

Low Cost Channel Bank with Routing & Voice Capability



Figure 1: Xedge 1000 DS1/E1 Integrated Access Device

INTRODUCTION

The Xedge 1000 is a cost-effective, compact integrated access device (IAD) used to deliver voice and data services over DS1/E1 lines. The modular Xedge 1000 simplifies network provisioning, reduces the network operating costs, and gives network managers a better platform for delivering analog-to-digital voice services.

An integrated design allows Xedge 1000 to deliver services that previously required multiple products from different manufacturers. Network managers and operators benefit by using Xedge 1000 for a variety of standard voice and data interfaces, as well as support of packet data across a structured T1 or E1 facility. Xedge 1000 integrates with GDC's Xedge family of multi-service switches and GDC's ProSphere network management schema.

Figure 1 shows the compact Xedge 1000 DS1/E1 Integrated Access Device in its 1RU packaging.

Modular Hot-swappable Plug-ins

Xedge 1000 supports the following access interfaces via multi-service modules:

- 2W/4W-type E&M channel module (EM24/TO)
- OCU/DP (subrate, 56K, 64K, SW56 data rates)
- ISDN module (LUNT/LULT)
- DSU/DP (sync & async modes)
- N x 56/64K dataport
- Drop-and-Insert T1/E1 module
- 8-port IP Router Module
- General subscriber line modules: (FXO/DPT, FXS/DPO/PLARD)

FEATURES & BENEFITS

- Versatile low-cost 24-channel T1 (or 30-channel E1) multiplexing with routing and multi-service options
- Ideal for remote-branch analog-to-digital voice
- Easy-to-configure Windows-based manager
- Compatible with Xedge multi-service switches
- Packet over T1 and E1 WAN Interface
- Secure configuration and management locally via VT-100 craft port, or remotely via standards-based SNMP
- Integrates with GDC's ProSphere Network Management System
- Supports a variety of multi-service channel modules.

Router Capability

Xedge 1000 supports diverse services, from POTs voice to legacy V.35 data to ISDN traffic. By adding an inexpensive 8-port Router Module, the device will support IP packets over T1/E1 based facilities. This service preserves legacy voice data infrastructures while transporting Ethernet/IP LAN traffic over existing wideband facilities.

Digital Voice Capability

When Xedge 1000 is deployed with GDC's Xedge multi-service switches, cost-effective and reliable transport of digital voice across wide-area networks is realized. In this application, an Xedge6000 multi-service switch provides the switch fabric, IP Service Gateway Module (ISG2) and the Voice Services Module (VSM) which enables packet voice in conjunction with traditional telephony devices. This application gives network managers a very cost effective migration to packet voice without sacrificing quality, reliability, and valuable existing infrastructure.

Xedge 1000 with Routing Module

The Xedge 1000 Router module (1 or 8 Fast Ethernet ports) enables time slot packet bundles to run over the T1/E1 facilities offering data rates between 56 K and 1.536 megabits per second. Ideal for converging voice, video, and data in converged hybrid networks, the Router module provides an economical gateway between a legacy TDM to packet network.

Xedge 1000 with the Router Module supports the following features:

- Up to eight Ethernet ports with 10/100 BaseT auto sensing
- RS-232 DCE console port for setup and management
- CLI Management via console port, Telnet and web browser
- SNMP V1/V2c management (maximum 10 SNMP managers and trap recipients at any one time when using the router Ethernet port)
- RIP V1 and V2
- NAT and NAPT
- DHCP Server/Relay Agent/Client mode
- DNS Client/Relay mode
- Frame Relay WAN layer 2 protocol
- PAP and CHAP
- VPN with IPSEC, PPTP, and L2TP
- Firmware updates via web-based GUI interface

Broadband Access & Transport

Xedge 1000 can be deployed as a standalone in branch offices or remote locations, or as part of an Xedge multi-service switching platform in converged networks.

Xedge 1000 with Xedge VSM

Connected to an Xedge6000 switch, the T1 or E1 WAN interface of the Xedge 1000 communicates with the Voice Service Module (VSM) to provide a very efficient and reliable multi-service gateway for voice, video, and data. Using a combination of TDM, IP, and ATM in the overall solution, Xedge 1000 provides wide area network guarantee priority delivery of real time voice and video and efficient utilization across the wide area network.

The VSM maps DSO packet, voice, and video bundles sent from the Xedge 1000 IAD for switching any to any traffic across a wide area network with Quality of Service (QoS) guarantees. VSM also assures efficient signaling and communication with PBX's, routers, and other wide area network and premised based equipment. VSM adapts remote office traffic via AAL-1, AAL2, and AAL5 as follows:

- AAL2 employs bandwidth saving techniques for voice traffic, such as silence suppression and voice compression, reducing the cost of leased lines.
- AAL5 efficiently adapts IP traffic with the appropriate class of service tagged for IP packets handling priority.
- AAL1 can be used for circuit emulation as required.

Xedge 1000 with Xedge ISG2

Connected to an Xedge6000 switch, the T1 or E1 WAN interface of the Xedge 1000 communicates with the Xedge ISG2 (IP Service Gateway Module) to support aggregation and distribution of IP Packets to router resources (Fig. 2).

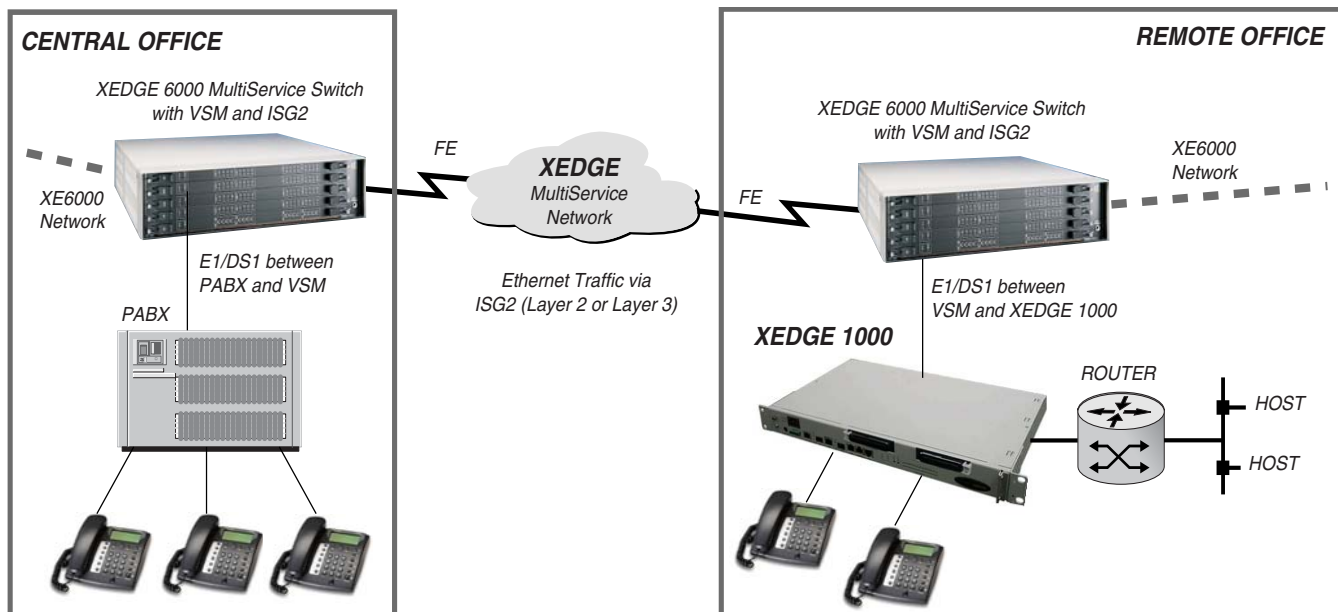


Figure 2: Xedge 1000 Converged Services with Xedge6000 MultiService Switches

Xedge 1000 Management

The Xedge 1000 is securely configured and monitored by the Xedge 1000 management system (NMS) via a local craft port or a remote interface. The craft port operates over a VT100/RS232 connection. The Xedge 1000 NMS provides a powerful set of tools for configuring and monitoring the Xedge 1000 from remote locations. The NMS allows the operator to supervise status of the network, configure network topology and control system operation.

The Xedge 1000 NMS software operates in a Windows-based environment. By using the graphical user interface, you can supervise, monitor and setup the Xedge 1000 system from distributed locations. The features of the Xedge 1000 NMS are:

- Powerful and friendly GUI and ease-of-use
- Remote configuration & shelf management
- Remote alarm monitoring
- SNMP management.

Xedge MultiService Management

In an Xedge MultiService Network with Xedge 1000, all of the Xedge multi-service modules are securely configured and monitored via SNMP, the local VT-100 craft interface or GDC's ProSphere NMS, described below.

The SNMP interface provides password-protected access to the Xedge multi-service modules, such as the ISG2 and the VSM, via a craft or Telnet connection. Menu-based SNMP utilizes both standard MIBs and GDC's proprietary MIBs that define the management data available from the managed Xedge modules and other co-located network elements installed in Xedge6000 or Xedge MSPx chassis.

ProSphere Network Management

The ProSphere Network Management System (NMS) is GDC's Java-based management software that allows multiple clients to access a ProSphere Server located on a remote PC or SUN workstation. ProSphere facilitates the configuration and monitoring of users, communications and Xedge multi-service switches via an intuitive graphical user interface. ProSphere can also discover Xedge 1000 devices communicating within the Xedge network and can monitor their status.

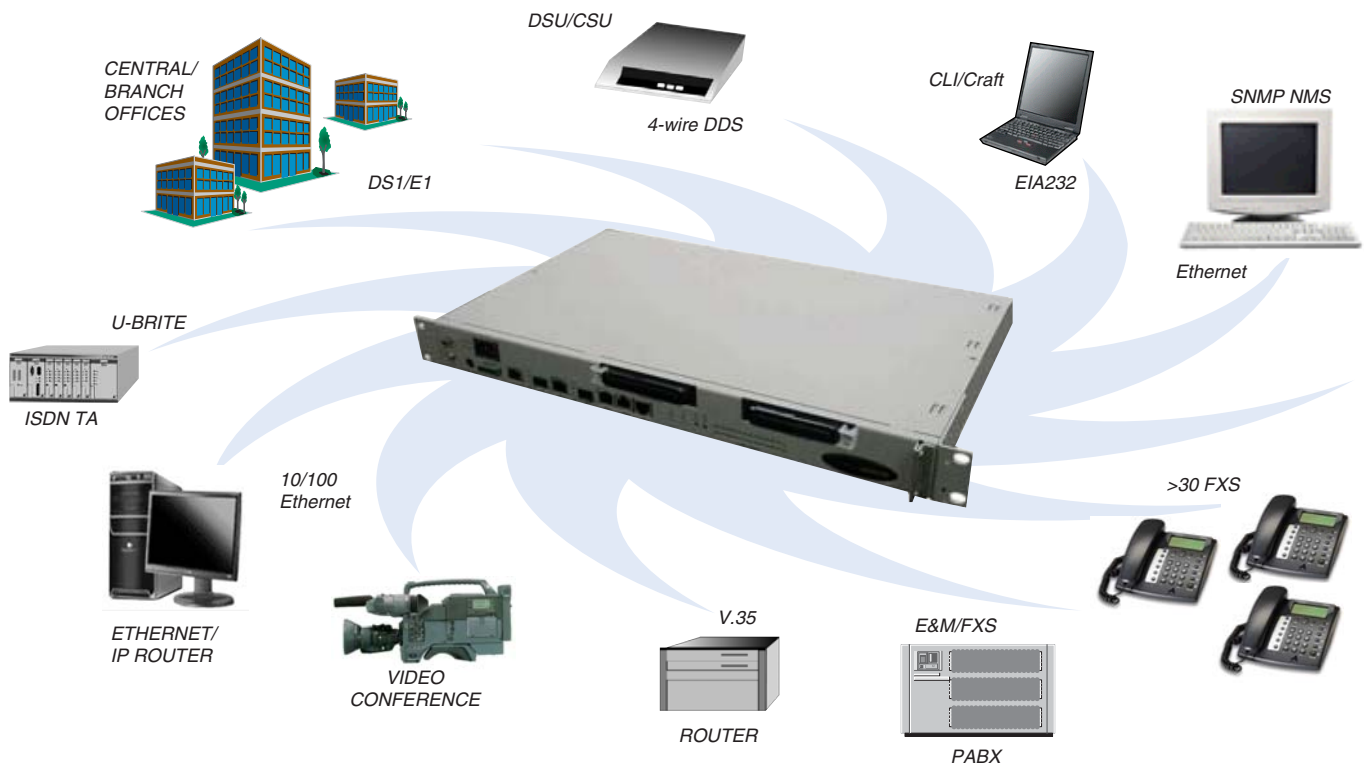


Figure 3: Xedge 1000 Access Interfaces

Physical Specifications

Xedge 1000 IAD Channel Bank Only

Single-slot Height: 44.5 mm (1.75 in.)

Width: 482.6 mm (19 in.)

Depth: 300 mm (12 in.)

Weight: 6 lbs.

Environmental Specifications

Non-Operating

Temperature: -40 to 70 degrees C (-40 to 158 degrees F)

Relative Humidity: Up to 95% non-condensing

Altitude: up to 12,191 m (40,000 ft)

Operating

Temperature: 0 to 50 degrees C (32 to 122 degrees F)

Relative Humidity: Up to 95% non-condensing

Altitude: -60 to 4,000 m (-197 to 13,123 ft)

Electrical Specifications

Power Input Voltage: -48 VDC +/- 20%

Compliance

Safety: UL1950 listed, CSA certified

Emissions: FCC part 15

Network Requirements: FCC part 68

Functional Specifications

Physical Interfaces

DS: 1.544 Mbps

E1: G.804/G.703, 2.048 Mbps

Status LEDs

LED indication for alarm and system status

Maintenance signal for OAM functionality

Automatic alarm and status report

Channel Units

2W/4W E&M (6/12 E&M per unit; Signaling I-V)

2W FXO (6/12 FXO per unit;

Loop/ground start, on-hook transmission for ANI)

2W FXS (6/12 FXS per unit; Independently configurable)

N x 56/64K Data

(N < 30; provisioned data in contiguous timeslots; < 6 circuits)

Multi-rate (sub-rate) Async/Sync unit

OCU-DP (Less than 12 circuits; SW56 & enhanced SW56)

Drop & Insert

Basic rate 2B+D ISDN

IP Router Module (1 or 8 Fast Ethernet Port(s))

Operation

Connector Type for DS1/E1: RJ-48

Framing Options for DS1: B8ZS, AMI

Framing options for E1: HDB3

Clock Synchronization: Internal, or External derived from DS1/E1

Management Interfaces

Xedge 1000 NMS Only

Configuration and Monitoring:

SNMP Manager, Telnet, or local craft port via ASCII terminal

Xedge MultiService Switch Applications

Discovery and Monitoring Only:

GDC ProSphere Network Management System

Xedge MultiService Switch Options

Xedge 6645 Switch Chassis (16 I/O slots, DC Power)

Xedge 6640 Switch Chassis (16 I/O slots, AC Power)

Xedge 6280 Switch Chassis (7 I/O slots, AC or DC Power)

Xedge 6160 Switch Chassis (4 I/O slots, AC or DC Power)

Xedge 6002 Switch Chassis (2 I/O slots, AC or DC Power)