A-4000

HIGH DENSITY ACCESS AGGREGATION PLATFORM FOR ATM, FRAME RELAY AND TDM TRAFFIC

A-4000 PROTOCOL SPECIFICATIONS

ATM Forum Protocol Support

- UNI 3.0, UNI 3.1, UNI 4.0
- OAM F4
- OAM F5
- ILMI
- PVCC, PVPC
- SPVC, SVC
- VPC, VCC
- Service categories: CBR, VBR-rt, VBR-nrt, UBR
- Per-VC queuing
- Policing
- Traffic shaping
- EPD
- ATM Forum inverse multiplexing over ATM (IMA) 1.0, 1.1

Circuit Emulation Service (CES) (Optional)

- T1/E1 TDM connections converted to CES virtual connections
- Non-structured CES for clear channel T1/E1
- Structured CES for Nx64 fractional T1/E1
- Channel associated signaling (CAS)
- AF-vtoa-0078.000
- AF-vtoa-0085.000
- ITU-T Rec I.363 B-ISDN ADM adaptation layer (AAL) specification

Frame Relay Protocol Support

- UNI FRF.1
- UNI FRF.4
- NNI FRF.2.1
- NNI FRF.10
- LMI Services: Annex A, LMI Annex D, LMI gang-of-four
- FECN/BECN
- Per-VC queuing
- Policing
- Traffic shaping
- Frame Relay Forum FRF.16 multilink frame relay

Protocol Interworking Support

- Network interworking FRF.5
- Service interworking FRF.8.1, transparent and translation
- ILMI to LMI translation
- EFCI to FECN/BECN mapping
- CLP to DE mapping

THE ASC A-4000

The MultiStream™ A-4000 aggregates traffic from up to 392 T1/E1 connections, or from as many as 56 T3/E3 connections. Egress is from up to 16 T3/E3, 16 OC-3c/STM-1, or four OC-12c/STM-4 ATM connections. Using ASC's ground breaking MultiStream™ technology, the A-4000 delivers multiple services including ATM, frame relay, and TDM/CES, enabling hybrid voice/video/data applications. The A-4000 provides a cost effective access solution at any scale from fractional T1/E1 to NxT1/E1 and T3/E3 speeds. Designed for carrier networks, the A-4000 offers network resiliency through a unique combination of physical and SONET APS redundancy.

The NEBS-3 certified A-4000 offers remote provisioning of multiple protocols for any port. ASC provides multiple choices for local and centralized management, including a Web-based element manager, CLI, SNMP agent, and ASCmanager—a full EMS based on Solaris/Oracle platforms.

ASC products provide a winning strategy for service providers:

- smooth migration to next-gen networks
- new revenue from new services
- rapid ROI
- faster provisioning
- reliable SLAs

A-4000 CARD SPECIFICATIONS

		ACCESS PORTS					TRUNK PORTS	
		A-1240	A-1240E	A-2000	A-2000E	A-3010	A-5040	A-7010
INTERFACES	Interface Type	DS-1	E1	DS-3	E3	Chan. DS-3	OC-3c/STM-1 ATM	OC-12c/STM-4 ATM
	Interface #	24	24	4	4	1	4	1
	Frame Formats	SF (D4), ESF	CCITT, G.704 (E1-CRC CAS, E1-CAS)	C-bit parity, M23	G.832 ADM, G.751 ADM, G.751 PLCP	C-bit parity, M23	I.432/G.709 SONET, STM-1	I.432/G.709 SONET, STM-4
	Line Codes	B8ZS, AMI	HDB3, AMI	B3ZS	HDB3	B3ZS		
	Connector(s)	100-pin SCSI female, adapter cable to dual Telco-50 female	100-pin SCSI female, adapter cable to dual Telco-50 female	Dual 75Ω BNC per port on rear panel	Dual 75Ω BNC per port on rear panel	Dual 75Ω BNC on rear panel	DIN 47256 on front panel	DIN 47256 on front panel
NxT1/E1 — ATM	IMA 1.0, 1.1	Yes	Yes	n/a	n/a	Yes	N/A	
	IMA groups	12	12	n/a	n/a	12		
	IMA links per group	8	8	n/a	n/a	8		
NxT1/E1 — FRAME RELAY	MFR (FRF.16)	Yes	Yes	n/a	n/a	Yes		
	MFR groups	12	12	n/a	n/a	12		
	MFR links per group	8	8	n/a	n/a	8		

A-4000 SYSTEM SPECIFICATIONS

High Availability

- All cards are hot swappable
- Fault resilient backplane
- Redundant timing
- Redundant BITS interfaces
- Redundant CO alarm contact closures
- Redundant, hot swappable fan trays
- Dual DC feeds
- Optional AC converter with load sharing/redundant rectifiers
- Optional redundant central switch fabrics

Management & User Interface

- HTTP manager for standard Web-browser access
- Full SNMP v1 agent includes traps for dynamic alarming
- ASCII configuration file upload/download via FTP over 10/100 Ethernet port or in-band over ATM VC
- Up to 4 CLI sessions via telnet over 10/100BaseT Ethernet or in-band or dual craft ports (front panel DB-9 female connector)

- Support for ASCmanager (see ASCmanager datasheet)
- Extensive physical layer and network protocol statistics
- Detailed status per port and per connection
- Field-upgradeable FLASH file system holds dual code loads and configurations; upload and download by FTP
- RADIUS or TACACS+ admin authentication

Timing Sources

- Internal timing: redundant Stratum level 3 with hold-over and self-timing modes
- External timing: BITS A and B reference source via wire wrap pins
- Line timing: from T1/E1 or T3/E3 interfaces
- User-definable timing hierarchy

Alarms, Visual Diagnostics

- Event and alarm log with time-stamps in NVRAM
- Physical port and VC statistics collection in NVRAM

- Critical, major and minor alarm contact closures with front panel LEDs and alarm cut off
- Front panel LEDs for power, timing, fan fail
- Line status LED for each T1/E1, T3/E3 port, and optical
- Alarms: RDI, LOS, LOF, OOF, AIS
- Optional BERT line testing for DS-1/E1 or DS-3/E3 ports
- Optional Smartjack and PDL loop codes for DS-1 ports

Certifications

- Safety: UL 1950, EN 60950/IEC950, CSA 22.2 950
- Emissions: EN 55022/CISPR 22, FCC Part 15 Class A
- Immunity: EN 61000
- NEBS Level 3: GR-1089, GR-63
- CE approved
- RBOC colocation certified: Verizon, Bell South, SBC

Environmental

- Size: 24.5" (14U) H x 17.5"W x 20"D

- Rack mountable, center or flush mount
- Operating temp: 5° to 40°C, short term -5° to 50°C
- Temperature storage: -40° to 70°C
- Humidity: 5% to 80% (relative, non-condensing)
- Weight: 103 lbs. fully loaded
- Dual voltage input feeds: -48 VDC @ 20A fully loaded
- Optional external AC power converter
- Max DC power consumption: 1000 Watts
- Cooling: field serviceable air filter and fan tray with redundant fans

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