

# ACE-202

Dedicated Multiservice Access Concentrator



Extending the reach  
of LAN, IP and  
voice/TDM services  
over ATM networks

**Ace**

- Creates a clear ATM network demarcation point at the customer premises
- Guarantees Service Level Agreement (SLA) performance and provides extensive statistic reports
- Differentiates between services by mapping Layer 2 VLAN and Layer 3 Class of Service to ATM Quality of Service (QoS)
- Operation And Maintenance (OAM) for QoS assurance and fault localization (I.610 compliant)
- Advanced traffic management including shaping and policing

ACE-202 is a Customer Premises Equipment (CPE), used as a multiservice access device or as an ATM network termination unit.

As a CPE, ACE-202 defines the boundary between the ATM public services and the customer's private network. A clear demarcation point at the customer premises increases service reliability, improves network efficiency and ensures end-to-end QoS support for carriers and service providers.

ACE-202 can be used as a CPE for native ATM or legacy services, such as TDM (CES), LAN (bridge/router) and HDLC over ATM.

ACE-202 extends ATM network facilities up to the customer premises. These facilities include advanced traffic management (spacing, policing and port pacing) and I.610 OAM flow support. In addition, the wide range of pluggable ATM network interfaces further enhances the flexibility of service possibilities.

When used as an interworking device, ACE-202 enables smooth connection of any CPE, such as PBXs and routers, to operate over ATM networks.

**RAD**

data communications  
The Access Company

# ACE-202

## Dedicated Multiservice Access Concentrator

ACE-202 can be used as a concentrator for medium to large corporations. The unit allows different types of corporate traffic to pass over public ATM networks in the most efficient way.

### ATM CAPABILITIES

ACE-202 supports both UNI and NNI cell headers with full bit range of VPI/VCI fields. With up to 256 supported VPC and/or VCC connections, ACE-202 can be used as a concentrator for large corporate networks.

To increase QoS versatility, ACE-202 performs VP tunneling. This enables bundling multiple VCCs into a single VPC, while maintaining all the VCC QoS characteristics and OAM capabilities at the F4 and F5 layers.

ACE-202 supports up to 30 VP tunnels. Each tunnel is shaped as a CBR connection, which can be defined with end-to-end OAM flow and act as a regular VP in the public network.

The Call Admission Control (CAC) feature prevents network congestion, by checking the network resources when a request to open a new connection is received. If network resources are insufficient, the request for a new connection is rejected.

### TRAFFIC MANAGEMENT

Traffic management is performed on several levels: VC, VP, VP tunnel or per user interface.

The following traffic management options are supported:

- Monitoring – the unit monitors and gathers statistical information on the violations of the traffic contract
- Policing – the unit compares the user traffic with the SLA parameters. In case the user traffic exceeds the SLA parameters, violating cells are tagged or discarded
- Spacing – both user and network operator benefit from spacing bursty traffic. For the user, more traffic can pass through the link at no additional cost. For the operator, spacing enables better statistical efficiency while keeping the same backbone equipment and QoS.

### SERVICE CLASS DIFFRENTIATION

To allow better utilization of bandwidth and backbone resources, ACE-202 differentiates ATM traffic according to predefined CBR, VBR (RT and NRT), UBR, UBR+ and ABR service classes.

### INTERFACES

ACE-202 is equipped with two plug-in network or user interface modules, and two optional built-in user interfaces.

A variety of plug-in ATM network interface modules can be installed in the unit:

- STM-1/OC-3c (fiber optic)
- 4×E1/T1 IMA (Inverse Multiplexing over ATM)
- E1/T1
- E3/T3
- ATM 25 Mbps.

The user interfaces (plug-in or fixed) may be either of the following:

- 10/100BaseT Ethernet
- E1/T1 CES
- E3/T3 CES
- HDLC
- 4×E1/T1 IMA.

*Note: Slot 1 and Slot 2 of ACE-202 require plug-in modules. Slot 1 is intended for a network interface only, and Slot 2 for either a network or a user interface. Slot 3 and Slot 4 are optional fixed user interfaces (see the back panel on page 4).*

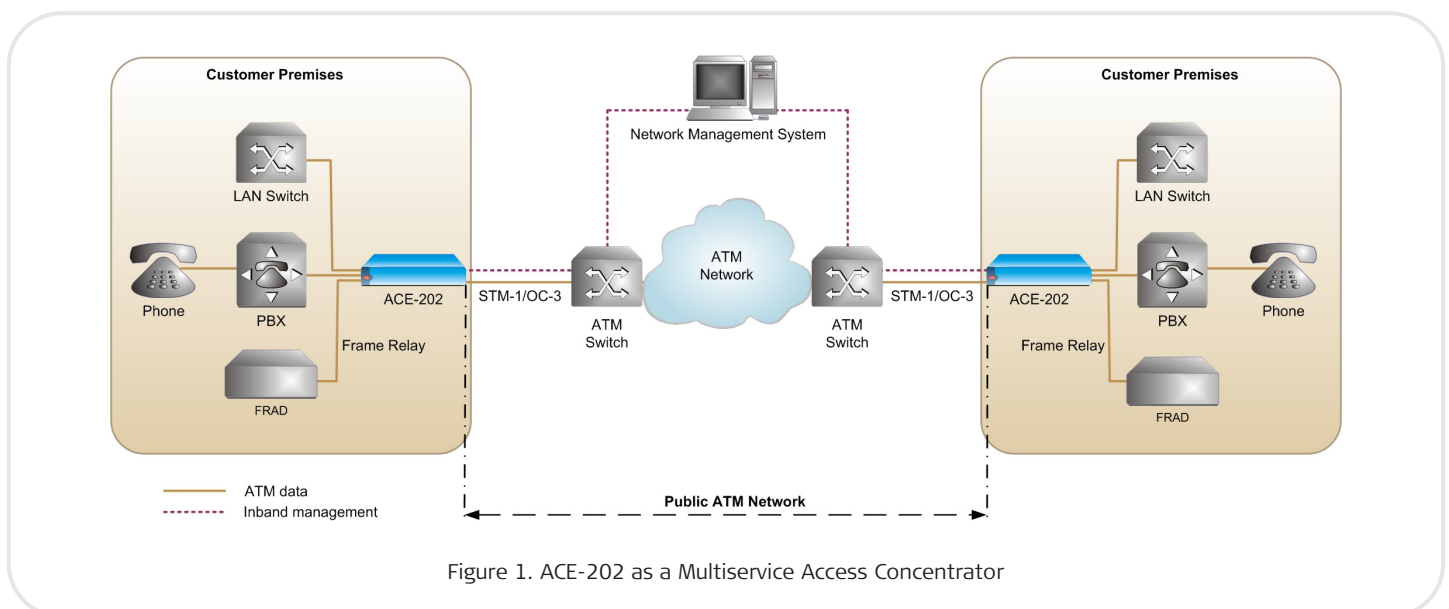


Figure 1. ACE-202 as a Multiservice Access Concentrator

## MANAGEMENT

ACE-202 can be managed either locally or remotely using different ports and applications. The unit's RS-232 port can be used for ASCII-based terminal control, SNMP management using PPP, or remote dial-up modem control.

A network management station located anywhere on the ATM public network can be connected to a remote customer device and perform configuration, monitoring and diagnostics using a dedicated inband VC established on the ACE-202 ATM network interface.

The RADview-HPOV network management application monitors, configures and presents network statistics using a graphical, user-friendly interface. This Unix-based application alerts on service availability and faulty network conditions in real-time, and enables chronological sorting of events.

To shorten and simplify its field installation, the RADview application can download and store a complete pre-defined configuration for ACE-202.

In addition to RADview, ACE-202 supports the Alcatel 5620 SNMP-based network management system. The ACE-202 Model Descriptor software component fully enables device configuration and monitoring via the Alcatel interface.

## STATISTICS COLLECTION

ACE-202 collects statistics on the physical layer, ATM layer and ATM adaptation layer (AAL5). The statistics information is sent to the network management station and can be used for SLA reports and diagnostics.

## OAM AND DIAGNOSTICS

OAM segment and end-to-end functionality is supported according to ITU-T I.610 and provided on the F4 and F5 ATM levels. This includes:

- AIS/RDI – system indicators for faulty conditions in the network. If these indicators are detected in the user or network modules, ACE-202 alerts the network management system.
- Continuity Check (CC) – used to check service availability. ACE-202 sends a CC cell periodically over a predefined VP or VC and verify that the VP or VC is intact.
- Loopback – allows measuring the minimum, maximum and average delay variation, and can also be used for fault isolation. Loopback cells can be sent with source and destination addresses and may be looped back to any network element pre-assigned with a loopback point address.

- Performance Monitoring (PM) – provides values for multiple parameters of the ATM service characteristics, such as cell loss, cell error rate, severely errored seconds and more.

Product Comparison Table

|                                | ACE-202   | ACE-2002   | ACE-2002E    |
|--------------------------------|-----------|------------|--------------|
| Supported VCCs                 | Up to 256 | Up to 1024 | Up to 1024   |
| F4/F5 OAM (ITU-T I.610)        | ✓         | ✓          | ✓            |
| Plug-in interface modules      | 2         | 4          | 4            |
| Optional fixed user interfaces | 2         | N/A        | N/A          |
| Optional plug-in IMA UNI ports | Up to 8   | Up to 16   | Up to 24     |
| Optional plug-in CES ports     | Up to 8   | Up to 16   | Up to 24     |
| Dual fiber optic Fast Ethernet | N/A       | N/A        | ✓            |
| Redundant power supply         | ✓         | ✓          | ✓            |
| Hot-swappable power supply     | N/A       | ✓          | ✓            |
| Physical width                 | 17"       | 17"        | 17.3"        |
| Physical height                | 1.7" (1U) | 1.7" (1U)  | 2.6" (1.5 U) |



# ACE-202

## Dedicated Multiservice Access Concentrator

### Specifications

#### INTERFACE MODULES

- Up to two modular interfaces in slot 1 and slot 2 (see *Table 1* and *Table 2* in the ACE-2002/2002E/202 Modules data sheet)
- Up to two built-in interfaces in slots 3 and 4 where slot 3 is intended for LAN modules only and slot 4 is intended for LAN, LAN+CES or IMA/UNI modules.

#### ATM CONNECTIONS

Up to 256 connections, 8/12 VPI bits, 16 VCI bits

#### RATE CONVERSION BUFFER

Buffer size is 64,000 cells in each direction

#### COMPLIANCE

ATM Forum: UNI 3.1, Circuit Emulation Service 2.0 (at-vtoa-0078), TM 4.0, IMA 1.0 & 1.1

ITU-T: I.363.1, I.371, I.372, I.432, I.610, G.703, G.704, G.706, G.732, G.823, G.957

ANSI: ANSI T1.403, AT&T TR-62411

IETF: RFC 1483

#### TERMINAL CONTROL

##### Type

RS-232/V.24 (DTE)

##### Data Rate

9.6, 19.2, 38.4, 57.6 or 115.2 kbps

##### Connector

9-pin, D-Type, male

#### GENERAL

##### Power

AC: 100 to 250 VAC, 47–63 Hz

DC: -41 to -60 VDC (-48 VDC nominal)

*Note:* ACE-202 supports redundant power supplies, per customer ordering.

##### Power Consumption

60W max

##### Physical

Height: 4.4 cm (1.7 in)

Width: 43.2 cm (17.0 in)

Depth: 35.0 cm (13.8 in)

Weight: 5.3 kg (11.7 lb)

##### Environment

Temperature:

Operating: 0°–50°C (32°–122°F)

Storage: -20°–70°C (-4°–158°F)

Humidity: Up to 90%, non-condensing

## ACE-202

## Dedicated Multiservice Access Concentrator

## Ordering

ACE-202/#/@/%

## Legend

- # Power supply type:
- |    |             |
|----|-------------|
| AC | 100–250 VAC |
| DC | -48 VDC     |
- @ Number of power supplies (leave empty for single power supply):
- |   |                              |
|---|------------------------------|
| R | Two redundant power supplies |
|---|------------------------------|
- % Optional fixed interface for slot 3 and a slot 4:
- |            |   |
|------------|---|
| NULL       | No fixed interface  |
| LAN        | Ethernet/Fast Ethernet port (RJ-45)                                     |
| LAN/CES/E1 | One ETH/Fast Ethernet port (RJ-45) and one balanced E1 CES port (RJ-45) |
| LAN/CES/T1 | One ETH/Fast Ethernet port (RJ-45) and one balanced T1 CES port (RJ-45) |
| LAN/LAN    | Two ETH/Fast Ethernet ports (RJ-45)                                     |
| IMA-UNI/E1 | Four E1 IMA/UNI ports (RJ-45)   |

**Note:** Two additional plug-in modules can be ordered separately. For more information, refer to the relevant module data sheets.

## SUPPLIED ACCESSORIES

AC power cord or a DC power connection kit (depending on the ordered power supply type)

## RM-34

Hardware kit for mounting one ACE-202 unit in a 19-inch rack

## OPTIONAL ACCESSORIES

## CBL-DB9F-DB9M-STR

Standard DB-9 to DB-9 control port cable

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