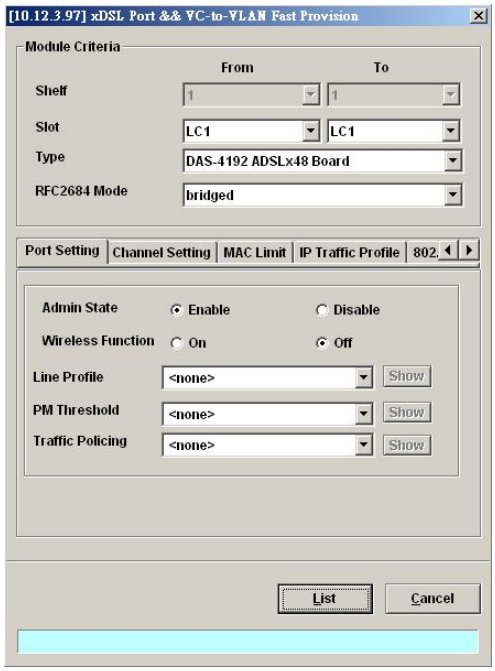
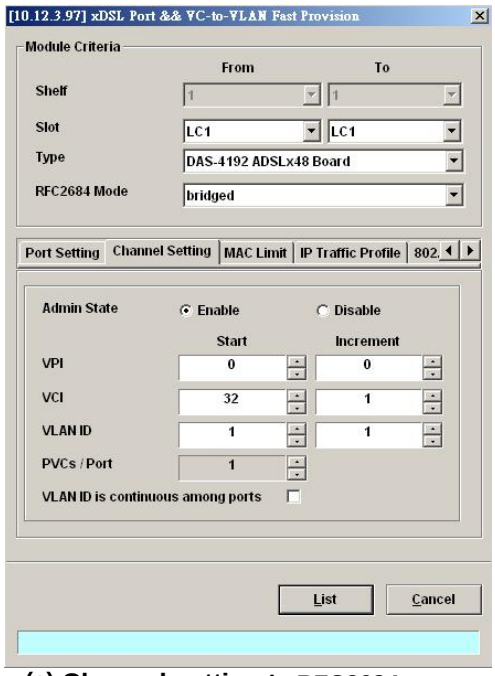
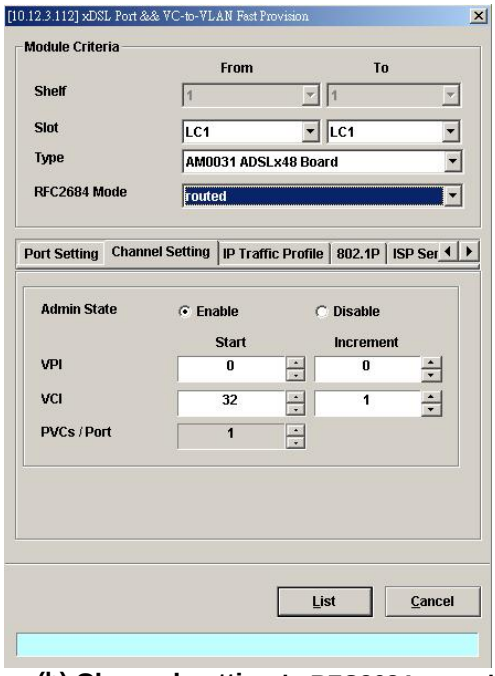


Figure 8-2 xDSL Port & VC-to-VLAN Fast Provision – Channel Setting Dialog



(a) Channel setting in RFC2684 bridged mode



(b) Channel setting in RFC2684 routed mode

Figure 8-3 xDSL Port & VC-to-VLAN Fast Provision – IP Traffic Dialog

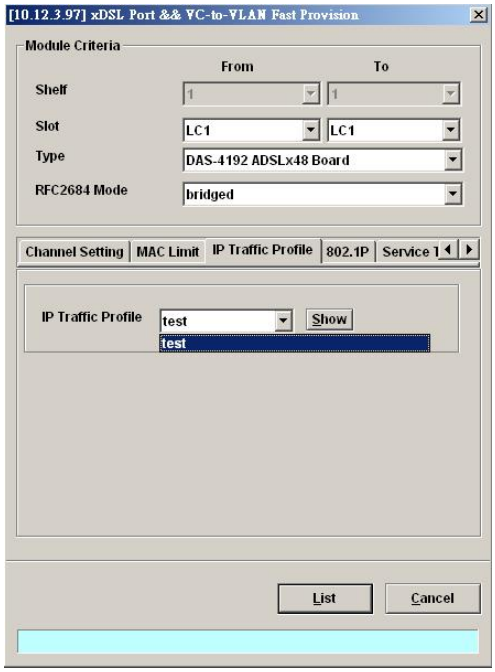


Figure 8-4 xDSL Port & VC-to-VLAN Fast Provision – MAC Limit Dialog (only for the RFC2684 bridged mode)

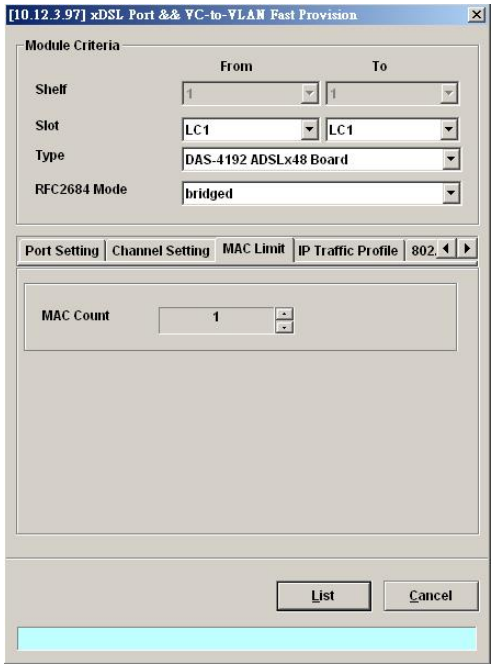


Figure 8-5 xDSL Port & VC-to-VLAN Fast Provision – ISP Server Dialog (only for the RFC2684 routed mode)

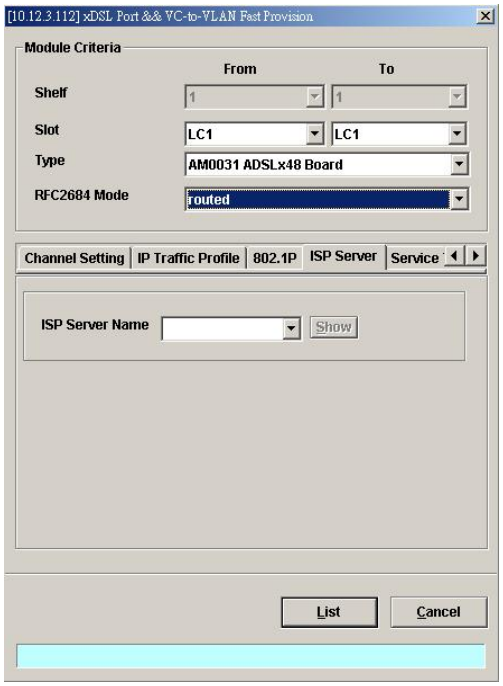


Figure 8-6 xDSL Port & VC-to-VLAN Fast Provision – 802.1P Dialog

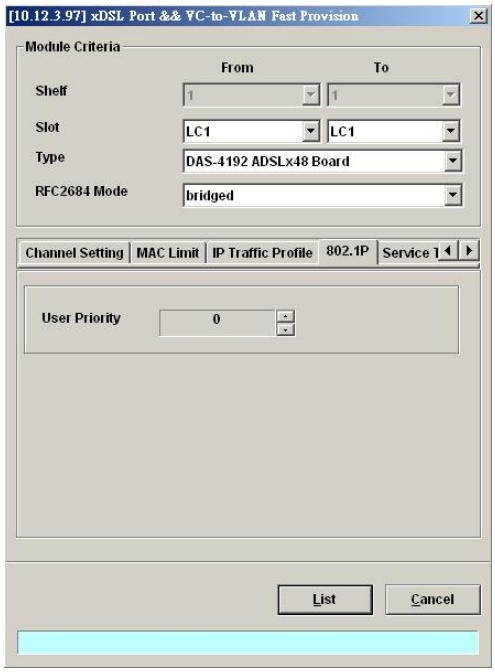
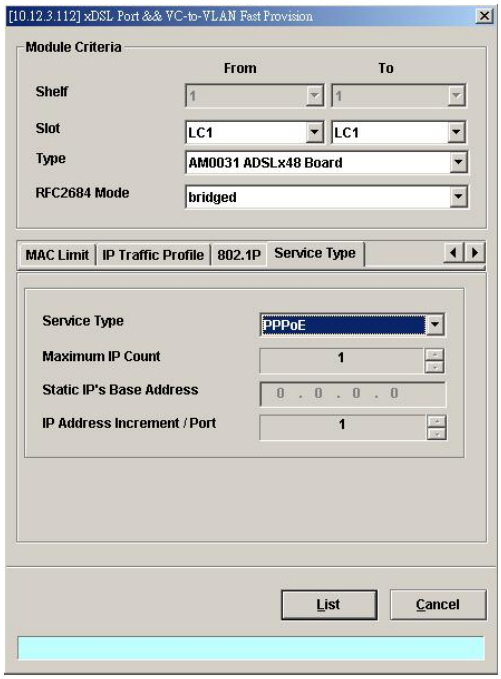
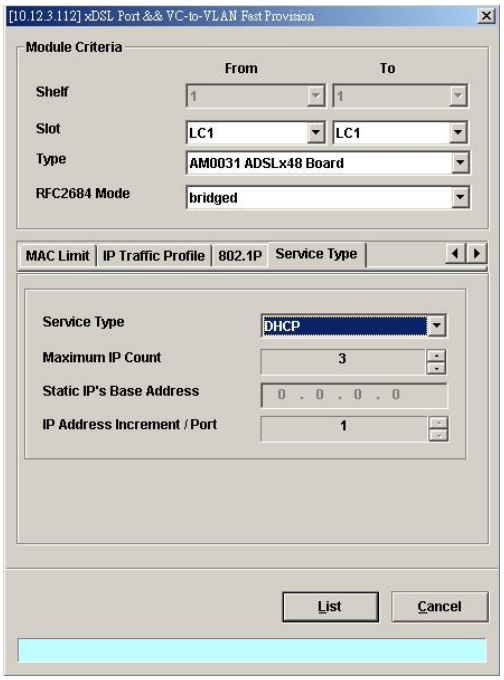


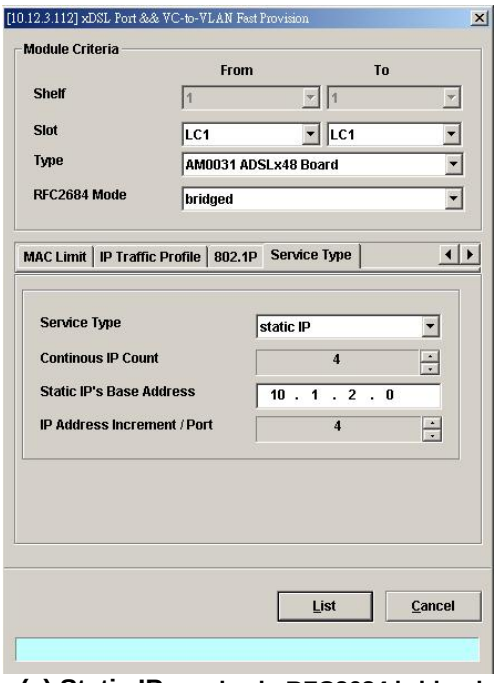
Figure 8-7 xDSL Port & VC-to-VLAN Fast Provision – Service Type Dialog



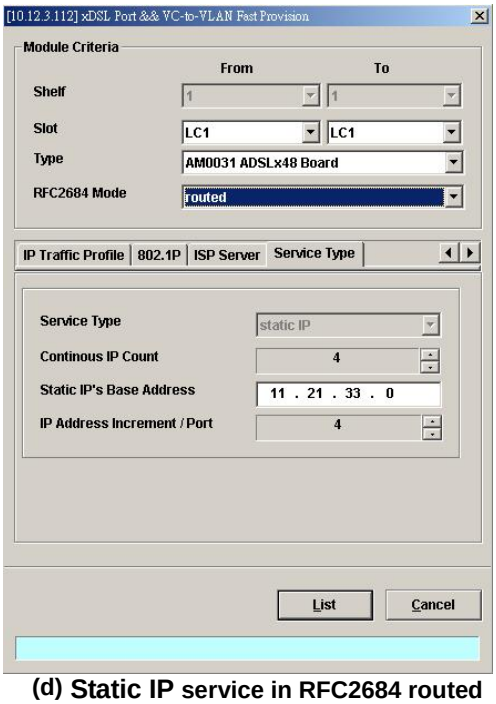
(a) PPPoE service in RFC2684 bridged mode



(b) DHCP service in RFC2684 bridged mode



(c) Static IP service in RFC2684 bridged mode



(d) Static IP service in RFC2684 routed mode

Table 8-1 xDSL Port & VC-to-VLAN Fast Provision Description

Field	Description
Module Criteria	
Shelf	This specifies the location of shelf. It is obsolete in the current release.
Slot	It specifies the location of the line card.
Type	It specifies the board type of line card.
RFC2684 Mode	It specifies the RFC 2684 encapsulation mode (Bridged or Routed mode)
Port Setting Dialog	
Admin State	It specifies the administrative state. (enable or disable)
Wireless Function	It specifies to enable or disable the wireless AP on the remote CPE (This function only works for the certified CPE)
Line Profile	It specifies the line profile. (xDSL Profile)
PM Threshold	It specifies the PM threshold profile.
Traffic Policing	It specifies the Traffic Policing profile. [Only for the ADSL port]
Channel Setting Dialog Start – Identify the number of starting value. Increment – Identify the number to be increment if more then one **PVCs / Port** is defined.	
Admin State	It specifies the administrative state. (enable or disable)
VPI (Start, Increment)	It specifies the VPI value of PVCs.
VCI (Start, Increment)	It specifies the VCI value of PVCs.
VLAN ID (Start, Increment)	It specifies the VLAN ID value of corresponding VC-to-VLAN connections.
PVCs / Port	It specifies the number of PVCs to be applied to each xDSL port.
VLAN ID is continuous among port	Check to sequentially increase the VLAN ID values to be assigned to the PVCs.
IP Traffic Profile Dialog	
IP Traffic Profile	This specifies the IP Traffic Profile of corresponding VC-to-VLAN connection.
802.1P Dialog	
User Priority	This specifies the VLAN priority of corresponding VC-to-VLAN connection.
ISP Server Dialog [only for RFC2684 routed mode]	
ISP Server Name	It specifies the ISP server name as specified in the section ‘ISP Information for IP over ATM’ of Chapter 7.
MAC Limit Dialog [only for RFC2684 bridged mode]	
MAC Count	It specifies the number of subscriber’s MACs allowed for the corresponding VC-to-VLAN connection.

Table 8-1 xDSL Port & VC-to-VLAN Fast Provision Description (Continued)

Field	Description
Service Type Dialog	
Service Type	This specifies the service type to be allowed on the PVC of individual subscriber. The following three service types are supported now. ● PPPoE ● DHCP ● Static IP
Maximum IP Count [only for DHCP Service]	This indicates the number of IP to be allowed while DHCP is selected
Continuous IP Count [only for Static IP Service]	This indicates the number of IP to be allowed while Static IP is selected
Static IP's Basic Address [only for Static IP Service]	This specifies the base of the IP address if the service type is Static IP
IP Address Increment/Port [only for Static IP Service]	This indicates the increment of IP address between two consecutive ports while Static IP is selected and Continuous IP Count is greater than 1.

Whenever the service type is specified as "Static IP Service", it is noted that the following relationship should be maintained.

IP Address Increment/Port ≥ Continuous IP Count

Enabling the Service Type Control makes the NE to provide the IP/MAC anti spoofing function.

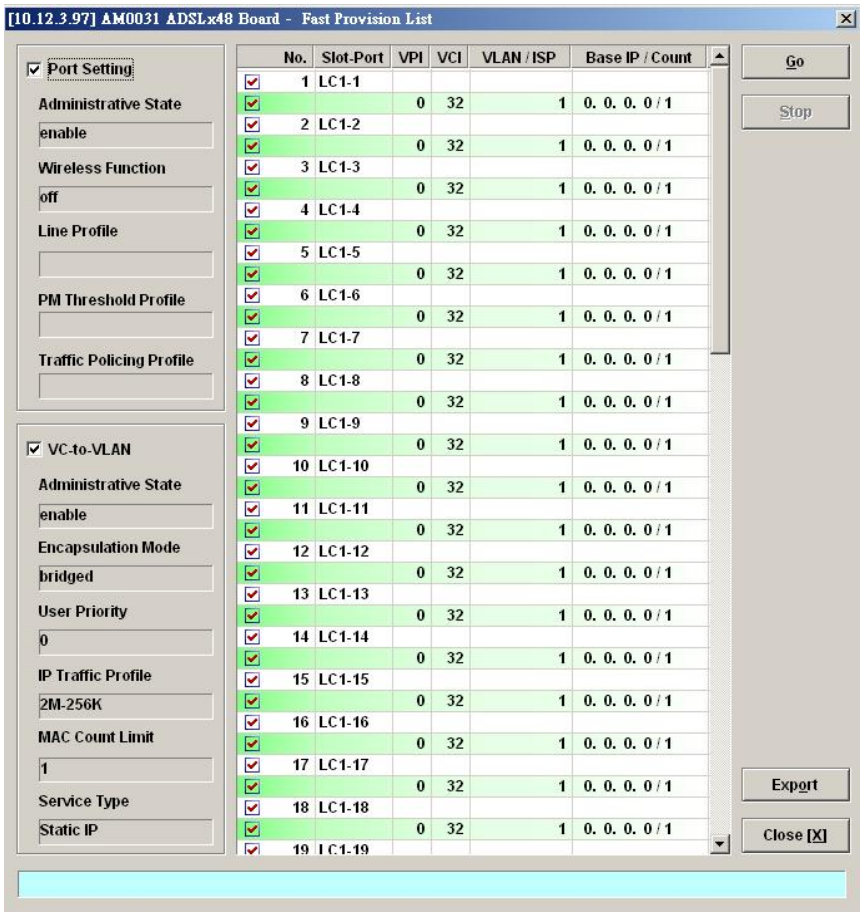
In the case that the subscriber acquires his IP address dynamically via PPPoE or DHCP, the NE will block the subscriber's traffic before a valid IP address assignment. Once the subscriber possesses a valid dynamic or static IP, the NE will just forward the packet of valid source IP/MAC addresses. In other words, the NE drops the subscriber's traffic of invalid source IP/MAC addresses.

Step 2 Click '**List**' button to launch the **xDSL Fast Provision List** dialog. Figure 8-8 summarizes what you set via the **xDSL Port & VC-to-VLAN Fast Provision** dialog. As shown in Figure 8-8, it depicts the list of subscriber ports you wish to apply to. If you do no want to apply the setting to any port or PVC, just remove it from the List Table by clearing the corresponding check-box.

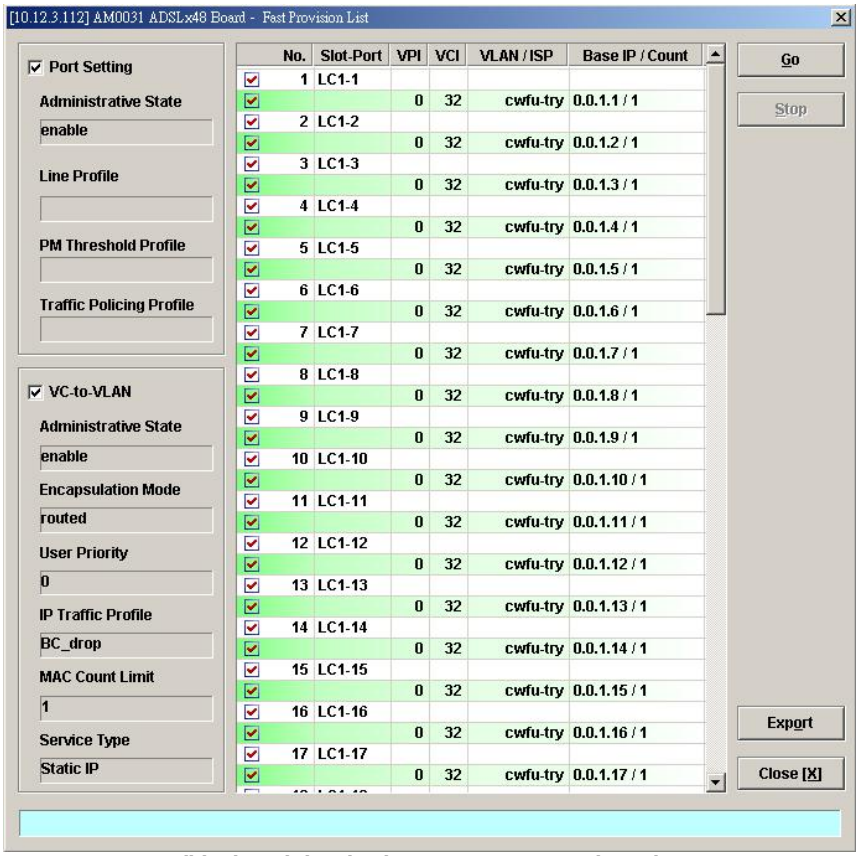
Table 8-2 depicts the related parameters.

Step 3 Click '**Go**' button to apply the given setting to all ports in the List Table. The checks are removed when the setting is successfully applied. Click '**Stop**' to stop the fast provisioning immediately if you want.

Figure 8-8 xDSL Fast Provision List Dialog



(a) List Dialog in the RFC2684 bridged mode



(b) List Dialog in the RFC2684 routed mode

Table 8-2 xDSL Fast Provision List Dialog Description

Field	Description
Condition	
Port Setting – Check to allow the correspondent setting to be applied to the ports in List Table. VC-to-VLAN – Check to allow the correspondent setting to be applied to the ports in List Table.	
Administrative State	This specifies the administrative state. (enable or disable)
Line Profile	This specifies the line profile. (xDSL Profile)
PM Threshold Profile	This specifies the PM threshold profile.
Traffic Policing Profile	This specifies the Traffic Policing profile. [Only for the ADSL port]
Encapsulation Mode	This specifies the RFC2684 encapsulation mode of corresponding PVC.
User Priority	This specifies the VLAN priority of corresponding VC-to-VLAN connection.
IP Traffic Profile	This specifies the IP traffic profile of corresponding VC-to-VLAN connection.
MAC Count Limit	It specifies the number of subscriber's MACs allowed for the corresponding VC-to-VLAN connection. [only for RFC2684 bridged mode]
Service Type	This specifies the service type of corresponding VC-to-VLAN connection. The following three service types are supported now. ● PPPoE ● DHCP ● Static IP
List Table	
No.	This indicates the serial number of entry of the List Table.
Slot-Port	This specifies the location of subscriber port.
VPI	This specifies the VPI value of PVC.
VCI	This specifies the VCI value of PVC.
VLAN / ISP	This specifies the VLAN ID (in RFC2684 bridged mode) or ISP name (in RFC2684 routed mode) of corresponding VC-to-VLAN connection.
Base IP / Count	This specifies the IP Base address and count of IP address of corresponding VC-to-VLAN connection. It applies whenever the Service Type Control is enabled and Static IP or DHCP is selected
Function Button	
Go	Click this button to start fast provisioning.
Stop	Click this button to force the fast provision terminating.
Export	Click this button to save the contents of **xDSL Fast Provision List** to the Personal Computer.
Close	Exit this **xDSL Fast Provision List** Dialog.

Multicast Service Fast Provisioning

The multicast service fast provision function helps you to build-up the multicast connection and the associated service profile efficiently.

Follow the subsequent procedures to configure the multicast service fast provision.

Step 1 Click Configuration → xDSL → Fast Provision → Multicast Channel on **Main Menu** to open the **xDSL Multicast Channel Fast Provision** Dialog, as shown in Figure 8-9 and Table 8-3 depicts the related parameters.

In Figure 8-9, it is noted that two individual tabs (Multicast Service Profile and MAC Limit) are provides to set the Multicast Service Fast Provision related parameters. Figure 8-9 ~ Figure 8-10 show the corresponding configuration Dialog. Click either one tab to launch the corresponding dialog to configure the parameters. As to the description of the configuration parameters, please refer to Table 8-3.

Figure 8-9 xDSL Multicast Channel Fast Provision – Multicast Service Profile Dialog

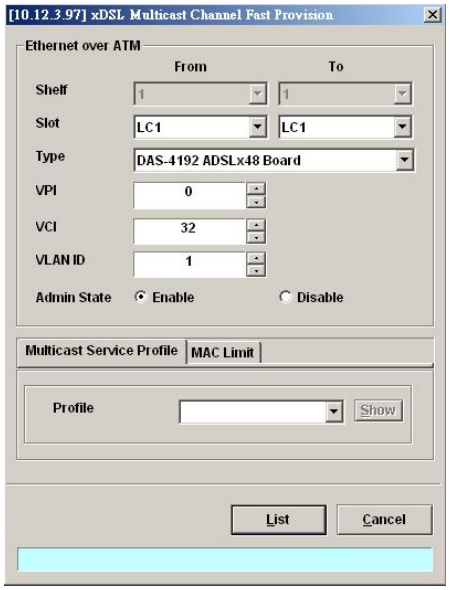


Figure 8-10 xDSL Multicast Channel Fast Provision – MAC Limit Dialog

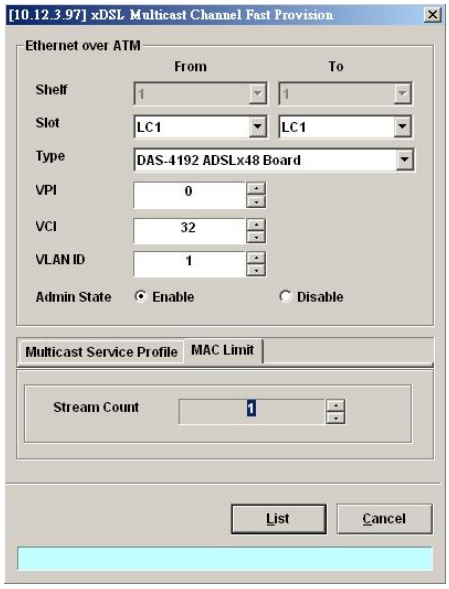


Table 8-3 xDSL Multicast Channel Fast Provision Description

Field	Description
Ethernet over ATM	
Shelf	This specifies the shelf ID.
Slot	It specifies the slot range.
Type	It specifies the LC board type.
VPI	It specifies the VPI value.
VCI	It specifies the VCI value.
VLAN ID	It specifies the VLAN ID value.
Admin State	It specifies the administrative state of these multicast channels.
Multicast Service Profile Dialog Show – Click this button to display the details of multicast service profile collocated.	
Profile	It specifies the Multicast Service Profile
MAC Limit Dialog	
Stream Count	This specifies the allowed number of concurrent multicast streams to be forwarded via each VC-to-VLAN connection.

Step 2 Click '**List**' button to launch the **xDSL Multicast Channel Fast Provision List** dialog. Figure 8-11 summarizes what you set via the **xDSL Multicast Channel Fast Provision** dialog. As shown in Figure 8-11, it depicts the list of subscriber ports you wish to apply to. If you do not want to apply the setting to any port in the list table, just clear the corresponding check-box

Table 8-4 depicts the related parameters.

Step 3 Click '**Go**' button to apply the given setting to all ports listing in the List Table. The checks are removed when the setting is successfully applied. Click '**Stop**' to stop the fast provision immediately if you want.

Figure 8-11 xDSL Multicast Channel Fast Provision List Dialog

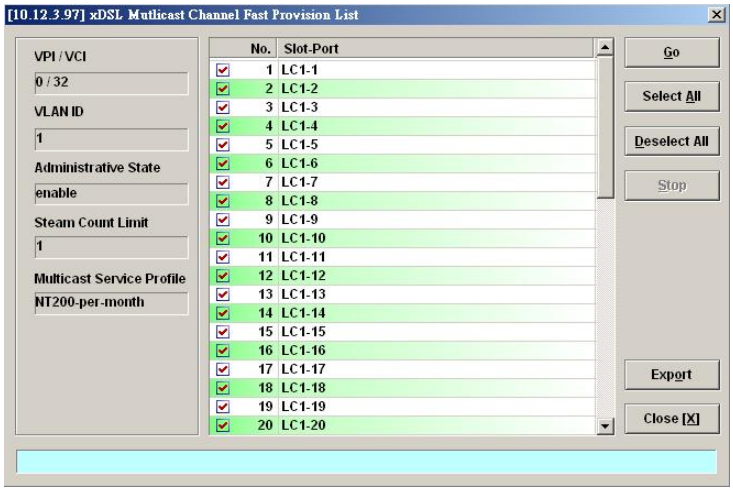


Table 8-4 xDSL Multicast Channel Fast Provision List Dialog Description

Field	Description
Condition	
VPI / VCI	This specifies the VPI / VCI value of corresponding PVC.
VLAN ID	This specifies the VLAN ID value of corresponding VC-to-VLAN connection.
Administrative State	This specifies the admin state of corresponding VC-to-VLAN connection..
Stream Count Limit	This specifies the allowed number of multicast streams to be forwarded via each VC-to-VLAN connection.
Multicast Service Profile	This specifies the multicast service profile.
List Table	
No.	This indicates the serial number of entry of the List Table.
Slot-Port	This specifies the location of subscriber port.
Function Button	
Go	Click this button to start fast provisioning.
Select All	Click this button to select all rows from List Table.
Deselect All	Click this button to deselect all rows from List Table
Stop	Click this button to force the fast provision terminating.
Export	Click this button to save the contents of **xDSL Multicast Channel Fast Provision List** to the Personal Computer.
Close	Exit the **xDSL Multicast Channel Fast Provision List** Dialog.

Chapter 9 Performance Management

This chapter describes system performance monitoring and related management.

This chapter contains the following sections:

- xDSL Line Current Performance Information
- xDSL Line Historical Performance Information
- GE Interface Performance Statistics

xDSL Line Current Performance Information

Follow the subsequent procedure to obtain data for evaluating the current xDSL line performance.

Step 1 Click Performance → xDSL Current PM on **Main Menu** to open the **xDSL Current PM Port Selection** Dialog as shown in Figure 9-1.

Step 2 Select the port you want to show and press Query button to get the current PM data. Depending on the type of selected port, the current PM dialog looks different. Figure 9-2 shows the ADSL Current PM Dialog. The corresponding descriptions are depicted in Table 9-1. As to the SHDSL Current PM Dialog, it is shown in Figure 9-3. The corresponding descriptions are depicted in Table 9-2.

Figure 9-1 xDSL Current PM Port Selection

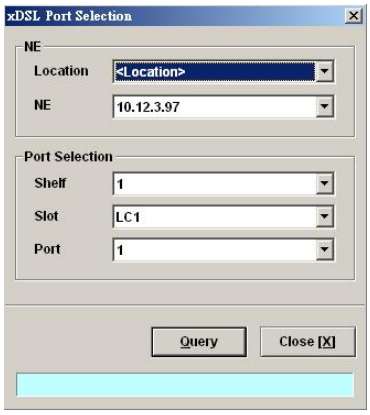


Figure 9-2 ADSL Current PM Dialog

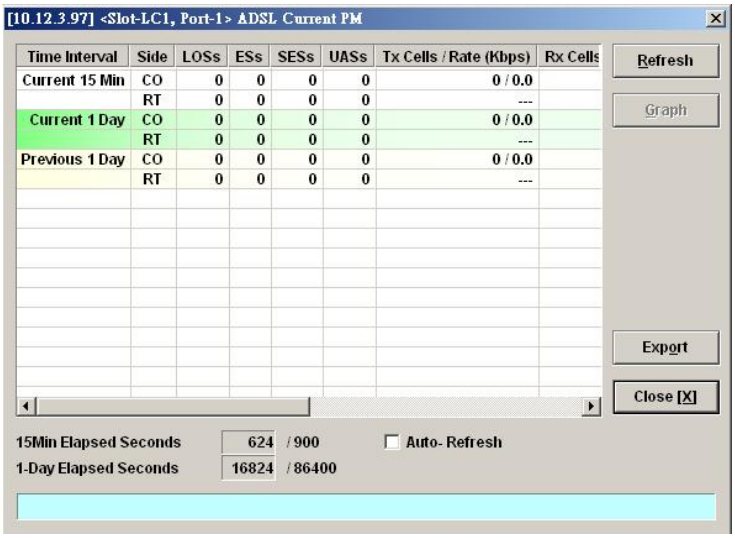


Table 9-1 ADSL Current PM Dialog Description

Field	Description
List Table	
Time Interval	This indicates the PM time interval
Side	This indicates the location where the PM parameters are observed. (Either central side (CO) or remote side (RT))
LOSs	This indicates the count of Loss of Signal Second during the current accumulated period.
ESs	This indicates the count of Error Second during the current accumulated period.
SESs	This indicates the count of Severely Error Second during the current accumulated period.
UASs	This indicates the count of Unavailable Error Second during the current accumulated period.
Tx Cells / Rate (Kbps)	This indicates the transmitted number of ATM cells and net data rate during the current accumulated period.
Rx Cell / Rate (Kbps)	This indicates the received number of ATM cells and net data rate during the current accumulated period.
CVs	This indicates the count of Code Violation during the current accumulated period.
FullInits	This indicates the count of the total number of full initializations attempted on the line (successful and failed) during the current accumulated period.
FailedInits	This indicates the total number of failed full initializations during the current accumulated period. A failed full initialization is when showtime is not reached at the end of the full initialization procedure, e.g., when: • A CRC error is detected. • A time-out occurs. • Unexpected message content is received.
TxBlks	This indicates the transmitted number of FEC block during the current accumulated period.
RxBlks	This indicates the received number of FEC block during the current accumulated period.
CrtBlks	This indicates the count of all blocks received with errors that were corrected during the current accumulated period.
UncrtBlks	This indicates the count of all blocks received with uncorrectable errors during the current accumulated period.
Function Button	
Refresh	Click this button to refresh the List Table
Graph	Click this button to draw the 2D/3D diagram
Export	Click this button to save the contents of **ADSL Current PM List** to the Personal Computer.
Close	Exit the **ADSL Current PM** Dialog.

Figure 9-3 SHDSL Current PM Dialog

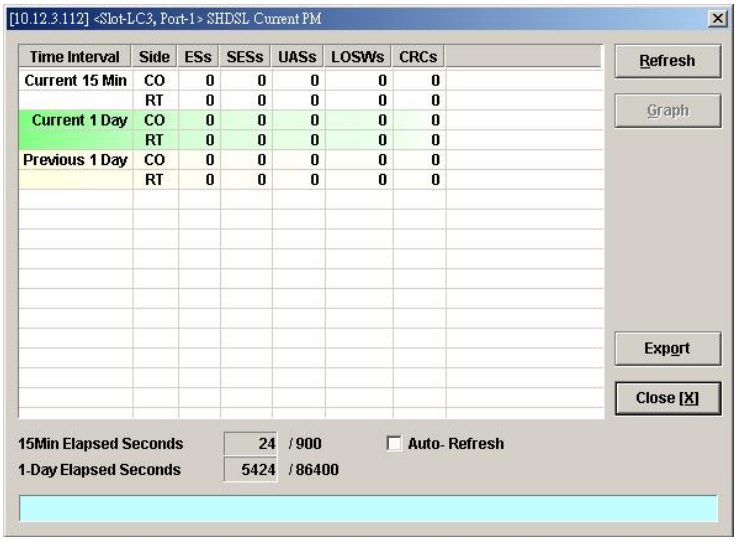


Table 9-2 SHDSL Current PM Dialog Description

Field	Description
List Table	
Time Interval	This indicates the PM time interval
Side	This indicates the location where the PM parameters are observed. (Either central side (CO) or remote side (RT))
ESs	This indicates the count of Error Second during the current accumulated period.
SESs	This indicates the count of Severely Error Second during the current accumulated period.
UASs	This indicates the count of Unavailable Error Second during the current accumulated period.
LOSWs	This indicates the count of LOSW second during the current accumulated period.
CRCs	This indicates the count of the SHDSL CRC anomalies occurring during the current accumulation period.
Function Button	
Refresh	Click this button to refresh the List Table
Graph	Click this button to draw the 2D/3D diagram
Export	Click this button to save the contents of **SHDSL Current PM List** to the Personal Computer.
Close	Exit the **SHDSL Current PM** Dialog.

xDSL Line Historical Performance Information

Follow the subsequent procedure to obtain data for evaluating the history xDSL line performance.

Step 1 Click Performance → xDSL History PM on **Main Menu** to open the **xDSL History PM Port Selection** Dialog as shown in Figure 9-4.

Step 2 Select the port you want to show and press Query button to get the historical PM data. Depending on the type of selected port, the historical PM dialog looks different. Figure 9-5 shows the ADSL History PM Dialog. The corresponding descriptions are depicted in

Table 9-3. As to the SHDSL History PM Dialog, it is shown in Figure 9-6. The corresponding descriptions are depicted in Table 9-4.

Figure 9-4 xDSL History Port Selection Dialog

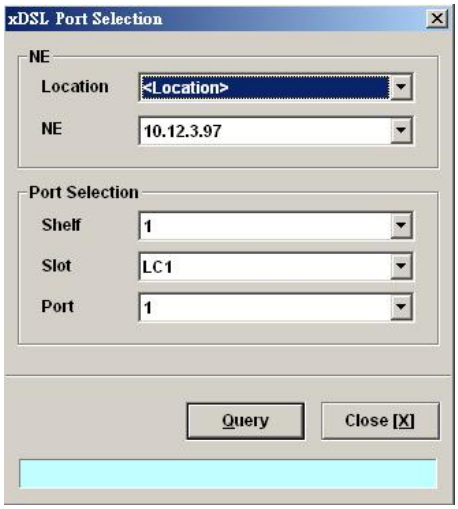
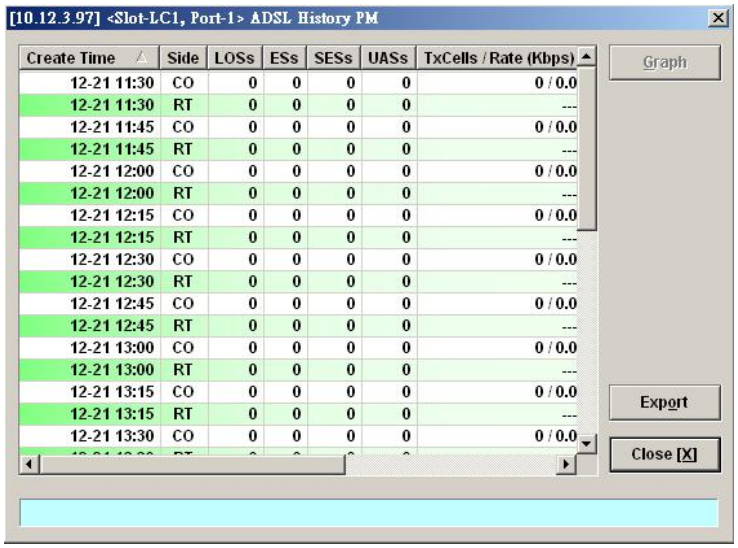


Figure 9-5 ADSL History PM Dialog



Create Time	Side	LOSs	ESs	SESs	UASs	TxCells / Rate (Kbps)
12-21 11:30	CO	0	0	0	0	0 / 0.0
12-21 11:30	RT	0	0	0	0	---
12-21 11:45	CO	0	0	0	0	0 / 0.0
12-21 11:45	RT	0	0	0	0	---
12-21 12:00	CO	0	0	0	0	0 / 0.0
12-21 12:00	RT	0	0	0	0	---
12-21 12:15	CO	0	0	0	0	0 / 0.0
12-21 12:15	RT	0	0	0	0	---
12-21 12:30	CO	0	0	0	0	0 / 0.0
12-21 12:30	RT	0	0	0	0	---
12-21 12:45	CO	0	0	0	0	0 / 0.0
12-21 12:45	RT	0	0	0	0	---
12-21 13:00	CO	0	0	0	0	0 / 0.0
12-21 13:00	RT	0	0	0	0	---
12-21 13:15	CO	0	0	0	0	0 / 0.0
12-21 13:15	RT	0	0	0	0	---
12-21 13:30	CO	0	0	0	0	0 / 0.0

Table 9-3 ADSL History PM Dialog Description

Field	Description
List Table	
Create Time	This indicates the time when the xDSL historical PM is recoreded.
Side	This indicates the location where the PM parameters are observed. (Either central side(CO) or remote side(RT))
LOSs	This indicates the count of Loss of Signal Second during the indicated period.
ESs	This indicates the count of Error Second during the indicated period.
SESs	This indicates the count of Severely Error Second during the indicated period.
UASs	This indicates the count of Unavailable Error Second during the indicated period.
Tx Cells / Rate (Kbps)	This indicates the transmitted number of ATM cells and net data rate during the indicated period.
Rx Cell / Rate (Kbps)	This indicates the received number of ATM cells and net data rate during the indicated period.
CVs	This indicates the count of Code Violation during the indicated period.
FullInits	This indicates the count of the total number of full initializations attempted on the line (successful and failed) during the indicated period.
FailedInits	This indicates the total number of failed full initializations during the indicated period. A failed full initialization is when showtime is not reached at the end of the full initialization procedure, e.g., when: • A CRC error is detected. • A time-out occurs. • Unexpected message content is received.
TxBlks	This indicates the transmitted number of FEC block during the indicated period.
RxBlks	This indicates the received number of FEC block during the indicated period.
CrtBlks	This indicates the count of all blocks received with errors that were corrected during the indicated period.
UncrtBlks	This indicates the count of all blocks received with uncorrectable errors during the indicated period.
Function Button	
Graph	Click this button to draw the 2D/3D diagram
Export	Click this button to save the contents of **ADSL History PM** to the Personal Computer.
Close	Exit the **ADSL History PM** Dialog.

Figure 9-6 SHDSL History PM Dialog

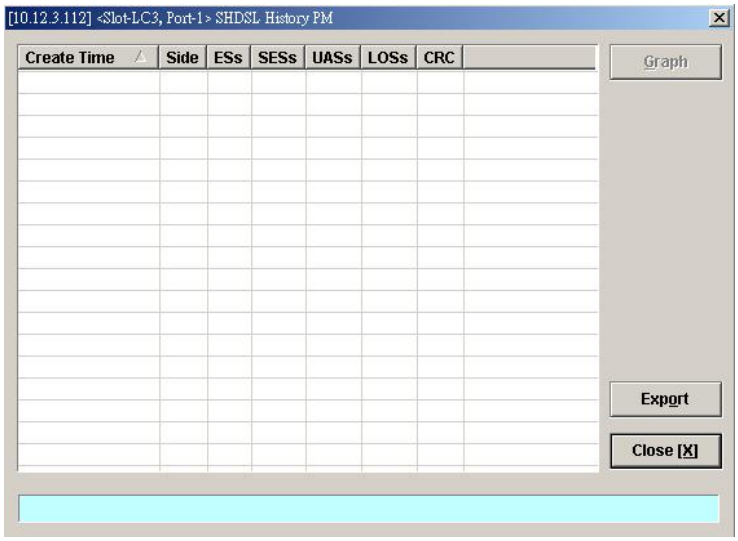


Table 9-4 SHDSL History PM Dialog Description

Field	Description
List Table	
Time Interval	This indicates the PM time interval
Side	This indicates the location where the PM parameters are observed. (Either central side (CO) or remote side (RT))
ESs	This indicates the count of Error Second during the indicated period.
SESs	This indicates the count of Severely Error Second during the indicated period.
UASs	This indicates the count of Unavailable Error Second during the indicated period.
LOSWs	This indicates the count of LOSW second during the indicated period.
CRCs	This indicates the count of the SHDSL CRC anomalies occurring during the current accumulation period.
Function Button	
Refresh	Click this button to refresh the List Table
Graph	Click this button to draw the 2D/3D diagram
Export	Click this button to save the contents of **SHDSL History PM List** to the Personal Computer.
Close	Exit the **SHDSL History PM** Dialog.

GE Interface Performance Statistics

Follow the subsequent procedure to obtain data for evaluating the GE interface performance.

Click Performance → Trunk Port PM on **Main Menu** to open the **Trunk Port PM** Dialog as shown in Figure 9-7. Table 9-5 depicts the related parameters.

Figure 9-7 Trunk PM Statistics Dialog

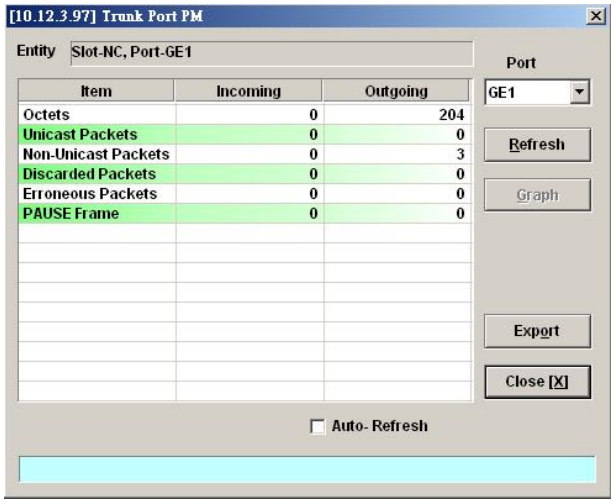


Table 9-5 Trunk PM Dialog Description

Field	Description
List Table	
Octets	This indicates the numbers of incoming/outgoing octets via the specified GE port.
Unicast Packets	This indicates the numbers of incoming/outgoing unicast packets via the specified GE port.
Non-Unicast Packets	This indicates the numbers of incoming/outgoing non-unicast packets via the specified GE port.
Discarded Packets	This indicates the numbers of incoming/outgoing discarded packets on the specified GE port per RFC1213.
Erroneous Packets	This indicates the numbers of incoming/outgoing erroneous packets on the specified GE port per RFC1213.
PAUSE Frame	This indicates the numbers of incoming/outgoing IEEE 802.3x pause frames on the specified GE port.
Function Button	
Port	Select the GE port you want to observe.
Refresh	Click this button to refresh the List Table
Graph	Click this button to draw the 2D/3D diagram
Export	Click this button to save the contents of **Trunk Port PM** to the Personal Computer.
Close	Exit the **Trunk Port PM** Dialog.

Chapter 10 Fault Management

This chapter describes the system fault management. The AMS LCT supports real time monitoring of the NE.

This chapter contains the following sections:

- NE Alarm Information
- System Alarm Management

NE Alarm Information

AMS LCT detects alarms from the NE system and interface card modules. Alarm detection is accomplished by way of either polling NE actively or receiving SNMP trap passively.

AMS LCT allows you to temporarily isolate a subset of event messages and display them in the List Table. By applying condition filters at top of dialog, the List Table will only contain the events that meet the specified filter criteria.

Follow the subsequent procedure to observe the current alarm information.

Step 1 Click Diagnosis → NE Alarm → Active Alarm on **Main Menu** to open the **Active Alarm & Event** dialog, or alternative select the object form **Rack Tab** and use right mouse button to bring out the menu, select the **Alarm → Active Alarm**, as shown in Figure 10-1. Table 10-1 depicts the definition of fields..

Step 2 Select the event from the List Table and click '**Detail**' button to view the detail of a specific event, as shown in Figure 10-2 and Table 10-2 depicts the related parameters.

Figure 10-1 Active Alarm & Event List Dialog

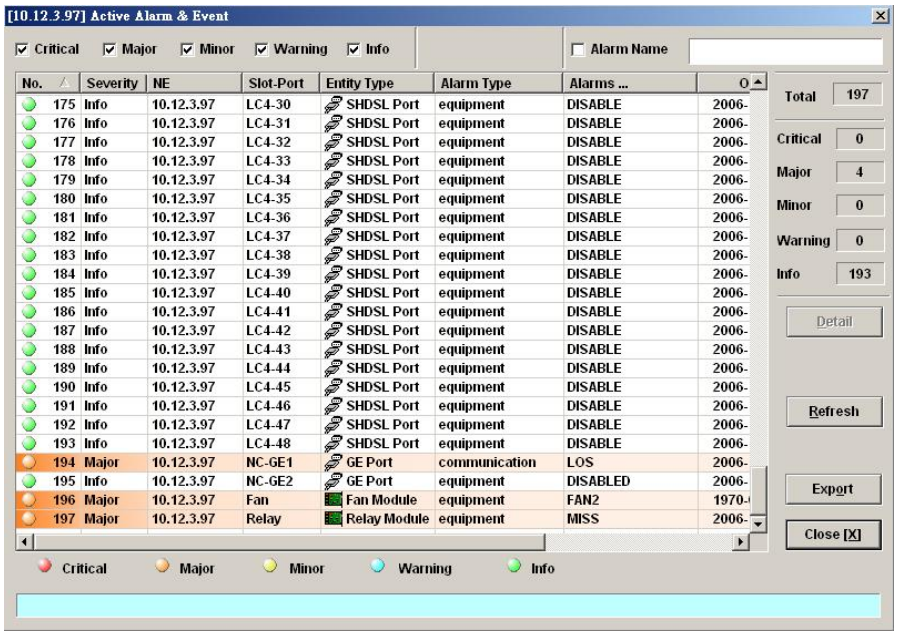


Table 10-1 Active Alarm & Event List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the Table List.
Severity	This indicates the severity of the specified alarm/event.
NE	This indicates the NE IP address.
Slot-Port	This indicates where the alarm/event occurred.
Entity Type	This indicates the hardware type of the entity where the alarm/event occurred.
Alarm Type	This indicates the alarm type.
Alarms	This indicates the description of alarm.
Occur Time	This indicates the time when the indicated alarm/event occurs at the NE.
Receive Time	This indicates the time when the indicated alarm/event received by the AMS LCT.
Function Button	
Detail	Click this button to display the detail information of the specified alarm/event.
Refresh	Click this button to refresh the List Table
Export	Click this button to save the contents of **Active Alarm & Event List** to the Personal Computer.
Close	Exit the **Active Alarm & Event List** Dialog.

The right-hand side of dialog provides a summary of all the active alarm status under the selected object (Slot-Port), with a display of the alarm of severity.

The List Table of Active Alarm & Event dialog displays the selected object. The title of dialog shows the scope of selecting object.

Figure 10-2 Detailed Alarm & Event Dialog

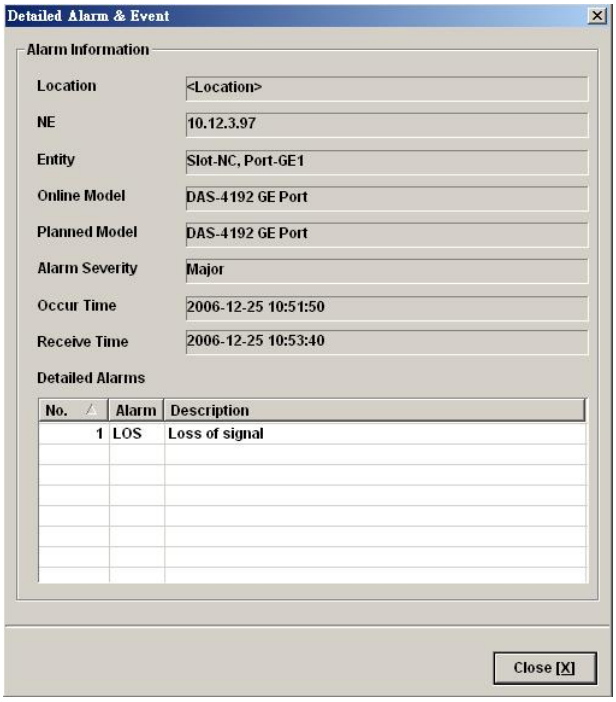


Table 10-2 Detailed Alarm & Event Dialog Description

Field	Description
Alarm Information	
Location	This indicates the location of the NE
NE	This indicates the NE IP address.
Entity	This indicates the module where the alarm/event occurred.
Online Model	This indicates the online model name associated with the “Entity”.
Planned Model	This indicates the planned model name associated with the “Entity”.
Alarm Severity	This indicates the severity of the observed alarm/event.
Occur Time	This record occur time of the observed alarm/event.
Receive Time	This record receives time of the specified alarm/event.
Detailed Alarm	This describes the detailed alarm information.

System Alarm Management

The system alarm management allows you to manually gather the alarm information from NE. You can also configure the system alarm relay input and monitor the NE hardware operation status (like voltage, temperature).

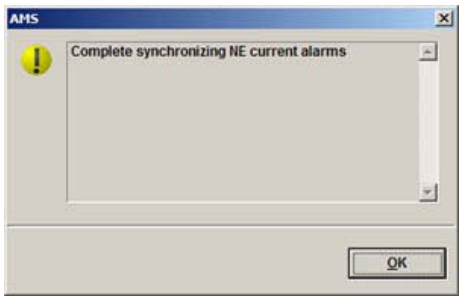
Alarm Synchronization

The AMS LCT provides automatic alarm synchronization. However, since the AMS LCT polls the NE periodically, the polling may not reflect the real-time status. To supplement this issue, the AMS LCT supports the real-time manually alarm synchronization function.

Follow the subsequent procedure to perform the alarm synchronization function.

Click Diagnosis → NE Alarm → Alarm Sync on **Main Menu** to process the alarm synchronization, as shown in Figure 10-3.

Figure 10-3 Completed Alarm Sync Dialog



Relay Input Management

The relay input management allows you to define the alarm relay input. Please see "*System Installation Guide*" for the definition. Once the normal status of input signal is different from the current status, the NE will launch an "abnormal status" alarm of the specified relay input to LCT.

Follow the subsequent procedure to manage the relay input.

Step 1 Click Diagnosis → NE Alarm → Relay Input on **Main Menu** to open the **NE Relay Input** Dialog as shown in Figure 10-4 . Table 10-3 depicts the related parameters.

Figure 10-4 NE Relay Input List Dialog

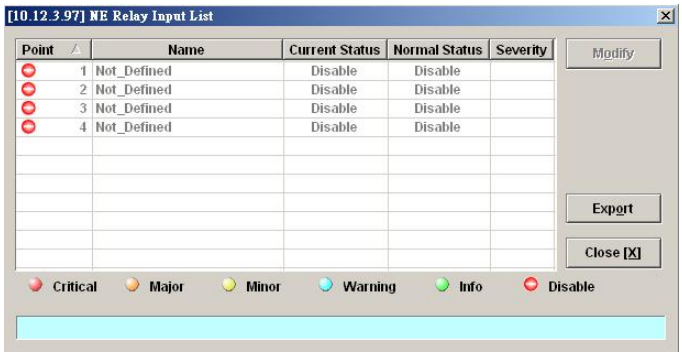


Table 10-3 NE Relay Input List Dialog Description

Field	Description
List Table	
Point	This indicates the location of relay input port.
Name	This indicates the name of replay input port.
Current Status	This indicates the current status of the specified relay input.
Normal Status	This indicates the normal status of the specified relay input that configured by operator.
Severity	This indicates the alarm severity while the status is abnormal.

Step 2 Select the row and click '**Modify**' button to modify the normal status of the relay input port as shown in Figure 10-5. Table 10-4 depicts the related parameters.

Figure 10-5 Modify NE Relay Input Dialog

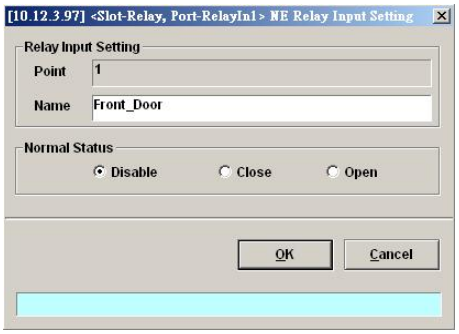


Table 10-4 Modify NE Relay Input Dialog Description

Field	Description
Relay Input Setting	
Name	This gives a meaningful name to the specified relay input.
Normal Status	
Disable	Check this radio button to disable the specified relay input.
Close	Check this radio button to define normal status of the specified relay input is “Close”.
Open	Check this radio button to define normal status of the specified relay input is “Open”.

Hardware Status Monitoring

In the hardware monitoring list dialog, you can monitor the temperature and voltage status of any specific card module.

Step 1 Click Diagnosis → NE Alarm → Hardware Monitoring on **Main Menu** to open the **Hardware Monitoring List** Dialog as shown in Figure 10-6. Table 10-5 depicts the related parameters.

Step 2 Select the row and click ‘**Modify**’ button to the system temperature threshold value as shown in Figure 10-7.

Figure 10-6 Hardware Monitoring List Dialog

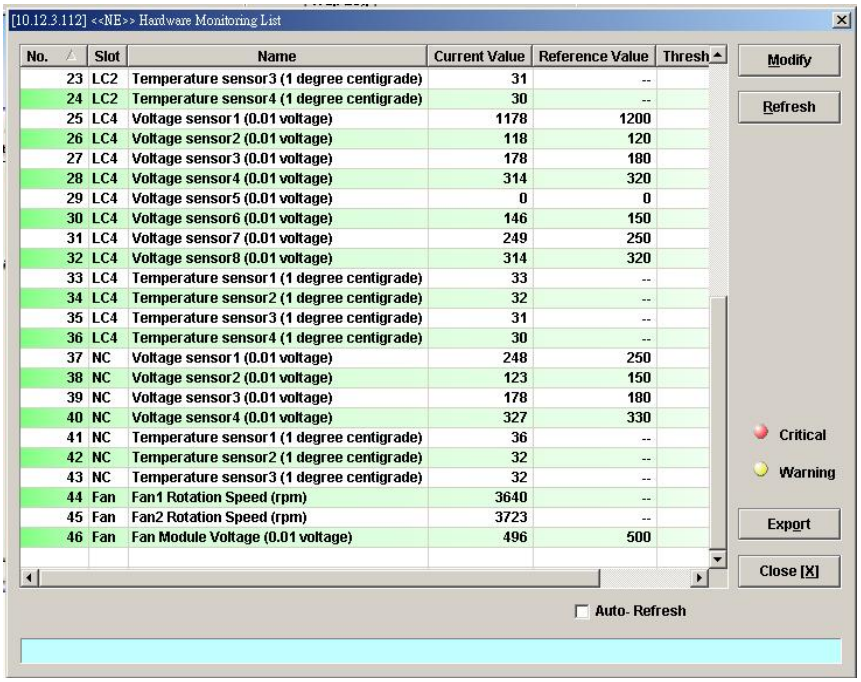
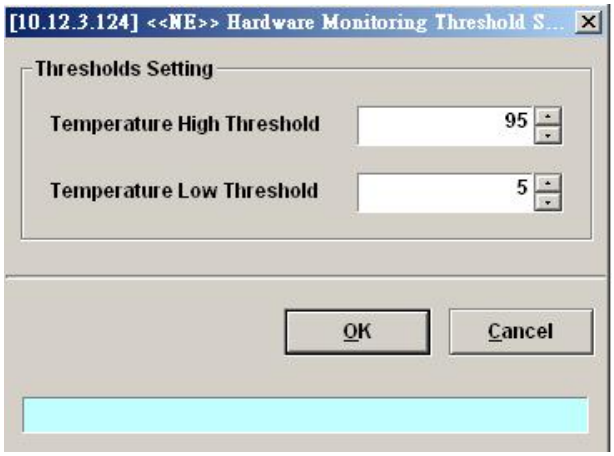


Table 10-5 Hardware Monitoring List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Tale.
Slot	This indicates the location of line card or other card model.
Name	This indicates the name of sensor.
Current Value	This indicates the current value of the specified sensor.
Reference Value	This indicates the normal value of the specified sensor.
Threshold – Low/High	This indicates the low-high threshold value of the specified sensor.
Function Button	
Modify	Click this button to modify the system temperature threshold value as shown in Figure 10-7.
Refresh	Click this button to refresh the table list.
Export	Click this button to save the contents of **Hardware Monitoring List** to the Personal Computer.
Close	Exit the **Hardware Monitoring List** dialog.

Figure 10-7 Hardware Monitoring Threshold Setting Dialog



Chapter 11 Diagnosis Management

This chapter describes the diagnosis of xDSL line interface, GE interface, and system network connectivity.

This chapter contains the following sections:

- xDSL Line Interface Diagnosis
- Trunk Current Status Diagnosis
- Network Diagnosis

xDSL Line Status Diagnosis

The NE supports the following five xDSL line status related diagnosis functions.

- Port Rate Status
- Bits Allocation Monitoring
- Loop Monitoring
- Loop Diagnosis (DELT <Dual-Ended Line Test>)
- Loop SELT Test (Single End Loop Test)

Port Rate Status

Follow the subsequent procedure to monitor the ADSL current rate status.

Step 1 Click Diagnosis → xDSL Current Status → Port Rate Status on **Main Menu** to open the **xDSL Port Selection Dialog** as shown in Figure 11-1.

Step 2 Select the port you want to show and press Query button on the **xDSL Port Selection** Dialog to observe the current ADSL port status as shown in Figure 11-2. Table 11-1 depicts the related parameters.

Figure 11-1 xDSL Port Selection Dialog

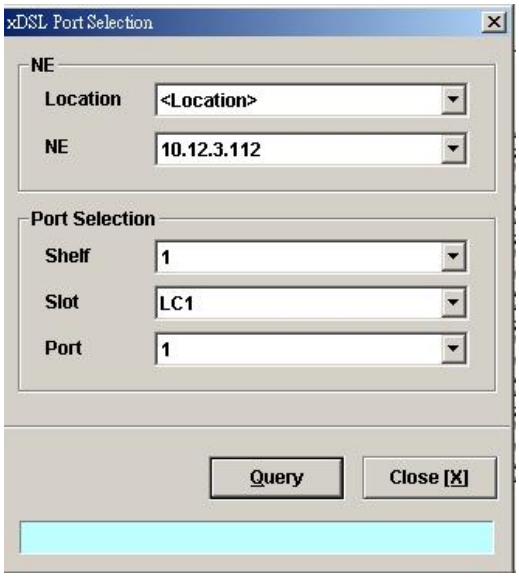


Figure 11-2 ADSL Port Rate Status Dialog

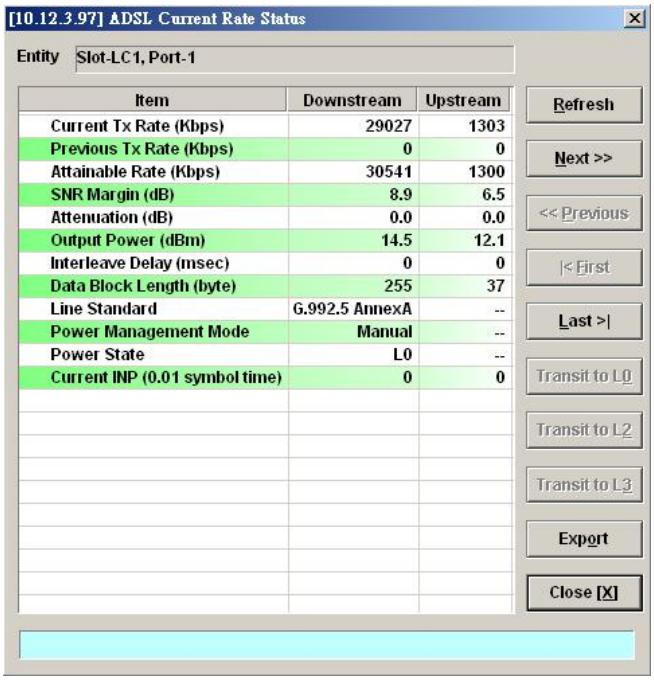


Table 11-1 ADSL Port Rate Status Dialog Description

Field	Description
List Table	
Current Tx Rate (Kbps)	This indicates the current DS/US transmit rate in unit of Kbps. (in the current show-time)
Previous Tx Rate (Kbps)	This indicates the previous DS/US transmit rate in unit of Kbps. (in the last show-time)
Attainable Rate (Kbps)	This indicates the DS/US attainable rate in unit of Kbps.
SNR Margin (dB)	This indicates the DS/US SNR margin in unit of dB.
Attenuation (dB)	This indicates the DS/US attenuation in unit of dB.
Output Power (dBm)	This indicates the DS/US output power in unit of dBm.
Interleave Delay (msec)	This indicates the DS/US interleave delay whenever the line is in the interleaved mode.
Data Block Length (byte)	This indicates the DS/US ADSL data block length in unit of octet.
Line Standard	This indicates the adopted for the current ADSL connection.
Power Management Mode	This indicates the power management mode, either manual or. Automatic.
Power State	This indicates the power management state of this subscriber port per ITU-T 992.3.
Current INP (0.01 symbol time)	This indicates the DS/US INP (Impulse Noise Protection) symbol time in unit of (0.01 symbol time).

Table 11-1 ADSL Port Rate Status Dialog Description (Continued)

Field	Description
Function Button	
Refresh	Click this button to refresh the specified threshold value.
Next	Click this button to display the next subscriber port.
Previous	Click this button to display the previous subscriber port.
First	Click this button to go to the first subscriber status.
Last	Click this button to go to the last subscriber status.
Transit to L0	Click this button to force the power management state to L0 per ITU-T 992.3.
Transit to L2	Click this button to set the power management state to L2 per ITU-T 992.3.
Transit to L3	Click this button to set the power management state to L3 per ITU-T 992.3.
Export	Click this button to save the contents of **ADSL Current Rate Status List** to the Personal Computer.
Close	Exit the **ADSL Current Rate Status** Dialog.

Please refer to ITU-T 992.3 for the details of state transition among the power management state L0, L2 and L3.

Bits Allocation Monitoring

The bit allocation monitoring function allows the operator to observe the number of bits carried on each tone of ADSL line in show-time.

Follow the subsequent procedure to monitor the bit allocation status on the specified ADSL connection.

Step 1 Click Diagnosis → xDSL Current Status → Bits Allocation on **Main Menu** to open the **xDSL Port Selection Dialog** as shown in Figure 11-1.

Step 2 Select the port you want to show and press Query button on the **xDSL Port Selection** Dialog to open the **xDSL Bit Allocation** Dialog as shown in Figure 11-3. Table 11-2 depicts the related parameters.

Figure 11-3 ADSL Bit Allocation Status Dialog

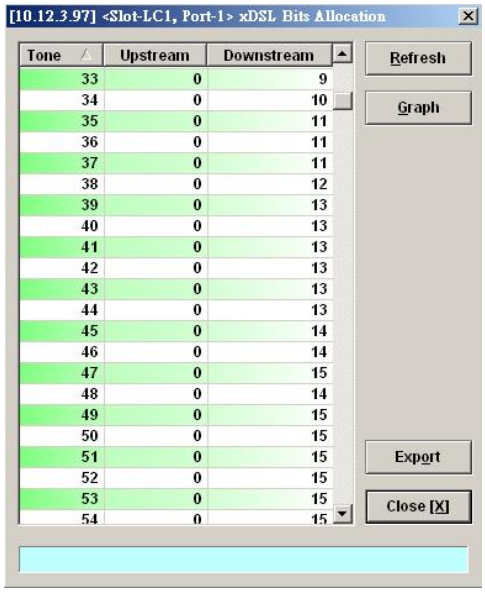
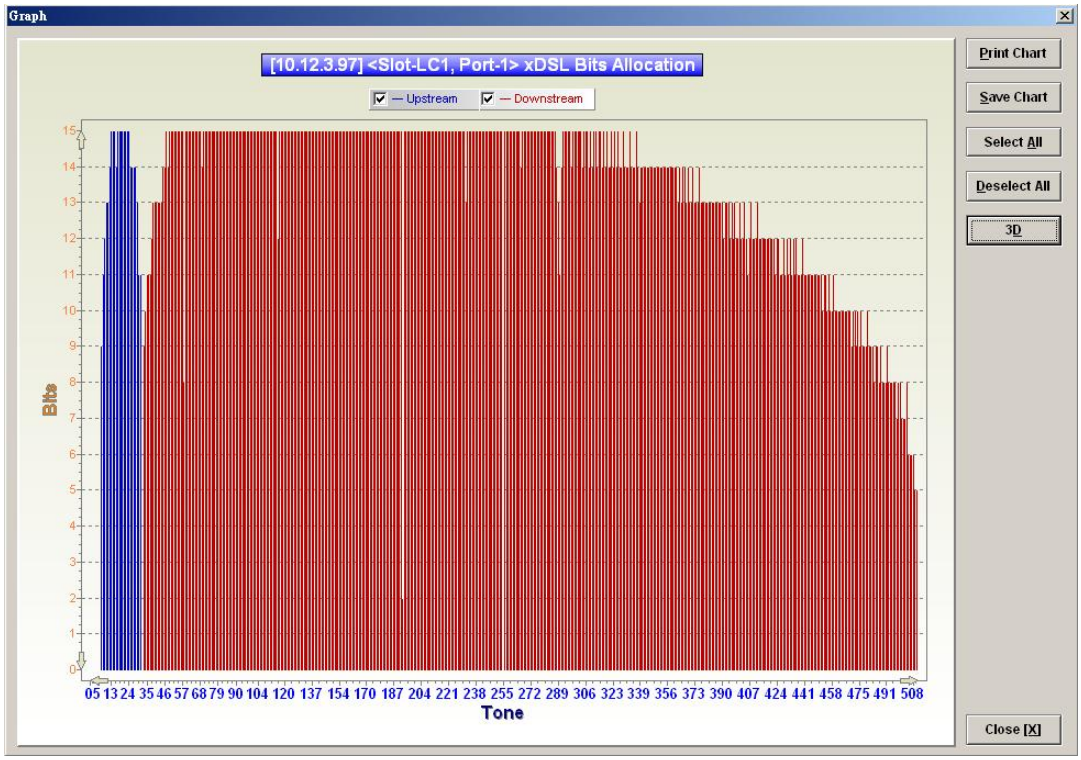


Table 11-2 ADSL Bit Allocation Status Dialog Description

Field	Description
List Table	
Tone	This indicates number of tone index.
Upstream	This indicates the upstream bit allocation of the specified tone.
Downstream	This indicates the downstream bit allocation of the specified tone.
Function Button	
Refresh	Click this button to refresh the bit allocation list table.
Graph	Click this button to display the graph for the bit allocation.
Export	Click this button to save the contents of **ADSL Bit Allocation Status List** to the Personal Computer.
Close	Exit the **ADSL Bit Allocation Status** Dialog.

Step 3 Click “Graph” to show the graph of Bit Allocation as shown in Figure 11-4.

Figure 11-4 Graph of Bit Allocation



Loop Monitoring

The loop monitoring function provides the records of ADSL loop characteristics measured during the last training. It is noted that the measured results are only available in the show-time.

Step 1 Click Diagnosis → xDSL Current Status → Bits Allocation on **Main Menu** to open the **xDSL Port Selection Dialog** as shown in Figure 11-1.

Step 2 Select the port you want to show and press Query button on the **xDSL Port Selection** Dialog to open the **ADSL Loop Monitoring** Dialog as shown in Figure 11-5. Table 11-3 depicts the related parameters.

Step 3 Press Start button to get starting.

Step 4 Click “Graph” button to show the graph of Magnitude as shown in Figure 11-6 or show the graph of Quiet Line PSD as shown in Figure 11-7

.

NOTE Please refer to ITU-T 992.3 for the details of loop monitoring parameters.

NOTE In comparison with the DELT, the ADSL loop is not corrupted whenever the operator performs the loop monitoring function.

Figure 11-5 ADSL Loop Monitoring Dialog

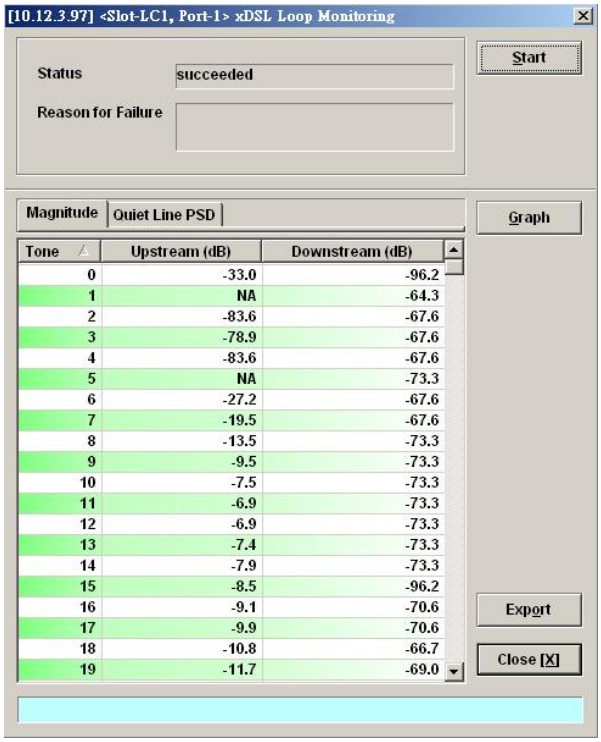


Table 11-3 ADSL Loop Monitoring Dialog Description

Field	Description
Status	This indicates the status of the loop monitoring.
Reason for Failure	This indicates the result of failure case.
Magnitude Dialog	
Tone	This indicates the serial number of tone.
Upstream	This indicates the magnitude of transfer function per tone of the upstream channel.
Downstream	This indicates the magnitude of transfer function per tone of the downstream channel.
Quiet Line PSD Dialog	
Tone	This indicates the serial number of tone.
Upstream	This indicates the quiet line noise PSD per tone of the upstream channel.
Downstream	This indicates the quiet line noise PSD per tone of the downstream channel.
Function Button	
Start	Click this button to start the loop monitoring function.
Graph	Click this button to display the resultant graph of loop monitoring.
Export	Click this button to save the contents of **xDSL Loop Monitoring List** to the Personal Computer.
Close	Exit the **xDSL Loop Monitoring List** Dialog.

NOTE Please refer to ITU-T 992.3 for the details of loop monitoring parameters.

Figure 11-6 Graph of Loop Monitoring - Magnitude

Figure 11-7 Graph of Loop Monitoring – Quiet Line Noise PSD

Loop Diagnosis (DELT <Dual-Ended Line Test>)

The DELT loop diagnosis function provides mechanism to measure the ADSL loop quality. This action will interrupt the ADSL connection. However, more detailed inform are gathered in comparison with the aforementioned loop monitoring function.

Step 1 Click Diagnosis → xDSL Current Status → Bits Allocation on **Main Menu** to open the **xDSL Port Selection Dialog** as shown in Figure 11-1.

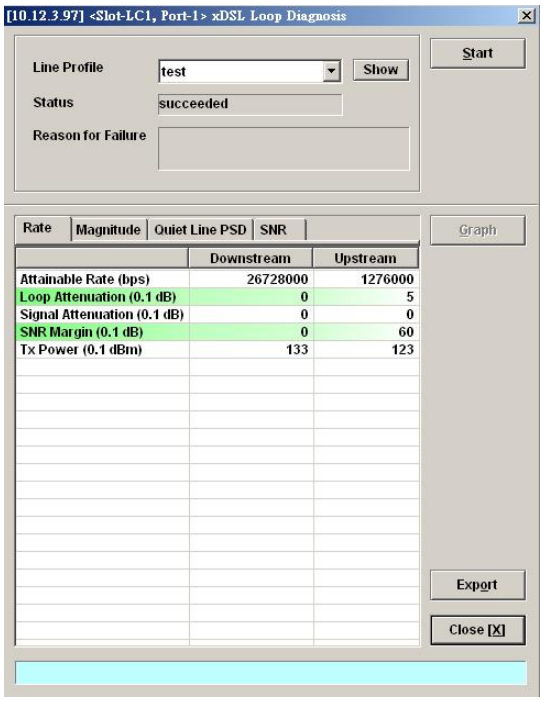
Step 2 Select the port you want to show and press Query button on the **xDSL Port Selection** Dialog to open the **ADSL Loop Diagnosis** Dialog as shown in Figure 11-8. Table 11-4 depicts the related parameters.

Step 3 Press Start button to get starting.

Step 4 Click "Graph" button to show the graph of Magnitude as shown in Figure 11-9 or the graph of Quiet Line PSD as shown in Figure 11-10 or the graph of SNR as shown in Figure 11-11.

In comparison with the loop monitoring function, the ADSL loop is corrupted whenever the operator performs the DELT.

Figure 11-8 ADSL Loop Diagnosis Dialog



The above dialog lists the loop diagnostics parameters that display, see the ITU-T's G.992.3 and G.992.5 for more information.

Table 11-4 ADSL Loop Diagnosis Dialog Description

Field	Description
Line Profile	Use this combo-box to select the line profile to test.
Status	This indicates the status of the DELT.
Reason for Failure	This indicates the result of failure case.
Rate Dialog	
Attainable Rate (bps)	This displays the attainable rate of DELT.
Loop Attenuation (0.1dB)	This displays the loop attenuation of DELT.
Signal Attenuation (0.1dB)	This displays the signal attenuation of DELT.
SNR Margin (0.1dB)	This displays the SNR margin value of DELT.
Tx Power (0.1dB)	This displays the transmit power value of DELT.
Magnitude Dialog (The magnitude of ADSL line transfer function)	
Tone	This indicates the number of the tone.
Upstream	This indicates the upstream magnitude of the specified tone.
Downstream	This indicates the downstream magnitude of the specified tone.
Quiet Line PSD Dialog (PSD of Quiet Line Noise)	
Tone	This indicates the number of the tone.
Upstream	This indicates the upstream PSD of Quiet Line Noise of the specified tone.
Downstream	This indicates the downstream PSD of Quiet Line Noise of the specified tone.
SNR Dialog	
Tone	This indicates the number of the tone.
Upstream	This indicates the upstream SNR of the specified tone.
Downstream	This indicates the downstream SNR of the specified tone.
Function Button	
Show	Click this button to display the selected line profile.
Start	Click this button to start the DELT function.
Graph	Click this button to display the result graph of DELT.
Export	Click this button to save the results of **ADSL Loop Diagnosis (DELT)** to the Personal Computer.
Close	Exit the **ADSL Loop Diagnosis (DELT)** Dialog.

Please refer to ITU-T 992.3 for the details of DELT.

‘Upshift Noise Margin’, ‘Downshift Noise Margin’, ‘Upshift Time’ and ‘Downshift Time’ are only applied to the Rate Mode ‘Adaptive at Run-Time’.

Figure 11-9 Graph of DELT result - Magnitude

Figure 11-10 Graph of DELT result – Quiet Line PSD

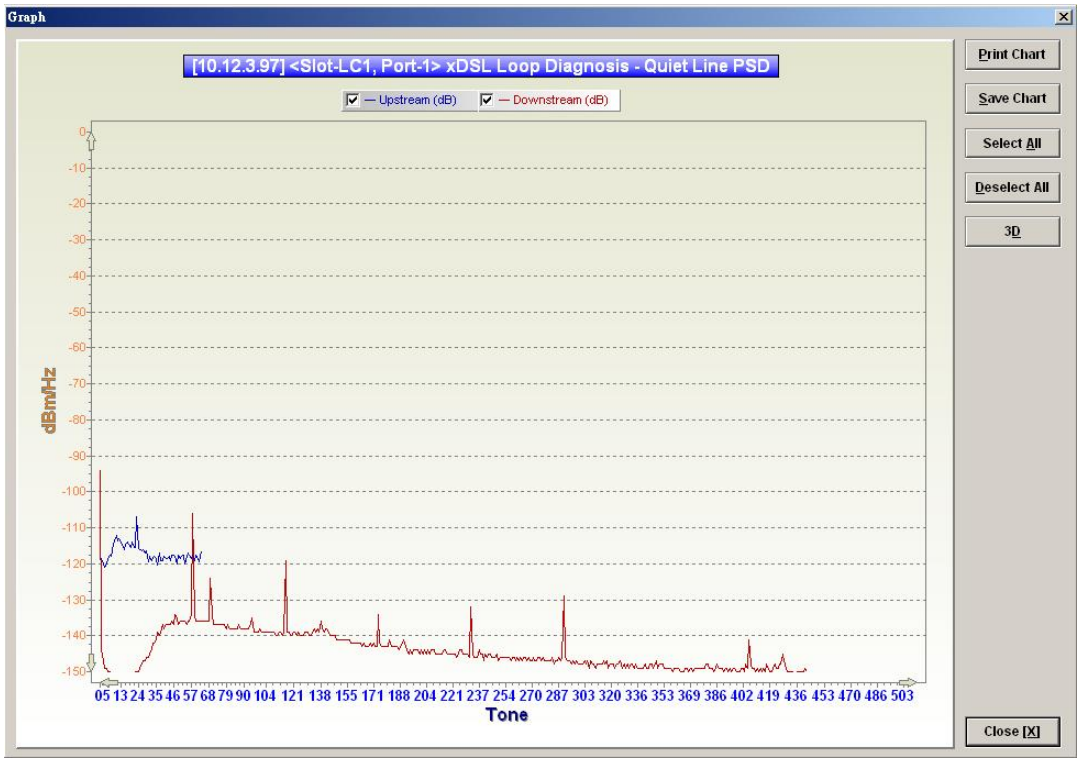
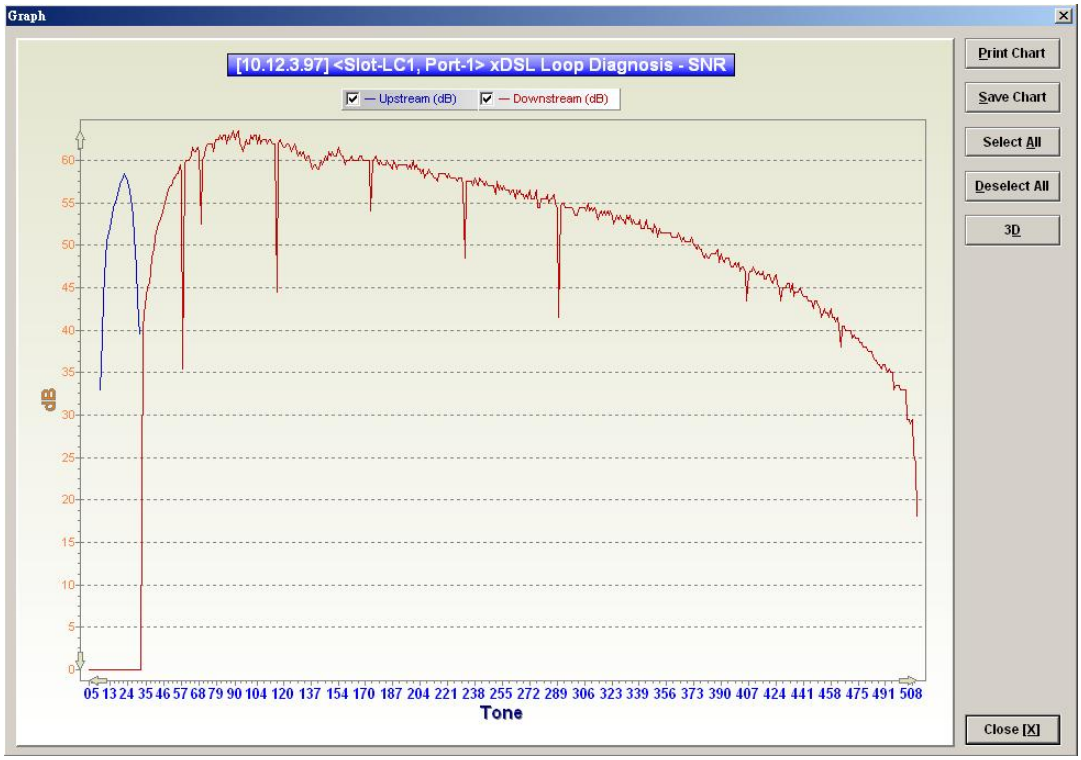


Figure 11-11 Graph of DELT result – SNR



Loop SELT Test (Single End Loop Test)

The SELT loop function diagnosis function is to estimate the distance of the DSL connection from the NE to the subscriber's location without connecting a subscriber device.

Step 1 Click Diagnosis → xDSL Current Status → Bits Allocation on **Main Menu** to open the **xDSL Port Selection Dialog** as shown in Figure 11-1.

Step 2 Select the port you want to show and press Query button on the **xDSL Port Selection** Dialog to open the **ADSL Loop SELT Test** Dialog as shown in Figure 11-12 and Table 11-5 depicts the related parameters.

Step 3 Press Start button to get starting.

Figure 11-12 ADSL Loop SELT Test

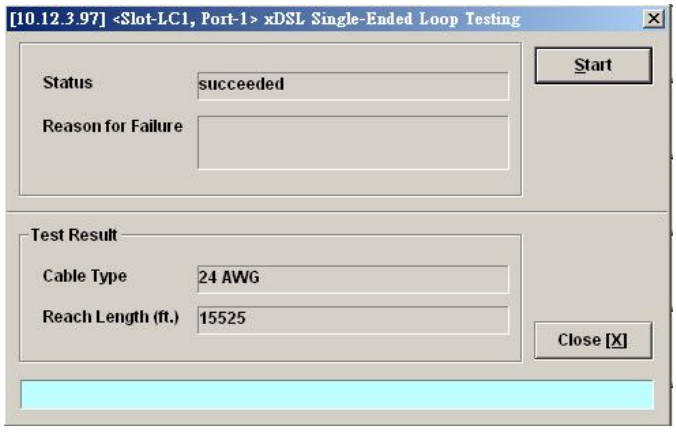


Table 11-5 ADSL Loop SELT Test Dialog Description

Field	Description
Status	This indicates the status of the SELT.
Reason for Failure	This indicates the result of failure case.
Test Result	
Cable Type	This displays the estimated cable type.
Reach Length (ft.)	This displays the estimated cable length.
Function Button	
Start	Click this button to start the SELT.
Close	Exit the SELT dialog.

Please refer to ITU-T 992.3 for the details of SELT.

xDSL Service Status Diagnosis

The NE supports the following six xDSL service status related diagnosis functions.

- Bridge Filtering Database
- VLAN Membership
- xDSL MAC Spoofing Statu
- Multicast Channel Status
- Multicast Group Membership
- xDSL Downstream Broadcast Forwarding VLANs

Bridge Filtering Database

The filtering database (FDB) displays the status of MAC address recorded in the line card on a per PVC basis.

Click Diagnosis → xDSL Current Status → Bridge Filtering Database on **Main Menu** to open the **Filtering Database Entry List** Dialog as shown in Figure 11-13. Table 11-6 depicts the related parameters.

Figure 11-13 Bridge Filtering Database Entry List Dialog

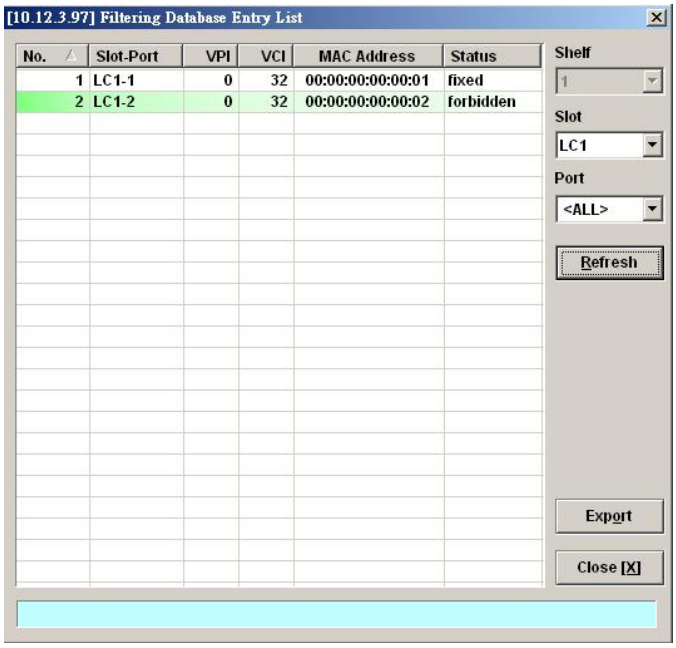


Table 11-6 Bridge Filtering Database Entry List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
Slot-Port	This indicates the location of xDSL port.
VPI	This indicates the VPI of the specified entry.
VCI	This indicates the VCI of the specified entry.
MAC Address	This indicates the MAC address of the specified entry.
Status	This indicates the reason the MAC address appears in this entry. The definitions of status are as follows. • **learned:** It indicates the MAC address is dynamically learned by the NE. • **forbidden:** It indicates the MAC address is manually set for the NE to drop the upstream Ethernet frame of the identical source MAC address. • **fixed:** It indicates the MAC address is manually set for the NE to forward the upstream Ethernet frame of the identical source MAC address.
Function Button	
Slot	Use this combo-box to select the line card.
Port	Use this combo-box to select the xDSL port.
Refresh	Click this button to refresh the list table.
Export	Click this button to save the contents of **Filtering Database Entry List** to the Personal Computer.
Close	Exit the **Filtering Database Entry List** Dialog.

VLAN Membership

The VLAN membership displays the list of xDSL ports belonging to a VLAN of particular VLAN ID.

Click Diagnosis → xDSL Current Status → VLAN Membership on **Main Menu** to open the **VLAN Membership List** Dialog as shown in Figure 11-14. Table 11-7 depicts the related parameters.

Figure 11-14 VLAN Membership List Dialog

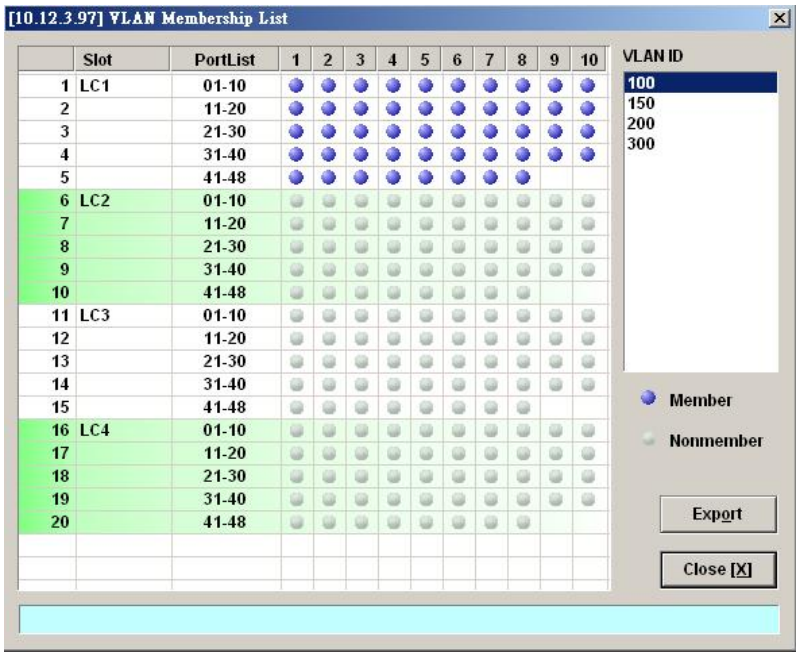


Table 11-7 VLAN Membership List Dialog Description

Field	Description
List Table	
Slot	This indicates the location of line card.
Port-List	This indicates the location of xDSL port. The blue point indicates that the corresponding port is a member port of a VLAN of the specified VLAN ID.
VLAN ID	This specifies the VLAN ID of the VLAN to show its members ports. Change the VLAN ID by clicking VLAN ID value with left button on mouse.
Function Button	
Export	Click this button to save the contents of **VLAN Membership List** to the Personal Computer.
Close	Exit the **VLAN Membership List** Dialog.

xDSL MAC Spoofing Status

The xDSL MAC Spoofing displays the duplicate MAC address from two or more individual xDSL subscriber ports.

Click Diagnosis → xDSL Current Status → MAC Spoofing Status on **Main Menu** to open the **MAC Spoofing Status List** Dialog as shown in Figure 11-15. Table 11-8 depicts the related parameters.

Figure 11-15 MAC Spoofing Status List Dialog

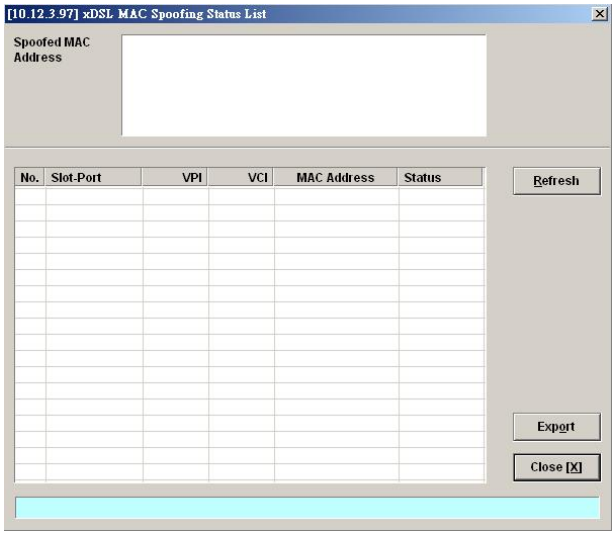


Table 11-8 MAC Spoofing Status List Dialog Description

Field	Description
Spoofed MAC Address	This displays the current spoofed MAC address.
List Table	
No.	This indicates the serial number of entry of the List Table.
Slot-Port	This indicates the location of xDSL port where the spoofed MAC address is observed.
VPI	This indicates the VPI of the PVC where the spoofed MAC address is observed.
VCI	This indicates the VCI of the PVC where the spoofed MAC address is observed.
MAC Address	This indicates the spoofed MAC address
Status	This indicates the current status of the recorded MAC address. The definition of possible statuses is as follows. • **learned (unique):** It indicates the dynamically learned MAC address is unique within the NE. • **spoofed (pass):** It indicates the dynamically learned MAC address is spoofed. The NE forwards the packet from this subscriber port as it appears first. • **spoofed (deny):** It indicates the dynamically learned MAC address is spoofed. The NE drop the packet from this subscriber port as it does not appears first.
Function Button	
Refresh	Click this button to refresh the Spoofed MAC Address list.
Export	Click this button to save the contents of **Spoofed MAC Address List** to the Personal Computer.
Close	Exit the **Spoofed MAC Address List** Dialog.

Whenever the NE detects spoofed MAC address, the NE launches a SNMP traps to the SNMP trap managers as specified in the section “Configuring the SNMP Trap Manager” in Chap 4.

Multicast Channel Status

Whenever the subscriber clicks his remote controller to watch a TV channel transmitted via the ADSL line, the set-top-box sends the corresponding IGMP report packet. The NE inspects the received IGMP report packet to check whether its multicast IP hits the associated multicast service profile (MSP) or not. If the multicast IP hits the associated MSP, the NE forwards the IGMP packet. In the meantime, the NE also records the multicast IP in the **Multicast Channel Status List** s shown in Figure 11-16. Refer the related information to the section “Multicast Service Profile” in Chapter 5.

Click Diagnosis → xDSL Current Status → Multicast Channel Status on **Main Menu** to open the **Multicast Channel Status List** Dialog as shown in Figure 11-16. Table 11-9 depicts the related parameters.

Figure 11-16 Multicast Channel Status List Dialog

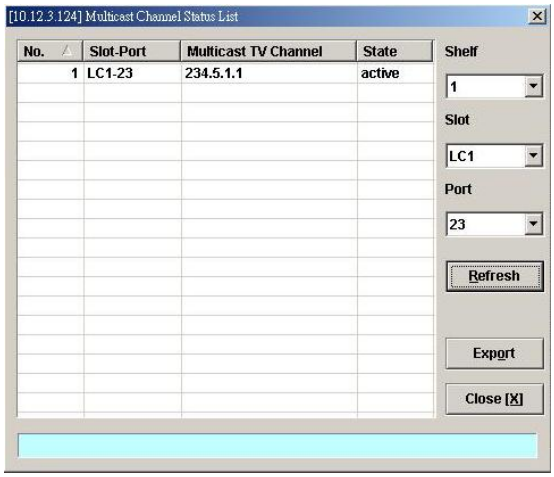


Table 11-9 Multicast Channel Status List Dialog Description

Field	Description
List Table	
No.	This indicates the serial number of entry of the List Table.
Slot-Port	This indicates the location of xDSL port.
Multicast TV Channel	This indicates that recorded multicast channel group IP address which the NE has received the corresponding IGMP report (Join) packet.
Status	This indicates the current status of the multicast channel group. The definition of possible statuses is as follows. • **Active:** The NE received the subscriber's IGMP report. • **Poll:** The NE does not receive the subscriber's IGMP report which responds to the IGMP server/proxy's IGMP query packet. • **Idle:** The NE retries to query the subscriber for "IGMP Robustness retry" times, but it does not get the response. In fact, the LCT will not show the entries of status equal to **Idle**.
Function Button	
Shelf	Use this combo-box to select the NE.
Slot	Use this combo-box to select the line card.
Port	Use this combo-box to select the xDSL ports, either one port or all ports.
Refresh	Click this button to refresh the multicast channel status.
Export	Click this button to save the contents of **Multicast Channel Status List** to the Personal Computer.
Close	Exit the **Multicast Channel Status List** Dialog.

Multicast Group Membership

The multicast group membership list displays the list of xDSL subscriber ports from which the NE has received the IGMP report (Join) packets to join a particular multicast TV channel. In other word, the multicast group membership list shows the xDSL member ports of a particular multicast TV Channel.

Click Diagnosis → xDSL Current Status → Multicast Group Membership on **Main Menu** to open the **Multicast Group Membership List** Dialog as shown in Figure 11-17. Table 11-10 depicts the related parameters.

Figure 11-17 Multicast Group Membership List Dialog

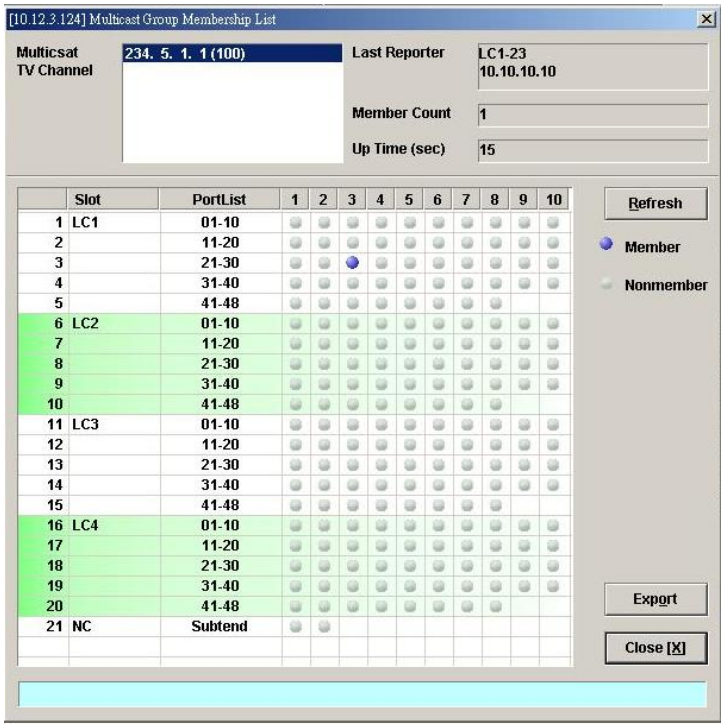


Table 11-10 Multicast Group Membership List Dialog Description

Field	Description
Multicast TV Channel	Use this list to select the multicast TV Channel to display its members.
Last Reporter	This indicates the last xDSL subscriber launches an IGMP report to join the specified multicast TV channel. Its representation includes the location of the subscriber as well as its IP address.
Member Count	This indicates the number of xDSL subscribers currently join the specified multicast TV channel.
Up Time (sec)	This indicates the time period since the NE received the first IGMP report to join the specified multicast TV channel.
List Table	
Slot	This indicates the location of line card.
Port-List	This indicates the port list number. The blue point means that the specified port is a member of the specified multicast channel.
Function Button	
Refresh	Click this button to refresh the multicast group membership list.
Export	Click this button to save the contents of **Multicast Group Membership List** to the Personal Computer.
Close	Exit the **Multicast Group Membership List** Dialog.

xDSL Downstream Broadcast Forwarding VLANs

The xDSL Downstream Broadcast Forwarding VLANs List displays the list of VLANs which are allowed to forward the downstream broadcast traffic.

Click Diagnosis → xDSL Current Status → Broadcast Filter Status on **Main Menu** to open the **xDSL Forwarding Broadcast VLANs List** Dialog as shown in Figure 11-18 and Table 11-11 depicts the related parameters.

Figure 11-18 xDSL Forwarding Broadcast VLANs List

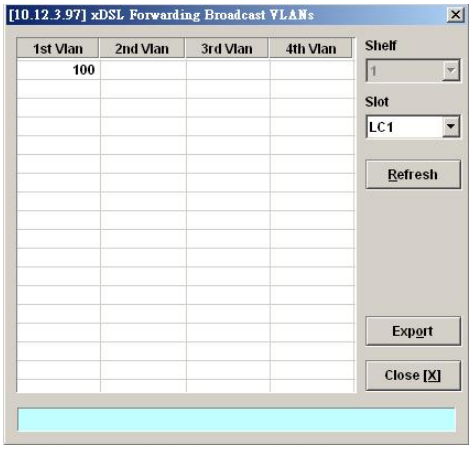


Table 11-11 xDSL Forwarding Broadcast VLANs List Description

Field	Description
List Table	This displays current VLAN ID of VLAN which forwards the broadcast packets.
Function Button	
Slot	Use this combo-box to select the location of xDSL line card.
Refresh	Click this button to refresh the Forwarding Broadcast VLANs list.
Export	Click this button to save the contents of **xDSL Forwarding Broadcast VLANs List** to the Personal Computer.
Close	Exit the **xDSL Forwarding Broadcast VLANs List** Dialog.

Trunk Current Status Diagnosis

LACP Diagnosis

Follow the subsequent procedures to view the current LACP status.

Click Diagnosis → Trunk Current Status → Link Aggregation Status on **Main Menu** to open the **Current Status of LACP for Trunk Port Dialog**. Figure 11-19 shows **Current Status of LACP for Trunk Port Dialog**, and Table 11-12 depicts the related parameters.

Figure 11-19 Current Status of LACP for Trunk Port Dialog

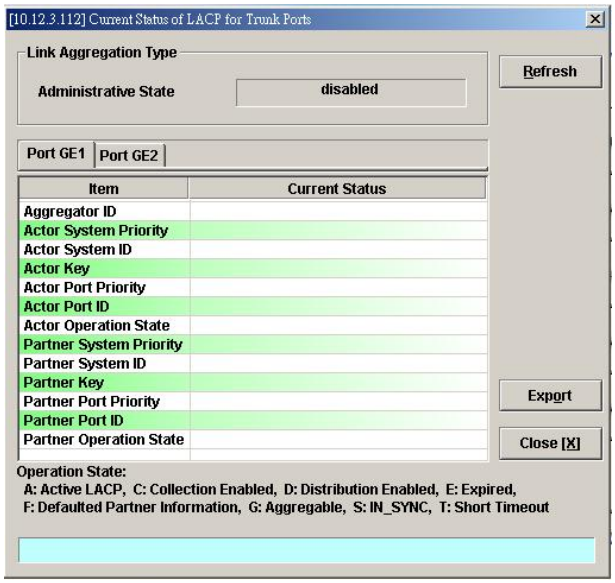


Table 11-12 Current Status of LACP for Trunk Ports Dialog Description

Field	Description
Link Aggregation Type	
Administrative State	This indicates the current setting of the field **Link Aggregation Type** of **LACP for Trunk Ports Dialog**.
Port GE1/ Port GE2 (Tab)	
Aggregator ID	It indicates the ID of aggregation group which the port belongs to.
Actor System Priority	It indicates the system priority configured for the LACP running on the NE.
Actor System ID	It indicates a 6-octet unique system ID for the LACP running on the NE. It is the MAC address of one of the GE port.
Actor Key	It indicates a 2-octet operational Key value of the GE port for the LACP running on the NE.
Actor Port Priority	It indicates a 2-octet port priority configured for the LACP running on the NE.
Actor Port ID	It indicates the port ID for the LACP running on the NE.
Actor Operation State	It indicates the current port status of the LACP on the NE per the IEEE 802.3 Annex 30C.6. A: lacpActivity, T: lacpTimeout(1), G: aggregation(2), S: synchronization(3), C: collecting(4), D: distributing(5), F: defaulted(6), E: expired(7)
Partner System Priority	It indicates the system priority of the peer LACP partner.
Partner System ID	It indicates a 6-octet unique system ID of the peer LACP partner.
Partner Key	It indicates a 2-octet operational Key value of GE port of the peer LACP partner.
Partner Port Priority	It indicates a 2-octet GE port priority of the peer LACP partner.
Partner Port ID	It indicates the port ID of GE port of the peer LACP partner.
Partner Operation State	It indicates the current GE port status of the peer LACP partner per the IEEE 802.3 Annex 30C.6. A: lacpActivity, T: lacpTimeout(1), G: aggregation(2), S: synchronization(3), C: collecting(4), D: distributing(5), F: defaulted(6), E: expired(7)

RSTP Diagnosis

Follow the subsequent procedures to view the current RSTP-Bridge status.

Click Diagnosis→ Trunk Current Status → RSTP Status on **Main Menu** to open the **Current Status of Rapid Spanning Tree Protocol– Bridge Dialog** as shown in Figure 11-20. Table 11-13

depicts the related parameters.

Figure 11-20 Current Status of Rapid Spanning Tree Protocol – Bridge Dialog

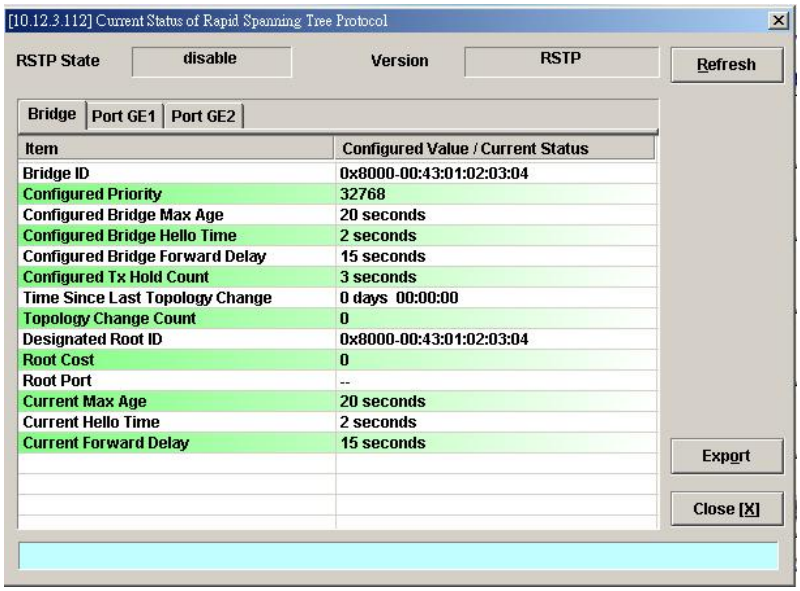


Table 11-13 Current Status of Rapid Spanning Tree Protocol – Bridge Dialog Description

Field	Description
RSTP State	This indicates the enable/disable the RSTP function at GE ports.
Version	This indicates the RSTP version the NE runs.
Bridge (Tab)	
Bridge ID	It indicates an unique 8-octet bridge ID which consists of a 2-octet Bridge Priority and a 6-octet MAC address.
Configured Priority	It indicates the configured 2-octet bridge priority.
Configured Bridge Max Age	It indicates the configured maximum age of STP/RSTP.
Configured Bridge Hello Time	It indicates the configured amount of time between the transmission of configuration bridge PDUs by this node on any port when it is the root of the spanning tree or trying to become so.
Configured Bridge Forward Delay	It indicates the configured time value that controls how fast a port changes its spanning state when moving towards the Forwarding state.
Configured Bridge Tx Hold Count	It indicates the configured Bridge Tx Hold Count.
Time Since Last Topology Change	It indicates the time since last topology change.
Topology Change Count	It indicates the count of topology changes.
Designated Root ID	It indicates the Root Bridge ID once the RSTP selects a bridge as a root bridge.
Root Cost	It indicates the total cost from the NE to the root bridge.
Root Port	It indicates the port toward the root bridge
Current Max Age	It indicates the Max Age determined by RSTP.
Current Hello Time	It indicates the Hello Time determined by RSTP.
Current Forward Delay	It indicates the Forward Delay determined by RSTP.

Port GE1/Port GE2

Follow the subsequent procedures to view the current RSTP- Port GE1/Port GE2 status.

Click the **Port GE1/Port GE2** tab in **Current Status of Rapid Spanning Tree Protocol Dialog** to launch the **Current Status of Rapid Spanning Tree Protocol –Port GE1/Port GE2 Dialog** as shown in Figure 11-21. Table 11-14 depicts the related parameters.

Figure 11-21 Current Status of Rapid Spanning Tree Protocol –Port GE1/Port GE2 Dialog

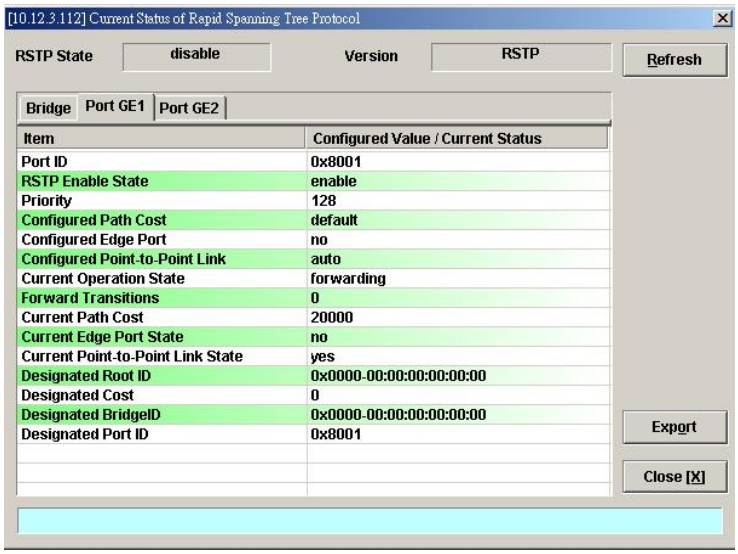


Table 11-14 Current Status of Rapid Spanning Tree Protocol –Port GE1/Port GE2 Dialog Description

Field	Description
RSTP State	This indicates the enable/disable the RSTP function at GE ports.
Version	This indicates the RSTP version the NE runs.
Port GE 1 / Port GE 2 (Tab)	
Port ID	It indicates the port ID the GE port.
RSTP Port Enable State	It indicates the current RSTP enabled/disabled status of the GE port.
Priority	It indicates the configured port priority the GE port.
Configured Path Cost	It indicates the configured path cost of the GE port.
Configured Edge Port	It indicates whether the GE port is configured as Edge Port or not.
Configured Point-to-Point Link	It indicates the configured status of the LAN segment attached to this GE port. • Yes: It indicates that this port should always be treated as if it is connected to a point-to-point link. • No: It indicates that this port should be treated as having a shared media connection • Auto-detection: It indicates that this port is considered to have a point-to-point link if it is an Aggregator and all of its members are aggregatable, or if the MAC entity is configured for full duplex operation, either through auto-negotiation or by management means.
Current Operation State	It indicates the current operation state of GE port.
Forward Transitions	It indicates the number of times this port has transitioned from the Learning state to the Forwarding state.
Current Path Cost	It indicates the configured numerical path cost of the GE port.
Current Edge Port State	It indicates whether the GE port is edge port or not.
Current Point-to-Point Link State	It indicates whether the GE port connects with point-to-point link or not.
Designated Root ID	It indicates the unique Bridge Identifier of the Bridge recorded as the Root in the Configuration BPDUs transmitted by the designated Bridge for the segment to which the port is attached.
Designated Cost	It indicates the path cost of the Designated Port of the segment connected to this port. This value is compared to the Root Path cost field in received bridge BPDUs
Designated Bridge ID	It indicates the Bridge Identifier of the bridge which this port considers to be the Designated Bridge for this port's segment.
Designated Port ID	The Port Identifier of the port on the Designated Bridge for this port's segment.

Network Diagnosis

The AMS LCT supports the following three network related diagnosis functions to check the connection between the AMS LCT and NE.

- Ping
- Traceroute
- Telnet
- Check SNMP Connection

Ping

Use the ‘Ping NE’ echo to check the NE connection from AMS LCT host.

Click Diagnosis → NE Connection → Ping NE on **Main Menu** to open the **Ping NE** Dialog as shown in Figure 11-22 and Table 11-15 depicts the related parameters.

Figure 11-22 Ping NE from Client Dialog

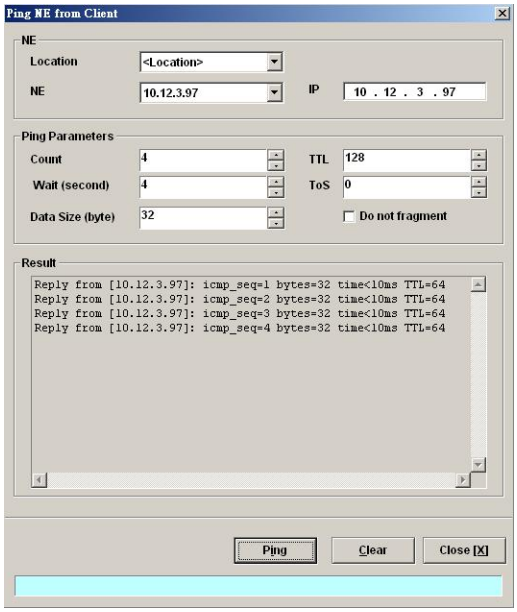


Table 11-15 Ping NE from Client Dialog Description

Field	Description
NE	
Location	Use this combo-box to select location.
NE	Use this combo-box to select NE.
IP	This indicates the IP address of the selected NE.
Ping Parameters	
Count	Use this field to select the number of ICMP ping packets to be launched by the LCT. Valid value is 1 ~ 99.
Wait (second)	Use this field to select the waiting time of ICMP packet. Valid value is 1 ~ 30.
Data Size (byte)	Use this field to select the payload size of ICMP ping packet. Valid value is 32 ~ 9996.
TTL	Use this field to select the TTL (Time To Live) of ICMP ping packet. Valid value is 1 ~ 255.
ToS	Use this field to select the ToS (Type of Serveice) of ICMP ping packet. Valid value is 0 ~ 255.
Do not fragment	Check this check box to set the “Do not fragment”-bit of ICMP ping packet.
Function Button	

Field	Description
Ping	Start sending ICMP packets.
Clear	Clear all the result above.
Close	Exit the Ping dialog.

Traceroute

Use the ‘Traceroute” to check the NE connection from AMS LCT host.

Click Diagnosis → NE Connection → Traceroute on **Main Menu** to open the **Traceroute NE** Dialog as shown in Figure 11-23. Table 11-16 depicts the related parameters.

Figure 11-23 Tracer Route NE from Client Dialog

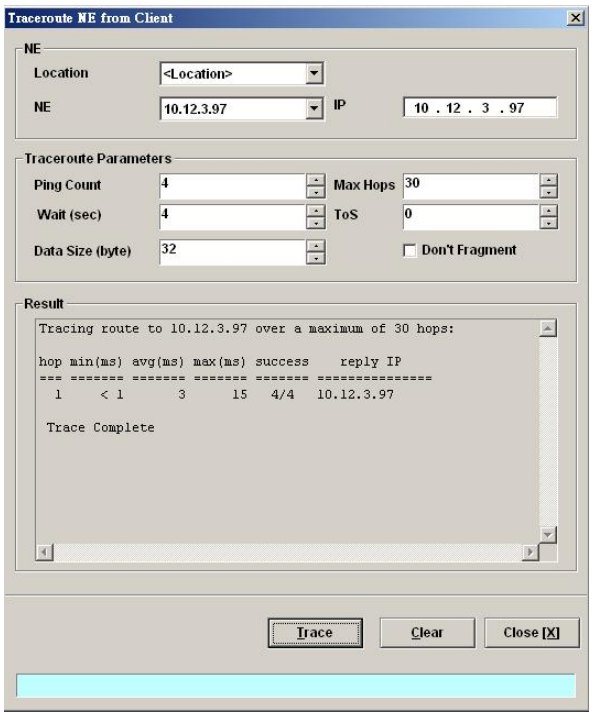


Table 11-16 Trace Route NE from Client Dialog Description

Field	Description
NE	
Location	Use this combo-box to select location.
NE	Use this combo-box to select NE.
IP	This indicates the IP address of the selected NE.
Ping Parameters	
Ping Count	Use this field to select the number of ICMP packets to be launched by the LCT. Valid value is 1 ~ 99.
Wait (second)	Use this field to select the waiting time of ICMP packet. Valid value is 1 ~ 30.
Data Size (byte)	Use this field to select the payload size of ICMP packet. Valid value is 32 ~ 9996.
Max Hops	Use this field to select the maximum number of hops of tracing.

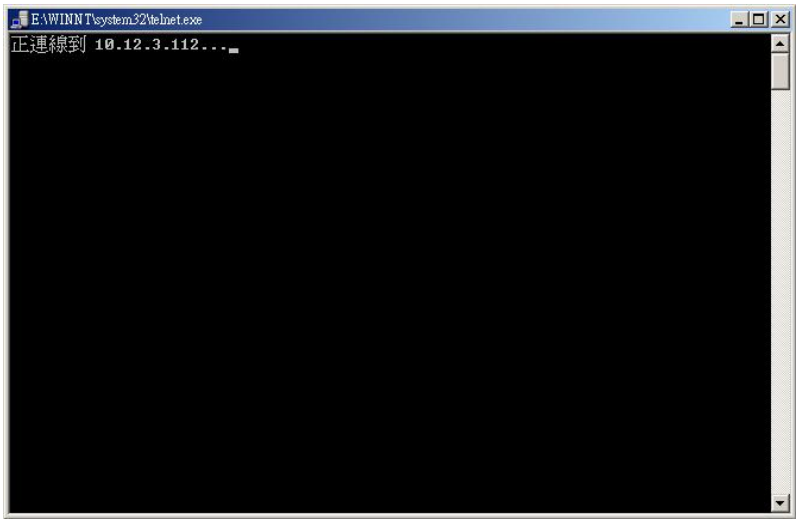
Field	Description
	Valid value is 1 ~ 255.
ToS	Use this field to select the ToS (Type of Serveice) of ICMP packet. Valid value is 0 ~ 255.
Do not fragment	Check this check box to set the “Do not fragment”-bit of ICMP packet.
Function Button	
Trace	Start Traceroute by sending ICMP packets.
Clear	Clear all the result above.
Close	Exit the Trace Route dialog.

Telnet

The AMS LCT allows operator to launch a Telnet window in the LCT environment.

Click Diagnosis → NE Connection →Telnet on **Main Menu** to launch the Telnet window as shown in Figure 11-24.

Figure 11-24 Telnet Pop-up Window



Check SNMP Connection

Use the ‘SNMP Connection’ to check whether the connection between NE and AMS LCT host is normal or not.

Click Diagnosis → NE Connection → SNMP Connection on **Main Menu** to open the **SNMP Connection** Dialog as shown in Figure 11-25 and Table 11-17 depicts the related parameters.

Figure 11-25 Check NE SNMP Connection Dialog

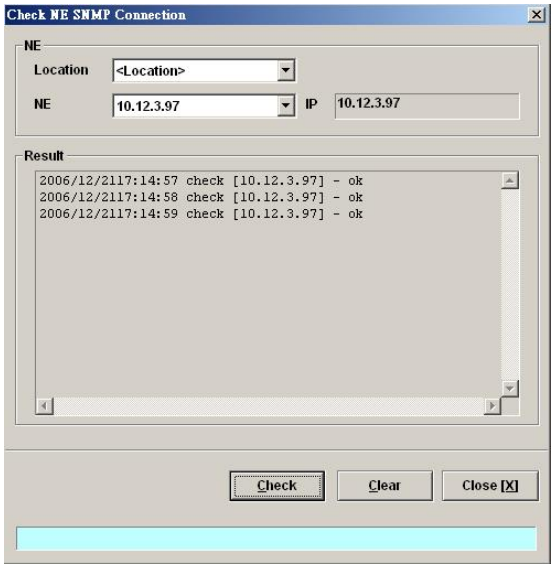


Table 11-17 Check NE SNMP Connection Dialog Description

Field	Description
NE	
Location	Use this combo-box to select location.
NE	Use this combo-box to select NE.
IP	This indicates the IP address of the selected NE.
Function Button	
Check	Start checking the SNMP connection.
Clear	Clear all the result above.
Close	Exit the Check NE SNMP Connection Dialog.

Chapter 12 General System Management

This chapter details the various operations that need to be carried out to setup and start services.

- AMS LCT Options

AMS LCT Options

Configuring the Alarm Warning Options

The AMS LCT supports to notify the operators whenever there is an alarm sent from the NE. The operator is allowed to control the AMS LCT to notify by flashing the alarm on the multimedia view (see Figure 3-2) and/or playing a audio file.

Click System → Option on **Main Menu** to open the **Client Options** Dialog as shown in Figure 12-1. Table 12-1 depicts the related parameters.

Figure 12-1 Client Options Dialog – Alarm Warning

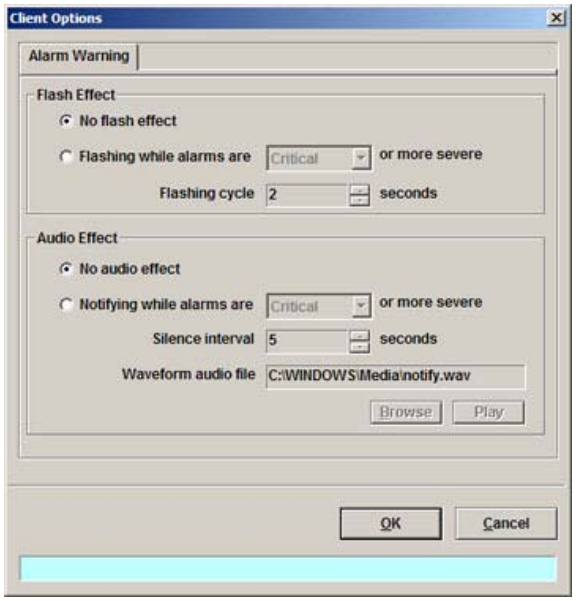


Table 12-1 Client Options Dialog – Alarm Warning Description

Field	Description
Flash Effect	
No flash effect	This option button disables the alarm warning flash effect.
Flashing condition and cycle	This option button enables the alarm warning flash effect. You can control the alarm severity and flashing cycles.
Audio Effect	
No audio effect	This option button disables the audio effect.
Notifying condition and interval	This option button enables the audio effect. You can control the alarm severity and the silence interval between two audio notifications.
Waveform audio file	This specifies the sound file of audio effect. Click 'Browse' button to select file and click 'Play' to test.

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Chapter 13 Administrating and Maintenance

Administrate and Maintenance encompasses the software image updating and configuration data management.

This chapter contains the following sections:

- NE Configuration Backup and Restore
- NE Firmware Up
- SHDSL LC Firmware Up
- NE Boot Partition
- Reset the Unit

NE Configuration Backup and Restore

Follow the subsequent procedure to backup and restore the configuration data file of NE on local LCT PC through FTP.

Step 1 Click Configuration → NE Management → Backup & Restore on **Main Menu** to open the **NE Configuration Backup & Restore** Dialog as shown in Figure 13-1 and Table 13-1 depicts the related parameters.

Step 2 To backup the configuration file, please input a valid administrative level username/password and give your backup file a file name, then click '**Backup**' button.

Step 3 To restore the configuration file, click '**Browse**' and choose the target file from the backup file directory, then click '**Restore**' button.

Step 4 After restoring the configuration data, it is noted that the NE needs to be rebooted to make the configuration data take effect.

You can also select and highlight the NE from the **Network Tree View** to progress the NE configuration Backup & Restore by right click of pop-up menu, NE Management → NE Backup & Restore.

Figure 13-1 NE Configuration Backup & Restore File List Dialog

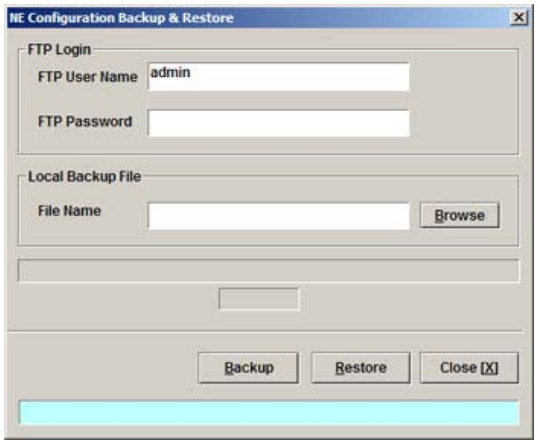


Table 13-1 NE Configuration Backup & Restore File List Dialog Description

Field	Description
FTP Login	
FTP User Name	Fill the administrative level username of FTP.
FTP Password	Fill the comparative password of the administrative level username.
Local Backup File	
Browse	Click this button to open the file choice window.
Function Button	
Backup	Start to backup the configuration data file of NE by saving it as the specified file on the local LCT PC through FTP.
Restore	Start to restore the configuration data file of NE by sending the specified file on the local LCT PC through FTP.
Close	Exit the Configuration Backup & Restore Dialog.

NE Firmware Upgrade

AMS LCT provides the "NE Firmware Upgrade" dialog to upgrade the NC/ADSL LC firmware image to NE through FTP.

Follow the subsequent procedure to upgrade the NC/ADSL LC firmware image. It is noted that the NE needs to be rebooted to execute the new image.

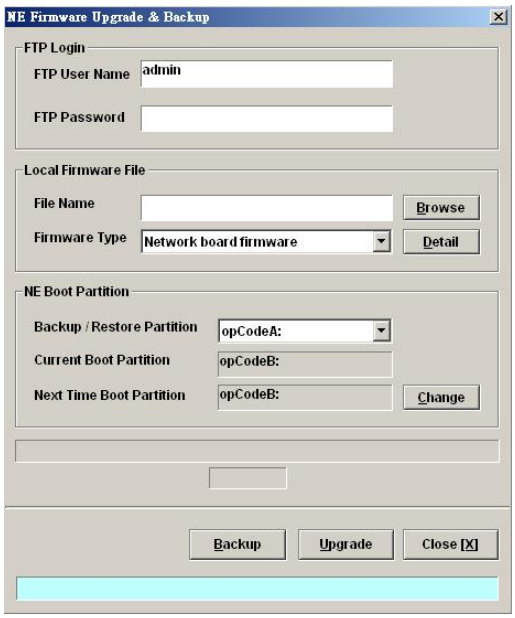
Step 1 Click Configuration → NE Management → Firmware Upgrade on **Main Menu** to open the **NE Firmware Upgrade** Dialog as shown in Figure 13-2. Table 13-2 depicts the related parameters.

Step 2 Click '**Browse**' button to choose the suitable code file from host directory.

Step 3 Click '**Upgrade**' button to process.

Step 4 Reset the NC or ADSL LC to execute the upgraded firmware.

Figure 13-2 NE Firmware Upgrade Dialog



Make sure the source image file that you select is accordant to the NE model, else the NE may not run well with the upgraded firmware image after rebooting.

Table 13-2 NE Firmware Upgrade Dialog Description

Field	Description
FTP Login	
FTP User Name	This indicates the user name of NE with administrator right.
FTP Password	This indicates the password of NE with administrator right.
Local Firmware File	
File Name	Click the 'Browse' button to select a file of NC firmware or an ADSL LC firmware from your local host.
Firmware Type	This indicates the firmware type for upgrade. Click 'Detail' button to display the information of selected file.
NE Boot Partition (also refer to NE Boot Partition)	
Backup / Restore Partition	This specifies the boot partition where the upgraded file to be placed to or backup from.
Current Boot Partition	This specifies the current boot partition.
Next Time Boot Partition	This indicates the partition of NE for next booting. Click 'Change' button to change boot partition.
Function Button	
Backup	Start to backup the NC/ADSL LC firmware image of NE by saving it as the specified file on the local LCT PC through FTP.
Upgrade	Start to upgrade the NC/ADSL LC firmware image of NE by sending the specified file on the local LCT PC through FTP.
Close	Exit the Configuration Backup & Restore Dialog.

SHDSL LC Firmware Upgrade

AMS LCT provides the "NE SHDSL Firmware Upgrade" dialog to upgrade the SHDSL LC firmware image to NE through FTP.

Follow the subsequent procedure to upgrade the SHDSL LC firmware image. It is noted that the NE needs to be rebooted to execute the new image.

AMS LCT provides the "NE SHDSL Firmware Upgrade" dialog to upload the firmware image to NC through FTP and then upgrade the new image from NC to SHDSL card. Follow the subsequent procedures to upgrade your SHDSL line card if necessary.

Step 1 Click Configuration → NE Management → NE SHDSL Firmware Upgrade on **Main Menu** to open the **NE SHDSL Firmware Upgrade** Dialog as shown in Figure 13-3. Table 13-3 depicts the related parameters.

Step 2 Click '**Browse**' button to choose the suitable code file from host directory.

Step 3 Click '**FTP**' button to upload new firmware to NC card.

Step 4 Mark the SHDSL LC which you want to upgrade firmware, and then click "**Upgrade**" to proceed.

Step 5 Reset the SHDSL LC to execute the upgraded firmware.

NOTE In comparison with the NC/ADSL LC firmware upgrade procedure, you need take one more step (**Step 4**) to upgrade the SHDSL firmware.

NOTE It is noted that the SHDSL LC must be reset at the completion of **Step 4**.

Figure 13-3 NE SHDSL Firmware Upgrade Dialog

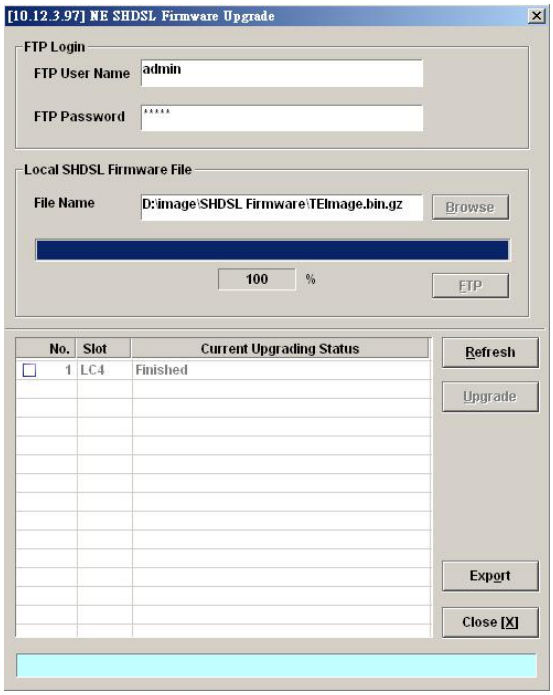


Table 13-3 NE SHDSL Firmware Upgrade Dialog Description

Field	Description
FTP Login	
FTP User Name	This indicates the user name of NE with administrator right.
FTP Password	This indicates the password of NE with administrator right.
Local SHDSL Firmware File	
File Name	Click the 'Browse' button to select a file of SHDSL firmware from your local host.
FTP	Click this button to upload SHDSL firmware to the NC.
Current Upgrading Status	This indicates the status of SHDSL line card. Upgrading is available only when the status is "initial".
Upgrade	Click this button to upgrade the new image from NC to SHDSL LC.
Refresh	Click this button to refresh the status during firmware updating.
Export	Click this button to save the contents of **NE SHDSL Firmware Upgrade** to the local LCT PC.
Close	Exit the **NE SHDSL Firmware Upgrade** Dialog.

NE Boot Partition

Step 1 Click Configuration → NE Management → Boot Partition on **Main Menu** to open the **NE Firmware Boot Partition** Dialog as shown in Figure 13-4 .Table 13-4 depicts the related parameters.

Step 2 Select the boot partition form 'Next Time Boot Partition' field to decide the booting image the NE will run whenever it is rebooted.

Figure 13-4 NE Firmware Boot Partition Dialog

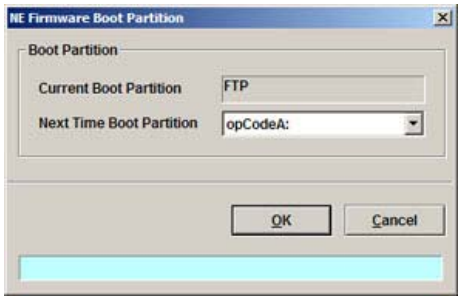


Table 13-4 NE Firmware Boot Partition Dialog Description

Field	Description
Current Boot Partition	This indicates the current boot partition.
Next Time Boot Partition	Use this combo-box to select the next boot partition.
Function Button	
OK	Commit the configuration.
Cancel	Cancel the setting.

Reset the Unit

Select the NC/LC or Port object, use right mouse button to bring out the menu, select the 'Reset' option to launch the **Reset the Unit Dialog** as shown in Figure 13-5.

Figure 13-5 Reset the Unit Dialog

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Appendix A Abbreviations and Acronyms

The abbreviations and acronyms used in this document.

Table A-1 Abbreviations and Acronyms Table

Abbreviations	Full Name
AAL	ATM Adaptation Layer
ADSL	Asymmetric Digital Subscriber line
AIS	Alarm Indication Signal
ATM	Asynchronous Transfer Mode
ATU-C	ADSL Transceiver Unit at the central office end
ATU-R	ADSL Transceiver Unit at the remote end
CBR	Constant Bit Rate
CV	Coding Violation
DSLAM	Digital Subscriber line Access Multiplexer
ES	Error Seconds
EOA	Ethernet over ATM
GE	Gigabit Ethernet
IP	Internet Protocol
LAN	Local Area Network
LOF	Loss of Frame
LOS	Loss of Signal
LPR	Loss of Power
OAM	Operation, Administration, and Maintenance
PADI	PPPoE active discovery initiation
PADR	PPPoE active discovery request
PADT	PPPoE active discovery terminate
PCR	Peak Cell Rate
PSD	Power Spectral Density
PVC	Permanent Virtual Channel
rtVBR	Real time Variable Bit Rate
SCR	Sustainable Cell Rate
SNR	Signal-to Noise Ratio
SNMP	Simple Network Management Protocol
UAS	Unavailable Seconds
UBR	Unspecified Bit Rate
VC	Virtual Channel
VCI	Virtual Channel Identify
VCL	Virtual Channel Link
VDSL	Very high-speed Digital Subscriber line
VLAN	Virtual Local Area Network
VP	Virtual Path
VPI	Virtual Path Identifier
VTU-O	VDSL Transmission Unit at the Optical network interface
VTU-R	VDSL Transmission Unit at the remote end
WAN	Wide Area Network
xDSL	ADSL/VDSL

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Appendix B Alarm Definition

Describe all the alarm in the AMS.

Table B-1 Alarm Definition

NE Model	Module Name	Alarm Name	Default Severity	Alarm Description
All	noEntity	EMPTY	No	Neither plan type nor on-line type configured
DAS4192	CPU Module	MISSING	Major	CPU Module is off-line
		TEMP	Major	Temperature is over the threshold
		VOL	Major	Voltage is below the threshold
		MISMATCH	Major	Planned type and online type are mismatched
		TCA_DHCP_BC	Warning	DHCP broadcast request rate threshold-crossing alert
	ADSL Module	MISSING	Major	ADSL module is off-line
		TEMP	Major	Temperature is over the threshold
		VOL	Major	Voltage is below the threshold
		MISMATCH	Major	Planned type and online type are mismatched
		NOT_OPERABLE	Major	ADSL line card is not operable
	Power Module	MISSING	Major	Power module is off-line
		NOT_OPERABLE	Major	Power card is not operable
	Fan Module	MISSING	Major	Fan module is off-line
		FAN1_SPEED	Major	Fan1 speed is below the threshold
		FAN2_SPEED	Major	Fan2 speed is below the threshold
		VOL	Major	Voltage is below the threshold
	ADSL Port	ES_NE_15_MIN	Minor	15 min near end ES is over threshold
		SES_NE_15_MIN	Minor	15 min near end SES is over threshold
		UAS_NE_15_MIN	Minor	15 min near end UAS is over threshold
		ES_FE_15_MIN	Minor	15 min far end ES is over threshold
		SES_FE_15_MIN	Minor	15 min far end SES is over threshold
		UAS_FE_15_MIN	Minor	15 min far end UAS is over threshold
		ES_NE_1_DAY	Minor	1 day near end ES is over threshold
		SES_NE_1_DAY	Minor	1 day near end SES is over threshold
		UAS_NE_1_DAY	Minor	1 day near end UAS is over threshold
		ES_FE_1_DAY	Minor	1 day far end ES is over threshold
		SES_FE_1_DAY	Minor	1 day far end SES is over threshold
		UAS_FE_1_DAY	Minor	1 day far end UAS is over threshold
		LOS	Minor	Loss of signal
		LOF	Minor	Loss of frame
		LPWR	Warning	CPE loss of power
		GEN_LINE_INIT_FAIL	Minor	Generic line initialization failure
		CONFIG_ERROR	Minor	Line initialization failure - configuration error
		HIGH_BIT_RATE	Minor	Line initialization failure - high bit rate
		COMM_PROBLEM	Minor	Line initialization failure - communication problem
		NO_PEER_DETECTED	Minor	No peer detected
		TRAINING	Warning	Port is under training
		NO_CONFIG	Information	Port is not configured

NE Model	Module Name	Alarm Name	Default Severity	Alarm Description
		PS_L2_MANUAL	Information	ADSL2/ADSL2+ Power State transfers to L2 by manual mode
DAS4192	ADSL Port	PS_L2_AUTO	Information	ADSL2/ADSL2+ Power State transfers to L2 by automatic mode
		PS_L3_CO	Information	ADSL2/ADSL2+ Power State transfers to L3 by CO side
		PS_L3_CPE	Information	ADSL2/ADSL2+ Power State transfers to L3 by CPE side
		ILLEGAL_IP	Warning	Packets with illegal IP addresses have been dropped
		ILLEGAL_MAC	Warning	duplicated MAC addresses from different line ports are made out
		DISABLED	Information	The port is disabled
	GE Port	MISSING	Major	GE Port is off-line
		NOT_OPERABLE	Major	GE Port is not operable
		STP_LEARN	Information	GE port is transited to STP-learning state
		STP_BLOCK	Information	GE port is transited to STP-blocking state
		DISABLED	Information	GE port is disabled
	Alarm Relay Module	MISSING	Major	Alarm relay module is off-line
	Alarm Relay Port	MISSING	Major	Alarm relay port is off-line
		RELAY_ABNORMAL	Major	The alarm relay port is under abnormal status
		DISABLED	Information	The alarm repay port is disabled
	SHDSL Module	MISSING	Major	SHDSL module is off-line
		TEMP	Major	Temperature is over the threshold
		VOL	Major	Voltage is below the threshold
		MISMATCH	Major	Planned type and online type are mismatched
		NOT_OPERABLE	Major	Line card is not operable
	SHDSL Port	TCA_ES_NE_15_MIN	Minor	15-min near end ES is over the threshold
		TCA_SES_NE_15_MIN	Minor	15-min near end SES is over the threshold
		TCA_UAS_NE_15_MIN	Minor	15-min near end UAS is over the threshold
		TCA_CRC_NE_15MIN	Minor	15-min near end CRC is over the threshold
		TCA_LOSW_NE_15MIN	Minor	15-min near end LOSW is over the threshold
		TCA_SNR_NE	Minor	Near end SNR margin is over the threshold
		TCA_ATTN_NE	Minor	Near end loop attenuation is over the threshold
		OPI	Information	Operation state change indication
		LOS	Minor	Loss of signal (FOH lost bit)
		SEGA	Minor	Segment anomaly - CRC anomaly (FOH sega bit)
		LPR	Minor	Loss of power - power status (FOH ps bit)
		SEGD	Minor	Segment defect - LOSW defect (FOH segd bit)
		PBO_NE	Minor	Near end enhanced power back off
		DEVFAULT_NE	Minor	Near end device fault - Diagnostic or self-test fault
		DCCONT_NE	Minor	Near end DC continuity fault - interfere with span powering
		LOSW_NE	Minor	Near end LOSW failure
		INI_CFG_NE	Minor	Near end indicates Far end not able to support requested configuration
		INI_PROTOCOL_NE	Minor	Near end indicates incompatible protocol used by Far end
		NOPEER	Minor	No peer detected
		PBO_FE	Minor	Far end enhanced power back off
		DEVFAULT_FE	Minor	Far end device fault - Diagnostic or self-test fault

NE Model	Module Name	Alarm Name	Default Severity	Alarm Description
		DCCONT_FE	Minor	Far end DC continuity fault - interfere with span powering
DAS4192	SHDSL Port	LOSW_FE	Minor	Far end LOSW failure
		INI_CFG_FE	Minor	Far end indicates Near end not able to support requested configuration
		INI_PROTOCOL_FE	Minor	Far end indicates incompatible protocol used by Near end
		DISABLED	Information	The port is disabled
DAS4672	CPU Module	MISSING	Major	CPU Module is off-line
		TEMP	Major	Temperature is over the threshold
		VOL	Major	Voltage is below the threshold
		MISMATCH	Major	Planned type and online type are mismatched
		NOT_OPERABLE	Major	CPU card is not operable
		TCA_DHCP_BC	Warning	DHCP broadcast request rate threshold-crossing alert
		STANDBY	Information	Running in standby mode
		HW_VERSION	Major	Hardware version is inconsistent
		SWAP	Information	Standby CPU module has been changed as active.
	ADSL Module	MISSING	Major	ADSL module is off-line
		TEMP	Major	Temperature is over the threshold
		VOL	Major	Voltage is below the threshold
		MISMATCH	Major	Planned type and online type are mismatched
		NOT_OPERABLE	Major	Line card is not operable
	Fan Module	MISSING	Major	Fan module is off-line
		FAN1_SPEED	Major	Fan1 speed is below the threshold
		FAN2_SPEED	Major	Fan2 speed is below the threshold
		FAN3_SPEED	Major	Fan3 speed is below the threshold
		VOL	Major	Voltage is below the threshold
	ADSL Port	ES_NE_15_MIN	Minor	15 min near end ES is over the threshold
		SES_NE_15_MIN	Minor	15 min near end SES is over the threshold
		UAS_NE_15_MIN	Minor	15 min near end UAS is over the threshold
		ES_FE_15_MIN	Minor	15 min far end ES is over the threshold
		SES_FE_15_MIN	Minor	15 min far end SES is over the threshold
		UAS_FE_15_MIN	Minor	15 min far end UAS is over the threshold
		ES_NE_1_DAY	Minor	1 day near end ES is over the threshold
		SES_NE_1_DAY	Minor	1 day near end SES is over the threshold
		UAS_NE_1_DAY	Minor	1 day near end UAS is over the threshold
		ES_FE_1_DAY	Minor	1 day far end ES is over the threshold
		SES_FE_1_DAY	Minor	1 day far end SES is over the threshold
		UAS_FE_1_DAY	Minor	1 day far end UAS is over the threshold
		LOS	Minor	Loss of signal
		LOF	Minor	Loss of frame
		LPWR	Warning	CPE Loss of power
		GEN_LINE_INIT_FAIL	Minor	Generic line initialization failure
		CONFIG_ERROR	Minor	Line initialization failure - configuration error
		HIGH_BIT_RATE	Minor	Line initialization failure - high bit rate
		COMM_PROBLEM	Minor	Line initialization failure - communication problem
		NO_PEER_DETECTED	Minor	No peer detected
		TRAINING	Warning	Port is under training
		NO_CONFIG	Information	Port is not configured
	ADSL Port	PS_L2_MANUAL	Information	ADSL2/ADSL2+ Power State transfers to L2 by manual mode.
		PS_L2_AUTO	Information	ADSL2/ADSL2+ Power State transfers to L2 by automatic mode.
		PS_L3_CO	Information	ADSL2/ADSL2+ Power State transfers to L3 by CO side
		PS_L3_CPE	Information	ADSL2/ADSL2+ Power State transfers to L3 by CPE side
		ILLEGAL_IP	Warning	Packets with illegal IP addresses have been dropped
		ILLEGAL_MAC	Warning	duplicated MAC addresses from different line ports are made out

NE Model	Module Name	Alarm Name	Default Severity	Alarm Description
		DISABLED	Information	The port is disabled
	GE Port	MISSING	Major	GE Port is off-line
DAS4672	GE Port	NOT_OPERABLE	Major	GE Port is not operable
		STP_LEARN	Information	GE port is transited to STP-learnning state
		STP_BLOCK	Information	GE port is transited to STP-blocking state
		DISABLED	Information	GE port is disabled
	Alarm Relay Module	MISSING	Major	Alarm relay module is off-line
	Alarm Relay Port	MISSING	Major	Alarm relay port is off-line
		RELAY_ABNORMAL	Major	The alarm relay port is under abnormal status
		DISABLED	Information	The port is disabled
	SHDSL Module	MISSING	Major	SHDSL module is off-line
		TEMP	Major	Temperature is over the threshold
		VOL	Major	Voltage is below the threshold
		MISMATCH	Major	Planned type and online type are mismatched
		NOT_OPERABLE	Major	Line card is not operable
	SHDSL Port	ES_NE_15_MIN	Minor	15-min near end ES is over the threshold
		SES_NE_15_MIN	Minor	15-min near end SES is over the threshold
		UAS_NE_15_MIN	Minor	15-min near end UAS is over the threshold
		TCA_CRC_NE_15MIN	Minor	15-min near end CRC is over the threshold
		TCA_LOSW_NE_15MIN	Minor	15-min near end LOSW is over the threshold
		TCA_SNR_NE	Minor	Near end SNR margin is over the threshold
		TCA_ATTN_NE	Minor	Near end loop attenuation is over the threshold
		OPI	Minor	Operation state change indication
		LOS	Minor	Loss of signal (FOH lost bit)
		SEGA	Minor	Segment anomaly - CRC anomaly (FOH sega bit)
		LPR	Minor	Loss of power - power status (FOH ps bit)
		SEGD	Minor	Segment defect - LOSW defect (FOH segd bit)
		PBO_NE	Minor	Near end enhanced power back off
		DEVFAULT_NE	Minor	Near end device fault - Diagnostic or self-test fault
		DCCONT_NE	Minor	Near end DC continuity fault - interfere with span powering
		LOSW_NE	Minor	Near end LOSW failure
		INI_CFG_NE	Minor	Near end indicates Far end not able to support requested configuration
		INI_PROTOCOL_NE	Minor	Near end indicates incompatible protocol used by Far end
		NOPEER	Minor	No peer detected
		PBO_FE	Minor	Far end enhanced power back off
		DEVFAULT_FE	Minor	Far end device fault - Diagnostic or self-test fault
		DCCONT_FE	Minor	Far end DC continuity fault - interfere with span powering
		LOSW_FE	Minor	Far end LOSW failure
		INI_CFG_FE	Minor	Far end indicates Near end not able to support requested configuration
		INI_PROTOCOL_FE	Minor	Far end indicates incompatible protocol used by Near end
		DISABLED	Information	The port is disabled
	Chassis	PWR1_FAIL	Warning	Power1 failed
		PWR2_FAIL	Warning	Power2 failed
		PWR1_NOT_OPERABLE	Major	Power1 is not operable
		PWR2_NOT_OPERABLE	Major	Power2 is not operable

Appendix C Index