

8200 Series IAD

Broadband Access Solutions

HIGHLIGHTS

- Seamless voice and high-speed data integration over T1/E1
- Channelized and unchannelized T1/E1
- Compatible with WAN transports including ATM and Frame Relay
- Supports emerging VoIP specifications (SIP, MGCP) 's' versions only
- 8-, 16-, or 24-Port POTS interface with Loop Start or Ground Start
- Universal Serial Interface (USI) (16- and 24-Port models only)
- Dynamic and Static IP Routing and Bridging capabilities
- DHCP and NAT to support IP address management
- Firewall support - IP filtering
- Dynamic bandwidth allocation and prioritization for voice and data traffic
- Management capabilities including Telnet, SNMP and TFTP
- Meets or exceeds current channel bank functionality (groom voice and bond remaining data)
- Provides remotely managed migration path to VoIP
- Reduces or eliminates truck rolls to end-customer site



Competition in the telecommunications market continues to intensify, putting carriers and other service providers under growing pressure to reduce network costs and deliver differentiated, highly competitive services. In response to this challenge, Verilink provides a family of Integrated Access Devices (IADs) that incorporates the capabilities of multiple networking devices such as channel banks, channelized/unchannelized CSU/DSUs, and dynamic and static IP routers. In addition, these IADs are capable of supporting multiple networking protocols such as TDM, Frame Relay, and ATM and provide support for multiple applications such as the integration of voice/data and high-speed Internet access. By consolidating multiple network devices, converging multiple services, and moving intelligence to the network's edge, Verilink's 8200 Series IADs lower requirements for capital equipment, minimize operational expenditures, and maximize profits. Using Verilink's IADs to integrate legacy networks into evolving infrastructures, service providers can now enable small and medium-sized enterprises (SMEs) to leverage the power of wide-area communications for competitive advantage. In particular, these new services allow SMEs to now cost-effectively experience quality voice services and high-speed data connections previously only profitably available to larger business customers.

The built-in flexibility of the 8200 Series IAD family, combined with the support for emerging protocols such as MGCP and SIP, provides a cost-effective solution for today while providing a built-in migration to future packet based applications. For example, an SME with TDM application requirements today can install Verilink's IADs with full confidence that as their networking requirements grow, the Verilink IAD will evolve with the network and provide an

easily managed, cost-effective migration to future application requirements such as VoIP, by simply reconfiguring the IAD. No costly truck rolls or forklift upgrades are required, providing future-proof investment protection for service providers and end users alike.

The 8200 Series IAD consists of access products provided in two versions: a base version supporting VoATM only and an "s" version that supports TDM/VoATM/VoIP all-in-one device. Both the base and "s" versions are available in models equipped with 8, 16, or 24 voice ports and an Ethernet interface capable of dynamic and static IP routing and bridging.

With these IADs, bandwidth usage is optimized. The IADs prioritize voice packets and dynamically allocate bandwidth between voice and data services. This ensures that end-users continue to experience the audio quality they have come to expect while maintaining access to high-speed data connections. Local telephone service through the 8200 Series IAD family is identical in quality and features to those available through the conventional circuit-switch voice network. Subscribers will continue to experience the voice quality they have come to expect, along with Centrex and CLASS features including Caller ID and Call Waiting. Also, Verilink's IADs have been extensively tested to ensure support of existing modems and telephones including key systems, fax machines, and analog telephones.

The 8200 Series IAD family is designed for simple installation and easy remote network management. Through Telnet, SNMP, and TFTP, the Verilink's IADs can be remotely monitored, provisioned, tested, and upgraded without the expense of a costly on-site visit.



PART NUMBER AND DESCRIPTION

2200-70453 - 001 8208 NA
 2200-70453 -122 8208 Europe
 2200-70453 -102 8208 UK
 2200-70457 - 001 8208s NA
 2200-70457 -122 8208s Europe
 2200-70457 -102 8208s UK
 2200-70461 - 001 8216s NA
 2200-70461 -122 8216s Europe
 2200-70461 -102 8216s UK
 2200-70463 - 001 8224s NA
 2200-70463 - 122 8224s Europe
 2200-70463 - 102 8224s UK

VOICE FEATURES

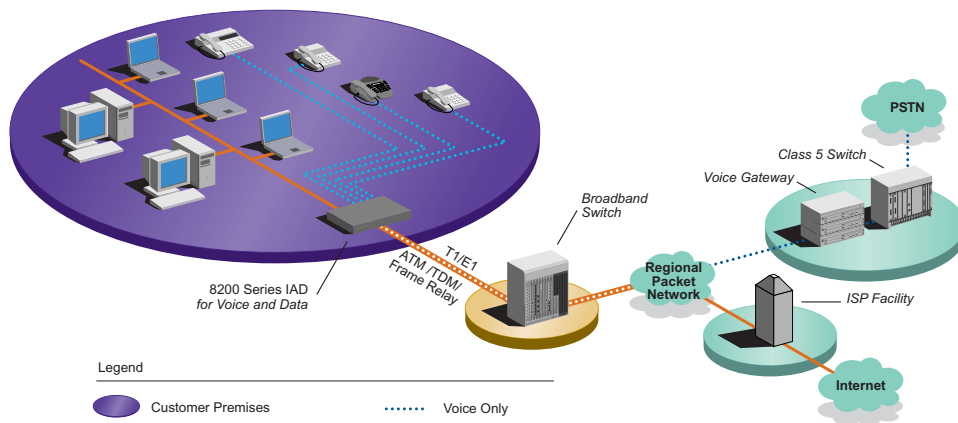
Analog
 Voice Ports: 8 POTS ports (RJ-11); 16 or 24 POTS ports FXS (RJ-21X)
 Failover: Analog input fail over to Line 1 (RJ-11)
 Signaling: Loop start, ground start
 Dialing: DTMF (tone), Pulse
 Ring Source: Internal
 Impedance: 600, 900, Complex (Country Specific)
 REN: 5 REN per port, 16 REN total
 Loop Current: 20, 24 mA typical (country-specific)
 Idle State Voltage: .48 V typical
 Ring Voltage: Balanced 65 V rms $\pm 5\%$ at 5 REN load
 Ring Frequency: 20, 25, 50 Hz (country-specific)
 Gain/System Loss: Programmable, +3 to -9 dB
 Digital
 Compression for VoIP Units: G.711 (64 kbps PCM), G.726 (32 kbps ADPCM), G.729a (8 kbps CS-ACELP) "s" version only
 Encoding: A-law, μ -law
 Echo Cancellation: G.168 compliant (single reflector)
 Protocol Support: CopperCom, ELCP (af-vmoa=0145), Jetstream,
 LES (af-vmoa-0145), MGCP, SIP (s-version only)
 DID/DOD Support
 Fax Support: V.17, V.29 support
 Modem Support: V.34, V.90 support
 Calling Features: Caller ID, flash hook, distinctive ring, stutter dial tone, call forwarding, call waiting

DATA FEATURES

LAN Interface: 10/100Base-T (RJ-45)
 Bridging: IEE 802.1d including spanning tree
 Routing: Default, Static, RIP1 (RFC 1058), RIP2 (RFC 2453), ICMP for IP Packet Processing
 DHCP: Server, Client (RFC 2131), Relay Agent (RFC 1542)
 PPP: PPoA, PPoE, PAP, CHAP, IPCP (RFC 1332) HCLC Support
 Management: SNMP via IP or EOC, MIB1, MIB2 (RFC 1213), Enterprise MIB, LES MIB
 Configuration: Console, Telnet (local, remote)

WAN FEATURES

Transport: ATM and Frame Relay
 Voice Gateways Supported: CopperCom, JetStream, TdSoft, Broadsoft,
 MetaSwitch, Cirpack, NuERA Tollbridge. General Bandwidth, Accelerated, AAL2/LES and ELCP and any af-vmoa-0145 compliant gateway
 SoftSwitches: NCS, LCS, MGCP 1.0, (RFC 2705.bis), SIP
 Network Interfaces
 T1
 Network Interface: RJ-48
 Line Interface: Balanced, 100 .
 Line Rate: 1.544 Mbps
 Clock Source: Line/local (software selectable)
 Line Coding: B8ZS or AM1 per T1.401
 Framing: D4 (SF)/ESF, TR-08, AT&T 54016 or ANSI T1.403
 Line Build Out: 0, .7.5, .15, or .22.5 dB
 Receive Sensitivity: Automatic
 Input Jitter Tolerance: Per ATT TR62411
 Protection: Over voltage/over current



Legend

Customer Premises
 Central Office
 Regional Switching Center
 Voice Only
 Data Only
 Voice and Data

E1

Network Interface: RJ-48
 Line Rate: 2.048 Mbps (± 50 bps) unframed
 Line Framing: CAS, CCS, or 2 Mbits unframed
 Line Code: AMI or HDB3
 Input Signal: E1, +1 to .27 dB
 Connection: RJ-48 jack at 120 ohm ($\pm 10\%$) or (75 ohm ($\pm 10\%$) via converter balun)
 Output Signal: 3.0 V ($\pm 10\%$) base-peak into 75 or 120 with protection
 Transient Voltage: 1000 V protection, fused input/output
 Jitter Control: per G.823 Sections 2.1 and 3.0
 Ones Density: HDB3, alternate fill; complies with G.701 and G.703
 T1 Provisioning (s-version only)
 Provisioning: Fractionally multiplexed voice and data
 Programming: On a DSO basis
 ATM
 Adaption Layers: AAL2 (voice), AAL5 (data), AAL5 (for layer 3 voice)
 Encapsulation: RFC 1483 multiprotocol encapsulation over ATM;
 RFC 2364 (PPP over ATM); ITU 366.2 (AAL2)
 AAL2 Profiles: ATM: 9, 10, 11, and ITU: 1; "s" versions also support ATM Profiles 7, 8, 12, and ITU 2
 Voice: Single AAL2 PVC
 Data: Up to 8 AAL5 PVCs
 Security: Software configurable payload scrambling
 Voice QoS: CBR; VBR-rt (16- and 24-Port model only)
 Data QoS: CBR, UBR
 Cell Delay Variation Buffer: Configurable 0-30 ms
 OAM Cell Handling: F4/F5 segment and end-to-end loopbacks
 Frame Relay
 Encapsulation: RFC 1490 multiprotocol encapsulation
 Voice: Single PVC
 Data: 8 Data Link Identifiers (DLCI)
 Data Link Format: Q.922
 Data Link Control: FRF.12 support, adjustable jitter buffer
 Framing: HDLC support

CONFIGURATION AND MANAGEMENT

10/100 Ethernet (Management or IP Gateway)
 Connection: 8-pin modular
 Network Protocol: TCP/IP based networks
 Data Rate: 10/100 Mbps
 Compatibility: 10/100Base-T
 Supervisory Port
 Connection: DB-9 female
 Data Rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps (default: 19.2 kbps)

Upgrades

Trivial File Transfer Protocol (TFTP) server and client for software upgrades and configuration
 Software download via gateway (wherever supported)
 Telnet (local and remote)
 Management
 SNMP 1.0, SNMP 3.0, Telnet, Console

SECURITY FEATURES

Firewall: IP filtering (in and out)
 NAT: RFC 1631, Port translation, exported services, multi-NAT (up to 8 public IP addresses)
 Security: Multilevel password protection
 Other: Radius client support (RFC 2865)

MANAGEMENT INTERFACES

Alarms
 Activation: Programmable thresholds on all interfaces
 Reporting: SNMP traps, e-mail notification
 Diagnostics
 Network Loops: Line loopback, payload loopback, or maintenance loopback
 Fractional Loop: Generates and responds to in-band V.54 loop code
 DTE Port Loops: V.54 and Local
 BERT: Multiple test patterns toward network or DTE ports with error inject

ENVIRONMENTAL

Power Supply: 8-Port: External 90-240 VAC, 50-60 HZ; 16- or 24-Port: Internal 90-240 VAC, 50-60 HZ
 Power: 8-Port: 20 watt nominal, 50 watt max; 16- or 24-Port: 40 watt nominal, 76/110 watt max
 Operating Temp: 0° C-40° C
 Storage Temp: -10° C-70° C
 Operating Humidity: 5%-90% non-condensing
 Safety: UL Safety UL 1950, CSA C22.2 No. 950-95, EN 60950:2000, IEC 60950:1999
 EMC FCC Part 15 Class A, EN55022, EN55024, EN61000-3-2, EN61000-3-3
 Telco: FCC Part 68
 LEDs: POWER, LAN LINK, LAN ACT, WAN LINK, VOICE
 Dimensions: 8-Port model: 11.8" x 8.3" x 1.8"; Weight: 1.8 lbs.; 16- or 24-Port models: 17.5" x 10.25" x 1.75"; Weight: 4.75 lbs.
 Mounting: Stand alone or wall mount

WARRANTY AND SUPPORT

Five-year warranty

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