



Introducing the Cisco Voice Interworking Service Module (VISM)

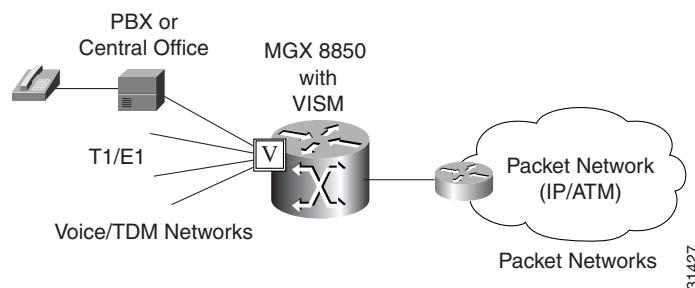
This Chapter provides a brief description of the main features and functions of VISM.

General Description

The Cisco Voice Interworking Service Module (VISM) Release 2.0 is a front card which is designed to operate with a compatible backcard on the Cisco MGX 8850 Wide Area Edge Switch platform.

A Cisco MGX 8850 Wide Area Edge Switch, when equipped with one or more VISM cards, has the capability of transporting digitized voice signals across a packet network while providing voice quality and reliability equal to the quality expected on the public telephone network. By transporting the voice traffic over ATM packet network, instead of traditional time division multiplexed (TDM) networks, considerable savings in network bandwidth requirements are achieved. Thus, the VISM/MGX 8850 combination provides an interface or voice gateway between conventional voice TDM networks and networks based upon packet switching technology.

Figure 1-1 MGX 8850 and VISM as a Network Gateway



VISM employs the concept of operating modes; a feature that permits it to be used in a variety of applications. In Release 2.0 there are two operating modes, namely, Voice over IP (VoIP) mode and AAL2 Trunking mode. These mode support three major applications as follows:

- **Switching**
Using VoIP mode, this application provides the emulation of many of the functions of a Tandem (Class 4) switch. In this application VISM functions as voice gateway (also referred to as a Media Gateway) to an IP network and performs call control in conjunction with a Call Agent. The Call

Agent (also referred to as a Media Gateway Controller or Cisco Virtual Switch Controller) initiates and controls the call control functions and VISM performs the transmission of the voice payload through a bearer circuit using VoIP and ATM AAL5 network protocols.

- **Multiservice Access with Call Control**
This application also uses VoIP mode. In this application the VISM/MGX 8850 combination is used to concentrate voice and data user services onto a single broadband circuit for transmission over the packet network again using VoIP and ATM AAL5 techniques. As with the Switching application, VISM can function with a Call Agent to perform Call Control. In this application, VISM can perform as a front-end to a Voice Gateway.
- **AAL2 Trunking**
This application uses AAL2 Trunking mode. In this application VISM/MGX 8850 combination is used to concentrate voice (and Fax/Modem) user services over a pre-provisioned AAL2 trunk. VISM merely passes (tunnels) bearer and signaling data across a packet network and plays no part in call setup and teardown.

Equipped with eight T1 or E1 ports, an array of Digital Signal Processors (DSPs), an HDLC framer, and a broadband interface to the packet network, VISM is ideally suited to processing high density digital voice circuits while providing compression, echo cancellation, dejittering, and packetization on the fly.

VISM architecture provides:

- Technology flexibility that allows the incorporation of new or improved technology as it becomes available
- Application flexibility such that it can be used in a range of situations providing interoperability with a wide variety of equipment types
- Modularity that allows equipment to be purchased and installed as it is needed in a step-by-step manner.

Features

Key features of VISM card set are:

- Provides 8 standard T1 or E1 interfaces with B8ZS, AMI & HDB3 line coding.
- Support for voice over ATM using AAL 2 cells (multiplexing only, no LLC/SNAP encapsulation).
- Voice over IP (VoIP) using AAL5 cells to RFC 1889.
- Support for both PCM a-law and u-law.
- Programmable 24, 32, 48, 64, 80, 96, 112, 128 ms taildelay near end echo cancellation.
- Voice compression to G.711, G.726-32K, G.729a, G.729ab standards.
- Nx64 clear channel (N = 1 only) support.
- Voice activity detection (VAD) and comfort noise generation (CNG) using variable threshold energy (Cisco proprietary).
- Support for call agent Simple Gateway Control Protocol (SGCP) version 1.0, SGCP 1.1+, and Media Gateway Control Protocol (MGCP) 0.1.
- Backhauling CAS signalling to Call Agent.
- Backhauling PRI signalling to a Call Agent (supports both user and network side of the LAPD protocol).
- Support for CCS signaling transport across an AAL5 trunk.

- Support for Fax and modem VoIP bearer transmissions.
- Support for dual (redundant) virtual circuits across the packet network
- Support for full continuity testing (COT). Supports origination and terminating loopback and transponder COT between VISM and the central office on the TDM side.
- Support for looptiming, payload and line loopbacks.
- 1:N cold redundancy using SRM-3T3 capabilities (bulk mode support for T1 lines only). Call do not persist during switchover.
- Courtesy downing of ongoing voice calls when the VISM is taken out of service for maintenance or other reasons.

Physical Characteristics

Physically a VISM card set is installed in a MGX 8850 Wide Area Edge Switch as a front card and a back card.

There are two types of front card: a VISM-8T1 card that supports up to 8 T1 lines carrying digitized voice and a VISM-8E1 card that supports up to 8 E1 lines carrying digitized voice.

Available T1 back cards are:

- AX-RJ48-8T1. This card supports 8 T1 lines using RJ48 connectors.
- AX-R-RJ48-8T1. This card is used with a T1 front card in redundant configurations.

Available E1 back cards are:

- AX-RJ48-8E1. This card supports 8 E1 lines using RJ48 connectors.
- AX-SMB-8E1. This card supports 8 E1 lines using SMB connectors.
- AX-R-RJ48-8E1. This card is used with a E1 front card in redundant configurations.
- AX-R-SMB-8E1. This card is used with a E1 front card in redundant configurations.

Acronyms

This section defines words, acronyms, and actions that are used in this manual and which may not be readily understood.

AAL	ATM Adaptation Layer
AIS	Alarm Indication Signal
BERT	Bit Error Rate Test
CA	Calling Agent
CAS	Channel Associated Signaling
CCS	Common Channel Signaling
CID	Channel Identifier
CLI	Command Line Interface
CU	Coding Unit
DSP	Digital Signal Processor
DSPM	Digital Signal Processing Module

DTMF	Dual Tone Multi Frequency
ECAN	Echo Cancellation
FDL	Facility Data Link
HDLC	High Level Data Link Control
IP	Internet Protocol
LM	Line Module
LOS	Loss Of Signal
MIPS	Million Instructions Per Second
MG	Media Gateway
MGC	Media Gateway Controller
MGCP	Media Gateway Control Protocol
OAM	Operation And Maintenance
PXM	Processor Switch Module
PCM	Pulse Code Modulation
PNNI	Private Network-to-Network Interface
PVC	Permanent Virtual Circuit
RAI	Remote Alarm Indication
RTP	Real-time Transport Protocol
SAR	Segmentation and Reassembly
SGCP	Simple Gateway Control Protocol
SRM	Service Redundancy Module
SS-7	Signaling System 7
SU	Signalling Unit
TSI	Time Slot Interchange
UDP	User Datagram Protocol
UFM	Universal Frame-Relay Module
UVM	Universal Voice Module
UXM	Universal Switch Module
VAD	Voice Activity Detection
VISM	VoIce Interworking Service Module
VoIP	Voice over IP
VSC	Virtual Switch Controller
xGCP	Generic acronym for a Gateway Control Protocol