

## Voice Service Module

### INTRODUCTION

The Xedge Voice Service Module (VSM) is a slot controller that provides standards-based Variable Bit Rate (VBR) Voice-Over-ATM interface in an Xedge switch network. It accepts up to four full ports of DS1 (96) or E1 voice (120) channels, and provides adaptation to ATM cell flows.

The VSM provides per-voice-circuit ADPCM or CS-ACELP compression, silence detection/suppression, echo cancellation, TLP attenuation, idle channel removal, and can interpret Channel Associated Signaling schemes.

Xedge VSM supports both AAL1 encoding, for backwards compatibility with Structured Circuit Emulation interfaces, and for interoperability with existing ATM products and networks, and AAL2 encoding for standards-based VBR Voice-Over-ATM services. The VSM provides an interface that offers future-proof, standards-based, VBR voice inter-networking across an ATM network.

This modular approach to Voice-Over-ATM within the VSM allows network designers to start with an entry level CBR AAL1 and VBR AAL2 solution. Value-added voice features, such as voice compression and silence detection/suppression, can be added as a simple upgrade when required.

### System Compatibility

The Xedge VSM plugs into a single slot of an Xedge AC- or DC-powered shelf: Xedge 6002 (2 slots), Xedge 6160 (4 slots), Xedge 6280 (7 slots) or the 16-slot Xedge 6640/6645 shelves.

The Xedge VSM is intended for use with any one of the following Enhanced Clocking LIMs:

- Xedge DS1-2CS LIM for T1 circuits.
- Xedge DS1-4CS LIM for T1 circuits.
- Xedge E1-2CS LIM for E1 circuits
- Xedge E1-4CS LIM for E1 circuits

### Diagnostics

Diagnostics are provided via status LEDs for all ports, diagnostic screens for all faults, and Local and Line Loop-backs. Management Interfaces include:

- Standard SNMP
- MIB management
- GDC's ProSphere Network Management System

### FEATURE HIGHLIGHTS

- Standards-based Variable Bit Rate Voice-Over-ATM interface.
- Supports 48, 60, 96 or 120 voice channels, or up to 124 data channels over up to four T1/E1 circuits.
- Supports up to 120 bundles per controller.
- Supports DS1-E1 companding
- Supports Idle channel removal
- Supports silence detection and suppression
- Supports Q.SIG signaling for dynamic call setup and teardown.
- Supports transport over ATM connections or ATM Pseudowires over Ethernet.
- Simultaneous AAL1 and AAL2 support.
- Support for Multi-level Precedence and Pre-emption (MLPP)
- Loop timing or network-provided timing according to ATM Forum recommendations.
- FAX/modem detection with automatic shift to 64K PCM or 32K ADPCM; FAX/modem detection bypass without CAS (idle code).
- Secure configuration and management via SNMP or MIB editor over Telnet/craft connection, or via ProSphere Network Management System.

### Compliance

- ATM Adaptation Layer 1 (AAL1) specifications in ITU-T I.363.X and ANSI T1.630.
- 64K PCM or 32K ADPCM voice compression (AAL1).
- Standards-based Variable Bit Rate (AAL2, per ITU-T I.363.2) and Constant Bit Rate (AAL1, per ITU-T I.363.1) circuit emulation for structured DS1 or E1 services on a per channel basis.
- Nx64K data (AAL1)
- 8K CS-ACELP voice compression (per ITU-T G.729a)
- TLP attenuation, CBR traffic shaping, cross-companding types, and echo cancellation (per ITU-T G.165 and G.168)


**VSM**

**FLT**  
**RUN**

**LINK 0**  
**RX**  
**UP**  
**TX**  
**ERR**

**LINK 1**  
**RX**  
**UP**  
**TX**  
**ERR**

**LINK 2**  
**RX**  
**UP**  
**TX**  
**ERR**

**LINK 3**  
**RX**  
**UP**  
**TX**  
**ERR**
