

VB-6008

Multiservice Access Node



Features

- Modular Multiservice Access Nodes
- Non-blocking digital cross-connection of up to 960 timeslots
- Supports up to 32 ports
- Traffic grooming
- E1/T1 conversion including A-law/ μ -law and signaling conversion
- Transmission of T1 traffic over E1, per ITU-T G.802
- Broadcast support
- Test and monitoring at any port
- Inverse multiplexing module transmits up to 15.6 Mbps
- Controlled slip buffer for overflow/underflow
- Provides STM-1, E3, T3, E1, T1, $n \times 56/64$ kbps and ISDN services over copper, fiber, or xDSL media
- Common logic and power supply redundancy
- 1:1 protective switching
- TFTP support for common logic software upgrade
- Management:
 - Out-of-band via V.24 supervisory port or Ethernet port
 - Inband via TS 0 or dedicated timeslot
- SNMP management system on PC or UNIX (HP OpenView) platform
- Telnet support
- Separate dial-in/dial-out port
- Provide SNMP agent and support standard management protocols: SLIP, PPP, and RIP2
- Local loop access solution with LTU or CSU options for extended range, built-in fiber optic, or 2-wire xDSL modems

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Description

- The VB-6008 multiservice access node provides non-blocking cross connection of up to 960 timeslots, over up to 32 ports. Plug-in interface modules enable $n \times 56/64$ kbps, E1, T1, E3, T3, or STM-1 transmission over copper, fiber, HDSL, IDSL, or SHDSL lines. A DIM module that provides inverse multiplexing capabilities of up to 15.6 Mbps is available.
- Typical applications include:
 - Local loop access with traffic grooming for redirecting voice and data to different trunks (see *Figure 1*)
 - Grooming multiple fractional E1/T1 lines onto a full E1/T1 link (see *Figure 2*)
 - Conversion/gateway between E1 and T1 networks for both data and voice (see *Figure 3*)

- VB-6008 is a 1U-high chassis with 4 I/O module slots
- The unit can be mounted in 19-inch racks.

CROSS CONNECT

- VB-6008 supports up to 32 ports. A user-defined connection table routes any incoming 56/64 kbps timeslot to any outgoing 56/64 kbps timeslot. Support is provided for drop-and-insert and broadcast applications.
- Cross-connection of $n \times 56$ kbps or $n \times 64$ kbps channels is done by placing the data onto E1 or T1 frames, using only the required number of timeslots. This provides Fractional CSU/DSU functionality.

E1/T1 CONVERTER

- The unit can function as a converter between 16 E1 ports and 16 T1 ports.
- A-law/ μ -law companding and signaling conversion are performed according to the E1 and T1 standards.

BASIC UNIT

- The basic VB-6008 includes two power supplies, two common logic modules, and four I/O slots for the plug-in interface modules.

COMMON LOGIC

- The CL.3 common logic module stores the matrix configuration and event information, as well as the configuration for alarm masking. It communicates with the management station using a SLIP/PPP/Ethernet connection (by means of an SNMP agent). CL.3 can pass management information received from 30 different remote sites, over TS 0 or any single dedicated timeslot, to the central management site. Flash for software download, Telnet and ASCII terminal management are also supported.

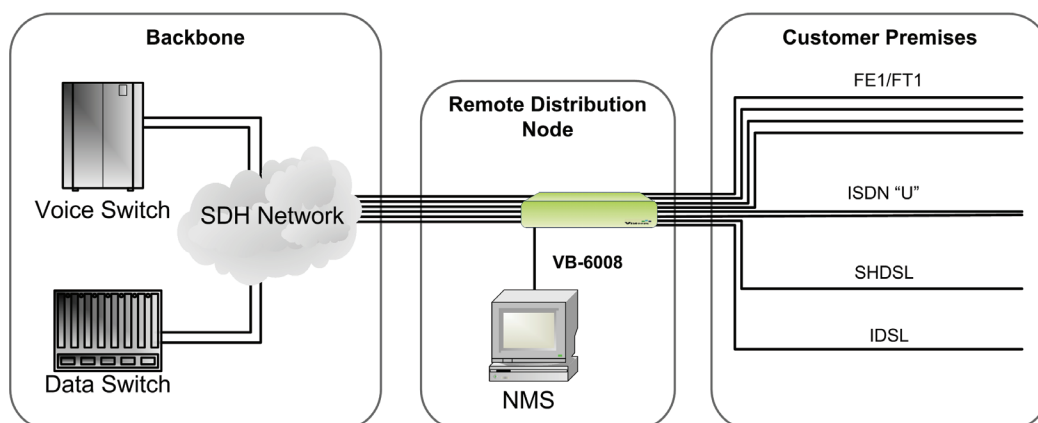


Figure 1. Multiservice Access Platform

I/O MODULES

- **E1B** is a two-port E1 interface module that supports both 2 and 16 frames per multiframe formats, TS 0 multiframe with CRC-4 and HDB3 line code, and unframed operation. For long-range applications, an LTU option is available. E1B provides BERT, loopback per timeslot, and 1:1 redundancy. E1B is available with either copper or fiber optic interfaces.
- **T1B** is a two-port T1 interface module that supports D4, ESF framing formats, or unframed operation. For long-range applications, a CSU option is available. T1B provides BERT, loopback per timeslot, and 1:1 redundancy. T1B is available with either copper or fiber optic interfaces.
- **4E1** and **8E1** are 4- or 8-port E1 interface modules that provide 4 or 8 E1 links over copper cables, with built-in LTU, and support E1 or fractional E1 rates.
- **4T1** and **8T1** are 4- or 8-port T1 interface modules that provide 4 or 8 T1 links over copper cables, with built-in CSU, and support T1 or fractional T1 rates.
- **HS** is a two-port $n \times 56/64$ kbps data module that provides two high-speed synchronous data channels. Each channel can be ordered independently with a V.35, V.11/RS-422, V.24, or X.21 interface. Ethernet 10/100 Mbps bridge and IP router versions are also available. Synchronous channels support data rates of $n \times 56/64$ kbps, (where n is 1 to 24 for T1, and 1 to 31 for E1).
- **8HS** is an eight-port $n \times 56/64$ kbps data module that provides eight high-speed synchronous data channels. Each data channel can support data rates of $n \times 56/64$ kbps (where $n = 1$ to 24 for T1 and 1 to 32 for E1 links).
- **E3** is a single-port E3 interface module that multiplexes up to 16 E1 channels into an E3 frame. E3 is available with either copper or fiber optic interfaces.
- **T3** is a single-port T3 interface module that multiplexes up to 28 T1 channels into a T3 frame with either C-bit parity or M13. T3 is available with either copper or fiber optic interfaces.
- **FSTM-1** is a fractional STM-1 module that provides direct access to Synchronous Digital Hierarchy (SDH) transmission cores, at STM-1 data rates (155.520 Mbps). An optional second interface is available for redundancy or linear ADM (daisy-chain) configurations.
- **8U** is an 8-port ISDN "U" interface module that provides independent ISDN "U" ports, supporting 2B + D channels, for a total payload data rate of up to 128 kbps per port. 8U can be configured either to extend ISDN lines over non-ISDN facilities, or as a dedicated LTU (Line Termination Unit) for short-range modems.
- **4SL** and **8SL** are four- and eight-port I/O modules that use SHDSL technology to extend the range of VB-6008 up to 8 km (5 mi) on 24 AWG (0.5 mm) 2-wire copper cables. Combined with standard SHDSL CPE, they extend the range of the traditional subscriber loop while saving on copper infrastructure.
- **IM** is a digital inverse multiplexer module that transmits a single higher-rate RS-530, V.35, X.21, HSSI, E1, or ETH signal over up to 8 separate E1/T1 lines. IM splits and transmits the individual signals through E1B, T1B, E3, T3, 4E1, 8E1, 4T1, 8T1, or FSTM-1 interface modules, using different paths or facilities, to ensure transmission integrity.

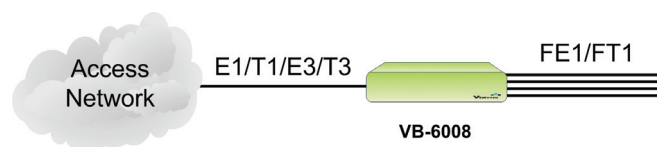


Figure 2. Grooming Fractional E1/T1

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MANAGEMENT

- Status and diagnostic information is defined, configured, and monitored over a V.24 supervisory port or optional Ethernet management port, using an ASCII terminal with SLIP or PPP protocols. A built-in SNMP agent enables remote management for configuration and diagnostics of remote devices (up to 30 remote locations) using TS 0, a dedicated timeslot on the E1/T1 trunk, or Telnet.
- A separate dial-in/dial-out port supports remote configuration (dial-in) and automatic alarm indication (dial-out). For dial-out operation, an external modem is activated to automatically dial a pre-programmed number whenever an alarm event occurs.
- The network management system provides centralized control of all network nodes, including interface configuration, connection setup, and alarm management. Alarm status and system configurations are available at all times.
- Multiple Vibicom hubs can be managed with UNIX-based, SNMP management systems.

- A remote VB-6008 can be programmed and setup either:
 - Out-of-band: using the Ethernet management port, the supervisory port of the remote unit, over a modem link, or over a FRAD
 - Inband: via either TS 0/F-bit, or over a single dedicated timeslot, supporting FR, PPP and RIP2 standard protocols.

DIAGNOSTICS

- VB-6008 provides diagnostic loopbacks for each E1/T1 or $n \times 56/64$ kbps module. E1 and T1 interface modules support loopbacks by timeslot, including an internal BERT, and loopbacks toward the local or remote DTE. T1 interface modules also support PLB or LLB code injection per ANSI T1.403. Any port can be configured to test and monitor data on any given port of the enclosure.
- Enhanced statistics include T1 ESF diagnostics according to ANSI T1.403 and RFC 3895; E1 CRC-4 diagnostics per ITU-T Rec. G.706; T3 diagnostics per RFC 3896, ANSI T1 107/107a; E3 diagnostics per RFC 3896, and STM-1 diagnostics per RFC 2258.

TIMING

- System timing options include: internal clock, external station (master) clock, or loopback timing from any selected external port.

REDUNDANCY

- System hardware redundancy is provided for the power supply and common logic.
- VB-6008 I/O modules support three types of redundancy:
 - Line redundancy (single-slot, 1:1) ensures protective switching within less than 50 msec, between ports on the same module.
 - Hardware (Y-cable) redundancy between modules protects the service from hardware failure. This type of redundancy is supported by copper interfaces only.
 - E3/T3 line and dual-slot hardware redundancy is achieved by installing two DE3/DT3 modules in a chassis, where only one module is active.

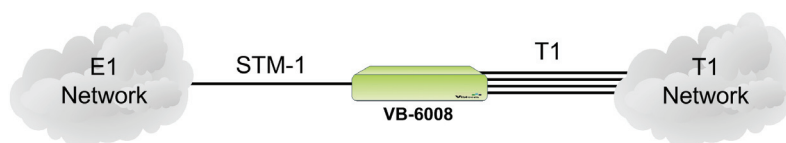


Figure 3. E1/T1 Conversion

Specifications

- Timeslot Mapping
Any timeslot to any timeslot, with/without A-law/ μ -law and/or signaling conversion per timeslot
 - Unused Timeslot Code
Any user-defined code
 - Timing
System clock source:
Internal clock (± 32 ppm)
External clock (G.703, RS-422)
Receive clock (from any port)
 - Station Clock Interface
Data rate:
1.544/2.048 Mbps (selectable)
Compliance:
ITU-T Rec. G.703 or V.11/RS-422
Connectors:
RJ-45, balanced
BNC coaxial, unbalanced
 - Elastic Buffer
Buffer length: ± 1 E1/T1 frame
Underflow: 1 frame repeated
Overflow: 1 frame skipped
(No frame sync loss for buffer overflow or underflow)
Data delay: up to 375 μ sec
Signaling buffer: ± 1 E1/T1 multiframe
 - Diagnostics
 - Local loopbacks on all external and internal ports (apart from VC-4)
 - Remote loopbacks on all external and internal ports (apart from VC-4, VC-12)
 - Code activated network loopbacks per ANSI T1.403 on T1 interface modules
 - Loopback for any timeslot per ANSI 403 RDL on E1 and T1 interface modules
 - Built-in BERT on all external E1, T1, HS, and IM ports
 - Alarm mask (user-defined)
 - Statistics
 - T1, ESF diagnostics:
Full support according to ANSI T1.403; local support according to AT&T 54016 and RFC 3895
Transparent FDL between ports
 - T3 diagnostics:
RFC 3896, ANSI T1 107, ANSI T1 107a
 - E1 CRC-4 diagnostics:
Per ITU-T Rec. G.706;
RFC 3895, 3896
Local support equivalent to AT&T 54016
 - E3 diagnostics: RFC 3896
 - STM-1 diagnostics: RFC 2258
 - Management Port
Dial Port (SP-MODEM)
with V.24/RS-232, async interface;
Data rate: 0.3–57.6 kbps, or autobaud
Connector: D-9 female, DTE Ethernet 10/100BaseT
 - Indicators
Front panel:
Major alarm, minor alarm, test, on-line (per power supply), on-line (per common logic)
Rear panel:
Module indicators
(see separate data sheets)
 - Physical
Height: 4.4 cm (1.75 in 1U)
Width: 44.0 cm (17.3 in)
Depth: 25.4 cm (10 in)
Weight: Less than 2.5 kg (5.5 lb)
- Note:** The weight is given for a fully equipped hub.
- Power Supply
100–240 VAC, 47 to 63 Hz
–48 VDC nominal
 - Power Consumption (max)
72W (DC), 60W (AC), high-power 250W (DC)
 - Temperature
0°–50°C (32°–122°F)
- Note:** For extended temperature ranges, contact your local Vibicom distributor.
- Humidity
Up to 90%, non-condensing

Ordering

Basic units, additional system modules, and I/O modules are ordered separately. When ordering I/O modules, see module data sheets.

BASIC UNIT

VB-6008/*/~

Includes 1U-high chassis with 4 I/O slots, 2 power supplies, and 2 common logic modules

ORDERING OPTIONS

- * Specify management port interface:
UTP for Ethernet 10/100BaseT
V24 for V.24/RS-232 dial port
- ~ Specify power supply:
AC for 100 to 240 VAC operation
48 for -48 VDC operation

SUPPLIED ACCESSORIES

Rack mounts are supplied according to the device ordered.

19-inch rack mount kit

AC power cord (when AC power supply is ordered)

DC adapter plug (when DC power supply is ordered)

OPTIONAL ACCESSORIES

CBL-DB9F-DB9M-STR

Control port cable



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