

ACE-2002



Multiservice Access Concentrator/ ATM Network Termination Unit



FEATURES

- Multiservice/ATM network demarcation device or enterprise access concentrator
- Offers converged WAN services in a fully ATM-featured product
- Four plug-in slots, fully modular
- Seamless migration of traditional services (LAN, Frame Relay data and voice) to ATM
- Provides a service platform for router, PBX, LAN, video codec and other corporate device connections
- Offers advanced bandwidth and traffic management capabilities to ensure high utilization of the ATM links while preserving QoS
- Implements ITU-T I.610 OAM standard to provide end-to-end service control
- Supports all ATM service categories: CBR, VBR (rt and nrt), UBR, UBR⁺ and ABR
- High resilience due to ATM links protection and dual hot-swappable power supplies
- Managed either inband (ATM) or out-of-band (Ethernet)
- Managed by RADview-HPOV or other network management applications
- Features a wide variety of ATM UNI modules, including ATM-25, E1/T1, E3/T3, IMA-4E1/T1 STM-1/OC-3 and STM-4/OC-12 modules
- Offers a wide range of non-ATM modules, including LAN (10/100BaseT), HDLC, Frame Relay and CES (E1/T1, 4xE1/T1, E3/T3)
- Compact, 1U high; suitable for mounting in 19-inch racks

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DESCRIPTION

- ACE-2002 is a multiservice access concentrator that can be used as a carrier-owned demarcation device or as a corporate concentrator connected to the public ATM network.
- As a demarcation device, ACE-2002 enables carriers and service providers to define the boundary between their ATM public services and the customer private network. A clear demarcation point at the customer premises increases service reliability, improves network efficiency and ensures end-to-end QoS support.
- ACE-2002 can be used as a demarcation device for native ATM or for legacy services, such as voice, LAN, Frame Relay or HDLC.
- ACE-2002 enables the extension of ATM network facilities up to the customer premises. These facilities include: advanced traffic management (shaping, policing) and full OAM flow support. In addition, the wide range of ATM modules further enhance the flexibility of service offerings.
- When used as an interworking device, ACE-2002 enables smooth migration of legacy equipment, such as PBXs and routers, to operate over ATM networks. Using multi-port modules and up to three user slots, ACE-2002 can be used as a concentrator for medium to large corporations. The unit enables different types of corporate traffic to pass over public networks in the most efficient way.

APPLICATIONS

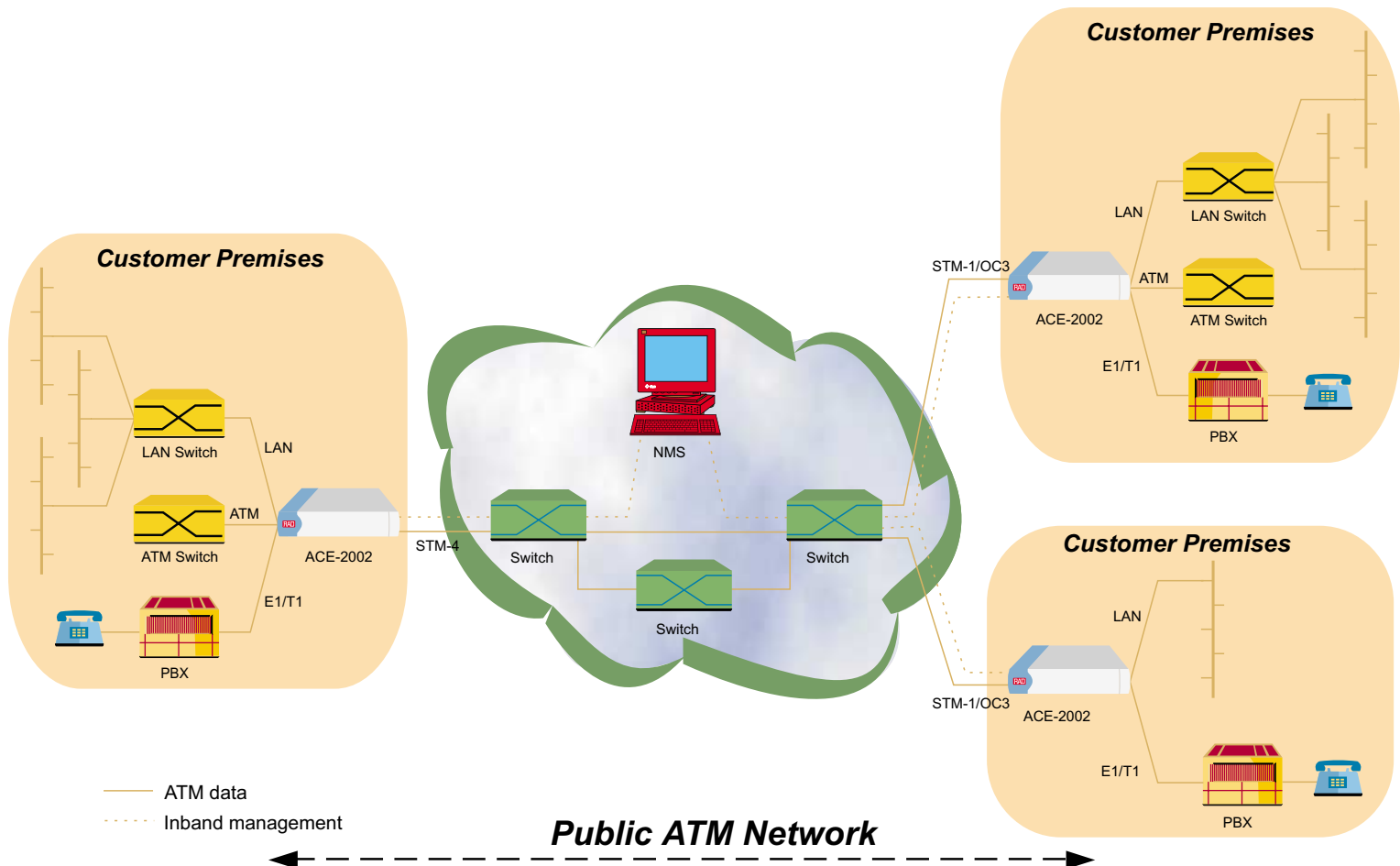


Figure 1. ACE-2002 as a Multiservice Access Concentrator



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ATM CAPABILITIES

- ACE-2002 supports both NNI and UNI cell headers with full bit range of VPI/VCI fields. ACE-2002 can support up to 1024 connections, VPC and/or VCC. This capability enables using ACE-2002 as a concentrator for large corporate networks or as a junction between two public networks.
- To increase versatility in QoS definition, ACE-2002 includes VP tunneling. This enables bundling multiple VCCs into a single VPC, while maintaining all the VCC QoS characteristics and OAM (Operation, Administration and Maintenance) capabilities at F4 and F5 layers.
- ACE-2002 supports up to 30 VP tunnels. Each tunnel is shaped as a CBR connection. It can be defined with end-to-end OAM flow and act as a regular VP in the public network.
- ACE-2002 supports Call Admission Control (CAC), which prevents network congestion, by checking the network resources when a request to open a new connection is received. If the network resources are insufficient, the request for a new connection is rejected.

TRAFFIC MANAGEMENT

- ACE-2002 can operate in the following modes:
 - Monitoring: The unit monitors and gathers statistical information on the violations of the traffic contract.
 - Policing: The unit compares the user traffic with the Service Level Agreement (SLA) parameters. In case the user traffic exceeds the SLA parameters, violating cells can be tagged or discarded.
 - Shaping: Both user and network operator benefit from shaping bursty traffic. For the user, more traffic can pass through the link at no additional cost. For the operator, shaping enables better statistical efficiency while keeping the same backbone equipment and QoS.
- In addition, ACE-2002 supports a number of layers of traffic scheduling. The layers are set per VC, per VP, per VP tunnel and per user interface.

ENHANCED RELIABILITY

- ACE-2002 can optionally provide two redundant network interface modules with physical link protection. Switch over between the modules is based on G.783 Annex A and Annex B.
- All ACE-2002 modules can be hot swapped. In case of hot swapping the same module type, all module configurations are saved and service is easily and quickly resumed.
- ACE-2002 can optionally be ordered with two redundant power supplies.

OAM

- The OAM functionality, intrinsic to the ATM technology, provides end-to-end manageability, allows fault localization and helps reduce operational costs. ACE-2002 supports segment and end-to-end OAM functionality complying with I.610. OAM functionality is provided on both the SONET/SDH (F1 and F3) and the ATM (F4 and F5) levels and includes:
 - AIS/RDI – System indicators for faulty conditions in the network. In case these indicators are detected in the user or network modules, ACE-2002 alerts the network management system.
 - Continuity Check (CC) – Used to check service availability. ACE-2002 sends a CC cell periodically over a predefined VP or VC and verifies that the VP or VC is intact.
 - Loopback – Using the loopback option, ACE-2002 can measure minimum, maximum and average delay and delay variation. The loopback function can also be used for fault isolation. The loopback cells can be sent with source and destination address and may be looped at any network element that was pre-assigned with a loopback point address.
 - Performance Monitoring (PM) – The OAM PM mechanism provides values for multiple parameters of the ATM service characteristics such as cell loss, cell error rate severely errored seconds and more.

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SLA AND STATISTICS COLLECTION

- To protect the public network from over-subscription and to maximize available network resources, it is beneficial for both user and service provider to agree upon a Service Level Agreement (SLA) contract. To ensure both sides honor the contract, ACE-2002 collects information on the various parameters agreed in the SLA. It also processes the data in real time and converts it into statistical information. All detected events are logged and time stamped. The information is collected by management systems in the network. It can be used later for billing accounts.

INTERWORKING

- To send long frames (mainly IP traffic) over ATM networks efficiently, ACE-2002 supports Early Packet Discard (EPD) and Partial Packet Discard (PPD) mechanisms. If cells are lost or discarded, and are part of a long frame, ACE-2002 can drop the rest of the cells that belong to the same frame. This prevents overload of the network resources by non-valid cells.

MANAGEMENT

- ACE-2002 can be managed either locally or remotely using different ports and applications:
 - ACE-2002 can be managed locally, by connecting an ASCII terminal to the RS-232 port on the front panel. The same port can be used to connect a dial-up modem so ACE-2002 can be remotely managed. ACE-2002 supports PPP protocol for SNMP management over RS-232.
 - ACE-2002 can be managed locally via a dedicated Ethernet port, located on the front panel.
 - A management workstation located anywhere in the ATM public network can be connected to a remote customer device and perform configuration, monitoring and diagnostics using a dedicated VC.
 - ACE-2002 can be managed by and report to up to 8 different managers simultaneously. This enables viewing the network status from different locations.

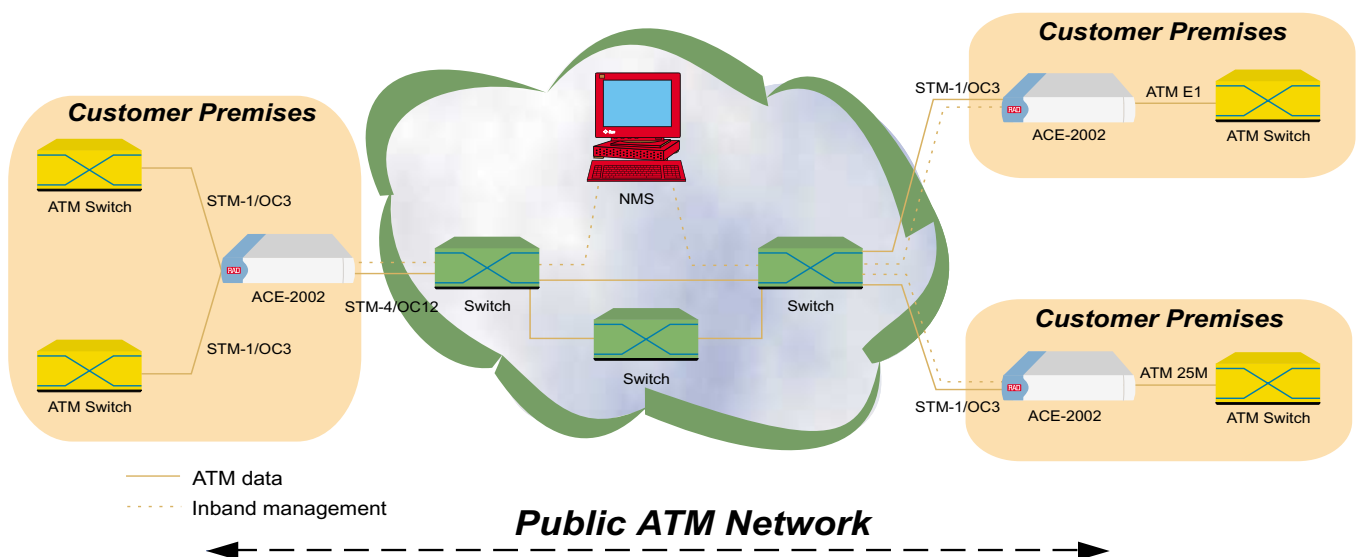


Figure 2. ATM NTU Application

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- ACE-2002 supports plug & play management which allows installation of the device with no on-site configuration required.
- The RADview-HPOV network management application provides the capability to monitor, configure, fault isolate and present network statistics using a graphical, user-friendly display. This UNIX-based application alerts in real time on service availability and faulty network conditions. The real time clock of the management application is synchronized with all the managed units. This enables determining the real time of events and provides the ability to sort events chronologically. Also, the statistical collection of events can be synchronized so that the 15-minute intervals of statistical information can be sorted in a realistic sequence. The system events and the statistical information are registered in a log file.

The RADview application can store a complete pre-defined configuration of ACE-2002 to shorten and simplify its field installation. After ACE-2002 is installed, it is possible to remotely download the complete configuration from anywhere in the network.

SPECIFICATIONS

- **ATM Connections**
1024 connections, 8/12 VPi bits, 16 VCI bits
- **Rate Conversion Buffer**
Buffer size of 64,000 cells in each direction, per VC weighted fair queues
- **Standards**
 - **ATM Forum**
UNI 4.0, circuit emulation service 2.0 (at-vtoa-0078), TM 4.0, IMA 1.0 & 1.1
 - **ITU-T**
I.610, I.371, I.372, I.432, I.363.1 G.703, G.704, G.706, G.732, G.823, G.957, ANSI T1.403, AT&T TR-62411, IETF RFC 1483
 - **Frame Relay Forum**
FRF.5, FRF.8
- **Control Interfaces**
 - **RS-232/V.24 (DTE)**
Baud rate: 9600, 19,200, 38,400, 57,600, 115,200 bps
Connector: DB-9 DTE
 - **Ethernet Port RJ-45**
Half-duplex mode
- **Power**
75W, 100–230 VAC, 47–63 Hz or -41 VDC to -72 VDC
Supports hot swappable power supply redundancy
- **Physical**
Height: 4.4 cm / 1.70 in
Width: 43.2 cm / 17.00 in
Depth: 35.0 cm / 13.80 in
Weight: 7.0 kg / 15.50 lb
- **Environment**
Temperature:
Operating 0–50°C/32–122°F
Storage -20–70°C/-4–158°F
Humidity: up to 90%, non-condensing

ORDERING

ACE-2002/#/@/&
ATM Network Termination Unit

Specify power supply type
AC for 100–250 VAC
48 for -48 VDC

@ Specify **R** for redundant power supply (same as the first)

& Specify **SPR** for traffic shaping option

RM-11

Hardware for mounting units in a 19-inch rack

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