CORNET
SWITCHING SYSTEMS

IPGate®-HD32

Legacy & Media Conversion over IP Transport

The IPGate-HD32 offers advanced features that reliably transport legacy Time Division Multiplexing (TDM) and other circuit-based applications across converged IP networks. Using circuit emulation services over packet (CESoP) standards, the IPGate-HD32 supports a wide variety of legacy analog and digital interfaces at configurable data rates ranging from 50 bps to 15.536 Mbps. It lets customers easily and reliably take advantage of converged IP networks to connect legacy circuits.

Specific to the IPGate family is a Gigabit Ethernet backbone and distributed architecture which makes the IPGate-HD32 a futureproof investment with a virtually unlimited variety of supported interfaces.

The IPGate-HD32 offers high density female connectors which enable it to pack more ports into a compact chassis.

Features

Virtual Matrix

The IPGate family provides many more interconnect possibilities than traditional "tunneling" units which are basically an IP pipeline connection between two devices. The distributed architecture in the IPGate-HD32 unit allows any-to-any connectivity between ports and devices enabling a user to create a "Virtual Matrix".

User Interface Monitoring

The IPGate optional bus interface cards let operators attach their test and monitoring equipment to the unit's backplane DB-25 female connectors. Port data is collected and presented in real time for monitoring without data disruption.

T1 Multiplexing

The IPGate-HD32 handles T1 multiplexing via a T1/E1 port card in the chassis. Connections are made from low -speed WAN or audio cards in the chassis to this T1/E1 card.

Multicast Mode (Future)

The multicast mode option establishes point-to-multipoint communications for each port.

Management

IntelView™, a web-based graphical user interface, is utilized for system management.

The system maintains the configuration of each port to protect against the possibility of a power failure. When power is restored, the system automatically restores user ports to their last configuration; restoring circuits without any operator intervention.

Key Features & Functions

- Circuit emulation services to packet conversion for serial data transport across the IP network
- Selectable interfaces
  - T1, E1, T3, E3
  - EIA-232, EIA-422, EIA-449, EIA-530 and V.35
  - Analog Voice
  - Wideband Audio
- Selectable encoding options
  - NRZ, AMI, B8ZS, HDB3, and Asynchronous
- Symmetric and Unidirectional circuit support
- Selectable Customer Premise Equipment (CPE) type
  - Data Terminal Equipment (DTE), Data Communications
- Equipment (DCE)
- Dual reference input clocking with software selectable timing modes
- Redundant hot swappable power supplies
- Redundant controller/network cards
- Hot swappable user interface cards
- 10/100Base-T media conversion over 1000Base-FX
- Dual packet and full redudancy options
- Selectable test monitor bus cards for passive monitoring and interactive testing of TDM interfaces
- Integrated DACX with 4 external T1/E1 trunk ports and connectivity up to 4,096 channels
- ATM (OC3, OC12) available via connectivity to CTI SONUX 200

Benefits

Circuit to IP Transport	Eliminate legacy network costs while capitalizing on existing equipment investment
Integral test and monitoring bus	Quickly identify and isolate legacy network equipment and incoming circuit problems
Multiple redundancy	Reduces failure exposure to 2 ports
Any-to-any port connectivity	Simplifies management Eliminates point-to-point inefficiencies
Multiple clocking offerings	Clocking method appropriate to application

Technology

IP Service Terminations
The IPGate family supports the following protocols:
IPv4 and IPv6, UDP, RTP, MPLS, L2TPv3, ITU-T, Y.1413, IETF CESoPSN, IETF SAToP, TDMoIP, Unstructured, Structured, and Structured with CAS.

It is also compliant with G.823, G.824 and G.8261/Y.1361 Timing, Synchronization, Jitter, and Wander requirements of ITU-T.

Legacy Interfaces
User port cards are hot swappable for ease of maintenance and can be interchanged within the same IPGate chassis. Interface adapters convert standard HDB26 connectors to the physical connector
required for each interface type.

All IPGate user port cards have built in LEDs for monitoring processor, network A or B, and network A/B link status. In addition, there are 8 LEDs whose functions vary by interface.

Low Speed Wan - support 2 ports
- EIA-232, EIA-530, V.35
- DTE/DCE
- 50 bps-2.048 Mbps (Internal, Recovered, Station or External timing)
- Control Leads (Sourced, Forced or Passed)

High Speed WAN
- EIA-530
- DTE/DCE
- 50 bps-15.536 Mbps (Internal, Recovered, Station or External timing)
- Control Leads (Sourced, Forced or Passed)

Narrow Band Voice Frequency
- Voice (300 – 3400 Hz)
- Input Impedance (150 ohms, 600 ohms)
- 6Vp-p Input Range
- Internal, Recovered, or Station timing
- Discrete Outputs 24V max (dry contact closure, closure to GND, closure to 24V)
- Discrete In puts 24V max.

Wide Band Voice Frequency
- Voice (30 – 50K Hz)
- Input Impedance (150 ohms, 600 ohms)
- 6Vp-p Input Range
- Internal, Recovered or Station timing
- Discrete Outputs 24V max (dry contact closure,
- closure to GND, closure to 24V)
- Discrete In puts 24V max.

T1/E1
- T1 or E1 (4 ports per card)
- Coding (AMI, B8ZS, HDB3)
- Framing (D4, ESF)
- Internal, Recovered, Looped or Station timing
- Channel Associated Signaling (CAS)
- Loops (manual and in-band)
- BERT Testing
- Statistics
- Alarms
- SF Signalling ITU-T Q.310

T3/E3
- DS3 or E3
- Coding (B3ZS, HDB3)
- Framing (M13, C-Bit)
- Internal, Recovered, Looped or Station timing
- Loops
- BERT Testing
- Statistics
- Alarms

Long Haul Secure Communications
- Plain (CVSD encoded 32 KHz)
- Cipher Text (16 Khz VINSON)
- Remote Radio Control
- Internal, Recovered, Looped, or Station timing

Power Supply Redundancy
The IPGate-HD32 comes with dual redundant power supply modules that are part of the chassis configuration. The modules are configured to share the total load but are capable of powering the entire unit. If a power module fails, the redundant module will automatically assume the entire load ensuring that the port-to-IP connections continue to pass data without interruption. A failure status will be displayed and reported to IntelView.

Ethernet and Packet Redundancy
The IPGate-HD32 supports both packet redundancy and full network redundancy via GigE network controllers with automatic failover.

Optional packet redundancy: Each IPGate-HD32 port card offers dual packet redundancy. The packet is split into a primary and secondary packet with unique headers and sent to the IPGate network controller. Through the controller's network connection the redundant packets can then be routed over two distinct network paths.

A full redundancy option is also offered. In this option the dual packets are duplicated. Each duplicate pair goes through a different IPGate network controller (two are offered) through a separate network connection and can then be routed over two distinct network paths. This option offers optimum packet redundancy.

Applications

TDM over IP
Supports point-to-point TDM trunks over the IP network without requiring changes to the TDM equipment. Leverages continued use and investment protection of TDM equipment.

PBX Interconnect over IP
Provides T1 or E1 frame-agnostic trunks for PBX interconnection across the IP network. Eliminates the need for costly leased lines between locations.

Media Conversion
Provides media conversion for 10/100Base-T over redundant 1000Base-FX.

Long Haul Secure Communications
The IPGate-HD32 LHSC card routes voice communications (secure or plain) from an operator's encryption device to a remotely located radio via satellite, land line, or a local base's standards-based IP network. The IPGate-HD32 with LHSC units are used in pairs, one located next to the operator with the other near the radio.

Specifications

Controller Card(s)	Up to 2 - 100/1000 BaseT Copper port and 100/1000Base-FX fiber port for redundancy
Port Cards:	16

Legacy Serial Interfaces

T1/E1	64 (without monitor bus)
DS3/E3	16
EIA-530	32
V.35	32
RS-232	32
RS-422/423	32
FXS/FXO (2-Wire)	32
2/4/6-Wire E&M (Types I to V)	32
12-Wire NB	32
12-Wire WB	16
Low Speed WAN	32
High Speed WAN	32
CDI	32
LHSC	16

Multi-Protocol Packet Interfaces (4)
- 100/1000 Base-T, 100/1000Base-FX
    - Supporting Service terminations: PW, RTP, UDP, IPv4, IPv6, MPLS, ECID, VLAN, User Defined

Data Rates
- 50 bps to 2.048 Mbps - low speed
- 50 bps to 15.536 Mbps - high speed

Port LEDs:
- Varies by Interface

Interface Type
- DTE or DCE, same card

Mechanical

Connectors:

IEC:	2 - AC Input
SFP:	2 - 1000 Base FX
RJ-45:	4 - Network 100/1000BaseT Copper Network
RJ45:	2 - Craft/COM Ports
RJ11:	2 – Station Clock
DB9:	2 – RS232 COM Ports
HDB26:	32 – Port interfaces for communications
Front RJ45:	2 – 100/1000 Base T Copper
Dimension:	19" w x 16" d x 5.25" h
Weight:	20 lb. approx. fully loaded

Environmental

Operating:	-0° C to +50° C
Storage:	-40° C to +60° C
Humidity:	0 to 98% relative humidity, non-condensing
Altitude:	10,000 feet above sea level

Electrical

Power AC:	Input: 90 to 240 VAC auto-ranging 47-63 Hz, single phase
Output:	12 V 33.3A (400W) per sled
Power DC:	
Input:	-48 VDC
Output:	12 V 33.3A (400W) per sled

IPGate-H32 Rear View