Lucent Technologies
Bell Labs Innovations

AnyMedia® Access System Element Manager for Narrowband Services Release 1.5

User Service Manual

363-211-402
Issue 2
(09.99)

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Title: AEM-NB User Service Manual Release 1.5

363-211-402 Issue 2 (09.99)

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About this Document

1 Overview

Purpose

This User Service Manual (USM) provides the following information for Lucent Technologies *AnyMedia*™ Access System Element Manager for Narrowband (AEM-NB), Release 1.5:

- A product overview and a functional product description
- System turn-up procedures and system modifications
- User Management
- Configuration management
- Fault Management, Maintenance.

The purpose of the USM is to provide the provisioning personnel with all information necessary to provision an *AnyMedia* Access System R1.5 via the AEM-NB.

The USM is a network oriented manual and will be shipped to all sites where an AEM-NB is available. It provides the provisioning operator(s) with necessary information to configure or re-configure network elements after local installation.

The philosophy behind the provisioning of network elements within a network is that the network is already installed, configured and service has been provided to the network after first installation and that re-configuration of the NE is necessary. Provisioning takes place from the AEM-NB, located in one or more central offices.

2 Intended Audience

The USM is intended for personnel who take care of deploying NEs by carrying out all provisioning activities of the NEs using the AEM-NB.

Tasks to be performed by the Provisioning personnel are:

- Collect information of provisioning data (e.g. check shelf layout, units list)
- Put ports in-service and out-service
- Assign timeslots (Cross Connections)
- Download and upload the provisioning data to and from the NEs
- Testing of assigned ports.
- Recognize, interpret, analyze or correct failures, caused by provisioning data that is configured incorrectly.

The personnel should at least have the following education level:

- Computer knowledge (e.g. windows applications and/or SUN applications)
- Telecommunication Network knowledge.

3 How to use this document

The guide is divided into a number of sections (subjects), clearly separated by numbered tabs. The front pages of the guide also describe this division, and list the titles of the subjects together with the corresponding tab numbers. Through this readers can quickly select the subject of their interests and needs.

- **How are we doing**
  A comment form so readers can give feedback to improve the next revision of the document.
- **Table of contents, list of figures, list of tables**
- **Overview**
  Defines the purpose of the document and the intended audience. Also included are topics about the conventions used in the document, related documentation, how to order documents, and how to comment on this document.
- **Chapter 1, Functional Description**
  Contains a short overview over the system, its features and capabilities.
- **Chapter 2, Software Installation**
  Describes the standard procedure to install the AEM-NB R1.0 server package (server applications) and client package (client applications).
- **Chapter 3, System Management**
  Provides the system administrator with all information necessary to administer the AEM-NB so that it can be used as a centralized management system.
- **Chapter 4, User Management**
  Describes all actions necessary to create/modify/delete users, user groups and domains and the handling of controlled objects.
- **Chapter 5, Configuration Management, Provisioning**
  Describes the database and software management, the default system configuration parameters and the provisioning and service activation, the inventory management, clock synchronization management and protection switching.
- **Chapter 6, Fault Management/Maintenance**
  Describes alarms and events, how to use the Alarm Viewer, how to perform tests and trouble clearing procedures.
- **Appendix**
  Describes the Data Communications Network (DCN) configurations.
- **Abbreviations and Acronyms**
  Lists all abbreviations and acronyms used in this manual.
- **Glossary**
  Defines special terms used in this manual.
- **Index**
  Alphabetical index to quickly search for paragraphs in the manual which provide more information on a certain keyword.

4 Conventions Used

The following are terms used in this USM that may have a different meaning than the general or common use of the term.

- In the AEM-NB, the term *access* means that the system provides the primary service interface for the customer to enter the network.
- The term *plug-in* is generally used for circuit pack units (COMDAC, CIU, IO-DS1, CTU and application packs (APs)) which have pre-designated slots with the capability to plug-in the circuit pack.

Numbering

Each fascicle can be identified by its number and contains a chapter which is numbered accordingly (e.g. Chapter 2 is contained in Fascicle 2).

The page, figure and table numbering begins with “1” in every chapter. To be able to identify them easily, these numbers are prefixed with the fascicle number. For example, Figure 2-3 designates the third figure in Fascicle 2.

Cross-References

Cross-reference conventions are identical with those used for numbering, i.e. the first number in cross-references refers to the corresponding fascicle.

Keyword Blocks

To facilitate the location of specific text passages, the guide contains so-called keyword blocks. These are placed to the left of the main text and contain either a keyword or a word which indicates the contents of a paragraph or group of paragraphs.

Abbreviations

Each abbreviation used in this guide is listed in Fascicle AB (“Abbreviations”) of the hardcopy version unless it can be assumed that the reader is familiar with this abbreviation.

Commands

Commands and messages are displayed in `constant-width` font (e.g., **`tar xf /cdrom/cdrom_name/AnyMediaEMSR10.tar`**).

Trademarks

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Typographical Conventions

The following table gives examples of the typographical conventions used in this chapter.

Table 0-5 Typographical Conventions

Object	Example	Meaning
Keyboard	**`Return`** or **`A`**	**`Return`** or **`A`** key on the keyboard
	`Shift-Ctrl-B`	**`Shift`**, **`Ctrl`** and **`B`** key pressed simultaneously
	`Esc A B`	**`Esc`**, **`A`** and **`B`** key pressed one after the other
Pushbutton	***Apply***	***Apply*** pushbutton in a window
Menu	***File -> Exit***	Menu option ***Exit*** in ***File*** menu
Objects in windows	**Date**	Designates the object **Date** in a window (e.g. text field, check box, spin box etc.)

6 General Safety Information

This section lists the safety information needed for the *AnyMedia* Access System for system turn-up after installation has been completed, operating, provisioning and maintaining the system.

6.1 General Notes on Safety

This system has been developed in line with the present state-of-the-art and fulfils the current national and international safety requirements. It is provided with a high degree of operational safety resulting from many years of development experience and continuous stringent quality checks in our company.

The system is safe in normal operation. There are, however, some potential sources of danger that cannot be completely eliminated. In particular, these arise during the

- Opening of housings or equipment covers
- Manipulation of any kind within the equipment, even if it has been disconnected from the power supply
- Disconnection of optical or electrical connections

through possible contact with

- Live parts
- Laser light
- Hot surfaces
- Sharp edges, or
- Devices sensitive to electrostatic discharge.

6.2 General Safety Requirements

In order to keep the technically unavoidable residual risk to a minimum, it is imperative to observe the following rules:

- **Installation, configuration and disassembly must be carried out only by expert personnel and with reference to the respective documentation.**
  Due to the complexity of the unit/system, the personnel requires special training.
- **The unit/system must be operated by expert and authorized users only.**
  The user must operate the unit/system only after having read and understood the chapter on safety and the parts of the documentation relevant to operation. For complex systems, additional training is recommended. Any obligatory training for operating and service personnel must be carried out and documented.
- **Any conversions or changes to the system or parts of the system (including the software) must be carried out by qualified Lucent Technologies personnel or by expert personnel authorized by Lucent Technologies.**
  All changes carried out by other persons lead to a complete exemption from liability.
  No components/spare parts must be used other than those recommended by the manufacturer and those listed in the procurement documents.
- **The unit/system must not be operated unless it is in perfect working order.**
  Any faults and errors that might affect safety must be reported immediately by the user to a person in responsibility.
- **The equipment must be supplied with Safety Extra-Low Voltage (SELV) of -48 V and the positive terminal of this source must be correctly connected to the protective earth.**
  Never connect to –60 V.
- **The unit/system must be operated only with the connections and under the environmental conditions as described in the documentation.**
- **The removal or disabling of safety facilities, the clearing of faults and errors, and the maintenance of the equipment must be carried out by specially qualified personnel *only*.**
  The respective parts of the documentation must be strictly observed.
  The documentation must also be consulted during the selection of measuring and test equipment.
- **Transport, storage and operation of the unit/system must be under the permissible conditions only.**
  See accompanying documentation and information on the unit/system.
- **Calibrations, special tests after repairs and regular safety checks must be carried out, documented and archived**.
- **Only use tested and virus-free diskettes.**

- **Do not place the shelves on an unstable cart, stand, or table.** The product may fall causing serious damage to the equipment.
- **Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.**

6.2.1 Safety Symbols and Labels

All safety instructions have a uniform appearance. They include a *signal word* that classifies the danger and a *text block* that contains descriptions of the type and cause of the danger, the consequences of ignoring the safety instruction and the measures that can be taken to minimize the danger. In some safety instructions, a *warning symbol* is placed underneath the signal word.

Classification

There are five classes of safety instructions: “Danger”, “Warning”, “Caution”, “Important” and “Notice”. The classification is shown in the following table.

DANGER	Serious injury is definite or likely.
WARNING	Serious injury is possible.
CAUTION	Minor injury is definite, likely or possible, or material damage to the product or in the product environment is definite or likely.
IMPORTANT	Material damage to the product or in the product environment is possible.
NOTICE	A fault, i.e. considerable impairment to operation, will be caused or may be caused.

7 Related Documentation

Document List

The following is related documentation for the AEM-NB and for additional components:

Table 1 List of Documents

Component	Manual Type	Comcode	CIC Ordering Number
AEM-NB R1.5	Functional Description	108588740	363-211-401[a]
AnyMedia Access System	Applications, Planning, and Ordering Guide (APOG)		363-211-101[a]
AnyMedia Access System	Installation Manual (IM)		363-211-102[a]
AnyMedia Access System	Commands and Procedures		363-211-100

a For the ordering address see Chapter 8, How to Order This Document.

7.1 Print Copy (Hard Copy)

Document Packaging and Format

All listed documents are available in print.

7.2 CD-ROM

The User Service Manual and the Functional Description are available in PDF format on CD-ROM and an Adobe Acrobat Reader [1] is provided to view them.

Table 2 Customer Documentation on CD-ROM

Component	CD-ROM	Ordering Number
AEM-NB R 1.5	Customer Documentation on CD-ROM includes: – User Service Manual (USM) – Functional Description.	363-211-400 [a]

a For the ordering address see Chapter 8, How to Order This Document.

8 How to Order This Document

Ordering Number

The ordering number for the AEM-NB *User Service Manual* is 363-211-402.

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Functional Description

1

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Functional Description

1

1.1 About this Subject

Scope

This chapter describes the Release 1.5 of the *AnyMedia*®-Element Manager for narrowband services (AEM-NB).

Purpose

This chapter provides an overview of the AEM-NB and tries to give an insight into the functioning of the AEM-NB by providing detailed information on the AEM-NB features mentioned.

Contents

The following AEM-NB subjects are described:

- Basic functionality
- Management features
- System and software architecture
- Hardware and software platform
- Interfaces
- Applications.

1.2 Introduction

General

The AEM-NB is part of a Telecommunication Management Network (TMN). It represents the element management layer and fulfills the tasks of the ISO (*International Standardisations Organisation*) functional areas (see Chapter 1.2.2, page 1-3).

Benefits

This provides some benefits for the operator:

- Better control over revenue generating services by local and centralized management
- Reduced time and effort for provisioning tasks
- Fast and efficient fault detection and isolation
- Prevention of unauthorized access by appropriate security mechanisms
- Reduction of operator mistakes by easy-to-use Graphical User Interface (GUI)
- Integration with higher management levels for network, service and business purposes.

1.2.1 Main Functions

The AEM-NB provides the following main characteristics/functions:

- Support of all *AnyMedia* Access Systems features
- Equipment Overview
- Common alarm handling for all network elements (NEs)
- Report, Log, Backup & Restore functions
- TL1 NE access via TCP/IP based on DCN
- User security handling (user profiles, NE domains)
- Online Help
- Multi User access
- Northbound interfaces (TL1).

1.2.2 ISO Functional Areas

1.2.2.1 Configuration Management

The Configuration Management supports the complete range of graphical functions to provision and maintain the R1.2 NEs. Network topologies, shelf views and self-explaining menus are navigating the operator to configure POTS, ISDN-BRA and Leased Line Services. The following main functionalities are offered (for more detail see Chapter 1.3.1.1, page 1-8):

- Inventory management
- Equipment provisioning and maintenance
- Service provisioning
- Clock synchronization
- System/Equipment/Service status
- Software download
- NE database backup and restore
- System date/time synchronization.

1.2.2.2 Fault Management

The Fault Management supports the operator in detecting, displaying, localizing and logging any faults occurring in the managed network. The following main functionalities are offered (for more detail see Chapter 1.3.1.1, page 1-8):

- Handling of alarm severities (critical, major, minor)
- Receiving of autonomous alarm messages
- Retrieving of alarms per system, plug-in unit, application pack
- Retrieving of alarm and event logs from NE
- Initiation/Evaluation of tests for fault analysis purposes.

1.2.2.3 Performance Management

The Performance Management provides facilities for retrieving, storing and printing of the NE performance and data to ensure the quality of service.

1.2.2.4 Security Management

The Security Management functions which are based on UNIX® control the access to the AEM-NB and to the managed NEs. The following main functionalities are offered (for more detail see Chapter 1.3.1.1, page 1-8):

- AEM-NB user administration
- AEM-NB user security profile
- No additional NE login for current AEM-NB user
- AEM-NB access via login name and password[1]
- Inactivity user session time-out[1].

1.2.3 Applications

The AEM-NB provides 6 applications which give access to the management functionality as described in Chapter 1.2.2, page 1-3. The following applications are available:

- System Administration
- User Administration and Profiling
- Log Viewer
- Alarm Viewer
- Configuration Manager
- BroadBand EM.

Each application is composed by one or more tasks. The default user group assignment to the individual applications/tasks is described in Chapter 1.4.4, page 1-26.

1 provided by the OS System (SUN Solaris)

1.2.4 System Working Modes

The AEM-NB can work in the following two modes:

- Stand-alone Mode
- Integrated Management Mode.

These modes are not mutually exclusive, i.e. the AEM-NB is always able to perform the element management tasks even while it is connected to any OS.

Stand-Alone Mode

In the stand-alone mode the AEM-NB performs the whole management of the NEs on its own. The user is able to perform all management tasks via the GUI.

Figure 1-1 shows the system architecture in the stand-alone mode.

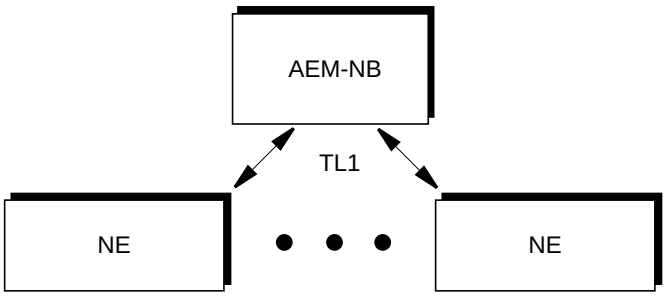

Figure 1-1 Stand-Alone Mode

Integrated Management Mode

In the integrated management mode the AEM-NB works as an integral part of the customer's management network, providing higher management systems (OSs) with services to manage NEs in their domains.

The AEM-NB allows other OSs to pass provisioning, testing or fault information to and from the NEs, e.g. a fault management surveillance system can collect fault data using the pass-through interface.

Figure 1-2 shows the system architecture of the integrated management mode.

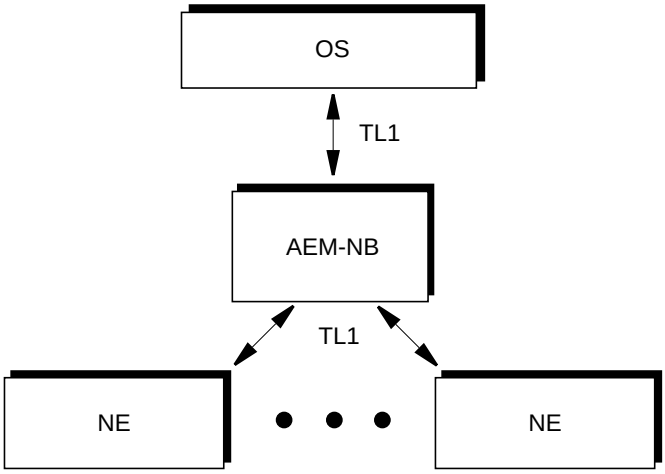

Figure 1-2 Integrated Management Mode

The complete system and software architecture of the AEM-NB is described in Chapter 1.3, page 1-7.

1.3 System and Software Architecture

1.3.1 Functional Groups

The AEM-NB software architecture is built with a number of components that can be grouped in the following distinct functional groups:

1. **NE Management**
   (Equipment Management, Service Management, Alarm Management, Test Management, Performance Management)
2. **General Components**
   (Components for Operation, Administration and Maintenance (OAM); Common Servers)
3. **Software Platform**
   (Software bus, Repository, third party libraries)
4. **Graphical User Interface (GUI)**
5. **Northbound Interface**
6. **Southbound Interface**.

Figure 1-3 shows the six functional groups. The shadowed blocks are part of the AEM-NB.

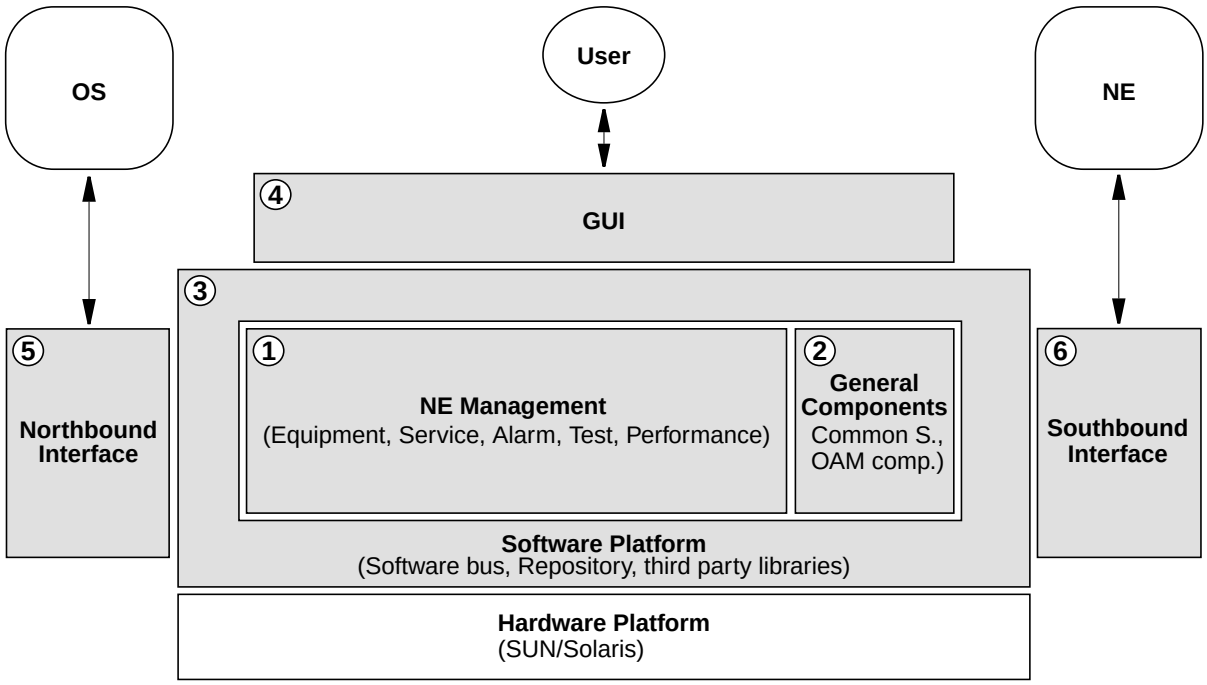

Figure 1-3 AEM-NB Functional Groups

1.3.1.1 NE Management

The NE Management functionality is distributed in 5 areas. These are: Equipment Management, Service Management, Alarm Management, Performance Management and Test Management.

Equipment Management

The Equipment Management provides the following functionality/features:

- *Scrolling List of NEs*

  The NEs are displayed in a list covered in a single window called *Network Browser*, where the NEs and their components can be handled like files in a file browser.

- *NE Provisioning*

  The operator can create a new NE manageable for the AEM-NB view. The operator must enter the specific configuration data for the new NE such as IP address, NE Name, NE user-id and password.

- *Software Download to a single NE*

  Provides a storage medium for maintaining a copy of the software and a mechanism for downloading that software to a NE.

- *Software Download to multiple NEs*

  Download of new software to multiple NEs on an individual connection basis.

- *NE Non-Volatile Data Storage Restoration*

  Restores NE non-volatile data storage upon user request. Provides a storage medium for maintaining a copy of the NVDS for backup and restore purposes on a periodic basis.

- *Maintain a local Copy of NE Inventory*

  The AEM-NB maintains a local copy of specific hardware identifiers and software version identifiers. This local copy accepts automatic inventory notifications. This information can be used for display and report functions in case of loss of communication with the supported NE. The hardware identifiers include all plug in units.

- *Maintain a local Copy of NE Provisioning Configuration Data*

  The AEM-NB maintains a local copy of all cross-connection and parameter settings for each NE. This information can be used for display and report functions in case of loss of communication with the supported NE.

- *Maintain NE Software Copies*

  The system keeps a copy of the versions of the NE software running in the NEs managed by the AEM-NB (FAST 24-channel, FAST 30-channel, SDH). Generally, only one version of NE software per NE type is used by all the NEs in a network but the AEM-NB must have the capacity to manage two software versions during the upgrade period.

- *NE Reset (INIT-SYS)*

  Allows the user to delete the NE and restore the factory settings for the whole NVDS except for the IP address, so that the AEM-NB can still communicate with the NE after the command execution has been completed.

- *AEM-NB Database Synchronization*

  Automatic update of the AEM-NB database records based on NE database changes.

- *Protection Control*

  The management system provides a facility to allow the user to switch operation of one unit in a NE to a standby unit, if that unit exists.

- *Equipment Protection*

  The AEM-NB allows the user to provision the equipment information for the protection scheme. Also the user can force protection switching.

  — NE R1.2 COMDAC - simplex/duplex and IO-DS1

- *NE Timing Synchronization*

  The AEM-NB supports the user to configure the NE synchronization clock sources.

- *NE Date and Time*

  The AEM-NB allows the user to set and retrieve the date and time of the NE.

- *NE Disaster Recovery from the AEM-NB*

  The AEM-NB is able to reconstruct its NE database by polling the NEs for information and from internally maintained backup copies of data.

Service Management

The Service Management provides the following functionality/features:

- *NE Service Status*

  Provides the aliveness status of the individual NEs providing a customer's service across all NEs under the EM's control.

- *Logical DS1 List*

  Logical DS1 ids can be listed based on a selection criteria.

- *Change Voice Frequency Data Enhancement (VFDE) for TR-303 VRTs*

  Enabling/Disabling of the Voice Frequency Data Enhancement (VFDE) of a TR-303 Virtual Remote Terminal (VRT).

- *Datalink Protection Switching*

  Provides datalink protection switching of a TR-303 Virtual Remote Terminal (VRT) for both TR-303 datalinks, Embedded Operations Channel (EOC) and Timeslot Management Channel (TMC).

- *Edition of the Network Interface*

- *Creation of a VRT/VB Logical Feeder (T1 Cross-Connection)*

- *Edition of a VRT/VB Logical Feeder (T1) of a VRT/VB*
- *Deletion of a VRT/VB Logical Feeder (T1) from a VRT/VB*
- *Addition/Deletion of a Logical Line (Subscriber, T0) to/from a VRT/VB*
- *Edition of a Logical Line (Subscriber, T0) of a VRT/VB*.

Alarm Management

The Alarm Management provides the following functionality/features:

- *Integrated display of all the alarms*

  The AEM-NB provides a common window (alarm viewer) to show all alarms reported by the managed NEs or generated by the management system itself. The display shows all the information pertaining to the alarm, including alarm type, severity, service affecting indication, date/time of occurrence and clearing.

- *Alarm Display Filters*

  It is possible to filter the items shown in the alarm viewer, for instance, to see only the critical alarms.

- *Alarm Notification to User*

  The user is informed by visual and audible alerts when a new alarm has been reported to the AEM-NB.

- *Clearing of Alarms*

  Alarms in the management system will automatically be cleared when the faults are removed at the source (such as in the NEs or in the platform). The alarm information will contain the date and time of alarm clearance.

- *Acknowledged Alarms*

  The operator can acknowledge a raised alarm - alarm still active but being investigated. The AEM-NB registers the time at which an alarm changes its status from raised to acknowledged and, separately, from acknowledged to cleared. It is also possible for an alarm to go directly from the raised to the cleared state.

- *Alarm Colors*

  The management system provides a color scheme based on alarm severities.

- *Enable/Disable of autonomous Alarms on an NE Basis*

- *Fault Localization*

  Provides fault localization across all NEs under the AEM-NB control. The COMDAC LEDs show the highest severity alarm for the system. The individual plug-in unit LEDs show the highest severity alarm for the plug-in unit. Fault localization is performed at AP level.

- *NE Alarm Log Handling*

  The AEM-NB is able to retrieve the NE alarm log via the cut-through interface.

Performance Management

The Performance Management provides the following functionality/features:

- *Handling of Performance Records*

  Records can be displayed, printed and stored in a user-defined file.

Test Management

The Test Management provides the following functionality/features:

- *Port Test (via cut-through)*

  It is possible to request a test for a particular port on a specific application pack.

- *Application Pack Card Test*

  It is possible to start a series of self-diagnostic routines for all port circuits on a specified Application Pack plus its common circuitry.

- *Standby Card Test Scheduling (via cut-through)*

  It is possible to schedule a test to perform a COMDAC side switch or off-line diagnostic for the standby COMDAC or the protection.

- *Built-in Self-Test*

  Each NE performs a built-in self-test of plug-in circuit packs periodically.

- *Loopback Test at the Feeder Side*

  It is possible to set or clear a loopback on particular feeders.

1.3.1.2 General Components

The components of this group do not have or require any knowledge of the NEs the AEM-NB is managing. They provide a platform on which the other AEM-NB components can operate and isolate them from the underlying customer platform.

OAM Components

The OAM components provide operation, administration, maintenance and security functionality. This is based on third party-tools (i.e. orbix) and a set of specific applications.

The OAM components provide the following functionality/features:

1. **Operation/Administration/Maintenance**

- *Standard Reports*

  The system allows the user to generate a set of predefined reports from the information kept by the AEM-NB. The reports cover the following areas:

  — Alarms

  — Equipment configuration

  — Service provisioning

  — NE inventory

  — Performance.

  The reports are available for displaying, printing and saving in a postscript file.

- *Backup and Restore of system relevant data*

  Relevant data includes all information necessary to restore the situation in case of an AEM-NB crash.

- *AEM-NB Software Upgrades*

  Provides an established release cycle for AEM-NB software upgrades in a way that minimizes incompatibility with NE software releases, and allows for upgrades to provide for OS compatibility. This upgrade does not affect the services provided by NEs.

- *Log Administration*

  The logs are capable of being printed and visualized. The system limits the size of the system logs. It is possible to make backups of the logs and to remove them from the system. There are logs for:

  — Actions

    Contains all the information on actions performed by users or the AEM-NB and which imply changes in the AEM-NB configuration, equipment (NE) configuration, service and subscriber configuration, access to the AEM-NB, print reports and backup & restore, i.e. all operations triggered by the user or the AEM-NB and all subsequent actions. The results of operations are also logged in the actions log.

  — System Internal Events

    Contains all internal events or actions which report unusual changes in the configuration and state of the AEM-NB or indicate errors that occurred in the AEM-NB.

  — Autonomous Reports

    Contains all information useful for the equipment supplier about alarms (NE and platform), the performance and all TL1 messages sent from all managed NEs and which imply changes in the database.

- *Possibility to sort logs*

2. **Security**

- *Possibility of creating/deleting/modifying AEM-NB Users*

  The AEM-NB uses the security mechanisms provided by the SOLARIS Operating System.

- *AEM-NB Security Privilege Levels*

  Allows at least three privilege levels within the managed domain. This is mapped to the NE privilege levels accordingly.

  — Administrator: has all the permissions.

  — Maintenance: has configuration and monitoring permissions.

  — Monitoring: has alarm monitoring and testing permissions.

- *NE User Security Privilege Levels*

  It is possible to administer the NE users and the privilege levels via the cut-through interface.

- *User Access is authenticated through User Name and Password*
- *Single Login to Access the Domain*

  Enables an authorized user to access multiple NEs simultaneously (e.g. multiple windows) using a single login and password.

- *Domain Partitioning*

  Enables the NEs managed by the AEM-NB to be partitioned into separate security domains and permits users access to the domains based on their areas of responsibility and profile.

- *User Inactivity Timer*[1]

  The user terminal will be locked with a screen saver once a configurable inactivity timer has expired. To unlock the terminal, the user has to type his/her password. The timer has to be configured by the administrator.

- *Lock Screen*[1]

  The user is able to lock the screen whenever he wants. To unlock the terminal the user has to enter his/her password.

Common Servers

Common Servers offer general purpose services. A common server

- manages the AEM-NB history and security logs
- logs the history and security data of other processes upon request
- provides log information upon request
- provides a facility to generate and print client reports in the AEM-NB printers
- provides event distribution services based on a supplier/consumer model.

1.3.1.3 Software Platform

1.3.1.3.1 Software Bus

CORBA Architecture

The communication between the AEM-NB processes is based on the Common Object Request Broker Architecture (CORBA) standard. The heart of the CORBA architecture is the Object Request Broker (ORB). The ORB is a software bus to which different applications can connect to offer their services and/or to use other applications' services (from which they are clients).

The ORB provides a transport mechanism that makes connected servers' location, platform and implementation transparent to their clients, making applications easier to distribute and scale.

1 provided by the OS System (SUN Solaris)

Protocol

The protocol used by the ORB is the Internet Interoperability Protocol (IIOP).

1.3.1.3.2 Repository

Introduction

The Repository contains all the AEM-NB information that must be persistent. It is supported by an Object Oriented Database (ObjectStore) and the underlying operating file system. All components of the system have direct access to the repository to store/retrieve their own data.

Contained Information

Information in the repository includes:

- NE inventory
  (for each NE: the hardware identifiers and the software versions)
- Equipment and Service provisioning data
- History and security logs
- External system communication parameters
- AEM-NB configuration data
- Alarms cache.

1.3.1.4 Graphical User Interface (GUI)

Introduction

The Java based GUI is responsible for putting up forms, collecting user input (commands and data) and routing it on to the correct component. It also receives data from the relevant process which it uses to update its display. The GUI has direct access to the services provided by the AEM-NB through the ORB.

Functionality, Features

The GUI provides the following functionality/features:

- *Multi-National Language Support*

  Provides all user interface capabilities in English.

- *Support TL1 messages*

  Supports all TL1 messages for all NE products for dumb terminal access. Allows direct input of TL1 messages. In some markets, direct input of TL1 messages may not be allowed and can be suppressed via the appropriate security permissions.

- *Online Help*

  Provides access to online help which contains at least information on the operation of the AEM-NB, meaning of the buttons, etc.

- *Multiple windowing*

  Provides multiple windowing for access to multiple NE information on a single screen.

- *Multiple user access*

  Provides for multiple users access to the AEM-NB at the same time. Multiple users may include multiple OSs or NMSs as well as multiple GUI access.

- *Time and Date format*

  Enables the user to use local/preferred time and date format. For example, the local calendar must be supported or optional use of 24 hour clock versus a 12 hour clock.

- *User friendly GUIs*

  Provides a user-friendly interface and hides the complexities of the information models.

- *Manageable Objects organized in a Hierarchy*

  The configuration is implemented within a GUI hierarchy:

  — NE group level, containing a number of NEs

  — NE level, starting with shelf-view.

1.3.1.5 Northbound Interface

Tasks

The Northbound Interface performs all the tasks needed to communicate to other OSs. It allows external OSs access to the NEs managed by the AEM-NB directly through TL1 commands via a pass-through interface. This access is controlled by the Northbound Interface until the OS is disconnected.

TL1 Pass-Through Interface

The TL1 Pass-Through Interface allows an external OS access to the NEs managed by the AEM-NB directly through TL1 commands for provisioning, testing and alarm purposes.

1.3.1.6 Southbound Interface

Tasks

The Southbound Interface performs all the tasks needed to communicate to the NEs managed by the AEM-NB. It provides distributed CORBA access which includes implementation and translation of TL1 commands, response and autonomous messages into equivalent CORBA requests and events.

TL1 Southbound Adaptors

The TL1 Southbound Adaptors isolate the main AEM-NB functionality from the specific protocols used by the NEs. They are responsible for translating actions and state changes conveyed through CORBA messages from/into the NE specific message formats.

Functionality, Features

The Southbound Interface provides the following functionality/features:

- *Southbound TCP/IP TL1 Client Application*

  Support for the TL1 client application on the southbound TCP/IP interfaces. TL1 is used for most of the OAM&P functions (see Chapter 1.3.1.2, page 1-11).

- *Southbound TCP/IP FTP Client Applications*

  Support for the FTP client application on the southbound TCP/IP interfaces. FTP is required for software download and NE data backup/restore.

- *Southbound TCP/IP Telnet Client Applications (Cut-Through)*

  Support for the Telnet application on the southbound TCP/IP interfaces. Telnet is used to provide a direct command line into the NE (i.e. an equivalent ASCII terminal interface).

1.3.2 Hardware Platform

1.3.2.1 Architecture

Components

A number of AEM-NB Clients (UNIX Workstations) can be added to the AEM-NB Server to support concurrent users or remote access to the server's applications. These clients can be connected through a TCP/IP infrastructure or a Wide Area Network (WAN). Examples are shown in Figure 1-9 to Figure 1-12.

Tasks of the Components

The tasks of the components are:

- **AEM-NB Server:**
  Manages all the AEM-NB applications and provides access to the NEs, the database and the external OS.
- **AEM-NB Client**:
  Formats the display of the application screens and manages the users sessions with the application, e.g. database access.

Conceptional Representation

Figure 1-4 is a conceptual representation of the various generic components.

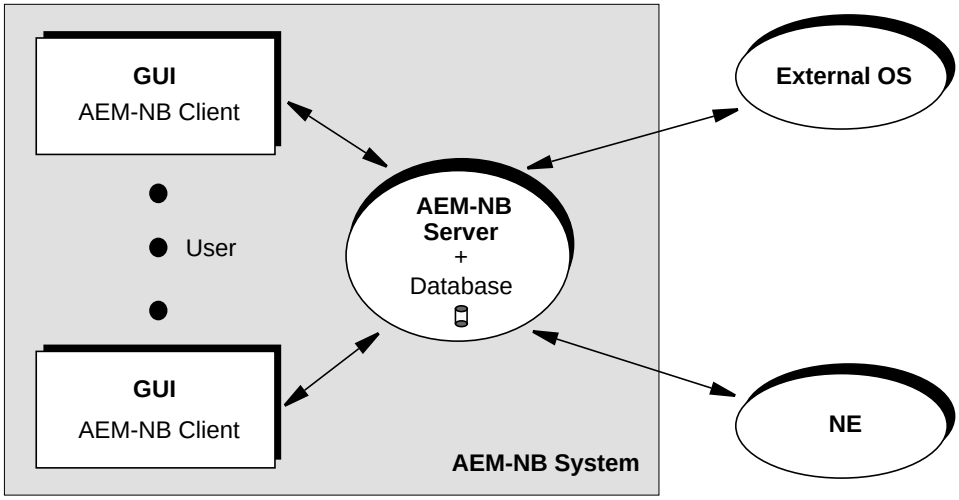

Figure 1-4 Hardware Components

Examples of AEM-NBs

Two examples of an AEM-NB system are shown in Figure 1-5.

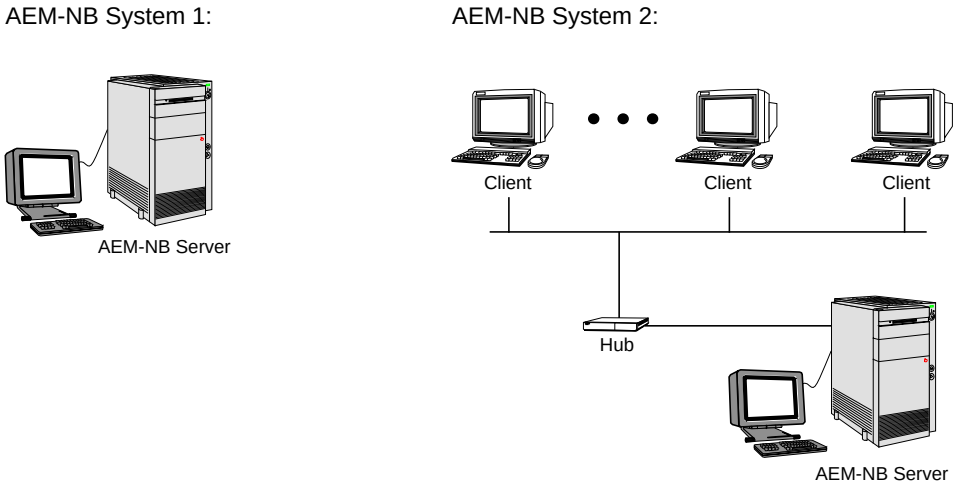

Figure 1-5 Examples of AEM-NBs

1.3.2.2 Requirements

Server/Clients

A SUN SOLARIS workstation can be used as AEM-NB Server as well as AEM-NB Client.

Peripherals

The AEM-NB system may use a number of peripherals with the following tasks:

- **CD-ROM:**
  Used for installing the system software.
- **Tape drive or another removable device (optional):**
  Used for backup and restore functions.
- **Printer:**
  Used for obtaining hard copies, e.g. configuration/alarm reports or performance monitoring measurement information.

1.4 Working with AEM-NB

Goal of this Chapter

This chapter will outline the management activities and processes in the AEM-NB. The main emphasis is on presenting everyday operation processes. The chapter is structured with respect to the various network life cycle phases (see further below).

User Profiles

There are 3 default user profiles: the administrator, maintenance and monitoring profile. The rights belonging to these profiles are described in Chapter 1.4.4, page 1-26.

Life Cycle of a Network

The individual life cycle of a telecommunication network has the following phases: planning, installation, provisioning, operation & surveillance, modification and finally decommissioning. Modification of a network may take the form of fine adjustment, expansion or restructuring of the network, and addition of new functionality.

Figure 1-6 shows the life cycle of a network.

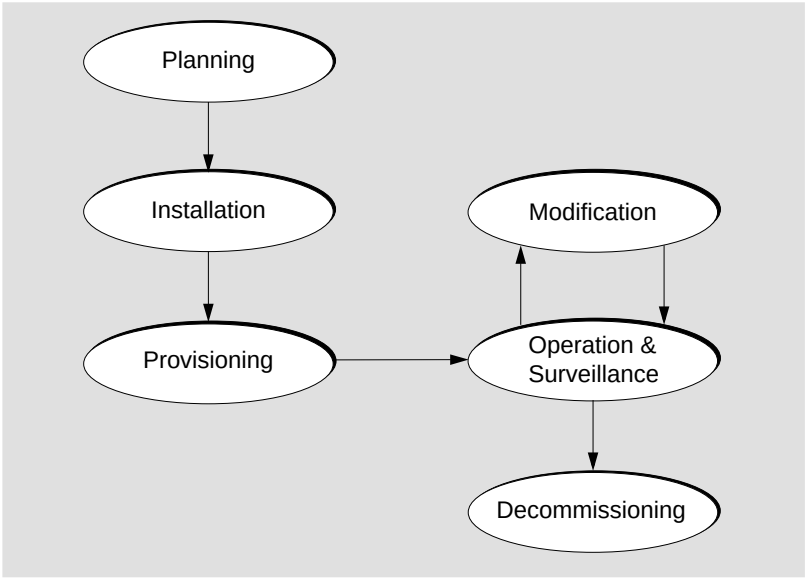

Figure 1-6 Life Cycle of a Network

Support by AEM-NB

The AEM-NB is mainly used in three life cycle phases: during network provisioning, network modification and network operation & surveillance. The installation phase is supported by the Graphical System Interface (GSI).

1.4.1 Network Planning and Physical Installation

Network Planning

In the network planning phase, all specifications and requirements of the future network operation are translated into a concrete network structure. That means, the network planning phase, during which a decision on the network topology, equipment and components is made, has to take place before the operation with the AEM-NB starts.

Physical Installation

The installation of the network follows the planning phase. The installation includes the following steps:

- Physical NE installation.
  This includes the installation of racks, plug-in units and cabling of the NEs
- Creation of a DCN plan

  Communication between the AEM-NB and the NEs is carried out via the Data Communication Network (DCN). A DCN plan should be drawn up before provisioning the network to ensure that the AEM-NB can reach all NEs and that the administration of the DCN does not lead to an undue increase in performance requirements.
- NE connection to the AEM-NB server
- OS connection to the AEM-NB Server (optional)
- Installation of the third-party, application and AEM-NB software on the AEM-NB Server.

Network Status after Physical Installation

After completion of these steps, the network operator has at his disposal a network which is connected physically with AEM-NB and which is, in principle, ready for operation.

1.4.2 Configuration Management

Introduction

The Configuration Management in accordance with the specific operating conditions of the network operator is performed by special provisioning actions. It is assumed that the NEs and AEM-NB have already been physically connected.

Provisioning Actions

Figure 1-7 provides an overview of the provisioning actions and the text which follows gives a detailed description.

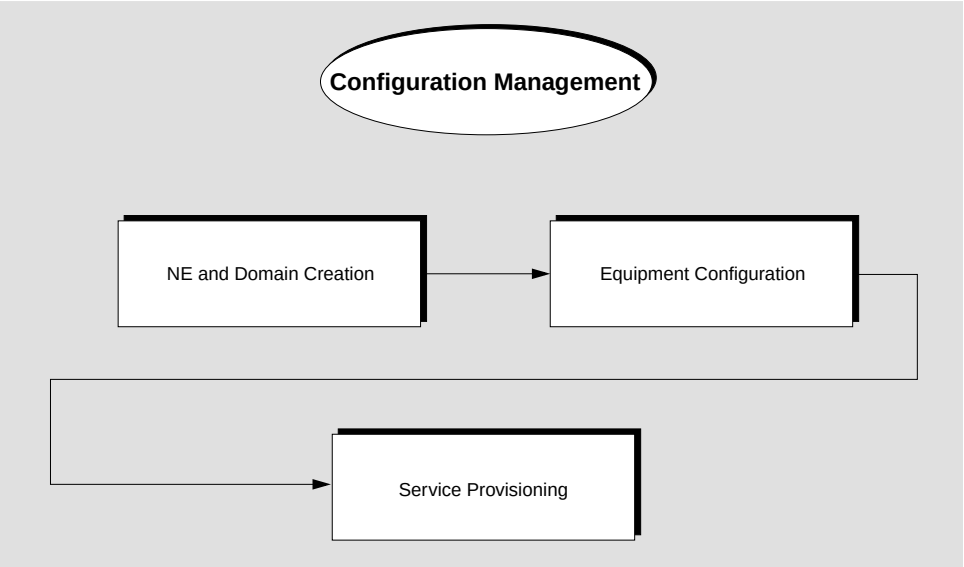

Figure 1-7 Network Provisioning

NE and Domain Creation

Prior to equipment configuration and service provisioning, the NEs must be known in the AEM-NB. To achieve this, the following 4 steps are necessary:

1. Creation of domains
2. Creation of NEs
3. Assignment of NEs to any domain(s)
4. Logical connection of NEs.

All steps are described in detail in Chapter 5.

Equipment Configuration

NEs can be configured if they are known in the AEM-NB. The following measures should be performed:

- Selection of the timing synchronization source
- Selection of the COMDAC (simplex/duplex) and IO-DS1 protection scheme
- Selection of those slots for which an absence of the circuit pack will be alarmed
- Provisioning of the protection switching.

All steps are described in detail in Chapter 5.

Service Provisioning

If the NEs are configured and integrated in the network, cross connections can be defined. The following actions are necessary:

- Creation of VRT/VB logical feeders
- Changing of Voice Frequency Data Enhancement (VFDE) for TR-303 VRTs
- Datalink Protection Switching for TR-303 VRTs
- Creation of VRT/VB logical lines (Subscriber)
- Cross-connection logical line to logical feeder.

All steps are described in detail in Chapter 5.

Network Status after Provisioning

After the provisioning phase the NEs can now be controlled and monitored by the AEM-NB and start operation & surveillance.

1.4.3 Network Operation & Surveillance

Actions

During network operation & surveillance, the administration, control and supervision of the network mainly include

- Fault Management
- Network Modification
- Performance Monitoring.

Required Rights

The administrator rights are sufficient to perform all required operations. The visual check of parameters and displays on the GUI requires monitoring rights only.

1.4.3.1 Fault Management

Alarm Types

There are two alarm types: alarms generated by the NEs and alarms generated by AEM-NB itself, e.g. an alarm indicating that log files without archiving is being removed (LOG_DEL_FULL). All alarms are displayed in the alarm viewer. It allows the network operator to detect the alarm and to locate its source.

General Fault Handling

Figure 1-8, page 1-22 shows the general fault handling. In the following the individual phases are described in more detail.

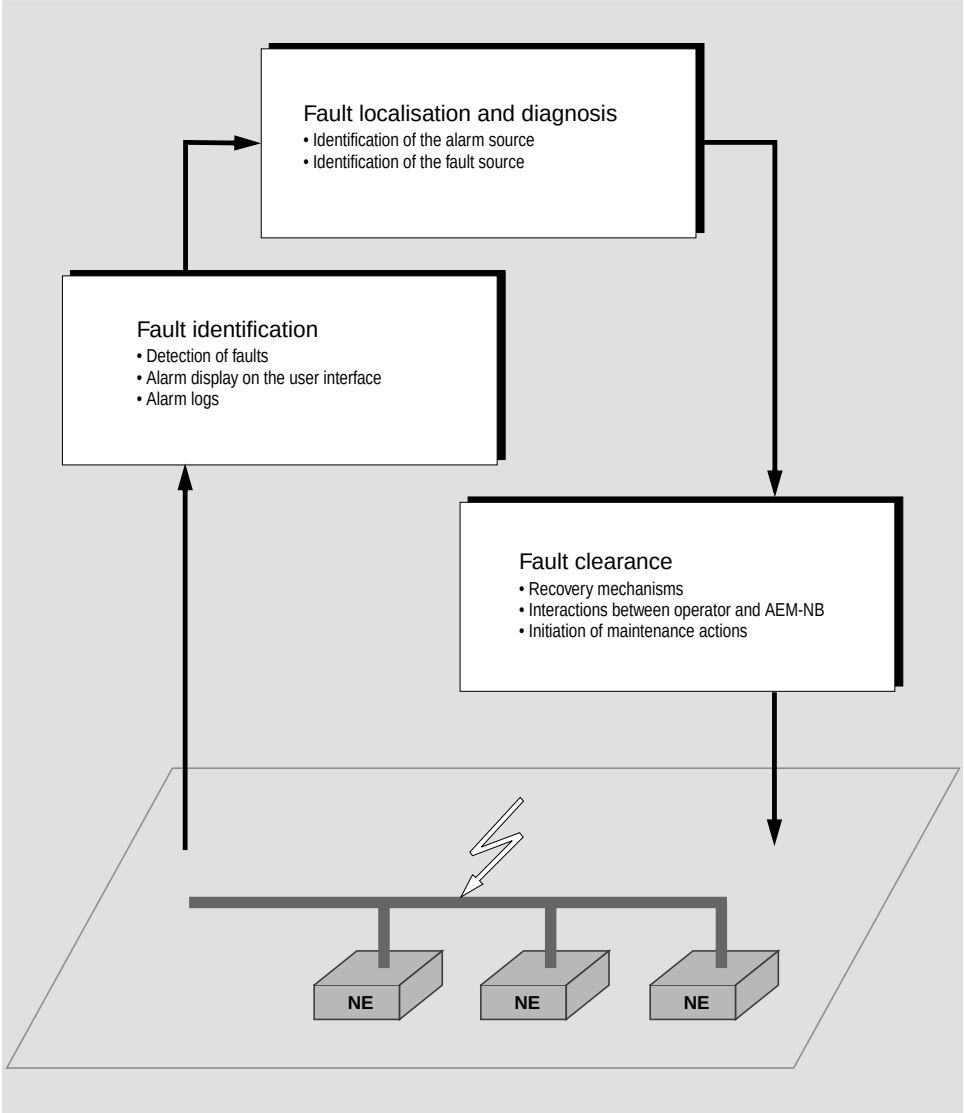

Figure 1-8 General Fault Handling

1.4.3.1.1 Fault Identification

Background

AEM-NB gathers information about faults occurring in the network and forwards this information to the network operator. This procedure includes two tasks: on the one hand, the fault must be identified, and on the other hand, the fault information must be processed as alarm notifications to be displayed on the user interface.

Detection of Faults

If a NE fault is detected, the NE notifies the AEM-NB. The notification comprises the type of fault and the address of the originating NE. The AEM-NB detects and processes such a notification automatically.

If the unit of a NE fails that is responsible for the communication with the AEM-NB, the fault is identified differently. No alarm notification will be sent to the AEM-NB. The AEM-NB detects the fault by testing at regular intervals whether the association to the particular NE is dropped. In this case the AEM-NB itself raises an alarm.

Alarm Display on the User Interface

A complete alarm overview and a detailed alarm description is provided by the alarm viewer. All relevant alarm data (e.g. alarm severity) are shown.

Alarm Logs

The AEM-NB keeps alarm logs to store the alarm notifications. Alarm logs are used among other things for long-term observations, e.g. of the fault behaviour in the network. Alarm logs exist for pending alarms, for the alarm history and for clock events in the network.

1.4.3.1.2 Fault Localisation and Diagnosis

Reaction to Fault Identification

When a fault has been detected, it is necessary to localise its source and diagnose its cause in order to initiate appropriate repair procedures. To locate the cause of fault, the AEM-NB provides information gathered from alarm notifications and general network data.

Fault Source

Each alarm notification contains the name of the network component from which it originates. This network component, however, need not always be the real fault source.

1.4.3.1.3 Fault Clearance

Background

The AEM-NB detects faults automatically and clears various software errors by itself (fault recovery). The transmission characteristics of the network will not be impaired by this.

Recovery Mechanisms

System Recovery protects the AEM-NB and associated users from unnecessary problems and avoids or reduces manual work.

Recovery processes vary depending on the type of failure that occurred, the structures affected, and the type of recovery. If no files are lost or damaged, recovery may amount to no more than restarting an instance. If data has been lost, recovery requires additional steps, such as database restore using a previous backup.

AEM-NB recovery mechanisms are initiated mainly by the following situations:

- NE software crash
- AEM-NB crash
- Communication between AEM-NB and a NE is interrupted.

In the case of a NE crash, the AEM-NB configures NEs in accordance with the internal state of the AEM-NB database. In the event of a AEM-NB crash or an interruption in communication, the AEM-NB downloads the current NE configuration from the NE to its database.

Interactions between Operator and AEM-NB

Faults (software or hardware), the cause of which the AEM-NB cannot eliminate itself by means of a recovery mechanism, must then be handled by the user. The AEM-NB supports this. The AEM-NB first displays the fault on the user interface. The user then initiates appropriate measures to clear the fault and/or to maintain network operation. This includes access to faulty network units and the redirection of the network traffic. The AEM-NB supports both.

Initiation of Maintenance Actions

Sometimes, additional maintenance actions are necessary to clear a fault. For example, some network disturbances can also originate in hardware faults. Such hardware faults often require the faulty component to be replaced, and this can only be done by maintenance personnel.

NOTE:
More detailed information about maintenance actions is provided in Chapter 6.

Fault Clearance

Once the fault has been cleared, the alarm is reset automatically.

1.4.3.2 Network Modification

Types of Network Modification

Usually, network operation & surveillance requires structural modifications in the network. The AEM-NB supports this. There are two types of network modifications:

- Installation or removal of NEs
- Modification of NEs.

1.4.3.2.1 Installation and Removal of a NE

Installation of a NE

For installing a new NE in an existing network the following steps must be carried out:

1. Check whether the new NE can be incorporated in the existing DCN plan drawn up in the network planning phase (if not, the DCN plan must first be revised)
2. Creation of the NE
3. Assignment of the NE to a domain
4. Logical connection of the NE
5. Selection of the timing synchronization source
6. Selection of the COMDAC protection scheme (simplex/duplex)
7. Selection of those slots for which an absence of the circuit pack will be alarmed.

All steps are described in detail in Chapter 5.

Removal of a NE

If an NE is no longer be managed by the AEM-NB, the administrator deletes it from the AEM-NB database.

NOTE:
When an NE is deleted from the AEM-NB database, it is still fully functional. The TL1 and TCP/IP links between the AEM-NB and the NE will be closed and the management access via the AEM-NB is not possible until the NE is created and connected again.

1.4.3.2.2 Modification of NEs

Adding a Plug-in Unit

NEs can be modified by adding or removing plug-in units. The AEM-NB recognises automatically which plug-in unit has been plugged and where. As only default settings are set on the new plug-in unit, the system administrator must adapt the configuration.

Removing a Plug-in Unit

When deleting a plug-in unit, it must be ensured that there are no connections running via this unit. Then the plug-in unit may be removed.

1.4.3.3 Performance Monitoring

Tasks of Performance Monitoring

Performance management guarantees that the transmission quality does not fall below a minimum performance threshold. Another task is the recording of data for analysis at a later date.

1.4.4 System Security and User Groups

Protection from Unauthorised Access

The AEM-NB provides mechanisms which protect the system from unauthorised access. The user groups play a very important role in this context as they define different levels of access rights for the individual users.

User Groups

By default there are 3 user groups: the administrator, maintenance and monitoring user group. Further groups can be added.

Access Rights

Table 1-1 provides an overview of the access permissions the user groups should have.

Table 1-1 Assignment of User Groups to Applications/Tasks

Application	Task	User Group
System Administration	Start-up / Shutdown	Administrator
	Monitoring	Administrator
User Administration and Profiling	Access Policy Management	Administrator
	Domain Management	Administrator
Log Viewer	Actions	Administrator, Maintenance
	System Internal Events	Administrator, Maintenance
	Autonomous Report	Administrator, Maintenance, Monitoring
Alarm Viewer	Acknowledge	Administrator, Maintenance
	View	Administrator, Maintenance, Monitoring
	Clear	Administrator, Maintenance
Configuration Manager	NE Creation	Administrator, Maintenance
	Equipment and Service Provisioning	Administrator, Maintenance
	View	Administrator, Maintenance, Monitoring
	Test	Administrator, Maintenance, Monitoring
	Cut-through	Administrator
BroadBand EM	BroadBand EM	Administrator, Maintenance, Monitoring

1.5 Network Configuration

The network configuration depends on the user applications. The most probable configurations are described below and illustrated in Figure 1-9 to Figure 1-12.

NOTE:
If there are various configuration options of the DCN, these are shown in the figures by means of dashed lines. The hubs are optional depending on the number of client platforms and NEs.

1.5.1 AEM-NB Server without Clients and external OS (LAN)

AEM-NB server connected to the NEs using a Local Area Network (LAN).

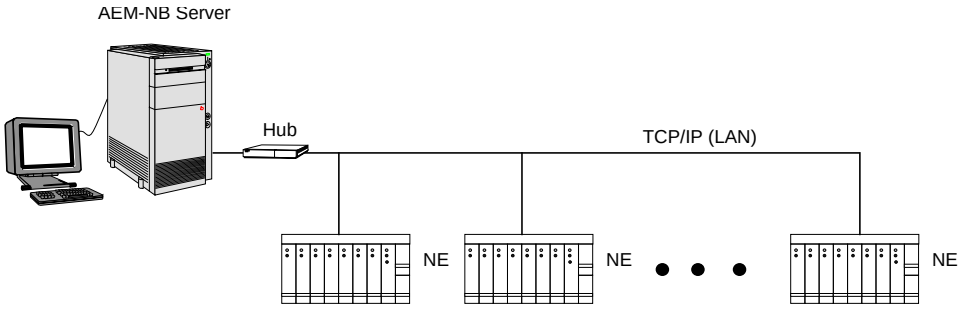

Figure 1-9 AEM-NB Server without Clients and external OS (LAN)

1.5.2 AEM-NB Server with Clients and without external OS (LAN)

AEM-NB server and one or more clients connected to the NEs using a LAN.

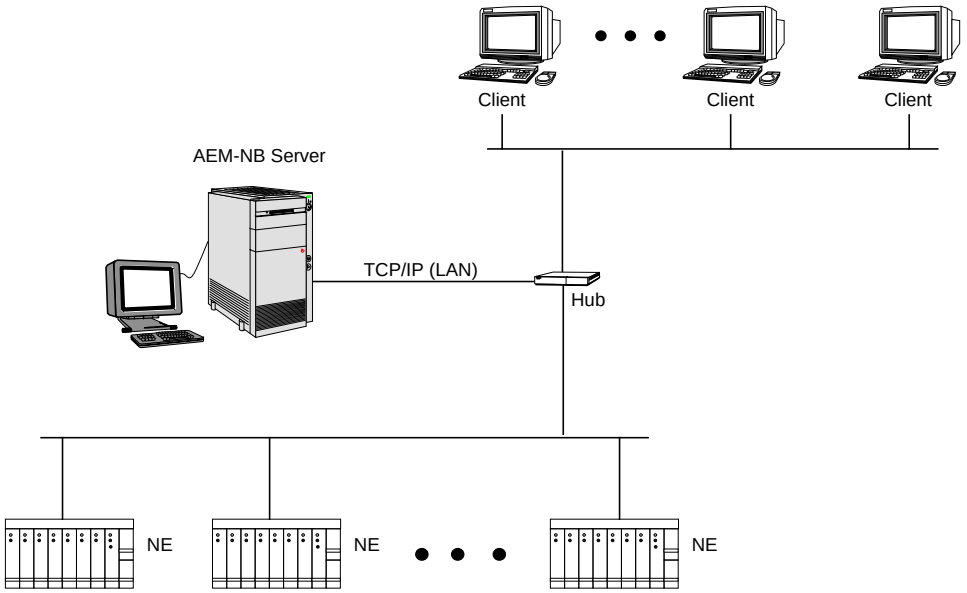

Figure 1-10 AEM-NB Server with Clients and without external OS (LAN)

1.5.3 AEM-NB Server without Clients and with external OS (WAN)

AEM-NB server connected to the NEs using a LAN and connected to one or more external OSs using a WAN link.

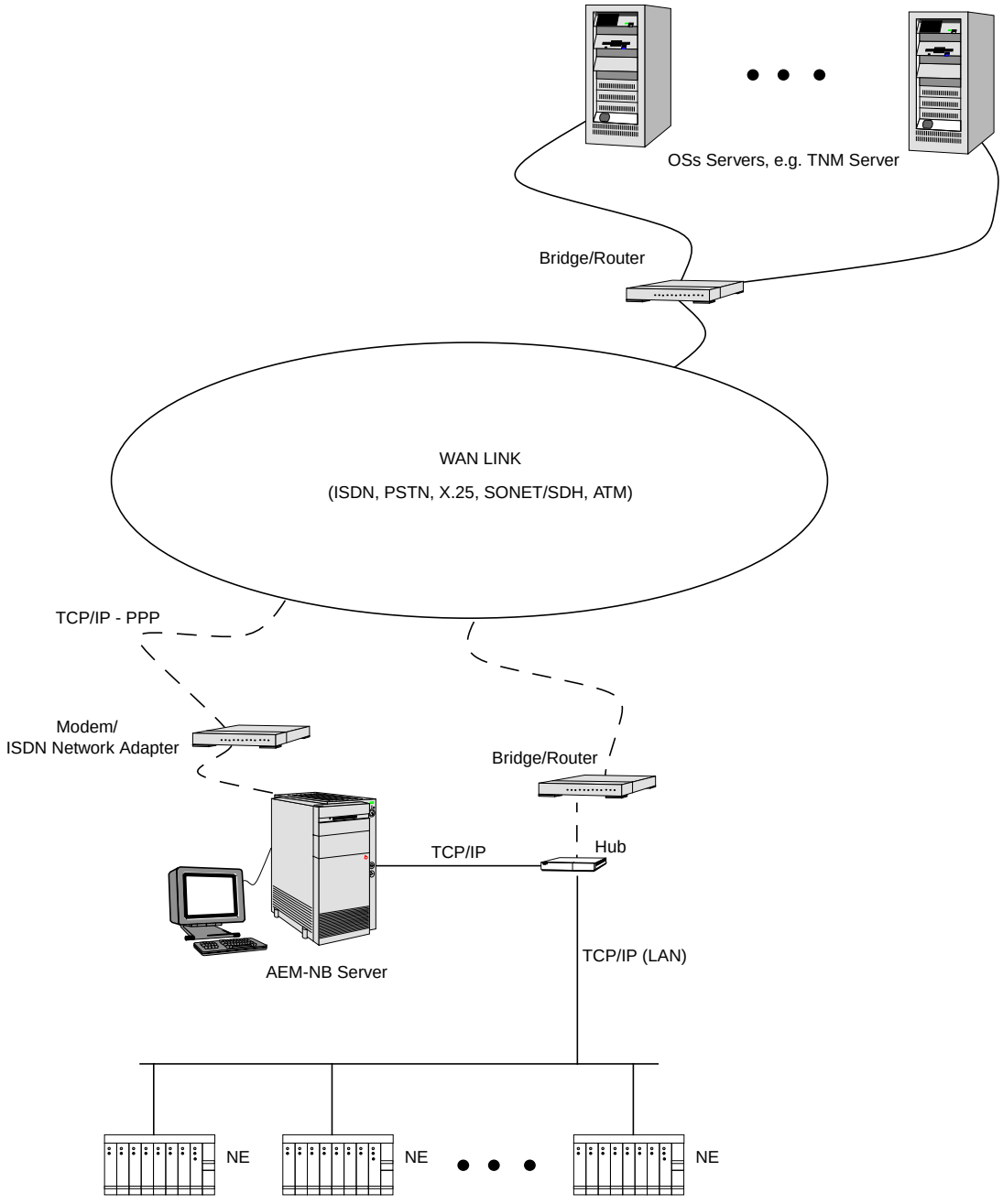

Figure 1-11 AEM-NB Server without Clients and with external OS (WAN)

1.5.4 AEM-NB Server with Clients and external OS (WAN)

AEM-NB server and one or more clients connected to the NEs using a WAN link and connected to one ore more external OSs using a LAN connection.

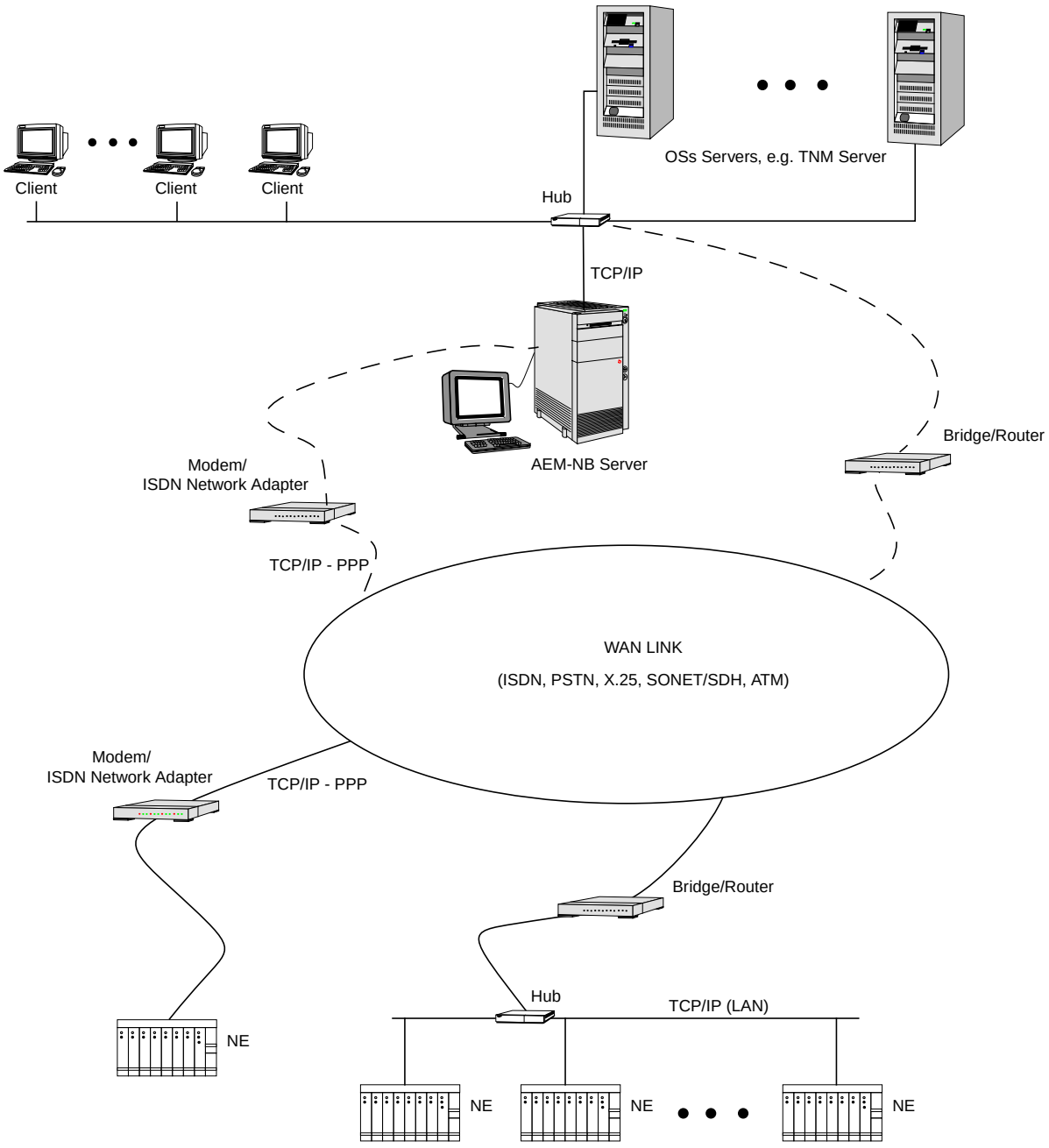

Figure 1-12 AEM-NB Server with Clients and external OS (WAN)

Software Installation and Commissioning

2

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Software Installation and Commissioning

2

2.1 General

The AEM-NB R1.5 (*AnyMedia*® Access System Element Manager for Narrowband Services, Release 1.5) runs on SUN SPARC Solaris 2 computers running Solaris 2.5.1 plus security and Y2000 patches and patch 106255-01 recommended by SUN.

In order to successfully install the AEM-NB R1.5 for the SUN Solaris installation the following has to be taken into account:

- **Disk partitioning**:
  HDD partitioning should include, in addition to the standard UNIX entries (e.g. /, /usr, /var, etc.), two entries for the AEM-NB software and the transaction.log (cf. Chapter 2.1.1, page 2-2 for size requirements).
- **Swap space**:
  In addition to the SUN recommendation (at least double the size of the RAM memory should be used for swap), 100MB per platform should be configured for OODBMS requirements.
- **NIS**:
  If more than one AEM-NB platform is to be used, NIS should be configured in the server, so all the AEM-NB clients will share the logins and password which are configured in the server tables. All the users require a NOT null password in order to manage AEM-NB.
- **NFS**:
  Network File Sharing is not required even when using a LAN, but if NIS is used, NFS allows operators to log-in in any client platform having access to their home directories.
- **SUN patches**:
  All the Solaris patches described in the shopping list must be installed before AEM-NB installation

- **LAN & WAN configuration**:
  E.g. default router to NEs, etc. must be available.

How to install SUN Solaris is described in SUN support/SUN Solaris Installation Guide.

Assumptions

For the following description it is assumed that

- The hardware required to install the AEM-NB R1.5 (*AnyMedia*® Element Manager for Narrowband Services, R1.5) is prepared
- The AEM-NB R1.5 consists of a number of server and client applications. The software install may imply the installation of all these applications or only some of them.

JRE

- The AEM-NB R1.5 includes as part of its environment the Java Runtime Environment (JRE) Release 1.1.7. JRE is included here free of charge for the final user.

2.1.1 Introduction

System Requirements

This document is intended as a guide for the person(s) who will be responsible for the installation and configuration of the hardware and software required for the AEM-NB R1.5 installation.

The AEM-NB R1.5 runs on Sun SPARC Solaris 2 computers running Solaris 2.5.1 plus security and Y2000 patches and 106255-01 patch recommended by SUN.

The *AnyMedia* distribution can be divided into two parts, Server side installation and Client side installation. Both include the specific Third-party applications needed to run the *AnyMedia* successfully.

Disk Space

To store the AEM-NB R1.5 files, your system must have the following amount of free disk space:

- AEM-NB client: 60 MB
- AEM-NB server: The space will depend upon the number of NEs managed by the system because of the data size. The recommended size for n NEs is obtained from adding the following (numbers in kbyte):

  software=450000

  logs=15000

  databases=1400+600*n

  transactions=2*(800+350*n)+n+25%

  The size calculated is based on maximum configurations and includes the overhead necessary for the temporary data used in operation.

It is recommended to create a separate partition to locate the transaction log file needed by ObjectStore. This partition would be used for this purpose only. It must not be deleted or managed because this file is only created and managed by Ob-

jectStore. Note that without this file ObjectStore is not able to work and also if a new partition or location is chosen, it needs write permissions for the *AnyMedia* user (login). If you choose a directory under *AnyMedia* location the correct owner and permits will be automatically provided in the installation process of *AnyMedia*.

The following table shows the recommended size of the partitions for a maximum of 10, 40 and 100 NEs:

NEs	/part 1	/part 2
10	475 MB	11 MB
40	500 MB	37 MB
100	530 MB	100 MB

where /part1 contains all the AEM-NB server software and data bases and the /part2 is dedicated to the transaction log.

Distribution Media

The AEM-NB R 1.5 distribution media is on CD-ROM and the defaults installation directories are /opt/lucent/*Application_name* (refer to Table 2-1, page 2-4 for more information about application names).

The AEM-NB R1.5 distribution is divided into eleven packages, as follows:

- *AnyMedia* Servers
- *AnyMedia* Client <GUI>
- *AnyMedia* Help
- OrbixMT2.3c patch 02
- OrbixTalk1.2c patch 02
- OrbixNames1.1c
- OrbixWeb 3.0
- ObjectStore5.0
- jre1.1.7+symantec+ReportPro
- LUMOS build 5
- RogueWave 1.5.7 & 1.1.2

which were built using the Application Packaging tools offered by Solaris (refer to your SUN documentation for more information).

A package contains a collection of files and directories required for the application and scripts to control how, where and if the package is installed.

Table 2-1 AEM-NB R1.5 distribution description

Package Name	Application Name
LuANY16S	*AnyMedia* Servers
LuANY16C	*AnyMedia* Clients
LuANY16en	*AnyMedia* Help
LuLUMRT	Lumos build 5 RT
LuOXNSRT	OrbixNames 1.1c RT
LuOX23RT	OrbixMT 2.3c pacth02 RT
LuOSRT	ObjectStore 5.0 RT
LuOXTKRT	OrbixTalk 1.2c patch02 RT
LuOXWRT	OrbixWeb 3.0 RT
LuRWRT	RogueWave 1.5.7 & 1.1.2 RT
LuJRERT	jre 1.1.7 + symantec + ReportPro

NOTE:
RT describes a Run Time application version.

Pre-requisites

In order to successfully install the AEM-NB R1.5 Client side, the application **Netscape 4.5 shall** be already installed on the target system.

TCP ports:
The following ports **must** be available in order to successfully run the AEM-NB R1.5:

- 1570: Orbix daemon uses the TCP port 1570 in order to wait for incoming connections that use the Orbix protocol.
- 1591 to 1641: As Corba servers are activated by the Orbix daemon, they are assigned a port so that clients can communicate with it.
- OrbixTalk uses two ports for communications. These ports have as default values "5000" and the next one. The first can be modified at installation time to a value between 1024 and 65534. It is essential that these ports are not used by any process on the SAME SUBNET DOMAIN.

IP multicast addresses:
Using OrbixTalk, all communications takes place using multicast addresses. The range of IP multicast addresses used by OrbixTalk is 31 with 255.0.0.0 as the first IP address (it is configurable at installation time in the range 255.0.0.0 to 239.255.255.255).

The time zone **must** be the same for the *AnyMedia* Client <GUI>, LUMOS, Network Element and OS. This parameter is needed for installing the *AnyMedia* Client.

The install_AMEMR15 script runs on K-shell <ksh> environment.

At least the system environment variable PATH **must** include the paths "/usr/bin" "/usr/sbin" and "/usr/ucb"
(for instance, "export PATH = $PATH:/usr/bin/:/usr/sbin:/usr/ucb")

2.2 Installation Procedure

General

The AEM-NB R1.5 distribution includes an installation script called **`Install_AMEMR15`** which shall be used in a full installation - it includes all packages stored on the distribution media -. Also, you can make individual package installations using the **`pkgadd`** command. In this case, you must be very careful with the packages dependencies showed in “Packages dependencies” on page 37.

This guide shows the flow of the installation - according to the interaction with the administrator - using the installation script provided in the distribution and using the **`pkgadd`** command for individual installations.

Common Tasks

Common actions must be make in both cases, as follows:

- You need to be logged on as **`root`**.
- Get ready your distribution medium:

Insert and Mount the CDROM

Insert and mount the CD. If the machine is running the vold, it will recognise that the CD is in place and mount it on **`/cdrom/AnyMediaNBEMR15`** (depending on your system configuration, **`/cdrom/AnyMediaNBEMR15`** might have to be replaced with a different device name). Depending on the configuration of **`vold`** you may have to append a trailing dot (“.”) to references to filenames on the CD. This is due to **`hsfs`** imposing a suffix on the filenames. If the machine is not running the **`vold`**, type:

```
# mount -F hsfs -o ro,notraildot
/dev/dsk/c0t6d0s2/cdrom
```

The device identifier c0t6d0s2 is configuration dependent, and as such will vary from machine to machine.
This will mount the CD on **`/cdrom`** (depending on your system configuration, **`/cdrom`** might have to be replaced with a different mount point. For more information about on how to mount a CD-ROM drive refer to your SUN documentation.

- A new user shall be created on the target system, who will be the user owner of the AEM-NB R1.5 files.

2.2.1 Full Installation

This type of installation uses the **Install_AMEMR15** script in order to install all packages contained in the distribution.

For the following description it is assumed that:

- The hardware and software requirements to install the AEM-NB R1.5 are prepared
- AEM-NB R1.5 software have not been installed previously.
- Common actions showed above have been made

Procedure

Complete the following procedure to install the AEM-NB R1.5 application

NOTE:
Lines with indentation and quoted are the system responses. They are included here to guide the installation procedure.

2.2.1.1 Server side installation

Complete the following procedure to install the *AnyMedia* server side.

Step	Procedure

1. Go to the directory where the installation script is placed (cdrom or disk)

2. Type **"./Install_AMEMR15"** and press **Return**.

```
AnyMedia NB EM R1.5 installation
CopyRight (c) 1999 Lucent Technologies, Inc.
All Rights Reserved

**Pre-requisites**

1.- Before attempting to install the applica
tion, please,read the readme.txt file.

2.- AnyMedia NB EM R1.5 runs on SUN SPARC So
laris 2 computers running Solaris 2.5.1 plus se
curity and Y2000 patches recommended by SUN and
106255-01 patch.

3.- TCP ports:
The following ports MUST be available in order
to succesfully run the AnyMedia EM:
* 1570: Orbix daemon uses the TCP port 1570 in
order to wait for incoming connections that use
the Orbix protocol.
```

```
* 1591 to 1641: As Corba servers are activated
by the Orbix daemon, they are assigned a port so
that clients can communicate with it.
* OrbixTalk uses two ports for communications.
These ports have as default values "5000" and
the next one. The first can be modified
at installation time to a value between 1024 and

65534.It is essential that these ports are not
used by any process on the SAME SUBNET DOMAIN.

4.- IP multicast adresses:
Using OrbixTalk, all communications takes place
using multicast addresses. The range of IP mul
ticast addresses used by OrbixTalk is 31 with
255.0.0.0 as the first IP address (it is config
urable at installation time in the range
255.0.0.0 to 239.255.255.255)

5.- The Install_AMEMR15 script runs on K-shell
<ksh> environment.

6.- At least the system environment variable
PATH MUST include the paths "/usr/bin",
"/usr/sbin" and "/usr/ucb" (for instance,
"export PATH=$PATH: /usr/bin/ :/usr/sbin: /usr/
ucb").

7.- The time zone MUST be the same for the Any
Media Client <GUI>, LUMOS and Network Element.
This parameter is needed for installing the Any
Media Client.

******************



Do you like to continue [y,n,?,q]
```

3. Type "**y**" and press **Return** to continue or type "**n**" or "**q**" and press **Return** to exit.

```
"AnyMedia NB EM R1.5 installation"
"CopyRight (c) 1999 Lucent Technologies, Inc."
"All Rights Reserved."
"Please, choose the installation mode"
"  1  Client     <Client side installation>"
"  2  Server     <Server side installation>"
"Enter selection [?,??,q]:"
```

NOTE:
Type ? to get help, type ?? to repeat the prompt and type q to exit from the installation.

4. Type **"2"** and press **Return**.

```
"Transferring <LuLUMRT> package instance"
"Transferring <LuRWRT> package instance"
"Transferring <LuOX23RT> package instance"
"Transferring <LuOXNS> package instance"
"Transferring <LuOXTKRT> package instance"
"Transferring <LuOSRT> package instance"
```

LUMOS Build 5 Installation

```
"Processing package instance <LuLUMRT> from
</tmp/lucent_pkg/1>"
"Lumos Runtime for AnyMedia NB-EM R1.5"
"(sparc-solaris) Build 5 run-time"
"OK, No previous package LuLUMRT have been
found."
"Enter install directory [/opt/lucent/LUMOS]
[?,q] "
```

5. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Checking your DNS domain name... "
"done."
"What is your DNS domain name  [default: es.lu
cent.com]  [?,q]"
```

6. Type your DNS domain name and press **Return** (press **Return** to select default).

NOTE:
A list of DNS user:group items of the target system is displayed (for instance, anymedia:lucent). This provides information to select an user owner and a group owner for packages files.

```
"Select owner and group for package files."
"NBR  USER:GROUP"
"  1  anymedia:lucent     "
"  ....    "
"Enter selection [?,??,q]:"
```

7. Type an user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
      lected"
"Using </> as the package base directory."
"## Processing package information."
"## Processing system information."
"## Verifying disk space requirements."
"## Checking for conflicts with packages already
      installed."
"## Checking for setuid/setgid programs."
"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."
"Do you want to continue with the installation
of <LuLUMRT> [y,n,?]"
```

8. Type **"y"** and press **Return**.

```
"Installing Lumos Runtime for AnyMedia NB-EM
R1.5 as <LuLUMRT>"
"## Installing part 1 of 1. "
"<files list>"
"[ verifying class <none> ]"
"## Executing postinstall script."
"You have the installation logfile in
/tmp/EM_Install_LuLUMRT.log"
"Installation of <LuLUMRT> was successful."
"Processing package instance <LuRWRT> from
</tmp/lucent_pkg/2>"
```

RogueWave 1.5.7 & 1.1.2 Installation

```
"RogueWave Tools & Threads Runtimes for AnyMedi
aNBEM R1.5"
"(sparc) 7.0.7 & 1.1.2"
"OK, No previous package LuRWRT have been
found."
"Enter install directory [/opt/lucent/rw] [?,q]"
```

9. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Select owner and group for package files."
"NBR  USER:GROUP"
"  1  anymedia:lucent     "
"  ....    "
"Enter selection [?,??,q]:"
```

10. Type an user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
lected"
"Using </> as the package base directory."
"## Processing package information."
"## Processing system information."
"## Verifying disk space requirements."
```

```
"## Checking for conflicts with packages already
      installed."

"## Checking for setuid/setgid programs."

"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."

"Do you want to continue with the installation
of <LuRWRT> [y,n,?]"
```

11. Type **"y"** and press **Return**.

```
"Installing RogueWave Tools & Threads Runtimes
for AnyMediaNBEM R1.5 as <LuRWRT>"

"## Installing part 1 of 1. "

"<files list>"

“[ verifying class <none> ]"

"## Executing postinstall script."

"You have the installation logfile in
/tmp/EM_Install_LuRWRT.log"

"Installation of <LuRWRT> was successful."
```

OrbixMT 2.3c patch 02 Installation

```
"Processing package instance <LuOX23RT> from
</tmp/lucent_pkg/3>"

"Orbix 2.3c02 Runtime for AnyMedia NB-EM R1.5"

"(sparc-solaris) Version 2.3c02MT Run-Time"

"OK, No previous package LuOX23RT have been
found."
```

NOTE:
A list of partitions and free space is displayed

```
"Here is a list of your partitions and the free
space in each of them:"

"Filesystem kbytes used avail capacity Mounted
on"

"<information about your partitions and free
space>"

"Where should Orbix be installed? [/opt/lu
cent/OrbixMT_2.3c2] [?,q] "
```

12. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"If you intend to use Orbix to communicate with
anything outside"

"your own subnet, you will need to supply your
subnet's domain name."

"If your machines all have fully-qualified host
names, reply with the value "null"."

"What is your domain name? [es.lucent.com] "
```

13. Type your domain name and press **Return** or reply null if all machines have fully-qualified host names (press **Return** to accept default).

```
"Select owner and group for package files."

"NBR  USER:GROUP"

"  1  anymedia:lucent     "

"  ....    "

"Enter selection [?,??,q]:"
```

14. Type an user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
lected"

"Using </> as the package base directory."

"## Processing package information."

"## Processing system information."

"## Verifying disk space requirements."

"## Checking for conflicts with packages already
      installed."

"## Checking for setuid/setgid programs."

"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."

"Do you want to continue with the installation
of <LuOX23RT> [y,n,?]"
```

15. Type **"y"** and press **Return**.

```
"Installing Orbix 2.3c02 Runtime for AnyMedia
NB-EM R1.5 as <LuOX23RT>"

"## Installing part 1 of 1. "

"<files list>"
```

```
"[ verifying class <bin> ]"
"<files list>"
"[ verifying class <cfg> ]"
"<files list>"
"[ verifying class <lib> ]"
"## Executing postinstall script."
"You have the installation logfile in
/tmp/EM_Install_LuOX23RT.log"
"Installation of <LuOX23RT> was successful."
```

OrbixNames 1.1c Installation

```
"Processing package instance <LuOXNS> from
</tmp/lucent_pkg/4>"
"OrbixNames 1.1c Runtime for AnyMedia NB-EM
R1.5"
"(sparc-solaris) Version 1.1c Run-Time"
"OK, No previous package LuOXNS have been
found."
"Package <LuOX23RT> OrbixMT Version 2.3c02MT
Run-Time have been found in <OrbixMT path>"
"Where should OrbixNames be installed? [/opt/lu
cent/OrbixNames1.1c][?,q] "
```

16. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Multi-threaded Orbix installation detected, is
this correct? [y] [y,n,?] "
```

17. Type **"y"** and press **Return**.

```
"Select owner and group for package files."
"NBR  USER:GROUP"
"  1  anymedia:lucent     "
"  ....    "
"Enter selection [?,??,q]:"
```

18. Type an user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
lected"
"Using </> as the package base directory."
```

```
"## Processing package information."
"## Processing system information."
"## Verifying disk space requirements."
"## Checking for conflicts with packages already
      installed."
"## Checking for setuid/setgid programs."
"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."
"Do you want to continue with the installation
of <LuOXNS> [y,n,?]"
```

19. Type **"y"** and press **Return**.

```
"Installing OrbixNames 1.1c Runtime for AnyMedia

NB-EM R1.5 as <LuOXNS>"
"## Installing part 1 of 1."
"[ verifying class <names> ]"
"<files list>"
"[ verifying class <bin> ]"
"<files list>"
"[ verifying class <lib> ]"
"## Executing postinstall script."
"-----------------------------------------"
"Okay, OrbixNames is now installed."
"You have the installation logfile in
/tmp/EM_Install_LuOXNS.log"
"Installation of <LuOXNS> was successful."
```

OrbixTalk 1.2 c patch02 Installation

```
"Processing package instance <LuOXTKRT> from
</tmp/lucent_pkg/5>"
"OrbixTalk 1.2c02 Runtime for AnyMedia NB-EM
R1.5"
"(sparc-solaris) 1.2c02"


"OrbixTalk Installation details:"
"Version:   1.2c02"
"Platform:  Solaris 2.x"
```

```
"Compiler:  WorkShop Compilers 4.2 30 Oct 1996
C++ 4.2"

"To install OrbixTalk1.2c you must already
have Orbix2.3c installed. "

"If this is not the case please exit now."

"If you already have OrbixTalk on your system,
this installation may overwrite some of the
files. Make sure you have a backup of your old
OrbixTalk, or install this new version in a new
set of directories.  If you want to make a backup
copy of the old version, you should exit now."

"It is recommended that you read the installa
tion guide before you continue."

"Do you want to continue? [y]:"
```

20. Type **"y"** and press **Return**.

```
"OK, No previous package LuOXTKRT have been
found."

"Package <LuOX23RT> OrbixMT Version 2.3c02MT
Run-Time have been found in <OrbixMT path>"
```

NOTE:
A list of partitions and free space is displayed.

```
"Here is a list of your partitions and the free
space in each of them:"

"Filesystem kbytes used avail capacity Mounted
on"

"<information about your partitions and free
space>"

"Where should the main OrbixTalk software dis
tribution be installed?[/opt/lu
cent/OrbixTalk1.2c02] "
```

21. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Which UDP/IP port should the OrbixTalk Direc
tory Enquiries daemon use?"
"OrbixTalk requires that you reserve a range of
AT LEAST 2 ports starting at this port? [5000]"
```

22. Type a valid UDP/IP port and press **Return** (press **Return** to select default).

```
"The OrbixTalk Directory Enquiries daemon as
signs individual Topics an IP Multicast address
starting with the next address above the base IP
address. What base IP Multicast address ( within
the range 225.0.0.0 to 239.255.255.255 ) should
the OrbixTalk Directory Enquiries daemon
use?[225.0.0.0]"
```

23. Type a valid IP multicast address and press **Return** (press **Return** to select default).

```
"What directory should the OrbixTalk data files
be stored? [/opt/lucent/OrbixTalk1.2c02/dat]"
```

24. Type a valid path (for instance **<OrbixTalk path>/dat** where the package files must be placed and press **Return** (press **Return** to select default).

```
"Select owner and group for package files."
"NBR  USER:GROUP"
"  1  anymedia:lucent     "
"  ....    "
"Enter selection [?,??,q]:"
```

25. Type an user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
lected"
"Using </> as the package base directory."
"## Processing package information."
"## Processing system information."
"## Verifying disk space requirements."
"## Checking for conflicts with packages already
installed."
"## Checking for setuid/setgid programs."
"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."
"Do you want to continue with the installation
of <LuOXTKRT> [y,n,?]"
```

26. Type **"y"** and press **Return**.

```
"Installing OrbixTalk 1.2c02 Runtime for AnyMe
dia NB-EM R1.5 as <LuOXTKRT>"

"## Installing part 1 of 1. "

"<files list>"

"[ verifying class <bin> ]"

"<files list>"

"[ verifying class <lib> ]"

"<files list>"

"[ verifying class <raw> ]"

"## Executing postinstall script."

"* Making backing copy of the orbix configura
tion file <OrbixMT path>/cfg/Orbix.cfg" to "<Or
bixMT path>/cfg/Orbix.cfg.old""


"* Licence registration was accepted for otd."

"* Licence registration was accepted for otmsd."

"* Licence registration was accepted for otdsm."

"*****************************************"

"*  INSTALLATION WARNINGS:"

"*"

"* For Orbix and OrbixTalk to be able to find Or
bix.cfg, you must set the environment variable
IT_CONFIG_PATH to its location,ie. "<OrbixMT
path>/cfg/Orbix.cfg"."

"* If the OrbixTalk binaries fail with the mes
sage "password" invalid""

"The licence install utility will need to be run
manually. Enter the following command: "

" <OrbixMT path>/bin/install_licence <OrbixTalk
path>/bin/otd <code>"

"* OrbixTalk 1.2c02 is now successfully in
stalled."

"You have the installation logfile in
/tmp/EM_Install_LuOXTKRT.log"

"Installation of <LuOXTKRT> was successful."
```

ObjectStore 5.0 Installation

```
"Processing package instance <LuOSRT> from
</tmp/lucent_pkg/6>"

"ObjectStore 5.0_SP3 Runtime for AnyMedia NB-EM
R1.5"

"(sparc-solaris) 5.0_SP3 Run-Time"

"Enter install directory [/opt/lucent/OS50_SP3]
[?,q]"
```

27. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default)

```
"Using </> as the package base directory."

"## Processing package information."

"## Processing system information."

"## Verifying disk space requirements."

"## Checking for conflicts with packages already
installed."

"## Checking for setuid/setgid programs."

"The following files are being installed with
setuid and/or setgid permissions: <ObjectStore
path>/sunpro/lib/oscminit <setuid root>"

"Do you want to install these as setuid/setgid
files [y,n,?,q]"
```

28. Type **"y"** and press **Return**.

```
"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."

"Do you want to continue with the installation
of <LuOSRT> [y,n,?]"
```

29. Type **"y"** and press **Return**.

```
"Installing ObjectStore 5.0_SP3 Runtime for Any
Media NB-EM R1.5 as <LuOSRT>"

"## Installing part 1 of 1. "

"<files list>"

"[ verifying class <none> ]"

"## Executing postinstall script."

"*****************************************"
```

" * Remember execute "osconfig" to set the environment *"
""**

" You have the installation logfile in /tmp/EM_Install_LuOSRT.log"

"Installation of <LuOSRT> was successful."

ObjectStore Configuration

"Object Store configuration"

"The default copy of ObjectStore to configure is in <ObjectStore path>/sunpro."

"Is this the copy that you want to configure? [yes]"

30. Press **Return**.

"ObjectStore includes shared libraries. For ObjectStore applications and utilities to work, the dynamic linker must be able to find them."

"The recommended arrangement is to have symbolic links in /usr/lib to the shared libraries."

"If you choose not to make these links, then you will have to instruct all ObjectStore users to add <ObjectStore path>/sunpro/lib to their LD_LIBRARY_PATH environment variable."

"Do you want to create links to ObjectStore libraries in /usr/lib? [yes]"

31. Press **Return**.

"Since you have requested a File-database configuration,you must give a pathname for the transaction log file. Where do you want to put the transaction log?"

32. Type a valid path (for instance **<ObjectStore path>/transaction.log**) where the package files must be placed and press **Return** (press **Return** to select default)

"You have configured this machine to run an ObjectStore server. The server's transaction log is in <Transaction log path>."

"Do you want to proceed? [yes]"

33. Press **Return**.

```
"Writing configuration files and initializing
the server, please"

"wait..."

"990423 111330 ObjectStore Release 5.0 Service
Pack 3 Database Server"

"ObjectStore includes a server daemon which must
be running for any application to access an Ob
jectStore database."

"It is recommended that you auto-start the dae
mon via commands in your operating system star
tup scripts. If you do not configure automatic
startup, you will have to start the server dae
mon by hand,or re-run this utility to configure
auto-start."

"Would you like to configure automatic server
startup and shutdown? [yes]"
```

34. Press **Return**.

```
"Successfully created /etc/rc2.d/S80ostore4."

"Successfully created link from
/etc/rc2.d/K80ostore4 to /etc/rc2.d/S80ostore4."

"Note that you must manually remove or edit ex
isting ObjectStore R3 scripts in /etc/rc2.d in
some situations:"

"To run only R4 clients or R3 file database cli
ents, remove all R3 scripts in /etc/rc2.d."

"To run all R4 clients and R3 clients, including
R3 rawfs clients, edit existing R3 scripts in
/etc/rc2.d to run only the R3 Directory Manager,
but not the R3 Server."

"To run both R3 and R4 clients with separate R3
and R4 Servers, see the documentation on editing
your OS_ROOTDIR/etc/ports file."


"This script will now verify the installation:"

"The ObjectStore Server daemon process is acces
sible. Schema databases are accessible."

"The cache manager launcher for release 4 (<Ob
jectStore path>/sunpro/lib/oscminit) has correct
modes and ownership."

"ObjectStore configuration completed."

"Transferring <LuANY16S> package instance"
```

***AnyMedia* Servers Installation**

```
"Processing package instance <LuANY16S> from
</tmp/lucent_pkg/1>"

"AnyMedia NB Element Manager Release 1.5
(server)"

"(sparc) LuANY16S_X.Xc"

"************************************"

"*AnyMedia Element Manager *"

"*(c) 1999-Lucent Technologies *"
"************************************

"OK, No previous package LuANY16S have been
found."

"***Select an installation path for AnyMediaEM
R1.5 server applications***"


"Enter install directory for the AnyMediaEM
R1.5 [/opt/lucent/AnyMediaNBEM_R1.5] [?,q] "
```

35. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"The installation path selected for AnyMedia EM
R1.5 is <Server path>"

"Package <LuOX23RT> OrbixMT Version 2.3c02MT
Run-Time have been found in <OrbixMT path>"

"Package <LuOXTKRT> OrbixTalk 1.2c02 have been
found in <OrbixTalk path>"

"Package <LuOXTKRT> OTGateway 1.2c02 have been
found in <OrbixTalk path>"

"Package <LuOXNS> OrbixNames Version 1.1c Run-
Time have been found in <OrbixNames path>"

"Package <LuOSRT> ObjectStore 5.0_SP3 Run-Time
have been found in <ObjectStore path>"

"Package <LuLUMRT> Lumos Build 5 run-time have
been found in <Lumos path>"

"Package <LuRWRT> RogueWave Tools and Threads
7.0.7 & 1.1.2 have been found in <RogueWave
path>"

"Select owner and group for package files."

"NBR  USER:GROUP"

"  1  anymedia:lucent     "
```

```
"  ....    "
"Enter selection [?,??,q]:"
```

36. Type a user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
lected"
"***Boot processes***"
"Do you like install the SystemAdmin process on
the system boot [y,n,?,q]"
```

37. Type **"y"** to confirm and press **Return** or type **"n"** to do nothing on the system.

NOTE:
If you select **"y"** the following request is displayed.

```
"Start-up MODE"
"  1  ALL to start-up all AnyMedia applications"
"  2  CORE to start-up only core AnyMedia appli
      cations"
"Enter selection [?,??,q]:"
```

38. Type the desired Start-up more **< 1 or 2 >**

```
"****cron processes****"
"RemoveAlm cron process will be executed every
day at 3.00 AM. Do you like change it [y,n,?,q]"
```

39. Type **"y"** to confirm and press **Return** or type **"n"** and press **Return** to do nothing on the system.

NOTE:
If you select "y" the following requests are displayed.

```
"Enter minute (0-59,*):  [?,q]"
```

40. Type a valid entry.

```
"Enter hour   (0-23,*):  [?,q]"
```

41. Type a valid entry

```
"Enter day of the month (1-31,*):  [?,q]"
```

42. Type a valid entry.

    "Enter month of the year (1-12,*): [?,q]"

43. Type a valid entry.

    "Enter day of the week (0-6 with 0=Sunday,*): [?,q]"

44. Type a valid entry.

    "Do you like install the Backup process as a cron [y,n,?,q]"

45. Type **"y"** to confirm and press **Return** or type **"n"** and press **Return** to do nothing on the system.

NOTE:
If you select **"y"** refer to steps 38 - 41.

"Do you like install the Archive process as a cron [y,n,?,q]"

46. Type **"y"** to confirm and press **Return** or type **"n"** and press **Return** to do nothing on the system.

NOTE:
If you select **"y"** refer to steps 38 - 41.

"Clean-up tasks for the AnyMediaNB-EM system will be executed every"

"day at 4.00 AM. Do you like change it [y,n,?,q]"

47. Type **"y"** to confirm and press **Return** or type **"n"** and press **Return** to do nothing on the system.

NOTE:
If you select **"y"** refer to steps 38 - 41.

"Using </> as the package base directory."

"## Processing package information."

"## Processing system information."

"## Verifying disk space requirements."

"## Checking for conflicts with packages already installed."

```
"## Checking for setuid/setgid programs."
"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."
"Do you want to continue with the installation
of <LuANY16S> [y,n,?]"
```

48. Type **"y"** and press **Return**.

```
"Installing AnyMedia NB Element Manager Release
1.5 (server) as <LuANY16S>"
"## Installing part 1 of 1. "
"<files list>"
"[ verifying class <common> ]"
"<files list>"
"[ verifying class <channels_24> ]"
"## Executing postinstall script."
"Starting orbixd daemon in the system"
"Starting ns daemon in the system"

"[ s1224: OrbixNames (Release 1.1) ]"
"[ s1369: OrbixOTM package (Release 1.5) ]"
"Checking AnyMedia EM R1.5 naming contexts"
"Starting CreateNEM_db process..."
"Getting the AnyMedia installation path..."
"OK"
"Getting NEM data base path"
"OK"
"Creating NEM Data Base"
"OK"
"exit OK"
"Starting CreateCMR12_db process..."
"Getting the AnyMedia installation path..."
"OK"
"Getting CM R1.2 data base path"
"OK"
"Creating CM R1.2 Data Base"
```

```
"OK"
"exit OK"
"Starting AMDbPopulate process..."
"Getting the AnyMedia installation path..."
"OK"
"Getting Alarm data base path"
"OK"
"Creating Alarm Data Base..."
"Creating os_Collection<HostElement*>..."
"Creating ListOfAlarmsPerHost ..."
"Creating segment and ElementManager Host
(0)..."
"OK"
"exit OK"
"Getting the AnyMedia installation path..."
"Getting OAM Security data base path"
"OK"
"Creating Database"
"Registering Servers in the Orbix Implementation
Repository"
""
"[20948: New Connection"
"(<hostname>. <domain_name>, IT_daemon,*,root,
pid=<pid>,optimised) ]"
"[20949: New Connection"
"(<host name>.<domain_name>,IT_daemon, *,root
,pid=<pid>,optimised) ]"
"[20950: New Connection"
...
"<pid> Killed"
"orbixd daemon pid=<pid> have been killed. Was
mine."
"20846 Killed"
"ns daemon pid=20846 have been killed. Was
mine."
"****************************************"
```

```
"* Execute ". AnyMediaNBEM.sh" to set the envi
ronment *"

"****************************************"

"You have the installation logfile in <Server
path>/tmp/EM_Install.log"

"Installation of <LuANY16S> was successful."

"Installation of AnyMedia EM R1.5 was successful
<Server side installation>"
```

2.2.1.2 Client side installation

Complete the following procedure to install the *AnyMedia* client side.

Step	Procedure

49. Go to the directory where the installation script is placed (cdrom or disk).

50. Type **"./Install_AMEMR15"** and press **Return**.

```
AnyMedia NB EM R1.5 installation
CopyRight (c) 1999 Lucent Technologies, Inc.
All Rights Reserved



**Pre-requisites**

1.- Before attempting to install the applica
tion, please,read the readme.txt file.

2.- AnyMedia NB EM R1.5 runs on SUN SPARC So
laris 2 computers running Solaris 2.5.1 plus se
curity and Y2000 patches recommended by SUN and
106255-01 patch.

3.- TCP ports:
The following ports MUST be available in order
to succesfully run the AnyMedia EM:
* 1570: Orbix daemon uses the TCP port 1570 in
order to wait for incoming connections that use
the Orbix protocol.
* 1591 to 1641: As Corba servers are activated
by the Orbix daemon, they are assigned a port so
that clients can communicate with it.
* OrbixTalk uses two ports for communications.
These ports have as default values "5000" and
the next one. The first can be modified
at installation time to a value between 1024 and
```

```
65534.It is essential that these ports are not
used by any process on the SAME SUBNET DOMAIN.

4.- IP multicast adresses:
Using OrbixTalk, all communications takes place
using multicast addresses. The range of IP mul
ticast addresses used by OrbixTalk is 31 with
255.0.0.0 as the first IP address (it is config
urable at installation time in the range
255.0.0.0 to 239.255.255.255)

5.- The Install_AMEMR15 script runs on K-shell
<ksh> environment.

6.- At least the system environment variable
PATH MUST include the paths "/usr/bin",
"/usr/sbin" and "/usr/ucb" (for instance,
"export PATH=$PATH: /usr/bin/ :/usr/sbin: /usr/
ucb").

7.- The time zone MUST be the same for the Any
Media Client <GUI>, LUMOS and Network Element.
This parameter is needed for installing the Any
Media Client.

******************

Do you like to continue [y,n,?,q]
```

51. Type "**y**" and press **Return** to continue or type "**n**" or "**q**" and press **Return** to exit.

```
"AnyMedia NB EM R1.5 installation"
"CopyRight (c) 1999 Lucent Technologies, Inc."
"All Rights Reserved."
"Please, choose the installation mode"
"  1  Client     <Client side installation>"
"  2  Server     <Server side installation>"
"Enter selection [?,??,q]:"
```

52. Type **"1"** and press **Return**.

```
"Transferring <LuJRERT> package instance"
"Transferring <LuOXWRT> package instance"
"Transferring <LuANY16en> package instance"
```

jre 1.1.7 + symantec classes + reportPro class installation

```
"Transferring <LuANY16C> package instance"
"Processing package instance <LuJRERT> from
</tmp/lucent_pkg/1>"
"JRE 1.1.7 for AnyMediaNBEM R1.5"
"(sparc-solaris) 1.1.7"
"OK, No previous package LuJRERT have been
found."
"Applications to install:"
"1 --> jre version 1.1.7"
"2 --> symantec classes"
"3 --> report pro classes"
"4 --> all"
"5 --> exit"
"Selection:"
```

53. Type **"4"** and press **Return**.

```
"Enter install directory [/opt/lucent/jre1.1.7]
[?,q] "
```

54. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Select owner and group for package files."
"NBR  USER:GROUP"
"  1  anymedia:lucent     "
"  ....    "
"Enter selection [?,??,q]:"
```

55. Type an user:group number and press **Return**.

```
"User: <users> and Group: <group>, have been se
lected"
"Using </> as the package base directory."
"## Processing package information."
"## Processing system information."
"## Verifying disk space requirements."
"## Checking for conflicts with packages already
installed."
```

```
"## Checking for setuid/setgid programs."
"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."
"Do you want to continue with the installation
of <LuJRERT> [y,n,?]"
```

56. Type **"y"** and press **Return**.

```
"Installing JRE 1.1.7 for AnyMediaNBEM R1.5 as
<LuJRERT>"
"## Installing part 1 of 1. "
"<files list>"
"[ verifying class <jre> ]"
"<files list>"
"[ verifying class <symantec> ]"
"<files list>"
"[ verifying class <report> ]"
"## Executing postinstall script."
"You have the installation logfile in"
"/tmp/EM_Install_LuJRERT.log"
"Installation of <LuJRERT> was successful."
```

OrbixWeb 3.0 Installation

```
"Processing package instance <LuOXWRT> from
</tmp/lucent_pkg/2>"
"OrbixWeb 3.0 Runtime for AnyMedia NB-EM R1.5"
"(sparc-solaris) Version 3.0 Run-Time"
"Installing Version 3.0 Run-Time."
"OK, No previous package LuOXWRT have been
found."
"Enter install directory [/opt/lu
cent/OrbixWeb3.0] [?,q]"
```

57. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Package <LuJRERT> jre 1.1.7 have been found in
<jre Path>"
```

```
"(If you don't plan to use fully-qualified host
names with OrbixWeb, enter "null" here.)"

"Checking your DNS domain name... done."

"What is your DNS domain name? [default: es.lu
cent.com]"
```

58. Type your domain name and press **Return** or reply null if all machines have fully-qualified host names (press **Return** to accept default).

```
"Enter the NS hostname: "
```

59. Type the NS host name and press **Return**.

```
"Enter the NS IP address:"
```

60. Type the NS IP adress and press **Return**.

```
"Select owner and group for package files."

"NBR  USER:GROUP"

"  1  anymedia:lucent     "

"  ....    "

"Enter selection [?,??,q]:"
```

61. Type an user:group number.

```
"User: <users> and Group: <group>, have been se
lected"

"Using </> as the package base directory."

"## Processing package information."

"## Processing system information."

"## Verifying disk space requirements."

"## Checking for conflicts with packages already
installed."

"## Checking for setuid/setgid programs."

"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."

"Do you want to continue with the installation
of <LuOXWRT> [y,n,?]"
```

62. Type **"y"** and press **Return**.

```
"Installing OrbixWeb 3.0 Runtime for AnyMedia
NB-EM R1.5 as <LuOXWRT>"

"## Installing part 1 of 1. "

"<files list>"

"[ verifying class <none> ]"

"## Executing postinstall script."

" You have the installation logfile in
/tmp/EM_Install_LuOXWRT.log"

"Installation of <LuOXWRT> was successful."
```

***AnyMedia* Help Installation**

```
"Processing package instance <LuANY16en> from
</tmp/lucent_pkg/4>"

"AnyMedia NB Element Manager Release 1.5 (Help)"

"(sparc) LuANY16en_US_X.X"

" ****************************************"

" *         AnyMedia Element Manager*"

" *         (c) 1999-Lucent Technologies*"

" ****************************************"

"OK, No previous package LuANY16en have been
found."

"Where should AnyMediaNBEM Help be installed?
[/opt/lucent/AnyMediaNBEM_R1.5/Help] [?,q]"
```

63. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Select owner and group for package files."

"Enter a valid owner:"
```

64. Type a valid user and press **Return**.

```
"Enter a valid group:"
```

65. Type a valid group and press **Return**.

```
"Using </> as the package base directory."

"## Processing package information."

"## Processing system information."

"## Verifying disk space requirements."
```

```
"## Checking for conflicts with packages already
installed."

"## Checking for setuid/setgid programs."

"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."

"Do you want to continue with the installation
of <LuANY16en> [y,n,?]"
```

66. Type **"y"** and press **Return**.

```
"Installing AnyMedia NB Element Manager Release
1.5 (Help) as <LuANY16en>"

"## Installing part 1 of 1. "

"<files list>"

"[ verifying class <common> ]"

"## Executing postinstall script."

"You have the installation logfile in"

"/tmp/EM_Install_LuANY16en.log"

"Installation of <LuANY16en> was successful."
```

AnyMedia Client Installation

```
"Processing package instance <LuANY16C> from
</tmp/lucent_pkg/5>"

"AnyMedia NB Element Manager Release 1.5 (Cli
ent)"

"(sparc) <LuANY16C_X.Yc>"


" ************************************"

      " *         AnyMedia Element Manager*"

" *         (c) 1999-Lucent Technologies*"

" ************************************"

"OK, No previous package LuANY16C have been
found."

"Where should AnyMediaNBEM GUI be installed?
[/opt/lucent/AnyMediaNBEM_R1.5/GUI] [?,q] "
```

67. Type a valid path where the package files must be placed and press **Return** (press **Return** to select default).

```
"Package <LuOXWRT> OrbixWeb Version 3.0 Run-Time
have been found in <OrbixWeb path>"
```

```
"Package <LuJRERT> jre 1.1.7 have been found in
<jre path>"
"Package <LuANY16en> Help have been found in
<Help path>"

WARNING: Netscape release 4.5 is necessary to
run the AnyMedia NB EM R1.5 Help and the AnyMe
dia Broad Band application. If it is already in
stalled on the system,please, answer 'y' to next
question, otherwise answer 'q' to exit or 'n' to
continue the AnyMedia NB EM R1.5 Client instal
lation. In this case, when the Netscape release
4.5 will be installed, the following variables
must be modified according the Netscape instal
lation settings in the AnyMediaNBEM_GUI.sh file:
.- PATH to add the Netscape path.
.- MOZILLA_HOME to store the Netscape path.
For instance, if Netscape release 4.5 is in
stalled on /opt/appl/Netscape4.5 the variables
shall be modified as follows:"
.- PATH=/opt/appl/Netscape4.5:other_paths
.- MOZILLA_HOME=/opt/appl/Netscape4.5"

"Is Netscape release 4.5 already installed on
the system [y,n,?]"
```

68. Type "**y**" if Netscape is already installed on the system and press **Return** otherwise type "**n**" and press **Return**.

NOTE:
The following question only appears if above answer was "**y**".

```
"What is the base path of Netscape?[[?,q]"
```

69. Type the path where the Netscape release 4.5 is installed on the system and press **Return**.

```
"Netscape version is correct"

"Select owner and group for package files."

"NBR  USER:GROUP"

"  1  anymedia:lucent     "

"  ....    "

"Enter selection [?,??,q]:"
```

70. Type an user:group number.

```
"User: <users> and Group: <group>, have been se
lected"

"What is the AnyMediaNBEM Server Host? [<de
fault>] [?,q] "
```

71. Type the host name where the *AnyMedia* AEM-NB servers were installed and press **Return** (press **Return** to select default).

```
"Wait...."

"What is the URL for Broad Band Manager?
[http://www.lucent.com][?,q]"
```

72. Type a valid URL where the broad band manager is placed and press **Return** (press **Return** to select default).

```
"Login for CutThrough functionallity?  [?,q]"
```

73. Type a valid login and press **Return**.

```
"Password for CutThrough functionallity?  [?,q]"
```

74. Type a valid password and press **Return**.

```
"Code for the representation of names of lan
guages"

"Refer to ISO 639:1988 (E/F) for more informa
tion"

"  1  da     Danish"

"  2  de     German"

"  3  fr     French"

"  4  it     Italian"

"  5  zh     Chinese"

"  6  es     Spanish"

"  7  en     English"

"Enter selection [?,??,q]:"
```

75. Type your language code and press **Return**.

```
"Code for the representation of names of coun
      tries"

"Refer to ISO 3166 for more information"
```

```
"  1  DK     DENMARK"
"  2  DE     GERMANY"
"  3  FR     FRANCE"
"  4  IT     ITALY"
"  5  CN     CHINA"
"  6  ES     SPAIN"
"  7  GB     UNITED KINGDOM"
"  8  US     UNITED STATES"
"Enter selection [?,??,q]:"
```

76. Type your country code and press **Return**.

```
"Code for the representation of names of Time
     Zones"
"  1  GMT     (0)    Greenwich Mean Time"
"  2  ECT     (1)    European Central Time"
"  3  EET     (2)    Eastern European Time"
"  4  ART     (2)    (Arabic) Egypt Standard
     Time"
"  5  EAT     (3)    Eastern African Time"
"  6  MET     (3.5)  Middle East Time"
"  7  NET     (4)    Near East Time"
"  8  PLT     (5)    Pakistan Lahore Time"
"  9  IST     (5.5)  India Standard Time"
" 10  BST     (6)    Bangladesh Standard Time"
"... 21 more menu choices to follow;"
"<RETURN> for more choices, <CTRL-D> to stop
display:"
"Enter selection [?,??,q]:"
```

77. Type the desired time zone and press **Return**.

NOTE:
The time zone **must** be the same for the *AnyMedia* Client (GUI), LUMOS, Network Element and OS.

```
"Using </> as the package base directory."
```

```
"## Processing package information."

"## Processing system information."

"## Verifying disk space requirements."

"## Checking for conflicts with packages already
installed."

"## Checking for setuid/setgid programs."

"This package contains scripts which will be ex
ecuted with super-user permission during the
process of installing this package."

"Do you want to continue with the installation
of <LuANY16C> [y,n,?]"
```

78. Type **"y"** and press **Return**.

```
"Installing AnyMedia NB Element Manager Release
      1.5 (Client) as <LuANY16C>"

"## Installing part 1 of 1. "

"<files list>"

"[ verifying class <common> ]"

"## Executing postinstall script."


"****************************************"

"* Execute ". AnyMediaNBEM_GUI.sh" to set the
environment *"

"****************************************"

" You have the installation logfile in <Client
path>/EM_Install.log"

"Installation of <LuANY16C> was successful."


"Installation of AnyMedia EM R1.5 was successful
<Client side installation>"
```

2.2.2 Individuals Package Installations

Also, it is possible to install each package individually using the command **pkgadd -d package_name.pkg** (refer to Table 2-1, page 2-4 to obtain the packages names).

NOTE:
If the package is already installed on the target system, the following actions must be make:

- the package must be un-installed previously (refer to “Remove AnyMedia package Installations” on page 40 for more information about packages un-installation)
- in order to does not affect the rest of the installed packages, the package must be re-installed in the same directory as the previous one.

NOTE:
the **pkgadd -d** command makes a temporal uncompressing on the /var/spool/pkg directory. Therefore, you must sure enough free disk space in this location. If you like uncompress in other location, the command **pkgtrans package_name.pkg new_location package_name** shall be executed previously (for instance, **pkgtrans LuOX23RT.pkg /tmp LuOX23RT**).

In this type of installation is necessary to comply with the packaged dependencies showed in the following table.

Table 2-2 Packages dependencies

To install	the following package must be installed previously
OrbixNames	OrbixMT
OrbixTalk	OrbixMT
OrbixWeb	jre
AnyMedia Servers	OrbixMT
	OrbixTalk
	OrbixNames
	LUMOS
	ObjectStore
	RogueWave
AnyMedia Client	OrbixWeb
	jre + symantec + reportPro
	Netscape -not included into the *AnyMedia* distribution-
Help	none

Traces and inputs in this type of installation and in a full installation are similar. Only the following differences could be found:

- When an installation starts, the package checks if a previous installation will make with the same package version. If no previous package is found the following message will appear:

  “OK, No previous package <Package_Name> have been found.”

NOTE:
Refer to “Type "2" and press Return.” on page 8 to see this trace.

In other cases, the following messages will appear:

- When the same package was installed previously

  “Previous completely installed package <Package_Name> version: <Package_Version> have been found. And it is the same to the new one you want to install:<Package_Version>.”

- When a package with the same architecture and version and different name was installed previously

  “Previous completely installed package <Package_Name> version: <Package_Version> have been found.Please, use pkgrm <Package_Version> to delete previous version.”

- When a package with the same architecture and name and different version was installed previously

  “Previous completely installed package <Package_Name> version: <Package_Version> have been found.but with different version (Package_Version) than the new you want to in stall.”

- When the same package was installed partially previously

  “Previous partially installed package <Package_Name> version: <Package_Version> have been found. And it is the same to the new one you want to install:<Package_Version>.”

- When a package with the same architecture and version and different name was installed partially previously

  “Previous partially installed package <Package_Name> version: <Package_Version> have been found.Please, use pkgrm <Package_Version> to delete previous version.”

- When a package with the same architecture and name and different version was installed partially previously

“Previous partially installed package <Package_Name> version: <Package_Version> have been found.but with different version (Package_Version) than the new you want to in stall.”

NOTE:
In cases 1, 2, 4 and 5, the installation will finish without changes on the system.

- After this step, the installation looks for its packages dependencies. If a needed package is found the following message will appear:

  “Package <Package_Name> <Application_Name> <Application_Verison> have been found in <Application_Path>”

NOTE:
Refer to “Type "y" and press Return.” on page 12 to see this trace.

If the package is not found, the installation will prompt about its installation path in order to check this path and the correct application version:

"<Package_Name> needs <Application_Name> <Application_Version> to be installed previ ously. Answer ’q’ to next question and install the package <Package_Name> otherwise provide the paths required.
What is the base path of <Required_Package_Name> <Package_verision> [?,q]?"

When an input is provided the installation checks the path and the version of the application. If the path is invalid the following message will appear:

“ERROR: Pathname does not exist.”

And if the version is invalid:

“Package <Required_Package_Name> have been found but INSTALL_PATH is not defined"

“Package <Required_Package_Name> have been found but with version: <Package_Version> not valid for <Package_Name>"

In both cases, the installation will prompt again for the required package.

- Also, the path where the Orbix.cfg file is located is request in the Orbix-Names, OrbixTalk and *AnyMedia* Servers packages installation, after the request for the installation path of the OrbixMT -the file will modified by both installations- :

"Where is Orbix.cfg file located [Orbix_path/cfg] [?, ??, q]?"

- Finally, after the ObjectStore installation the user must execute the `osconfig server` command, in order to configure the ObjectStore daemon (refer to steps 28 to 32).

2.2.3 Cancel Installation

There are two ways to cancel the installation, as follows:

- internal cancellation: when the `Install_AMEMR15 or pkgadd` command detect through information files or installation scripts that something is invalid.
- external cancellation: if the administrator kill the process (kill -9 or Ctrl+C).

In both cases, the `system` informs about if files has been installed on the system. In this case, the administrator must use the `pkgrm` command to remove the installation.

2.2.4 Remove *AnyMedia* package Installations

In order to remove any *AnyMedia* package installations, the administrator must execute the command **`pkgrm <Package_Name>`**.

NOTE:
Refer to Table 2-1, page 2-4 to obtain the *AnyMedia* packages names.

When a package is removed, all files installed by it or created during the *AnyMedia* operation, such as data bases and temporal data files, are erased in the target system.

2.2.4.1 Remove *AnyMedia* Servers package

Complete the following procedure to remove the *AnyMedia* Servers package.

Step	Procedure

1. Log in as **`root`**.
2. Type **`pkgrm LuANY16S`** and press **`Return`**.

   The following package is currently installed:

   `LuANY16S AnyMedia NB Element Manager Release 1.5 (server)(sparc) LuANY16S_X.Xc`

   `Do you want to remove this package?`

3. Type **"y"** and press **Return**.

```
## Removing installed package instance
<LuANY16S>

This package contains scripts which will be
executed with super-user permission during the
process of removing this package.

Do you want to continue with the removal of this
package [y,n,?,q]
```

4. Type **"y"** and press **Return**.

```
## Verifying package dependencies.

## Processing package information.

## Executing preremove script.

Removing data bases

TRACE: Removing NEM data base

TRACE: Removing CM data base

TRACE: Removing ALM data base

TRACE: Removing SEC data base

## Removing pathnames in class <channels_24>

## Removing pathnames in class <common>

<files list>

## Executing postremove script.

## Updating system information.

Removal of <LuANY16S> was successful.
```

You have now removed the *AnyMedia* Servers package.

2.2.4.2 Remove *AnyMedia* Client package

Complete the following procedure to remove the *AnyMedia* Client package.

Step	Procedure

1. Log in as **root**.

2. Type **pkgrm LuANY16S** and press **Return**.

```
The following package is currently installed:

LuANY16C    AnyMedia NB Element Manager Release
            1.5 (Client) (sparc) LuANY16C_X.Xc
```

```
Do you want to remove this package?
```

3. Type **"y"** and press **Return**.

```
## Removing installed package instance
<LuANY16C>

This package contains scripts which will be
executed with super-user permission during the
process of removing this package.

Do you want to continue with the removal of this
package [y,n,?,q]
```

4. Type **"y"** and press **Return**.

```
## Verifying package dependencies.

## Processing package information.

## Executing preremove script.

## Removing pathnames in class <channels_24>

## Removing pathnames in class <common>

<files list>

## Executing postremove script.

## Updating system information.

Removal of <LuANY16C> was successful
```

You have now removed the *AnyMedia* Client package.

2.2.4.3 Remove Third-Party packages

The following procedure is the same for all parts of the Third-Party software. For example the procedure below describes the removal of the RogueWave package.

Complete the following procedure to remove the RogueWave package:

Step	Procedure

1. Log in as **root**.
2. Type **pkgrm LuRWRT** and press **Return**.

```
The following package is currently installed:
LuRWRT RogueWave Tools & Threads Runtimes for
AnyMediaNBEM R1.5 (sparc) 7.0.7 & 1.1.2)
Do you want to remove this package?
```

3. Type **"y"** and press **Return**.

```
## Removing installed package instance <LuRWRT>
## Verifying package dependencies.
## Processing package information.
## Removing pathnames in class <none>
<file list>
## Updating system information.
Removal of <LuRWRT> was successful.
```

You have now removed the RogueWave package.

2.3 Configuration Parameters

2.3.1 Introduction

This chapter provides information about all the configuration parameters that are used with AEM-NB R1.5, as follows:

- An alphabetical list of all configuration parameters that are used with AEM-NB R1.5.
- Detailed information about each parameter.

These configuration parameters are distributed in three configuration files, as follows:

- **AnyMediaNBEMR1.5.cfg** for variables used by the *AnyMedia* servers.
- **AnyMedia.ini** and **SystemPreferences.ini** for variables used by the GUI.

Only the configuration parameters the *AnyMedia* administrator can modify are explained in this chapter -modify these configuration variables with caution as they may adversely affect the correct operation of the application-. To modify the other configuration parameters stored in the configuration files, please contact with Lucent Technologies TCL.

2.3.2 *AnyMedia* Server Configuration Parameters

The following table provide an alphabetical list of the configuration parameters for *AnyMedia* servers.

Table 2-3 AnyMediaNBEM.cfg file

	configuration parameter	
	name	**description**
Configuration Management Settings	CM.directoryNVDS	NVDS files location. This files store information in such a way as to survive indefinite periods of total power failure. The current values for all provisionable parameters are store in the NVDS directory and hence are the parameter values that will be used on subsequent NE power-up. Default value: CM/nefiles/NVDS.
	NOTE: All paths showed as default value are relative to the AnyMedia installation path.	
	CM.directoryNVPS	NVPS files location. It keeps software program data. It resides in the NE <COMDAC> Default value: CM/nefiles/NVPS.
OAM Settings	OAM.backup.archiveDirectory	default path or device -like a Tape unit- where the AnyMedia archives will be placed. Default value: archives.
	OAM.backup.backupDirectory	default path or device -like a Tape unit- where the AnyMedia backups will be placed. Default value: backups.
	OAM.backup.backupLogDirectory	default path where the backup's logs will be placed. Default value: tmp.
	OAM.backup.numberOfLogFiles	maximum number of backup's log files. Range of values: 1 to 10 Default value: 10.
	OAM.log.directoryCurrentLogs	default path where the AnyMedia logs will be placed. Default value: log.
	OAM.log.directoryRestoredLogs	default path where the AnyMedia restored logs will be placed. Default value: restored.
	OAM.log.maximumTotalLogSize	maximum size in kilobytes for all AnyMedia log files. Range of values: 10000 to 20000. Default value: 15000.

configuration parameter	
name	**description**
OAM.log.minimumDaysKept	log's latency period in days. Range of values: 5 to 10. Default value: 7.

2.3.3 *AnyMedia* client <GUI> configuration variables

The following table provides an alphabetical list of the configuration parameters for *AnyMedia* GUI.

Table 2-4 SystemPreferences.ini configuration file

	configuration parameter	
	name	**description**
Site Settings	SITE	the city or the location where the Element Manager is working. This value is used for printing purposes.
	LOC_TIME_ZONE	code for the representation of names of time zones. Range of values: **GMT** (Greenwich Mean Time), **ECT** (European Central Time), ... Default value: defined at installation time.
User View Settings	USERVIEW	default view in User Administration window. Range of values: users, usergroups, domains or objects. Default value: users.
Alarm Viewer Settings	ALM_VIEW	default view. Range of values: view1, view2, view3 or view4. Default value: view1.
	ALM_FILTER	default alarm filter. Range of values: Last24h, CritRaised, Raised, Host, CritNotCleared, OwnedAck, Clear, AllAck or All. Default value: Last24h.
	NOTE: The following parameters are used for alarms notification purposes. The notification can be either a visual effect -in the *AnyMedia* GUI main window the flag icon changes to up state and the count of notified alarms is increased- or/and audio effect -a beep sound is generated-.	
	VISUAL_CRITICAL_ALARM_SEV	enable-disable visual notification of critical severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
	VISUAL_MAJOR_ALARM_SEV	enable-disable visual notification of major severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.

	configuration parameter	
	name	**description**
	VISUAL_MINOR_ALARM_SEV	enable-disable visual notification of minor severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
	VISUAL_INFO_ALARM_SEV	enable-disable visual notification of information severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
	AUDI_CRITICAL_ALARM_SEV	enable-disable audio notification of critical severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
	AUDI_MAJOR_ALARM_SEV	enable-disable audio notification of major severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
	AUDI_MINOR_ALARM_SEV	enable-disable audio notification of minor severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
	AUDI_INFO_ALARM_SEV	enable-disable audio notification of information severity alarms. Range of values: true -to enable- or false -to disable-. Default value: true.
Broad-Band Application Settings	BROAD_BAND_URL	the URL where the Broad Band application is located. Default value: defined at installation time.
Cutthrough Settings	LOGTELNET	login to connect to *AnyMedia* NB server for CutThrough purposes. Default value: defined at installation time.

configuration parameter	
name	**description**
PASSTELNET	password to connect to *AnyMedia* NB server for CutThrough purposes. Default value: defined at installation time.
SERVER	server host where the *AnyMedia* NB application is running. Default value: defined at installation time.

Help Settings

HELP_URL	the URL where the help files are located.

Table 2-5 AnyMedia.ini configuration file

configuration parameter	
name	**description**
LV_READLINES	line number of server log messages read in Log Viewer. Range of values: 1 to 50. Default value: 50.

System Management

3

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System Management

3

3.1 Overview

This chapter provides you with information about:

- Accessing the *AnyMedia*® management system (AEM-NB)
- General handling of the workspace and AEM-NB windows
- Starting up and shutting down applications
- Printing out reports from AEM-NB windows
- Backup and restore tasks
- Basics on log management and how to use the Log Viewer.

3.2 System Access

To access the *AnyMedia* Element Manager (AEM-NB) application, you need to have an account in the underlying operating system, and this account has to be accepted as a user account of AEM-NB. AEM-NB user accounts are managed by the administrator (cf. Chapter 4).

3.2.1 Login to Operation System

This chapter describes how to log into the system.

System Login

Complete the following procedure to log in:

Step	Procedure
1.	The system asks for your user name. Enter your user name and press **`Return`** or click ***OK***.
2.	The system asks for your password. Enter your password and press **`Return`** or click ***OK***.

Login Correct

If the login was correct, the workspace is displayed.

Login Incorrect

If the login was incorrect, a warning message appears ("`Login incorrect; please try again`."). Confirm the message by pressing **`Return`** or clicking ***OK*** and repeat the login procedure.

Start Core Applications

If the core applications were not yet started an administrator has to do this (cf. Chapter 3.4.4, page 3-20) before the AEM-NB Access Bar can be started.

Start AEM-NB Access Bar

To start the AEM-NB Access Bar (cf. Figure 3-1) after a correct login, type in a terminal window, which you can start via the workspace manager (cf. Chapter 3.3.8, page 3-12):

`GUI_Main`

The AEM-NB Access Bar is shown.

Figure 3-1 Workspace with AEM-NB Access Bar

3.2.2 Logout from Operation System

This chapter describes how to log out from the system. You can log out manually or be logged out automatically after a certain time of mouse and keyboard inactivity.

System Logout

Complete the following procedure to log out manually:

Step	Procedure
1.	Close the AEM-NB Access Bar window.
2.	Click on the **Exit** symbol in the workspace manager or select ***Log out...*** in the workspace menu.
3.	A message box pops up. Press **`Return`** or click ***OK*** to confirm the logout. Press ***Cancel*** not to log out.

After a logout the login screen is displayed again.

NOTE:
During the client installation (cf. 2.2.1.2, page 2-27) a cron process is installed. This cron automatically kills the GUI processes every night due security reason. The execution time of the cron can be changed by the administrator only.

3.2.3 AEM-NB Access Bar

The AEM-NB Access Bar allows access to all AEM-NB applications and offers an alarm indication as well as a help feature.

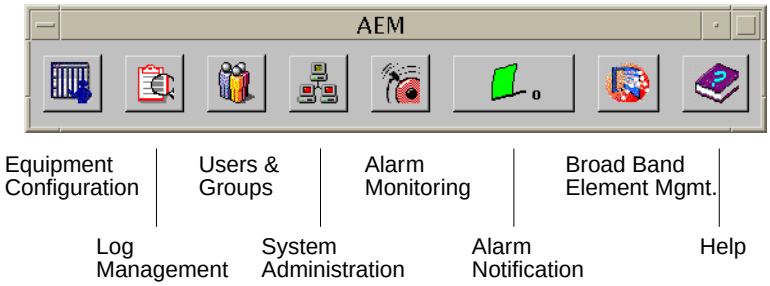

Figure 3-2 AEM-NB Access Bar

Start Access Bar To start the Access Bar click on the access bar icon in the workspace manager (cf. Chapter 3.3.8).

Functions The Access Bar provides access to the following applications:

- Equipment Configuration (cf. Chapter 5)
- Log Management (cf. Chapter 3.7, page 3-32)
- Users & Groups (cf. Chapter 4)
- System Administration (cf. Chapter 3.4, page 3-17)
- Alarm Monitoring (cf. Chapter 6)
- Alarm Notification (cf. Chapter 3.2.3.1, page 3-4)
- Broad Band Element Management
- Help.

Start applications To start an application click on the respective icon.

Access Control If an icon of the Access Bar is grayed, you are not allowed to access this application or the application is not running. Whether access is granted or denied depends on your user group membership. The Alarm Notification and Help icons are always accessible.

3.2.3.1 Alarm Notification Icon

Description The Alarm Notification icon displays a flag and a counter. The flag is raised if new alarms are received. The counter is increased every time an alarm is received. By default, only critical alarms affect the Alarm Notification icon. The counting starts with "0" every time the Access Bar is started. The behavior of the Alarm Notification icon can be changed so that it displays alarms with other severities.

Reset Counter

If you click on the Alarm Notification icon, the flag is lowered and the counter reset.

Customize Alarm Notification

The behavior of the Alarm Notification Icon can be customized. It reports only alarms for which the corresponding variable (see Table 3-1) in the system preferences file (**`$ANYMEDIAPATH/GUI/cfg/SystemPreferences.ini`**) is set to **`true`**. If the variable is set to **`false`** it reports no alarms of this alarm severity.

Table 3-1 Variables for Customizing Visual Alarm Notifications

Alarm Severity	Variable Name
Critical	VISUAL_CRITICAL_ALARM_SEV
Major	VISUAL_MAJOR_ALARM_SEV
Minor	VISUAL_MINOR_ALARM_SEV
Info	VISUAL_INFO_ALARM_SEV

Audible Alarm Notification

If an alarm of a certain alarm severity (default: critical) is received an audible signal is issued. The audible signal is generated only for alarms with an alarm severity for which the corresponding variable (see Table 3-2) in the system preferences file is set to **`true`**. If it is set to **`false`** no audible signal is generated for alarms of this alarm severity. Alarms are audible on the server only.

Table 3-2 Variables for Customizing Audible Alarm Notifications

Alarm Severity	Variable Name
Critical	AUDI_CRITICAL_ALARM_SEV
Major	AUDI_MAJOR_ALARM_SEV
Minor	AUDI_MINOR_ALARM_SEV
Info	AUDI_INFO_ALARM_SEV

Make Changes Take Effect

Changes in the system preferences file take effect only after the next start-up of the AEM-NB GUI clients.

3.2.3.2 Help Icon

Description

The Help icon provides access to the AEM-NB online help. If you click on the Help icon the help index is displayed.

3.2.4 Capacity

The AEM-NB allows for a maximum of

- 5 simultaneous users
- 100 NEs to be managed.

3.3 General Information on Keyboard and Windows

3.3.1 Keyboard

The keyboard offers special keys which are pressed individually or in combination with others to perform specific actions.

Special Keys

The most important special keys are:

- **Return**, to confirm an entry or to start a new line when a text consisting of several lines is entered
- **Esc** = "Escape" to initiate an escape sequence, i.e. the keys pressed after pressing Esc are interpreted as an instruction and not as entered text
- **Ctrl** = "Control" to initiate a control sequence. **Ctrl** is always used in combination with one or several other keys and represents an instruction
- **Alt** = "Alternate" is pressed in combination with one or more other keys thereby assigning these keys another meaning
- **Backspace** or **Del** (= "Delete") to delete all characters to the left of the cursor.

Conventions

The keys on the keyboard are represented in the text in the following way: **Ctrl**, **Backspace**, **A**, **B**,...

Two or more of these keys connected by a hyphen ("-") indicate that they must be pressed simultaneously. **Shift-Ctrl-A**, for example, means that the "A" key must be typed while holding down **Shift** and **Ctrl**.

Keys that are separated by blanks only must be pressed one after the other. **Esc A B**, for example, means that **Esc** must be pressed first followed by **A** and then **B**.

3.3.2 Mouse

Conventions

When using the mouse, you will frequently find the following terms:

- **Click** or **Select**: Position the cursor on an object and press the left mouse button.
- **Double click**: Click the left mouse button twice in rapid succession.
- **Drag**: Move the mouse keeping the left mouse button pressed.

3.3.3 Different Aspects of the Cursor

The aspect of the cursor will vary to indicate the actions you may currently undertake using the mouse.

The following symbols show examples for possible cursor aspects:

The arrow up pointing to the left is used to select objects and to press buttons.

The "I" beam is used within a text field to indicate the position where text is to be inserted.

The "clock" cursor indicates that in the window where the cursor is positioned a process requiring a lot of processing time is running and no mouse or keyboard inputs are possible.

3.3.4 Basics on Windows

The window which contains the **input focus** evaluates all keyboard and mouse inputs. The window containing the input focus is easy to distinguish from other windows opened on the screen by the different colour of its window frame.

Use the mouse to direct the input focus to a defined window. Click on a position within the window or place the cursor on the window.

The window shown in Figure 3-3 labels the different window controls which allow the user to change the aspect of the window on the screen and the process represented by the window.

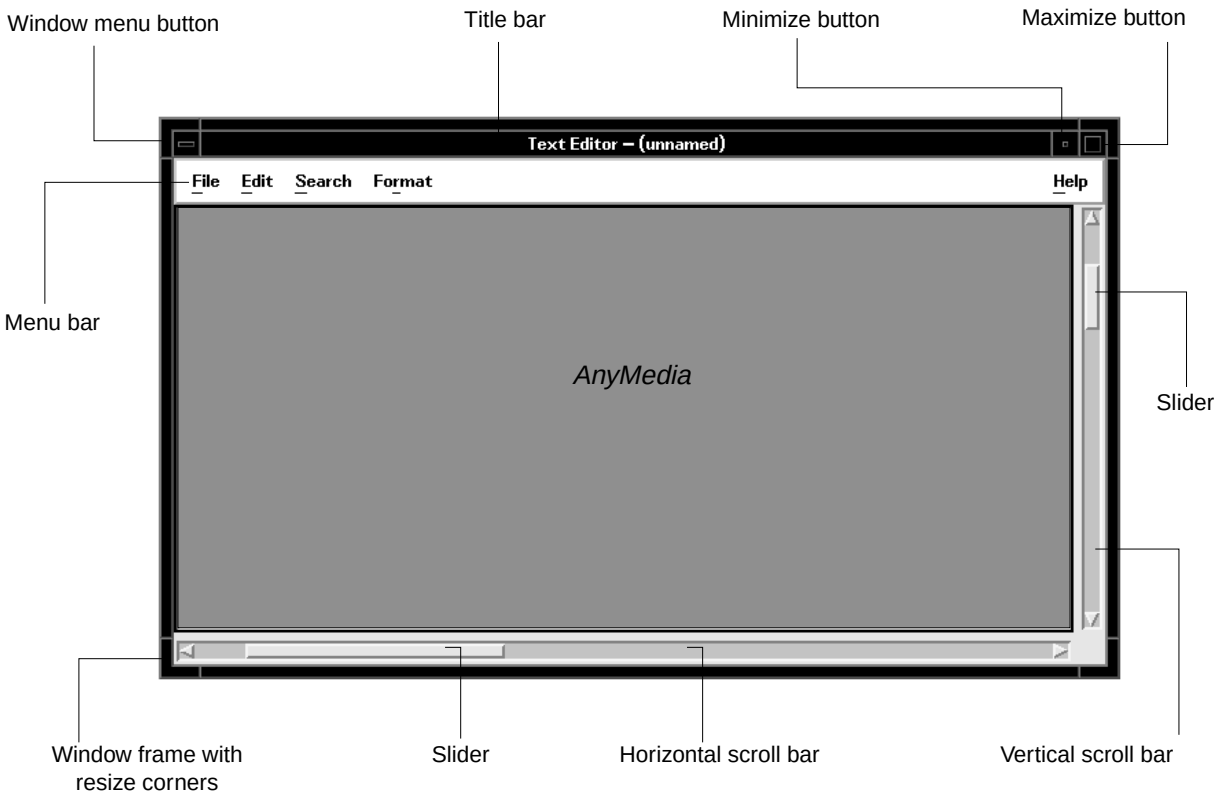

Figure 3-3 Specimen Window and Window Controls

The individual window controls shown in Figure 3-3 are:

Figure 3-4 Controls in a Window

Window Part	Function
Window frame with resize corners	The frame delimits the window on the screen and its colour indicates whether this window contains the input focus. Drag the frame to shift and resize the window. By dragging the window corners, the window size may be modified to both limiting sides at the same time.
Title bar	The title bar informs you about the function of the window. Drag the title bar to shift the window on the screen.
Minimize button	If you click on the minimize button, the window will be displayed in its minimum size, i.e. it will appear as an icon on the screen, though the process represented by the window will continue running.

Figure 3-4 Controls in a Window

Window Part	Function
Horizontal scroll bar	Use the horizontal scroll bar and the slider to shift the visible window section to the left or right. ■ Small step to the left or right: Click on the left or right scroll bar arrow. ■ Page left or right: Click on the scroll bar to the left or right of the slider. ■ Shift window section: Use the mouse and drag the slider horizontally until the desired window section becomes visible.
Vertical scroll bar	Use the vertical scroll bar to shift the currently visible window section up or down: ■ Small step up or down: Click on the top or bottom scroll bar arrow. ■ Page up or down: Click on the scroll bar section above or below the slider. ■ Shift window section: Use the mouse and drag the slider up or down until the desired window section becomes visible.
Maximize button	Activate the maximize button by clicking on it to show the window at its maximum size, i.e. the window will occupy the whole screen. If you click again on the maximize button thus activated, the window will be restored to its original size.
Menu bar	The menu bar contains the menu names, each of them containing options related to the topic. These options may be selected to control the process running in this window (cf. Chapter 3.3.6)
Window menu button	Click this button to open the window menu (cf. Figure 3-5). Double click to exit the application.

3.3.5 Window Menu

A window can be provided with a window menu. The window menu allows to alter the appearance of the window or to exit the application represented by the window.

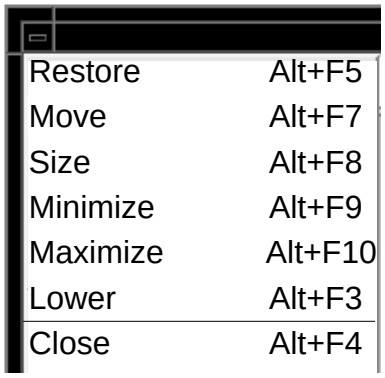

Figure 3-5 Window Menu

To open the window menu shown in Figure 3-5, click on the window menu button or click with the right mouse button on the window frame.

The menu options in the window menu are listed in the following table.

Table 3-3 Window Menu Items and their Function

Menu Item	Function
Restore	A window currently being represented as an icon or in its maximum size is restored to its original size.
Move	Allows you to move the window interactively on the screen. The window frame will follow the mouse movements until you press the left mouse button.
Size	Allows interactive resizing of the window. Move the cursor appearing in the window to the window edge you wish to move. The edge will follow the mouse movements until you press the left mouse button.
Minimize	The window is shown as an icon.
Maximize	The window is shown in its maximum possible screen size.
Lower	If there are several overlapping windows, the currently active window is shifted to the bottom of the pile.
Close	This function will close the window and remove it from the user interface, exiting the application linked to the window.

3.3.6 Menu Bar

Menu Options

The menu bar of a window contains the menu names. Once you click on a menu it opens and a series of related menu options will be displayed under the menu name.

Conventions

Each option represents a function, which can be used to control the application running in the window. To call this function, click on the required option. A menu option is referred to in the text as: "***Menu name -> Menu option***" (e.g. in the menu below: ***Network View -> Maps***).

A grayed menu name or option cannot be selected.

Submenu Conventions

Submenus are menus opening under a certain menu option and containing a number of related menu options. Some menu options are provided with a small arrow pointing to the right (>). These menu options have a submenu that will open as soon as you click on the menu option. A submenu option is referred to in the text as "***Menu name -> Menu option -> Submenu option***" (e.g. "***Network View -> Submaps -> Open/List...***"). A submenu option again may offer a submenu, then an appropriate number of "**->**" is added.

3.3.7 Cursor Menu

Menu at the Cursor Position

Some objects in windows have a menu associated with them. This menu will pop up at the cursor position when the right mouse button is pressed. The cursor must not, however, be positioned on a menu bar or a window frame. The cursor menu is not available in all windows. The functions which can be executed using this cursor menu depend on the application of the respective window.

Select Menu Option

Proceed as follows to select a menu option from the cursor menu:

Step	Procedure
1.	Press the right mouse button.
2.	Move the cursor onto the desired menu option.
3.	Click the left or right mouse button to execute the menu option, or if you do not wish to execute a menu option, move the cursor away from the menu and click somewhere outside the menu.

3.3.8 Workspace Manager

General

After logging in to the operation system (SUN Solaris), the workspace manager window is situated at the bottom of the screen offering a range of functions and information. A function is initiated by clicking the respective area of the workspace manager. In Figure 3-6 only an example of the workspace manager is given, as the entries are configurable.

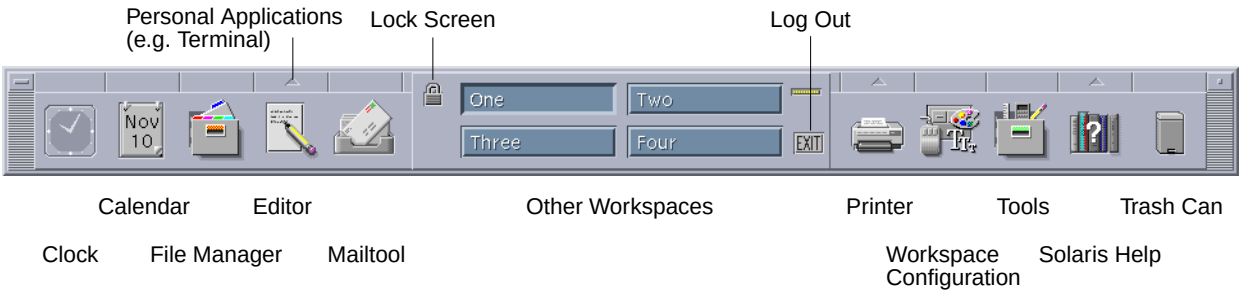

Figure 3-6 Workspace Manager

Functions

For a detailed description of the offered functions, please refer to your *Solaris User's Guide* and *Solaris Common Desktop Environment User's Guide*.

3.3.9 Workspace Menu

General

The workspace menu opens when you click with the right mouse button on the background of the workspace.

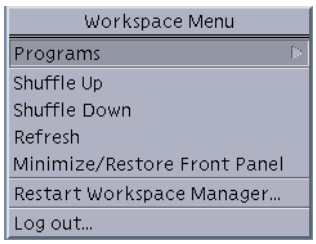

Figure 3-7 Workspace Menu

Workspace Menu Functions

The workspace menu provides the functions listed in the following table:

Table 3-4 Menu Items of the Workspace Menu

Menu Item	Function
Programs	A submenu offering several programs.
Shuffle Up	If several windows on the screen are layered on top of one another, "Shuffle Up" brings the window from the very bottom to the top of the pile.
Shuffle Down	If several windows on the screen are layered on top of one another, "Shuffle Down" moves the window from the top of the pile to the very bottom.
Refresh	The contents of the windows on the screen and the screen backdrop are refreshed.
Minimize/Restore Front Panel	The workspace manager window is reduced to an icon or, if already iconized, restored to a window.
Restart Workspace Manager...	The workspace manager is restarted. Some of the changes to the user interface become valid only after the restart of the workspace manager. The restart must be acknowledged in a window.
Log out...	A logout from the system can be initiated.

3.3.10 Controls in AEM-NB Windows

Introduction

The windows of the AEM-NB display certain controls (buttons, text fields, etc.). These controls are the same in all AEM-NB windows and explained in this chapter.

Grayed Controls

All controls within a window can be activated by clicking on them only if they are not grayed.

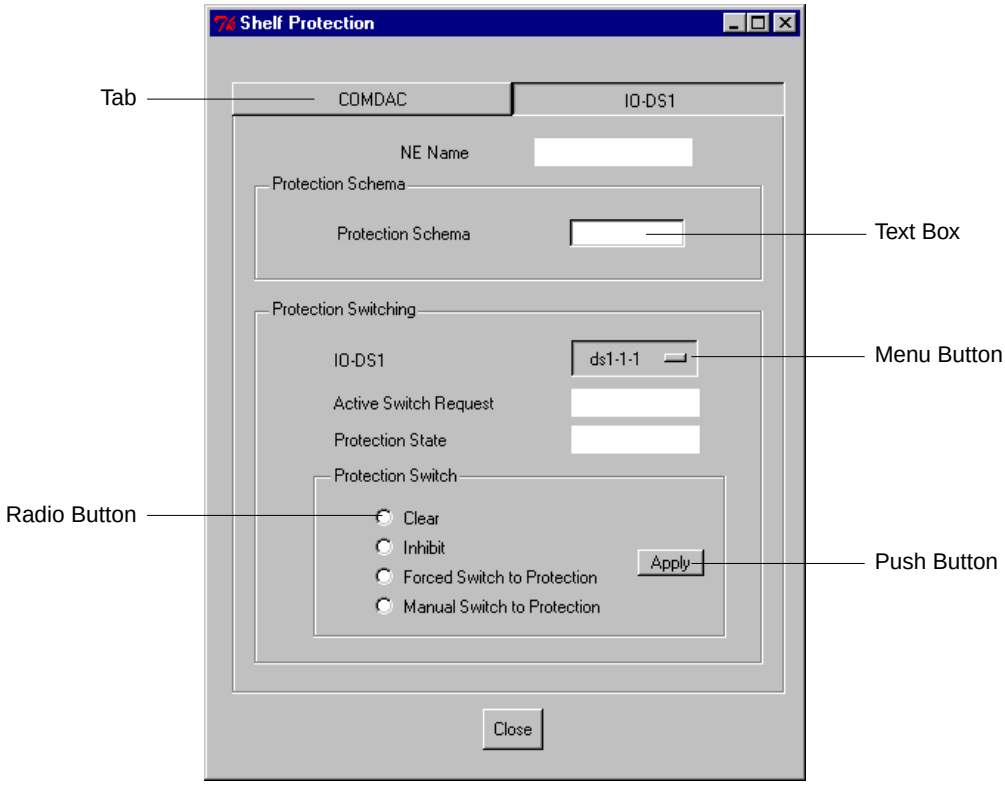

Figure 3-8 Example of an AEM-NB Window

Convention The following font is used when a button is mentioned, e.g. ***Close***.

The following elements are used within windows:

- Pushbutton

  Each pushbutton is provided with a designation describing its function. If you click on the pushbutton, the function will be executed. If you click on a pushbutton, the designation of which is followed by three dots (e.g.: ***Help...***), a window will open where you may set further parameters. Push-buttons which alter their designation depending on context are also called **Label buttons**.

- Check Box

  Check boxes have the same function as an on/off switch. Each time you click on a check box, you will change its toggle status. A (pressed) check box containing a check mark means that the option at this position is selected.

- Radio Button

  Radio buttons have the same function as check boxes, with the difference that of various radio buttons of the same group, only one can be pressed at a time. As with a radio set, a set button will pop out when you press the next one in.

- Text Box

  Text boxes are used to input text via the keyboard.

- List Box

  A list box contains read-only data in list form. To scroll through a list you have to use the scroll bar at the right of the list box.

- Drop-Down List Box

  A drop-down list box allows you to enter data by selecting an entry from a list that drops down after clicking on the triangle on the right of the box.

- Spin Box

  A spin box only allows a limited set of discrete ordered input values. You have to use the up and down arrows to increment or decrement the value.

- Tab

  A window can contain a register of several tabs. Clicking on a tab displays the corresponding contents in the window.

- Option Menu

  The option menu is used to set a certain option. Its designation will indicate the option currently set. Handling of the option menu is the same as for a menu.

Frequently Used Buttons

The table below provides an overview of buttons which have the same function in every AEM-NB window:

Table 3-5 Function of Frequently Used Buttons

Button	Function
OK	Applies changes; window is closed
Apply	Applies changes; window stays open for further edits
Cancel	Discards changes; running operation is cancelled; window is closed
Close	Discards changes; window is closed
Edit	Opens an edit window for the displayed parameters

Frequently Used Menus

The table below provides an overview of menus which have the same function in every AEM-NB window:

Table 3-6 Function of Frequently Used Menus

Menu	Function
File -> Print -> Print Table	Prints the contents of text lists in the window (cf. Chapter 3.5, page 3-21).
File -> Print -> Print Preview	Prints a screenshot of the lists in the window (cf. Chapter 3.5, page 3-21).
File -> Exit	Closes all windows of this application.
Help -> On Window	Displays online help for this window.
Help -> Index	Displays online help index.

3.4 Application Start-Up and Shutdown

3.4.1 General on Applications

Definitions

The following tables gives definitions of terms used in this chapter.

Table 3-7 Definitions for Applications

Term	Meaning
Server application	Set of server processes that perform a certain functionality. Server applications provide services for client applications.
Client application	Set of processes that use the services provided by the server applications (e.g. GUI and Northbound users)
Level 1 or core applications	The minimum set of server applications that have to run together to provide the minimum functionality of the AEM-NB. These applications must run to allow the Level 2 Application to be started up. These applications are shown as only one running application. If this group is shut down the AEM-NB is shut down.
Level 2 applications	The server applications that can be started-up and shut-down individually without affecting the functioning of other applications. However, there are interdependences between Level 2 applications so that the shut-down of one may affect the services of others.

There are three ways to start the server applications:

- at boot time

  Root can configure the system at the installation so that Level 1 applications only or Level 1 and all Level 2 applications start at boot time.

- via command line

  The administrator can start Level 1 applications or Level 1 and all Level 2 applications via command line.

- via GUI

  The administrator can start any desired Level 2 application from the GUI once Level 1 is already running.

3.4.2 AEM-NB Server Applications

The AEM-NB consists of four server applications. The following list gives their names and uses:

- System core

  Provides basic functionalities and is needed by all applications. If this server application is shut-down, all other applications are shut down and all client applications are notified of the shutdown

- Configuration management

  needed by the configuration management application (cf. Chapter 5). If this server application is shut down, the configuration management application will no longer run.

- Alarm management

  needed by the fault/alarm management application (cf. Chapter 6). If this server application is shut down, the fault/alarm management application will no longer run.

- Network element management

  Needed for operations which affect NEs. If this server application is shut down, operations with NEs can no longer be carried out. All client applications continue working, except for those parts involving NEs.

Restart of Server Applications

If a server application crashes, the AEM-NB tries to start-up this server application one time automatically. If the server application start-up mechanism fails, and it is a level 2 application, it remains stopped. If it is a level 1 application, the whole system is shutted-down and restarted (all running applications at that moment are shutted-down and restarted).

3.4.3 Start-Up/Shutdown of Server Applications via GUI

Introduction

The System Administration function of the Access Bar allows to start up or shut down server applications manually and to monitor the state of each application. Only the administrator has access to this function. The "System Administration" window is shown below.

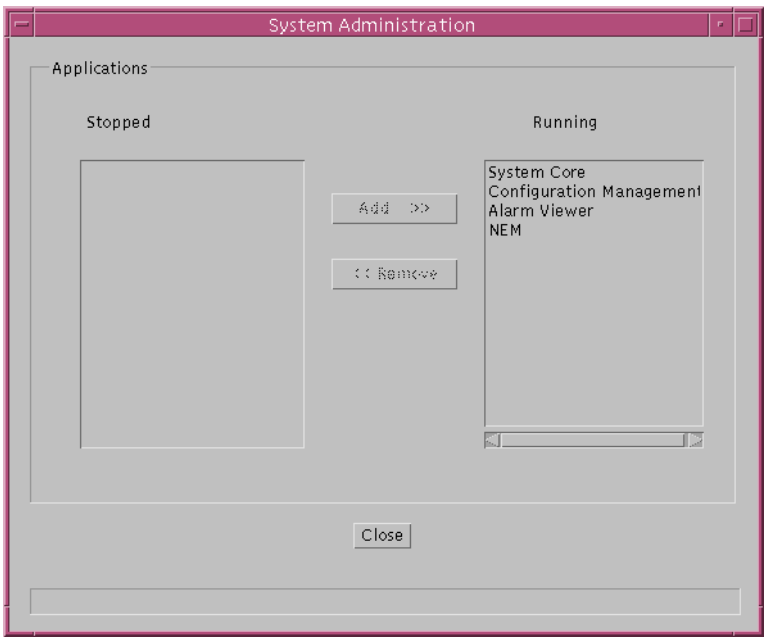

Figure 3-9 System Administration

Stopped/Running Lists

The "System Administration" window displays two lists: **Stopped** and **Running**. The **Stopped** list contains all applications which are not running. The **Running** list contains all running applications. You can stop running or start stopped applications.

The following table provides an overview of the possible actions in the "System Administration" window.

Table 3-8 System Administration Actions

If you want to...	then...
start one or more applications	select the applications which shall be started under **Stopped** and press ***Add***.
shut-down one or more applications	select the applications to be shut down under **Running** and press ***Remove***.
close the window	press ***Close*** or select ***File -> Exit***.

Start/Shut-down more applications

You may start or shut-down more than one application at the same time. To do so, click on all desired applications once. Clicking on a selected application again, deselects it.

3.4.4 Start-Up/Shutdown of Server Applications via Command Line

The system can be configured at installation time to start-up the server applications automatically on every reboot. An administrator can start-up or shut-down server applications via a command line interface.

Commands for Start-Up and Shut-Down

The following table shows which commands have to be entered in a terminal window to start-up or shut-down server applications.

Table 3-9 Commands for Start-up and Shut-down

If you want to...	Type in a terminal window...
start-up all AEM-NB applications	`systemAdmin ALL`
start-up the core AEM-NB applications	`systemAdmin CORE`
shut-down all AEM-NB applications	`systemAdmin CLEAN`

3.4.5 Deinstall AEM-NB from Your System

Deinstallation

The AEM-NB software can be deinstalled from your system. The deinstallation removes all AEM-NB related items (databases, 3rd party software, etc.), which have been installed at the time when AEM-NB was installed, from your system.

Commands for Deinstallation

The following table shows which commands have to be entered in a terminal window to deinstall AEM-NB from your system. Log in as root to execute these commands:

Table 3-10 Commands for Deinstallation

If you want to...	Type in a terminal window...
remove the server package	`pkgrm LuANY10S`
remove the client package	`pkgrm LuANY10C`
remove third-party software	`pkgrm LuRWRT`

For details about the above commands, please refer to Chapter 2.2.4.1 Remove AnyMedia Servers package, Chapter 2.2.4.2 Remove AnyMedia Client package and Chapter 2.2.4.3 Remove Third-Party packages.

3.5 Print out Reports

General

The "Print Dialog" is used from any application within AEM-NB to generate an output of data. It pops up when you press ***Print*** in a window.

System Details for Printing

If the Unix command "**`lp`**" does not exist or is not configured on your system the AEM-NB software will not be able to print. This is because the print-out is first converted to PostScript format and then piped to the Unix command "**`lp -d printer_name`**" where **`printer_name`** is replaced by the value entered in the **Printer** field of the "Print Dialog".

Figure 3-10 shows an example of the "Print Dialog".

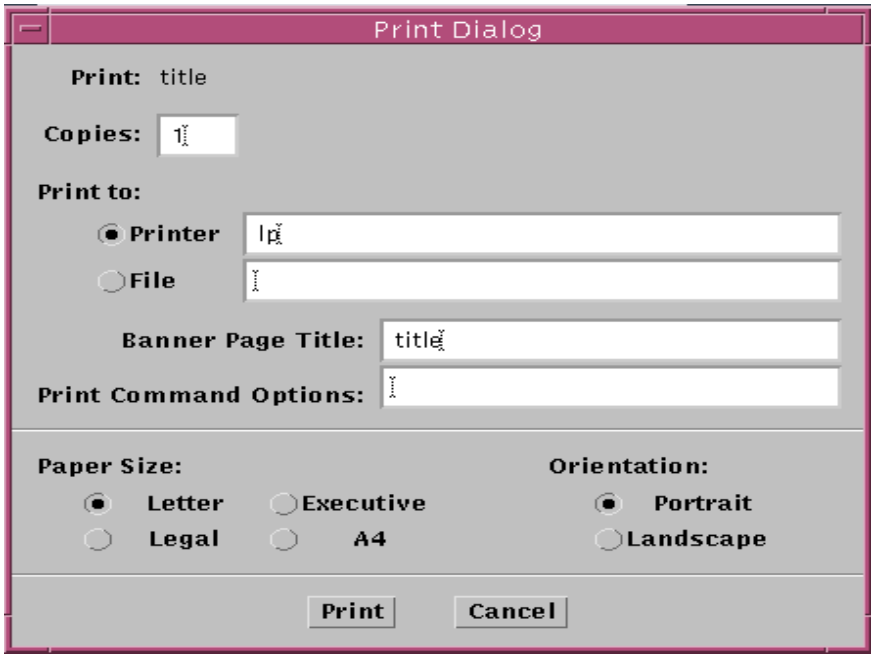

Figure 3-10 Print Dialog

Actions in Print Dialog

The following table provides an overview of the possible actions in the "Print Dialog".

Table 3-11 Print Dialog Actions

If you want to...	then...
print multiple copies	enter the number of copies in **Copies**.
print to a printer	enter the name of the printer in **Printer**.
print to a file	enter the name of the file in **File**.
have a title over the printed pages	enter the title in **Banner Page Title**.

Table 3-11 Print Dialog Actions

If you want to...	then...
apply UNIX print options	enter the options in **Print Command Options**.
select the paper size	click one of the radio buttons below **Paper Size**.
select the orientation of the print out	click one of the radio buttons below **Orientation**.
start printing and close the window	click on ***Print***.
close the print window without printing	click on ***Cancel***.

After you confirmed your settings with ***Print***, the "Print Preview" window is opened, cf. Figure 3-11.

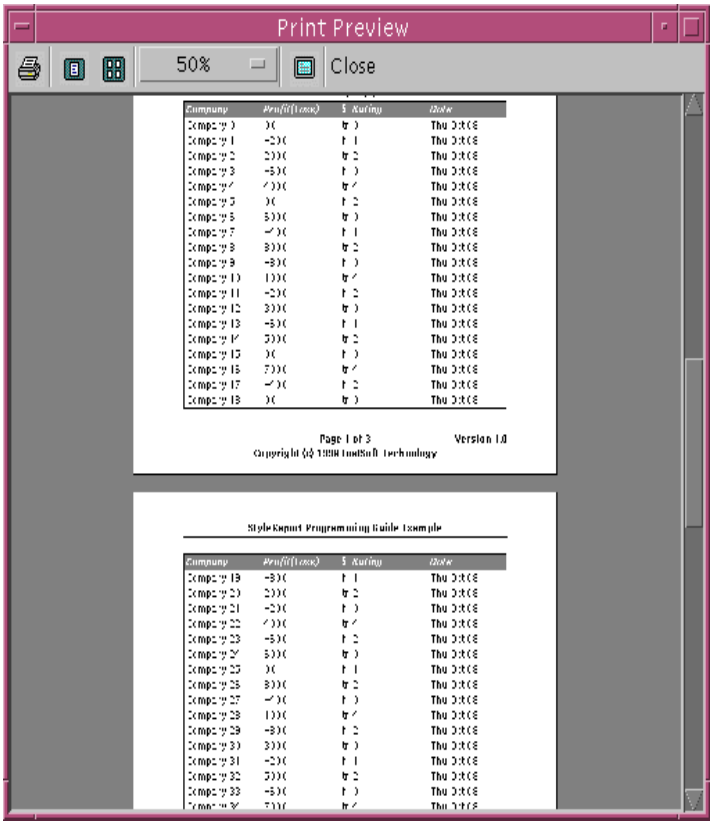

Figure 3-11 Print Preview Window

Actions in Print Preview

The following table provides an overview of the possible actions in the "Print Preview".

Table 3-12 Print Dialog Actions

If you want to...	then...
print out	click on the ***printer icon***
cancel the print out	click on ***Close***
view a single page preview	click on the ***single page icon***
view a multi page preview	click on the ***multi page icon***
change the magnification of the preview	select another magnification with the ***% option menu***
maximize/restore the preview window	click on the ***monitor icon***

3.6 Backup and Restore

The backup functions of the AEM-NB allow you to copy AEM-NB related file systems to removable media (such as tape) to safeguard against loss, damage, or corruption. The AEM-NB system files and database backup allows to back up and restore system files and databases belonging to the installed applications (e.g. configuration files). Archiving is possible for AEM-NB log files

The restore functions allow you to restore file systems by copying reasonably current backup files from removable media to a working directory.

3.6.1 Basics on Backups and AEM-NB Databases

Definitions

The following table gives definitions of terms used in this chapter.

Table 3-13 Definitions

Term	Meaning
Backup	process of copying file systems to removable media (such as tape) to safeguard against loss, damage, or corruption.
Archive	process of copying file systems to removable media (such as tape) and deleting the original files once they have been backed up.
Restore	process of copying backup files from removable media to a working directory, replacing the original files which could have been damaged.
Full Backup	copies a complete file system or directory

Table 3-13 Definitions

Term	Meaning
Incremental Backup	copies new files and files that have changed since a previous backup. The incremental backups are usually given a dump level which determines which files are backed up. A certain level incremental backup will save all the new or changed files since the last backup with a lower level.
On-line Backup	backups performed on user demand
Off-line Backup	backups performed automatically via any scheduling mechanisms, e.g. cron file

AEM-NB Databases

The AEM-NB database can be subdivided into four different databases:

- Alarm DB

  To maintain alarm information

- OAM DB

  To maintain user administration, domain information, etc.

- NE DB

  Used to keep all the NE specific data, considered to be a copy from the real NE. There will be an NE DB per network element version managed.

- NE EM DB

  used to keep private NE data (name, status) not retrieved from the real NE.

Backup Types

There are three different backup types. The following list shows their differences and advantages:

- Full backup

  A full backup copies a complete file system or directory, e.g. all AEM-NB data. This method requires large numbers of backup tapes that take a long time to write and takes also some time to retrieve individual files because the backup drive has to move sequentially to the point on the tape where the file is located. On the other hand, using full backup makes it easier to retrieve small changes in file systems.

- Incremental backup

  An incremental backup only includes copies of new files and files that have changed since a previous backup. It is available for database files only. Requires less resources, but searching for a certain file on the incremental tapes can take time.

3.6.2 Commands for Backup, Archive and Restore

Default Locations of Data for Backups or Archives

If a backup is done, the four AEM-NB databases, the NVDS and the log files are copied to the backup medium. If an archive is made the log files are moved to the backup medium. The files from which a backup or archive is done are shown in the table below. The location of the files is relative to the main installation directory. (For changing default locations refer to Chapter 3.8, page 3-38.)

Table 3-14 Default File Names for Backup and Archive

Database/File	File Name (Directory/File)	Backup Fails if File doesn't exist
Alarm database	AM/db	yes
Configuration management database	CM/db	yes
NE management database	NEM/db	yes
Security database	Security/db	yes
Non-volatile Data Storage (NVDS)	CM/nefiles/NVDS	no
Log Files	log (directory)	no

Default Locations for Restored Data

When a backup is restored, all files are restored to their original location. When archives are restored they are copied into the directory **`restored`** (relative to the main installation directory).

Restore One of Several Backups from Tape

When more than one backup is placed on a tape and a particular one shall be restored, the name of this backup must be known. The name can be determined by using the **`tar`** command. For example: **`tar tvf /dev/rmt/0mn`**.

Command Syntax

In the following description of the commands, square brackets, e.g. **`[-c]`**, indicate optional parameters. The pipe symbol "|" indicates alternative options from which one has to be chosen, e.g. **`INC|FULL`**. All parameters not enclosed in brackets are mandatory. Each command is entered without enclosing parameters in brackets.

Backup Files

Use the following command to make a backup of a database or directory. If you enter none of the optional parameters, a backup of all data necessary to restore the AEM-NB will be done:

```
AEMNB_backup [-c] [-p path] [-f file] [-t INC|FULL] [-l level]
```

Parameter description:

-c	Aborts a running backup operation.
-p *path*	***path*** is the directory or device to back up.
-f *file*	Location of the backup file. ***file*** can be a local file or a locally mounted file (in case a local tape device is used ***file*** specifies a "soft label"). (Default file names: EM_SYSBCK_yyyymmdd.fullbck for full backup EM_SYSBCK_yyyymmdd.incbck for incremental backup, with yyyy = year, mm = month, dd = day of the backup.)
-t INC|FULL	Type of backup: incremental (**INC**) or full (**FULL**). (Default: FULL). This parameter is ignored if "**-l 0**" is used.
-l *level*	Specifies the backup level. Files modified since last backup at a lower level are copied, ***level*** = 0...9. This parameter is ignored if "**-t FULL**" is used.

Restore Files

Use the following command to restore a database or directory:

```
AEMNB_restore [-c] [-p path] -f file
```

Parameter description:

-c	Aborts a running restore operation.
-p *path*	***path*** is the directory or device to which the restored data should be written. If no value is specified, the original locations will be used.
-f *file*	Location of the backup file. ***file*** can be a local file, a locally mounted file or a local tape device.

Archive Files

Use the following command to archive log files. This function is primarily intended to archive the AEM-NB log files. If you enter none of the optional parameters, the AEM-NB log files will be archived.

```
AEMNB_archive [-c] [-p path] [-f file]
```

Parameter description:

-c	Aborts a running archive operation.
-p *path*	***path*** is the directory or device to archive. (Default: path to log files.)
-f *file*	Location of the backup file. ***file*** can be a local file or a locally mounted file (in case of a local tape device is used ***file*** specifies a "soft label"). (Default file name: EM_SYSARCH_yyyymmdd.arc, with yyyy = year, mm = month, dd = day of the archive.)

3.6.3 Backup, Archive and Restore Procedures

This section gives an overview of the steps necessary for a backup, archive or restore operation.

Prerequisite for Backup, Restore and Archive

The backup, archive or restore commands require that some path system variables are properly set. This is done by the command **`AnyMediaNBEM.sh`** during the installation of AEM-NB. If this command was not executed the backup, archive or restore commands will not work.

Different Users

When different users perform backup, archive or restore operations the system will display a message asking whether temporary data which remained from the previous user should be deleted. If such a message is displayed you must confirm the deletion of these data.

3.6.3.1 Backup Procedure

The backup operation needs no user interaction after the backup command was executed.

3.6.3.2 Archive Procedure

The archive operation needs no user interaction after the archive command was executed.

3.6.3.3 Restore Procedure

3.6.3.3.1 General

Default Locations for Restored Data

When a backup is restored, all files are restored to their original location. When archives are restored they are copied into the directory **`restored`** (relative to the main installation directory).

Restore One of Several Backups from Tape

When more than one backup is placed on a tape and a particular one shall be restored, the name of this backup must be known and the tape must be positioned at the beginning of this backup. The name can be determined by using the **`tar`** command. For example: **`tar tvf /dev/rmt/0mn`**. The positioning is done as described below.

Position Tape

If you know the order of the backups on tape, you can position the tape at the beginning of the desired backup as follows: Rewind the tape (e.g with **`mt -f /dev/rmt/0m rewind`**) and issue a **`tar`** command (see example above) until the backup which comes before the one which shall be restored is displayed. If you do not know the order of the backups on the tape, it can be determined as follows: Rewind the tape and then repeatedly issue a **`tar`** command (see example above) until the backup to be restored is displayed while you note the order of the backups on tape. Then you can position the tape as shown above.

3.6.3.3.2 Full Restoration Procedure

When the restore command is executed the user must decide which image type should be restored. The restore script displays the following message:

```
Please enter the type of the image to be restored [backup/archive]
```

Type **backup** or **archive** and press **Enter**.

Copy of Originals

Copies of the original databases are saved to allow for a cancellation of the operation. If such a copy could not be made the appropriate image can nevertheless be restored, but a warning is issued. For each database for which no copy could be made the following message is displayed:

```
Actual <DATABASE TYPE> is not present or ObjectStore copy operation failed.
The AnyMedia NB-EM system state cannot be recovered if a cancellation is requested.
Do you want to continue? [y/n]
```

Type **y** and press **Enter** to continue with the restore procedure. If you type **n** the restore command stops with an error message, no data are restored and the system will not work unless a correct restore is performed. When the original databases are present, the message above is not displayed.

Additional Incremental Backups

While the different databases are restored certain information is displayed on the screen. Then the restoration tool asks whether additional databases should be restored:

```
Do you wish to restore from any additional incremental backups? (yes/no):
```

Type **no** and press **Enter**.

After that the execution of the restore tool finishes and the restoration is complete.

3.6.3.3.3 Incremental Restoration Procedure

Before a certain incremental backup can be restored the previous full backups and possibly some previous incremental backups must be restored.

The procedure to restore an incremental backup is the same as the above described procedure for a full backup except for the last ("Additional Incremental Backups") step. In that step the restore tool asks for a confirmation that all needed full backups which are a prerequisite for the incremental backup are present. Answer this question affirmatively. After that the execution of the restore tool finishes and the restoration is complete.

3.6.4 Examples for Backup Schedules

Introduction

This section gives you some examples for typical backup schedules and explains the backup level.

Backup Level

Crucial for the understanding of the backup schedules is understanding the backup level. The backup level is a number which is assigned by you to every backup you make. Each time you make a new backup only those files are put on

the back-up media which were altered since the last backup with a lower backup level. A backup level "0" means a full backup.

3.6.4.1 Daily Cumulative, Weekly Cumulative Backups

This is the most commonly used backup schedule. It is recommended for most situations.

Schedule Characteristics

This schedule has the following characteristics:

- Each weekday backup accumulates all files changed since the end of the previous week (or the initial level 0 backup).
- Each Friday's backup contains all files changed since the first level 0 backup. For the level 9 backups, the previous level 0 or level 5 is the closest backup at a lower level.
- Each Friday's backup contains all files changed during the month to that point.

Example

The following table shows the backup levels for each days backup. Once a month, a backup with backup level 0 must be performed.

Table 3-15 Backup Levels of Each Backup

	variable	Mon	Tue	Wed	Thu	Fri
1st of month	0					
1st week		9	9	9	9	5
2nd week		9	9	9	9	5
3rd week		9	9	9	9	5
4th week		9	9	9	9	5

The following table shows how files accumulate in the backup for each weekday.

Table 3-16 Example for Files in Backup for Two Weeks

	Mon	Tue	Wed	Thu	Fri
1st week	ab	abc	abcd	abcde	abcdef
2nd week	g	gh	ghi	ghij	abcdefghijk

3.6.4.2 Daily Cumulative, Weekly Incremental Backups

Example

The following table shows the backup levels for each days backup. Once a month, a backup with backup level 0 must be performed

Table 3-17 Backup Levels of Each Backup

	variable	Mon	Tue	Wed	Thu	Fri
1st of month	0					
1st week		9	9	9	9	3
2nd week		9	9	9	9	4
3rd week		9	9	9	9	5
4th week		9	9	9	9	6

The following table shows how files accumulate in the backup for each weekday.

Table 3-18 Example for Files in Backup for Two Weeks

	Mon	Tue	Wed	Thu	Fri
1st week	ab	abc	abcd	abcde	abcdef
2nd week	g	gh	ghi	ghij	ghijk

3.6.4.3 Daily Incremental, Weekly Cumulative Backups

Example

The following table shows the backup levels for each days backup. Once a month a backup with backup level 0 must be done.

Table 3-19 Backup Levels of Each Backup

	variable	Mon	Tue	Wed	Thu	Fri
1st of month	0					
1st week		3	4	5	6	2
2nd week		3	4	5	6	2
3rd week		3	4	5	6	2
4th week		3	4	5	6	2

The following table shows how files accumulate in the backup for each weekday.

Table 3-20 Examples for Files in Backup for Two Weeks

	Mon	Tue	Wed	Thu	Fri
1st week	ab	cd	ef	h	abcdefghi
2nd week	jk	lmn	o	p	jklmnopqr

3.7 Log Management

The log management records information on events in the AEM-NB. The logged events can be viewed with the Log Viewer.

3.7.1 Different Log Types

There are three log types within the Log Viewer:

- Actions

  It contains all the information on actions performed by users or the AEM-NB and which imply changes in the AEM-NB configuration, equipment (NE) configuration, service and subscriber configuration, access to the AEM-NB, print reports and backup& restore. That means all operations triggered by the user or the AEM-NB and all subsequent actions. Also the results of operations are logged in the actions log.

- System Internal Events

  It contains all internal events or actions which report unusual changes in the configuration and state of the AEM-NB or indicate errors which occurred in the AEM-NB.

- Autonomous Reports

  It contains all information valuable for the equipment supplier about alarms (NE and platform), the performance and all TL1 messages sent from the NE which imply changes in the AEM-NB database.

3.7.2 Configuration of Logs

Log size

The following values can be configured (conf. Chapter 3.8, page 3-38) for the log system by the administrator:

- Minimum number of days (incl. current day) in the log (default: 7 days)
- Maximum size of all logged data (default: 15 Mbyte)

Log Grows Too Big

The logs are stored as separate files, one file holds one day of one log type. If the size of the logged data has reached the size limit and a new event to be logged occurs, some of the already logged data has to be deleted. The oldest recorded

day of one of the logs holding the largest number of days is always deleted. The log system determines which log shall be shortened as follows:

Table 3-21 How the Log be Shortened is Determined

If...	then the log system will...
only one log holds more days than the others	delete oldest recorded day of this log.
the longest logs hold the same number of days and the log for which an event shall be logged is among these logs	delete oldest recorded day of the log for which an event shall be logged.
the longest logs hold the same number of days and the log for which an event shall be logged is not among these logs	select one of the longest logs in the following order: Autonomous Report, Actions, System Internal Events and delete oldest recorded day of this log.

Alarms

The log system issues an alarm if

- one of the logs is shortened to a number of days below the minimum number of days. (I.e. also, if a log is shortened that already holds fewer than the minimum number of days.) Alarm name: LOG_DEL_PART.
- the current day of a log is deleted. Alarm name: LOG_DEL_FULL.

Restore Log Files

When log files are restored (cf. Chapter 3.6), the log of the current day is not overwritten.

3.7.3 Log Viewer Window

The logs can be viewed by means of the Log Viewer application. The logged entries in the Log Viewer cannot be edited.

Start Log Viewer

The Log Viewer is started-up by clicking on the log viewer icon in the Access Bar. After start-up the default log type is displayed, this value can be configured (default: "Actions").

Access Permission

The log types which are visible to you depend on your user group. The following table shows the log types which the different user groups are allowed to see.

Table 3-22 Visibility of a Log Type for a Certain User Group

Log type	Visible for user group
Actions	Administrator, Maintenance
System Internal Events	Administrator, Maintenance
Autonomous Reports	Administrator, Maintenance, Monitoring

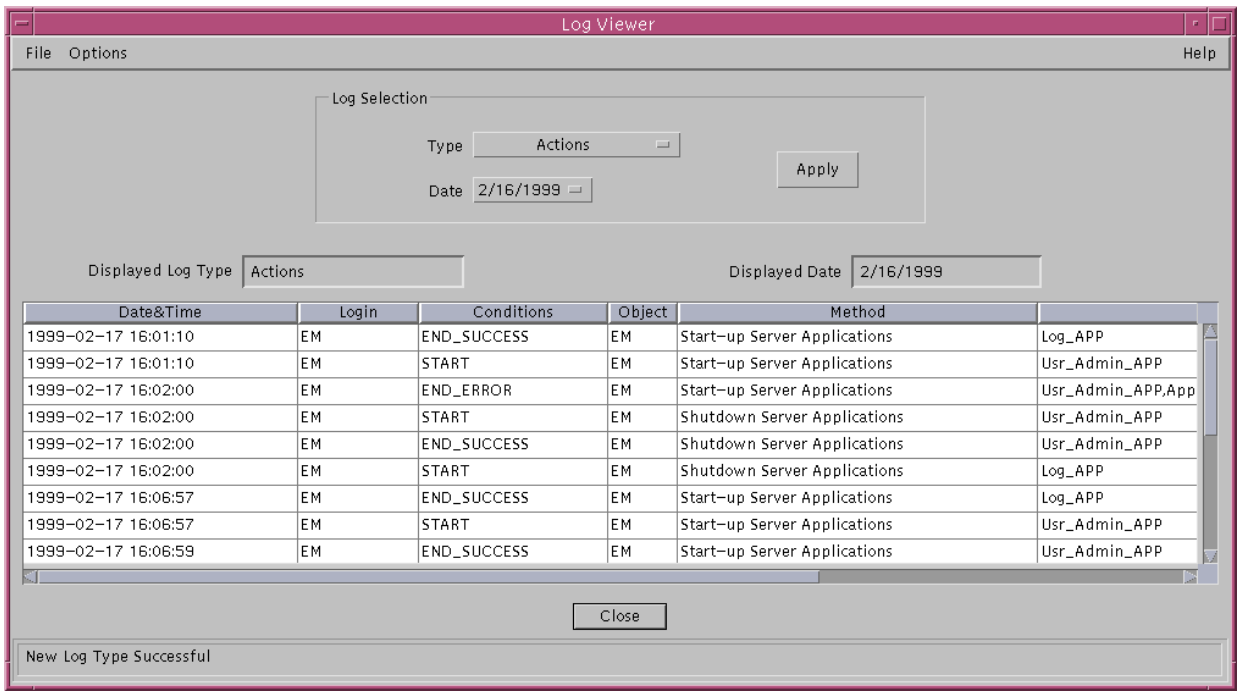

Figure 3-12 Log Viewer

Meaning of Columns

The following table explains the meaning of the columns in the Log Viewer table.

Table 3-23 Information Displayed in the Log Viewer Table

Column	Meaning
Date&Time	Date and time when the event was registered in the log file. Format: "year-month-date hour:minute:second"
Login	The user name of the user performing an action or "EM"
Conditions	The condition of a performed action, to indicate whether it is the request or the response. (E.g. START, END_SUCCESS, END_ERROR)
Object	Unique identification of the object (NE_Id or EM) which has sent a TL1 message or has received an action.

Table 3-23 Information Displayed in the Log Viewer Table

Column	Meaning
Method	A string explaining the performed action.
Parameters	■ For Actions and System Internal Events Shows all parameters involved in the action. ■ For Autonomous Reports Shows all TL1 message parameters in the order they were received (for TL1 messages sent from NE) and all alarm fields (except Description) for platform alarms.
Event Type	The event which happened in the AEM-NB.

Log Types and Displayed Information

Depending on the chosen log type the table in the Log Viewer displays different information (more or less columns). The following table shows which information is displayed for which log type.

Table 3-24 Log Types

Log Type	Contents
Actions	Date&Time, Login, Conditions, Object, Method, Parameters
System Internal Events	Date&Time, Object, Event Type, Parameters
Autonomous Report	Date&Time, Parameters, NE_Id

Menus and Functions

The following table provides an overview of the menus of the Log Viewer and their functions.

Table 3-25 Menus and Functions

Menu Item	Function
File -> New	Start up a new Log Viewer
File -> Reload	Update the displayed Log Viewer table with newly logged items.
File -> Print -> Print Table	Print out all logged items displayed in the table of the Log Viewer.
File -> Print -> Print Preview	Print a screenshot of the list of log messages.
File -> Close	The selected Log Viewer window is closed. Other open Log Viewer windows stay open.
File -> Exit	Close all Log Viewer windows.

Table 3-25 Menus and Functions

Menu Item	Function
Options -> Default Type	Set a new default type, which will be displayed, when the next Log Viewer window is opened.
Help -> On Window	Display help for Log Viewer
Help -> Index	Display help index.

Actions The following table lists all actions you can perform in the Log Viewer window.

Table 3-26 Actions in the Log Viewer Window

If you want to...	then...	Result
display a certain log type of a specific date	select the desired log type with the pull down control **Type** and the date of interest with the pull down control **Date** and press ***Apply***.	The log of the selected type and date is displayed in the Log Viewer table.
view different log types or dates simultaneously	start another Log Viewer with ***File -> New*** and set the desired **Type** or **Date**.	A new Log Viewer window displays the selected log type and date.
change the log type displayed at start-up	select ***Options -> Default Type***. In the window which opens (cf. Figure 3-13), click on the new default log type and press ***Apply*** or, to set no new default type, press ***Cancel***.	The selected log type is displayed by default whenever a new Log Viewer window is opened.
print displayed log	select ***File -> Print Table*** or ***File -> Preview***	The Log Viewer table or a screenshot of the window is printed out.
display updated log	select ***File -> Reload***	Newly logged entries are displayed.
sort the log	click on one of the column headers to sort the log according to the column entries alphabetically or by date and time. Click again to reverse the sort order.	The Log Viewer table is displayed sorted alphabetically or by date and time.
close one Log Viewer window	select ***File -> Close*** or press ***Close***	The selected Log Viewer window is closed.
close all Log Viewer windows	select ***File -> Exit***	All Log Viewer windows are closed.

Select Default View

The following window pops up if you have chosen to set a new default log type via ***Options -> Default Type*** to be displayed at every start-up of the Log Viewer. You can select a log type and press ***Ok*** or close the window without any actions with ***Cancel***.

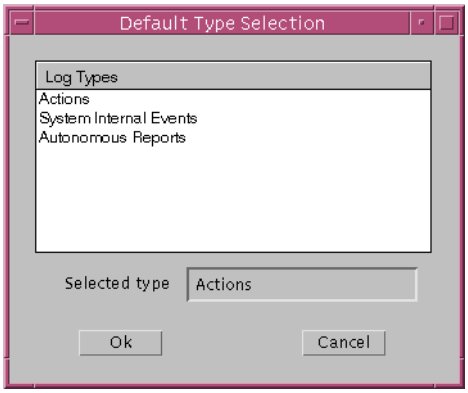

Figure 3-13 Set Default Type

3.8 System Variables

The values of some system variables are specified in the file **AnyMediaNBEM.cfg** which is located in the directory **$ANYMEDIAPATH/cfg/**. The system variables can be changed by editing their values in this file with a text editor. The changes take effect after the system is restarted.

The following table shows selected variable names, their meaning and default values. The locations of the directories are relative to the main installation directory of the AEM-NB.

Table 3-27 System Variables and their Default Values

System Property	Variable Name	Default Value
Location of alarm database	AM.databaseLocation	**AM/db**
Location of configuration management database	CM.databaseLocation	**CM/db**
Location of NE management database	NEM.databaseLocation	**NEM/db**
Location of security database	OAM.security.databaseLocation	**Security/db**
Location of Non-volatile Data Storage (NVDS)	CM.directoryNVDS	**CM/nefiles/NVDS**
Location of log files	OAM.log.directoryCurrentLogs	**log**
Minimum number of days (incl. current day) in the log	OAM.log.minimumDaysKept	**7**
Maximum size of all logged data	OAM.log.maximumTotalLogSize	**15**
Stop OrbixMT (3rd party software) when the AEM-NB goes down	Gen.3rdParty.mgmtOrbixMT	**true**
Stop OrbixNames (3rd party software) when the AEM-NB goes down	Gen.3rdParty.mgmtOrbixNames	**true**
Stop OrbixTalk (3rd party software) when the AEM-NB goes down	Gen.3rdParty.mgmtOrbixTalk	**true**
Stop ObjectStore (3rd party software) when the AEM-NB goes down	Gen.3rdParty.mgmtObjectStore	**true**

User Management

4

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User Management

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4.1 Introduction

This chapter describes the "User Administration and Profiling" application. It allows to

- create/modify/delete users
- assign/unassign users to/from user groups
- create/modify/delete user groups
- assign/unassign user groups access to/from applications, tasks and domains
- create/modify/delete domains
- assign/unassign controlled objects to/from domains.

NOTE:
All actions can only be done by the AEM-NB administrator!

4.2 User

4.2.1 Create User

Introduction

This chapter describes the process to add a new user to the system. Before adding a new user to the system, please pay attention to the following remarks:

- The AEM-NB administrator must have a system login.
- The user must be created via OS.
- The AEM-NB administrator should know the login ID of the user to be created and the group the user shall belong to.

Procedure

Complete the following procedure to add a new user:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-1 Access Bar

2. Select the **third** icon.
The *User Administration* window pops up showing the *Users Table*.

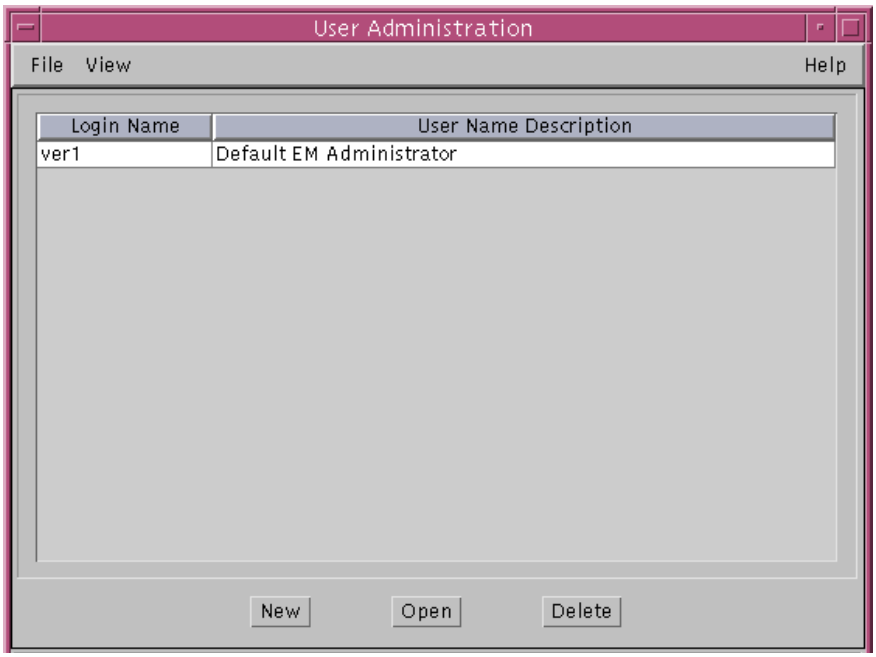

Figure 4-2 "Users Table"

3. Click ***New***.
The *User Profile* window pops up.

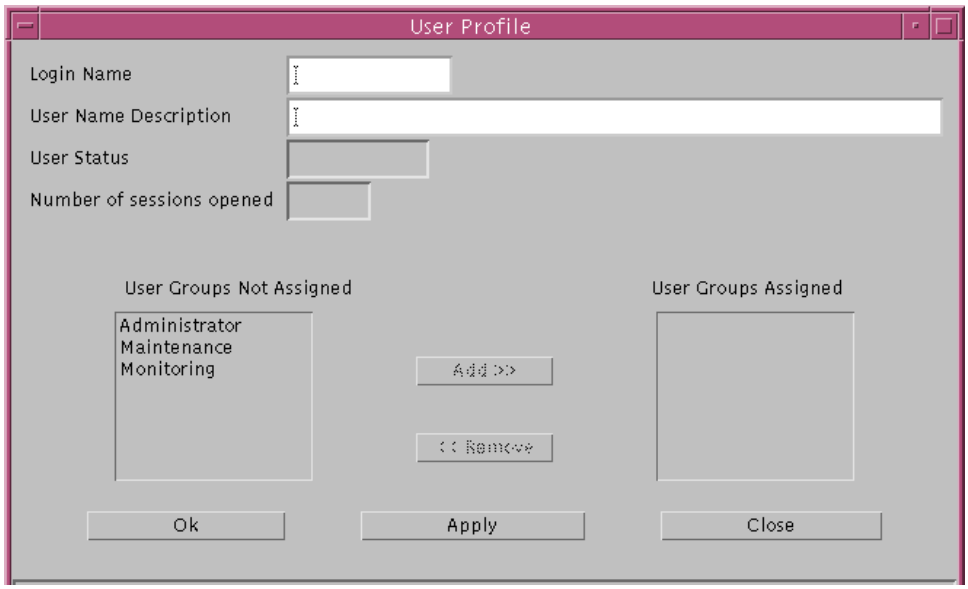

Figure 4-3 Window "User Profile"

4. Enter a new login name in the **Login Name** field (this is mandatory - 3 to 12 characters) and extra information like last name, first name, email, etc. in the **User Name Description** field (this is optional - 0 to 60 characters). Any characters are allowed.

5. Select one or more user groups the user shall belong to in the **User Groups Not Assigned** field and Click ***Add***.

NOTE:
To create user groups see Chapter 4.4.1, page 4-17.

6. Click ***OK*** or ***Apply*** to save the settings (the system ensures that the new user does not yet exist in the system). After clicking ***OK*** the window will be closed.
If you want to reject the settings, click ***Close*** before ***OK*** or ***Apply***.

The other fields are described in Chapter 4.2.2, page 4-4.

4.2.2 Modify User

Introduction

This chapter describes the process to modify the information or profile of a user. Before modifying the information or profile of a user, please pay attention to the following remarks:

- To modify the information or profile of a user the AEM-NB administrator must have a system login.
- The AEM-NB administrator is not able to change the system login information of a user, i.e. system login and password.

Procedure

Complete the following procedure to modify the information or profile of a user:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-4 Access Bar

2. Select the **third** icon.
The *User Administration* window pops up showing the *Users Table*.

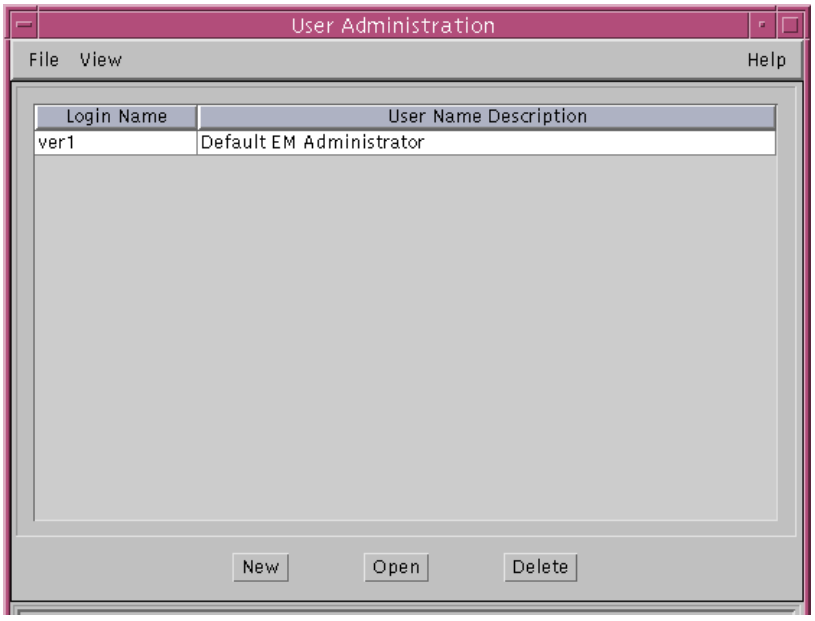

Figure 4-5 "Users Table"

3. Select one user of the **Login Name** field and click ***Open***.
The *User Profile* window pops up with the current information about the selected user.

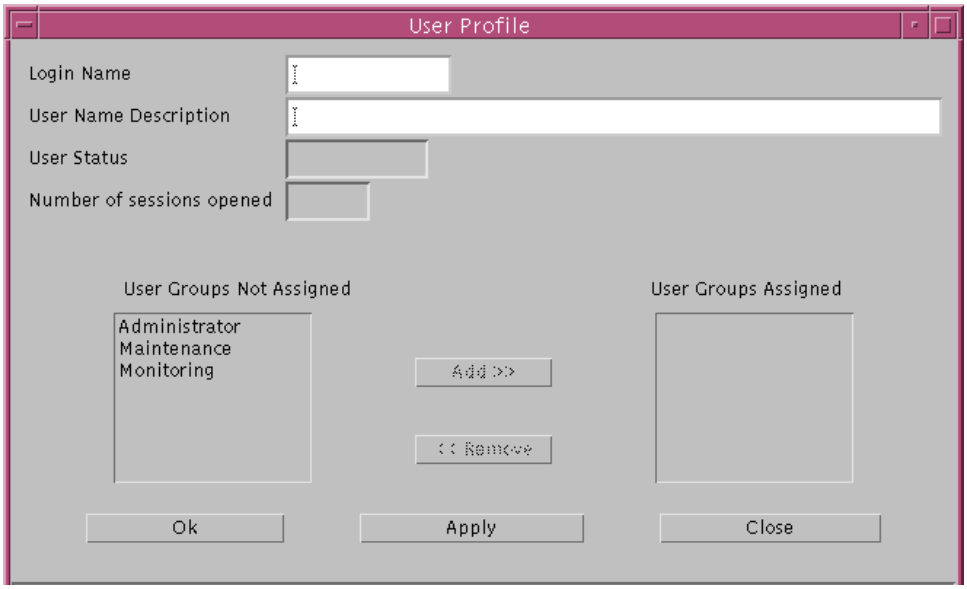

Figure 4-6 Window "User Profile"

Change User Name Description

To change the user name description like last name, first name, email, etc., enter the new information in the **User Name Description** field (0 to 60 characters). Any characters are allowed.

Adding to User Groups

To assign the selected user to further user groups, select one or more user groups in the **User Groups Not Assigned** field and click ***Add***.

NOTE:
To create user groups see Chapter 4.4.1, page 4-17.

Removing from User Groups

To remove the selected user from user groups, select one or more user groups in the **User Groups Assigned** field and click ***Remove***.

Click ***OK*** or ***Apply*** to save the changes. After clicking ***OK*** the window will be closed.
If you want to reject the changes, click ***Close*** before ***OK*** or ***Apply***.

Other Fields (read-only)

The following fields are read-only fields to display user data:

Login Name:
Displays the label which identifies the user.

User Status:
Displays if the system login associated to this user is created (enabled) or deleted (disabled).

Number of sessions opened:
Displays the number of sessions opened into the AEM-NB by the user.

4.2.3 Delete User

Introduction

This chapter describes the process to remove a user from the AEM-NB. Before removing a user, please pay attention to the following remarks:

- To remove a user from the AEM-NB the administrator must have a system login.
- When a user is deleted, all related information and profiles are removed from the system. This does not include the system login and any other system resources such as home directories or system files which are not managed by the AEM-NB. Furthermore, the user is automatically deleted from the user groups it was included in.
- Before deleting any user assigned to the administrator user group, the AEM-NB checks that this is not the last user assigned to the administrator user group. If this is the last one assigned, the deletion is rejected.

Procedure

Complete the following procedure to remove a user from the AEM-NB:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-7 Access Bar

2. Select the **third** icon.
The *User Administration* window pops up showing the *Users Table*.

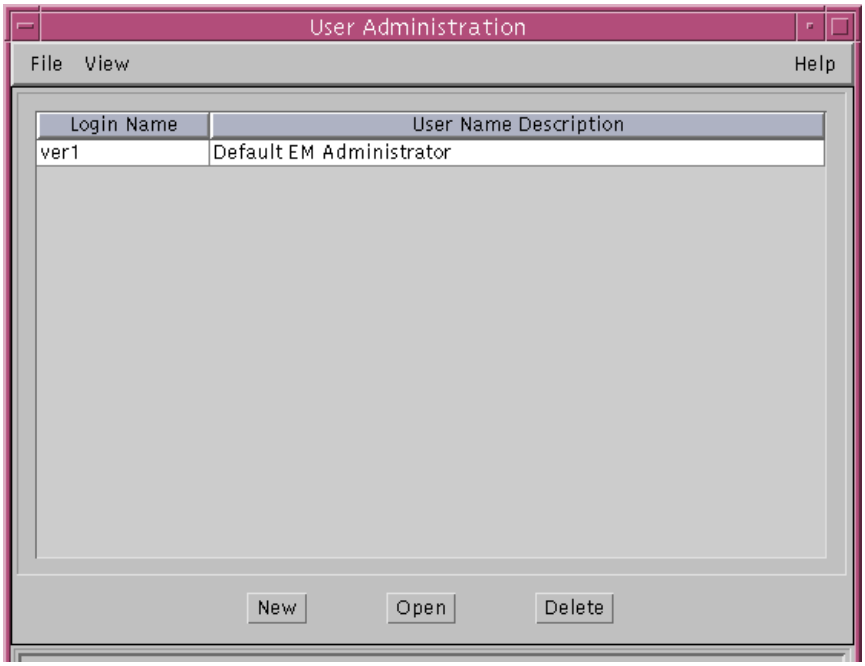

Figure 4-8 "Users Table"

3. Select the user which shall be deleted in the **Login Name** field and click ***Delete***.

4. Confirm your selection. The window will be closed.

4.3 Domains

4.3.1 Create Domains

Introduction

This chapter describes the process to create a new domain. Before creating a new domain, please pay attention to the following remarks:

- The AEM-NB administrator must have a system login.
- The controlled objects are defined as sets of managed NEs.
- Only "EM" and "NE" controlled object types are supported.

  NOTE:
  An "EM" object is generated by default with "Type: EM" and "Value: AnyMedia" which cannot be deleted.

Procedure

Complete the following procedure to create a new domain:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-9 Access Bar

2.	Select the **third** icon. The *User Administration* window pops up.

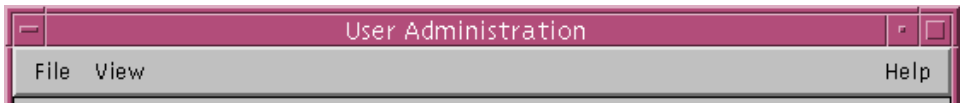

Figure 4-10 Window "User Administration"

3. Select ***View -> Domains***.
The *Domains Table* appears.

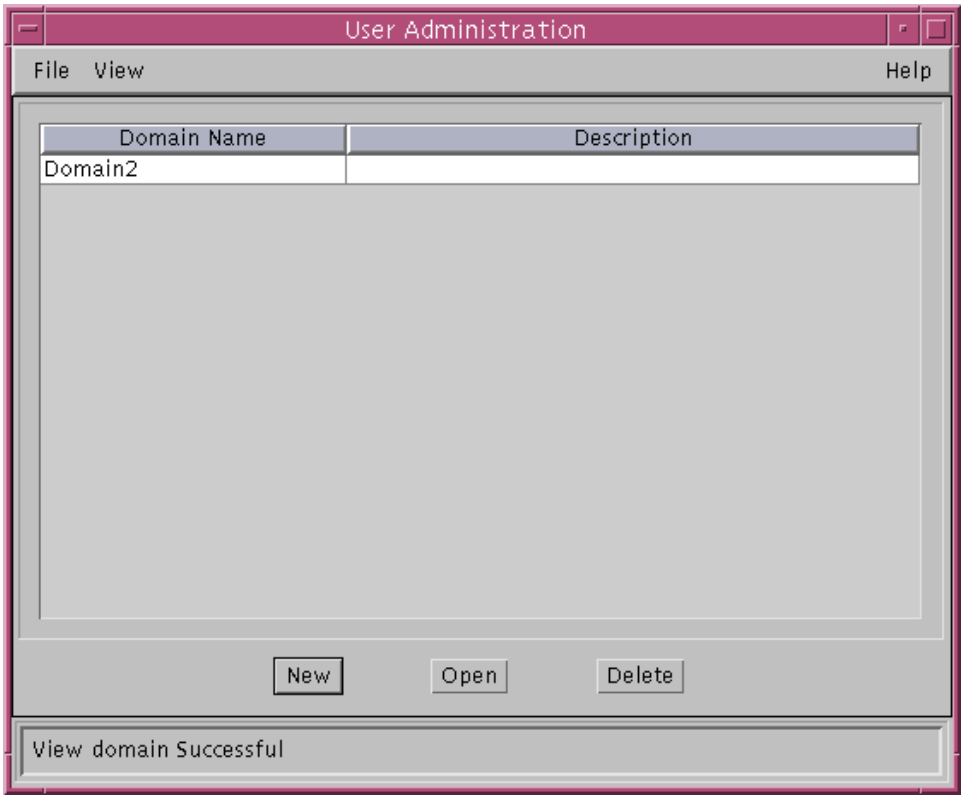

Figure 4-11 "Domains Table"

4. Click ***New***.
The *Domain Profile* window pops up.

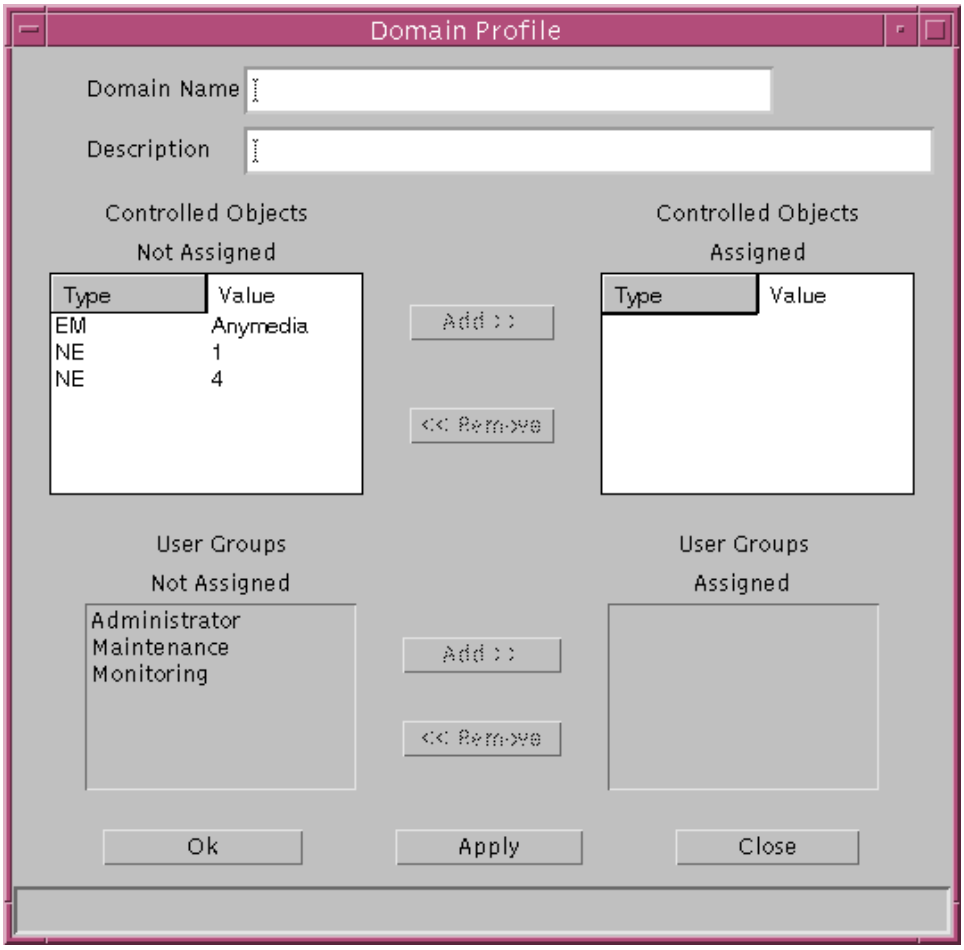

Figure 4-12 Window "Domain Profile"

5. Enter a new domain name in the **Domain Name** field (this is mandatory - 3 to 30 characters) and extra information in the **Description** field (this is optional - 0 to 60 characters). Any characters are allowed.

6. Select one or more controlled objects that shall belong to the new domain in the **Controlled Objects Not Assigned** field and click ***Add***.

NOTE:
Each controlled object consists of two fields: *Type* and *Value*.

7. Select one or more user groups that shall have access to the new domain in the **User Groups Not Assigned** field and click ***Add***.

NOTE:
To create user groups see Chapter 4.4.1, page 4-17.

8. Click ***OK*** or ***Apply*** to save the settings (the system ensures that the new domain does not yet exist in the system). After clicking ***OK*** the window will be closed.
If you want to reject the settings, click ***Close*** before ***OK*** or ***Apply***.

The other fields are described in Chapter 4.3.2, page 4-11.

4.3.2 Modify Domains

Introduction

This chapter describes the process to modify the information of a domain, e.g. which devices it includes, etc. Before modifying the information of a domain, the AEM-NB administrator must have a system login.

Procedure

Complete the following procedure to modify the information of a domain:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-13 Access Bar

2. Select the **third** icon.
The *User Administration* window pops up.

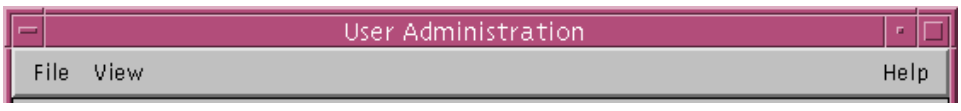

Figure 4-14 Window "User Administration"

3. Select ***View -> Domains***.
The *Domains Table* appears.

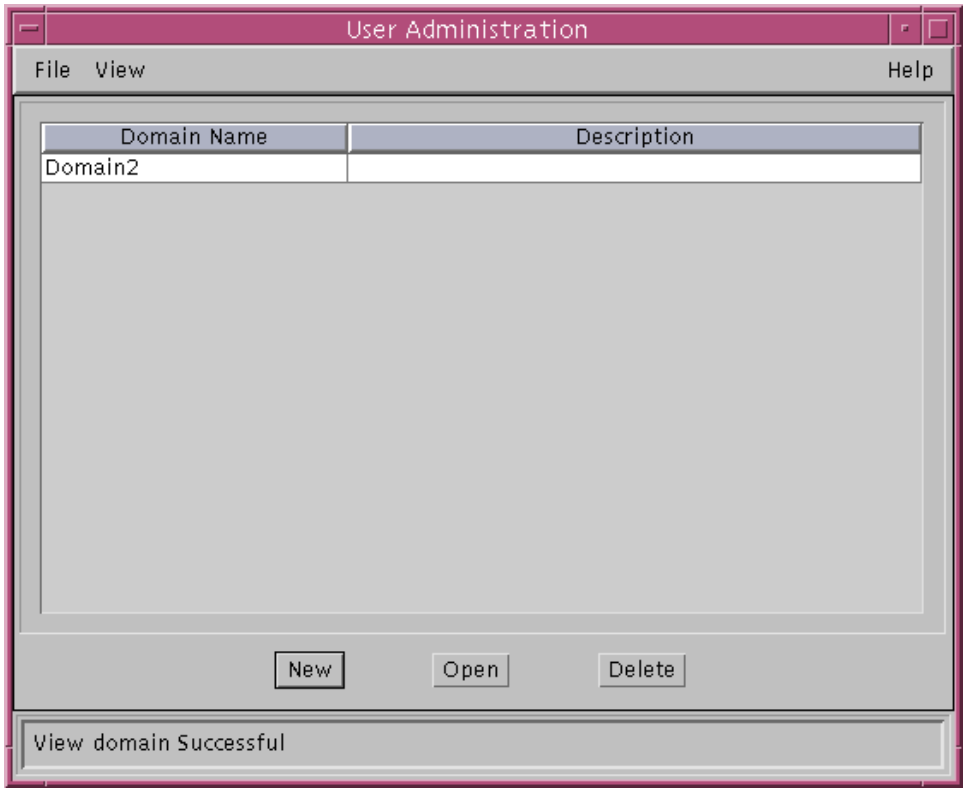

Figure 4-15 "Domains Table"

4. Select one domain in the **Domain Name** field and click ***Open***.
The *Domain Profile* window pops up with the current information about the selected domain.

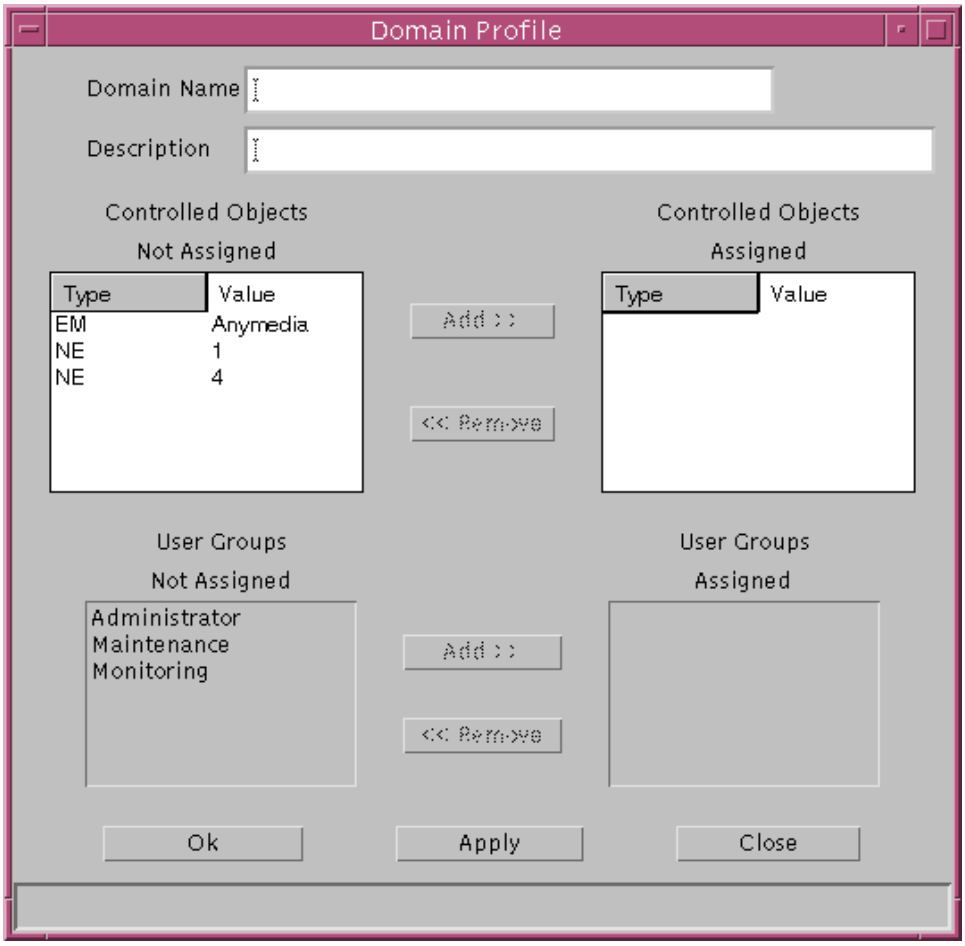

Figure 4-16 Window "Domain Profile"

Change Domain Name

To change the domain name, enter the new name in the **Domain Name** field (3 to 30 characters). Any characters are allowed.

Change Domain Description

To change the domain description, enter the new information in the **Description** field (0 to 60 characters). Any characters are allowed.

Adding Controlled Objects

To assign further controlled objects to the selected domain, select one or more controlled objects in the **Controlled Objects Not Assigned** field and click ***Add***.

NOTE:
Each controlled object consists of two fields: *Type* and *Value*.

Removing Controlled Objects

To remove assigned controlled objects from the selected domain, select one or more controlled objects in the **Controlled Objects Assigned** field and click ***Remove***.

NOTE:
Each controlled object consists of two fields: *Type* and *Value*.

Adding User Groups

To give further user groups access to the selected domain, select one or more user groups in the **User Groups Not Assigned** field and click ***Add***.

NOTE:
To create user groups see Chapter 4.4.1, page 4-17.

Removing User Groups

To remove assigned user groups from the selected domain, select one or more user groups in the **User Groups Assigned** field and click ***Remove***.

Click ***OK*** or ***Apply*** to save the changes. After clicking ***OK*** the window will be closed.
If you want to reject the changes, click ***Close*** before ***OK*** or ***Apply***.

4.3.3 Delete Domains

Introduction

This chapter describes the process to remove a domain from the AEM-NB. Before removing a domain, please pay attention to the following remarks:

- The AEM-NB administrator must have a system login.
- Before deleting a domain, the AEM-NB ensures that there are no controlled objects assigned to this domain. If this is the case, the deletion request will be rejected.
- After a domain deletion, all related information will be removed from the AEM-NB. This does not include the devices (NEs or any other type) which are grouped in that domain or their information. Furthermore, the access permission will be automatically unassigned from the user groups that had access to this domain.

Procedure

Complete the following procedure to remove a domain:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-17 Access Bar

Step	Procedure
2.	Select the **third** icon. The *User Administration* window pops up.

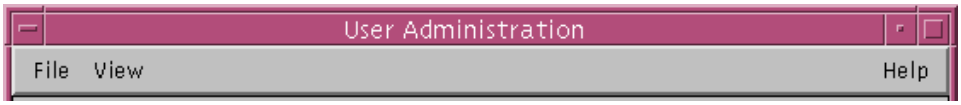

Figure 4-18 Window "User Administration"

3. Select ***View -> Domains***.
The *Domains Table* appears.

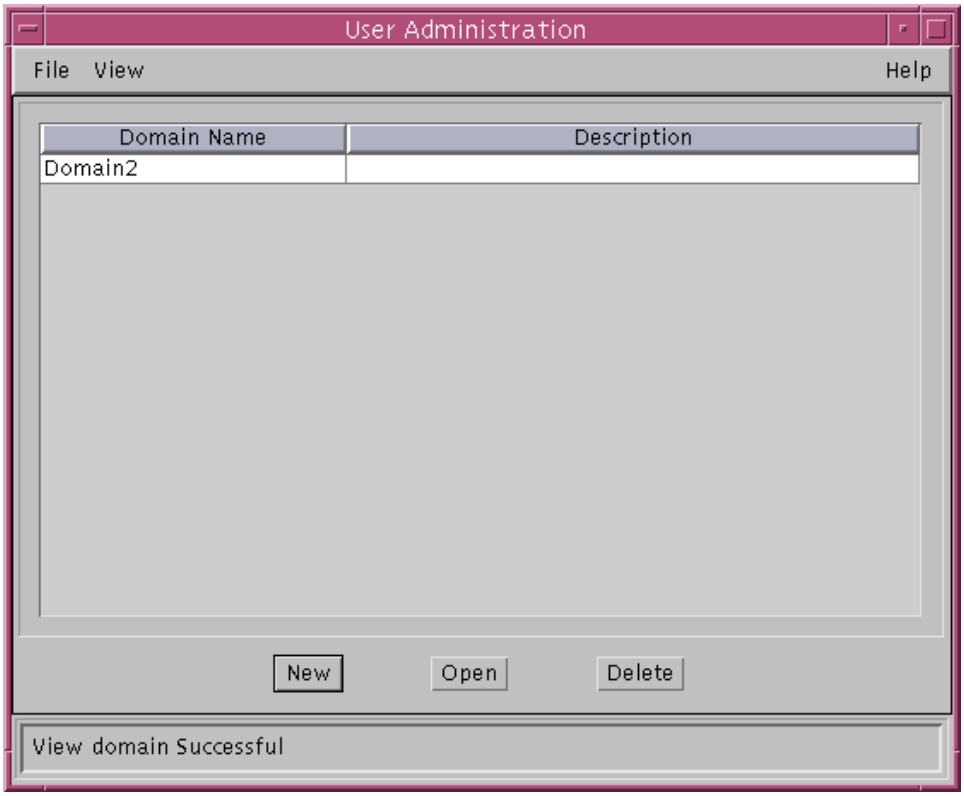

Figure 4-19 "Domains Table"

4. Select the domain which shall be deleted in the **Domain Name** field and click ***Delete***.

5. Confirm your selection. The window will be closed.

4.4 User Groups

4.4.1 Create User Groups

Introduction

This chapter describes the process to create a new user group. Before creating a new user group, please pay attention to the following remarks:

- By default the AEM-NB provides three user groups: Administrator, Maintenance and Monitoring.
- The administrator user group shall be assigned access permissions to all domains, applications and tasks.
- Before a user group can be created, modified or deleted the AEM-NB administrator must have a system login.
- Applications are divided into tasks. A user can be assigned a whole application or only a subset of its tasks.

Procedure

Complete the following procedure to create a new user group:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-20 Access Bar

2.	Select the **third** icon. The *User Administration* window pops up.

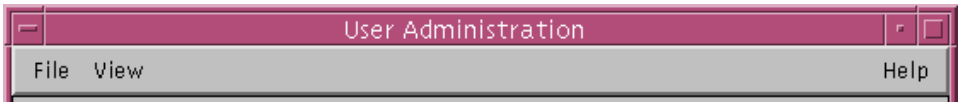

Figure 4-21 Window "User Administration"

3. Select ***View -> User Groups***.
The *User Groups Table* appears.

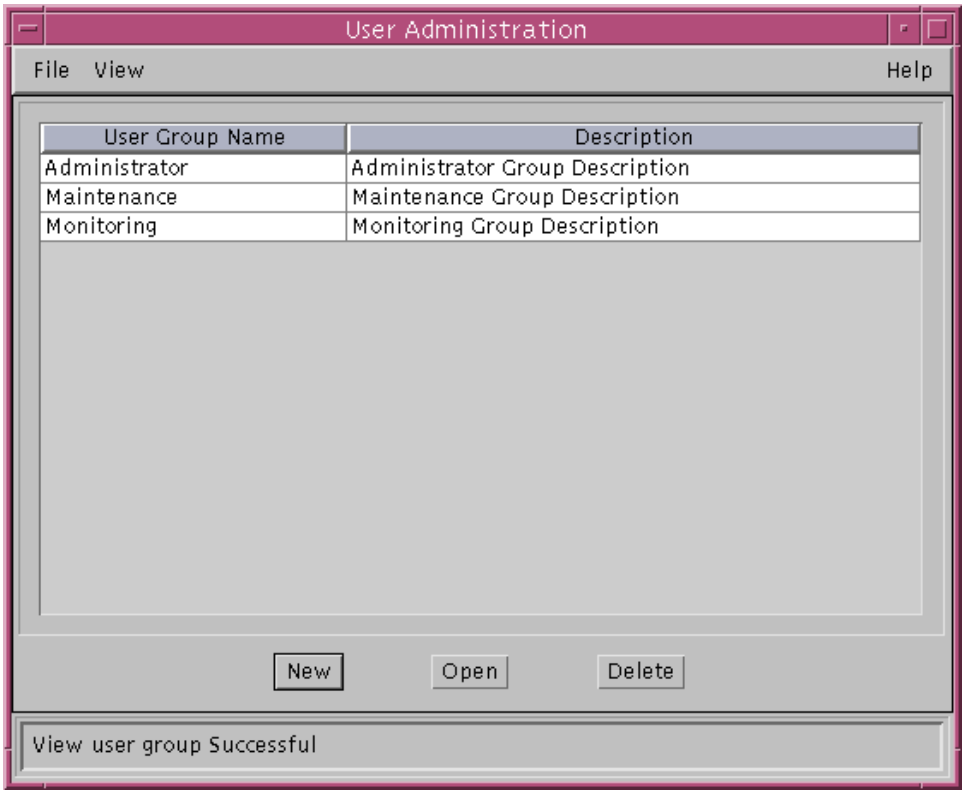

Figure 4-22 "User Groups Table"

4. Click ***New***.
The *User Group Profile* window pops up.

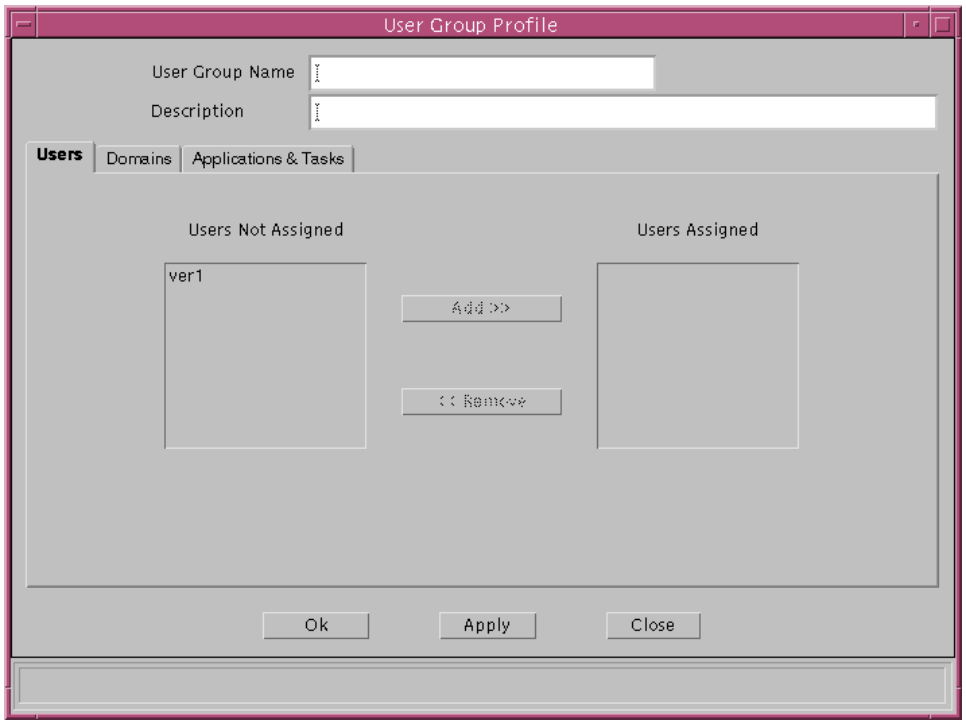

Figure 4-23 Window "User Group Profile"

5. Enter a new user group name in the **User Group Name** field (this is mandatory - 3 to 30 characters) and extra information in the **Description** field (this is optional - 0 to 60 characters). Any characters are allowed.

6. Click ***Users***.

7. Select one or more users that shall belong to the new user group in the **Users Not Assigned** field and click ***Add***.

NOTE:
To create user see Chapter 4.2.1, page 4-2.

8. Click ***Domains***.

9. Select one or more domains the user group shall has access to in the **Domains Not Assigned** field and click ***Add***.

NOTE:
If access permission to a domain is granted to a user group, that permission will be automatically granted for each controlled object within that domain.

NOTE:
To create domains see Chapter 4.3.1, page 4-8.

For carrying out the next three steps (10, 11 and 12) please pay attention to Table 4-1. It provides an overview about the access permissions the user groups shall have.

Table 4-1 Assignment of User Groups to Applications/Tasks

Application	Task	User Group
System Administration	Start-up / Shutdown	Administrator
	Monitoring	Administrator
User Administration and Profiling	Access Policy Management	Administrator
	Domain Management	Administrator
Log Viewer	Actions	Administrator, Maintenance
	System Internal Events	Administrator, Maintenance
	Autonomous Report	Administrator, Maintenance, Monitoring
Alarm Viewer	Acknowledge	Administrator, Maintenance
	View[a]	Administrator, Maintenance, Monitoring
	Clear	Administrator, Maintenance
Configuration Manager	NE Creation	Administrator, Maintenance
	Equipment and Service Provisioning	Administrator, Maintenance
	View[a]	Administrator, Maintenance, Monitoring
	Test	Administrator, Maintenance, Monitoring
	Cut-through	Administrator
BroadBand EM	BroadBand EM	Administrator, Maintenance, Monitoring

a If the VIEW task is unassigned but other tasks are still assigned, these tasks are left as assigned to this user group. But the user is not able to perform any kind of operation over these tasks until the VIEW task is assigned again.

The most of the task names are self described, but other tasks needs a deeper description:

Access Policy Management provides the functionality to:

- create/modify/delete AEM-NB users
- create/modify/delete AEM-NB user groups
- create/modify/delete AEM-NB domains
- create/modify/delete assignments between AEM-NB users and AEM-NB user groups
- create/modify/delete access assignments between AEM-NB user groups and applications/tasks
- create/modify/delete access assignments between AEM-NB user groups and domains
- modify assignments between domains and controlled objects.

Domain Management provides the functionality to:

- modify assignments between domains and controlled objects.

NE Creation provides the functionality to:

- create/modify/delete controlled objects with *Type* NE.

10. Click ***Applications & Tasks***.

11. Select one or more applications the user group shall has access to in the **Applications Not Assigned** field and click ***Add***.
The corresponding tasks are displayed for selection.

12. Select one or more tasks the user group shall has access to in the **Tasks Not Assigned** field and click ***Add***.

13. Click ***OK*** or ***Apply*** to save the settings (the system ensures that the new user does not yet exist in the system). After clicking ***OK*** the window will be closed.
If you want to reject the settings, click ***Close*** before ***OK*** or ***Apply***.

The other fields are described in Chapter 4.4.2, page 4-22.

4.4.2 Modify User Groups

Introduction

This chapter describes the process to modify the properties of a user group. Before modifying the properties of a user group, please pay attention to the following remarks:

- The AEM-NB administrator must have a system login.
- The administrator user group shall be assigned access permissions to all applications and tasks and these access permissions shall not be modified.

Procedure

Complete the following procedure to create a new user group:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-24 Access Bar

2.	Select the **third** icon. The *User Administration* window pops up.

Figure 4-25 Window "User Administration"

3. Select ***View -> User Groups***.
The *User Groups Table* appears.

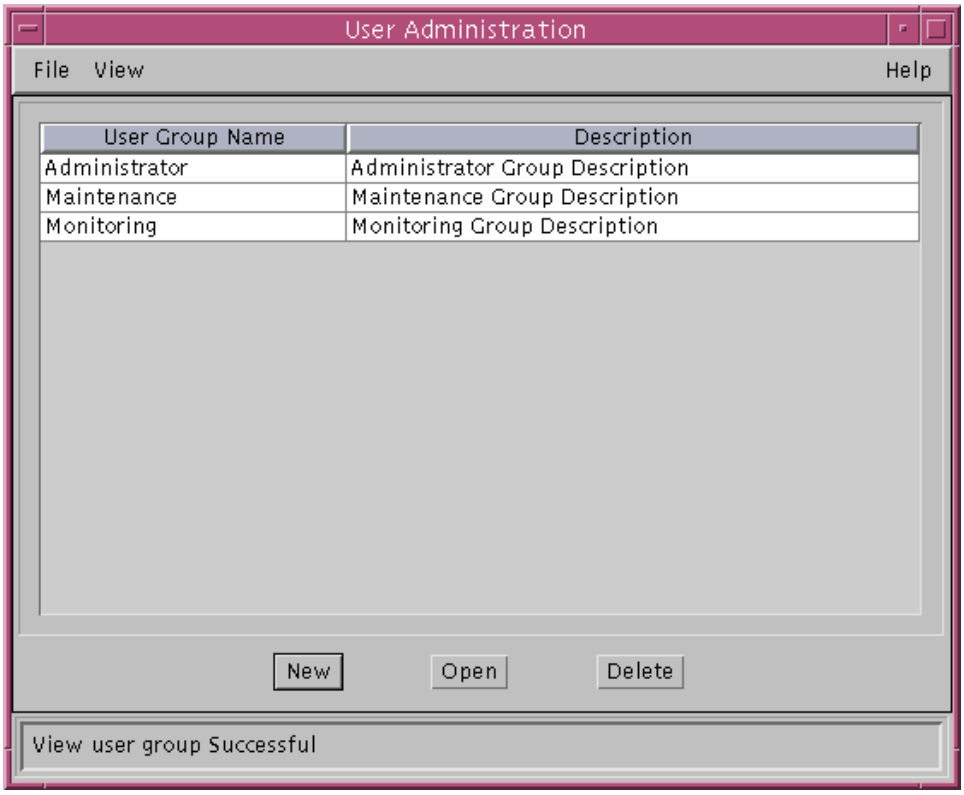

Figure 4-26 "User Groups Table"

4. Select one user group of the **User Group Name** field and click ***Open***. The *User Group Profile* window pops up with the current information about the selected user group.

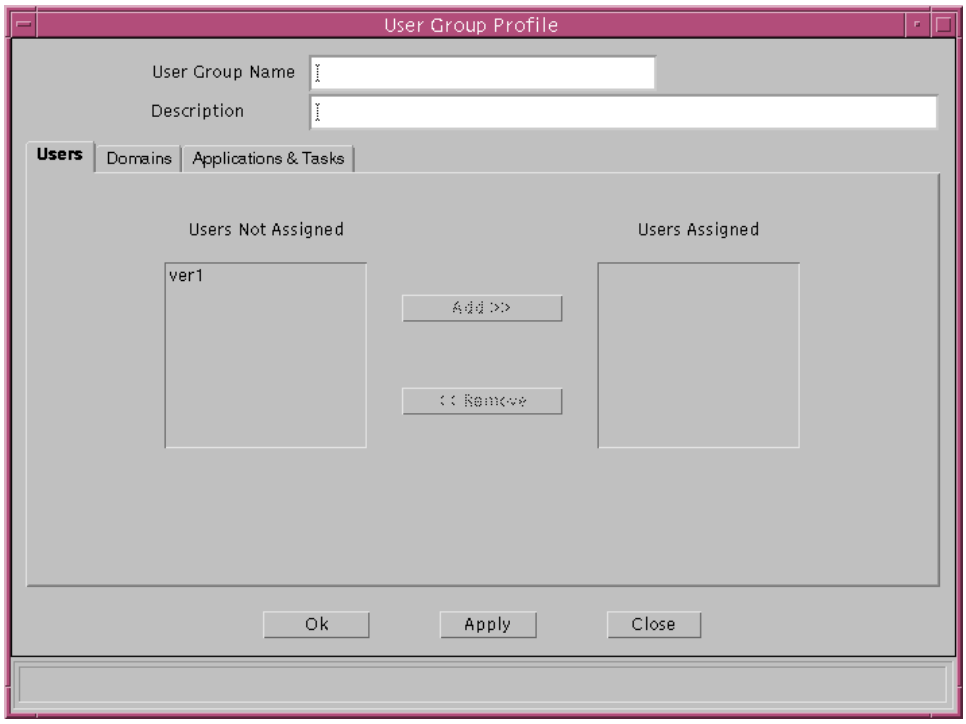

Figure 4-27 Window "User Group Profile"

Change User Group Name

To change the user group name, enter the new name in the **User Group Name** field (3 to 30 characters). Any characters are allowed.

Change User Group Description

To change the user group description, enter the new information in the **Description** field (0 to 60 characters). Any characters are allowed.

Adding Users

To assign further users to the selected user group, click ***Users***, select one or more users in the **Users Not Assigned** field and click ***Add***.

NOTE:
To create user see Chapter 4.2.1, page 4-2.

Removing Users

To remove assigned users from the selected user group, click ***Users***, select one or more users in the **Users Assigned** field and click ***Remove***.

NOTE:
The last user of user group administrator is protected against deletions.

Adding to Domains

To give the selected user group access to further domains, click ***Domains***, select one or more domains in the **Domains Not Assigned** field and click ***Add***.

NOTE:
If access permission to a domain is granted to a user group, that permission will be automatically granted for each controlled object within that domain.

NOTE:
To create domains see Chapter 4.3.1, page 4-8.

Removing from Domains

To disable the access to one or more domains, click ***Domains***, select one or more domains in the **Domains Assigned** field and click ***Remove***.

NOTE:
The administrator user group shall be assigned access permissions to all domains and this access permissions shall not be modified.

Adding Applications

To give the selected user group access to further applications, click ***Applications & Tasks***, select one or more applications in the **Applications Not Assigned** field and click ***Add***.

NOTE:
For this action please pay attention to Table 4-1, page 4-20.

Removing Applications

To disable the access to one or more applications, click ***Applications & Tasks,*** select one or more applications in the **Applications Assigned** field and click ***Remove***. For this action please pay attention to Table 4-1, page 4-20.

NOTE:
The administrator user group shall be assigned access permissions to all applications and this access permissions shall not be modified.

NOTE:
If the user select an application in the Applications Assigned field, all tasks that are under it will be expanded in the Tasks Assigned and Tasks Not Assigned fields.

Adding Tasks

To give the selected user group access to further tasks, select one or more tasks in the **Tasks Not Assigned** field and click ***Add***.

NOTE:
For this action please pay attention to Table 4-1, page 4-20.

Removing Tasks

To disable the access to one or more tasks, select one or more tasks in the **Tasks Assigned** field and click ***Remove***. For this action please pay attention to Table 4-1, page 4-20.

NOTE:
If the task "View" is removed, also the tasks "Acknowledge" and "Clear" are not possible (but not removed).

NOTE:
The administrator user group shall be assigned access permissions to all tasks and this access permissions shall not be modified.

Click ***OK*** or ***Apply*** to save the changes. After clicking ***OK*** the window will be closed. If you want to reject the changes, click ***Close*** before ***OK*** or ***Apply***.

4.4.3 Delete User Groups

Introduction

This chapter describes the process to remove a user group from the AEM-NB. Before removing a user group, please pay attention to the following remarks:

- The AEM-NB administrator must have a system login.
- The administrator user group is protected against deletions.
- After a user group deletion, all related information is removed from the AEM-NB. This does not include the contained users or their information, but these users will lose the ability to invoke the applications, tasks, devices and maps for which the user group had permission.

Procedure

Complete the following procedure to remove a user group:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-28 Access Bar

2. Select the **third** icon.
The *User Administration* window pops up.

Figure 4-29 Window "User Administration"

3. Select ***View -> User Groups***.
The *User Groups Table* appears.

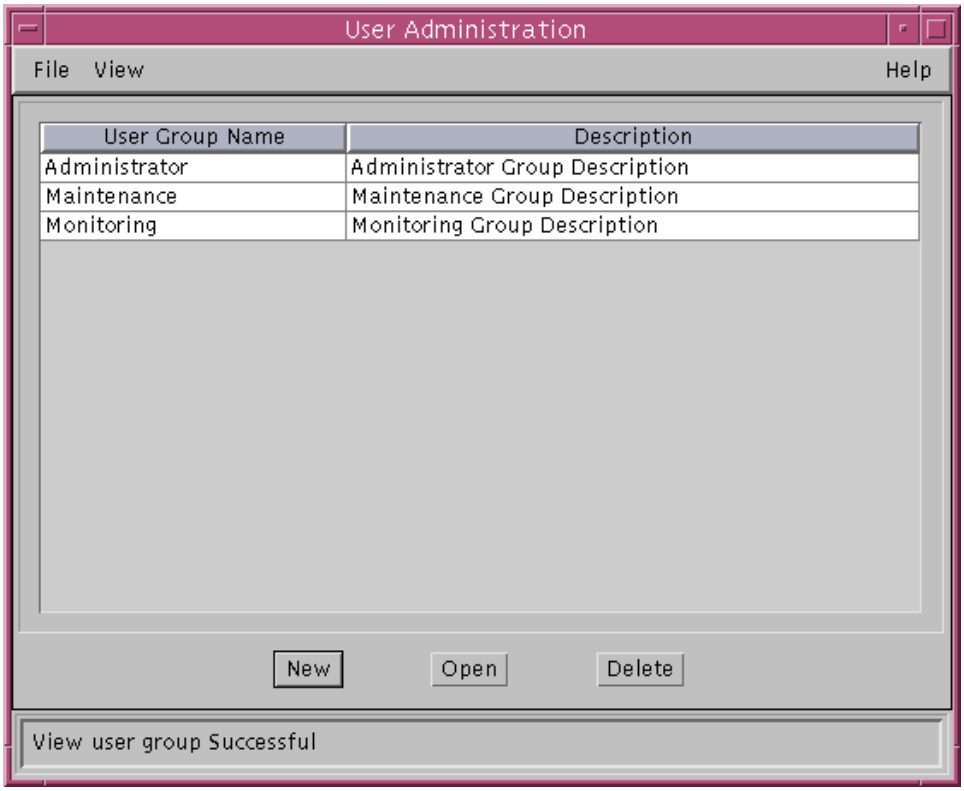

Figure 4-30 "User Groups Table"

4. Select the user group which shall be deleted in the **User Group Name** field and click ***Delete***.

NOTE:
The administrator user group is protected against deletion.

5. Confirm your selection. The window will be closed.

4.5 Controlled Objects

4.5.1 Modify Controlled Objects

Introduction

This chapter describes the process to modify the information about existing controlled objects. The controlled object creation and deletion are not covered by this document. For NE creation and deletion refer to Chapter 5.3.1 and Chapter 5.3.3.

Before modifying the information about any controlled object the AEM-NB administrator must have a system login.

Procedure

Complete the following procedure to modify the information about existing controlled objects:

Step	Procedure
1.	Login as AEM-NB administrator. After the login process is complete the *Access Bar* pops up.

Figure 4-31 Access Bar

Step	Procedure
2.	Select the **third** icon. The *User Administration* window pops up.

Figure 4-32 Window "User Administration"

3. Select ***View -> Controlled Objects***.
The *Controlled Objects Table* appears.

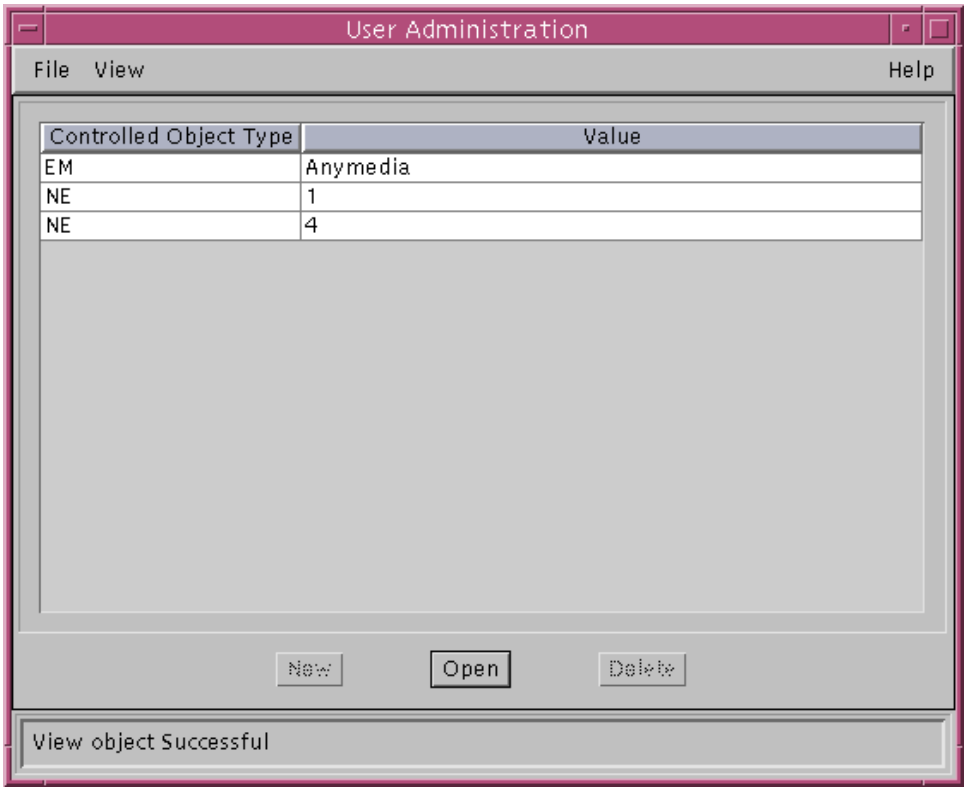

Figure 4-33 "Controlled Objects Table"

4. Select one controlled object type in the **Controlled Object Type** field and click ***Open***.
The *Controlled Object Profile* window pops up with the current information about the selected controlled object.

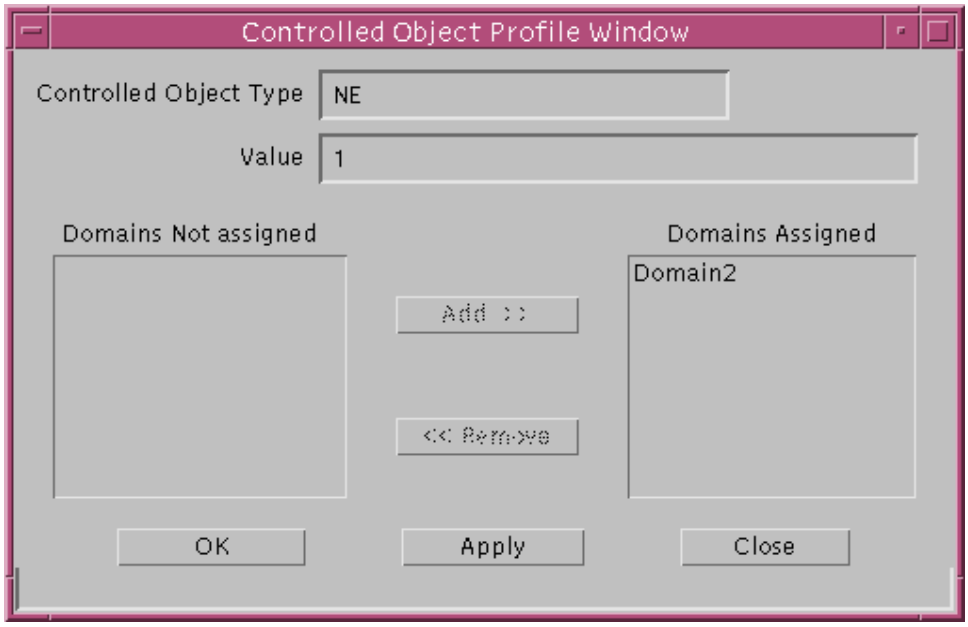

Figure 4-34 Window "Controlled Object Profile"

Adding to Domains

To assign the selected controlled object to further domains, select one or more domains in the **Domains Not Assigned** field and click ***Add***.

NOTE:
To create domains see Chapter 4.3.1, page 4-8.

Removing from Domains

To remove the selected controlled object from domains, select one or more domains in the **Domains Assigned** field and click ***Remove***.

NOTE:
The "EM" object generated by default is protected against deletion.

Click ***OK*** or ***Apply*** to save the changes. After clicking ***OK*** the window will be closed.
If you want to reject the changes, click ***Close*** before ***OK*** or ***Apply***.

Other Fields (read-only)

The following fields are read-only fields to display data of the selected controlled object:

Controlled Object Type:
Displays the controlled object type. Possible values are *EM* and *NE*.

Value:
Displays the characteristics of the selected controlled object (e.g. NE name).

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5.1 Overview

This chapter describes the Configuration Manager application of the *AnyMedia*® Access System Element Manager for Narrowband Services (AEM-NB). It addresses the following topics:

- Overview of the controlled *AnyMedia* Access System.
- Explanation of Menu bar and Network Browser.
- Screen navigation.
- Equipment Configuration and Service Provisioning.

5.1.1 Overview of *AnyMedia* Access System R1.5

The architecture of the *AnyMedia* Access System R1.5 is a single shelf with the following main components as shown in Figure 5-1, page 5-2:

- Up to 6 IO_DS1 packs
- Up to two Common Data and Control (COMDAC) packs
- One Craft Test Unit (CTU) pack
- Up to 16 Application Packs (APs)
  - — 32-line 2WCF Programmable: PROG2W a.k.a. POTS 32/512 a.k.a. PROG32.
  - — 32-line 2WCF POTS only: a.k.a. POTS32.
  - — 32-line 2W Programmable Special/Coin: PRCOIN a.k.a. PROG1_CF.
  - — 16-line ANSI ISDN: ISDN AP a.k.a. ISDN16_u.

— AFM_DS33: The Access Feeder Multiplexer card provides a DS3 ATM interface for ADSL traffic (one or more AFMs the in right-most AP slot(s)).[1]

— ADSL4: The Quad ADSI packs provide four ADSL subscriber line terminations each.

— Metallic Distribution Server Units (MDSUs):
The *AnyMedia* Access System supports the MDS2 and MDS2B shelves (Chapter 5.1.1.1, page 5-3) for installation of SLC carrier channel units. Only narrowband transmission is planned for this shelf. MDS2/MDS2B shelves are connected via an electrical interface through one or two Metallic Distribution Server Units APs that, in effect, extend the PCM Highway from the *AnyMedia* Access System backplane to the MDS2/MDS2B. An MDSU can be located in any AP slot; however, the MDSUs will normally be located in AP slots 14 and 15 to simplify shelf cabling. One MDSU extends 1.5 PCM Highways to a controller (MSC) in the MDS2/MDS2B Shelf. In order to extend 3 PCM Highways to both sections of the MDS2/MDS2B Shelf, two MDSUs must be installed (MSU100 - SAPQADMBAA).

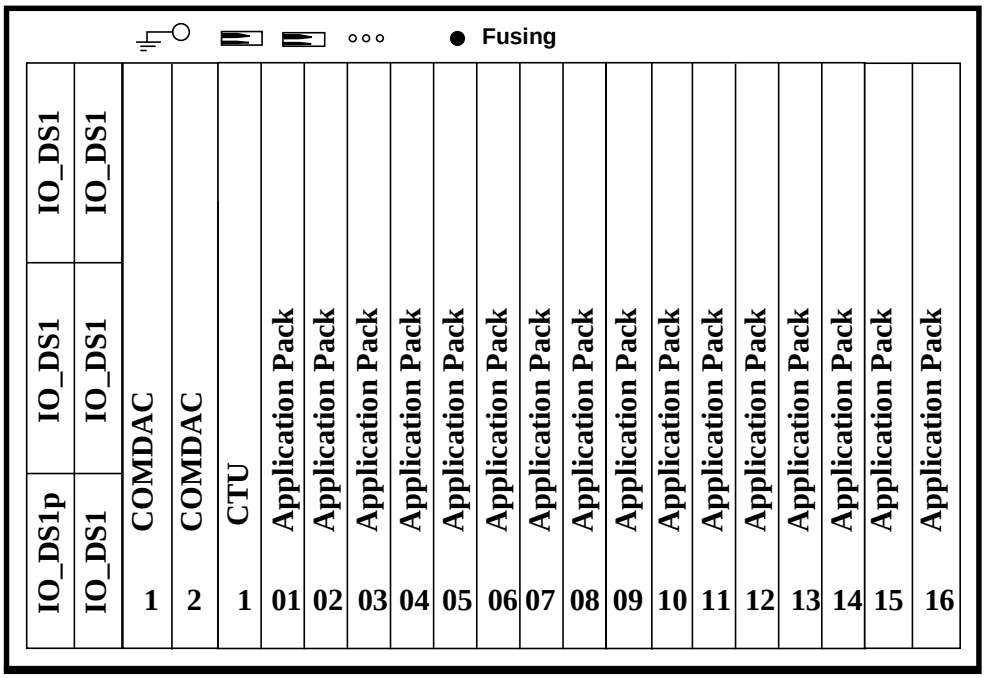


Figure 5-1 AnyMedia Shelf Layout (Release 1.2)

1 Even when the *AnyMedia* Access System AEM-NB directly manages only the narrowband plug-ins of the *AnyMedia* Access System, the broadband packs will also be displayed to provide the required integration level between both managers.

5.1.1.1 MDS2/MDS2B Shelf Layout

The use of the MDS2 or MDS2B Shelf is optional. If it is used, one or two *AnyMedia* Access System AP slots are equipped with the MDSUs server units, each of which connects to an MSC (Metallic Shelf Controller) pack in the MDS2 Shelf. The MDS2/MDS2B Shelf, based on the SLC-2000 Metallic Distribution Shelf (MDS), has the capacity to hold 24 SLC (SPQ or AUA) channel units and to serve up to 96 DS0-rate services.

The MDS2/MDS2B Shelf is used to provide specials via SPQ/AUA Channel Units. A maximum of one MDS2/MDS2B Shelf is supported per *AnyMedia* Access System. The shelf can serve up to 96 DS0s in 24 slots; each MDSU pack on the *AnyMedia* Access System shelf can serve up to 48 DS0s and up to 12 channel units (CU). The MDSU APs primarily serve as pass-through for the PCM transmission and the UART messages. All control messages to and from the MDS2/MDS2B Shelf are routed through the MDSU packs; the MDSU-1 pack serves the first 12 slots (slots 1 through 12) on the MDS2, the MDSU-2 pack serves the remaining 12 (slots 13 through 24).

The MDS2/MDS2B Shelf may be equipped so that only half of the shelf is operational (12 channel units). For this case, only one MDSU is needed in the *AnyMedia* Shelf. A partially-equipped (half) MDS2 Shelf requires one PTU (Power Test Unit) and one MSC.

The MDSUs utilize the same timing signals as the narrowband APs. A single 8-MHz clock and 8-kHz sync are supplied by an MDSU to an MCS in the MDS2/MSD2B for timing the MDS2/MSD2B link. Side selection of the clock and sync from the COMDACs is performed by the MDSU.

The MDS2 shelf shown in Figure 5-2 is arranged to accommodate 12 CU circuit packs, a PTU and an MSC pack per section. The first, or left, section is a mirror image of the second, or right, section.

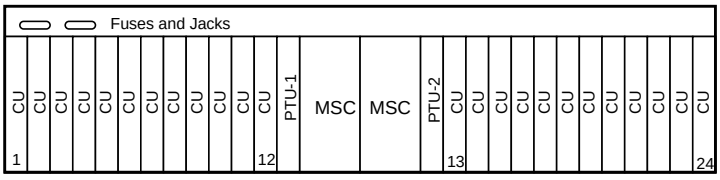


Figure 5-2 MDS2 Shelf Layout

The MDS2B shelf shown in Figure 5-3, page 5-4 is arranged to accomodate 12 CU circuit packs, a PTU and MSC pack pre section. The fist, or top, section is a mirror image of the second, or down, section.

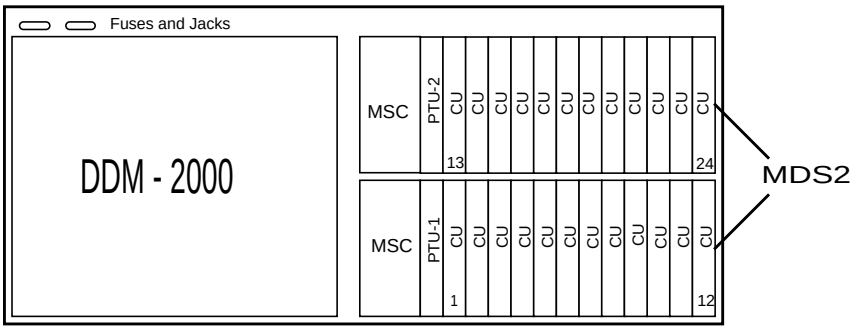


Figure 5-3 MDS2B Shelf Layout

Metallic Shelf Controller (MSC)

The MSC provides the required shelf interface and central control for half of the shelf. Each MSC is two slots wide but has only one backplane connector. An 8-MHz MDS2 link is provided to interface with the *AnyMedia* Access System shelf. On the distribution side the MSC supports 3 4.096-Mbps PCM links for connecting 12 channel units. The MSC performs the following functions:

- Translates between 1.5 *AnyMedia* Access System PCM Highways and 3 SLC carrier format PCM buses
- Performs rate conversion from incoming 8-MHz link and distributes timing and synchronization to CUs
- Translates between one *AnyMedia* Access System UART link and the SLC carrier Bank Controller Link (BCL) and PTU control interfaces
- Control and monitoring for CUs and PTUs
- Composite clock input and DDS (Digital Data System) timing distribution to CUs
- Supports signaling bit translation and signaling state transition detection for DID (Direct Inward Dialing) services on TR-303.
- The MSC is a simplex pack. The MSC hardware can support software download. (AEM-NB R1.5 does not support this feature).

Power Test Units (PTU)

The PTU has power converters to distribute +5V and -5V power to the CUs and 5V power to the MSC. Each PTU powers 12 CUs and one MSC. Positive and negative ringing inputs are looped through each PTU so that each PTU distributes ringing to the 12 CUs it provides power to. The PTU can detect the loss of its ringing inputs. The PTU has relays and protectors for test access. It also has terminations and detectors for channel testing. Each PTU also supports one TAP (Test Access Path). The PTU2 TAP (TAP-A) is required for special services testing and local test access, the PTU1 TAP (TAP-B) is required for POTS testing.

Channel Units (CU)

SLC carrier (SPQ and AUA type) channel units will be used. All intelligence about the CUs, their register formats and locations, the PTU message sets, etc., reside on the COMDAC. The set of SLC channel units supported is shown below:

- AUA293 BRITE III
- SPQ429 Quad P-phone CF
- SPQ442 Quad E SPOTS CS
- AUA41B 4W CF, inventory ready
- AUA45B Ringing repeater (manual ringdown)
- AUA75 PLAR
- SPQ452 Dual Dataport OCU
- AUA200 SW 56 2W CU (Adtran)
- AUA232 RS-232(Adtran)
- SPQ444 Single 4W CS w/TDM
- SPQ454 Single 4W E&M Types I & II
- MCU-5205 DC alarm CU (Tollgrade)
- MCU-5405 DC bypass CU (Tollgrade).

5.1.1.2 Virtual Remote Terminals

The *AnyMedia* Access System can be configured to be logically divided into a number of separate virtual terminals that provide three types of voice frequency service node interfaces: TR303, TR08 and INA.

5.1.1.3 OAM&P Interfaces

There are three operations, administration, maintenance and provisioning (OAM&P) interfaces to the *AnyMedia* Access System shelf for telephony applications:

- Local EIA-232D serial port on the CTU DTP100 in the *AnyMedia* Access System shelf to which a TL1 system interface (TL1SI or CIT) or a GSI can be connected. This interface is typically used during initial installation.
- A local LAN interface on the *AnyMedia* Access System shelf provides access to an IEEE 802.3-compliant LAN through a 10BaseT connection. All communications through this interface will be over Transaction Control Protocol/Internet Protocol (TCP/IP), and is the way to the AEM-NB.
- Remote Operations Channel: a remote LAN interface, which uses TCP/IP to communicate with the AEM-NB. The OAM&P functionality is provided via a nailed-up DS0 link that is part of the DS1 (payload) connectivity to the *AnyMedia* Access System shelf. The DS0 link originates from a data communication network (DCN) that supports TCP/IP over an Ethernet LAN connection on the AEM-NB side and does a translation to a wide area network (WAN) via multiple DS0s on the other.

5.1.1.4 External Interfaces for Circuit Testing

The *AnyMedia* Access System provides three external interfaces for circuit testing:

- Local access for manual testing via jacks on the CTU DPT 100
- Connection to the Test Access Path (TAP) - B
- Remote Test Unit (RTU-2) via the tip/ring leads from two APs VF port circuits.

5.1.1.5 Synchronization Interfaces

The *AnyMedia* Access System supports four timing modes which can be provisioned by the AEM-NB:

- External DS1
- External Composite Office Clock
- Free Running Mode
- Loop Timed Mode.

The provisioning options are described in Chapter 5.3.2.4, page 5-52.

5.1.1.6 Plug & Play Capabilities

The circuit packs associated with the *AnyMedia* Access System have the capability to self-identify themselves with inventory data. This capability is very useful during the execution of provisioning and maintenance procedures.

For example, upon insertion of the new circuit pack in the *AnyMedia* Access System Shelf, the inventory data of the new pack, as well as its serial number, slot and pack entity, will be reported to the AEM-NB and/or GSI interface. The removal of any plug-in unit will be announced also.

5.1.1.7 NE Equipment Configuration-Related Tasks

The NE equipment configuration facilities provided by the AEM-NB cover the operations that control and provision the NE, including the following:

- Configuration Specific Equipment Data - which involves tasks for:
  - NE Creation & Deletion
  - Circuit Pack Management
    - COMDAC Management
    - IO_DS1s Management - Physical Feeder Management
    - CTU Management
    - AP Management
  - Protection Management

- Slot Alarming Configuration
- Date & Time Management
- NE Security Configuration
- Timing Synchronization Provisioning

- Maintaining a local copy of the NE Provisioning Data - which includes tasks for:
  - Initializing the local copy when an NE is add to the AEM-NB
  - Maintaining the local copy concerning equipment changes
  - Synchronizing the local copy with the equipment data maintained by the NE, and reporting differences.
- **Inventory Management** - system activity of collecting, updating and reporting data on *AnyMedia* Access System equipage and system status, including providing users with access to the entire equipment information, whether locally maintained or not.
- **NE Memory Administration** - this means the management of the Nonvolatile Data Storage (NVDS) of the *AnyMedia* Access System: Backup & Restore
- **NE Software Administration** - this involves tasks to manage the Nonvolatile Program Storage (NVPS) of the *AnyMedia* Access System: software download, copying the NVPS between controller CARDS, etc.
- **MDS2/MDS2B management** - which, in this release, involves:
  - MDS2/MDS2B shelf Slots Alarming Configuration.
  - Retrieve & Maintain MDS2/MDS2B Inventory information.

For more information refer to the AMAS R1.5 network elements documentation.

5.2 Configuration Manager Window

This major application provides the operator with the facilities needed to fully configure *AnyMedia* network elements (both equipment and services).

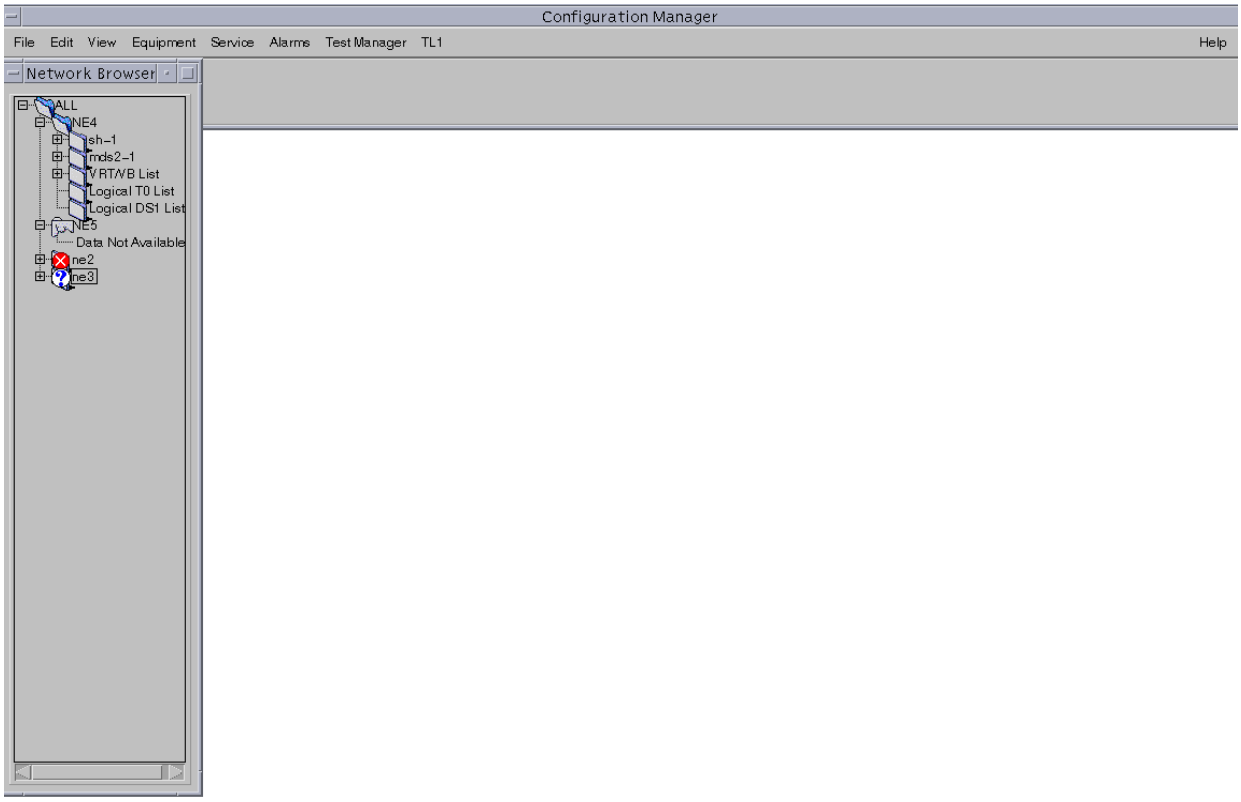


Figure 5-4 Configuration Manager

The initial window consists of two frames:

- At the top, a **menu bar** provides access to all possible operations on the network elements (cf. Chapter 5.2.2, page 5-9).
- On the left-hand side, the screen displays a tree-like structure (known as the **Network Browser**) with the list of NEs created and manageable by the AEM-NB (see below).

Depending on previous actions the following frames are additionally available:

- On the right-hand side, a common area is used for the display of the information requested through the menu bar, cursor menu or tool bar (if present).

- A **status bar** is incorporated at the bottom of every single screen except of Network Browser and menu bar (cf. Chapter 5.2.3, page 5-11).
- The **cursor menu** will pop up at the cursor position when the right mouse button is pressed (cf. Chapter 5.2.4, page 5-12).

5.2.1 Network Browser

The **Network Browser** displays the list of all NEs available to the operator in a tree-like structure. You can select the object you want to configure, view, modify or delete. The action to be taken is selected from the Menu bar or the object's pop up menu (cursor menu). By default the first time this window is opened, level two is displayed (i.e. all NEs).

By selecting an NE it is possible to gradually explode this level to display the shelf(s), slots and ports (if any), as well as network interfaces, and user ports.

NE Connection State

The Network Browser displays (at the NE level) an icon that identifies the connection state of each NE (not connected, not connected (trying), not connected (cancelling), connected (synchronizing) and connected.

5.2.2 Menu Bar

The Menu bar entries are enabled/disabled depending on the object selected in the Network Browser. The following table describes the Menu bar's main entries and subsequent submenus. The right column (Available at level) identifies the Network Browser item that needs to be selected to have this menu option available to the user.

Menu entries	Available at level
File -> New -> NE	All
File -> Open	NE, Shelf, Slot, User Port (physical and logical), Physical DS1 (physical and logical), Logical DS1 List, Logical TO List, VRT/VB List, VRT/VB id
File -> Delete	NE
File -> Print -> Window	
File -> Print -> Table	
File -> Print -> Preview	
File -> Exit	Any
Edit -> Cut	Text editing field
Edit -> Copy	Text editing field
Edit -> Paste	Text editing field

Menu entries	Available at level
Edit -> Clear	Text editing field
View -> Expand Branch (+ sign on the left)	Any
View -> Collapse Branch (- sign on the left)	Any
View -> Reload	Window
Equipment -> Provisioning -> Create -> NE	All
Equipment -> Provisioning -> Edit/View	NE, Shelf, Slot, DS1 Feeder, Port (User Port/Physical DS1)
Equipment -> Provisioning -> Delete	NE
Equipment -> Provisioning -> Time Source Control	NE
Equipment -> Provisioning -> Date & Time	NE
Equipment -> NE Inventory Data	NE
Equipment -> EM-NE Synchronization	NE
Equipment -> NE Reset (INIT-SYS)	NE
Equipment -> NE SW Download	All
Equipment -> NE NVDS Backup	NE
Equipment -> NE NVDS Restore	NE
Equipment -> Shelf View	Shelf, MDS2 Shelf MDS2Shelf
Equipment -> Protection	Shelf
Equipment -> Program Copy	Shelf
Equipment -> Loopback	Physical DS1
Service -> Provisioning -> Add -> Logical DS1	VRT/VB id
Service -> Provisioning -> Add -> Logical T0	VRT/VB id, User Port
Service -> Provisioning -> Edit/View	Network Interfaces List, Logical DS1 List, Logical T0 List
Service -> VRT/VBs List	NE
Service -> Logical DS1 List	NE
Service -> Logical T0 List	NE
Alarms -> Alarm Viewer (cf. Chapter 6.3, page 6-10)	NE

Menu entries	Available at level
Test Manager -> Physical Port Test (cf. Chapter 6.4.1, page 6-24)	Port
Test Manager -> AP Test (cf. Chapter 6.4.2, page 6-26)	AP
TL1 -> Cut-through	NE
Window -> Cascade	Any
Window -> Window 1	Any
Window -> Window 2	Any
Help -> Index	Any (displays the help index for navigation through the EM help information)
Help -> On Window	Any (case sensitive online help).

5.2.3 Status Bar

Feedback from the NE is displayed on screen, as is progress information related to the commands issued by the AEM-NB. This feedback is provided by the status bar incorporated at the bottom of every single screen except Network Browser and Menu bar.

Figure 5-5 Status Bar (Example)

The status bar is composed of three sub-areas:

- **Message area**: Used to display feedback. It indicates what is being done. The last feedback message sent by the NE is displayed until a new command is sent or the window is closed.
- **Progress area**: Informs the user there are jobs running

- **Stop / Cancel button**: for commands: allows cancellation of commands. Note that Cancel does not imply undo.

If you try to close the window and the last command executed has not finished yet, you will be informed (*Warning* window) that there are still jobs running:

`You have running jobs. Do you want to continue?`

You have to decide whether to continue or wait until the job is finished.

5.2.4 Cursor Menu

Menu at the cursor position

Some objects in windows have a menu associated with them. This menu will pop up at the cursor position when the right mouse button is pressed. The cursor must not, however, be positioned on a Menu bar or a window frame. The cursor menu is not available in all dialogue boxes. The functions which can be executed using this cursor menu depend on the application of the respective dialogue box.

Select menu option

Proceed as follows to select a menu option from the cursor menu:

Step	Procedure
1.	Press and hold down the right mouse button.
2.	Drag the cursor onto the desired menu option.

Release the right mouse button to execute the menu option, or if you do not wish to execute a menu option, move the cursor away from the menu and release the right mouse button.

5.2.4.1 Structure and Cursor Menus

In the following table, the last column contains the cursor menus. It also shows (*in parenthesis*) the name of the window launched if the name of the cursor menu entry and the name of the window are not the same.

Browser entries	Cursor menu entries and associated windows
All	Create NE (*NE Information*)
All -> NE	NE Information Cut Through Delete NE
All -> NE -> Shelf	Shelf View Protection Program Copy
All -> NE -> Shelf -> IO-DS1	Edit (*IO-DS1*)

Browser entries	Cursor menu entries and associated windows
All -> NE -> Shelf -> IO-DS1 -> Physical DS1	Add/Edit (*Physical DS1-Logical DS1*) Loopback (*Physical DS1-Logical DS1*)
All -> NE -> Shelf -> COMDAC	Edit (*COMDAC*)
All -> NE -> Shelf -> CTU	Edit *(CTU)*
All -> NE -> Shelf -> AP	Edit *(AP)* AP Test
All -> NE -> Shelf -> AP -> User Port (Logical T0)	Add/Edit Logical T0 *(Logical T0)* Physical Port Test
All -> NE -> Shelf -> MDS2-1	MDS2 Shelf View
All -> NE -> Shelf -> MDS2B-1	MDS2B Shelf View
All -> NE -> Shelf -> MDS2-1 -> MSC	Edit (*MSC*)
All -> NE -> Shelf -> MDS2B-1 -> MSC	Edit (*MSC*)
All -> NE -> Shelf -> MDS2-1 -> PTU	Edit (*PTU*)
All -> NE -> Shelf -> MDS2B-1 -> PTU	Edit (*PTU*)
All -> NE -> MDS2-1 -> CU	Edit (*CU*)
All -> NE -> MDS2B-1 -> CU	Edit (*CU*)
All -> NE -> VRT/VBs List	Edit (*VRT/VB List*)
All -> NE -> VRT/VBs List -> VRT/VB Type (TR-303, TR-08, INA)	Edit (*VRT/VB List*)
All -> NE -> VRT/VBs List -> VRT/VB Type (TR-303, TR-08, INA) -> VRT/VB id	Edit (*VRT/VB*) Edit Logical DS1 List (*Logical DS1 List*) Edit Logical T0 List (*Logical T0 List*) Add Logical DS1 (*Physical DS1-Logical DS1*) Add Logical T0 (*Logical T0*)
All -> NE -> Logical DS1 List	Edit (*Logical DS1 List*)
All -> NE -> Logical T0 List	Edit (*Logical T0 List*)

5.3 Equipment Configuration

Overview

Configuration of Specific Equipment Data is the process of preparing the AEM-NB for control of the *AnyMedia* Access System by configuring and setting any required option.

Prior to network interface configuration and service configuration, the AEM-NB must know some data of the equipment; this is done during the NE creation process, which is usually followed by circuit pack configuration.

Then, during NE management, some other tasks regarding equipment configuration can be performed by the AEM-NB, e.g. Date & Time Management, Timing Synchronization Management, Protection Management, etc.

Finally, if the NE is not managed by the AEM-NB any longer, it shall be deleted from the AEM-NB database.

The description of equipment configuration is divided in three main sections:

- Add NE (cf. Chapter 5.3.1, page 5-16)
- Edit/view configuration data (cf. Chapter 5.3.2, page 5-21)
- Delete NE (cf. Chapter 5.3.3, page 5-67).

Figure 5-5, page 5-15 shows an overview of the screen navigation for equipment configuration. In this figure is assumed that the NE is already connected (cf. Chapter 5.3.1, page 5-16).

The boxes with a gray background show the Network Browser selection the other boxes show the possible menus that can be reached by using the Menu bar or the cursor menu.

The arrows represent the order in which the windows can be opened.

Examples

To open the *COMDAC Shelf Protection* window proceed as follows:

- Select ***All -> NE -> Shelf -> COMDAC*** via the Network Browser and select ***Equipment -> Protection*** via the Menu bar or
- Select ***All -> NE -> Shelf ->*** via the Network Browser and select ***Protection*** via the cursor menu.

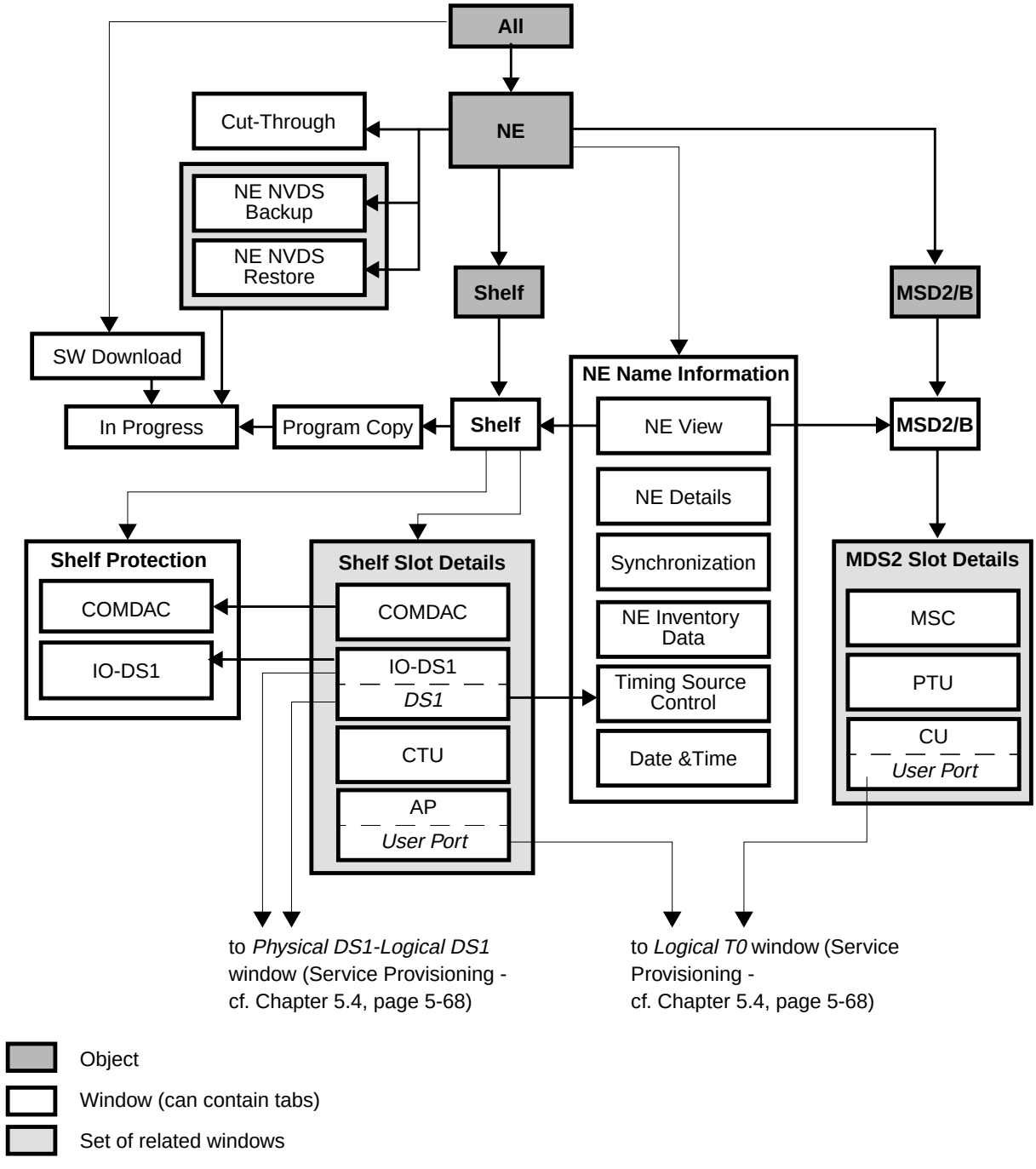


Figure 5-5 Screen Navigation for Equipment Configuration

5.3.1 Add an NE

The following steps are necessary to add an NE:

- Create NE
- Assign Domain
- Connect NE.

Assumptions

To add an NE the following assumptions must be fulfilled:

- The PC-based GSI (Graphical System Interface) is used to set the NE in a state where NVDS (Non-Volatile Data Storage) is populated with the minimum values (i.e. target id, IP-address, user id).
- All those parameters are assumed to be known by the Operator.
- The DCN link with the NEs is available (cf. Appendix A).
- Domains are already created (cf. Chapter 4.3.1).

Add NE Procedure

Complete the following procedure to add an NE.

Step	Procedure
1.	Select ***ALL*** in the Network Browser and ***Create NE*** via the cursor menu or select ***File -> New -> NE*** or ***Equipment -> Provisioning -> Create -> NE*** via the Menu bar. The *NE Name Information* window pops up:

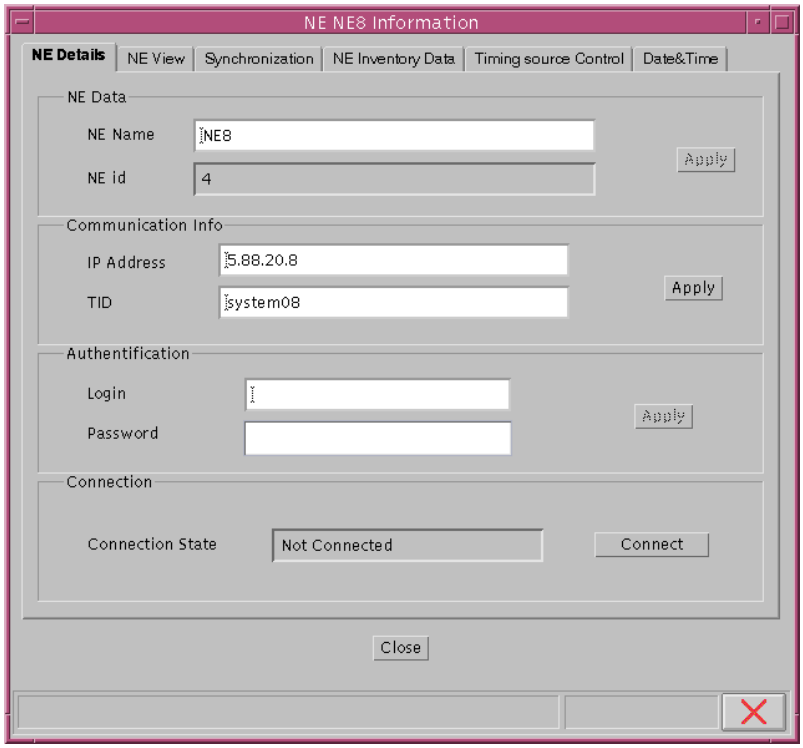


Figure 5-6 "NE Name Information" Window

While creating a new NE the tab **NE Details** is active by default.

2. Enter an appropriate **NE name** in the corresponding field. All characters are allowed, the maximum length is 30 characters. (At this stage the fields **Communications Info**, **Authentication** and **Connection** are not available.)

   The field **NE id** shows a unique identifier internally used by the AEM-NB.

3. Press ***Apply*** to confirm. The *Domain Selection* window pops up.

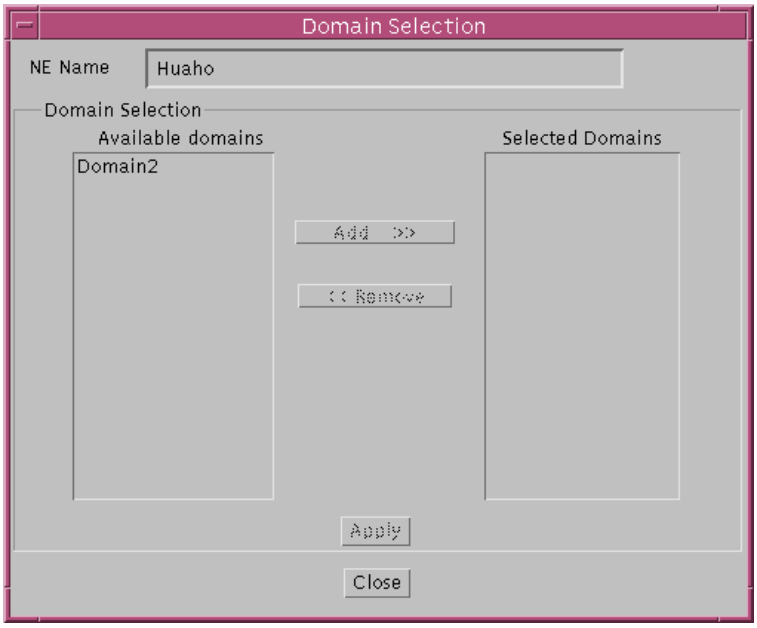


Figure 5-7 "Domain Selection" Window

Assign Domain

At creation time, the NE must be included in one or several domains (for domain creation see chapter 4). The *Domain Section* window consists of two lists: **Available Domains** and **Selected Domains**. This window provides the user with the facilities needed to select the domains from which the NE will be accessible.

4. Use the ***Add >>*** button to move the selected NE from the **Available Domains** list box to the **Selected Domains** one. Use ***<< Remove*** to remove domains from the **Selected Domains** list.
   (The ***Add >>*** button and the ***<< Remove*** button are available only after having selected a domain name from the corresponding list.)

5. Press ***Apply*** to confirm.
   In the *NE Name Information* window the fields **Communications Info**, **Authentication** and **Connection** are now displayed. The **Connection State** is set to **Not Connected** (see step 7).

NOTE:
If you decide to close this window (via ***Close*** or window controls), a *Warning* window pops up informing you of the possible rejection of the NE creation:

At least 1 domain must be selected. Otherwise the NE creation operation will be rejected. Do you want to go back to Domain Selection?

If you select ***No***, the creation of the NE is rejected. Otherwise, the *Domain Selection* window is activated. The window remains on the screen until you make a decision.

Connect NE

NOTE:
To establish the connection to the created NE first you have to enter the appropriate data in the fields **Communications Info** and **Authentication** in the *NE Name Information* window. After that it is possible to establish the connection by pressing ***Connection***. Depending on the **Connection State** this Label button provides different functions: ***Connect, Disconnect, Cancel***.

6. Enter the **IP Address** and **TID** (Target ID, the name of the NE to which the connection is addressed) of the new NE in the field **Communications Info**. IP Address format: xxx.xxx.xxx.xxx; where x is a numeric [0, 9]; the TID has a range from 1 to 20 characters.

NOTE:
Once the connection is established, these fields can not be edited unless the connection is broken.

7. Press ***Apply*** to confirm.

8. Enter the **Login** and **Password** in the **Authentication** pane.

NOTE:
Once the connection is established, these fields can not be edited unless the connection is broken.

9. Press ***Apply*** to confirm.

NOTE:
Now the connection can be established. The label button in the field **Connection** displays **Connect.**

10. Press ***Connect*** to establish the connection.
If all entries were correct the connection will be established and the new NE can be displayed on the Network Browser.
Wrong entries (incorrect login or password) will result in an error message.

NOTE:
The field **Connection State** reflects the current connection state with the NE (Not Connected, Not Connected (Trying), Not Connected (Cancelling), Connected (Synchronizing) and Connected).
The label button on the right hand side can be used to change the connection state (**Connect**, if the connection state is Not Connected; **Disconnect**,

if the connection state is Connected or Connected (Synchronizing); Cancel, if the connection state is Not Connected (Trying).

Edit and provisioning actions are only possible once the connection is established. Only in this case the NE can be displayed on the Network Browser.

Adding an NE is normally followed by setting timing source (cf. Chapter 5.3.2.4, page 5-52) and configuring simplex COMDAC protection (cf. Chapter 5.3.2.6, page 5-58).

5.3.2 Edit/View of Configuration Data

All edit/view actions of configuration data can be started via *NE Name Information* window.

NE Name Information

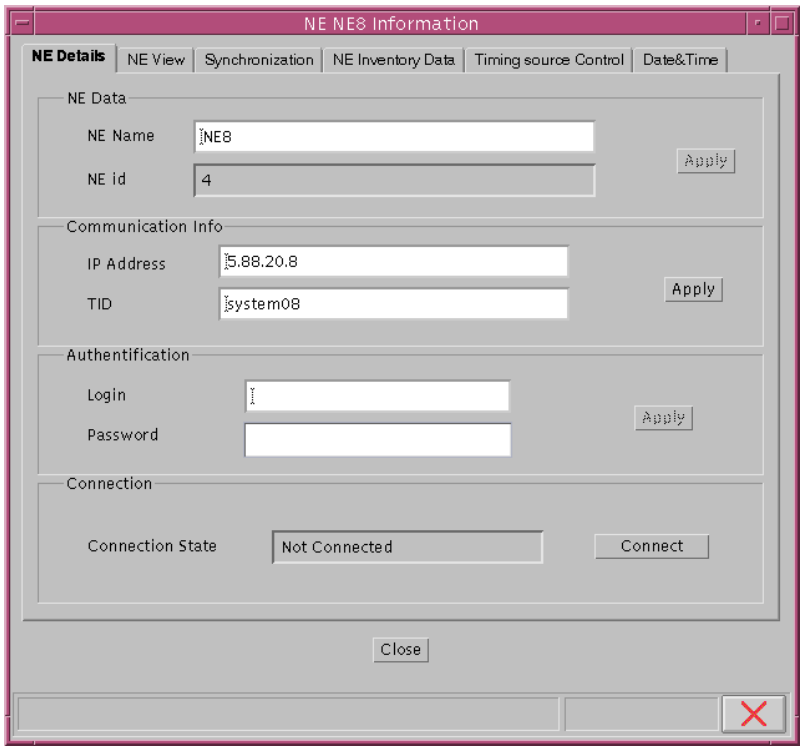


Figure 5-8 "NE Name Information" Window

This window includes of 6 tabs:

- NE Details (cf. Chapter 5.3.1, page 5-16)
- NE View (cf. Chapter 5.3.2.1, page 5-21)
- NE Synchronization (cf. Chapter 5.3.2.2, page 5-46)
- NE Inventory Data (cf. Chapter 5.3.2.3, page 5-49)
- Timing Source Control (cf. Chapter 5.3.2.4, page 5-52)
- Date & Time (cf. Chapter 5.3.2.5, page 5-55).

5.3.2.1 NE View

The purpose of this tab of the *NE Name Information* window is to provide a simple graphical representation of the NE shelves (in case of multiple shelves).

Complete the following procedure to display the shelf view:

Step	Procedure
1.	Select ***All -> NE*** in the Network Browser and ***NE Information*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar. The *NE Name Information* window pops up.
2.	Click on tab ***New View***

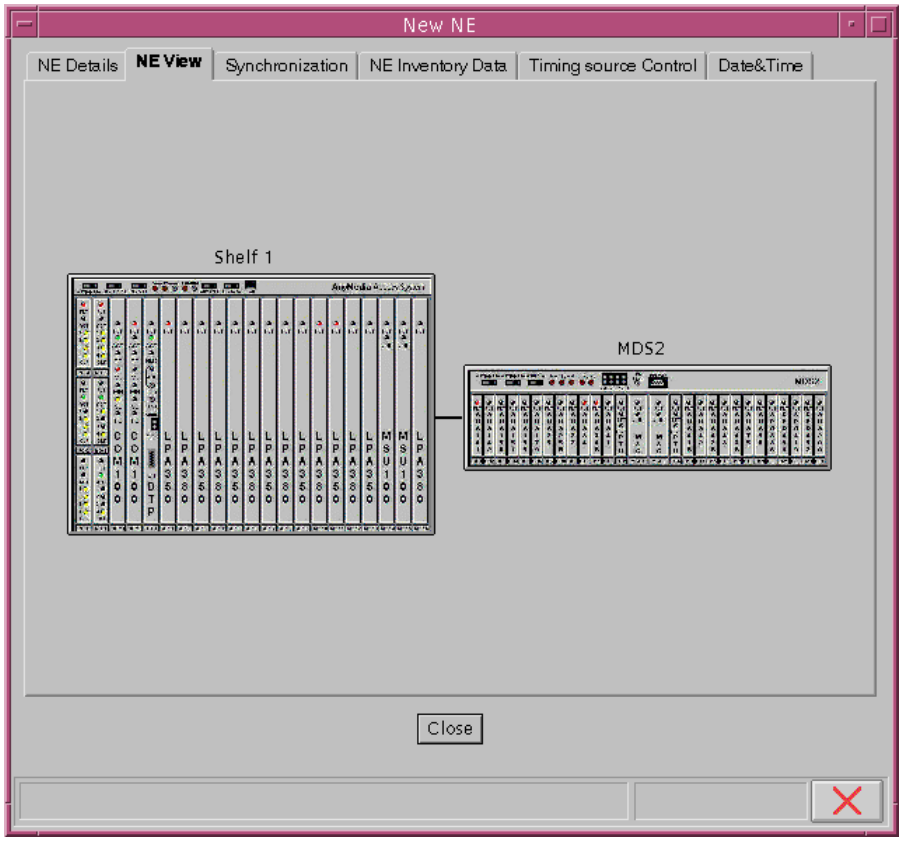


Figure 5-9 "NE Name Information" Window (Tab NE View)

It is possible to navigate to the different shelves with a single click on the appropriate box
(***Shelf 1->*** *Shelf View* window - cf. Chapter 5.3.2.1.1, page 5-23;
MDS2/MDS2B-> *MDS2/MS2B Shelf View* window - cf. Chapter 5.3.2.1.2, page 5-25).

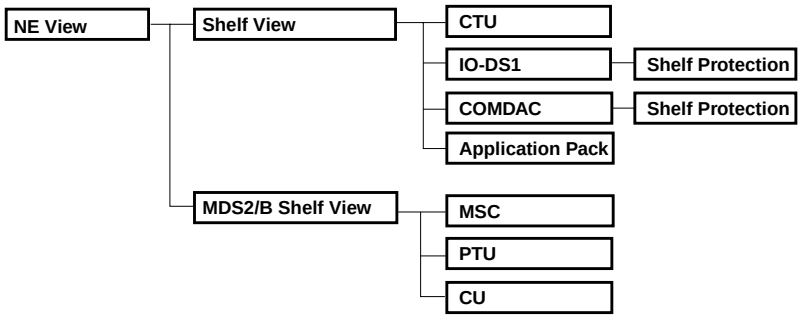


Figure 5-10 Menu Tree

5.3.2.1.1 Shelf View Window

This window provides general inventory, provisioning and alarm information (through the circuit pack LEDs). Each slot will show the card type inserted and its alarms (when applicable). If the slot is empty, no card will be shown.

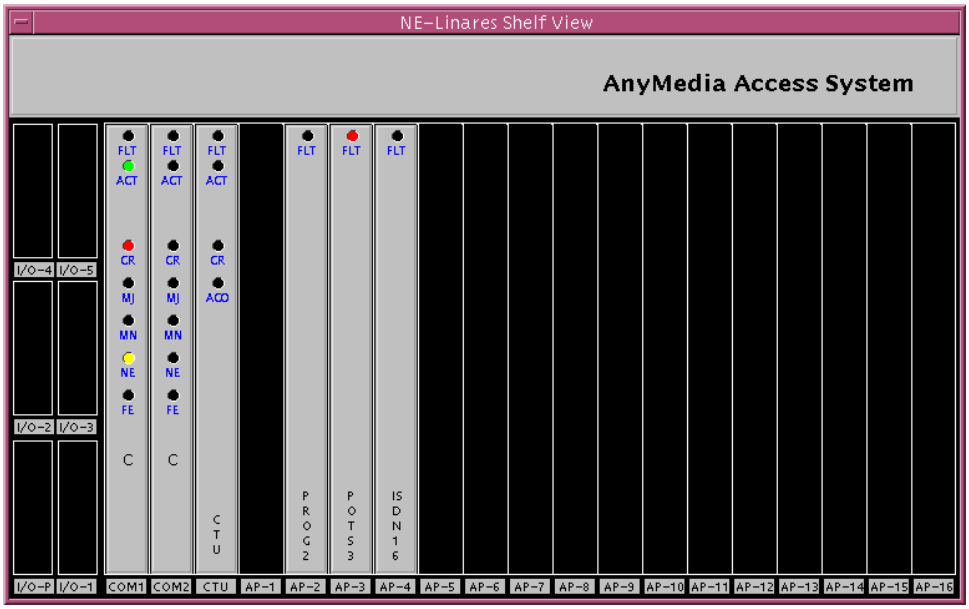


Figure 5-11 "Shelf View" Window

Single clicking on any slot will launch the card-specific window even when the card is not inserted (cf. Chapter 5.3.2.1.3, page 5-27 for IO-DS1, Chapter 5.3.2.1.4, page 5-30 for COMDAC, Chapter 5.3.2.1.5, page 5-32 for CTU, Chapter 5.3.2.1.6, page 5-34 for Application Pack).

The Shelf View window displays different colors for different types of LEDs. The following table describes the colors which will be used for each LED type inside every card type. The table describes the color used when the LED is ON or is blinking. If the LED is OFF the color black is used.

Circuit Pack	LED	Color	Meanings
IO-DS1	FLT	red	■ Lit during circuit pack failure ■ Flashes when the circuit pack executes off-line self-test.
	ACT	green	Lit when the circuit pack is service-active.
	CLF1	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 1.
	CLF2	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 2.
	CLF3	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 3.
	CLF4	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 4.
COMDAC	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes during software download and turnup.
	ACT	green	Indicates that this COMDAC is active.
	CR	red	Lit when the highest severity alarm is critical.
	MJ	red	Lit when the highest severity alarm is major.
	MN	yellow	Lit when the highest severity alarm is minor.
	NE	yellow	Lit when the source of the fault or abnormal condition is near end.
	FE	yellow	Lit when the source of the fault or abnormal condition is far end.
CTU	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes on turnup.
	ACT	green	Lit when a test is in progress.
	MISC	yellow	Lit when one of the eight miscellaneous alarm inputs is active.
	ACO	green	For future use
All Application Packs	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes during software download and turnup.

Circuit Pack	LED	Color	Meanings
AP (MDSU)	FLT	red	Lit when a fault is detected on the circuit pack.
	LNK	yellow	■ Lit when loss of clock/sync signal is detected ■ Flashes when incorrect MDSU/MDS2/MDS2B side association is detected.

See Chapter 6.2, page 6-1 for more details about alarm handling.

5.3.2.1.2 MDS2/MDS2B Shelf View Window

This window provides general inventory, provisioning and alarm information (through the circuit pack LEDs). Each slot will show the card type inserted and its alarms (when applicable). If the slot is empty, no card will be shown.

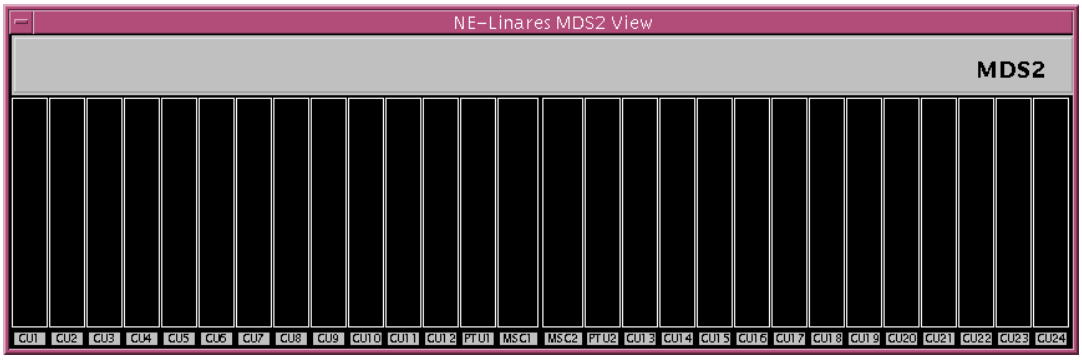


Figure 5-12 "MDS2 Shelf View" Window

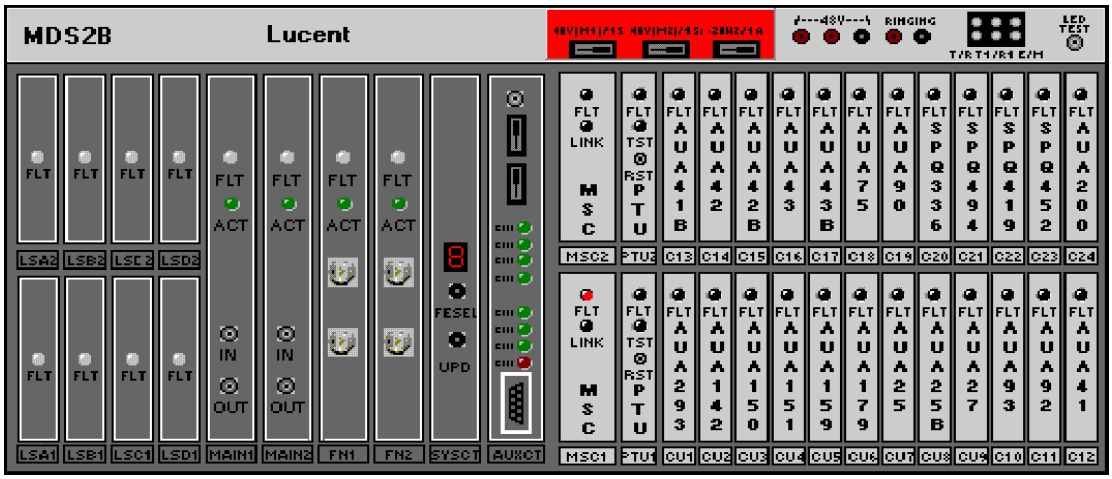


Figure 5-13 "MDS2B Shelf View" Window

Single clicking on any slot will launch the card-specific window (cf. Chapter 5.3.2.1.7, page 5-38 for MSC, Chapter 5.3.2.1.8, page 5-40 for PTU, Chapter 5.3.2.1.9, page 5-42 for CU).

Circuit Pack	LED	Color	Meanings
CU	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes during software download and turnup.
MSC	FLT	red	Lit when a fault is detected on the circuit pack.
	LNK	yellow	■ Lit when loss of clock/sync signal is detected ■ Flashes when incorrect MDSU/MDS2/MDS2B side association is detected.
PTU	FLT	red	Lit when a fault is detected on the circuit pack.
	TST		Lit when a channel served by the PTU is under test.

5.3.2.1.3 Configure IO-DS1

The IO-DS1 circuit pack provides four physical DS1 interfaces to accommodate telephony via standard TR-08, TR-303 and INA network interfaces.

This window can be displayed even when the circuit pack is not plugged in.

Procedure

Complete the following procedure to view/edit the IO-DS1 data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> IO-DS1*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***IO-DS1*** in *Shelf View* window. The *IO-DS1* window pops up:

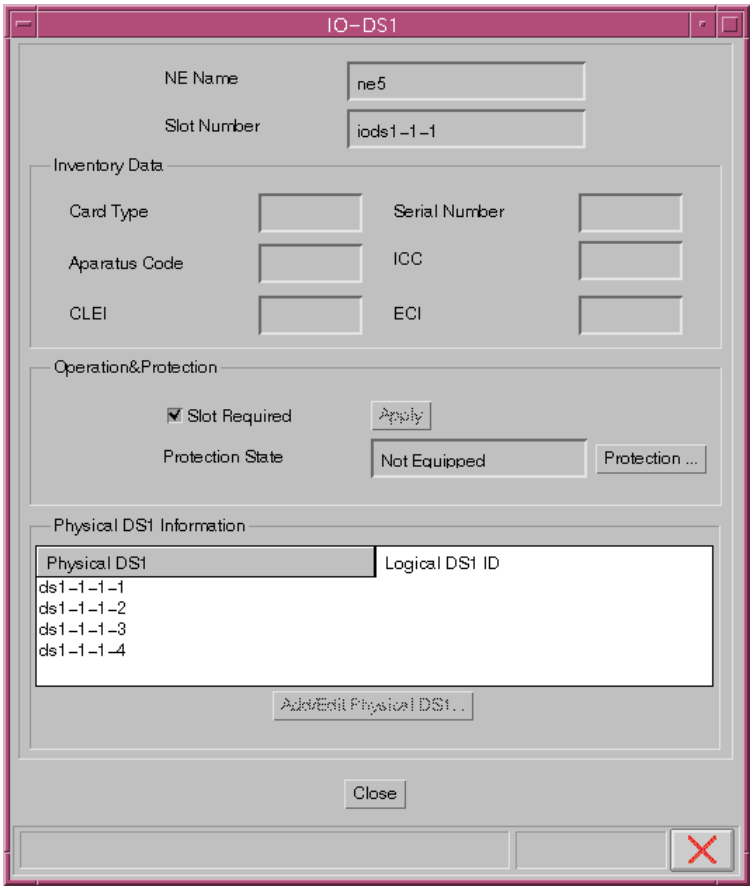


Figure 5-14 "IO-DS1" Window

The following table shows the view/edit options of the *IO-DS1* window:

Parameters/ Buttons	Description
NE Name	NE name of the selected NE (max. 30 characters).
Slot	Slot format: iods1-1-shelf-slot (e.g. iods1-1-2-4 for working IO-DS1s and iods1p-shelf (e.g. iodsp1-1) for the protection IO-DS1. Possible values: iods1-{1}-{1, 5} for working IO-DS1 iods1p-{1} for protection IO-DS1.
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible value: IODS1. **Serial Number**: 12-character alphanumeric code that includes the date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible values are: FAC 100. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes.
Operation & Protection	**Slot Required** displays the required state of the shelf slot. This state can be changed by the operator as long as the circuit pack is **not** inserted. Default state for iods1: **Not Required** (with the exception of iods1p whose default is **Required**) The ***Apply*** button is available only if the IO-DS1 is not inserted and the required state of the IO-DS1 has been modified by the operator. The read-only text field **Protection State** shows whether the selected IO-DS1 is working or not. Possible values: **Working** (providing service) or **Standby** (not in service). The ***Protection...*** button provides access to the *Shelf Protection* window.

Parameters/ Buttons	Description
Physical DS1 Information	The information in this field is displayed in a table (4 rows, one per physical DS1): ■ **Physical DS1**: Physical address of the DS1 feeders. Feeders are DS1 circuits used to provide the Virtual Remote Terminal (VRT) or INA Virtual Bank (VB) feeder facilities. Format: ds1-slot-port (e.g. ds1-1-4). ■ **Logical DS1 id**: This is the id used to identify logical feeders. Possible values: v3fdr-1-{1, 28} for TR-303 v8fdr-{1, 20}-{a, b, c, d} for TR-08 ina-{1,20} for INA Once a row in the table is selected, the ***Add/Edit Logical DS1...*** button becomes available.

2. Use the check box **Slot Required** in the pane **Operation & Protection** to define the required slot state.

3. Click on ***Apply*** to confirm the change of the state of the shelf slot (the window remains on screen for further use).

   Go to step 4 to modify protection; go to step 5 to edit the logical DS1.

4. Use the ***IO-DS1 Protection...*** button to open the *Shelf Protection* window (IO-DS1 tab - cf. Chapter 5.3.2.7, page 5-59) to modify the current protection scheme or to perform protection switches.

5. Select a row in the **Physical DS1 Information** list.

6. Click on ***Edit Logical DS1...*** to open the corresponding *Physical DS1-Logical DS1* window (Chapter 5.4.3, Figure 5-36, page 5-84). The same result will be obtained by double clicking on any row.

5.3.2.1.4 Configure COMDAC

The COMDAC (Common Data and Control) circuit pack performs the main bandwidth management and control functions for the system.

This corresponding window contains all the information related to the COMDAC. It can be displayed even when the circuit pack is not plugged-in.

Procedure

Complete the following procedure to view/edit the COMDAC data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> COMDAC*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***COMDAC*** in *Shelf View* window. The *COMDAC* window pops up:

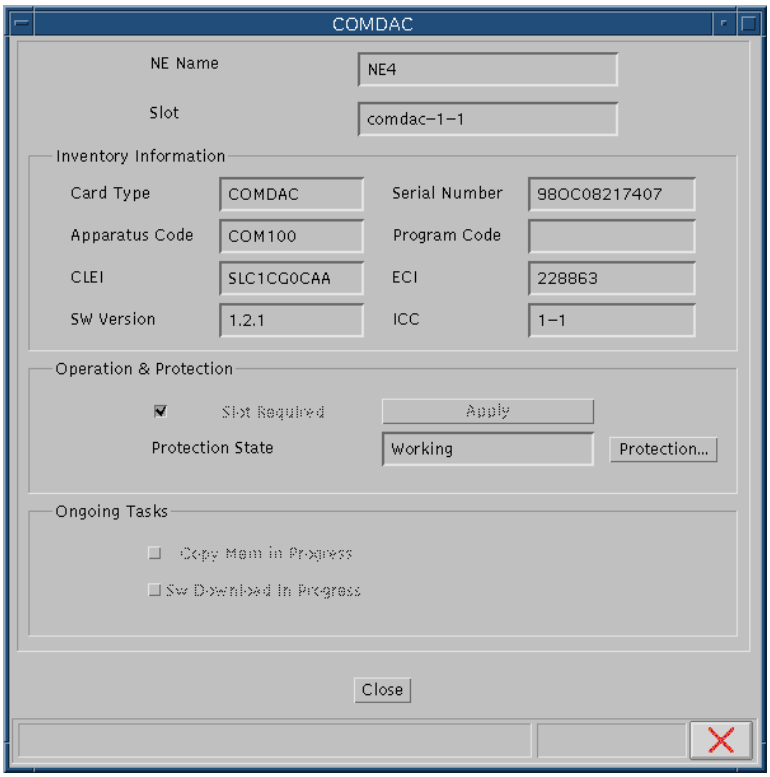


Figure 5-15 "COMDAC" Window

The following table shows the view/edit options of the *COMDAC* window:

Parameters/ Buttons	Description
NE Name	NE name of the selected NE (max. 30 characters).
Slot	Slot number where the COMDAC is plugged in. Slot format: comdac-1-{1,2}
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible value: COMDAC. **Serial Number**: 12-character alphanumeric code that includes the date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible value: COM100. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes. **SW Version**: Obtained from the NE at connection time. Internally, the AEM-NB will have to verify whether the mentioned SW Version is manageable by the system. **Program Code**: Code of the SW currently stored in the plug-in.
Operation & Protection	This field is described in Chapter 5.3.2.6, page 5-58.
Ongoing Tasks	**Copy Mem in Progress,** **Sw Download in Progress** These check boxes indicate operations in progress which can take a long time and must be known by the operator.They will be refreshed when the window is launched or when refreshing the whole window.

5.3.2.1.5 Configure CTU

The CTU (Craft Test Unit) circuit pack provides both channel testing support and a termination for local operations, administration, maintenance and provisioning.

This corresponding window contains all information related to the CTU. It can be displayed even when the circuit pack is not plugged in.

Procedure

Complete the following procedure to view/edit the CTU data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> CTU*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***CTU*** in *Shelf View* window. The *CTU* window pops up:

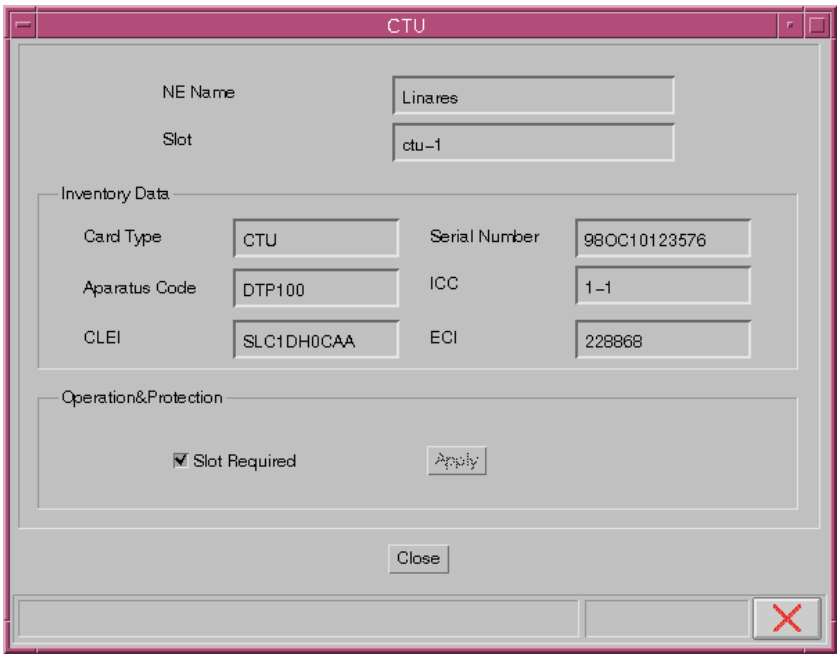


Figure 5-16 "CTU" Window

The following table shows the view/edit options of the *CTU* window:

Parameters/ Buttons	Description
NE Name	NE name of the selected NE (max. 30 characters).
Slot	Slot number where the CTU is plugged in.
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible value: CTU. **Serial Number**: 12-character alphanumeric code that includes the date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible value: DTP100. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes.
Operation & Protection	The check box **Slot Required** displays the required state of the shelf slot. This state can be changed in the case of CTU, regardless of the slot status. Default state for CTU: **Not Required** (empty check box). The ***Apply*** button is available only if the required state of CTU has been modified by the operator.

2. Use the check box **Slot Required** to define the slot state.

3. Press ***Apply*** to confirm (the window remains on screen for further use).

5.3.2.1.6 Configure Application Pack

The APs (Application Packs) provide the line side interface functionality that provide service to end-users.

The corresponding window contain all information related to the AP. It can be displayed even when the circuit pack is not plugged in.

Procedure

Complete the following procedure to view/edit the Application Pack data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> AP*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***AP*** in *Shelf View* window. The *Application Pack* window pops up:

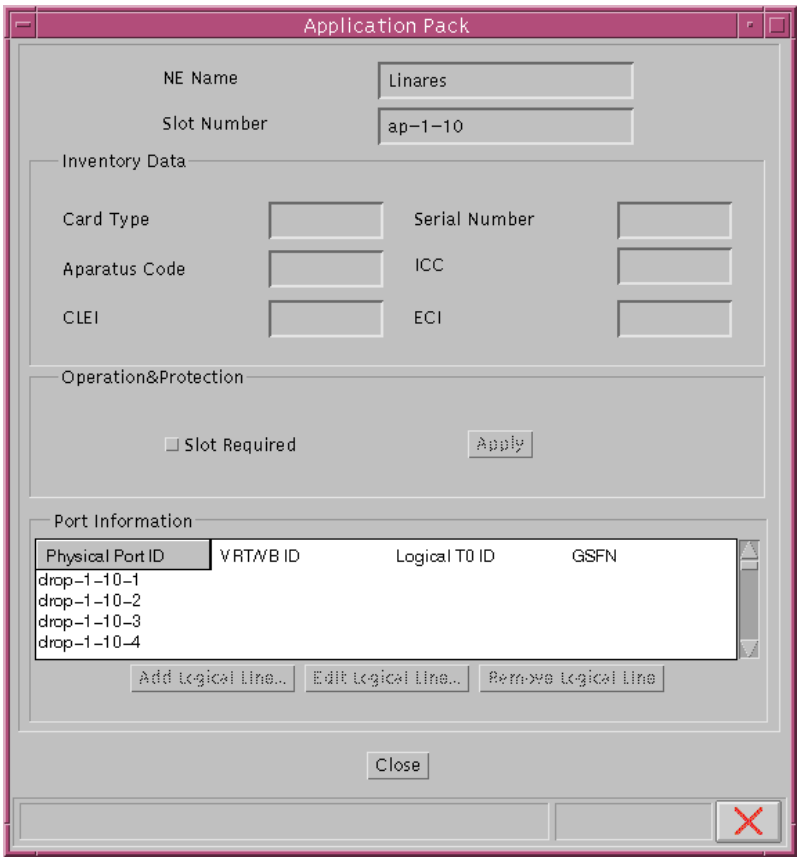


Figure 5-17 "Application Pack" Window

The following table shows the view/edit options of the *Application Pack* window:

Parameters/ Buttons	Description
NE Name	NE Name of the selected NE (max. 30 characters).
Slot	Slot number where the AP is plugged in. Format: ap-{1,16}
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible values: cf. Table 5-1, page 5-37. **Serial Number**: 12-character alphanumeric code that includes the date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible values: cf. Table 5-1, page 5-37. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes.
Operation & Protection	The check box **Slot Required** displays the required state of the shelf slot. This state can be changed only if the card is not inserted. The ***Apply*** button is available only if the required state of the AP has been modified from **Required** to **Not Required.**

Parameters/ Buttons	Description
Port Information	This pane contains a table displaying port information. This information is presented in a 4-column table. The table is sorted by **Physical Port id**. A scroll bar allows navigation through the table. Rows in the table can be selected to edit (single row selection) or delete (single or multiple row selection) the corresponding Logical T0(s) through the use of the ***Edit Logical T0...*** or ***Delete Logical T0...*** buttons (see below). ■ **Physical Port id**: Identifies the port within the application pack. Format: drop-shelf-slot-port Possible values: drop-1-{1,16}-{1,32} The following entries are available only if a port is already cross-connected (not yet implemented for R1.5). ■ **VRT/VB id**: shows the VRT/VB id on which the service is provided - only available if the physical port is cross-connected. VRT/VB id format: v303-1 for TR-303, v08-{1, 20} for TR-08 ina-{1, 20} for INA ■ **Logical T0 id**: Indicates the Logical T0 id within the VRT/VB id shown in the row (only available if the physical port is cross-connected). Possible values: v3dp-{1}-{2048} for TR-303 v8dp-{1, 20}-{1, 96} for TR-08 inads0-{1, 20}-{1, 24} for INA ■ **GSFN**: Generic Signalling Function that identifies the service type provided. The following values are possible: DFLT (default), 2LS, 2GS, Coin, 2FXLS, 2FX, 2RV0, 2NOS, ISDN and 4DO (only for ROC), Unknown.
	The ***Add Logical T0...*** button provides access to the *Logical T0* window. In this case, the Physical Port id will be transferred. This button is enabled only if a physical port is selected with no cross-connection to a logical T0 id. The ***Edit Logical T0...*** button provides access to the *Logical T0* window where you will be able to edit the logical T0 parameters (whenever this is possible) or even remove the existing cross-connection (delete Logical T0) of the selected User Port from the list. This button is enabled only if a physical port cross-connected to a logical T0 is selected. The ***Delete Logical T0...*** button removes the cross-connection selected in the list (see above).

2. Use the check box **Slot Required** to define the slot state.

3. Press ***Apply*** to confirm (the window remains on screen for further use).

If ...	then ...
you want to add a Logical T0	select a row in the **Port Information** list and press ***Add Logical T0...***. The *Logical T0 List* window pops up (cf. Chapter 5.4.7, page 5-90).
you want to edit a Logical T0	select a row in the **Port Information** list and press ***Edit Logical T0...***. The *Logical T0* window pops up (cf. Chapter 5.4.8, page 5-112).
you want to delete a cross-connection	select the desired **Logical T0 id** in the **Port Information** list and press ***Delete Logical T0...***. A *Warning* window pops up displaying the following message:

`Logical T0 will be deleted. Ok to proceed?`

NOTE:
If the logical T0 is red-lined the following warning message pops up:
`Redlined logical T0 will be deleted. Ok to proceed?`

4. If you decide to continue, the remove operation will be started. The information displayed will be updated once the remove operation is finished to show the current list.

Table 5-1 AP Cards - Possible Values

Card Type	Apparatus Code	CLEI
PROG2W	LPA380	E5ISFB0AAA
POTS32	LPA300	SLCUVR0BAA
PRCOIN	LPA350	E5ISFA0AAA
ISDN16_U	LPU116	E5PQAXUAAA
AFM_DS33	LPA900	SLCUZN0BAA
ADSL4	LPA400	E5ICNJ0AAA
MDSU	MSU100	SAPQADMBAA

5.3.2.1.7 Configure MSC

The MSC (Metallic Shelf Controller) circuit pack provides the required shelf interface and central control for half of the MDS2 Shelf or MDS2B Shelf.

The corresponding window contains all information related to MSC. It can be displayed even when the circuit pack is not plugged in.

Procedure

Complete the following procedure to view/edit the MSC (Metallic Shelf Controller) data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> MSC*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***MSC*** in *MDS2/MDS2B Shelf View* window. The *MSC* window pops up:

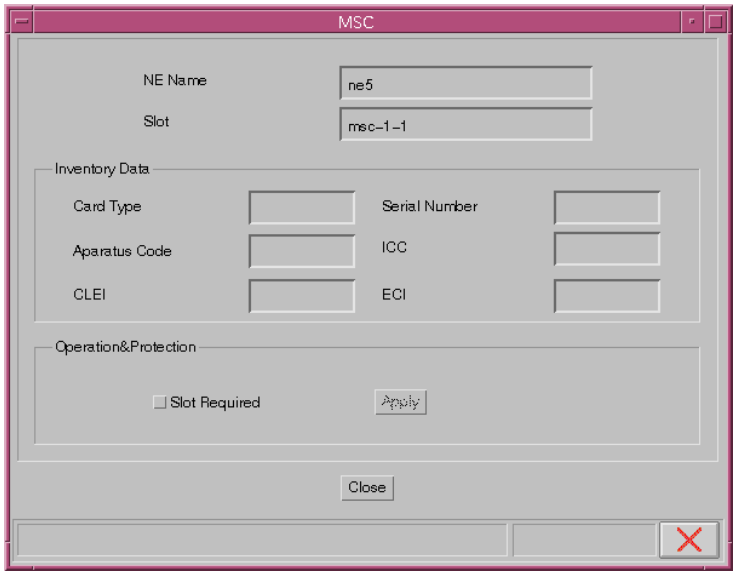


Figure 5-18 "MSC" Window

The following table shows the view/edit options of the "MSC" window:

Parameters/ Buttons	Description
NE Name	NE name of the selected NE (max. 30 characters).
Slot	Slot number where the MSC is plugged in. Possible values: msc-1-{1,2}
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible values: MSC. **Serial Number**: 12-character alphanumeric code that includes the date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible value: MSC100. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes.
Operation & Protection	The check box **Slot Required** displays the required state of the shelf slot. This state can be changed by the operator only if the card is not inserted. The ***Apply*** button is available only if the required state of MSC has been modified by the operator.

2. Use the check box **Slot Required** to define the slot state.

3. Press ***Apply*** to confirm (the window remains on screen for further use).

5.3.2.1.8 Configure PTU

The PTU (Power Test Units) circuit pack provides power converters to distribute +5V and -5V power to the CUs and 5V power to the MSC.

The corresponding window contains all information related to PTU pack. It can be displayed even when the circuit pack is not plugged in.

Procedure

Complete the following procedure to view/edit the PTU (Power Test Unit) data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> PTU*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***PTU*** in *MDS2/MDS2B Shelf View* window. The *PTU* window pops up:

Figure 5-19 "PTU" Window

The following table shows the view/edit options of the "PTU" window:

Parameters/ Buttons	Description/Action
NE Name	NE name of the selected NE (max. 30 characters).
Slot	Slot number where the PTU is plugged in. Possible values: ptu-1-{1,2}.
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible values: PTU. **Serial Number**: 12-character alphanumeric code that includes date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible value: BDJ200. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes.
Operation & Protection	The check box **Slot Required** displays the required state of the shelf slot. This state can be changed by the operator only if the card is not inserted. The ***Apply*** button is available only if the required state of MSC has been modified by the operator.

2. Use the check box **Slot Required** to define the slot state.

3. Press ***Apply*** to confirm (the window remains on screen for further use).

5.3.2.1.9 Configure CU

The CU (Channel Unit) circuit packs provides the line side interface functionality that provide service to end-users.

The corresponding window contains all information related to CU packs. It can be displayed even when the pack is not plugged in.

Procedure

Complete the following procedure to view/edit the CU (Channel Unit) data:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> CU*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar or single click on the circuit pack ***CU*** in *MDS2/MDS2B Shelf View* window. The *Channel Unit* window pops up:

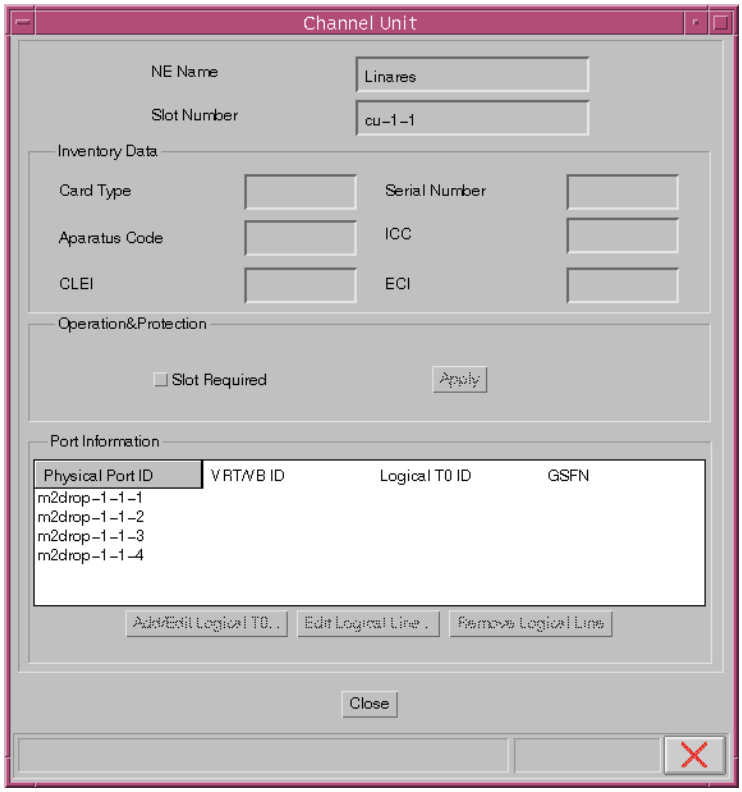


Figure 5-20 "Channel Unit" Window

The following table shows the view/edit options of the *CU* window:

Parameters/ Buttons	Description/Action
NE Name	NE name of the selected NE (max. 30 characters).
Slot	Slot number where the CU is plugged in. Possible values: cu-1-{1, 24}.
Inventory Information	The read-only text fields provide the following information: **Card Type**: 11-character mnemonic used to identify the general type of function provided. Possible values: cf. Table 5-2, page 5-45. **Serial Number**: 12-character alphanumeric code that includes the date and place of manufacture. **Apparatus Code**: Specifies the function of the plug-in. Possible values: cf. Table 5-2, page 5-45. **ICC (InterChangeability Code)**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the Issue number and **n** the Series Number. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes.
Operation & Protection	The check box **Slot Required** displays the required state of the shelf slot. This state can be changed by the operator only if the card is not inserted. The ***Apply*** button is available only if the required state of CU has been modified by the operator.

Parameters/ Buttons	Description/Action
Port Information	This pane contains a table displaying port information. This information is presented in a 4-column table. The table is sorted by **Physical Port id**. A scroll bar allows navigation through the table. Rows in the table can be selected to edit (single row selection) or delete (single or multiple row selection) the corresponding Logical T0(s) through the use of the ***Edit Logical T0...*** or ***Delete Logical T0...*** buttons (see below). ■ **Physical Port id**: Identifies the port within the application pack. Format: m2drop-shelf-slot-port Possible values: m2drop-1-{1,24}-{1,4}. The following entries are available only if a port is already cross-connected (not yet implemented for R1.5). ■ **VRT/VB id**: shows the VRT/VB id on which the service is provided - only available if the physical port is cross-connected VRT/VB id format: v303-1 for TR-303 v08-{1, 20} for TR-08 ina-{1, 20} for INA. ■ **Logical T0 id**: Indicates the Logical T0 id within the VRT/VB id shown in the row - only available if the physical port is cross-connected. Possible values: v3dp-{1}-{2048} for TR-303 v8dp-{1}-{1, 96} for TR-08 inads0-{1, 20}-{1, 24} for INA. ■ **GSFN**: Generic Signalling Function that identifies the service type provided. The following values are possible: AC, BRI, DATA, DPT, DX4[N, R], EBS, ETO4, FXO, FX[S,T][1,2,3,5], LR, NO[1,2], OCU[1,2,3], PLR[1,2], SW56, TD[O, S][A,B,C,D], TO, TO4, EM4[C, H], FX[O,P][1,2,3,5], EM4[C, H], Unknown.
	The ***Add Logical T0...*** button provides access to the *Logical T0* window. In this case, the Physical Port id will be transferred.This button is enabled only if a physical port is selected with no cross-connection to a logical T0 id. The ***Edit Logical T0...*** button provides access to the *Logical T0* window where you will be able to edit the Logical T0 parameters (whenever this is possible) or even remove the existing cross-connection (delete Logical T0) of the selected User Port from the list. This button is enabled only if a physical port cross-connected to a logical T0 is selected. The ***Delete Logical T0...*** button removes the cross-connection selected in the list (see above).

2. Use the check box **Slot Required** to define the slot state.

3. Press ***Apply*** to confirm (the window remains on screen for further use).

If ...	then ...
you want to add a Logical T0	select a row in the **Port Information** list and press ***Add Logical T0...***. The *Logical T0 List* window pops up (cf. Chapter 5.4.7, page 5-90).
you want to edit a Logical T0	select a row in the **Port Information** list and press ***Edit Logical T0...***. The *Logical T0* window pops up (cf. Chapter 5.4.8, page 5-112).
you want to delete a cross-connection	select the desired **Logical T0 id** in the **Port Information** list and press ***Remove Logical T0...***. A *Warning* window pops up displaying the following message.

`Logical T0 will be deleted. Ok to proceed?`

NOTE:
If the logical T0 is red-lined the following warning message pops up:
`Redlined logical T0 will be deleted. Ok to proceed?`

4. If you decide to continue, the remove operation will be started. The information displayed will be updated once the remove operation is finished to show the current list

Table 5-2 CU Cards - Possible Values

Card Type	Apparatus Code	CLEI
AUA293	AUA293	5SC4PT0CAA
SPQ429	SPQ429	SAC1AK0AAA
SPQ442	SPQ442	SAC1AH0AAA
AUA41B	AUA41B	5SC3HJEAAA
AUA45B	AUA45B	5SCUUJ5AAB
AUA75	AUA75	5SC1FF2AXX
SPQ452	SPQ452	5SCTFFGAAB
AUA200	AUA200	5SCTB0DAAA
SPQ444	SPQ444	SAC1BF0AAB
SPQ454	SPQ454	SAC1BG0AAB
MCU-5205	MCU-5205	t. b. d.
MCU-5405	MCU-5405	t. b. d.

5.3.2.2 NE Synchronization

5.3.2.2.1 Configuration Information Synchronization

Overview

The possibility exists for the AEM-NB database to become inconsistent with the information stored locally in the NE (Non-Volatile Data Storage). A database re-synchronization capability provides a mechanism for the AEM-NB database to be made consistent (synchronized) with the locally stored NE information.

Two NE configuration data synchronization states can be identified:

- **Sync**: The AEM-NB database is consistent with the locally stored NE information and all the autonomous messages concerning configuration changes are enabled (DB changes, switch reports and some events of type protection switches, lockout and loop back).
- **Async**: The AEM-NB database and the NE configuration data are out of synchronization and/or configuration reports are inhibited and/or AEM-NB configuration message buffer is overflowing.

(For more information refer to the AMAS R1.5 network elements documentation.)

5.3.2.2.2 Alarm Information Synchronization

Overview

In general alarms can be considered independently of each other (any alarm report can be processed by the AEM-NB independent of other alarm reports). The AEM-NB distinguishes two possible states for alarm handling: alarms from NEs are enabled or they are inhibited.

Two NE synchronization states can be considered:

- **Sycn**: The AEM-NB alarm database is consistent with the current NE alarms. If alarm and/or environment alarm reports are inhibited, the AEM-NB database is only a snapshot of NE alarm information at a certain moment in time.
- **Async**: The AEM-NB alarm database and the current NE alarms are out of synchronization due to alarm buffer overflow. The AEM-NB alarm database is only a snapshot of NE alarm information at a certain moment in time.

(For more information refer to the AMAS R1.5 network elements documentation.)

Parameter Setting

Complete the following procedure to modify the synchronization states for configuration and alarms and to define the autonomous output states:

Step	Procedure
1.	Select ***All -> NE*** in the Network Browser and ***NE Information*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** or ***Equipment -> EM-NE Synchronization*** via the Menu bar. The *NE Name Information* window pops up.
2.	Click on tab ***Synchronization***. (this step is not necessary if the *NE Name Information* window has been opened via ***Equipment -> EM-NE Synchronization***).

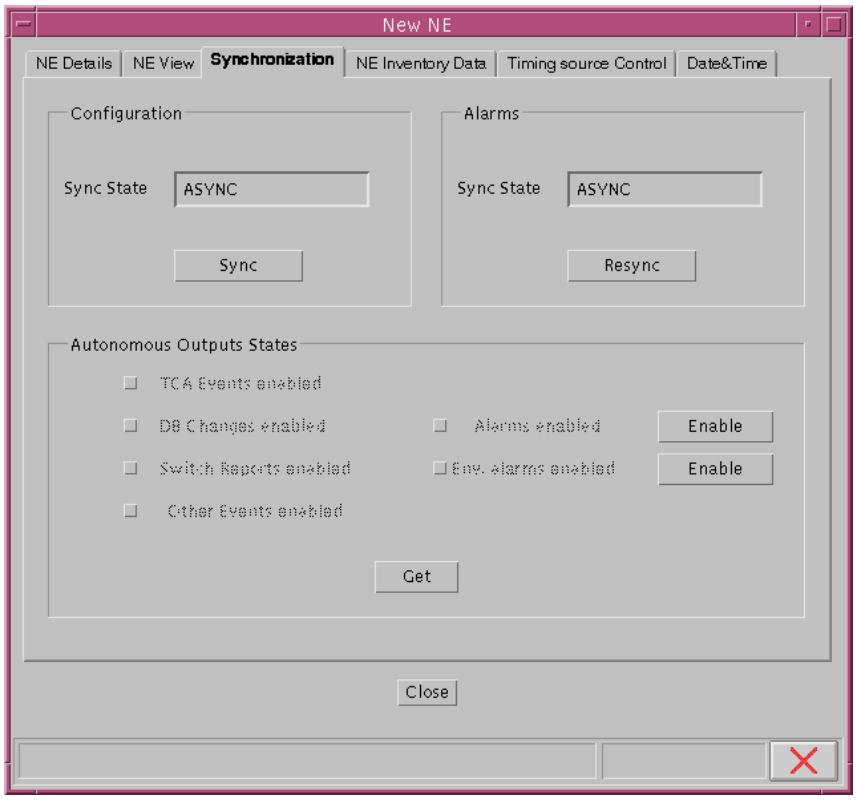


Figure 5-21 "NE Name Information" Window (Tab Synchronization)

Parameters/ Buttons	Description
Configuration	The **Sync State** represents the configuration synchronization state between the AEM-NB and NE. This information is obtained from the NE and it will be automatically updated. Possible values are: **Sync** and **Async**.
Alarms	The **Sync State** represents the alarm processing state between the AEM-NB and NE. This information is obtained from the NE and it will be automatically updated. Possible values are: **Sync** and **Async.**
Autonomous Outputs States	Check boxes indicate autonomous output states. The ***Get*** button can be used to show the current autonomous output states of the NE.

3. Use the ***Label*** button in the pane **Configuration** to change the **Sync State**.
   If the **Sync State** is **Sync**, the label says **Resync**. If the **Sync State** is **Async**, the label says **Sync**.

4. Use the ***Resync*** button in the pane **Alarms** to re-synchronize the alarm synchronization state.

5. Use the ***Label*** buttons (**Enable/Disable**) to modify the alarms and environmental alarms.
   Possible values for these labels are **Enable** (if the alarms or platform alarms say **Disable**) or **Disable** (if the alarms or platform alarms say **Enable**).

6. Use the ***Get*** button to update the display of the autonomous output states.

5.3.2.3 NE Inventory Data

This window provides NE inventory data.

Procedure

Complete the following procedure to get the inventory data:

Step	Procedure
1.	Select ***All -> NE*** in the Network Browser and ***NE Information*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** or ***Equipment -> NE Inventory Data*** via the Menu bar. The *NE Name Information* window pops up.
2.	Click on tab ***NE Inventory Data***. (this step is not necessary if the *NE Name Information* window has been opened via ***Equipment -> NE Inventory Data***).

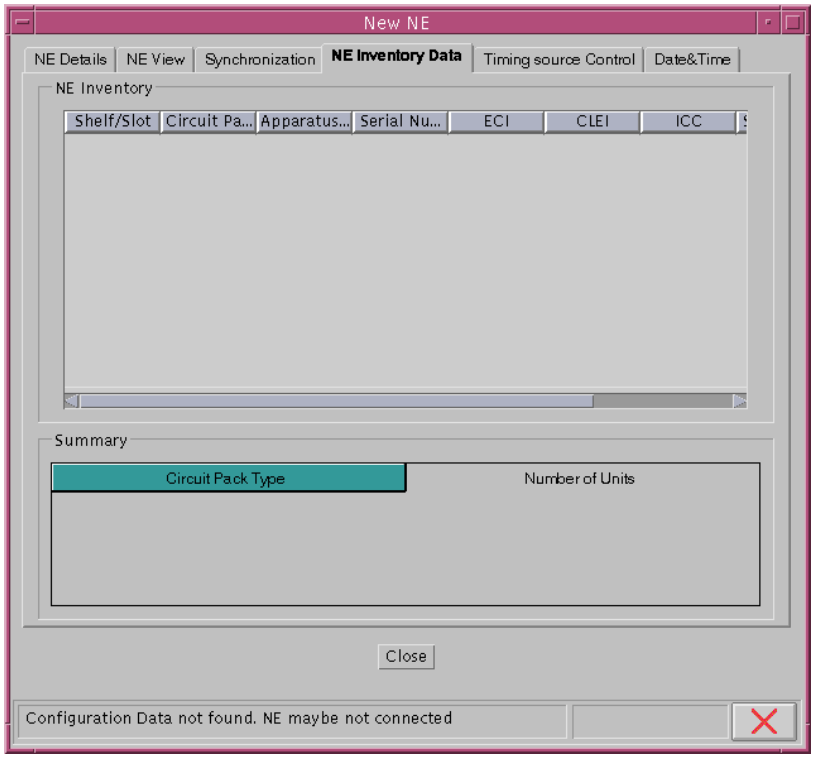


Figure 5-22 "NE Name Information" Window (Tab NE Inventory Data)

Two non-editable tables display NE inventory information. The first table contains per slot data, while the second one provides summarized information per card type.

Parameters/ Buttons	Description
NE Inventory data	**Shelf/Slot**: Numeric field that identifies the position of each plug-in unit. **Circuit Pack Type**: Mnemonic that identifies the circuit pack type. Possible values: cf. Table 5-3, page 5-50 **Apparatus Code**: Identifies the specific function provided by the plug-in unit. Possible values: cf. Table 5-3, page 5-50 **Serial Number**: A 12-character alphanumeric code that identifies each plug-in. It includes the date and place of manufacture. **ECI**: Code that corresponds to the bar-coded label on the faceplate of the plug-in. There is a one-to-one correspondence between CLEI and ECI codes. **CLEI**: Code assigned by Bellcore that provides information about the functionality of the plug-in. **ICC**: Indicates the interchangeability among plug-ins to specify forward/backward compatibility. Format of the ICC is **Sm:n** where **m** is the issue number and **n** the Series Number. **SW Version**: Obtained from the NE at connection time. Internally, the AEM-NB will have to verify whether the mentioned SW Version is manageable by the system. Only applicable to the COMDACs or the shelves, where the shelf-backplane version will be displayed. **Program Equipment Code**: Code of the SW currently stored in the plug-in. Only applicable to the COMDAC.
Summary	**Circuit Pack Type**: Displays a mnemonic that identifies the circuit pack type. Possible values are: cf. Table 5-3, page 5-50 **Number of Units**: Displays two numbers: the number of plug-in units and the number of unplugged units.

Table 5-3 Card Information - Possible Values

Card Type	Apparatus Code	CLEI
FAST	(Shelf number)	--
COMDAC	COM100	SLC1CG0CAA
IO_DS1	FAC 100	SLC1EJ0CAA

Card Type	Apparatus Code	CLEI
CTU	DTP100	SLC1DH0CAA
PROG2W	LPA380	E5ISFB0AAA
POTS32	LPA300	SLCUVR0BAA
PRCOIN	LPA350	E5ISFA0AAA
ISDN16_U	LPU116	E5PQAXUAAA
AFM_DS33	LPA900	SLCUZN0BAA
ADSL4	LPA400	E5ICNJ0AAA
MDSU	MSU100	SAPQADMBAA
MSC	MSC100	SACPHM0BAA
PTU	BDJ200	SAPQAAV
t. b. d.	AUA293	5SC4PT0CAA
t. b. d.	SPQ429	SAC1AK0AAA
t. b. d.	SPQ442	SAC1AH0AAA
t. b. d.	AUA41B	5SC3HJEAAA
t. b. d.	AUA45B	5SCUUJ5AAB
t. b. d.	AUA75	5SC1FF2AXX
t. b. d.	SPQ452	5SCTFFGAAB
t. b. d.	AUA200	5SCTB0DAAA
t. b. d.	AUA232	5SCTCB0AAA
t. b. d.	SPQ444	SAC1BF0AAB
t. b. d.	SPQ454	SAC1BG0AAB
t. b. d.	MCU-5205	5SC26TV2AA
t. b. d.	MCU-5405	5SC26T02AA

5.3.2.4 Configuration of Timing Source

Overview

The *AnyMedia* Access System supports four timing modes:

- **External DS1**: The Line Code and Framing format for the external DS1 synchronization input must be provided
- **External Composite Office Clock**
- **Free Running Mode:** For free-running operation, the NE derives timing from an internal crystal oscillator (XO) with an accuracy not worse than ±32 parts-per-million (ppm) over full power supply, temperature, and life-time. The free-running mode is intended only for turn-up and failure conditions.
- **Loop Timed Mode**: In this mode, a selected feeder DS1 signal synchronizes an internal phase-locked loop. The NE can loop time to any feeder DS1 input as required by TR303. However, the system will only use two timing inputs (selected via provisioning) for protection reasons.

Timing Inputs

The two timing inputs are identified as **Primary** (Reference Source) and **Secondary** (Protection Source). The first DS1 feeder of the first IO_DS1 plug-in is the default primary input, and the first feeder of the second IO_DS1 plug-in is the default secondary input. The network provider can tailor the set of valid timing inputs and their priorities via provisioning. The Primary and Secondary reference signals can be selected from any physical feeder inputs on any two IO_DS1 plug-ins, or from two feeder inputs on the same plug-in. The NE can continue to derive timing from the reference inputs if one or both of the physical inputs are switched to the protection IO_DS1 plug-in.

For more information refer to the AMAS R1.5 network elements documentation.

Upon initialization, the NE selects the primary input as the active reference, and the secondary input as its alternate source. If the primary reference fails, the NE hardware switches to the alternate source, providing synchronization reference source protection is available (cf. Chapter 5.3.2.7, page 5-59).

Configuration Procedure

Complete the following procedure to configure the timing source:

Step	Procedure
1.	Select the ***All -> NE*** in the Network Browser and ***NE Information*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** or ***Equipment -> Provisioning -> Timing Source Control*** via the Menu bar. The *NE Name Information* window pops up.
2.	Click on tab ***Timing Source Control***. (this step is not necessary if the *NE Name Information* window has been opened via ***Equipment -> Provisioning -> Timing Source Control***).

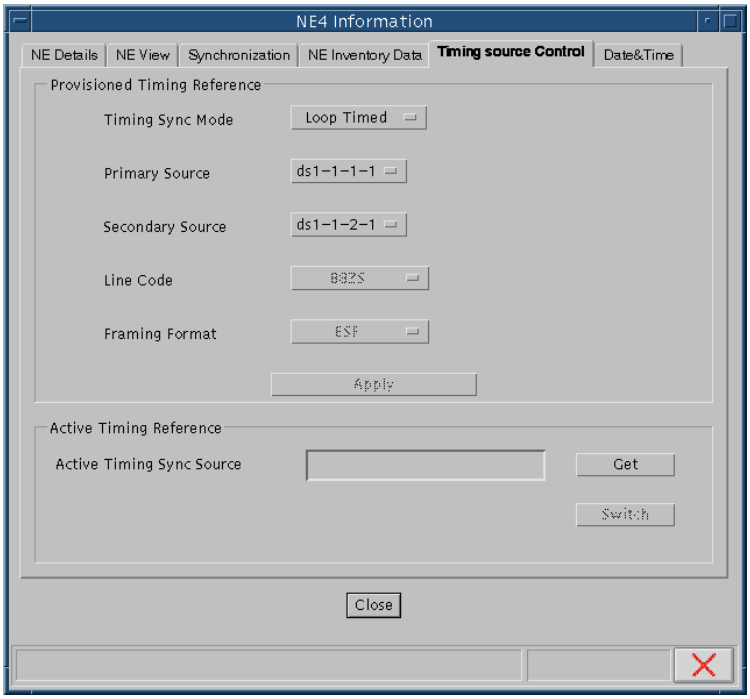


Figure 5-23 "Timing Source Control" Window

This window provides the operator with the facilities needed to configure the NE timing source. Three menu buttons are available: **Synchronization Mode, Reference Source** and **Protection Source**.

Parameters/ Buttons	Description
Synchronization Mode	This option menu displays the current **Synchronization Mode**. Possible values: **Free Running**, **Loop Timed**, **External Clock**, **External DS1**. This option menu can also be used to change the **Synchronization Mode**. Only after changing the mode the next two fields (**Primary Source** and **Secondary Source**) are available.
Primary Source	This option menu is available only if the **Synchronization Mode** is **Loop Timed**. The Primary Source (working) and (optionally) the Secondary Source (standby) can be selected. Possible values: any of the available feeders (ds1-1-{1, 5}-{1, 4}). Once the source(s) of synchronization has been selected, click on the ***Apply*** button to accept the change.

Parameters/ Buttons	Description
Secondary Source	This option menu is available only if the **Synchronization Mode** is **Loop Timed**. The Secondary Source (standby) can be selected. Possible values: any of the available feeders (ds1-1-{1, 5}-{1, 4}). Once the source(s) of synchronization has been selected, click on the ***Apply*** button to accept the change. NOTE: The secondary source must be different from the primary source. Otherwise there is no protection available.
Line Code	This option menu is available only if the **Synchronization Mode** is **External DS1**. Possible values: B8ZS, ZCS, Not Applicable (can not be selected). Once the **Line Code** has been changed, click on the ***Apply*** button to accept the change.
Framing Format	This option menu is available only if the **Synchronization Mode** is **External DS1**. Possible values: ESF, SF, Not Applicable (can not be selected). Once the **Line Code** has been changed, click on the ***Apply*** button to accept the change.
Apply	This button is available only when: ■ **Synchronization Mode** has been changed. ■ **Synchronization Mode** is **Loop Timed** and at least one source has been modified. ■ **Synchronization Mode** is **External DS1** and either the **Line Code** or **Framing Format** have been modified. NOTE: During the apply operation, the ***Get*** and ***Switch*** buttons are disabled. The whole subpane will be updated as result of the operation.

Parameters/ Buttons	Description
Active Timing Sync Source	This field shows the current timing synchronization source obtained from the NE by using the ***Get*** button. Possible values: Free Running, Loop Timed / PRI, Loop Timed / SEC, External DS1 / Ext1, External DS1 / Ext 2, External Clock / Ext1, External Clock / Ext 2. If the ***Get*** button has not been pressed this field will be empty.
Get	This button can be used to retrieve the **Active Timing Synchronization Source** from the NE. NOTE: During the get operation, the ***Apply*** and ***Switch*** buttons are disabled. The timing reference subpane will also be updated as result of this operation.
Switch	This button is enabled only if the **Active Timing Synchronization Source** is not **Free Running**. It can be used to switch between the working and standby sources of synchronization. In other words, the standby source becomes the working source and the working source becomes the standby source. NOTE: During the switch operation, the ***Apply*** and ***Get*** buttons are disabled. The **Active Timing Synchronization Source** field will also be updated as result of this operation.

3. Use the menu buttons to select appropriate values for **Synchronization Mode**, **Primary Source** and **Secondary Source.**

4. Press ***Switch*** to switch between the working and standby sources of synchronization.

5. Press ***Apply*** to confirm.

5.3.2.5 Set Date and Time

Overview

A function required by the AEM-NB is provisioning the date and time of the managed NEs, i.e. the operator is able to set the NE Date & Time. Also it is possible for the AEM-NB to retrieve the date and time of any NE.

Procedure

Complete the following procedure to set the date and time:

Step	Procedure
1.	Select ***All -> NE*** in the Network Browser and ***NE Information*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** or ***Equipment -> Provisioning -> Date & Time*** via the Menu bar. The *NE Name Information* window pops up.
2.	Click on tab ***Date & Time***. (this step is not necessary if the *NE Name Information* window has been opened via ***Equipment -> Provisioning -> Date & Time***).

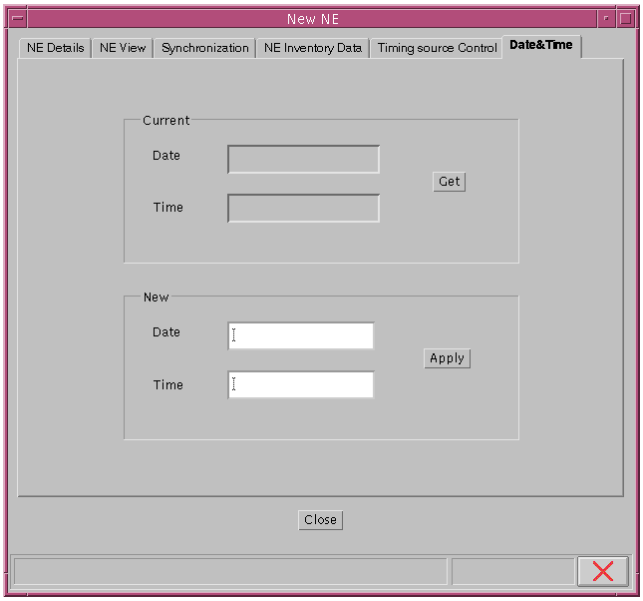


Figure 5-24 "Date & Time" Window

This tab provides you with the facilities needed to obtain the current date and time used in the NE as well as to change them. Two panes are shown: **Current** and **New**.

— **Current**

The current date and time used in the NE is displayed.

Use the ***Get*** button to retrieve the data from the NE.

— **New**

Enter the **Date** and **Time** in order to change the NE date and time (possible range for the date is 1 Jan. 1970 to 31 Dec. 2037).

Press ***Apply*** to confirm.

The ***Apply*** button is active only if a new date and/or new time have been entered.

5.3.2.6 Configure Simplex COMDAC Protection Scheme

Overview

The NE automatically sets the COMDAC protection mode (or duplex mode) when both COMDACs are plugged in. Then the alarming state of both COMDACs slots is set to **Required** and the AEM-NB is not able to change it until one of the COMDACs is removed. When a COMDAC is removed, the AEM-NB is then able to set that slot to **Not-Required**, so the COMDAC protection mode will be disabled (simplex).

Procedure

Complete the following procedure to set the COMDAC protection to simplex:

Step	Procedure
1.	Select ***All -> NE -> Shelf -> COMDAC*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Equipment -> Provisioning -> Edit*** via the Menu bar. The *COMDAC* window pops up:

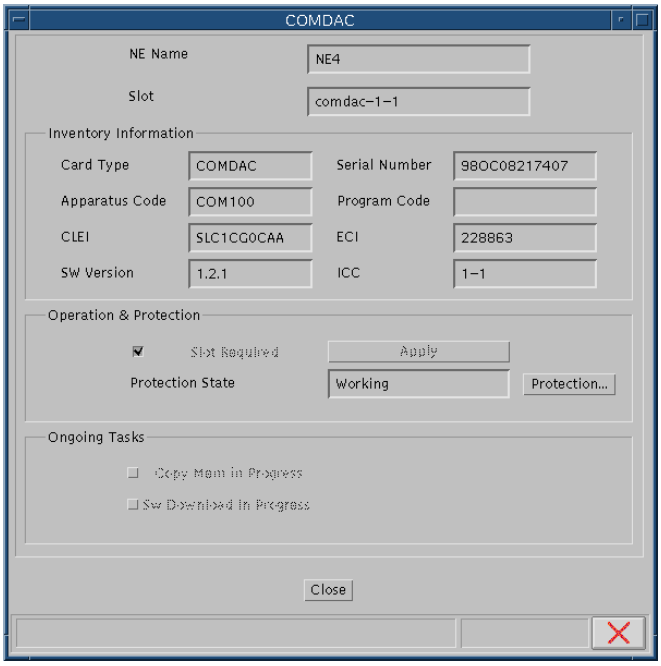


Figure 5-25 "COMDAC" Window

This window includes hardware and software data (inventory) as well as the operational and protection state.

The **Inventory Information** pane contains read-only fields (cf. Chapter 5.3.2.1.4, page 5-30).

For configuring the protection scheme the pane **Operation & Protection** is used.

Parameters/ Buttons	Description
Slot	This non-editable field shows which one of the two slots is being used (comdac-1-{1,2}).
Slot Required	Slot required displays the required state of the shelf slot. This state can be changed by the operator as long as the circuit pack is **not** inserted. However, it is **not** possible to set both COMDACs to **not** required. The ***Apply*** button is available only if both COMDACs are present and the user modifies the required state of one of them from **Required** to **Not-Required**.
Protection State	This non-editable field shows whether the selected COMDAC is working or not: **Working** (providing service) or **Standby** (not in service).
Protection...	This button provides access to the *Shelf Protection* window (COMDAC tab) to allow you to modify the current protection scheme or perform protection switching (cf. Chapter 5.3.2.7.1, page 5-60).

2. Deselect the check box **Slot Required**.

3. Press ***Apply*** to confirm (the window remains on screen for further use).

5.3.2.7 Protection Switching

General

Protection switching provides an automatic recovery mechanism in the *AnyMedia* Access System when a fault is detected. NE entities that are involved in carrying service to a large number of end users are generally required to be protected with a redundant unit. However, the NE provides customer options to have none or some entities protected with redundant units. These entities can be either 1:1 or 1:N protected. For 1:1 protected entities, one of them serves as the active or primary unit and the other serves as a “protection” or standby unit. For 1:N protected entities, one entity serves as the “protection” or standby unit for all N active units. If an active unit fails, the failure is detected and service is automatically “protection switched” to the protection unit. The protection switching can also be requested on demand.

Revertive/non-revertive

Protection switching can be revertive or non-revertive. Revertive protection switching implies that the active and standby units will return to their original configuration once the failure causing the protection switch has been repaired. Non-revertive switching does not return the entities to their original configuration. With non-revertive switching, the repaired unit becomes the new standby unit.

The *AnyMedia* Access System supports the following protection features:

- COMDAC pack - 1:1 protection; non-revertive switch (cf. following section).
- IO_DS1 packs - 1:N protection ($1 \leq N \leq 5$); revertive switch (cf. Chapter 5.3.2.7.2, page 5-63).
- Synchronization reference source - 1:1 protection; non-revertive switch (cf. Chapter 5.3.2.4, page 5-52).
- EOC/TMC data links - 1:1 protection; non-revertive switch (cf. Chapter 5.4.1, page 5-73).

Definitions

The different kinds of switching (COMDACs and IO_DS1 circuit packs) are defined as follows:

- **Side Switching:** refers to the operation of deactivating the active core entity and activating the standby core entity.
- **Manual (normal) Switch:** refers to an AEM-NB-initiated switch command that instructs the NE to perform a switch only if the protection unit is in service and there are no known faults.
- **Forced Switch:** refers to an AEM-NB-initiated switch command that instructs the NE to perform a switch no matter what the conditions of the protection unit.
- **Inhibit Switch:** refers to an AEM-NB-initiated switch command that instructs the NE to inhibit a side switch no matter what the conditions of the active unit are.

5.3.2.7.1 COMDAC Protection Switching

Overview

The COMDAC is the core circuit pack of the *AnyMedia* Access System. The NE supports both duplex and simplex operations, i.e., the COMDAC can be protected or unprotected. In duplex operation, the COMDAC will run in an active and standby mode.

The NE automatically sets the COMDAC protection mode when both COMDACs are plugged in. Then the alarming state of both COMDACs slots is set to **Required** and the AEM-NB is not able to change it until one of the COMDACs is removed. When a COMDAC is removed, the AEM-NB is then able to set that slot to **Not-Required**, so the COMDAC protection mode will be disabled (simplex).

Procedure

Complete the following procedure to define protection switching for the COMDAC.

Step	Procedure
1.	Select ***All -> NE ->*** **Shelf** in the Network Browser and ***Protection*** via the cursor menu or select ***Equipment -> Protection*** via the Menu bar. The *Shelf Protection* window pops up (tab COMDAC):

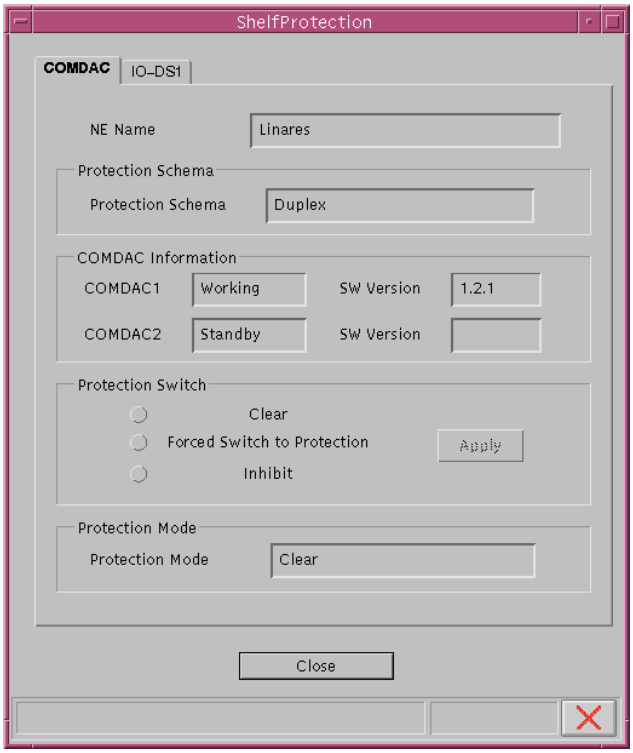


Figure 5-26 "Shelf Protection" Window (Tab COMDAC)

(for IO-DS1 description see Chapter 5.3.2.7.2, page 5-63)

This window provides COMDAC protection information. It also provides the mechanisms needed to perform changes in the protection scheme as well as protection switches.

Parameters/ Buttons	Description
Protection Scheme	Represents the protection scheme used in the NE. If only one COMDAC is present in the shelf, the protection scheme is **Simplex**. If both COMDACs are present, **Duplex** is the value shown. Only in this case (Duplex configuration) is the **Protection Switch** pane available (see below).
COMDAC Information	**COMDAC 1 (2):** This non-editable fields display the current COMDAC working state. The following values are possible: **Working**, **Standby** and **Not Equipped** (if there is no COMDAC inserted in the corresponding slot). **SW Version:** Shows the SW Version for the respective COMDAC.
Protection Switch	Radio buttons allow protection switching to be specified. Only the working COMDAC is inhibited. With the **Forced Switch** request the working COMDAC becomes standby and vice versa. **Inhibited Switch** request is disabled if the current protection status is **Forced**. **Forced Switch** request is disabled if the current protection status is **Inhibit**. Therefore before you can switch from **Forced Switch to Protection** to **Inhibit** or vice versa you have to **Clear** the current protection.
Protection Mode	This field displays the current protection mode which will be updated as a result of a protection switch. Possible values: **Clear** or **Freeze.**

2. Use the Radio buttons in field **Protection Switch** to switch the protection: **Clear** or **Forced Switch to Protection** or **Inhibit**

3. Press ***Apply*** to confirm. A *Warning* window pops up:

   `Protection switching may be service affecting. Do you want to continue?`

   If you decide to continue, the switch operation will be started. The information displayed will be updated once the switch is finished to show the current state.

The following events set off error messages:

- The NE is not equipped for the requested protection switching (i.e. the protecting slot is empty).
- The NE detects an error in the switch request (i.e. the request cannot be executed due to another activity in the AEM-NB).

- The NE cannot execute the request as the NE software installation is in progress.

5.3.2.7.2 IO-DS1 Protection Switching

Overview

The NE supports both protected and unprotected DS1 feeder interface operations, i.e., the IO-DS1 can be 1:N protected (1≤N≤5) or without a protection IO_DS1 pack. IO-DS1 pack protection is controlled by the active COMDAC via the Protection Control Bus.

The AEM-NB cannot provision DS1 pack-level protection. It is automatically invoked when an FAC100 pack is plugged into the IO-DS1 protection slot.

Procedure

Complete the following procedure to define protection switching for IO-DS1.

Step	Procedure
1.	Select ***All -> NE ->*** **Shelf** in the Network Browser and ***Protection*** via the cursor menu or select ***Equipment -> Protection*** via the Menu bar. The *Shelf Protection* window pops up:
2.	Click on tab ***IO-DS1***.

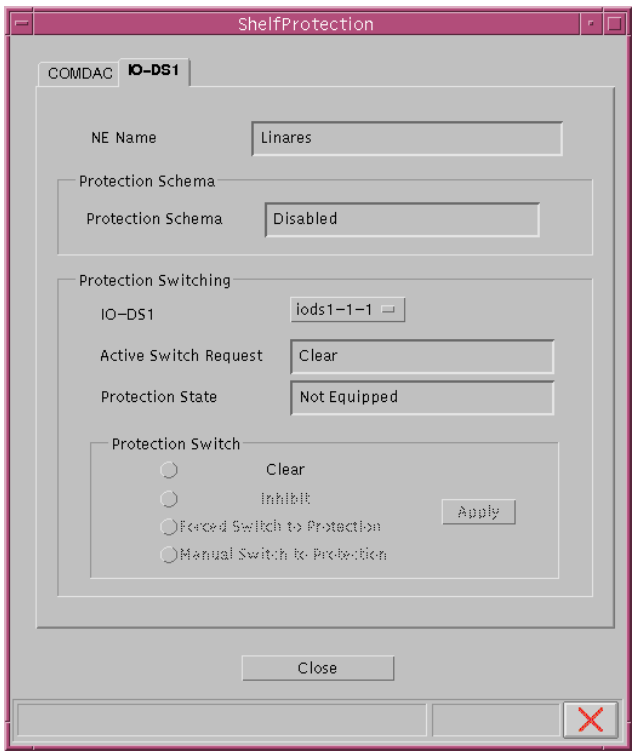


Figure 5-27 "Shelf Protection" Window (Tab IO-DS1)

This window provides IO-DS1 protection information. It also provides the mechanisms needed to perform changes in the protection scheme as well as protection switches.

3. Use the following table to define the IO-DS1 Protection Switch:

Parameters/ Buttons	Description
Protection Scheme	Displays the protection scheme used in the NE for IO-DS1. Possible values: **Enable** (IO-DS1-p present) or **Disable** (no IO-DS1-p). Only in the case of protection scheme **Enable** the **Protection Switch** pane is available.
Protection Switching	The **IO-DS1** option menu shows all IO-DS1s (present or absent) in the NE. Selecting one of these IO-DS1 will provoke population of the **Active Switch Request** and **Protection State** read-only fields (see below). The possible values for **Active Switch Request** are: ■ **Clear**: No active switch in effect. Any protection switch is allowed for the specified IO-DS1. ■ **Lockout**: If this is selected for the protection IO-DS1, access to the protection pack for the group is not allowed. When applied to a service IO-DS1, access to the protection pack is prevented. No protection switches will be done on the specified service slot until the switch is reset. Only ***Clear*** Protection Switch will be allowed. ■ **Forced Switch to Protection**: Applicable to IO-DS1 only. No automatic or manual switches will be done until the forced switch is reset. ■ **Automatic Switch to Protection**: A switch provoked by a failed (or missing) IO-DS1 to the protection unit. ■ **Manual Switch to Protection**: The specified service IO-DS1 has been manually switched to protection IO-DS1. The **Protection State** displays the current protection state which will be updated as a result of a **Protection Switch** (see below). Possible values are: **Not Equipped**, **Working** and **Standby.**

Parameters/ Buttons	Description
Protection Switch	Radio buttons allow protection switching: **Clear** or **Inhibit** or **Forced Switch to Protection** or **Manual Switch to Protection**. **Clear**: Clears any active switch request and returns traffic on the protection pack to its original service pack (provided this pack is functional). **Clear** does not affect the **Automatic Switch**. **Inhibit**: If applied on the protection pack, service shall return to the protected pack and **Protection Scheme** changed to **Disable**. If applied on the protected pack, protection for this pack is disabled. If this pack was providing service through the protection pack, a protection-to-service switch will occur. This protection switch remains in effect till a protection mode is cleared. **Forced Switch to Protection**: Switches service from the service pack to the protection pack (no matter what). Not applicable to protection pack. The switch remains in this state until a **Lockout** or **Clear** is requested. **Manual Switch to Protection**: Switches service from service pack to the protection pack if the protection pack is present, functional and not carrying traffic. Not applicable to the protection pack. This protection switch remains in effect till a protection switching **Lockout**, **Forced**, or **Clear** is entered or an **Automatic Protection Switch** occurs.

4. Use the menu button **IO-DS1** to select an appropriate IO-DS1.

5. Use the radio buttons in the field **Protection Switch** to select the desired protection: **Clear** or **Inhibit** or **Forced Switch to Protection** or **Manual Switch to Protection.**

6. Press ***Apply*** to confirm. The *Warning* window pops up:

   Protection switching may be service affecting. Do you want to continue?

   If you decide to continue, the switch operation will be started. The information displayed will be updated once the switch is finished to show the current state.

The following events set off error messages:

- The NE is not equipped for the requested protection switching (i.e. the protecting slot is empty).
- The NE detects an error in the switch request (i.e. the request cannot be executed due to another activity in the AEM-NB).

- The NE cannot execute the request as the NE software installation is in progress.
- The forced switch is denied as the protecting slot is locked out.
- The manual switch is denied either because there is a higher protection switch active (Inhibit, Forced) or because an automatic switch is already protecting that protected slot.

5.3.2.8 Alarm Configuration

Configuring of the alarm severities is only possible via the cut-through interface.The corresponding TL1 commands are available on-line using the GSI help on *AnyMedia* Access System.

5.3.3 Delete NE

If the NE should not be managed by the AEM-NB any longer, it shall be deleted from the AEM-NB database.

Procedure Complete the following procedure to delete an NE.

Step	Procedure
1.	Select the ***All -> NE*** in the Network Browser and ***Delete NE*** via the cursor menu or select ***File -> Delete*** or ***Equipment -> Provisioning -> Delete*** via the Menu bar. A *Warning* window pops up: **`You are about to delete <NE Name>. Do you want to continue?`** If you select **No**, the deletion of the NE is rejected. Otherwise, the NE will be deleted.

NOTE:
When an NE is deleted from the AEM-NB database, it is still fully functional. The TL1 and TCP/IP links between the AEM-NB and the NE will be closed and the management access via the AEM-NB is finished until the NE is created and connected again.

5.4 Service Provisioning

Overview

Service provisioning (deactivation) consists of the setting of those parameters needed to provide service to (or disconnect service from) an individual end-customer. For Distribution Ports, such parameters include those that specify a T0 cross-connection between a Logical T0 on a VRT/VB (Virtual Remote Terminal / Virtual Bank) and an end-customer's physical port, and the setable parameters within the port. Service provisioning is typically initiated by a service order, although reprovisioning is sometimes also needed for maintenance purposes or for reconfiguration of an existing network, e.g., load balancing.

Figure 5-28, page 5-69 shows a conceptual diagram of the cross-connections between the physical (DS1 and subscriber) ports of the *AnyMedia* Access System and the VRTs/VBs. The *AnyMedia* Access System supports

- up to one TR-303 VRT
- up to 20 TR-08 VRTs
- and up to 20 INA VBs

in any combination not exceeding 20 feeder DS1s (4 DS1 feeders for each IO-DS1).

T1 cross-connections provide feeder bandwidth to VRTs and VBs. A maximum of 20 T1 cross-connections can be created; they are limited by the maximum number of DS1 feeder ports in the system.

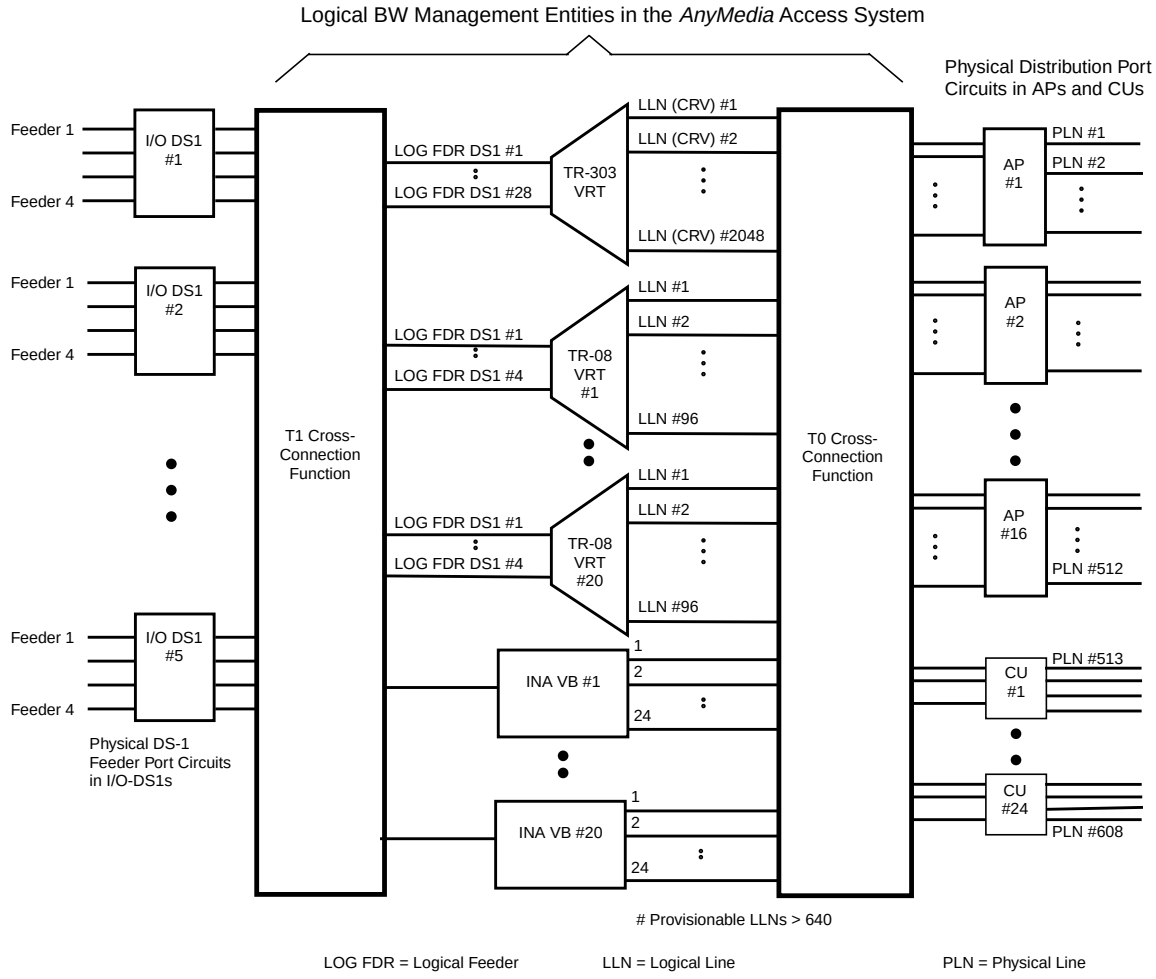


Figure 5-28 Cross-Connection Diagram

T0 cross-connections bind a Distribution Port (a tip/ring pair) to a VRT or VB. A maximum of 609 T0 cross-connections can be created in the *AnyMedia* Access System; they are limited by the maximum number of Distribution Ports in the system.

Each Logical T0 may contain provisioning data for its associated physical subscriber line. In addition, the T0 data for locally switched services and ISDN lines on the TR-303 VRT can be administered by the LDS through its EOC. When a physical subscriber line is T0 cross-connected to a VRT or VB, it takes on the characteristics defined by the T0 data for the corresponding logical port (e.g., if a line from a PROG2W LPA380 AP is cross-connected to a logical port that is provisioned for POTS service, it provides a loop-start interface; if the line is then cross-connected to a logical port that is provisioned for Foreign Exchange (FX) service, it provides a ground-start interface).

The NE logical configuration supports a combined maximum of 672 T0 records among all VRTs and VBs. This number exceeds the total number of physical subscriber lines that the system supports.

The physical ports of the *AnyMedia* Access System provide feeder DS1 connections and subscriber tip/ring pairs. The physical ports are associated with IO-DS1 FAC100 circuit packs and APs respectively.

Service provisioning for VF (Voice Frequency) services requires that feeder and distribution ports be associated with a VRT/VB through T1 and T0 cross-connections, respectively, and that T0 provisioning data be entered for the desired service. Finally, the required physical circuit packs must be equipped. Figure 5-29 represents the composite provisioning data required to bring a single subscriber line into service on a TR-08 VRT.

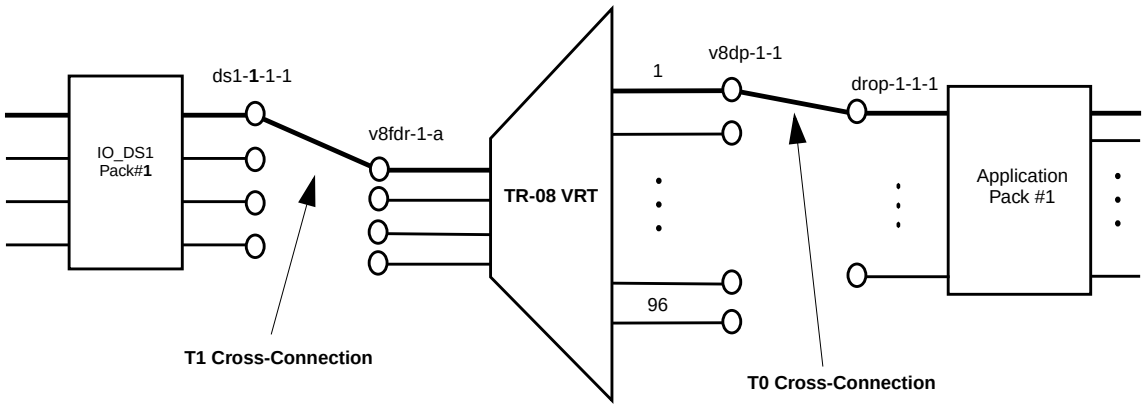


Figure 5-29 Provisioning Data for a TR-08 POTS Subscriber Line

As mentioned before the *AnyMedia* Access System may contain 1 TR-303 VRT and/or up to 20 TR-08 VRTs and INA VBs in any combination, subject to the limit imposed by the 20 available DS1 network interfaces. A physical distribution port may be assigned to only 1 logical line on 1 VRT or INA VB; similarly, a logical line can be assigned to only 1 physical distribution port.

TR-303 VRT

The single TR-303 VRT can support any number of physical lines up to the full 608-line maximum capacity of the *AnyMedia* Access System. The logical lines of the TR-303 VRT are identified by Call Reference Values (CRVs), which may be any of 672 integer values from 1 to 2048. A physical distribution port in the system can be assigned to any CRV of the TR-303 VRT.

The TR-303 VRT includes full access concentration between its logical line DS0s and available time slots on the feeder DS1s (24 time slots) associated with the VRT (full access means that if there is an available feeder time slot it is possible to assign a logical line DS0 to that time slot). For time slot management the TR303 VRT supports the following process:

Dynamic time slot assignment: a time slot assignment made over the Timeslot Management Channel (TMC) for locally-switched application. This time slot assignment/deassignment is done on a per call basis under control of the LDS.

Semi-permanent time slot assignment: a time slot assignment made over the Embedded Operation Channel (EOC) for providing a dedicated voice/data path. This time slot assignment/deassignment is done on a per service order basis. The LDS will manage the semi-permanent cross-connections in the TR-303 VRT.

TR-08 VRT

A TR-08 VRT supports up to 96 physical lines. The logical lines are identified by logical line numbers (LLNs), which are integer values ranging from 1 to 96. A physical distribution port may be assigned to any LLN within any TR-08 VRT. There is a fixed mapping between TR-08 LLN number and the TR-08 feeder DS0 used for the circuit. This allows the FAST to make the cross-connection between the TR-08 physical port and the feeder DS0 without explicitly provisioning the feeder DS0 to be used.

INA VB

An INA VB supports a maximum of 24 physical lines. The logical lines are numbered from 1 to 24. A physical distribution port may be assigned to any logical line within any INA VB.

There is a fixed mapping between INA LLN number and the INA feeder DS0 used for the circuit. This allows the *AnyMedia* Access System to make the cross-connection between the INA physical port and the feeder DS0 without explicitly provisioning the feeder DS0 to be used. The AID (Access Identifier) of an INA logical line and its INA feeder DS0 are the same.

For more information refer to the AMAS R1.5 network elements documentation.

Screen Navigation

Figure 5-30, page 5-72 shows an overview of the screen navigation for service provisioning.

The arrows represent the order in which the windows can be opened.

Example

To edit the *Physical DS1-Logical DS1* window

- select ***All -> NE -> Shelf -> IO-DS1 -> Physical DS1*** in the Network Browser and
  select ***Edit*** via the cursor menu.

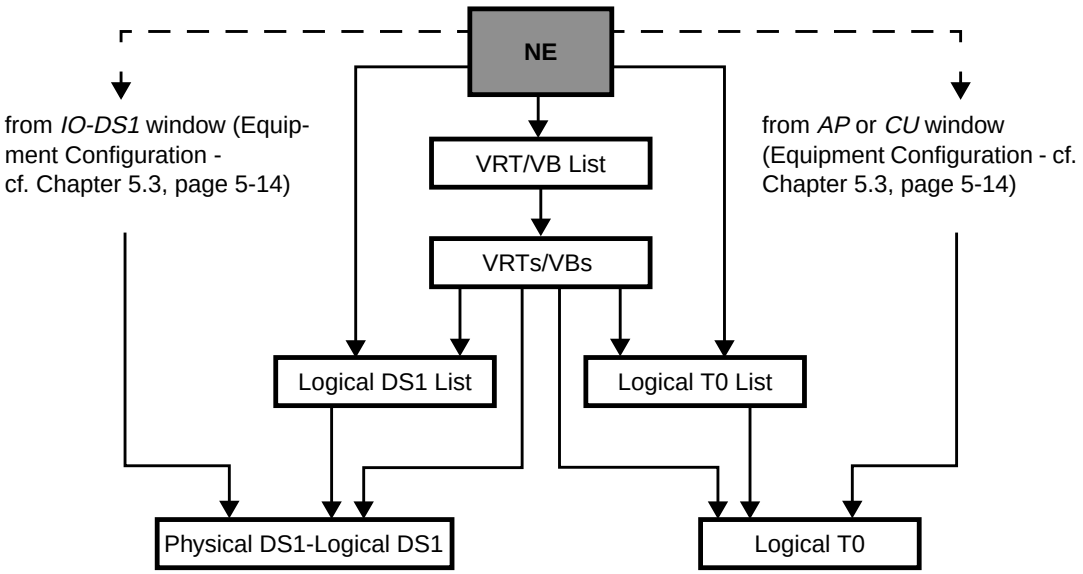


Figure 5-30 Screen Navigation for Service Provisioning

5.4.1 Edit Network Interface

Procedure Complete the following procedure to configure a VRT/VB.

Step	Procedure
1.	Select ***All -> NE -> VRT/VB List*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Service -> Provisioning -> View/Edit*** via the Menu bar. The *VRT/VB List* window pops up.

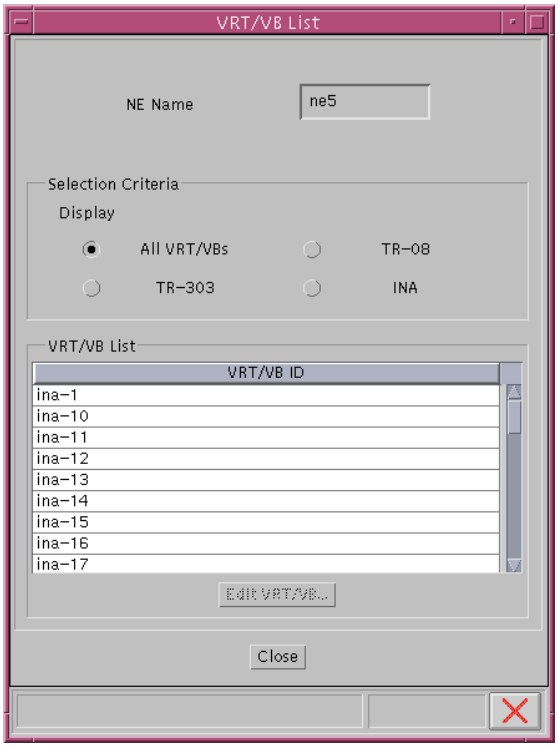


Figure 5-31 "VRT/VB List" Window

This window displays the VRT/VB ids list based on a selection criterion. It provides access to the *VRT/VB* window for addition or deletion of Logical DS1s

and/or Logical T0s and for modifying VRT/VB specific parameters (when applicable).

Parameters/ Buttons	Description
Selection Criteria	Radio buttons are used to define the list that will be displayed in the pane **VRT/VB List**.
VRT/VB List	Selected criterion is **All VRT/VB**: The list will display all VRT/VB ids. Selected criterion is **TR-303** or **TR-08** or **INA**: In these cases, only the VRT/VB ids of the selected type will be displayed. The VRT/VB table provides a scroll bar to allow access to all VRT/VB ids. VRT/VB id format: v303-1 for TR-303 v08-{1, 20} for TR-08 ina-{1, 20} for INA Upon selection of any entry, the ***Edit VRT/VB...*** button becomes available.

2. Use the radio buttons to choose a desired **VRT/VB**.

3. Select an appropriate entry in the list click on ***Edit VRT/VB...*** or double click on the entry. The *VRT/VB* window pops up.

NOTE:
Figure 5-32, page 5-75 shows the *VRT/VB* window for TR-303. Only for this interface type the panes **VFDE** and **Datalink & Protection** are available. For TR-08 and INA are only the panes **Actions** and **Operational State** are available. Only these two panes are shown in the corresponding windows.

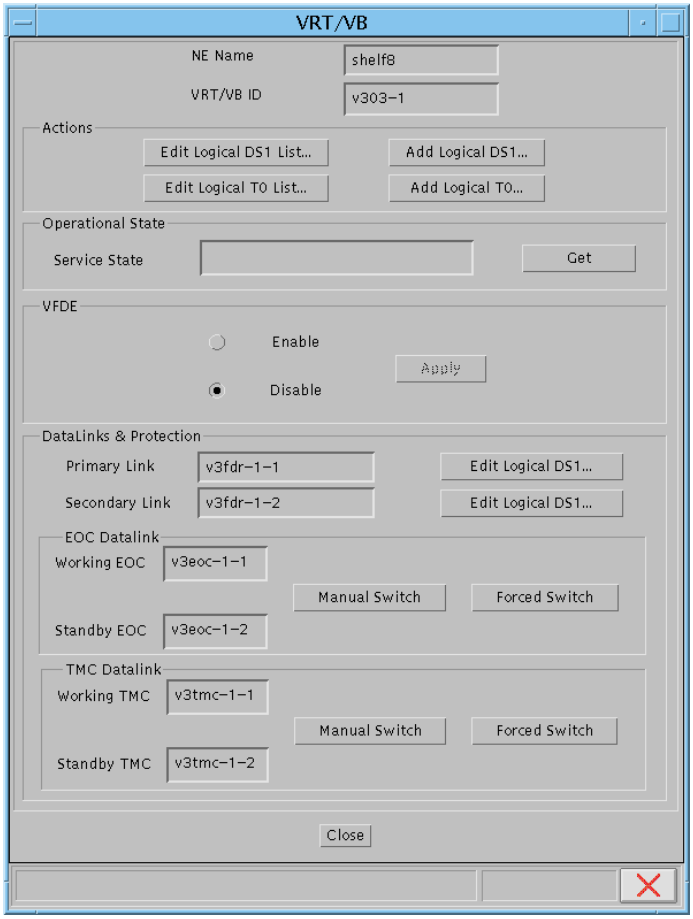


Figure 5-32 "VRT/VB" Window

This window provides access to the lists of Logical DS1s and Logical T0s, as well as allowing addition of Logical DS1s and Logical T0s to the selected VRT/VB. It also displays (on demand) the VRT/VB operational state. In the case of TR-303, this window will show the VFDE state (enable or disable) and datalink protection information.

Parameters/ Buttons	Description
Actions	Four buttons provide access to other windows: ***Edit Logical DS1 List...***: Provides access to the *Logical DS1 List* window for the selected VRT/VB (cf. Chapter 5.4.5, page 5-88). ***Edit Logical T0 List...***: Provides access to the *Logical T0 List* window for the selected VRT/VB (cf. Chapter 5.4.8, page 5-112). ***Add Logical DS1...***: Provides access to the *Physical DS1-Logical DS1* window (tab Cross-connection - cf. Chapter 5.4.3, page 5-81). The VRT/VB id will be populated using the selected VRT/VB id. ***Add Logical T0...***: Provides access to the *Logical T0* window for the selected VRT/VB (cf. Chapter 5.4.7, page 5-90).
Operational State	The **Service State** shows the VRT/VB service state obtained from the NE through the use of the ***Get*** button. Possible values: In Service (**IS**) and Out of Service (**OOS**). The ***Get*** button retrieves the VRT/VB service states.
	The following panes are only applicable to TR-303 (cf. Chapter 5.4.4, page 5-88).
VFDE	Two radio buttons (**Enable / Disable**) are used to modify the VFDE status by clicking on ***Apply***. The ***Apply*** button is available only if the VFDE status has been modified.

Parameters/ Buttons	Description
Datalinks & Protection (not yet available for R1.5)	**Primary Link, Secondary Link**: Displays the Logical DS1 id of the Primary (logical feeder DS1-1) and Secondary Link (logical feeder DS1-2). Only available if Logical DS1 id is present. Possible values are: v3fdr-{1}-{1, 28}. The ***Edit Logical DS1...*** button provides access to the *DS1-Logical DS1* window (Physical DS1 Data tab - cf. Figure 5-37, page 5-86) to change the timing reference. **EOC Datalink:** ■ **Working / Standby EOC**: Displays the Logical DS1 id used by the working/standby EOC (Embedded Operations Channel). Possible values are: v3fdr-{1}-{1, 28}. ■ ***Manual Switch*** button: Performs a manual switch between working and standby EOCs. Only available if both working and standby EOCs are present and the standby path is not out of service. ■ ***Forced Switch*** button: Performs a forced switch between working and standby EOCs. Only available if both working and standby EOCs are present and regardless of the service condition of the standby path. **TMC Datalink:** ■ **Working / Standby TMC**: Displays the Logical DS1 id used by the working/standby TMC (Timeslot Management Channel). Possible values: v3fdr-{1}-{1, 28}. ■ ***Manual Switch*** button: Performs a manual switch between working and standby TMCs. Only available if both working and standby TMCs are present and the standby path is not out of service. ■ ***Forced Switch*** button: Performs a forced switch between working and standby TMCs. Only available if both working and standby TMCs are present and regardless of the service condition of the standby path.

5.4.2 Logical DS1 List

Procedure Complete the following procedure to edit the Logical DS1 List.

Step	Procedure
1.	Select ***All -> NE -> VRT/VBs List -> VRT/VB Type (TR-303, TR-08, INA) -> VRT/VB id*** in the Network Browser and ***Edit Logical DS1 List*** via the cursor menu or select ***File -> Open*** or ***Service -> Logical DS1 List*** via the Menu bar. The *Logical DS1 List* window pops up.

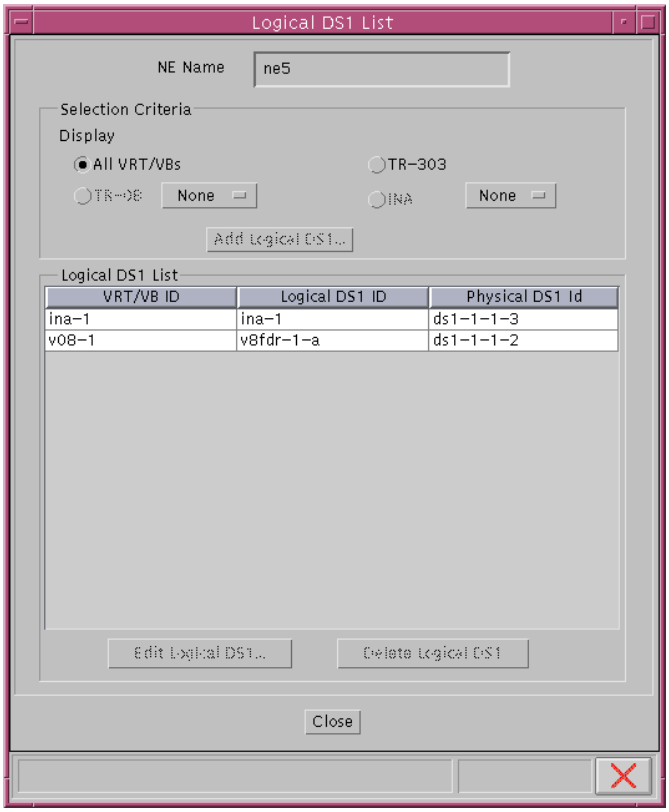


Figure 5-33 "Logical DS1 List" Window

This window displays Logical DS1 id list based on a selection criteria. It provides access to *Physical DS1-Logical DS1* window for Physical DS1-Logical DS1 parameter modification.

Parameters/ Buttons	Description
Selection Criteria	Radio buttons are used to define the list that will be displayed in the pane **Logical DS1 List**. ■ **All VRTs/VBs**: The list displays all Logical DS1s currently present in the NE for all VRT/VBs. ■ **TR-303, TR-08, INA**: In all these cases except TR-303, a non-editable option list will be available showing the possible options. Selection of one of these VRT/VB ids automatically sets the corresponding radio button. If no VRT/VB id is selected, the radio button is not editable (i.e. the user will not be able to set it). Possible values: v08-{1, 20} for TR-08 ina-{1, 20} for INA.
Add Logical DS1...	This button is only available if a specific VRT/VB id has been selected and the maximum number of Logical DS1s has not yet been created: max. 4 for TR-08 max. 20 for TR-303 max. 1 for INA. This button provides access to the *Physical DS1-Logical DS1* window to add a new Logical DS1.
Logical DS1 List	The information in this field is displayed in a table: ■ **VRT/VB id**: Displays a logical part of the NE that supports a single type of interface. Format: v303-1 for TR-303 v08-{1, 20} for TR-08 ina-{1, 20} for INA. ■ **Logical DS1 id**: Indicates the Logical DS1 id within the VRT/VB id. Possible values: v3fdr-1-{1, 28} for TR-303 v8fdr-{1, 20}-{a, b, c, d} for TR-08 ina-{1, 20} for INA. ■ **Physical DS1 Id**: Displays the Physical DS1 id cross-connected to the Logical DS1 id. Possible values: ds1-1-{1, 5}-{1, 4}.
Edit Logical DS1...	This button provides access to the *Physical DS1-Logical DS1* window to edit the Logical DS1 parameters (whenever this is possible) and the Physical DS1 parameters.
Delete Logical DS1...	Deletes the Physical DS!-Logical DS1 cross-connection selected in the list.

2. Use the radio buttons to choose a desired **VRT/VB**.

If you want ...	**then ...**
to add a Logical DS1	press ***Add Logical DS1...***. The *Physical DS1-Logical DS1* window pops up (cf. Chapter 5.4.3, page 5-81).
to edit a Logical DS1	select a row in the **Logical DS1 List** and press ***Edit Logical DS1...***. The *Physical DS1-Logical DS1* window pops up (cf. Chapter 5.4.5, page 5-88).
to delete a Logical DS1	refer to Chapter 5.4.6, page 5-89.

5.4.3 Creation of VRT/VB Logical Feeder (T1 Cross-Connection)

Assumptions

For the following description it is assumed that the NE is connected, a logical feeder is not yet created and the physical feeder (DS1) is not in use by any other logical feeder.

The following figure shows a block diagram of T1 cross-connections.

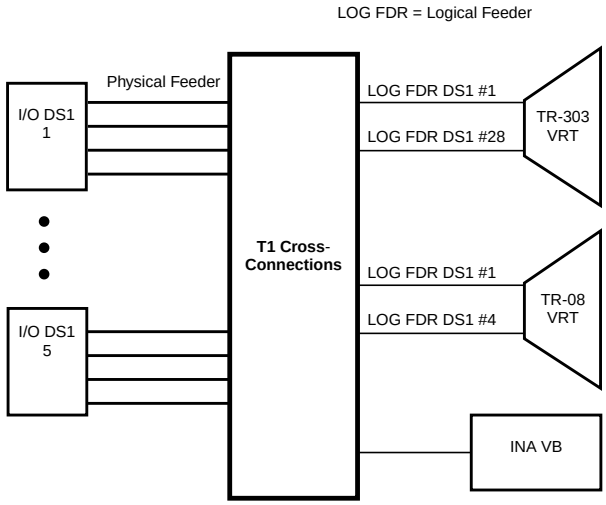


Figure 5-34 T1 Cross-Connections

Procedure

Complete the following procedure to add a logical feeder (T1) to a VRT/VB.

Further information is contained in Chapter 5.4.5, page 5-88 for editing the VRT/VB logical feeder; cf. Chapter 5.4.6, page 5-89 for deleting the VRT/VB logical feeder.

Step	Procedure
1.	Select ***All -> NE -> VRT/VB List -> VRT Type -> VRT/VB id*** in the Network Browser and ***Add Logical DS1*** via the cursor menu or select ***Service -> Provisioning -> Add -> Logical DS1*** via the Menu bar. The *Physical DS1-Logical DS1* window pops up.

NOTE:
There are different ways to open this window (cf. Figure 5-30, page 5-72). Depending of the previous actions the options in the window are different.

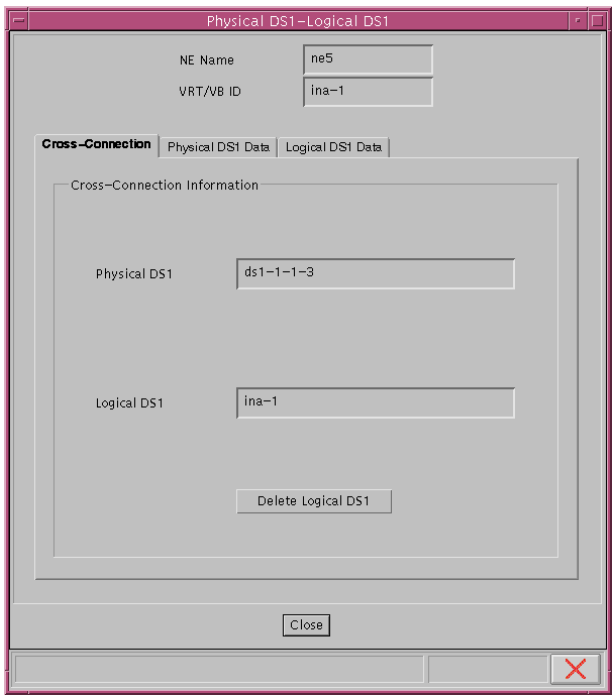


Figure 5-35 "Physical DS1-Logical DS1" Window (Tab Cross-Connection)

The tab "Cross-connection" identifies the NE and VRT/VB related to the cross-connection and provides the facilities for selecting the appropriate Physical DS1 and Logical DS1 id (from the lists of available ones) in the case of cross-connecting Physical DS1-Logical DS1. As far as editing is concerned, both fields will be non-editable and the only possible action will be delete the cross-connection.

Parameters/ Buttons	Description
VRT/VB id	Depend on the previous action this field displays the already selected VRT/VB id or provides an option menu (if the DS1 is not yet cross-connected) to select an appropriate VRT/VB id.
Cross-connection Information	The field **Physical DS1** is used to enter an appropriate Physical DS1 to be cross-connected. (When coming from a window in which the Physical DS1 is already defined the corresponding value is displayed and this field is not editable.) Format: ds1-shelf-slot-feeder Possible values: ds1-1-{1, 5}-{1, 4} (five possible IO-DS1s per shelf, four possible feeders per IO-DS1).

Parameters/ Buttons	Description
	The field **Logical DS1** is used to enter an appropriate Logical DS1 id to be cross-connected. (When coming from a window in which the Logical DS1 is already defined the corresponding value is displayed and this field is not editable.) Possible values: v3fdr-{1}-{1, 28} for TR-303 v8fdr-{1, 20}-{a, b, c, d} for TR-08 ina-{1,20} for INA.
Label	For the **label** button two values are possible: ***Add Logical DS1*** or ***Delete Logical DS1***. ***Add Logical DS1*** will be available when the Logical DS1 does not yet exist. ***Delete Logical DS1*** will be available when the Logical DS1 does already exist.

2. Enter the appropriate **Physical DS1** (up to 9 characters) to be cross-connected in field Physical DS1.

3. Enter the appropriate **Logical DS1 id** (up to 10 characters) to be cross-connected.

4. Click on label button ***Add Logical DS1***.

5. Switch to tab **Logical DS1 Data.**

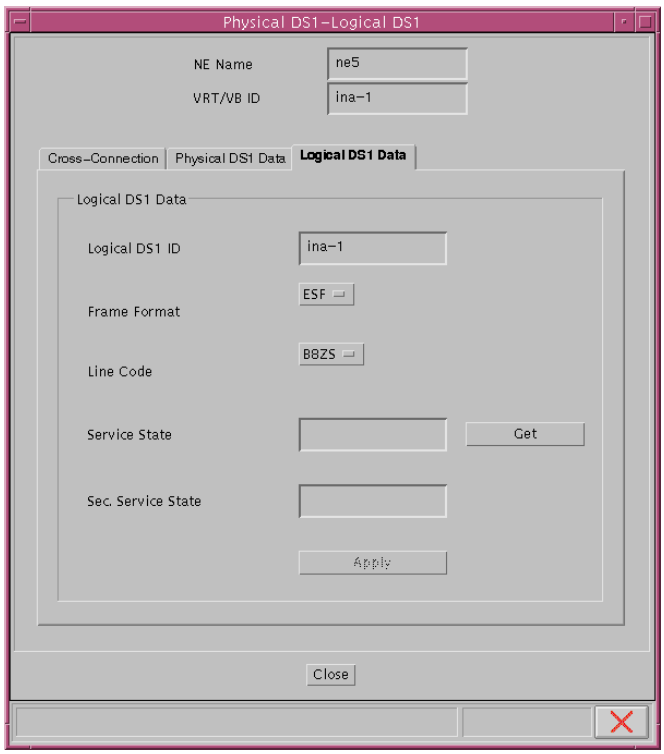


Figure 5-36 "Physical DS1-Logical DS1" Window (Tab Logical DS1 Data)

Logical DS1 information will be provided only if there is a Physical DS1-Logical DS1 cross-connection in place.

Parameters/ Buttons	Description
Logical DS1 id	This field shows the corresponding value: any number between 1 and 28. Possible values: v3fdr-{1}-{1, 28} for TR-303 v8fdr -{1, 20}-{a, b, c, d} for TR-08 ina-{1, 20} for INA. NOTE: Only 20 logical DS1s can be cross-connected inside an NE.

Parameters/ Buttons	Description
Frame Format	This option menu shows the possible frame formats: Three possible values: **ESF** (Extended SuperFrame), **FS** (SuperFrame with Datalink) or **SF** (SuperFrame). Default values are: ■ ESF for TR-303 not reprovisionable ■ FS for TR-08 (DS1-a) not reprovisionable ■ SF for TR-08 (DS1-{b,d} not reprovisionable ■ ESF for INA ESF or SF. NOTE: Values are only changeable for INA VB.
Line Code	This option menu shows the line coding values: Possible values are: **ZCS** (Zero Code Suppression) or **B8ZS** (Bipolar with 8 Zero Suppression). The default is **B8ZS** for TR-303, TR-08 and INA VRT/VBs. NOTE: Values only changeable for TR-08 and INA. **ZCS** is blocked for TR-303 VRTs.
Get	Via this button the Logical DS1 **Service State** and the Logical DS1 **Secondary Service State** can be displayed. Possible values for Service State: **IS** (In Service) or **OOS** (Out of Service). Possible values for Secondary Service State: **AUTO** (Automatic Non Alarmed), **LPBK** (Loop back), **MON** (Degraded Signal) or **YEL** (Yellow Alarm).
Apply	This command button will only be available in the following cases: 1. There is a Physical DS1-Logical DS1 cross-connection present. 2. VRT/VB Type is TR-08 and Line Code has been modified. 3. VRT/VB type is INA and any of the Frame Formats has been modified.

6. Select the appropriate frame format in the option menu **Frame Format**.

7. Select the appropriate line coding value in the option menu **Line Code**.

8. Click on ***Apply*** to confirm.

9. Switch to tab **Physical DS1 Data.**

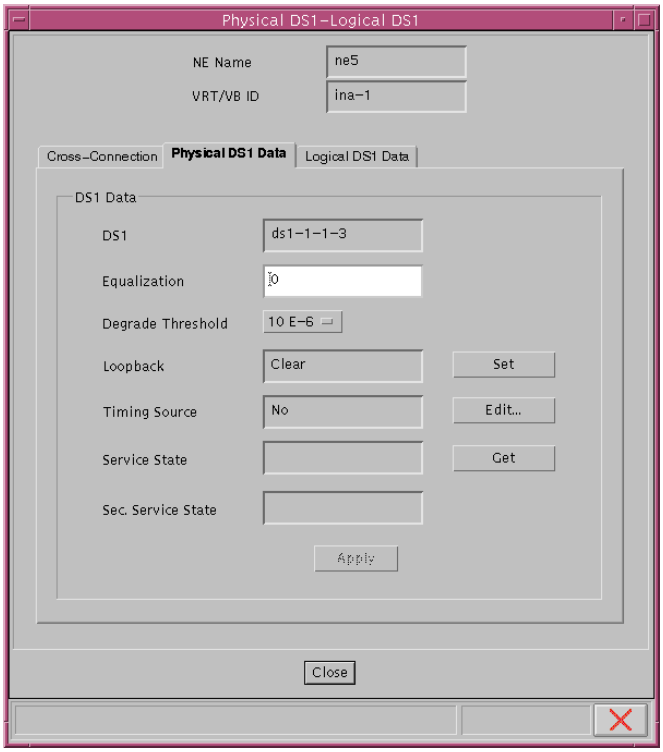


Figure 5-37 "Physical DS1-Logical DS1" Window (Tab Physical DS1 Data)

This window provides physical DS1 information.

Parameters/ Buttons	Description
Physical DS1	This field displays the selected physical DS1 id (already populated). Format: ds1-shelf-slot-feeder Possible values: ds1-1-{1, 5}-{1, 4} (Five possible IO-DS1s per shelf, four possible feeders per IO-DS1).
Equalization	This field is used to define the cable length to the DSX-1. This field is mandatory. Possible values are: **0** to **655** ft. Default value is 0 ft.
Degrade Threshold	Physical DS1 Signal Degrade Threshold. Possible values are: **10E-7**, **10E-6**, **10E-5**, **10E-4**.

Parameters/ Buttons	Description
Loopback	This field displays the current loopback state (**clear** or **set**). Use the Label button on the right-hand side to change the loopback state (for loopback details see Chapter 6.4.5, page 6-29).
Label	Use this button to set or clear the physical DS1 loopback. Depending on the loopback state reflected, this command button displays the possible operation (**Clear**, if the loopback is set; **Set**, if the loopback is cleared).
Timing Reference	Displays whether or not the selected physical DS1 is the timing source reference (**Yes** or **No**). The reference can be changed via the ***Edit...*** button on the right-hand side. This button provides access to the *NE Information* window (tab **Timing Source Control** - cf. Chapter 5.3.2.4, page 5-52) to allow the modification of the current NE timing source reference.
Get	Via this button the physical DS1 **Service State** and the DS1 **Secondary Service State** can be displayed. Possible values for Service State: **IS** (In Service) or **OOS** (Out of Service). Possible values for Secondary Service State: **AUTO** (Automatic Non Alarmed), **LPBK** (Loop back), **MON** (Degraded Signal) or **YEL** (Yellow Alarm).
Apply	This button will only be available if the Equalization and/or Degrade Threshold have been modified.

10. Enter the appropriate cable length to the DSX-1 in the **Equalization** field.

11. Select the **Degrade Threshold** for Physical Feeder.

12. Click on **Apply** to confirm.

5.4.4 Change Voice Frequency Data Enhancement (VFDE) for TR-303 VRTs

Assumption For the following description it is assumed that the NE is connected and the VFDE state is well-known.

Procedure Complete the following procedure to change VFDE for TR-303 VRTs.

Step	Procedure
1.	Select ***All -> NE -> VRT/VB List -> VRT Type TR-303*** in the Network Browser and ***Edit*** via the cursor menu or select ***File -> Open*** or ***Service -> Provisioning -> Edit*** via the Menu bar. The *VRT/VB* window pops up (cf. Figure 5-32, page 5-75).
2.	Choose the VFDE state (**Enable/Disable**) by using the radio buttons in the field VFDE.
3.	Click on ***Apply*** to confirm. A *Warning* window pops up in case of changing the VFDE state to **Disable**: **`The operation may be service affecting. Continue anyway?`**
4.	If you decide to continue, the AEM-NB will send an allow-VFDE message (in case of enable) or an inhibit-VFDE message (in case of disable) to the NE. The following *In Progress* message will be shown in the status bar: **`Disable/Enable VFDE launched.`**

5.4.5 Edit VRT/VB Logical Feeder

Assumptions For the following description it is assumed that the NE is connected, the Logical Feeder is created and the Service State of the Logical Feeder is well known.

Procedure Complete the following procedure to change a Logical Feeder (T1) of a VRT/VB.

Step	Procedure
1.	Select ***All -> NE -> VRT/VBs List -> VRT/VB Type -> VRT/VB id*** in the Network Browser and ***Edit Logical DS1 List*** via the cursor menu or select ***Service -> Logical DS1 List*** via the Menu bar.The *Logical DS1 List* window pops up.
2.	Select the appropriate VRT/VB id in the table *Logical DS1 List*.
3.	Click on ***Edit Logical DS1...***. The *Physical DS1-Logical DS1* window pops up (cf. Chapter 5.4.3, page 5-81).

Use the tabs **Physical DS1 Data** and **Logical DS1 Data** to edit the Logical Feeder Data.

NOTE:
Physical Feeder:
If the new DS1 is not in use, both a delete-cross-connection and a new enter-cross-connection message are sent to the NE.
If the new DS1 is in use, both existing cross-connections are released (old and new DS1), via two delete-cross-connection messages, and two new cross-connections are created via two enter-cross-connection messages.

5.4.6 Delete VRT/VB Logical Feeder

Assumptions

For the following description it is assumed that the NE is connected, the Logical Feeder is created and the Service State of the Logical Feeder is well known.

Procedure

Complete the following procedure to remove a Logical Feeder (T1) from a VRT/VB.

Step	Procedure
1.	Select ***All -> NE -> VRT/VBs List -> VRT/VB Type -> VRT/VB id*** in the Network Browser and ***Edit Logical DS1 List*** via the cursor menu or select ***Service -> Logical DS1 List*** via the Menu bar.The *Logical DS1 List* window pops up.
2.	Select the appropriate VRT/VB id in the table *Logical DS1 List*.
3.	Click on ***Delete Logical DS1...***. A *Warning* window pops up: **`Deleting Logical DS1 id may be service affecting and may remove existing semi-permanent cross-connections (DS0 end points), OK to proceed?`** If you decide to continue, the AEM-NB will send a delete-cross-connection message to the NE.

5.4.7 Add VRT/VB Logical T0 (Subscriber)

Assumptions

For the following description it is assumed that the NE is connected, the Logical T0 is not yet created and the Physical Line (drop or roc) is not in use by any other Logical T0.

The following figure shows a block diagram of T0 cross-connections.

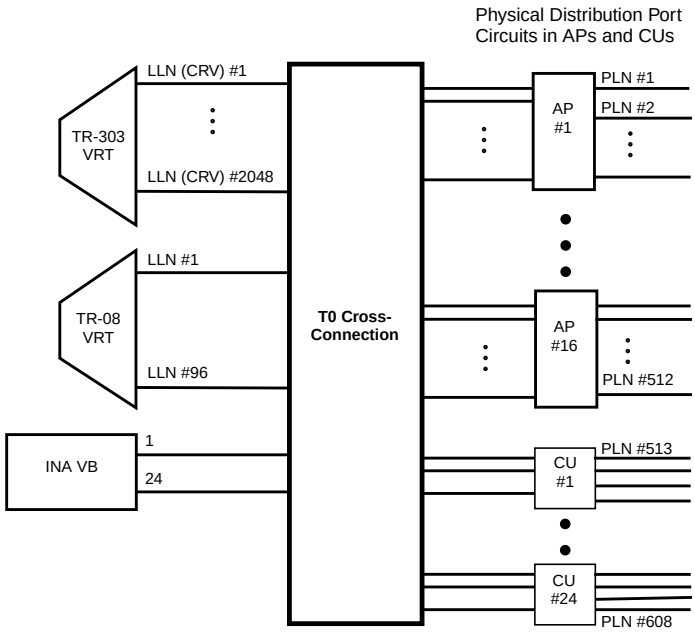


Figure 5-38 T0 Cross-Connections

Procedure

Complete the following procedure to add a Logical T0 of a VRT/VB:

Step	Procedure
1.	Select ***All -> NE -> VRT/VBs List -> VRT/VB Type -> VRT/VB id*** in the Network Browser and ***Edit Logical To List*** via the cursor menu or select ***Service -> Logical T0 List*** via the Menu bar. The *Logical T0 List* window pops up. This window can also be reached with ***All -> NE -> Logical T0 List*** via the cursor menu.

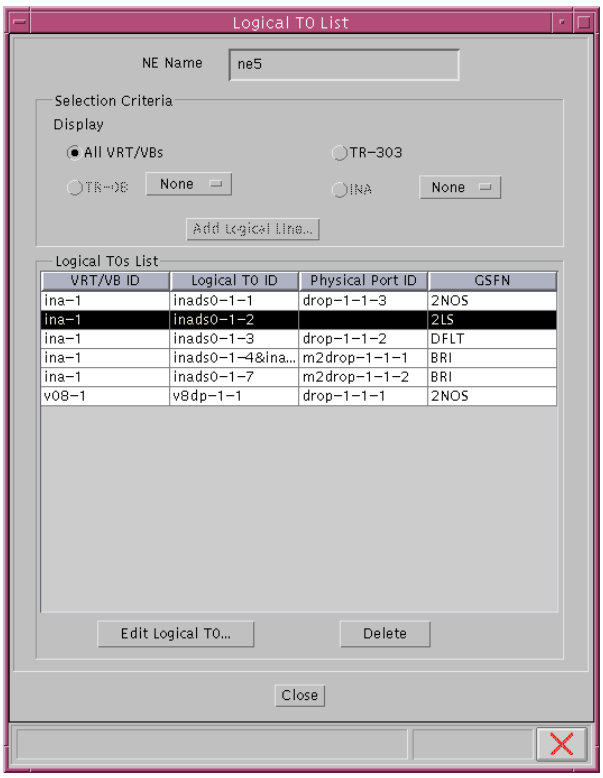


Figure 5-39 "Logical T0 List" Window

This window displays the **Logical T0 id** list based on a selection criterion.

Parameters/ Buttons	Description
Selection Criteria	Radio buttons are used to define the list that will be displayed in the pane **Logical T0 List** (see below). ■ **All Network Interfaces**: The list displays all Logical T0s currently present in the NE for all VRT/VBs. ■ **TR-303, TR-08, INA**: In all these cases except TR-303, a non-editable option list will be available showing the possible options. Selection of one of these VRT/VB ids automatically sets the corresponding radio button. If no VRT/VB id is selected, the radio button is not editable (i.e. the user will not be able to set it). Possible values: v08-{1, 20} for TR-08 ina-{1, 20} for INA.

Parameters/ Buttons	Description
Add Logical T0...	This button is only available if a specific VRT/VB id has been selected and the maximum number of Logical T0s has not yet been created: max. 96 for TR-08 max. 2048 for TR-303 max. 24 for INA.
Logical T0 List	The information in this field is displayed in a table: ■ **VRT/VB id**: Displays a logical part of the NE that supports a single type of interface. Format: v303-1 for TR-303 v08-{1, 20} for TR-08 ina-{1, 20} for INA. ■ **Logical T0 id**: Indicates the Logical T0 id within the VRT/VB id. Possible values: v3dp-1-{1, 2048} for TR-303 v8dp-{1, 20}-{1, 96} for TR-08 inads0-{1,20}-{1, 24} for INA. ■ **Physical Port Id**: Displays the Physical Port id cross-connected to the Logical T0. Possible values: drop-{1}-{1,16}-{1,32} for APs m2drop-{1}-{1,24}-{1,4} for CUs. ■ **GSFN**: Generic Signalling Function. The following values are possible: **DFLT** (default), **2LS**, **2GS**, **Coin**, **AC**, **EBS**, **LR**, **DPT, 2FXLS**, **2FX**, **2RVO**, **2NOS**, **TO**, **DX4**[**N**,**R**], **FX**[**O**,**P**,**S**,**T**] [**1**,**2**,**3**,**5**] **EM4**[**C**,**H**], **PLR**[**1**,**2**], **ETO4**, **FXO**, **TD**[**O**,**S**] [**A**,**B**,**C**,**D**], **TO4, ISDN, 4DO**, **DATA**, **NO1**, **NO2**, **OCU1**, **OCU2**, **OCU3**, **SW56**, **BRI. Unknown.**
Edit Logical T0...	This button provides access to the *Logical To* window to edit the Logical T0 parameters (whenever this is possible). NOTE: This button is disable if GSFN = Unknown.
Delete Logical T0...	Deletes the cross-connection selected in the list (cf. Chapter 5.4.9, page 5-112).

2. Use the radio buttons to choose a desired **Logical T0**.

3. Click on ***Add Logical T0...***.The new VRT/VB id will be inserted into the Logical T0 list.

4. Select an appropriate entry in the Logical T0 list and click on ***Edit VRT/VB...*** or double click on the entry. The *Logical T0* window pops up:

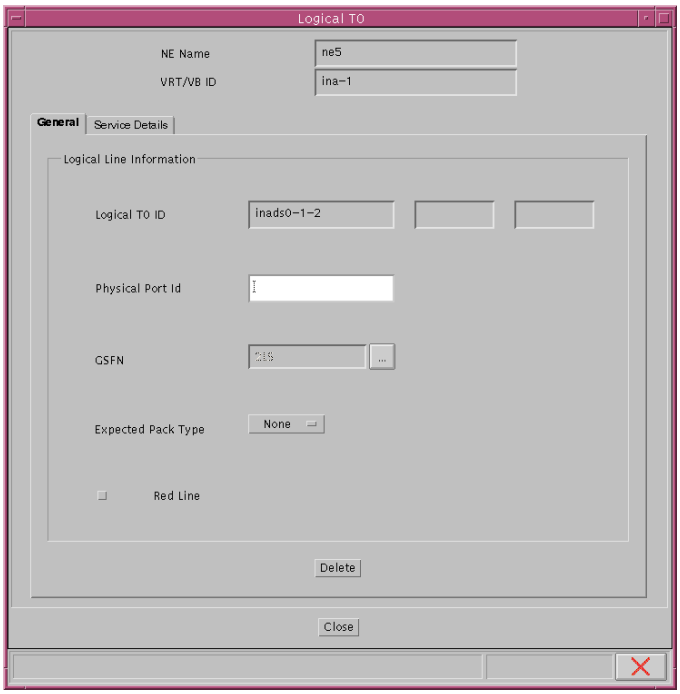


Figure 5-40 "Logical T0" Window (Tab General)

This window is composed of two tabs: **General** and **Service Details**. It is used to add Logical T0, remove Logical T0 or modify Logical T0. The parameters shown in this window will be enabled or disabled depending on the action selected and where this action has been selected from. This window allows cross-connection of User Port-Logical T0 (T0 Cross-connections), as well as service configuration and modification.

Parameters/ Buttons	Description
VRT/VB id	This field displays the selected VRT/VB id. v303-1 for TR-303 v08-{1, 20} for TR-08 ina-{1, 20} for INA. NOTE: When coming from the *Application Pack* window (***Add Logical T0...*** - cf. Chapter 5.3.2.1.6, page 5-34) or the Physical Port id cursor menu (Network Browser), this field is empty and non-editable. An option menu with all VRT/VB ids is offered for selection.

Parameters/ Buttons	Description
GSFN	Available GSFNs: Group 1: **DFLT**, **2LS**, **2GS**, **Coin**, **AC**, **EBS**, **LR**, **DPT** Group 2: **2FXLS**, **2FX**, **2RVO**, **2NOS**, **TO**, **DX4**[**N**,**R**], **FX**[**O**,**P**,**S**,**T**] [**1**,**2**,**3**,**5**] **EM4**[**C**,**H**], **PLR**[**1**,**2**], **ETO4**, **FXO**, **TD**[**O**,**S**] [**A**,**B**,**C**,**D**], **TO4** Group 3: **ISDN** Group 4: **DATA**, **NO1**, **NO2**, **OCU1**, **OCU2**, **OCU3**, **SW56**, **BRI.** The GSFNs are described in Chapter 5.4.7.1, page 5-98 to Chapter 5.4.7.15, page 5-110. NOTE: When coming from the *Application Pack* window (***Add Logical T0...*** - cf. Chapter 5.3.2.1.6, page 5-34) or the VRT/VB window (***Add Logical T0...*** - cf. Chapter 5.4.1, page 5-73), this field is empty and editable. NOTE: GSFN type is NOT modifiable in R1.5. A change in the GSFN of a Logical T0 implies deletion and new creation of a Logical T0. Depending on the GSFN selected, the list of parameters needed for configuring a subscriber will differ - see the next sections.
Logical T0 id(s)	These fields show the Logical T0 id(s): v8dp-{1, 20}{1, 96} for TR-08 v3dp-{1}-{1, 2048} for TR-303 inads0-{1, 20}-{1, 24} for INA. There are three fields available: The second field will be available only when the GSFN field is populated with BRI, NO1, NO2 or OCU1, OCU2, OCU3 for a second entry in bundle Logical T0. The third field will be available only when the GSFN field is populated with BRI for a third entry in bundle Logical T0. NOTE: These fields are populated and non-editable only when coming from ***Edit Logical T0...***. Otherwise they are empty and editable. NOTE: For NO1, NO2, OCU1, OCU2 and OCU3 a second entry is possible but not allowed because this is not yet supported by the NE.

Parameters/ Buttons	Description
Physical Port id	This field displays the physical Port id cross-connected to the Logical T0. Possible values: drop-{1}-{1,16}-{1, 32} for APs m2drop-{1}-{1, 24}-{1, 4} for CUs. NOTE: When coming from the *Application Pack* window (***Add Logical T0...*** - cf. Chapter 5.3.2.1.6, page 5-34) or the Physical Port id cursor menu (Network Browser), this field is populated and editable.
Expected Pack Type	In order to provide service, the subscriber has to be assigned to the proper Application Pack. To ensure that the service requested will work, the user should enter the CLEI code of the circuit pack that is supposed to provide that type of service. Since CLEI codes are completely meaningless, the GUI offers an option menu of the circuit pack types supported (cf. Table 5-1, page 5-37 and Table 5-2, page 5-45). Therefore the user is able to select one of these types that internally is to be mapped to its corresponding CLEI code.
Red Line	This check box is used to identify red-lined subscribers. NOTE: A special warning message appears when red-lined Logical T0s are to be edited (cf. Chapter 5.4.9, page 5-112).
Label	The function of this label button depends on the situation. Possible values are: ***Apply*** or ***Delete***. ***Apply*** will be displayed whenever ***Add Logical T0...*** has been selected or ***Edit Logical T0...*** has been chosen and at least one parameter has been modified. ***Delete*** will be active when coming from ***Edit Logical T0...*** selection and both Logical T0 id and Physical Port id are present.

5. Use the option menu **GSFN** to select an appropriate GSFN.

6. Enter the desired **Logical T0 id(s)**.

7. Use the option menu **Expected Pack Type** to select a desired AP (this step is optional).

8. Use the check box **Red Line** to define whether the subscriber shall be red lined.

9. Click on ***Apply*** to confirm.

Switch to tab **Service Detail** to get/edit service-specific details of the selected GSFN.

GSFN	Cross-References
DFLT	cf. Chapter 5.4.7.1, page 5-98
2LS, 2GS, 2FXLS, 2FX	cf. Chapter 5.4.7.2, page 5-98
2RVO	cf. Chapter 5.4.7.3, page 5-100
2NOS	cf. Chapter 5.4.7.4, page 5-101
BRI	cf. Chapter 5.4.7.5, page 5-102
T0	cf. Chapter 5.4.7.6, page 5-102
DX4N, DX4R, FX	cf. Chapter 5.4.7.7, page 5-103
EM4C, EM4H, PLR1, PLR2	cf. Chapter 5.4.7.8, page 5-104
ETO4	cf. Chapter 5.4.7.9, page 5-105
DPT	cf. Chapter 5.4.7.10, page 5-106
FXO	cf. Chapter 5.4.7.11, page 5-107
OCU 1, 2, 3	cf. Chapter 5.4.7.12, page 5-108
SW56	cf. Chapter 5.4.7.13, page 5-109
TD	cf. Chapter 5.4.7.14, page 5-109
T04	cf. Chapter 5.4.7.15, page 5-110

The following parameters are available for all Logical T0 types:

Parameters/ Buttons	Description
NE Name	Displays the NE name of the selected NE.
VRT/VB id	Displays the selected VRT/VB id.
GSFN	Displays the selected GSFN for the Logical T0. The GSFN parameters are dependent on the GSFN type, and they are shown in each GSFN group table. There are some services which do not have special details: COIN, ISDN, AC, DATA, EBS, LR and NO[1,2].
Service State	Shows the Logical T0 service state obtained from the NE through the use of the ***Get*** button. Possible values: In Service (**IS**), Out of Service (**OOS**).

Parameters/ Buttons	Description
Secondary Service State	Shows the secondary service state information obtained from the NE. It provides supplementary information about the line state. This field (capable of displaying two lines of text) has a vertical scroll bar to allow display of multiple lines. Possible values: Abnormal (ANR) Facility Failure (FAF) Family of Equipment Failure (FEF) Fault (FLT) Mismatch of Equipment and Attributes (MEA) Red Lined (RDLD) Supported Entity Exists (SDEE) Supported Entity Outage (SGE) Switch (SWTCH) Test (TS) Unassigned (UAS) Unequipped (UEQ).
Get	This button retrieves the Logical T0 service states.
Apply	This button is used to accept the different changes.

The following descriptions of service details are introduced by a short explanation (overview). For more information refer to the AMAS R1.5 network elements documentation.

5.4.7.1 Service Details, GSFN = DFLT

Overview

The DFLT (Default POTS/SPOTS) service is primarily applicable to TR-08 applications.

Service Details (Parameters)	Description
Enable Full Time Transmission	When a check mark is set in the check box the transmission circuits in the AP or CU remain active when the subscriber is on-hook. Possible values: **Set**, **Not set**. Default: Set.
Loss Mode	Use this option menu to specify whether the Application Pack will automatically adjust its transmit/receive loss to control the overall loop loss to approximately **2** or **5** dB, or use prescription-set values. Possible values: **2**, **5**, **Auto**. Default: Auto.

5.4.7.2 Service Details, GSFN = 2LS, 2GS, 2FXLS, 2FX

Overview

The 2LS (2-wire loop-start service with enhanced transmission and signaling provisioning options) is applicable to the POTS32 LPA300, PRCOIN LPA350 and PROG2W LPA380 APs.

The 2GS (2-wire ground-start service with enhanced transmission and signaling provisioning options) is applicable to the PRCOIN LPA350 and PROG2W LPA380 APs.

The 2FXLS (2-wire FX, loop-start) is applicable to the PRCOIN LPA350 and PROG2W LPA380 APs.

The 2FX (2-wire FX, ground-start) is applicable to the PRCOIN LPA350 and PROG2W LPA380 APs.

Service Details (Parameters)	Description
Enable Full Time Transmission	When a check mark is set in the check box the transmission circuits in the AP or CU remain active when the subscriber is on-hook. Possible values: **Set**, **Not set**. Default: Set.
Balance1 Mode (BAL1)	This option menu can be used to define whether the AP or CU uses an adaptive hybrid to control the 4-wire-to-2-wire balance or a prescription set value. Possible values: **Auto**, **Fixed**. Default: Auto.
Balance2 Mode	This slider can be used to establish the prescription balance setting, in case BAL1 is **Fixed**. If BAL1 has value **Auto**, this control will be disabled (grayed out). Possible values: **0** ... **31**, step 1. Default: 0.
Loss Mode (LOSS)	This option menu can be used to specify whether the AP or CU will automatically adjust its transmit/receive loss to control the overall loop loss to approximately **2** or **5** dB, or use prescription-set values. Possible values: **2**, **5**, **Fixed**. Default: 2.
RTLP (Receive Transmission Level Point)	This slider is used to reset a fixed receive gain or loss in dB. Negative values define loss; positive values define gain. Only valid if LOSS is **Fixed**. If LOSS is not fixed, this control will be disabled. Possible values: **-8** ... **1.5**, step 0.25. Default: -8.
TTLP (Transmit Transmission Level Point)	This slider can be used to set a fixed transmission gain or loss in dB. Negative values define loss; positive values define gain. Only valid if LOSS is **Fixed**. If LOSS is not fixed, this control will be disabled. Possible values: **-6.75** ... **4.5**, step 0.25. Default: 4.5.
Z	This option menu can be used to define the termination impedance of the tip/ring interface. Possible values: **600**, **900**. Default: 900.
Equalization	This slider can be used to set the slope equalization for the AP or CU. Possible values: **0** ... **7**, step 1. Default: 0 (7 for 2FXLS).
Trunk Condition	This option menu can be used to determine whether the AP or CU sets the signaling state toward the CO (Central Office) to the **Idle** state, **Busy** or the DS0 Remote Alarm Indication(**Rai**) code during a fault condition. Default: Idle (Busy for 2FX).

5.4.7.3 Service Details, GSFN = 2RVO

Overview The 2RVO (2-wire loop reverse battery, originate) is applicable to the PRCOIN LPA350 and PROG2W LPA380 APs.

Service Details (Parameters)	Description
RTLP (Receive Transmission Level Point)	This slider can be used to reset a fixed receive gain or loss in dB. Negative values define loss; positive values define gain. Possible values: **-8** ... **1.5**, step 0.25. Default: -8.
TTLP (Transmit Transmission Level Point)	This slider can be used to set a fixed transmission gain or loss in dB. Negative values define loss; positive values define gain. Possible values: **-6.75** ... **4.5**, step 0.25. Default: 4.5.
Z	This option menu can be used to define the termination impedance of the tip/ring interface. Possible values: **600**, **900**. Default: 900.
Balance1 Mode (BAL1)	This option menu can be used to define whether the AP or CU uses an adaptive hybrid to control the 4-wire-to-2-wire balance or a prescription set value. Possible values: **Auto**, **Fixed**. Default: Fixed.
Balance2 Mode	This slider can be used to establish the prescription balance setting, in case BAL1 is **Fixed**. If BAL1 has value **Auto**, this control will be disabled (grayed out). Possible values: **0** ... **31**, step 1. Default: 0.
Equalization	This slider can be used to set the slope equalization for the AP or CU. Possible values: **0** ... **7**, step 1. Default: 0.
Trunk Condition	This option menu can be used to determine whether the AP or CU sets the signaling state toward the CO to the **Idle** state, **Busy** or the DS0 Remote Alarm Indication (**Rai**) code during a fault condition. Default: Idle.

5.4.7.4 Service Details, GSFN = 2NOS

Overview

The 2NOS (2-wire transmission only, with sealing current) is applicable to the PRCOIN LPA350 and PROG2W LPA380 APs.

Service Details (Parameters)	Description
Z	This option menu can be used to define the termination impedance of the tip/ring interface. Possible values: **600**, **900**. Default: 900.
Equalization	This slider can be used to set the slope equalization for the AP or CU. Possible values: **0** ... **7**, step 1. Default: 0.
Balance1 Mode (BAL1)	This option menu can be used to define whether the AP or CU uses an adaptive hybrid to control the 4-wire-to-2-wire balance or a prescription set value. Possible values: **Auto**, **Fixed**. Default: Fixed.
Balance2 Mode	This slider can be used to establish the prescription balance setting, in case BAL1 is **Fixed**. If BAL1 has value **Auto**, this control will be disabled (grayed out). Possible values: **0** ... **31**, step 1. Default: 0.
RTLP (Receive Transmission Level Point)	This slider can be used to reset a fixed receive gain or loss in dB. Negative values define loss; positive values define gain. Possible values: **-8** ... **1.5**, step 0.25. Default: -8.
TTLP (Transmit Transmission Level Point)	This slider can be used to set a fixed transmission gain or loss in dB. Negative values define loss; positive values define gain. Possible values: **-6.75** ... **4.5**, step 0.25. Default: 4.5.

5.4.7.5 Service Details, GSFN = BRI

Overview

The BRI (basic rate interface transmission extension (3 DS0 ISDN BRITE)) is applicable to the AUA293 ISDN BRITE channel unit which uses the U-Interface 2B1Q signal comprising two B channels and one D channel, plus overhead.

Service Details (Parameters)	Description
Switched VC	Switched Virtual Connection for ISDN. This option menu can be used to select the combination of bearer (B) channels provided to the subscriber. Possible values: **2B+D**, **B1+D**, **B2+D**, **D**. Default: 2B+D.

5.4.7.6 Service Details, GSFN = T0

Overview

The TO (transmission only, no sealing current) is used for a private line application with no DC signal. It is applicable to the SPQ442 channel unit which provides four channels of service which can be used for 2-wire non-switched private lines.

Service Details (Parameters)	Description
Impedance	The transmit and receive impedance parameter selects the termination impedance of the channel unit. Possible values: **600**, **900**. Default: 600.
Slope	This slider can be used to adjust the frequency response of the equalizer. Possible values: **0** ... **7**, step 1. Default: 0.
Balance	This slider can be used to specify the precision network for the 4-wire-to-2-wire hybrid balance function. Possible values: **0** ... **15**, step 1. Default: 3.
RCVGN	This slider can be used to define the receive gain parameter. Possible values: **-8** ... **1.5**, step 0.25. Default: -8.
XMTGN	This slider can be used to define the transmit gain parameter. Possible values: **-1** ... **6.75**, step 0.25. Default: -1.

5.4.7.7 Service Details, GSFN = DX4N, DX4R, FX

Overview

The DX4[N, R] (4-wire duplex signaling, normal simplex and reverse simplex) is applicable to the AUA41B channel unit which provides one channel of service to be used in the MDS2/MDS2B.

The FX[O, P][1,2,3,5] (4-wire foreign Xoffice, no toll diversion/with toll diversion (LSNS, LSRS, GSNS, LSNS)) is applicable to the SPQ444 channel unit which is intended for use in non locally switched loop- and ground-start special services (Loop start normal simplex, Loop start reverse simplex, Ground start normal simplex, Ground start reverse simplex).

The FX[S, T][1,2,3,5] (4-wire foreign exchange, no toll diversion/with toll diversion (LSNS, LSRS, GSNS, LSNS)) is applicable to the AUA41B channel unit which provides one channel of service to be used in the MDS2/MDS2B (Loop start normal simplex, Loop start reverse simplex, Ground start normal simplex, Ground start reverse simplex).

Service Details (Parameters)	Description
TRMT	This slider can be used to define the transmit attenuator parameter. Possible values: **0** ... **16.5**, step 0.1. Default: 16.5.
RCV	This slider can be used to define the receive attenuator parameter. Possible values: **0** ... **16.5**, step 0.1. Default: 16.5.
Load/Non Load	This option menu can be used to select whether the transmit equalizer mast be loaded or non-loaded distribution cable. Possible values: **N**, **L**. Default: N.
Bandwidth	This slider can be used to control the frequency response characteristic of the transmit equalizer. Possible values: **0** ... **15**, step 1. Default: 0.
Slope	This slider can be used to adjust the frequency response of the equalizer. Possible values: **0** ... **15**, step 1. Default: 7.
Impedance	The transmit and receive impedance parameter selects the termination impedance of the channel unit. Possible values: **150**, **600**, **1200**. Default: 600.
Height	This slider can be used to control the amplitude of the transmit equalizer's transfer function. Possible values: **0** ... **15**, step 1. Default: 0.
Trunk Condition	This option menu can be used to determine whether the AP or CU sets the signaling state toward the CO to the **Idle** state, **Busy** or the DS0 Remote alarm indication (**Rai**) code during a fault condition. Default: Idle.

5.4.7.8 Service Details, GSFN = EM4C, EM4H, PLR1, PLR2

Overview

EM4[C, H]: 4-wire E&M, Type I and Type II. The E&M function is used in PBX tie trunks to provide the E&M signaling interface. It is applicable to the SPQ454 channel unit which is intended for used in PBX tie trunks and it can interface with a PBX or other transmission equipment.

PLR[1,2]: 4-wire pulse link repeater, Type I and Type II. The primary application of the PLR function is also in PBX tie trunks providing the E&M signaling interface with inverted polarity. It is also applicable to the SPQ454 channel unit.

Menu Description

Service Details (Parameters)	Description
TTMT	This slider can be used to define the transmit attenuator parameter. Possible values: **0** ... **25.5**, step 0.1. Default: 25.5.
RCV	This slider can be used to define the receive attenuator parameter. Possible values: **0** ... **25.5**, step 0.1. Default: 25.5.
Trunk Condition	This option menu can be used to determine whether the AP sets the signaling state toward the CO to the **Idle** state, **Busy** or the DS0 Remote alarm indication (**Rai**) code during a fault condition. Default: Idle.

5.4.7.9 Service Details, GSFN = ETO4

Overview

The ETO4 (4-wire equalized transmission only) function is used in private lines (voice or data) when equalization of cable transmission characteristics is required. It is applicable to the AUA41B channel unit.

Service Details (Parameters)	Description
TRMT	This slider can be used to define the transmit attenuator parameter. Possible values: **0** ... **16.5**, step 0.1. Default: 16.5.
RCV	This slider can be used to define the receive attenuator parameter. Possible values: **0** ... **16.5**, step 0.1. Default: 16.5.
-7 dB (J3) (DBJ3)	When the **Black** option is selected, the channel unit supports an input TLP range of -15.0 to 1 dB. When the **White** option is selected, the channel unit supports an input TLP range of -8.0 to 8.5 dB. Possible values: **Black**, **White**. Default: Black.
Load/Non Load	This option menu can be used to select whether the transmit equalizer mast be loaded or non-loaded distribution cable. Possible values: **N**, **L**. Default: N.
Bandwidth	This slider can be used to control the frequency response characteristic of the transmit equalizer. Possible values: **0** ... **15**, step 1. Default: 0.
Slope	This slider can be used to adjust the frequency response of the equalizer. Possible values: **0** ... **15**, step 1. Default: 0.
Impedance	The transmit and receive impedance parameter selects the termination impedance of the channel unit. Possible values: **150**, **600**, **1200**. Default: 600.
Height	This slider can be used to control the amplitude of the transmit equalizer's transfer function. Possible values: **0** ... **15**, step 1. Default: 0.
Sealing Current	When a check mark is set, the channel unit applies a current from tip to ring (or across the transmission lead simplex) of the subscriber interface. Possible values: **Set**, **Not set**. Default: Set.

5.4.7.10 Service Details, GSFN = DPT

Overview

The DPT (dial-pulse terminating) function is used for a DID (Direct Inward Dial) with either dial pulse or multi-frequency addressing. It is applicable to the SPQ442 channel unit which provides four channels of service which can be used for DID trunks.

Service Details (Parameters)	Description
Impedance	The transmit and receive impedance parameter selects the termination impedance of the channel unit. Possible values: **600**, **900**. Default: 600.
Balance	This slider can be used to specify the precision network for the 4-wire-to-2-wire hybrid balance function. Possible values: **0** ... **15**, step 1. Default: 15.
Receive Gain	This slider can be used to define the receive gain parameter. Possible values: **-8** ... **1.5**, step 0.25. Default: -1.
Transmit Gain	This slider can be used to define the transmit gain parameter. Possible values: **-1** ... **6.75**, step 0.25. Default: -1.
Slope (SL)	This slider can be used to adjust the frequency response of the equalizer. Possible values: **0** ... **7**, step 1. Default: 0.
Trunk Condition	This option menu can be used to determine whether the AP or CU sets the signalling state toward the CO to the **Idle** state, **Busy** or the DS0 Remote alarm indication (**Rai**) code during a fault condition. Default: Idle.

5.4.7.11 Service Details, GSFN = FXO

Overview

The FXO (foreign exchange office) function is used for a non locally or locally switched loop- or ground-start application. It is applicable to the SPQ442 channel unit.

Service Details (Parameters)	Description
Impedance	The transmit and receive impedance parameter selects the termination impedance of the channel unit. Possible values: **600**, **900**. Default: 600.
Balance	This slider can be used to specify the precision network for the 4-wire to 2-wire hybrid balance function. Possible values: **0** ... **15**, step 1. Default: 0.
Receive Gain	This slider can be used to define the receive gain parameter. Possible values: **-8** ... **1.5**, step 0.25. Default: -8.
Transmit Gain	This slider can be used to define the transmit gain parameter. Possible values: **-1** ... **6.75**, step 0.25. Default: -1.
Slope	This slider can be used to adjust the frequency response of the equalizer. Possible values: **0** ... **7**, step 1. Default: 0.
Toll Diversion	When no check mark is set, the channel unit will not transmit the reverse loop current feed signaling state toward the digital facility. Possible values: **Set**, **Not set**. Default: Not set.
Trunk Condition	This option menu can be used to determine whether the AP or CU sets the signaling state toward the CO to the **Idle** state, **Busy** or the DS0 Remote alarm indication (**Rai**) code during a fault condition. Default: Idle.
On-Hook Transmission	When a check mark is set, the channel unit is configured for full-time on-hook transmission. Possible values: **Set**, **Not set**. Default: Not set.
LS/GS	This option menu can be used to define whether Loop Start or Ground Start is used. Possible values: **LS**, **GS**. Default: GS.

5.4.7.12 Service Details, GSFN = OCU 1, 2, 3

Overview

The OCU[1,2,3] (office channel unit dataport (1, 2 or 4 data rates)) is applicable to the SPQ452 dual OCU data port which is primarily used in an end-link of a DDS private line data service.

Service Details (Parameters)	Description
Rate	This option menu can be used to specify the subscriber data rate, in kbps, for the subscriber interface. Possible values: OCU1: **24**, **48**, **96**, **192**; OCU2: **384**, **560**; OCU3: **640**. Default: 19.2 for OCU1, 56.0 for OCU2, 64.0 for OCU3.
Error Correction	This option menu can be used to select the error correction technique for the DS0 path. The **MVEC** option is applicable only for subscriber data rates of 19.2 kbps and less. **SCEC** requires two DS0 time slots. Possible values: OCU1: {**NONE**, **MVEC**}. Default: NONE OCU2, OCU3:{**NONE**, **SCEC**}. Default: NONE.
All-Zero Code	All-Zero Code allowed: when a check mark is set, the channel unit will not allow a word containing 8 zeros to be sent toward the digital facility. Possible values: OCU1, OCU2: {**Set, Not set**}. Default: Not set OCU3: {**Set**}.
SCC	Secondary channel used: when a check mark is set, the channel unit supports a low-speed telemetry channel in the subscriber's data bits. Possible values: OCU1, OCU2: {**Set, Not set**}. Default: Not set OCU3: {**Set**}.
QM	When a check mark is set, the channel unit will send Abnormal Station Code to the Network upon detecting an excessive number of bipolar violations from the loop. Possible values: OCU1, OCU2: {**Set, Not set**}. Default: Not set OCU3: {**Not set**}.

5.4.7.13 Service Details, GSFN = SW56

Overview

The SW56 (Switched 56 kbps DDS service) is also applicable to the SPQ452 dual OCU dataport including enhanced service options to the DDS.

Service Details (Parameters)	Description
Enhanced Switch	When the Enhanced Switched 56-kbps check mark is set, the channel unit supports the transmission of call progress tones to the CPE (Customer Premises Equipment). Possible values: **Set**, **Not set.** Default: **Not set.**
AB Signaling	The AB Signaling parameter check mark is normally not set, which causes the channel unit to operate in the software signaling mode. Possible values: **Set**, **Not set.** Default: **Not set.**
Quality Monitoring	When the Quality Monitoring parameter check mark is set, the channel unit will send Abnormal Station Code to the Network upon detecting an excessive number of bipolar violations from the loop. Possible values: **Set**, **Not set.** Default: **Not set.**

5.4.7.14 Service Details, GSFN = TD

Overview

TD[O, S][A, B, C, D]: 4-wire tandem office and 4-wire tandem subscriber, 4-state (Type II, Type I) and 2-state (Type II, Type I). The tandem function is used for providing a back-to-back carrier interface for loop- or ground-start circuits. It is applicable to the SPQ444 channel unit.

Service Details (Parameters)	Description
TRMT	This slider can be used to define the transmit attenuator parameter. Possible values: **0** ... **11.6**, step 0.1. Default: 11.6.
Trunk Condition	This option menu can be used to determine whether the AP or CU sets the signaling state toward the CO to the **Idle** state, **Busy** or the DS0 Remote alarm indication (**Rai**) code during a fault condition. Default: Idle.

5.4.7.15 Service Details, GSFN = T04

Overview

The T04 (4-wire transmission only) function is used in voice or data private lines. It is applicable to the AUA41B channel unit which may be used in the MDS2/MDS2B, interfacing with a switch, other transmission equipment, data equipment, or cable.

Menu Description

Service Details (Parameters)	Description
TRMT	This slider can be used to define the transmit attenuator parameter. Possible values: **0** ... **16.5**, step 0.1. Default: 16.5.
-7 dB Transmit	This option menu can be used to control a 7 dB pad in the transmit path. When the **Black** option is selected, the channel unit supports an input TLP range of -9.0 to 7.5 dB. When the **White** option is selected, the channel unit supports an input TLP range of -16.0 to 0.5 dB. Possible values: **Black**, **White**. Default: Black.
-7 dB Receive (DBR)	This option menu can be used to control a 7 dB pad in the receive path. When the **Black** option is selected, the channel unit supports an input TLP range of -16 to 0 dB. When the **White** option is selected, the channel unit supports an input TLP range of -9.5 to 7 dB. Possible values: **Black**, **White**. Default: Black.
RCV	This slider can be used to define the receive attenuator parameter. Possible values: **0** ... **16.5**, step 0.1. Default: 16.5.
Sealing Current	When a check mark is set, the channel unit applies a current from tip to ring (or across the transmission lead simplex) of the subscriber interface. Possible values: **Set**, **Not set**. Default: Set.

5.4.7.16 Overview of Application Packs and GSFNs

Overview

The following table provides an overview of the general service functions and the compatible Applications Packs/channel units.

GSFN	Compatible AP/CU
DFLT	LPA300, LPA350, LPA380
2LS	LPA300, LPA350, LPA380
2GS	LPA350, LPA380
2FX	LPA350, LPA380

GSFN	Compatible AP/CU
2FXLS	LPA350, LPA380
2RVO	LPA350, LPA380
2NOS	LPA350, LPA380
ISDN	LPU116
COIN	LPA350, (lines 1-16 only)
4DO	(ROC)
DATA	AUA200, AUA232
EBS	SPQ429
AC, LR	AUA45B, AUA75
NO1, NO2	MCU5205, MCU5405
BRI	AUA293
TO	SPQ442
DPT	SPQ442
DX4[N,R]	AUA41B
FX[O,P][1,2,3,5]	SPQ444
FX[S,T][1,2,3,5]	AUA41B
EM4[C,H]	SPQ454
PLR[1,2]	SPQ454
ETO4	AUA41B
FXO	SPQ442
OCU[1,2,3]	SPQ452
SW56	SPQ452
TD[O,S][A,B,C,D]	SPQ444
TO4	AUA41B

5.4.8 Edit VRT/VB Logical T0 (Subscriber)

There are several ways to start the edit procedure. The following figure shows the possibilities for opening the corresponding windows.
Access via the Network Browser (***All -> NE -> Shelf -> AP -> User Port (Logical T0)***) and cursor menu (***Edit***) is also possible.

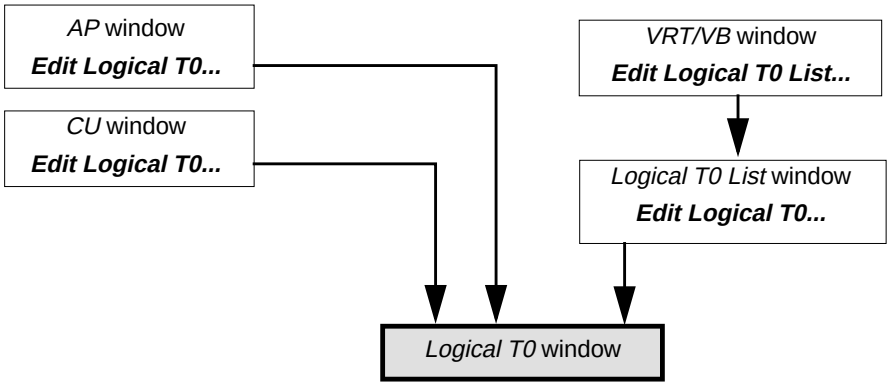


Figure 5-41 Edit Logical T0

The edit options are described in Chapter 5.4.7, page 5-90.

5.4.9 Delete VRT/VB Logical T0 (Subscriber)

There are several ways to initiate the deletion of Logical T0s. The corresponding button ***Delete Logical T0...*** exists in the *CU*, *AP* and *Logical T0 List* windows (this button is disabled in *CU* and *AP* windows for R1.5).

Procedure

Complete the following procedure to remove a Logical T0:

1. Select the Logical T0 in the corresponding list
2. Click on ***Delete Logical T0...*** button. A *Warning* window pops up:

   `Logical T0 will be deleted, OK to proceed?`

NOTE:
If the chosen Logical T0 has been configured as red lined (cf. Figure 5-40, page 5-93) the following *Warning* message will pop up:

`Redlined Logical T0 will be deleted, OK to proceed?`

If you decide to continue, the AEM-NB will send a delete message to the NE.

5.5 NE Software Upgrade

This function is subdivided into two parts: NE software download and program copy.

5.5.1 NE Software Download

Overview

There are two software versions, the one in the active COMDAC and the new one to be downloaded. It is assumed that the user has a copy of the software currently running in the active COMDAC.

The software download procedure is as follows:

- Start download
- Load software into the standby COMDAC.

Assumptions

For the following description it is assumed that the NE is already connected and the NE hardware platform is prepared to receive and work with the new program version.

Procedure

Complete the following procedure to start software download:

Step	Procedure
1.	Select ***All*** in the Network Browser.
2.	Select ***Equipment -> NE SW Download*** via the Menu bar. The *NE SW Download* window pops up:

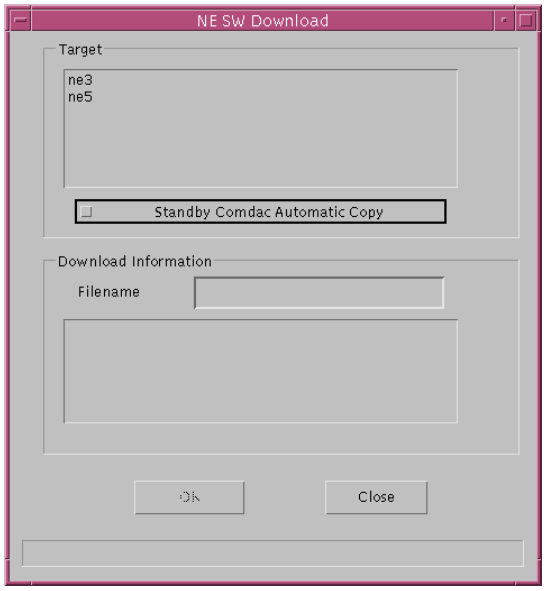


Figure 5-42 "NE SW Download" Window

This window is subdivided into two fields: **Target** and **Download Information**.

3. Select one or more NEs in the Target list.

4. Set the check box **Standby Comdac Automatic Copy** if you want to copy automatically the software from the working COMDAC to the standby COMDAC after the software download is completed successfully.

5. Select a desired file in the **Download Information** list. The corresponding file will be displayed in the **Filename** field.

6. Click on ***OK***. A *Warning* window pops up (the *Software Download* window remains on the screen after the download is finished):

   `SW Download is service affecting. Do you want to continue?`

   If you decide to continue the AEM-NB starts the download procedure. An *In Progress* window pops up showing the following message:

   `SW Download to <NE Name> in progress.`

NOTE:
The *In Progress* window is a dialog window with progress indicator and cancel option that will be displayed any time there is a long duration task being performed, such as SW Download. The following figure shows an example:

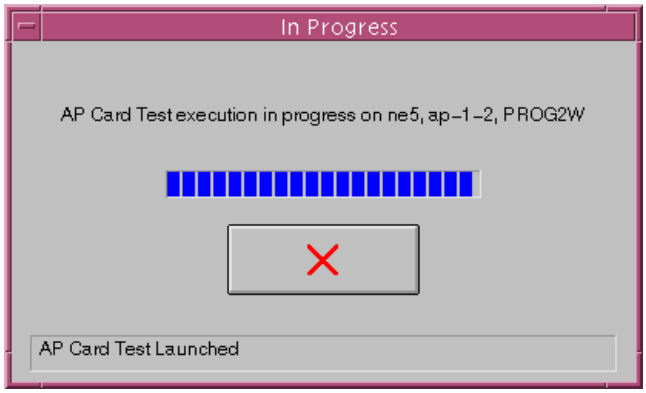


Figure 5-43 Example of an "In Progress" Window

The progress bar shows the operation status. A percentage display exists for SW Download and NE Reset. The display continues to show 90% until the end of the process. The ***Cancel*** button will be disabled if either the SW Download or the NVDS Restore commands are being executed (i.e. an FTP process is still running).

7. Wait until this process is finished.

   After the download process has correctly finished the connection to the NE breaks off. To re-establish the connection proceed with **Step 6**.

   The following errors will stop the download process:

   - NE does not match login and password. The AEM-NB returns operation failed to the AEM-NB.
   - NE detects that the side switch to the standby COMDAC is not possible (e.g. 2nd COMDAC not present, as the NE R1.5 does not support SW Download in simplex mode) and refuses the SW Download operation.
   - If the download of the data fails an alarm is issued and manual intervention will be required to:
     - — restart the download procedure from the beginning, or
     - — write from the active COMDAC to the standby COMDAC to back out the partial load (duplex configuration) - see Chapter 5.5.2, page 5-116.
   - If the software program is not installed successfully on the standby COMDAC:

     In duplex configuration, an alarm will be sent to the AEM-NB and manual intervention will be required to:

     - — restart the download procedure from the beginning, or

— write from the active COMDAC to the standby COMDAC to remove the downloaded copy - see Chapter 5.5.2, page 5-116.

5.5.2 Program Copy

Overview

This function is used to copy a new loaded software from the currently active COMDAC to the standby COMDAC. During normal operation both COMDACS should have the same software version. So the software copy should always be the next step after software download.

Duplex Configuration

For the following description it is assumed that the NE is configured in duplex configuration.

Procedure

Complete the following procedure to copy the new software from the active COMDAC to the standby COMDAC:

Step	Procedure
1.	Select ***All -> NE -> Shelf*** in the Network Browser an ***Program Copy*** via cursor menu or select ***Equipment -> Program Copy*** via the Menu bar. The *Program Copy* window pops up:

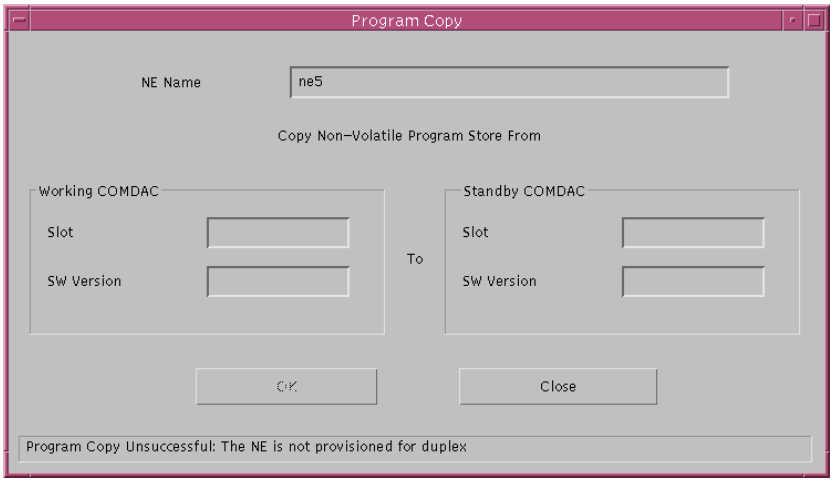


Figure 5-44 "Program Copy" Window

This is a dialog window requesting information from the operator to continue. There are two panes (titled **Working COMDAC** and **Standby COMDAC**) showing the corresponding slot number and SW versions used in each of the COMDACs.

— **Slot**

Identifies which COMDAC is where (e.g. Working COMDAC in slot 1 and Standby in slot 2).

— **SW Version**

Obtained from the NE. The SW version of the working COMDAC will be taken as the NE SW version.

2. Press ***OK*** to start the software copy. An *In Progress* window pops up:

```
Program Copy from COMDAC 1 to COMDAC 2 in Progress
```

3. Wait until this process is finished.

5.6 Nonvolatile Data Storage (NVDS)

Overview

This section describes the backup and restore procedures. The backup procedure uploads the data from the NE's COMDAC to the AEM-NB. The restore function deals with the downloading of a previous backup NVDS from the AEM-NB to the NE. Both functions apply to both simplex and duplex NE configurations.

Backup/restore Data

For database backup and restoration the AEM-NB is able to create/maintain a copy of provisioning data from the active COMDAC (NVDS). When a loss of data occurs in the NE (due to factors such as human error, power failure or hardware and software failures), the restoration features enable the AEM-NB to restore a previous backup to one NE.

Backup Media

The AEM-NB is able to store the backup copy in diverse storage media that can include Hard Disk Drive (HDD), tapes, removable disk cartridges and any other available mass-storage medium.

FTP

For database backup and restoration operations the AEM-NB uses a File Transfer Protocol (FTP) connection within the NE. FTP allows the AEM-NB to overwrite or copy information residing on the NE.

The AEM-NB can open only one FTP session per NE at a time where the AEM-NB will support the client role of the FTP session, and the *AnyMedia* Access System will play the server part.

5.6.1 Data Backup

Complete the following procedure to initiate data backup:

Step	Procedure
1.	Select ***All -> NE*** in the Network Browser
2.	Select ***Equipment -> NE NVDS Backup*** via Menu bar. The *NVDS Backup* window pops up:

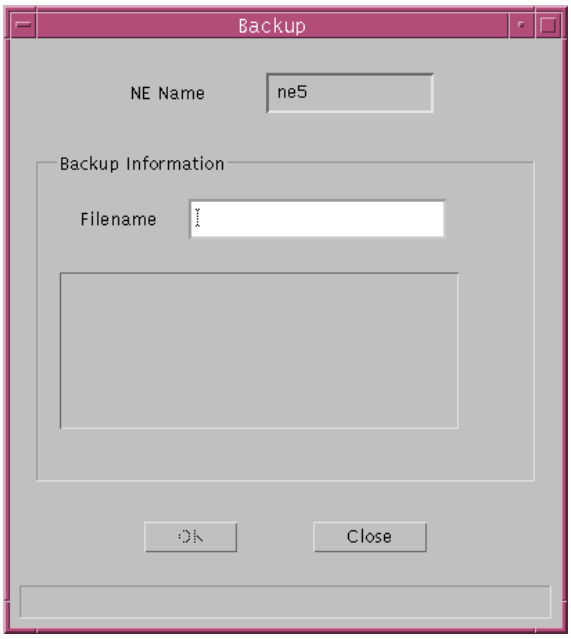


Figure 5-45 "NVDS Backup" Window

The **Filename** list displays all file names available for a backup.

3. Select the file in the list of which you wish to make a backup. The corresponding file will be displayed in the **Filename** field and can be edited.

4. Click on ***OK*** (this command button is available only after having selected the file name). The status bar shows the progress of the operation.

5.6.2 Data Restore

Complete the following procedure to initiate data Restoration:

Step	Procedure
1.	Select ***All -> NE*** in the Network Browser
2.	Select ***Equipment -> NE NVDS Restore*** via Menu bar. A *Warning* window pops up: **`NE NVDS Restore may be service affecting. Do you want to continue?`**
3.	Press ***Yes*** to confirm this message. The *NVDS Restore* window pops up:

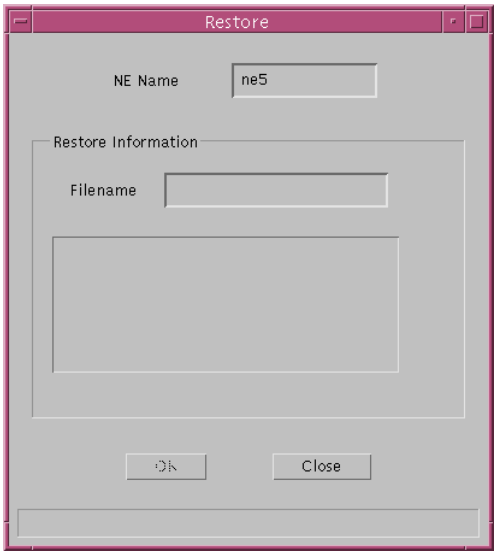


Figure 5-46 "NVDS Restore" Window

The **Filename** list displays all backup file names.

4. Select a desired file in the list. The corresponding file will be displayed in the **Filename** field and can be edited.

5. Click on ***OK*** (this command button is available only after having selected the file name). An *In Progress* window pops up:

   `NVDS restore on <NE Name> in progress`

   After the restoration is finished the following message is displayed:

   `NVDS restore on <NE Name> in completed`

5.7 NE Reset

This menu is used to reset the NE's NVDS to the factory default except for the IP address, so that the AEM-NB can still communicate with the NE after command execution is complete.

Procedure

Complete the following procedure to get the inventory data:

Step	Procedure

1. Select ***All -> NE*** in the Network Browser.

2. Select ***Equipment -> NE Reset (INIT-SYS)*** via the Menu bar. A *Warning* window pops up:

   NE Reset is service affecting. The data stored in the *NE Name* will be destroyed and set to the default manufacturing values. Do you want to continue?

   If you decide to continue, the AEM-NB will send an INIT-SYS to the NE to reset the NVDS to its default values. An *In Progress* window pops up.

   Reset <NE Name> in progress

NOTE:
After the reset process has correctly finished the connection to the NE breaks off. To re-establish the connection proceed with **Step 3**.

3. Select ***Equipment -> Provisioning -> Edit*** via the Menu bar. The *NE Name Information* window pops up.

4. Press ***Connect*** in the **Connection** pane to establish the connection.

5.8 TL1 Cut-Through

Overview

The AEM-NB provides the operator with a command line to a TL1 (transaction language 1) session with any NE. Using this command line, the user can type any TL1 command, send these commands to a selected NE and get the responses to the requests as well as all the autonomous outputs sent by the NE.

TL1 used for the provisioning, maintenance and administration of the *AnyMedia* Access System is an ASCII-based command language.

This cut-through interface is used by remote AEM-NB craft personal when the GUI does not support certain TL1 commands. The AEM-NB will provide the independence between the cut-through interface and the GUI interface.

To open a cut-through interface with an NE the operator must provide the connection information (Login and Password) defined in the NE Name Information window (cf. Chapter 5.3.1, page 5-16).

When the AEM-NB receives the request to open a cut-through session, it opens the TCP/IP connection with the selected NE using a new virtual connection, to avoid conflicts with the current AEM-NB GUI session. Then the operator will manage the cut-through session through the use of TL1 commands.

Cut-through / GUI independence

The AEM-NB GUI behavior (but not necessarily the performance) is not affected by any simultaneous cut-through connection running on the platform.

The operator using the AEM-NB GUI need not have to know about any cut-through session running on the AEM-NB platform. The performance of the system could be affected by the load of the hardware, but the behavior of the GUI is the same in both cases.

Procedure

Complete the following procedure to start a TL1 session:

1. Select ***All -> NE*** in Network Browser.

How to start a TL1 session

2. Select ***TL1 -> Cut-through*** via the Menu bar to start a TL1 session. The *Cut through* window pops up.

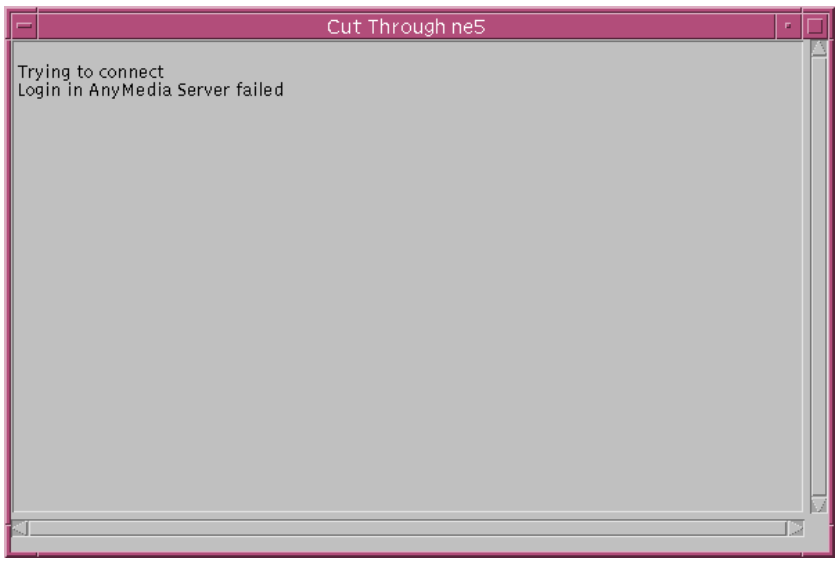


Figure 5-47 "Cut Through" Window

3. Enter the **Login** and **Password** as defined in the *NE Name Information* window (cf. Chapter 5.3.1, page 5-16).

Now you are able to enter the appropriate TL1 commands.

5.9 Fiber Reach

Overview

The AEM-NB provides an interface to a ITM-SNC (Integrated Transport Management - Sub NetworkController) session with any DDM-2000 Fiber Reach component on the transport network that interacts with the *AnyMedia* Access System. Using this software package, the user can retrieve alarms and configuration related to the transport sub-network.

The Fiber Reach interface is used by remote login when the operator wants to locate a failure or defect that is shown on the access system that have been originated in the transport network. The GUI interface and the ITM-SNC are totally independent from each other because they are operating on different NEs.

To open a remote session with an ITM-SNC the operator must provide the connection information (Login and Password) as for the login into an ITM-SNC session (for more information, cf. ITM-SNC User Manual).

FiberReach / GUI independence

The AEM-NB GUI behavior (but not necessarily the performance) is not affected by any simultaneous Fiber Reach connection running on the platform.

The operator using the AEM-NB GUI does not need to know about any Fiber Reach sessions running on the AEM-NB platform. The performance of the system

could be affected by the load of the hardware, but the behavior of the GUI is the same in both cases.

5.9.1 Start a Fiber Reach Session

Complete the following procedure to start a Fiber Reach session:

1. Type **fr** in a terminal window, which you can start via the workspace manager (cf. Chapter 3.3.8, page 3-12) and press **Return.** The following message is shown:

   ```
   List of available hosts:
   1.-mahp1
   2.-mascusa14

   a) Add Host     d) Del Host     q) Quit
   Enter Selection:
   ```

2. Enter the host number where the ITM-SNC is installed from the list of available hosts or enter **a** for include a new one (cf. Chapter 5.9.2, page 5-123).

3. Enter the **Login** and **Password** defined on the ITM-SNC documentation.

Now you are able to use the ITM-SNC application.

5.9.2 Add a Host

Complete the following procedure to add a host for Fiber Reach:

1. Type **fr** in a terminal window, which you can start via the workspace manager (cf. Chapter 3.3.8, page 3-12) and press **Return.** The following message is shown:

   ```
   List of available hosts:

   a) Add Host     d) Del Host     q) Quit
   Enter Selection:
   ```

2. Enter ***a*** that identifies the option Add Host and press **Return**. The next message pops up:

   ```
   Host to be added:
   ```

NOTE:
The host is reachable by Fiber Reach if the user name and the IP address of the AEM-NB user is contained in the rlogin file.

3. Enter the name of the host where the ITM-SNC is installed.

4. Enter **q** and press **Return** to exit.

5.9.3 Delete a Host

Complete the following procedure to delete a host for Fiber Reach:

1. Type **fr** in a terminal window, which you can start via the workspace manager (cf. Chapter 3.3.8, page 3-12) and press **Return.** The following message is shown:

   ```
   List of available hosts:
   1.-mahp1
   2.-mascusa14

   a) Add Host     d) Del Host     q) Quit
   Enter Selection:
   ```

2. Enter ***d*** that identifies the option Del Host and press **Return**. The next message pops up:

   ```
   Host to be removed:
   ```

3. Enter the number that identifies the host on the list.

4. Select **q** and press **Return** to exit.

Fault Management and Maintenance

6

Contents

Contents

Fault Management and Maintenance

6

6.1 Overview

This chapter provides you with informations about

- Basics on the alarm management
- Basics on alarms
- Maintenance actions if certain alarms are pending
- Using the Alarm Viewer
- Performing test actions with the test management
- Basics on information management (e.g. connection states).

6.2 Alarm Management

6.2.1 Overview

The main function of the alarm management is to manage the *AnyMedia*® Access System Element Manager for Narrowband Services (AEM-NB) and Network Element (NE) related alarms that are registered in the Element Manager System (EMS). For the list of the NE alarms refer to Chapter 6.6.3, page 6-37. For the list of the alarms generated by the management system refer to Chapter 6.6.4, page 6-37.

Once the communication connection between the AEM-NB and an NE is established, the AEM-NB clears the "not-connected" NE alarm indication (if they exist) and starts an alarms and environment alarms synchronization process between the AEM-NB alarm database and active NE alarms. Finally the AEM-NB will try to update its view of NE configuration data and will start a synchronization process between the AEM-NB data set and the NE configuration information (NE NVDS). The NE database is always the master.

The database does not maintain the alarm history, it only stores the current alarms status. An alarm can be in one of the following three states:

- Raised
- Acknowledged
- Cleared.

The main responsibilities of the Alarm Management Subsystem (AMS) are the following:

- Maintain up-to-date alarm information.
- Notify alarm changes to alarm clients.
- Provide access to the current alarm data.
- Manage alarms raising.
- Manage cleared alarms.
- Manage acknowledgment of alarms.
- Synchronization of the alarm data per NE.
- AEM-NB Alarm log handling.
- Periodical deletion of cleared alarms.

6.2.2 Maintain Up-To-Date Alarm Information

During the alarm life time, the AEM-NB updates the following information:

- The date and time of the last status change.
- The last alarm status change.
- The last user (id) which acknowledged an alarm.
- The number of times the alarm has occurred between the first occurrence and now.

If an acknowledged alarm is raised again the status for this alarm is changed from acknowledged to raised. Additionally the acknowledge data (*user Id*), if available, is removed from the alarm information.

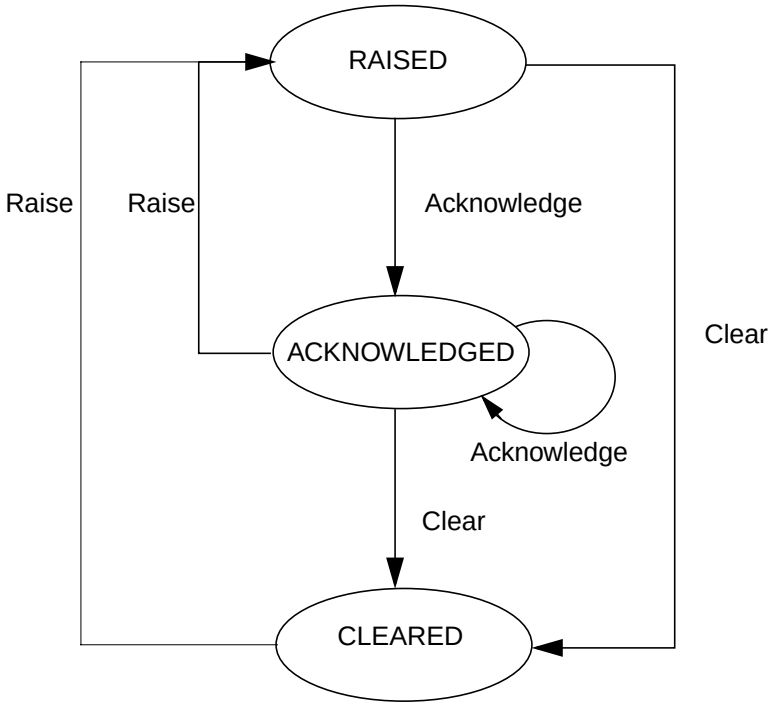


Figure 6-1 Life Cycle of an Alarm

6.2.3 Alarm Notification to the User

Overview

Any time incorrect data (out-of-range values, inappropriate value types, etc.) is entered at the Graphical User Interface (GUI), a new alarm occurs or the status of any alarm changes to raised again, an alarm message is reported to the AEM-NB. The alarms are indicated, if defined, visually and acoustically.

Visual Alarm Indication

The occurrence of a new alarm of a defined severity (default value: critical) is visually indicated in different ways:

- Notification icon displayed in the AEM-NB access bar.

  This icon consists of a flag and a counter. The flag is raised only the first time a new alarm of the defined severity is reported to the AEM-NB. Additionally the counter is increased.

  Every time the user clicks on the icon, the flag is lowered and the counter is reset before the AEM-NB requires confirmation.

  The alarm severity affecting the notification icon is configurable via the system variables in the file $ANYMEDIAPATH/GUI/cfg/SystemPreferences.ini.

Table 6-1 Configure Notification Icon

System Variable	Severity	Possible States
VISUAL_CRITICAL_ALARM_SEV	Critical	On/Off, default = ON
VISUAL_MAJOR_ALARM_SEV	Major	On/Off, default = OFF
VISUAL_MINOR_ALARM_SEV	Minor	On/Off, default = OFF
VISUAL_INFO_ALARM_SEV	Information	On/Off, default = OFF

For alarm notification see aslo Chapter 3.2.3.1.

- Shelf View Window

  This window (cf. Chapter 5.3.2.1.1, page 5-23) provides general inventory, provisioning and alarm information (through the circuit packs LEDs). Each slot shows the card type inserted and its alarms (via a red FLT LED, if available). If the slot is empty, no card will be shown.

  See table below for the list of LEDs provided in each pack. The table describes the color used when the LED is ON or blinking. If the LED is OFF the color black is used.

Table 6-2 LED Meanings

Circuit Pack	LED	Color	Meanings
IO-DS1	FLT	red	■ Lit during circuit pack failure ■ Flashes when the circuit pack executes off-line self-test
	ACT	green	Lit when the circuit pack is service-active.
	CLF1	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 1
	CLF2	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 2
	CLF3	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 3
	CLF4	yellow	Lit when a fault or facility alarm occurs on the in service received DS1 port 4

Table 6-2 LED Meanings

Circuit Pack	LED	Color	Meanings
COMDAC	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes during software download and turnup
	ACT	green	Indicates that this COMDAC is active.
	CR	red	Lit when the highest severity alarm is critical
	MJ	red	Lit when the highest severity alarm is major
	MN	yellow	Lit when the highest severity alarm is minor
	NE	yellow	Lit when the source of the fault or abnormal condition is near end
	FE	yellow	Lit when the source of the fault or abnormal condition is far end
CTU	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes on turnup
	ACT	green	Lit when a test is in progress
	MISC	yellow	Lit when one of the eight miscellaneous alarm inputs is active
	ACO	green	For future use
All Application Packs	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes during software download and turnup
AP (MDSU)	FLT	red	Lit when a fault is detected on the circuit pack.
	LNK	yellow	■ Lit when loss of clock/sync signal is detected ■ Flashes when incorrect MDSU/MDS2/MDS2B side association is detected.

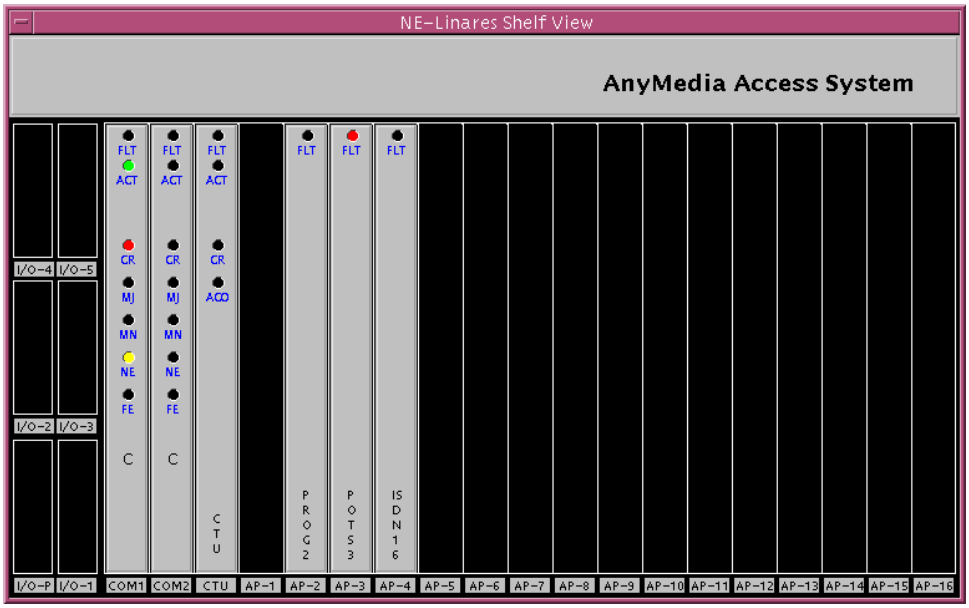


Figure 6-2 Shelf View

- MDS2/MDS2B Shelf View Window.

Circuit Pack	LED	Color	Meanings
CU	FLT	red	■ Lit when a fault is detected on the circuit pack ■ Flashes during software download and turnup.
MSC	FLT	red	Lit when a fault is detected on the circuit pack.
	LNK	yellow	■ Lit when loss of clock/sync signal is detected ■ Flashes when incorrect MDSU/MDS2/MDS2B side association is detected.
PTU	FLT	red	Lit when a fault is detected on the circuit pack.
	TST		Lit when a channel served by the PTU is under test.

Audible Indication

The user is warned by an audible indication if a new alarm of a defined severity (default value: critical) is reported to the AEM-NB. Only alarms from NEs within the user domain will be indicated.

The alarm severity which causes audible alarm notification is configurable via the system variables in the file $ANYMEDIAPATH/GUI/cfg/SystemPreferences.ini.

Table 6-3 Configure Audible Notification

System Variable	Severity	Possible States
AUDI_CRITICAL_ALARM_SEV	Critical	On/Off, default = ON
AUDI_MAJOR_ALARM_SEV	Major	On/Off, default = OFF
AUDI_MINOR_ALARM_SEV	Minor	On/Off, default = OFF
AUDI_INFO_ALARM_SEV	Information	On/Off, default = OFF

For alarm notification see aslo Chapter 3.2.3.1.

By default, the AEM-NB causes an audible alarm indication every time a new critical alarm is reported to the AEM-NB.

Alarm Information

For more information on the reported alarm open the Alarm Viewer (cf. Chapter 6.3, page 6-10).

Alarm Acknowledgment

Acknowledging alarms is described in Chapter 6.3.5, page 6-21.

Alarm Clearance

Clearing alarms is described in Chapter 6.3.5, page 6-21.

6.2.4 Provide Access to the Current Alarm Data

Alarm Retrieval

The user can select lists of alarms filtered by several fields. Therefore the user specifies a selection criterion (cf. Chapter 6.3.4.3, page 6-19) that is taken by the AMS to make the appropriate filters. For instance, an user can request all the critical alarms of an NE, or all platform alarms, or all alarms which are service affecting and are raised at the same time.

The number of alarms stored in the alarm database can be retrieved, too. The total number of alarms can be retrieved as well as the number of alarms per severity (number of critical alarms, major, minor and information).

User Domains

The user domain is the list of NEs and/or the AEM-NB the user can manage. The user domains are applicable in the AMS to the alarm retrieval operations and to the alarm notification.

Each user can only request alarms and the number of alarms that are in the user's domain. The client and server security filters fill in this information. When the alarm retrieval operation arrives at the alarm server, in addition to the normal input data it also contains the user domain information added by the user interface.

6.2.5 Managing the Raising of Alarms

General

An alarm is raised by the NE or by any object of the AEM-NB. When an alarm is raised its state and the relevant transmitted data (cf. Chapter 6.6.2, page 6-35) are updated. Special care has to be taken if the alarm is raised repeatedly (see “Repetitive and Fluctuating Alarms”). In this case the already existing alarm is put into the raised state. The user acknowledge identification, if available, is removed from the alarm. This way a raised condition of an existing alarm is considered as a new raising (not a new alarm). The number of occurrences is increased every time the same alarm is raised.

Repetitive and Fluctuating Alarms

A repetitive alarm is an alarm that is raised several times before it is cleared. A fluctuating alarm is an alarm that is raised and cleared alternatively several times in a short period (at least less than the AEM-NB constant for the cleared alarms, see Chapter 6.2.10, page 6-9).

To handle these alarms three fields are defined and maintained for each alarm:

- First Raised Time
- Last Changed Time
- Number of Occurrences.

The alarm viewer can obtain the following information:

- The "Number of Occurrences" is the number of times the alarm has been raised between when it was first raised and the current time (only the raised alarms are counted). In this period the alarm has been raised all the time or it may have been raised/cleared several times (it is not relevant to distinguish both cases).

6.2.6 Manage Alarm Acknowledgment

Alarms can only be acknowledged by a user at the user interface. It is possible to acknowledge all alarms types. If an alarm is acknowledged its state is updated accordingly and the user identification and the last changed time are registered. Acknowledging an alarm causes a change to the alarm database. Therefore the alarm was logged before in the action log. It is possible to acknowledge an alarm that has already been acknowledged. The user identification and the new acknowledge time are registered as well, overwriting the previous acknowledge data.

6.2.7 Managing the Clearing of Alarms

General

The NE alarms are cleared by the NE-AMS. Platform alarms are cleared automatically (e.g. NE-AEM-NB association alarms) or by a user at the user interface (e.g. log alarms). Users can only clear specific platform alarms. Users cannot clear the association alarms for the NE alarms. When an alarm is cleared its state is updated and the time is registered, too. Clearing an alarm causes a change to the alarm database. Therefore the alarm was logged before in the autonomous report log (if the user clears an alarm this will be logged in the action log; if an alarm is cleared by the NE it will be logged in the autonomous report log).

If the raise is newer, then it is a repetitive raise; the alarm state is set to the raised state. If the raise is older, then this message is ignored; the alarm state stays in the cleared state and the relevant data is updated.

Automatic alarm clearance

If network and platform alarms are cleared at their source the AEM-NB clears them after a variable period of time in the AEM-NB database. This period of time is set by default to 3 days and can be configured by the user via the system variable "AM.minimumClearPeriod" in the file $ANYMEDIAPATH/cfg/AnyMediaNBEM.cfg.

6.2.8 Alarm Data Synchronization

The AMS is responsible for the performance of NE alarm synchronization. To accomplish this, the AMS requests all the current alarms (normal and environment) of the NE that is being synchronized. Once the AMS has received these alarms it compares them with the alarms stored in the AEM-NB alarm database. At the end of the synchronization the alarms stored in the alarm database must be the same as the alarms retrieved from the NE-AMS. Only one synchronization per NE can be performed at the same time. The AMS rejects any synchronization request for the same NE if the first one has still not finished.

6.2.9 AEM-NB Alarm Log Handling

If the user wants to know the different states throughout the alarm life the user will have to see the Log System (cf. Chapter 3.7, page 3-32) in which all alarm changes are stored.

Three types of logs are used. The AMS logs the following situations:

- Actions log:

  Periodical database deletion of cleared alarm's start and end.

  Alarm's synchronization start and end.

  Periodical deletion of cleared alarms.

  Manual clear, manual acknowledge. The user identification that performs these actions is also logged.

- System-internal events log:

  Exception conditions of the AMS.

- Autonomous report log:

  Raise, automatic clear, update of every alarm.

6.2.10 Periodical Deletion of Cleared Alarms

By default, alarms with *cleared* status are maintained for at least three days (including the current day) in the database. This value and can be configured by the user via the system variable "AM.minimumClearPeriod" in the file $ANYMEDIAPATH/cfg/AnyMediaNBEM.cfg and is an integer multiple in days. The default value is 3 days.

The AEM-NB performs a periodical deletion of the alarms with cleared status that exceed the specified time. This is done during the night period in low-load hours.

6.3 Alarm Monitoring

6.3.1 General

Overview

The AEM-NB provides a process to monitor and display all alarms stored in the database. Using this system, the Alarm Viewer, the user is able to see many different alarm attributes such as Alarm Type, Severity, Status, Summary and the date and time when the alarm was raised. Via this tool the user can perform actions (e.g. acknowledge, clear) for some of these alarms.

What you will find

In this chapter you will find the following information:

- Instructions for starting and terminating the alarm viewer (Chapter 6.3.2, page 6-10)
- Instructions for handling the alarm viewer (Chapter 6.3.3, page 6-11)
- Structure of the alarm viewer window (Chapter 6.3.3.3, page 6-14 and Chapter 6.3.3.4, page 6-15)
- System management (Chapter 6.3.4, page 6-18)
- Alarm viewer functions (Chapter 6.3.5, page 6-21).

6.3.2 Starting and Terminating the Alarm Viewer

6.3.2.1 Starting the Alarm Viewer

The Alarm Viewer can be started in different ways:

- Clicking on the icon ***Alarm Viewer*** in the Access Bar (cf. Chapter 3.2.3, page 3-4).
- Clicking on ***Alarms*** in the menu bar of the other Element Manager applications (cf. Chapter 3.3.6, page 3-11). In this case only alarms of the NE which is selected in the Network Browser are shown.

The displayed window has the title "Alarm Viewer" and maintains similarities with the other AEM-NB's windows.

The *Alarm Viewer* window consists of the sections:

- Menu bar (File, Views, Filters, Actions, Help).
- Toolbar (buttons for Acknowledge, Clear and Reload).
- General Information section.
- Alarm table.

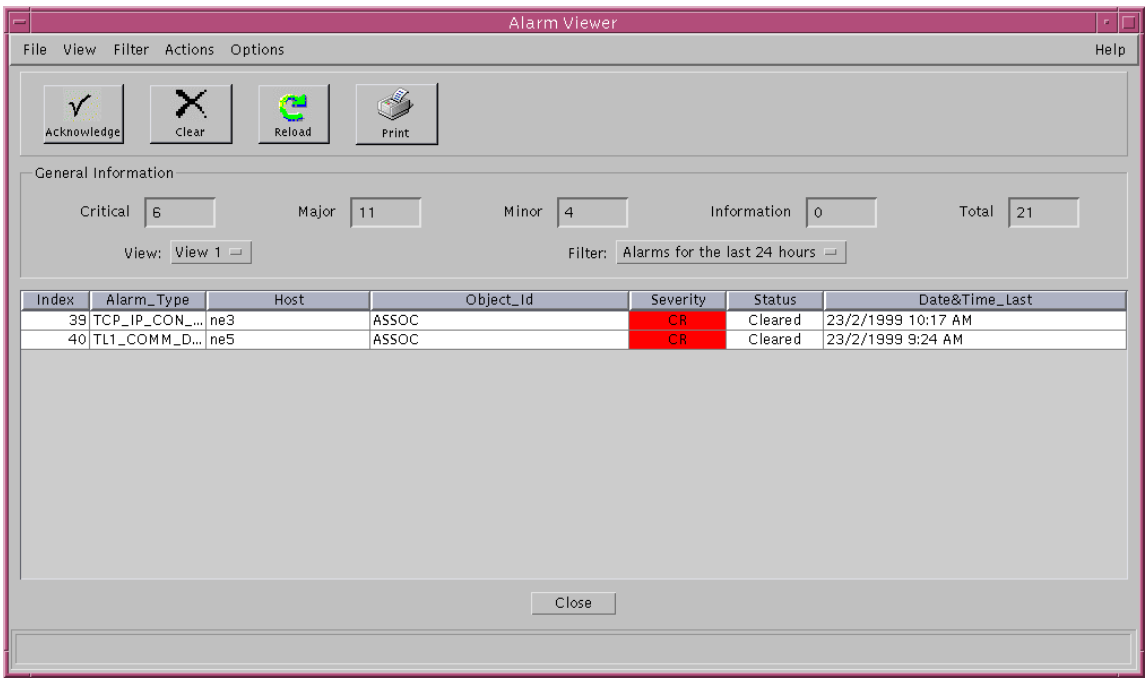


Figure 6-3 Alarm Viewer Window

6.3.2.2 Terminating the Alarm Viewer

The Alarm Viewer can be terminated as follows:

- By selecting ***File -> Exit*** in the Alarm Viewer menu to close all Alarm Viewers launched by the user.
- By clicking on ***Close*** button to close only the Alarm Viewer being in use.

Before quitting the Alarm Viewer the user is prompted for confirmation.

6.3.3 Performing Alarm Viewer Functions

The Alarm Viewer provides different possibilities to perform internal functions and alarm management functions.

These functions can be initiated via:

- Menu
- Toolbar

In most cases the choice depends on the user's personal preference.

6.3.3.1 Menu Bar

The menu is used to activate alarm viewer functions.

NOTE:
The executable functions depend on your user privileges.

Figure 6-4 Menu Bar of the Alarm Viewer

Selection is achieved

- By opening the menu by pressing the left mouse button and dragging the cursor to the desired option in the menu or
- By opening the menu via the keyboard by entering **`Alt`** plus the underlined letter of the relevant menu to open the menu option and then entering the letter underlined in the desired menu option.

Table 6-4 File Menu

Menu display	Menu option	Meaning	Information in
New Reload Print Close Exit	New	Launch a new instance of the Alarm Viewer.	Chapter 6.3.4.1, page 6-18
	Reload	Display a fresh copy of the current information shown in the window. Only alarms which match the filter criteria will be included.	Chapter 6.3.5, page 6-21
	Print	Print all alarm items displayed in the currently displayed table or save the items into an ASCII file.	Chapter 6.3.4.1, page 6-18
	Close	Dismiss this window, but without closing other instances of the Alarm Viewer.	Chapter 6.3.4.1, page 6-18
	Exit	Close all Alarm Viewers opened by the user.	Chapter 6.3.4.1, page 6-18

Table 6-5 Views Menu

Menu display	Menu option	Meaning	Information in
View1 View2 View3 View 4	View1	Select a view from the predefined views.	Chapter 6.3.4.2, page 6-18
	View2		
	View3		
	View4		

Table 6-6 Filters Menu

Menu display	Menu option	Meaning	Information in
Alarms for the last 24 hours Critical Raised Alarms Raised Alarms Alarms from a Host/s Critical Alarms not cleared Owned Acknowledge Alarms Clear Alarms All Acknowledge Alarms None Filter / All Alarms	Alarms for the last 24 hours	Selection of filter criteria for displaying alarm information.	Chapter 6.3.4.3, page 6-19
	Critical Raised Alarms		
	Raised Alarms		
	Alarms from a Host/s		
	Critical Alarms not cleared		
	Owned Acknowledge Alarms		
	Clear Alarms		
	All Acknowledge Alarms		
	None Filter / All Alarms		

Table 6-7 Actions Menu

Menu display	Menu option	Meaning	Information in
Acknowledge Clear	Acknowledge	Acknowledge all selected alarms, their status will change to acknowledged.	Chapter 6.3.5, page 6-21
	Clear	Clear all selected alarms, their status will change to cleared.	Chapter 6.3.5, page 6-21

Table 6-8 Help Menu

Menu display	Menu option	Meaning	Information in
	Index	Display the index help, allowing the user to navigate through the AEM-NB help information.	Chapter 6.3.4.4, page 6-21
	On window	Display the help information of the window where the user is currently working.	

6.3.3.2 Toolbar

The toolbar contains often used functions and consists of four buttons:

Table 6-9 Toolbar

Function	Icon	Meaning
Acknowledge		Acknowledge all selected alarms. Their status immediately changes to acknowledged. The User_Ack is set to the login of the user who has acknowledged the alarm
Clear		Clear all selected alarms. Their status immediately changes to cleared.
Reload		Reload the actual alarms states into the table. Only alarms which match the filter criteria are included.
Print		Open a window for printing out all alarm items displayed in the currently displayed table (cf. Chapter 3.5, page 3-21).

6.3.3.3 General Information Section

The first section is a frame titled *General Information*, this frame includes controls showing information about the number of alarms of each alarm severity (in the domain where the user is working):

- Critical

  Displays the number of critical (CR) alarms.
- Major

  Displays the number of major (MJ) alarms.
- Minor

  Displays the number of minor (MN) alarms.
- Information

  Displays the number of information (IN) alarms.
- Total

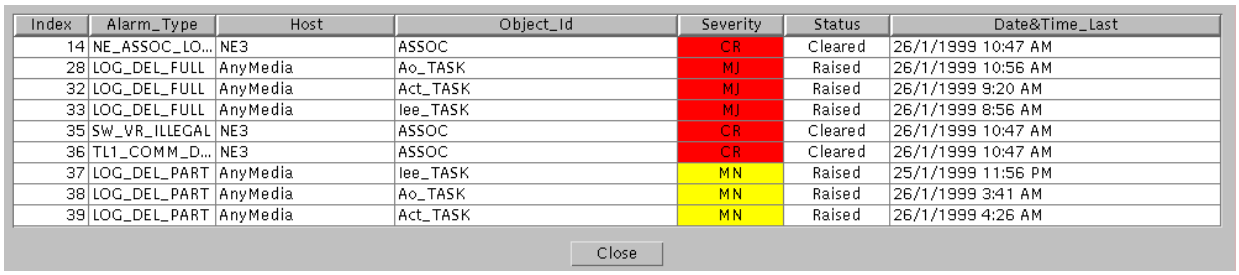
  Displays the total number of alarms (all severities).

Additionally the frame contains two option menus, which show the filter (cf. Chapter 6.3.4.3, page 6-19) and view (cf. Chapter 6.3.4.2, page 6-18) currently being used. In this two option menus the user can select filters and views.

Figure 6-5 Frame General Information

6.3.3.4 Alarm Table

The last section in the Alarm Viewer window is a table that contains zero or more alarms belonging to a domain. This table allows the user to sort the alarms (cf. Chapter 6.3.3.4.2, page 6-17) by clicking on a specific table header. The user also can select them for acknowledgment or clearance. The mechanism to acknowledge or clear is the same, the user has to select one or more alarms. After selecting the alarms click on ***Acknowledge*** or ***Clear*** in the tool bar
or select ***Actions -> Acknowledge*** or ***Actions -> Clear*** via the menu bar.



Index	Alarm_Type	Host	Object_Id	Severity	Status	Date&Time_Last
14	NE_ASSOC_LO...	NE3	ASSOC	CR	Cleared	26/1/1999 10:47 AM
28	LOG_DEL_FULL	AnyMedia	Ao_TASK	MJ	Raised	26/1/1999 10:56 AM
32	LOG_DEL_FULL	AnyMedia	Act_TASK	MJ	Raised	26/1/1999 9:20 AM
33	LOG_DEL_FULL	AnyMedia	Iee_TASK	MJ	Raised	26/1/1999 8:56 AM
35	SW_VR_ILLEGAL	NE3	ASSOC	CR	Cleared	26/1/1999 10:47 AM
36	TL1_COMM_D...	NE3	ASSOC	CR	Cleared	26/1/1999 10:47 AM
37	LOG_DEL_PART	AnyMedia	Iee_TASK	MN	Raised	25/1/1999 11:56 PM
38	LOG_DEL_PART	AnyMedia	Ao_TASK	MN	Raised	26/1/1999 3:41 AM
39	LOG_DEL_PART	AnyMedia	Act_TASK	MN	Raised	26/1/1999 4:26 AM

Close

Figure 6-6 Alarm List Section

6.3.3.4.1 Alarm Parameters

For each alarm the following alarm fields (depending on the selected view) can be displayed:

- Index

  Sequence number for each different alarm reported to the AEM-NB (the maximum sequence number is 100 000).

- Alarm_Type

  Unique identification of each alarm type.

- Summary

  Contains text briefly describing the alarm. The summary text is unique in the Element Manager.

- Severity

  Contains the default severity of the alarm.

  - Critical (*CR*)
  - Major (*MJ*)
  - Minor (*MN*)
  - Information (*IN*)

- Service Affecting

  Specifies whether the alarm is subscriber service affecting or not.

  Possible values: Yes, No.

- Description

  Contains a full description of the alarm.

- Host

  Unique text label in the AEM-NB scope. For NE alarms, it is the "NE-Name" that identifies the NE through all the AEM-NB applications the alarm belongs to. For platform alarms, it is the string "EM".

- Object_Id

  Object identifier referring to the alarm. Examples of objects are network elements, "ASSOC", etc.

- Status

  Working status of the alarms.

  - Raised

    Alarm with alarm condition raised, and has not been yet processed.

  - Acknowledged

    The alarm is still active and being investigated.

  - Cleared

    Alarm condition has been cleared, or the user has requested the clearing of this alarm.

- Date&Time First Raise

  Date and Time of the first Raised status in the life cycle of one alarm.

- Date&Time Last Change

  Date and Time of the last status change in the life cycle of one alarm.

- Occurrences

  Number of times the alarm has been raised between the first raised time and the current time.

- User Ack

  The last user which has acknowledged an alarm.

6.3.3.4.2 Sorting Alarms

Summary

The user can sort alarms by the different fields by clicking on the respective header. The sort can be ascending or descending order. The sort order is reversed by clicking on the respective header.

All alarm fields are sorted by alphanumeric order except dates, severity and status fields.

- In the severity field, alarms are sorted in the logical order: Critical, Major, Minor and Information.
- In the status field, alarms are sorted in the logical order: Raised, Acknowledge and Clear.

Effects

The alarms are re-arranged according to the selected criteria.

Sorting Alarms

Proceed as follows to sort the alarm display:

Step	Procedure

1. Click on the header according to which the alarms are to be sorted.

   Response: The alarms are sorted according to the selected alarm field in ascending or descending order.

2. Check if the list was sorted as desired.

   Yes: O.K.

   No: Continue with step 3.

3. Click again on the header to sort the list in the reverse order.

   The sort can be in ascending or descending order, each time the user clicks on the same header again the list is sorted the other way.

6.3.4 System Management Functions

The general system management functions comprise the functions for file management, for defining view options and for getting help. These functions are contained in the following menus:

- File
- Views
- Filters
- Help.

6.3.4.1 File

In the file menu you can start the following actions:

- New

  Launch a new instance of the Alarm Viewer.

- Reload

  Display a fresh copy of the current information shown in the window.

- Print

  (cf. Chapter 3.5, page 3-21)

- Close

  Close the active window, but without closing other instances of the Alarm Viewer. Same functionality as the Close button.

- Exit

  Close all Alarm Viewers opened by the user.

6.3.4.2 Views

Summary For displaying alarm lists you can select from four pre-defined views.

- View1:
  Index, Alarm Type, Host, Object Id, Severity, Status,
  Date&Time Last Change
- View2:
  Index, Alarm Type, Host, Object Id, Status, Date&Time First_Raise,
  Date&Time Last_Change, User Ack, Occurrences
- View3:
  Index, Summary, Host, Object ID, Severity, Status,
  Date&Time Last_Change
- View4:
  All alarm fields.

Effects The alarms are rearranged according to the selected criteria.

Selecting Views

Proceed as follows to select the desired view option:

Step	Procedure

1. Select ***Views -> ViewX*** (X = 1 to 4) in the menu bar.

   The same view options can be selected

   — via the option menu ***Views*** in the General Information section (cf. Chapter 6.3.3.3, page 6-14)

   Response: The alarms are displayed according to the selected view.

6.3.4.3 Filters

Summary

For displaying the alarm lists you can select pre-defined filters. Only those alarms corresponding to the pre-defined criteria are displayed. The alarm set is displayed without modifying the current view.

The filters are:

- Alarms for the last 24 hours (all alarms which have been changed in the last 24 hours)
- Critical Raised Alarms
- Raised Alarms
- Alarms from a Host/s
- Critical Alarms not cleared
- Owned Acknowledge Alarms
- Clear Alarms
- All Acknowledge Alarms
- None Filter / All Alarms.

Effects

The alarms are rearranged according to the selected filter criteria.

Selecting Filter

Proceed as follows to select the desired filter option:

Step	Procedure

1. Select the desired filter options:

If you want to view ...	then select *Filters -> ...*	Result/Notes
all alarms which have been changed in the last 24 hours	***Alarms for the last 24 hours***	The alarms are displayed according to the selected filter.
all critical raised alarms	***Critical Raised Alarms***	The alarms are displayed according to the selected filter.
all raised alarms	***Raised Alarms***	The alarms are displayed according to the selected filter.
all alarms from a host	***Alarms from a Host/s***	Continue with step 2.
all not cleared critical alarms	***Critical Alarms not cleared***	The alarms are displayed according to the selected filter.
all owned acknowledge alarms	***Owned Acknowledge Alarms***	The alarms are displayed according to the selected filter.
all cleared alarms	***Clear Alarms***	The alarms are displayed according to the selected filter.
all acknowledge alarms	***All Acknowledge Alarms***	The alarms are displayed according to the selected filter.
all alarms.	***None Filter / All Alarms***	The alarms are displayed according to the selected filter.

The same filter option can be selected

— via the option menu ***Filters*** in the general information section (cf. Chapter 6.3.3.3, page 6-14)

2. Select the NE or the AEM-NB for which the alarms are to be displayed.

   A window (Figure 6-7, page 6-21) is displayed for selecting one or more NEs and/or the AEM-NB.

3. Either click on ***OK*** or ***Cancel***.

OK	Updates the Alarm Viewer showing only the alarm information of the pre-selected NE, NEs or AEM-NB.
Cancel	Closes this window and cancels the operation.

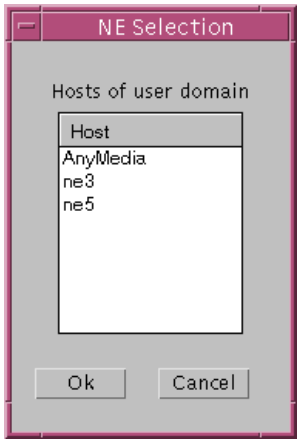


Figure 6-7 NE Selection Window

6.3.4.4 Help

Help is provided for every window. The help text describes the purpose of the window, how to use it and a description of each field of the window is given.

In the Menu Bar of each AEM-NB application there are two help options:

- Index:
  Displays the help index, allowing the user to navigate through the AEM-NB help information.
- On window:
  Displays the help information of the window where the user is currently working.

6.3.5 Alarm Viewer Functions

Summary

The Alarm Viewer provides the user with different functions for managing alarm information:

- Reload alarms
- Acknowledge alarms

  The user can acknowledge one, more or all reported alarms. The AEM-NB allows different users to acknowledge the same alarm. The name of the last user who has acknowledged the alarm is stored.

- Clear alarms

  The user can clear one, more or all platform alarms. If not all selected alarms could be cleared, you are informed about the alarms for which this action failed.

- Print alarm lists (cf. Chapter 6.3.4.1, page 6-18).

Prerequisites Before performing alarm acknowledgment and alarm clearance select the alarms you want to acknowledge or clear.

Starting Actions Select the desired alarm viewer action:

If you want to ...	then select ...	Result/Notes
retrieve alarms	***Actions -> Reload***	Reloads alarms in the table. Only alarms which match the filter criteria are included. Same functionality as ***Reload*** in the tool bar. To customize the displayed alarm list perform the actions described in Chapter 6.3.4.3, page 6-19 and Chapter 6.3.4.2, page 6-18.
acknowledge alarms	***Actions -> Acknowledge***	All selected alarm items are acknowledged. Their status immediately changes to acknowledge. Same functionality as ***Acknowledge*** in the tool bar. For better readability the displayed alarms can be sorted (cf. Chapter 6.3.3.4.2, page 6-17).
clear alarms	***Actions -> Clear***	All selected alarm items are cleared. Their status immediately changes to cleared. Same functionality as ***Clear*** in the tool bar. For better readability the displayed alarms can be sorted (cf. Chapter 6.3.3.4.2, page 6-17).

6.4 Test Management

Main Functions

The test management provides all the general purpose test functionality. The main functions are:

- Providing the user with different test options (see below),
- Starting the test execution by means of the AEM-NB,
- Displaying the test results on the AEM-NB user interface, and
- Setting and clearing of loopbacks.

Test Options

The following test options are available:

- Port test (cf. Chapter 6.4.1, page 6-24)
- Application Pack (AP) card test (cf. Chapter 6.4.2, page 6-26)
- Standby card test scheduling (cf. Chapter 6.4.3, page 6-28)
- Built-in self-test (cf. Chapter 6.4.4, page 6-29)
- Loopback test at the feeder side (cf. Chapter 6.4.5, page 6-29).

Access to the Testroutines

The test routines are available via the "Configuration Manager" application. To start it, click ***Config. Manager*** in the Access Bar. The *Configuration Manager* window and the *Network Browser* pop up (cf. Figure 6-8).

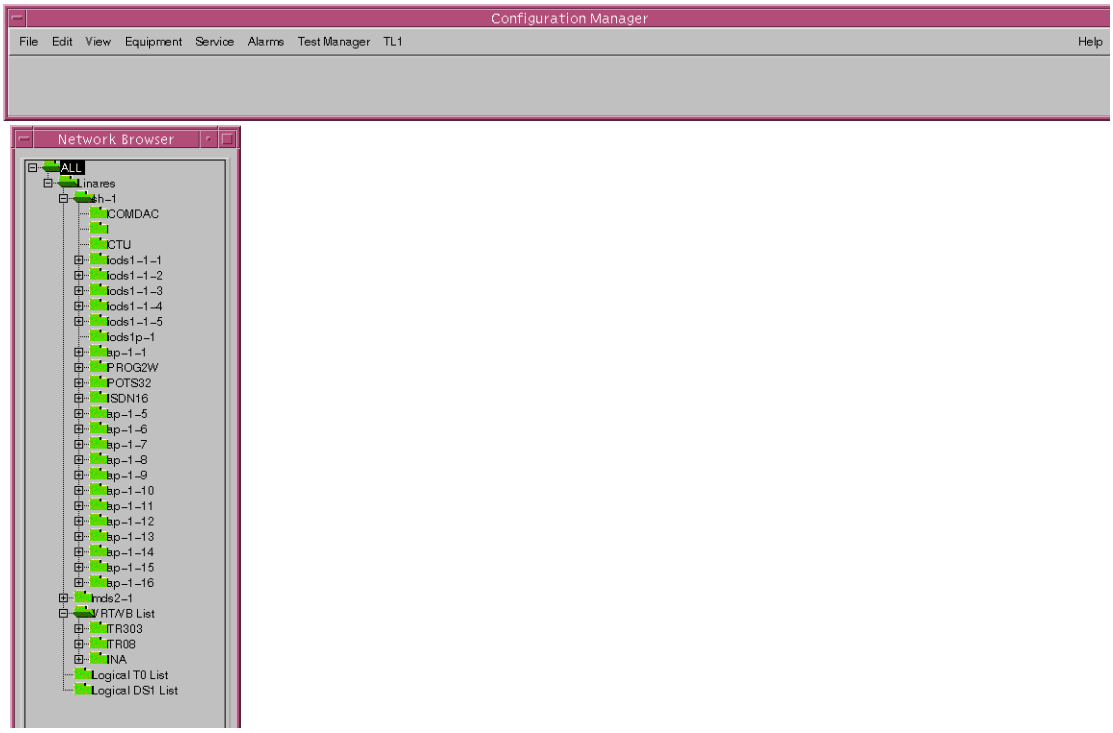


Figure 6-8 Window "Configuration Manager"

6.4.1 Port Test

Purpose

By means of a port test you are able to run a series of self-diagnostic routines for a particular port on a specified AP.

Procedure

Proceed as follows to start a port test and view the test result:

Step	Procedure

1. Start the port test.

   You have the following options to do this:

   a. **Via the Network Browser and the Main Menu:**

      — Select the port you intend the test to run for in the Network Browser (***All -> NE -> Shelf -> AP -> User Port***).

      — Start the test by selecting ***Test Manager -> Physical Port Test*** from the menu bar.

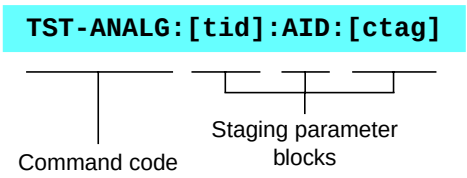
   b. **Via the Network Browser and the Cursor Menu:**

      — Select the port you intend the test to run for in the Network Browser (***All -> NE -> Shelf -> AP -> User Port***).

      — Start the test by selecting ***Physical Port Test*** from the cursor menu.

   c. **Via the TL1 Command Line Interface:**

      Enter the following TL1 command by using the TL1 command line interface (cf. Chapter 5.8, page 5-121):

      Please refer to the AMAS R1.2 network elements documentation for a detailed description of TL1 commands (including an explanation of the input format, restrictions, error conditions etc.).

   Comment: "Port Test execution in progress on *NE Name, Slot, Card Type, Physical Port id* " is displayed during the test execution.

2. Wait until the *Port Test Result* window (cf. Figure 6-9, page 6-25) appears and view the test result.

Test Result

The *Port Test Result* window shows the test results of a series of self-diagnostic routines on a specific port circuit.

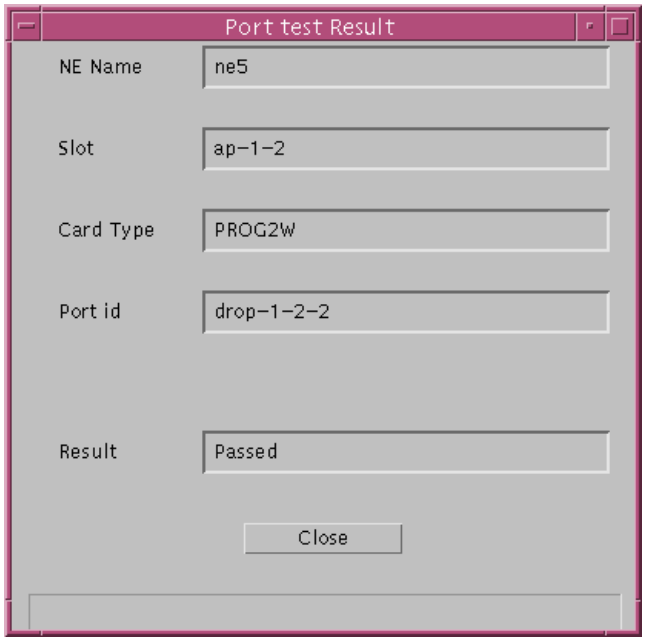


Figure 6-9 The "Port Test Result" Window

The text fields are display-only, they have the following meaning:

Table 6-10 Meaning of the Text Fields in the "Port Test Result" Window

Text Fields	Meaning	Possible Values
NE Name	The unique identifier of the selected NE as specified at NE creation time.	Any string consisting of up to 30 characters
Slot	The slot number of the AP being used.	AP-1 ... AP-16
Card Type	Mnemonic used to identify the general type of function provided (AP card type).	PROG2W, PRCOIN and POTS32
Physical Port id	The port within the AP.	Port 1 ... Port 32
Result	The result of the test routines.	PASS or FAIL

Click **Close** to dismiss the “Port Test Result” window.

6.4.2 AP Card Test

Purpose

By means of an AP card test you are able to start a series of self-diagnostic routines for all port circuits on a specified AP plus its common circuitry.

Procedure

Proceed as follows to start an AP card test and view the test result:

Step	Procedure

1. Start the AP card test.

   You have the following options to do this:

   a. **Via the Network Browser and the Main Menu:**

      — Select the AP you intend the test to run for in the Network Browser (***All -> NE -> Shelf -> AP***).

      — Start the test by selecting ***Test Manager -> AP Test*** from the menu bar.

   b. **Via the Network Browser and the Cursor Menu:**

      — Select the AP you intend the test to run for in the Network Browser (***All -> NE -> Shelf -> AP***).

      — Start the test by selecting ***AP Test*** from the cursor menu.

   c. **Via the TL1 Command Line Interface:**

      Enter the following TL1 command by using the TL1 command line interface (cf. Chapter 5.8, page 5-121):

      ```
      TST-ANALG:[tid]:AID:[ctag]
      ```

      Command code

      Staging parameter blocks

      Note:
      Use the value "all" for the Access Identifier (AID).

      Please refer to the AMAS R1.2 network elements documentation for a detailed description of TL1 commands (including an explanation of the input format, restrictions, error conditions etc.).

   Comment: "AP Card Test execution in progress on *NE Name, Slot, Card Type*" is displayed during the test execution.

2. Wait until the *AP Card Test Result* window (cf. Figure 6-10, page 6-27) appears and view the test result.

Test Result

The *AP Card Test Result* window shows the test results of a series of self-diagnostic routines for all port circuits on a specified AP plus its common circuitry.

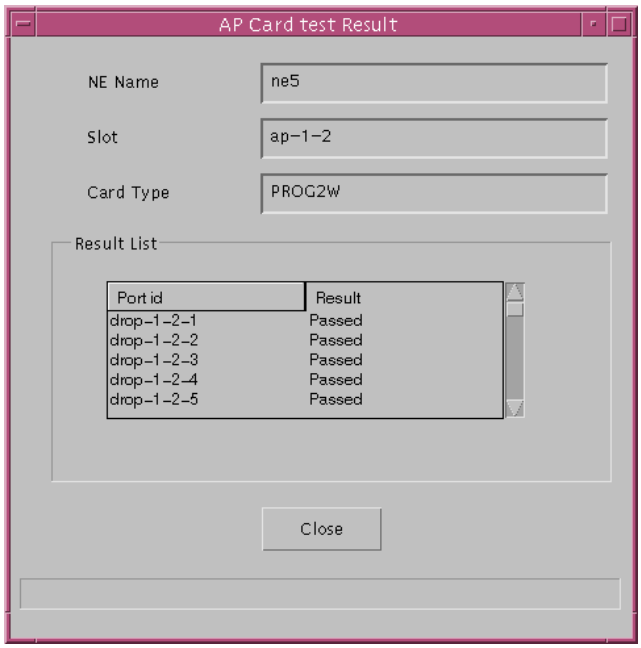


Figure 6-10 The "AP Card Test Result" Window

The text fields are display-only, they have the following meaning:

Table 6-11 Meaning of the Text Fields in the "AP Card Test Result" Window

Text Fields	Meaning	Possible Values
NE Name	The unique identifier of the selected network element as specified at NE creation time.	Any string consisting of up to 30 characters
Slot	The slot number of the AP being used.	AP-1 ... AP-16
Card Type	Mnemonic used to identify the general type of function provided (AP card type).	PROG2W, PRCOIN and POTS32
Result List: Physical Port id	The port within the AP.	Port 1 ... Port 32
Result List: Result	The result of the test routines.	PASS or FAIL

Click **Close** to dismiss the *AP Card Test Result* window.

6.4.3 Standby Card Test Scheduling

Side Switch and Off-line Diagnostics

During the execution of a standby card test scheduling a COMDAC side switch and off-line diagnostics for the standby COMDAC or off-line diagnostics for the protection feeder IO-DS1 pack are performed.

Possible User Settings

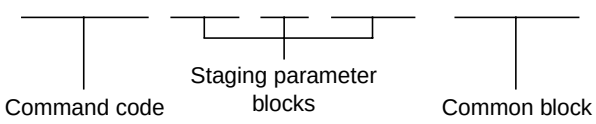
The AEM-NB provides the opportunity to the user to set-up the periodicity and the time of the day (cf. Table 6-12, page 6-28) to perform a standby card test over:

- the standby COMDAC pack or
- the protection IO-DS1 pack.

Procedure

To schedule a standby card test enter the following TL1 command by using the TL1 command line interface (cf. Chapter 5.8, page 5-121):

```
SCHED-EX:[tid]:AID:[ctag]::INVL,STM
```



NOTE:
It is not possible to start the standby card test via the Network Browser (is planned for the future)!

Parameters in the Common Block

The parameters in the common block have the following meaning:

Table 6-12 Common Block Parameters for SCHED-EX

Parameter	Meaning	Format	Possible Values
INVL (Interval)	Periodicity: The number of days between two standby card tests.	x-DAY	x=0 ... 365 (0 means that the test schedule execution is reset).
STM (Start Time)	The time of the day when standby card tests shall be performed.	hh-mm	hh=0 ... 23 (hour-of-day) mm=0 ... 59 (minute-of-hour).

Please refer to the AMAS R1.2 network elements documentation for a detailed description of TL1 commands (including an explanation of the input format, restrictions, error conditions etc.).

Result

Depending on the standby card test result the following behaviour can be observed:

- If the test is successful the side switch will be performed.
- If the test fails then no side switch will be performed. Additionally an alarm will be raised in this case.

6.4.4 Built-in Self-Test

Test Request

Each NE performs a built-in self-test of plug-in circuit packs periodically.

NOTE:
The built-in self-test is not requested from the AEM-NB, it will be always started from the NE!

Procedure

If a failure occurs, the NE will raise an alarm (*REPT-ALM*) which contains the AID of the failed pack plug-in. The alarm is then visible in the “Alarm Viewer” of the AEM-NB. For more information about possible alarms see Chapter 6.6.4, page 6-37 (describes AEM-NB alarms) or refer to the AMAS R1.2 network elements documentation (describes NE alarms).

6.4.5 Loopback Test at the Feeder Side

Procedure

It is possible to set or clear a loopback on particular feeders. Proceed as follows to set/clear DS1 loopbacks:

Step	Procedure

You have the following options to set/clear a loopback:

a. **Via the Network Browser and the Menu Bar:**

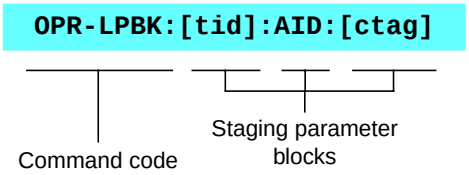
1. Select the DS1 you intend to set/clear a loopback in the Network Browser (***All -> NE -> Shelf -> IO-DS1 -> Physical DS1***).
2. Select ***Equipment -> Loopback*** from the menu bar
   or
   Loopback from the cursor menu.

   The *Physical DS1-Logical DS1* window pops up. Check that the displays in the **NE Name** and **DS1** fields are correct.
3. Click ***Physical DS1 Data***.
   The **Loopback** field displays the current loopback state (**Clear** or **Set**).
4. Click ***Label*** to change the loopback state.

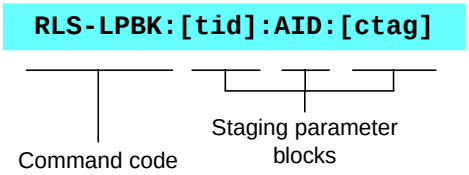
   Depending on the loopback state reflected, this command button displays the possible operation (**Clear**, if the loopback is set; **Set**, if the loopback is cleared).

b. **Via the TL1 Command Line Interface:**

To *set* a loopback enter the following TL1 command by using the TL1 command line interface (cf. Chapter 5.8, page 5-121):



To *clear* a loopback enter the following TL1 command by using the TL1 command line interface (cf. Chapter 5.8, page 5-121):



Please refer to the AMAS R1.2 network elements documentation for a detailed description of TL1 commands (including an explanation of the input format, restrictions, error conditions etc.).

6.5 Information Management and Maintenance

6.5.1 NE-AEM-NB Connection States

Connection States

There are five NE-AEM-NB connection states. They depend on the availability of a TCP/IP connection and TL1 communication session between the AEM-NB and NE and also on the AEM-NB's attempt to open a TL1 communication session with the NE:

- NOT_CONNECTED

  Initial NE state when there is no connection between AEM-NB and NE and the AEM-NB is in a "passive" state avoiding any possibility of connection establishment with the NE.

- NOT_CONNECTED (TRYING)

  Initial NE connection establishment state when the TL1 communication session between the AEM-NB and NE is not available (AEM-NB login to NE via ACT-USER command) but the AEM-NB is in an "active" state trying to open a connection (TCP/IP connection and TL1 communication session) with the NE.

- NOT_CONNECTED (CANCELLING)

  The communication session between the AEM-NB and NE is available but the AEM-NB is trying to close connection (TCP/IP connection and communication session) with NE. The user is unavailable to execute any action.

- CONNECTED (SYNCHRONIZING)

  The communication session between the AEM-NB and NE is available but the AEM-NB is trying to synchronize AEM-NB and NE information. The user is unavailable to execute any action until the synchronizing process is finished. After that the state changes to CONNECTED.

- CONNECTED

  TL1 communication session between the AEM-NB and NE is available (TCP/IP connection is alive) and the software version currently stored in the NE is supported by the AEM-NB. When the association process between the AEM-NB and NE is completed, the NE state changes to CONNECTED and remains like this until the TL1 communication session is closed on user request or the TCP/IP connection is lost/closed.

6.5.2 Changing Connection States

The connection state changes can be initiated by the user via the GUI (cf. Chapter 5.3.1, page 5-16, section „Connect NE“) or they are initiated by the AEM-NB.

Not Connected

The user can initiate the connection establishment process with an NE in connection state NOT_CONNECTED. After initiating this process the NE state changes to NOT_CONNECTED (TRYING).

Not Connected (Trying)

When the NE state is NOT_CONNECTED (TRYING), the AEM-NB tries to establish a TCP/IP connection with the NE. The AEM-NB attempts to connect to one of the TCP ports of the NE. After the successful connection to a TCP port, the AEM-NB checks if it supports the software version of the NE. If the software version is supported the NE state becomes CONNECTED (SYNCHRONIZING), if not it remains NOT_CONNECTED (TRYING) and the AEM-NB continues its attempts to establish a connection. The user can cancel these attempts via the GUI, which will change the NE state to NOT_CONNECTED (CANCELLING).

Connected

The user can request to close a connection with an NE via the GUI. When the TL1 communication session is closed by the AEM-NB, the NE state is changed to NOT_CONNECTED. When the NE state is CONNECTED and the TCP/IP connection is lost or closed, the NE state becomes NOT_CONNECTED (TRYING). When a TL1 communication session loss is detected and the TCP/IP connection is still established, the AEM-NB closes the TCP/IP connection and the NE state also becomes NOT_CONNECTED (TRYING).

6.5.3 Configuration Data Synchronization after Association

General

If an NE is connected to the AEM-NB the databases of NE and AEM-NB have to be synchronized. To change synchronization settings see Chapter 5.3.2.2, page 5-46.

Autonomous Reports

There are various types of autonomous reports that are used to keep consistency between configuration changes in the NE and AEM-NB database (e.g. LED status reports, switch reports). For an NE the user can disable the sending of autonomous reports (reports can be inhibited/enabled separately or collectively). But to maintain consistency between the NE configuration data and the AEM-NB database, these configuration reports have to be enabled.

Synchronization States Diagram

The following figure illustrates the NE state model depending on the synchronization state between the data kept in the NE and the AEM-NB database.

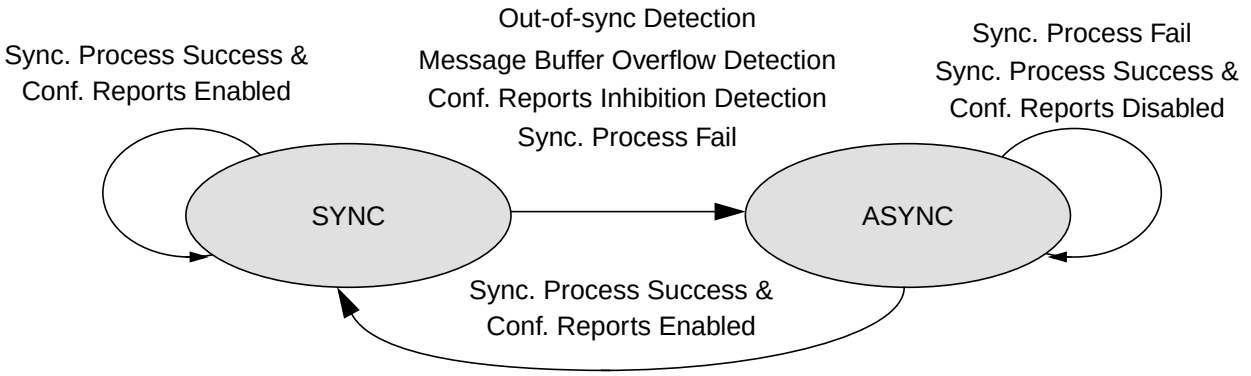


Figure 6-11 NE Configuration Data Synchronization States

SYNC/ASYNC There are the following two NE configuration data synchronization states:

- SYNC

  The AEM-NB database is consistent with the locally stored NE information, and all the autonomous messages concerning configuration changes are enabled (configuration reports: database changes, LED status reports, switch reports and some events of the type protection switching and inhibit messages).

- ASYNC

  The AEM-NB database and the NE configuration data are out of synchronization and/or configuration reports are inhibited and/or the AEM-NB configuration messages buffer is overflown.

6.5.4 Alarm Data Synchronization after Association

Alarm Data The AEM-NB maintains alarm data for each NE. These data are updated with all NE alarms and environment alarms from the NEs database. To change synchronization settings see Chapter 5.3.2.2, page 5-46.

Synchronization States Diagram The following figure illustrates the NE state model depending on the synchronization state between the alarm data kept in the NE and the AEM-NB alarm database.

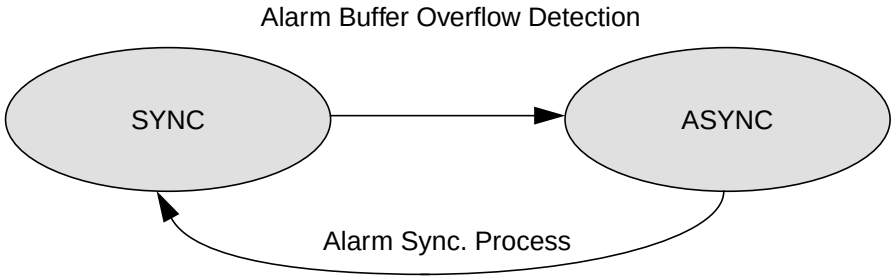


Figure 6-12 NE Alarm Data Synchronization States

SYNC/ASYNC

There are two NE alarm synchronization states:

- SYNC

  The AEM-NB alarm database is consistent with the current NE alarms. If alarm and/or environment alarm reports are inhibited, the AEM-NB database is only a snapshot of NE alarm information at a certain moment in time.

- ASYNC

  The AEM-NB alarm database and the current NE alarms are out of synchronization due to an alarm buffer overflow. The AEM-NB alarm database is only a snapshot of NE alarm information at a certain moment in time.

Configuration Data

The AEM-NB configuration data which are maintained for each NE are updated with the NEs configuration data. The data from the NE non-volatile data storage (NVDS) are used.

6.5.5 Association Maintenance

Association

An association between the AEM-NB and an NE is established if the TCP/IP connection and the TL1 communication session are opened. The NE state changes into CONNECTED.

NE Monitoring

The AEM-NB monitors the association state of the NE by periodically sending messages (RTRV-HDR) to the NE. If the AEM-NB does not receive a response to a certain number of messages within a certain time, it assumes that the TL1 connection to the NE is lost and closes the TCP/IP connection to the NE.

Default Values for Monitoring

By default these messages are sent by the AEM-NB every five minutes. The response to a message must be received within four minutes and not more than two responses may be lost, otherwise the TCP/IP connection is closed by the AEM-NB.

These values can be configured by the user via the system variables "NEM.association.heartBeatNumber" and "NEM.association.heartBeatTime" in the file $ANYMEDIAPATH/cfg/AnyMediaNBEM.cfg.

6.6 Alarms

6.6.1 Overview

An alarm is reported for any condition that needs user attention, since it may impact the normal operations of any system under user responsibility (e.g. AEM-NB, NE).

6.6.2 Alarm Types

Alarm Classification

Detected alarms are classified as one of the following:

- Platform Alarm

  Alarm related to the *AnyMedia*™ Element Manager application or its hardware/software platform. Generated (raised) by any object of the AEM-NB when it detects an abnormal condition to be reported to the user.

  Information provided:

  — AEM-NB Object Identifier

  — Alarm Type Identifier

  — Severity

  — Service Affecting

  — Occurrence Time.

- NE-AM Alarms

  Generated (raised) by the NE-AM. Refer to Chapter 6.2.5, page 6-8 to see how the information comes from the NE-AM to the AEM-NB The NE-AM alarms are classified in two groups:

  — Normal Alarms

  Data provided:
  Access Identifier, Condition Type, Notification Code, Service Affecting, Access Identifier Type, Occurrence Date, Occurrence Time

  — Environment Alarms

  Data provided:
  Access Identifier, Alarm Type, Notification Code, Occurrence Date, Occurrence Time

For all alarm types several alarm data fields are conceptually the same (although they convey different values). For instance, both Condition Type and Alarm Type refer to the type of alarm being raised/cleared (Battery on discharge, Loss of frame, ...).

The following table maps all the equivalent fields to general names that uniquely identify a concept independently of the alarm type.

Table 6-13 General Alarm Fields

General Name	Platform Alarm	NE Alarm	NE Environment Alarm
Object_Id.	EM Object Identifier	Access Identifier	Access Identifier
Alarm_Type	Alarm Type Identifier	Condition Type	Alarm Type
Severity	Severity	Notification Code	Notification Code
Serv_Affec.	Service Affecting	Service Effect	-
Date_First_Time/ Date_Last_Time[a]	Occurrence Time and Date[a]	Occurrence Time[b]	Occurrence Time[b]
		Occurrence Date[c]	Occurrence Date[c]

a Time and date (YYYY-MM-DD HH-MM-SS)

b Only time (HH-MM-SS)

c Only date (MM-DD)

Alarm Severities

For each alarm one of the following alarm severities is defined:

- Critical (CR)
- Major (MJ)
- Minor (MN)
- Information (IN), only applicable for platform alarms.

Alarm Identification

The multiple key that uniquely identifies an alarm is:

- Host Identifier

  Identifies where the alarm comes from. If it comes from an NE, then this identifier is the NE name. If the alarm is reported by the AEM-NB the host identifier is "EM". For association alarms the host identifier is "NE_name".

- System Object Identifier

  Identifies the alarm-affected object within the host, which is identified by the host identifier. For association alarms the system object identifier is "ASSOC".

- General Alarm Identifier.

  Unique identifier within each type of alarm.

In order to ease possible communication between different users, an index number is provided as a temporal alarm identification. It is temporal because the index number will be used as a circular sequence (the maximum sequence number is 100 000). It is provided only for user convenience. It will not be used to identify an alarm within the AMS. For this purpose the multiple key defined above has to be used.

6.6.3 Network Element Alarms

Alarm Descriptions Please refer to the AMAS R1.2 network element documentation for detailed alarm descriptions of network element alarms.

6.6.4 Element Manager Platform Alarms

This chapter provides alarm descriptions of the AEM-NB platform alarms including proposals for corrective maintenance actions.

Alphabetical Order In the following the AEM-NB platform alarms are listed alphabetically.

6.6.4.1 LOG_DEL_FULL

Meaning All old logs have been deleted. Because more available space was necessary the log type of the current day has been deleted, too. The Object_Id shows which log type has been deleted.

Abbreviation: LOG_DEL_FULL

Severity: Major

Service affecting: No

Effects There are no old logs available, and not all logs of the current day are available to be viewed or stored.

Possible Cause(s) There may be a problem or abnormal situation in the AEM-NB, or the selection of the configurable size limits of the log system was too small.

Corrective Actions Proceed as follows to clear the alarm:

Step	Procedure
1.	Check the AEM-NB for problems or abnormal situations. Have there any problems or abnormal situations occurred? **Yes:** Try to resolve these problems or abnormal situations. If this is not possible, continue with step 2. **No:** Continue with step 2.
2.	Check the size limits of the log system. Are the size limits set correctly (cf. Chapter 3.7.2, page 3-32)? **Yes:** Call Lucent Technologies Technical Support. **No:** Set the size limits correctly, i.e. increase the size limits.

6.6.4.2 LOG_DEL_PART

Meaning A log type not yet archived has been deleted due to lack of available space.

Abbreviation: LOG_DEL_PART

Severity: Minor

Service affecting: No

Effects The respective log type can neither be viewed nor archived.

Possible Cause(s) There may be a problem or an abnormal situation in the AEM-NB, or the configurable size limits of the log system have not been chosen correctly.

Corrective Actions Proceed as follows to clear the alarm:

Step	Procedure
1.	Archive the remaining logs to prevent them from being deleted.
2.	Check the AEM-NB for problems or abnormal situations. Have there any problems or abnormal situations occurred? **Yes:** Try to resolve these problems or abnormal situations. If this is not possible, continue with step 3. **No:** Continue with step 3.
3.	Check the size limits of the log system. Are the size limits set correctly (cf. Chapter 3.7.2, page 3-32)? **Yes:** Call Lucent Technologies Technical Support. **No:** Set the size limits correctly, i.e. increase the size limits.

6.6.4.3 NEASSOC_LOST

Meaning The AEM-NB lost the management association with the network element (NE).

Abbreviation: NEASSOC_LOST

Severity: Critical

Service affecting: No

The alarm will be cleared when the TCP/IP connection and TL1 communication session are available, and the software version currently stored in the NE is supported by the AEM-NB, i.e. when the association process between the AEM-NB and the NE is completed (NE state is **CONNECTED**, cf. Chapter 6.5.1, page 6-31).

Effects It is not possible to manage the NE. The TL1 communication session and the TCP/IP connection are lost.

Possible Cause(s) A loss of the TCP/IP connection has been detected, or the TCP/IP connection has been closed as a consequence of a loss of the TL1 communication session.

Corrective Actions Proceed as follows to clear the alarm:

Step	Procedure

1. Check the NE state after a waiting period of 1 minute.

   Comment: When NE state is CONNECTED and the TCP/IP connection is lost or closed, the NE state is moved to TRYING and the loop process to re-establish the connection with the NE is started by the AEM-NB.

   Is the state CONNECTED?

   Yes: O.K.

   No: Continue with step 2.

2. Check for Data Communication Network (DCN) being in service

   Is the DCN in service?

   Yes: Call Lucent Technologies Technical Support.

   No: Put the DCN into service.

6.6.4.4 PASS_VIOLATION

Meaning Pass-through security violation. More than three consecutive log-in attempts on the pass-through interface have been encountered.

Abbreviation: PASS_VIOLATION

Severity: Information

Service affecting: No

Effects None.

Possible Cause(s) An external Operations System (OS) is trying to open a pass-through link without being authorized.

Corrective Actions Proceed as follows to clear the alarm:

Step	Procedure

1. Ask your system administrator for more details on access control.

6.6.4.5 SWVR_ILLEGAL

Meaning The Software Version currently stored in the NE is not supported by the AEM-NB.

Abbreviation: SWVR_ILLEGAL

Severity: Critical

Service affecting: No

Effects It is not possible to manage the NE.

Possible Cause(s) The Software Version currently stored in the NE is not supported by the AEM-NB.

Corrective Actions Proceed as follows to clear the alarm:

Step	Procedure
1.	Check that the correct version of software is installed on the NE's System Controller Card (COMDAC).

6.6.4.6 TCP/IP_CON_REFUSED

Meaning The TCP/IP connection establishment could not be completed successfully for port numbers 11001, 11003, 11005 and 11007.

Abbreviation: TCP/IP_CON_REFUSED

Severity: Critical

Service affecting: No

Effects It is not possible to manage the NE.

Possible Cause(s) Some TCP/IP protocol errors stopped the connection establishment process between AEM-NB and NE.

Corrective Actions Proceed as follows to clear the alarm:

Step	Procedure
1.	Check the TCP/IP communication addresses. Are the TCP/IP communication addresses correct? **Yes:** Continue with step 2. **No:** Correct the addresses. Continue with step 4.
2.	Check the gateway NE identification.

Is the gateway NE identification correct?

Yes: Continue with step 3.

No: Correct the identification. Continue with step 4.

3. Check the Data Communication Network (DCN).

   Is the DCN in service?

   Yes: Continue with step 4.

   No: Bring the DCN into service.

4. Is the alarm now cleared?

   Yes: O.K.

   No: Call Lucent Technologies Technical Support.

6.6.4.7 TL1_COMM_DENIED

Meaning

User login for a TL1 communication session was denied by the NE for all TCP/IP connections opened.

Abbreviation: TL1_COMM_DENIED

Severity: Critical

Service affecting: No

The alarm will be cleared when a TL1 communication session between the AEM-NB and the NE has been successfully opened.

Effects

It is not possible to manage the NE because there is no TL1 communication session available.

Possible Cause(s)

A user login error is stopping the TL1 communication session establishment process between the AEM-NB and the NE.

Corrective Actions

Proceed as follows to clear the alarm:

Step	Procedure
1.	Check for correct User Identification (user login), Password and NE target identifier (TID).

Data Communications Network (DCN) Configuration

A

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Data Communications Network (DCN) Configuration

A

A.1 Overview

This appendix provides you with information about

- DCN introduction,
- General definitions of terms,
- Network Element management communications,
- AnyMedia Element Manager management communications,
- Sample DCN configurations.

A.2 DCN Introduction

The *AnyMedia*® Access System is designed to provide a full range of narrowband access services like POTS, ISDN and Leased Lines.

AEM-NB Features

The *AnyMedia* Element Manager for Narrowband Services (AEM-NB) will provide the standard management configuration, equipment configuration, fault and testing, performance and security functions capabilities to do service management, monitoring, generate reports and printouts, do backup and restore functions for example to improve the customer's day to day business.

Communication of AEM-NB and NE

The AEM-NB will communicate with the network elements by using TL1 commands over TCP/IP (TL1 over raw TCP can also be used) and FTP over TCP/IP. A communication with TL1 commands over Telnet is only possible via cut-through. The AnyMedia AEM-NB is also prepared in the first release to communicate with other legacy OSs by means of TL1 northbound pass-through interfaces. TL1 will be used for request/response and autonomous reports commands and FTP will be used for software and database upload/download operations.

DCN

The Data Communications Network (DCN) is the communications infrastructure (routers, WAN links, etc.) needed for communication of the AEM-NB with the NEs

it manages. This manual refers to AEM-NB Release 1.5 and *AnyMedia* NE Release 1.5. For this releases many DCN configurations and protocol profiles can be used according to the network operators needs and scenarios. Two sample DCN scenarios are given at the end of this chapter.

A.3 Terms Used in this Chapter

Data Communications Network The Data Communications Network (DCN) consists of the communication media and the interconnected devices which are used to exchange management information between the AEM-NB, the NEs and other management systems.

Semi Permanent Leased Line A Semi Permanent Leased Line (SPLL) is a service in which resources are used permanently for the transmission of data between two points. The switch is the responsible for the set-up of this service.

Remote Operations Channel The Remote Operations Channel (ROC) is a bearer channel that conveys management information for a remote system (AnyMedia NE). The ROC is expected to be used when the system is installed at locations where no Ethernet Local Area Network (LAN) and no separate network (e.g. X.25) exists.

Router A router is a network layer device that forwards packets from one network to another based on network layer information (OSI layer 3). Data packets are only transferred through the router, if the participant is on another port of the router. The router can keep data traffic certain parts of a LAN. A router is more powerful than a bridge, it reduces the traffic on a LAN more than a bridge, because the IP address is evaluated for traffic control.

Bridge A bridge is a network layer device that passes packets between two or more network segments that use the same data link communications protocol (OSI layer 2). The network segments appear as one segment to protocol levels higher than the data link layer. The bridge recognizes with the help of the MAC address which LAN component is on which port of the bridge. Data packets are only transferred over the bridge if the participant is on another port of the bridge. With a bridge data traffic can be kept from certain parts of a LAN.

A.4 NE Communication Capabilities

In this section the management communication capabilities an AnyMedia NE are described. The AnyMedia Access System provides the following management interfaces for operation, administration, maintenance, and provisioning (OAM&P):

- Craft interface terminal (CIT).

  The CIT port is a local EIA-232D (former RS-232C) interface. It is located on the faceplate of the CTU card in the AnyMedia Access System for 24 channel market. Either a TL1 ASCII terminal or a PC-based Graphical System Interface (GSI-NB) can be connected to the CIT port locally. This interface is typically used during initial installation and other maintenance related activities. This interface can also be used to remotely manage the NE

using the AEM-NB/GSI-NB (a DCN is also needed), PPP is being implemented on top of the CIT port as to allow this remote management. The protocol profile in the NE for this scenario is shown in Figure A-1.

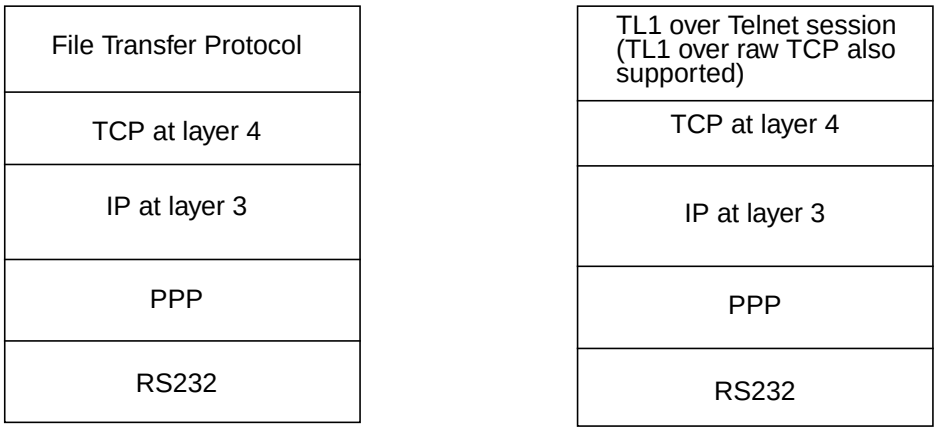

Figure A-1 AnyMedia Remote Access to CIT Port Protocol Profiles

- External system LAN interface.

  LAN interface is available via a backplane connector on the AnyMedia Access System shelf. It provides access to an IEEE 802.3 compliant LAN through a 10BaseT connection. All communications through this interface occur over the transmission control protocol/internet protocol (TCP/IP) to the GSI-NB or element manager (AEM-NB). The protocol profile in the NE for this scenario is shown in Figure A-2. For AnyMedia NE release 1.7 it will be an IAO LAN (also supporting an OSI protocol stack).

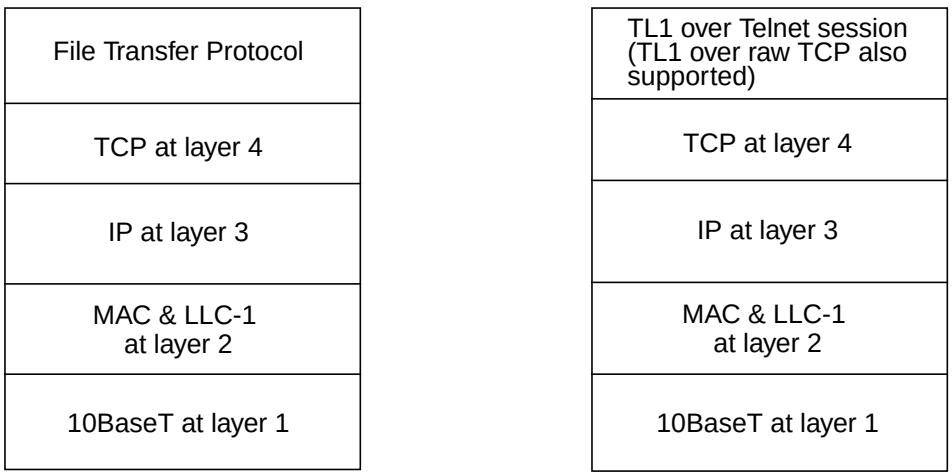

Figure A-2 AnyMedia External LAN Interface Profiles

- Remote Operations Channel (ROC)

  The remote operations channel (ROC) is a 64 kbps timeslot within the payload of a DS1 link bound to a feeder of the AnyMedia NE. The AnyMedia Access System provides access for a remotely located OS if it communicates via TCP. The protocol profile in the NE for this scenario is shown in Figure A-1. This alternative can be used if no local Ethernet LAN is available or the outside plant (OSP) environment is too severe for a router. It does not need a separate DCN, then it can be a cheaper solution. The protocol profile in the NE for this scenario is shown in Figure A-3.

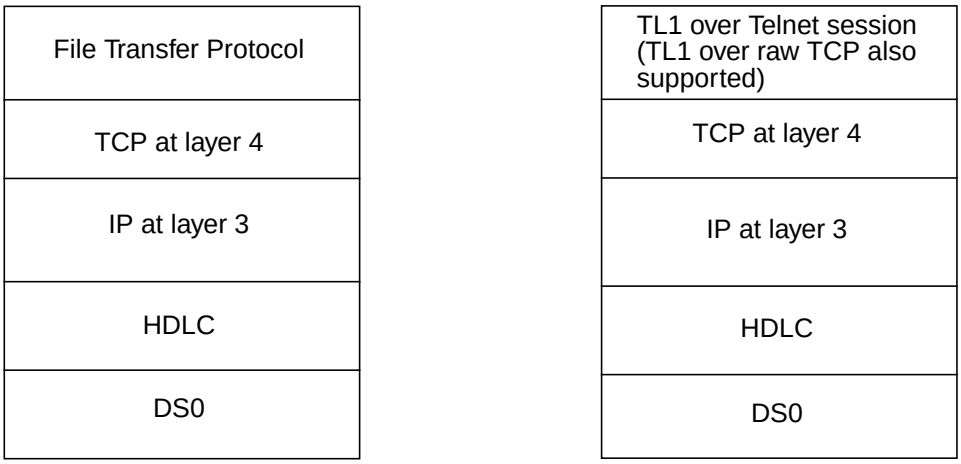

Figure A-3 AnyMedia Remote Operations Channel (ROC) Protocol Profiles

For establishing communication between the AEM-NB and the NE, the NE must be minimally configured with its LAN, ROC or CIT parameters as applicable. This option is the only available, as the AnyMedia Access System does not support remote boot and remote TCP/IP configuration. The GSI-NB can be used to provide this initial configuration of the NE using the CIT port.

A.5 AEM-NB Communication Capabilities

The AEM-NB uses for communicating management data an external system LAN interface. The protocol profile in the AEM for this scenario is shown in Figure A-4.

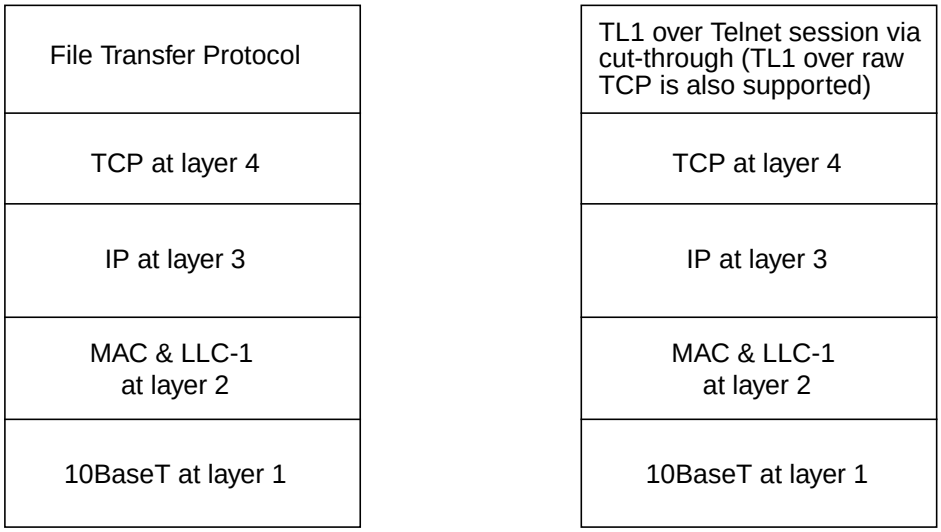

Figure A-4 AEM-NB Protocol Profiles

A.6 Sample DCN Configurations

Having in mind the management communications capabilities of the AnyMedia NE and EM two DCN scenarios have been selected as sample configurations.

A.6.1 Remote Operations Channel Over Semi Permanent Leased Lines DCN

Configuration

The assumptions for this configuration are:

- The LAN-based element manager is located in the central office collocated with the Local Digital Switch (LDS).
- The NEs are located at remote locations.
- The OAM&P information (mapped in the 64 kbit/s ROCs) is transported from the AEM-NB in the central office to the remote locations via a semi permanent leased line (SPLL) using either TR-08 or TR-303 access technologies.
- A router/bridge is used for interfacing the channelized T1 I/F to the LAN in the central office. The router/bridge performs the translation from LAN to HDLC/DS0 access via channelized T1 interfaces.

- For layer 2 the HDLC Protocol is used between 24 channel NEs and the router.
- One remote operation channel is used for communicating with each NE (64 kbit/s ROC carried on a SPLL). For managing up to 24 NEs connected to the LDS, a single T1 interface for the router/bridge is sufficient.

A.6.1.1 Router Configuration

Configuration

The minimal requirements for the router/bridge for supporting this scenario are:

- Minimal WAN Interface Requirements:

  The router/bridge must have one or more channelized 1.544 Mbit/s T1 interfaces (ITU G.703/G.704). An IP address may be assigned to each time-slot or channel group.

- Minimal LAN Interface Requirements

  The router must have one or two (for cascading purposes) Ethernet (IEEE 802.3) 10BaseT ports. In case of two LAN ports, LAN-to-LAN routing is supported.

For the router/bridge the following has to be provisioned:

- T1 interface functionality (line code, framing type etc.)
- Time-slot mapping (each needed serial interface will be a channel group mapped on a time slot of the channelized T1)
- Protocols and encapsulations
- IP-addresses for IP routing (routing tables)
- Ethernet media

The initial provisioning of a router/bridge is typically performed by a VT100/ANSI terminal, connected to a RS-232C port. When the IP-address of the router is provisioned, the router may be configured via LAN (TELNET, SNMP) depending on the router/bridge used.

A.6.1.2 AnyMedia Network Element Configuration

The ROC (over SPLL) is the management interface used to access the NE. The initial provisioning has to be done via pre-provisioning (factory settings) or a local GSI-NB (LAN or RS-232C) because the SPLL service, carrying the remote operations channel, must be in-service to get remote access to the NE via remote operations channel.

Provisioning the ROC via GSI

The following actions have to be made to provision the ROC over SPLL management interface:

- Provision the Local Digital Switch (LDS) that is connected to the NE shelf to associate the DS0 channel to a SPLL service.
- Provision the NE using the ENT-T0 TL1 command to indicate that the received DS0 is a 64 Kbps clear channel (gsfn=4do).

- Provision the NE using the ENT-CRS-T0 command to indicate that the received DS0 should be cross connected to the logical ROC port. Note that the remote operations port T0 cross-connection created for a TR-08 VRT will cause system bandwidth to be allocated, while for TR-303 this command is more an association function than a cross-connection. No actual cross-connection is made in TR-303 until a request to connect the logical line specified in this command is received from the LDS over the EOC data link (for semi-permanent connections).
- Provision the NE using the SET-IP command to an unique IP address.

Provisioning the ROC via TL1 using GSI

TL1 commands can be used to configure the NE. Note that the default router address of the NE must be set to 224.0.0.2 (universal router's multicast address) so that the NE points to the router on the other side of the ROC interface.

The following TL1 commands are an example of ROC over SPLL configuration (for TR-303) in the NE.

```
ent-t0::v3dp-1-49::::gsfn=4do;
ent-crs-t0::v3dp-1-49,roc-1;
ent-crs-t1::ds1-1-1-1,v3fdr-1-3;
set-ip::::::shelf=135.5.78.2,defrouter=224.0.0.2,
submask=255.255.255.0
```

The "nail-up" of the DS0 channel must also be provisioned in the LDS after that the ROC over SPLL is provisioned. Once communications with the element manager is established via the ROC over SPLL, remote operations on the NE can be executed as over a connection via LAN. Also either the GSI-NB or a standard windows FTP/TELNET can be used.

A.6.1.3 Element Manager Server Configuration

Server IP Parameters

The server on which the AEM-NB application resides must have its IP parameters configured:

- IP address (e.g. 135.88.20.234)
- subnet mask (e.g. 255.255.240.0)
- default router (e.g. 135.88.17.1)

Configuration

In the AEM-NB the following parameters have to be configured to be able to communicate with the NEs.

- TCP/IP configuration related to NEs
  - For every NE the AEM-NB wants to communicate with, its IP address (e.g. 135.88.4.2) must be introduced in the AEM-NB (provisionable via AEM-NB GUI).
  - The ports to be used in the NE needs to be stored in the AEM-NB (e.g., for TL1 over TELNET communication the ports to be used are in the order: 11001, 11003, 11005 and 11007; for FTP communication the port number 20 for FTP data transmissions and the port number 21 for FTP control communication).

- Association configuration related to NEs
  - — For every NE with which the AEM-NB has to communicate, the NEs Target Identifier (TID) must be known by the AEM-NB (provisionable via AEM-NB GUI).
  - — For every NE with which the AEM-NB wants to communicate, the LOGIN information related to that NE must be introduced in the AEM-NB (provisionable via AEM-NB GUI).
  - — For every NE the AEM-NB wants to communicate with, the PASSWORD information related to that NE must be known by the AEM-NB (provisionable via AEM-NB GUI).

A.6.1.4 Element Manager Client Configuration

Client IP Parameters

The workstation with the AEM-NB client has the following IP parameters configured. Note that if the client is located at the same machine as the server these parameters are already configured.

- IP address (e.g. 135.88.20.230)
- subnet mask (e.g. 255.255.240.0)
- default router (e.g. 135.88.17.1)

AEM-NB Preferences File

In the preferences file of the AEM-NB client the following information must be stored to be able to access the AEM-NB server (this file has to be created before starting the AEM-NB client GUI):

- The AEM-NB server IP address (e.g. 135.88.20.234)
- The LOGIN for accessing the AEM-NB server (encrypted)
- The PASSWORD for accessing the AEM-NB server (encrypted)

A.6.1.5 Local Digital Switch Configuration

Management operations have to be performed on the LDS to create the SPLL service and associate this service to the DS0 channel which will be cross connected with the ROC. The provisioning of this DS0 channel will be static with TR-08 and dynamic with TR-303.

A separate SPLL needs to be established with every NE which shall be managed.

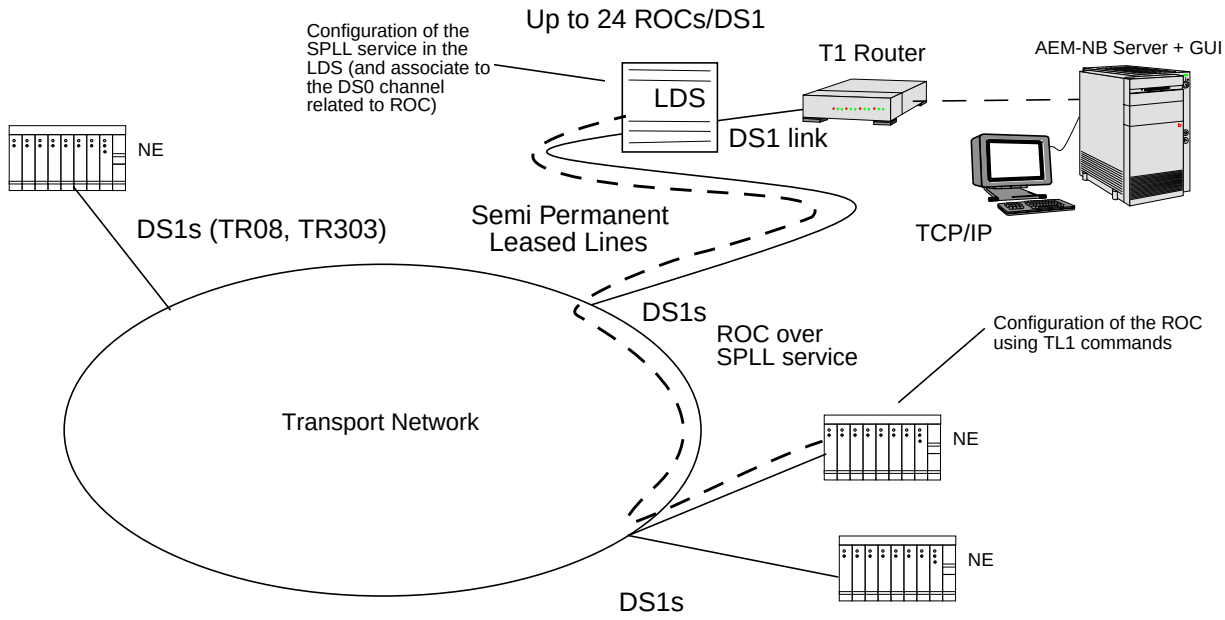

Figure A-5 ROC over Semi Permanent Leased Line for AEM-NB

A.6.2 X.25 DCN

The assumptions for this configuration are:

- The LAN-based element manager is located in the central office.
- The NEs are located at remote locations (a remote LAN may exist at the remote location).
- The OAM&P information is transported from the AEM-NB in the central office to the NEs in the remote locations via a public/private X.25 network.
- An X.25 router (maybe a PC with X.25 and Ethernet cards) is needed at both sides (AEM-NB and NE sides) for interfacing X.25 network (playing the role of the X.25 DTE) and the LANs. The router performs the mapping from IP to X.25 and is responsible for call set-up, data transfer and call clearing in the X.25 network. The local LAN OA&M NE interface will be used for the communication between the router and the AEM-NB/NEs.
- X.25 Permanent Virtual Circuits (PVCs) or Switched Virtual Circuits (SVCs) are established for interchanging information.

A.6.2.1 Router Configuration

Router/Bridge Requirements

The minimal requirements for the router/bridge for supporting this scenario are:

- Minimal WAN Interface Requirements:

  The router/bridge must have one or more X.25 DTE interfaces. An IP address has to be assigned to every X.25 DTE interface.

- Minimal LAN Interface Requirements

  The router must have one or two (for cascading purpose) Ethernet (IEEE 802.3) 10BaseT ports. In case of two LAN ports, LAN-to-LAN routing should be supported.

Router/Bridge Provisioning

Provisioning needs for the router are the following:

- X.25 interface functionality (encapsulation, window size, etc.)
- Protocols and encapsulations
- PVC and SVC characteristics (If SVCs are used the router is responsible for establishing and releasing the SVC.).
- IP-addresses for IP routing (routing tables)
- Ethernet media

The initial provisioning of a router/bridge is typically performed by a VT100/ANSI terminal, connected to a RS-232C port.

A.6.2.2 Configuration of AnyMedia Network Element

On the AnyMedia NE the local LAN port must be configured. The initial provisioning has to be done via pre-provisioning (factory settings) or a local GSI-NB (LAN or RS-232C). The NE IP address, the default router address and the subnet mask of the NE local LAN port must be configured. How to use TL1 commands to configure the NE is shown in the next example. The default router address will be the IP address of the X.25 router on NE side.

```
set-ip::::::shelf=135.88.4.2,defrouter=135.88.17.1,
submask=255.255.240.0
```

Once the communication with the element manager is established via X.25, the remote operations on the NE can be executed as if a connection via LAN were present.

A.6.2.3 Element Manager Server Configuration

The element manager server configuration is the same as described in Chapter A.6.1.3, page A-7. The default router will be the X.25 router on AEM-NB side.

A.6.2.4 Element Manager Client Configuration

The element manager client configuration is the same as described in Chapter A.6.1.4, page A-8.

A.6.2.5 Transport Elements Configuration

If the transport is achieved by means of an X.25 Public Data Network (PDN) then X.25 permanent virtual circuits or switched virtual circuits must be provisioned between routers on both sides before the AEM-NB and NEs are able to exchange management information.

If PVCs are used they may be established by the PDN operator. If SVCs are used the routers on AEM-NB and NE sides are responsible for establishing (e.g. for routing IP packets) and releasing the connections (e.g. by timeouts). It is necessary to assign the address of the router before X.25 WAN can be used.

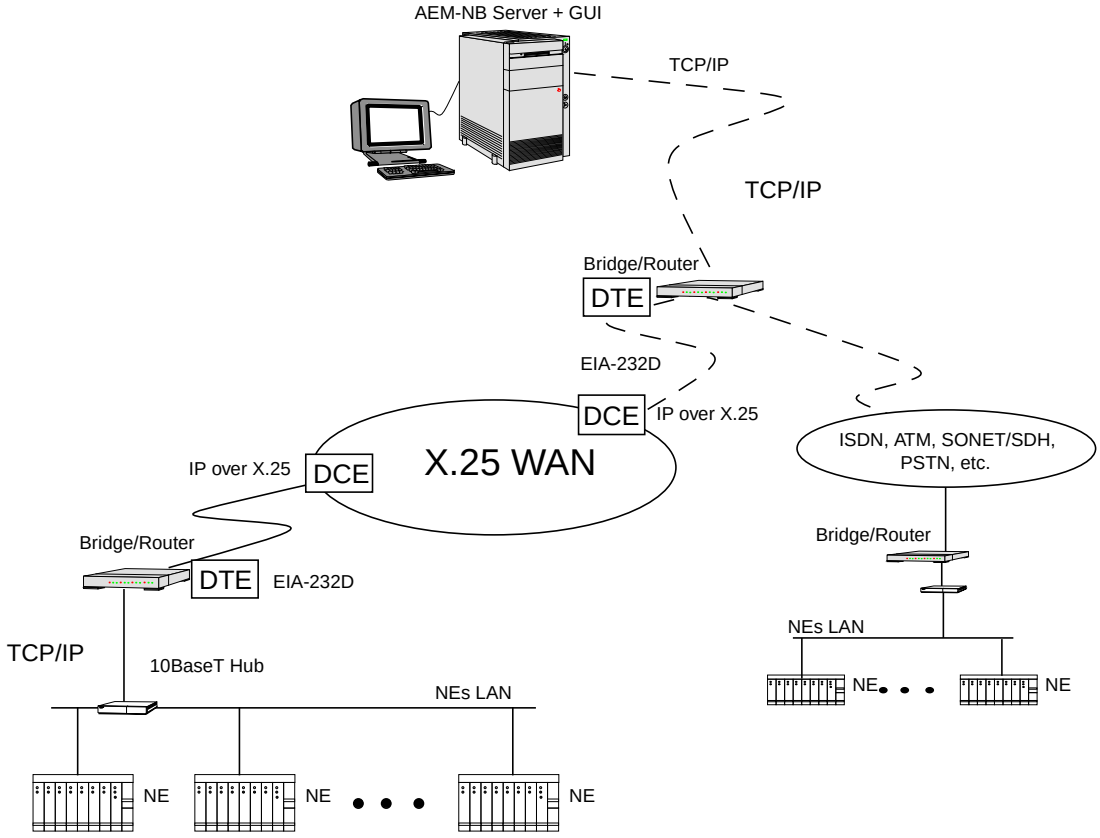

Figure A-6 X.25 Communication with Remote NEs

Abbreviations

A

ACO
Alarm Cut-off

ADSL
Asymmetrical Digital Subscriber Line

AEM
AnyMedia™ Access System Element Manager

AFM
Access Feeder Multiplexer

AID
Access Identifier

AMAS
AnyMedia Access System

ANR
Abnormal

ANSI
American National Standards Institute

AO
Autonomous Output Message

AP
Application Pack

APOG
Applications, Planning, and Ordering Guide

ASCII
American Standard Code for Information Interchange

ATM
Asynchronous Transfer Mode

AUTO
Automatic

B

BAL
Balance

BB
Backus-Naur Form

BCL
Bank Controller Link

BITS
Building Integrated Timing Supply

BRA
Basic Rate Access

C

CD
Compact Disk

CDE
Common Desktop Environment

CFL
Customer Feature List

CIT
Craft Interface Terminal

CIU
Communication Interface Unit

CLEI
Code assigned by Bellcore

CMIP
Common Management Information Protoco

CO
Central Office

CPE
Customer Premises Equipment

CR
Critical (alarm severity)

CRV
Call Reference Value

CTAG
Correlation Tag

CTRL
Control

CTU
Craft Test Unit

CU
Channel Unit

D

DB
Database

DC
Direct Current

DCN
Data Communication Network

DDS
Digital Data System

DFL
Default

DID
Direct Inward Dial

DPT
Dial Pulse Termination

E

ECI
(Code that corresponds to the bar-coded label on the faceplate of the plug-in)

EIA
Electronic Industries Association

EM
Element Manager

EM-AM
Element Manager-*AnyMedia*

ENT
Enter

EOC
Embedded Operations Channel

EQPT
Equipment

ESF
Extended Super Frame

ETO
Equalized Transmission Only

EVT
Event

F

FAF
Facility Failure

FEF
Family of Equipment Failure

FLT
Fault

FS
SuperFrame with Datalink

FTP
File Transfer Protocol

FXO
Foreign Exchange Office

G

GS
Ground Start

GSF
General Service Function

GSFN
Generic Signalling Function

GSI
Graphical System Interface

GUI
Graphical User Interface

H

HBER
High Bit Error Ratio

HDD
Hard Disk Drive

HDLC
High Level Data Link Control

HP
Hewlett Packard

HW
Hardware

I

ICC
InterChangeability Code

ICMS
Integrated Configuration Management System

ID
Identifier

IEEE
Institute of Electrical and Electronics Engineers

IIOP
Internet Interoperability Protocol

IN
Information (alarm severity)

INA
Integrated Network Access

IP
Internet Protocol

IS
In Service

ISDN
Integrated Services Digital Network

ITM-SNC
Integrated Transport Management - Sub NetworkController

ITU
International Telecommunication Union

L

LAN
Local Area Network

LBER
Low Bit Error Ratio

LDS

LED
Light Emitting Diode

LIC
License

LLN
Logical Line Number

LPBK
Loop Back

LS
Loop Start

M

MDS
Metallic Distribution Server

MDSU
Metallic Distribution Server Unit

MEA
Mismatch of Equipment and Attributes

MHz
Megahertz

MJ
Major (alarm severity)

MLT
Mechanized Loop Testing

MM
Module Manager

MN
Minor (alarm severity)

MON
Degraded Signal

MR
Modification Request

MSC
Metallic Shelf Controller

N

NB
Narrow Band

NE
Network Element

NEM
Network Element Management / AnyMedia EM subsystem

NM
Network Management

NMA
Network Monitoring and Analysis

NMS
Network Management System

NVDS
Nonvolatile Data Storage

NVPS
Nonvolatile Program Storage

O

OAM
Operations, Administration and Maintenance

OCU
Office Channel Unit

OMG
Object Management Group

OODB
Object Oriented Database

OOS
Out Of Service

OPS
Operations System

ORB
Object Request Broker

OS
Operation System

P

PBX
Private Branch Exchange

PC
Personal Computer

PCM
Pulse Code Modulation

PID
Password Identifier

PLN
Physical Line Number

PLR
Pulse Link Repeater

POTS
Plain Old Telephone Service

PPP
Point to Point Protocol

PSTN
Public Switched Telephone Network

PT
Power Test

PTU
Power Test Unit

R

RAM
Random Access Memory

RCV
Receive

RDLD
Red Lined

REPT
Report

ROC
Remote Operations Channel

ROM
Read Only Memory

RTLP
Receive Transmission Level Point

RTU
Remote Test Unit

2RVO
2-Wire Loop Reverse Battery, Originate

S

SCC
Secondary Channel

SCEC
Secondary Channel Error Correction

SDEE
Supported Entity Exists

SDH
Synchronous Digital Hierarchy

SGE
Supported Entity Outage

SL
Slope

SLC
Subscriber Loop Carrier

SNMP
Simple Network Management Protocol

SPLL
Semi Permanent Leased Line

SW
Software

T

TA
Terminal Adapter
Test Area

TAP
Test Access Path

TCA
Threshold Crossing Alert

TCP
Transmission Control Protocol

TID
Target Id

TL1
Transaction Language 1

TLP
Transmission Level Point

TM
Timeslot Management

TMC
Timeslot Management Channel

TMN
Telecommunication Management Network

TNM
Total Network Management

TO
Transmission Only

TRMT
Transmit Attenuator Parameter

TS
Test

TS
Timeslot

TTLP
Transmit Transmission Level Point

TTMT
Tandem Transmit Attenuator Parameter

U

UART
Universal Asynchronous Receiver/Transmitter

UAS
Unassigned

UEQ
Unequipped

UI
User Interface

UID
User Id

UPS
Uninterruptable Power Supply

UX
Unix

V

VB
Virtual Bank

VC
Virtual Connection

VF
Voice Frequency

VFDE
Voice Frequency Data Enhancement

VRT
Virtual Remote Terminal

W

WAN
Wide Area Network

X

XO
Crystal Oscillator

Y

YEL
Yellow Alarm

Z

ZCS
Zero Code Suppression

ZS
Zero Suppression

Glossary

10Base T
This is a physical interface used for high speed Ethernet connection. It uses twisted pair cables.

A

a-wire
One of the wires of the subscriber line. Sometimes it is called the tip wire.

AEM-NB
AnyMedia Access System Element Manager for Narrowband Services. It may be also named simply AEM-NB in some parts of the document.

Alarm
Any condition that needs operator attention, since it may impact the normal operations of any system under operator responsibility (e.g. Element Manager, Network Element).

AMS
Alarm Management Subsystem.

***AnyMedia* Access System**
This is also referred to as the Network Element or just the NE.

AnyMedia NE
AnyMedia Network Element for Narrow Band Services. It is the Network Element to which the DCN defined in this document is related. Also known as FAST or AMAS.

AO
Autonomous output; reports generated by the NEs.

Application
Group of one or more modules that offer related functionality.

Applicatios Pack (AP)
This is a circuit pack which provides the line-side interface functionality for POTS, SPOTS, ISDN or special service circuits. Each AP handles 24 or 32 lines (POTS, SPOTS, COIN and special services) or 16 lines (ISDN). There can be up to 16 APs in an AnyMedia Access System shelf.

Archive
Process of copying file systems to removable media (such as tape) and deleting the original files once they have been backed up.

AUDIT Trail
A subset of all log messages. A record showing who has accessed an Anymedia EM and what operation was performed during a given period of time.

B

b-wire
One of the wires of the subscriber line. Sometimes it is called the ring wire.

Backup
Process of copying file systems to removable media (such as tape) to safeguard against loss, damage, or corruption.

BB
Broad Band.

Blinking Alarm
An alarm which is continuously changing its status: raised, clear, raised, clear ...

Bridge
A network layer device that passes packets between two or more network segments that use the same data link communications protocol (OSI layer 2). The network segments appear as one segment to protocol levels higher than the data link layer. The bridge recognizes with the help of the MAC address which LAN component is connected at which port of the bridge. Data packets are only transferred over the bridge if the participant is at another port of the bridge. With a bridge, data traffic can be kept from a certain part of a LAN.

Built-in Self Test (BIST)
This is a procedure executed by each plug-in circuit pack either after power-up or on demand. The task is to check the functions of the hardware.

Burst Load
Load that can occur in certain well-known circumstances, where response times are no longer guaranteed, but queues handle excess traffic. After removing the causes of the burst load, and a certain settling time, normal operation is resumed. During burst load there is a graceful degradation, no loss of information, only a queueing occurs to defer the load to a later moment.

Busy Hour Load
Maximum load that is expected to occur in real life that must be handled with normal response times.

C

Call Reference Value (CRV)
This is a numeric value used to identify a logical line on a TR-303 Virtual Remote Terminal (VRT) in messages exchanged between the HDT and the TR-303 switch when setting up and tearing down individual calls. For TR-303 VRTs, the CRV is identical to the last field in the AID for a logical line, e.g.,104 is the CRV for the logical line having AID v3dp-1-104. CRVs are numbered between 1 and 2048. A maximum of 672 provisioned logical lines are supported by the *AnyMedia* Access System R1.2. A CRV can be uniquely associated with a single Distribution Port by setting up a T0 cross-connection between that port and the logical line specified by the CRV.

Cross Connection

Several types of cross connections are present in the *AnyMedia* Access System:

- **T1 cross-connections** provide links between physical DS1 feeder ports and the logical feeder ports of the VRTs and INA Virtual Banks (VB). They are created and deleted using the TL1 commands ENT-CRS-T1 and DLT-CRS-T1. The creation of a T1 cross-connection acts as a trigger within the NE to instantiate the associated VRT or VB.
- **T0 cross-connections** provide links between the logical ports of a VRT or an INA VB and the physical distribution ports of the NE. They are created and deleted by the TL1 commands ENT-CRS-T0 and DLT-CRS-T0.
- Finally, the undifferentiated term **cross connection** describes an actual bandwidth assignment within the system's TSI fabric. Such bandwidth assignments are administered dynamically by the TR-303 TMC, they are administered semi-permanently by the TR-303 EOC, and they are created automatically by the NE in response to provisioning activities on TR-08 VRTs and INA VBs.

Circuit

This refers to the devices and functions built on or provided by an AP for one port. In some documents this is also called facility. The subscriber line is not included.

Client

An entity that initiates requests to a server. For the AnyMedia Access System a client could be a PC with a GUI interface, a telnet session or an OS (like the AEM-NB).

Client Application

A group of one or more user modules that offer related functionality.

Client Host

A machine where one or more user modules are installed.

Common Data and Control Pack (COMDAC)

This performs the main bandwidth management and control functions of the system.

Configuration Management

This consists of a set of functions for controlling the network elements, including initialization, parameter setting, starting and stopping and collecting information about the NE configuration.

Controlled Objects

An entity defined via type and value. Where type is defined as NE for AEM-NB R1.0, but later when unbundled it requires the ability to configure type as VRT for the 24-channel product. Value will identify one specific managed NE or VRT Interface.

CIT: Craft Interface Terminal

A local RS232 connection on the AnyMedia access system to which a PC GUI can be connected.

D

Date

This refers to the day, month, and year and represents a calendar function that needs to include a calculation for leap years and a capability of determining the day of the week from the date, and must be Y2K compliant.

DCN

Data Communications Network; the communication media and interconnected devices used to exchange management information between the AEM-NB, the NEs and other OSs.

Defaults

These are the parameter values built into the NE when it is shipped from the factory. (Default values are restored upon execution of an *INIT SYS* command.)

Device Driver
A program that controls a specific device, such as a cartridge tape (DAT).

Distribution Port
The circuitry that provides narrowband access (i.e., up to the 1.544 Mbps DS1 rate) to a single network interface over one (2- or 4-wire) metallic facility and converts between the format seen by this network interface (e.g., analog voice-frequency, ISDN U-interface, etc.) and the internal format (i.e., 4-Mbps timeslots). Distribution Ports are contained in Application Packs / Channel Units for the *AnyMedia* Access System. A maximum of 32 Distribution Ports are supported on POTS/COIN Application Packs (APs) and a maximum of 16 Distribution Ports are supported on ISDN APs.

Download
The process of moving information from a server to a client at the request of a client according to client/server paradigm. Expected applications of this capability are database retrievals.

Drop
This comprises the wire to the customer and customer premises equipment (CPE). In some documents this is also called equipment.

DS1 ports
DS1 circuits are used to provide the AnyMedia Access System shelf virtual remote terminal (VRT) or INA Virtual Bank feeder facilities and are physically located on the IO_DS1 circuit packs in the NE shelf.

DU
Development Unit.

E

EAS Element Access Server
This is a CORBA server developed by Lumos Technologies which provides an interface between TL1 messages and CORBA methods.

EM Application
A group of one or more modules that offers related functionality.

EM Domain
An assigned collection of Controlled Objects.

EM Task
This represents a subset of the management functions supported by EM applications.

EM User
An entity defined via login name that can be assigned at least to an EM user group.

EM User Group
A logical group of EM users enabled to access one or more “domains”. Permissions to access domains, applications and tasks are administered on an EM user group basis.

Embedded Operations Channel (EOC)
A duplicated DS0 data link dedicated for exchange operations messages between the LDS and RDT.

F

Fault Case
For some faults (e.g. DCN failure), normal working conditions need to be re-established within certain time limits. These are fault cases that are taken into account.

Fault Management
For detecting, displaying, storing, filtering and routing fault/alarm data.

Feeder DS1 Ports
These are the DS1 circuits that are used to provide virtual remote terminals or INA virtual bank feeder facilities and are provided by IO_DS1 circuit packs in the *AnyMedia* Access System. The DS1 port numbers are included as part of the AIDs for these feeder DS1 ports.

Forced Switch
This refers to an Element Manager-initiated switch command that instructs the NE to perform a switch no matter what the conditions of the protection unit (COMDAC and IO_DS1 circuit packs only) are.

Full Backup
This copies a complete file system or directory.

G

Generic Signaling Function (GSFN)
This defines the signaling interface for a provisioned distribution port. It is part of the T0 object data associated with each port. Typical values for the GSFN are 2LS (2-wire loop start) and 2RV0 (2-wire loop reverse battery, originating side).

Global Program
This defines the information presentation to the user according to the user's preferred language and customs. A global program is one that has been internationalized and can be localized.

GSI
This is an intelligent terminal which may be a laptop PC that supports Graphical User Interface (GUI) software and the TL1 protocol interface to the AnyMedia Access System.

GSI-NB
The Graphical System Interface for narrowband services. This is a Windows 95-based PC which uses TL1 commands for the management of AnyMedia Network Elements.

GUI
The Graphical User Interface of the *AnyMedia* Element Manager System.

H

Host
A machine where one or more modules are installed.

Hub or Multiport Repeaters
This have 8, 12, 16 or more ports. With their help multiple devices with 10BASE-T interface can be connected to a single LAN. They have at least one additional port for connecting an additional segment of a LAN.

I

Incremental Backup
This copies new files and files that have changed since a previous backup. The incremental backups are usually given a dump level which determines which files are backed up. A certain level incremental backup will save all the new or changed files since the last backup with a lower level.

Inhibit Switch
This refers to an Element Manager-initiated switch command that instructs the NE to inhibit a side switch irrespective of the conditions of the active unit (COMDAC and IO_DS1 circuit packs only).

Internationalization
This is the process of isolating the language- and customs-dependent code in a computer program from the language-independent code. The term internationalization is often abbreviated as *i18n*.

IO/DS1 Pack (IO_DS1)
This provides four DS1 interfaces to accommodate telephony via standard TR-08 mode, TR-303 and INA network interfaces.

IO_DS1 Circuit Packs
Each circuit pack contains four feeder DS1 port circuits together with the circuitry needed to interface with DS1 signals (metallic feeder).

IP Addresses
These are distributed according to the worldwide or local configuration. The IP address is used in ISO layer 3. A LAN contains tables for making an assignment between MAC address and IP address.

L

Level 1 Applications
The minimum set of server applications that have to run together to provide the minimum functionality of the AnyMedia NB EM. These applications must exist before the Level 2 Application can be started. If this group is shut down the AEM-NB is shut down.

Level 2 Applications
Server applications that can be started up and shut down individually without affecting the functioning of other applications.

Line Test
Also called drop test. This checks for open circuits, short circuits, leakages to ground, foreign voltages, or other faults on the subscriber line that connects an AP port circuit to the CPE. The results are used to detect broken or bad quality wires even before the customer realizes a lack of quality.

LL/PLL Permanent Leased Lines
A service in which resources are used permanently for the transmission of data between two points. The switch is not responsible for setting up this service.

Locale
This is a geographic or political region that shares the same language and customs. In this document, a locale is also used to refer to the definition of the subset of a user's information technology environment that depends on language and cultural conventions.

Local Digital Switch (LDS)
This is a switching machine that terminates a TR-303 VRT. An example of an LDS is the Lucent 5ESS® switch.

Localization
This is the process of adapting a program for use in a specific locale.

LOG File
This is the file used for listing all actions that have occurred in a system. This information is generated and recorded concurrently and sequentially as transactions and events are processed in the system.

Logical DS0
The descriptor used in this document to refer to parameters affecting a DS0 (64-kbps) service or facility (TR-303 logical line DS0).

Logical DS1
The descriptor used in this document to refer to parameters affecting a DS1 (1.544-Mbps) service or facility (TR-303 logical feeder DS1).

Logical Feeder DS1 Numbers
These are the identifiers (1 to 28, for the TR-303 VRT) of the VRT feeder DS1s that are used by the real-time call processing software of the TR-303 Local Digital Switch (LDS) and in communicating with the VRT (over the TMC and/or EOC) about these feeder DS1s. The *AnyMedia* Access System provides only 20 physical feeder DS1 ports, so only a subset of the logical feeder DS1s can be in service.

Logical Line
This is a logical customer termination provided by the NE on either a TR-303/TR-08 VRT or an INA VB.

Logical Line Number (LLN)
This is the Access IDentifier (AID) used externally by the Element Manager to identify uniquely a VRT or INA Virtual Bank distribution-side logical drop.

M

MAC Address
This is a 6-byte hardware address, which identifies a unique participant worldwide in an Ethernet LAN. A MAC address is used in OSI layer 2.

Manual (normal) Switch
This refers to an Element Manager-initiated switch command that instructs the NE to perform a switch only if the protection unit (COMDAC and IO_DS1 circuit packs only) is in service and not faulty.

Migration
This refers to converting an NE from one software release to another by installing a different software release.

Module
An executable installed on a Host.

N

NE
AnyMedia Access System Network Element.

NEM
Network Element Management Subsystem.

Non-Volatile Data Storage (NVDS)
This refers to a capability of the AnyMedia Access System to store information in such a way as to survive indefinite periods of total power failure. The current values for all provisionable parameters are stored in the NVDS and hence are the parameter values that will be used on subsequent NE power-up.

Non-Volatile Program Storage (NVPS)
This keeps software program data. It resides in the COMDAC.

Normal Hour Load
The average load expected during the lifetime of the system.

O

Off-line Backups
These are backups performed automatically via any scheduling mechanisms, e.g. cron file.

On-line Backups
These are backups performed on user demand.

Operator
This refers to the *AnyMedia* Element Manager users.

Operator Mode
Testing initiated by staff from the EM using the NE-integrated capabilities. These tests can last some time, e.g., some measurements can be executed several times during a test session. The results in this mode usually are values (e.g. resistance, voltage, ...) and pass/fail decisions.

Overload
The load that causes the system to take drastic measures to ensure its integrity. During overload normal system function is disrupted and certain inputs (the ones causing the overload) are ignored. After clearing the overload situation, the system is left in asynchronous state for those inputs that generated the overload. Re-synchronization of this input retrieves synchronization.

OS
This is any operations system or Element Manager connected to the AnyMedia Access System Element Manager by some means of communication. For the AnyMedia Element Manager R1.0 the communication method is TCP/IP.

P

Password (PID)
This is always associated with a login UID. PID is a case-sensitive string containing 6 to 10 alphabetic, numeric and symbolic characters, where at least two characters are non-alphabetic and one is symbolic.

PCM Highway
The COMDAC pack is connected to each AP by the PCM highway, which consists of two 4.096-Mbps serial links, a 4.096-MHz clock and an 8-kHz sync signal. The AnyMedia Access System uses two PCM highways between the COMDAC, the IO_DS1s and each of the 16 AP slots.

Performance Management
For receiving, detecting, time stamping, analyzing, displaying and storing performance data.

Plain Old Telephone Service (POTS)
The conversional 2-wire analog subscriber service.

Platform
The hardware on which any AnyMedia EM module, server or client, is running.

Platform Alarm
This is an alarm related to the *AnyMedia* Element Manager application or its hardware/software platform. It usually refers to an Element Manager function or hardware/software platform object.

Port
This is circuitry built on an AP to provide an interface for subscribers. Note that more than one port can be housed on an AP, e.g. the LPZ100 provides 32 Z-ports.

Port Test
Also called circuit test. Verifies the ability of an AP port to provide proper transmission and signaling. It is the testing of the port hardware. The functions of the port test rather depend on the hardware function of the circuit (e.g. POTS, pulse metering, ISDN, ...). These tests are performed on each AP using part of their self-test capabilities.

R

RDT
This refers to the physical Remote Digital Terminal. A Remote Digital Terminal is a physical section of the NE that interfaces to the LDS at DS1 rate.

Response Time
The real elapsed time between detectable start of an action and its completion.

Restore
The process of copying backup files from removable media to a working directory, replacing the original files which could have been damaged.

ROC (Remote Operations Channel)
The bearer channel that conveys management information for a remote system (AnyMedia NE). The ROC is intended to be used when the system is installed at locations where no local Ethernet LAN and no separate network (e.g., X.25) exists.

Router
A network layer device that forwards packets from one network to another based on network layer information (OSI layer 3). Data packets are only transferred through the router if the participant is connected to another port of the router. With a router, data traffic can be kept from certain parts of a LAN. A router is more powerful than a bridge, it reduces the traffic on a LAN more than a bridge, because the IP address is evaluated for traffic control.

S

Security Management
This restricts access based upon the establishment of log-in procedures and an associated set of passwords. Screen locks are used as well.

User access is based upon domain partitioning. Controls the access to the data and capabilities inherent within a fixed partition of the network, including unbundling.

Server
A network element that waits for requests from clients to perform specific tasks. This is the function performed by the *AnyMedia* Access System.

Server Application
This is a set of server processes that perform a certain function.

Server Host
This is the machine where the system server modules are installed.

Server Module
This is the module that provides a subset of the system services.

Service
This is a piece of functionality provided by a server module.

ServiceState (of an object or entity)
This represents the current availability status of an associated resource or service in the NE from the management point of view (e.g., memory administration, maintenance).

Session
This is the active communication link between a client (in the context of this document the client will be the AEM-NB) and a server (in the context of this document the server will be the AnyMedia Access System for Narrow Band).

Side Switching
This refers to the operation of deactivating the active core entity and activating the standby core entity (COMDAC and IO_DS1 circuit packs).

Software Download
The transport of the information required to upgrade/update a given NE's generic program.

SPLL Semi Permanent Leased Lines
A service in which resources are used permanently for the transmission of data between two points. The switch is responsible for setting up this service.

System
AnyMedia-EM software. It provides a set of services allowing an operator to manage the AnyMedia NE.

System Failure
Any problem that prevents the EM system from continuing to work.

T

T0
This is the descriptor used for the TL1 interface to refer to parameters concerning a DS0 (64 kbps) service or facility.

T1
This is the descriptor used for the TL1 interface to refer to parameters concerning a DS1 (1.544 Mbps) service or facility.

TAS (Terminal Access Server)
This adapts local area networks (LAN) to wide area networks (WAN). TASs have the ability to integrate remote network elements in a local network. TASs support different LAN protocols (e.g. Ethernet) and WAN protocols (e.g. PPP).

TCA (Threshold Crossing Alert)
A crossing of a parameter threshold that is generally considered to be a transient condition.

TELNET
This ia a remote terminal interface protocol which allows remote login capability into a system on a network from any other node on that network that is also running TELNET. TELNET is a TCP/IP application.

Test Access Path (TAP)
There are up to two TAPs, one consisting of two pairs (TAP-B) and the other of six pairs (TAP-A), both providing internal and external metallic test access to the circuits.

Test Session
This is the procedure including all necessary functions to test a subscriber. This includes the setup of the test path as well as the release of the test equipment. The test session runs in the NE.

Time
This represents a 24-hour clock function.

Timeslot Management Channel (TMC)
This is a duplicated DS0 data link that a TR-303 VRT and Local Digital Switch (LDS) use to exchange connection control information with each other as they set up and tear down DS0 paths through the system on a per-call basis.

TL1 (Transaction Language 1)
This is a bellcore standard message language. It is the primary means of operating and maintaining the V5DLC system. A TL1 message session supports bi-directional message transmission and when a TL1 link is established, the system can initiate autonomous messages to monitor alarms and changes in system status.

TR303 VRT (TR303 Virtual Remote Terminal)
This refers to the logical portion of the NE that supports a single TR303 interface acting as a TR303 RDT. Only one TR303 VRT can be supported in NE R1.2.

U

Upgrade
Is a type of migration where the software release is changed from an earlier release to a later release.

Upload
The process of moving information from a client to a server at the request of a client according to client/server paradigm. Intended applications of this capability are software updates and restoring databases.

User
The operator who will use the EM to provision, maintain and monitor the AnyMedia Access System.

User Identifier (UID)
This is a unique user login identifier. This string is required and cannot be null. Grouping of UID string values for this command is not allowed. The valid UID value is a 3 to 10 case-sensitive alphanumeric character string.

User Module
A module that provides an interface to the users or to other external systems to the AnyMedia EM functionality.

V

VB
Virtual Bank. This is the entity that groups a feeder and various drops for permanent leased line services in a similar way to the VRTs for switched traffic.

W

Workload or Load
A mix of actions and their frequencies from all possible input points that need processing in some way in the system.

Z

Z-port
A Z-port is circuitry built on a POTS AP to provide a Z interface for analog subscribers. Note that more than one Z-port is housed on an *AnyMedia* POTS AP, e.g. the LPZ100 provides 32 Z-ports.

Z-port (for transmission only)
This is a Z-interface normally used for services other than telephony (e.g. data transmission). This type of Z-interface does not support DC feeding and does not support out-band signaling. This interface can support Analog Leased Line (ALL) service.

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