FUSION A10

PSEUDOWIRE ACCESS GATEWAY

FOR MOBILE BACKHAUL AND VOICE/DATA INTEGRATION OVER PACKET NETWORKS

THE DRAGONWAVE FUSION A10 IS A CUSTOMER-LOCATED OR POINT OF PRESENCE (POP) PSEUDOWIRE ACCESS GATEWAY DESIGNED TO ENABLE COST-EFFECTIVE CELL SITE VOICE AND DATA BACKHAUL AS WELL AS VOICE AND DATA CONVERGENCE OVER A PACKET-BASED NETWORK.

With the Fusion A10, service providers can convert any packet access network (Carrier Ethernet, broadband wireless, cable HFC, xDSL, PON, etc.) into a full-service alternative to TDM access and Layer 2 services, such as Frame Relay, ATM and HDLC.

- Mobile service providers can significantly reduce their operational expenses by replacing costly leased line access and avoiding multiple overlay networks.

- Wireline service providers can preserve customer revenue from traditional services while migrating to next generation networks.

- Carrier Ethernet service providers gain immediate new revenue opportunities by offering profitable traditional services such as T1/E1 private line and PBX voice backhaul, as well as advanced Ethernet services.

By offering the full range of voice and data services over a single, unified, packet-based infrastructure, providers can cut costs, increase revenues and expand their market, while preserving investments in existing equipment, thereby ensuring a non-disruptive migration path to packet-based networks.

SOLUTION HIGHLIGHTS

- IETF PWE3-based capabilities – Circuit Emulation Service (CES), ATM, FR and HDLC

- Industry-leading CES with enhanced jitter management

- High Precision Clock Recovery (HPCR®) – the industry's most robust adaptive clock recovery technology

- Extensive Ethernet capabilities – port-based VLAN tagging and switching and Ethernet OAM

- Advanced QoS mechanisms – port-based rate limiting, DiffServ and Ethernet VLAN 802.1Q/P

- Extended temperature range

- Optional field replaceable, redundant power supply

- Seamless interoperability with all generations of mobile wireless base stations

- Remote management capabilities through DragonWave's CLI and DragonVision NMS

KEY APPLICATIONS

- 2G / 3G / 4G mobile backhaul

- T1/E1 circuit emulation for TDM leased-line replacement

- PBX-to-PSTN backhaul and PBX-to-PBX (tie-line) connectivity

- ATM Services including ATM IMA

- HDLC virtual leased lines for X.25/SNA/IPX transport
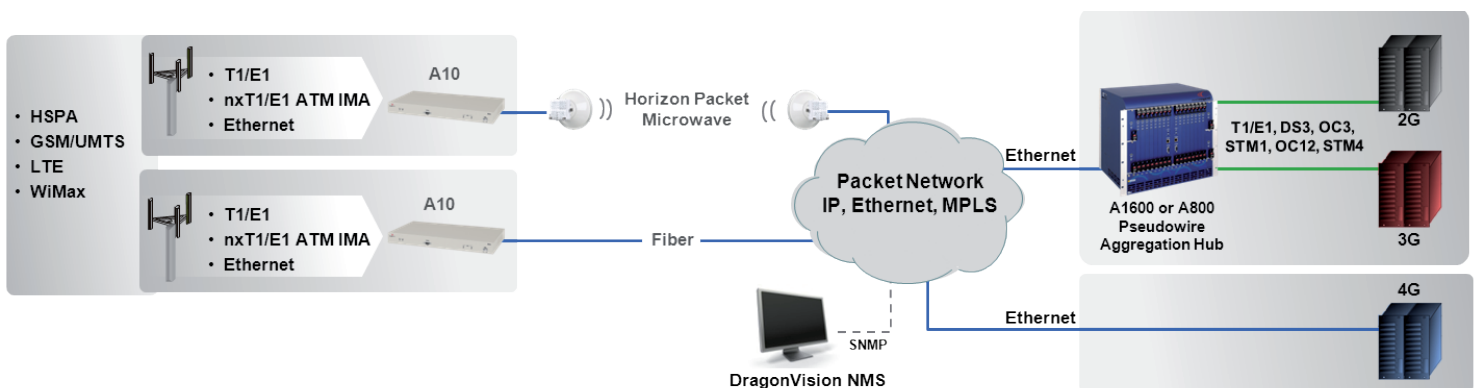
PHYSICAL INTERFACES

E1

- Number of Ports: 4 or 8
- Bit Rate: 2.048 Mbps ± 50 ppm
- Standards Compliancy
  - ITU G.703, G.704, G.706, G.732
- Framing
  - Unframed, FAS, FAS with CRC4,
  - MFAS with CAS, MFAS with CAS and CRC4
- Line Code: AMI
- Zero Suppression: HDB3
- Jitter and Wander Performance
  - ITU G.823, G.8261
- Connectors
  - Balanced RJ-45, 120 Ω
  - Unbalanced BNC 75 Ω connectors via an optional adapter cable

T1

- Number of Ports: 4 or 8
- Bit Rate: 1.544 Mbps ± 32 ppm
- Standards Compliancy
  - ANSI T1.403, Telcordia TR-62411
- Framing: Unframed, D4, ESF
- Line Code: AMI
- Zero Suppression: B8ZS
- Jitter and Wander Performance
  - Telcordia TR-62411, ITU G.824, G.8261
- Connectors: Balanced RJ-45, 100 Ω

ETHERNET

- Number of Ports: 5
  - 3x 10/100BaseTx (User or Network)
  - 2x 1000BaseX (User or Network) or
  - 2x 100BaseFx (User or Network)
- Standards Compliancy
  - 802.3 (Fixed settings, auto-negotiation)
  - 802.1q/p
- Connectors
  - 10/100BaseTx – RJ-45
  - 100BaseFx – LC duplex (SFP)
  - 1000BaseX – LC duplex (SFP)
  - SFP transceivers should be ordered separately

MANAGEMENT INTERFACE

- Type: RS-232
- Connector: DB-9, female

INDICATORS

- Power: Green – Active
- PS-1 / PS-2 (A10-R)
  - Green – On
  - Red – Failure
  - Off – Not powered / not connected
- Alarm
  - Off – No alarms
  - Orange – Minor alarm
  - Red – Major alarm
- Ethernet
  - Link: Green - On
  - Activity: Amber - On
- T1/E1
  - LOS (Red)
  - RAI (Orange)

POWER OPTIONS

- DC Power (A10): ±18 to ±72 VDC
  - Nominal: ±24, ±48, ±60 VDC
- DC Power (A10-R): ±18 to ±60 VDC
  - Nominal: ±24, ±48 VDC
- AC Power (A10/A10-R): 90 to 264 VAC
  - Nominal: 100 - 240 VAC
- Field replaceable power supply (A10-R)
- Redundant power supply (A10-R)

POWER CONSUMPTION

- A10
  - DC: 9W to 14W
  - AC: 10W to 16W
- A10-R
  - DC: 11W to 17W
  - AC: 12W to 18W

PHYSICAL DIMENSIONS

- A10
  - Inches: 1 RU (h) x 9.41 (d) x 8.2 (½ RU) (w)
  - Cm: 4.45 (h) x 23.0 (d) x 20.8 (w)
- A10-R
  - Inches: 1 RU (h) x 9.41 (d) x 17.25 (1 RU) (w)
  - Cm: 4.45 (h) x 23.0 (d) x 43.8 (w)

PSEUDOWIRE SERVICES

TDM-CES

- Framed (CESoPSN)
  - n x DS0   (1=< n =< 31)
- Unframed (SAToP)

ATM

- Cell based (AAL0)
  - VPC, VCC and VCC Bundle modes
- Frame based (AAL5)
- ATM cell concatenation: single or multiple cells encapsulated per Pseudowire frame
- ATM VP/VC cross connect
- DS1/E1 UNI
- ATM IMA UNI
  - Up to 8 ports per group
  - Up to 2 groups

HDLC/PPP

- Port mode

FRAME RELAY

- One-to-One mode
- Port mode

IP SERVICE INTERWORKING

- HDLC IP Service Interworking
- Frame Relay IP Service Interworking
- PPP IP Service Interworking

ETHERNET SERVICES

- Bridging/Forwarding between Ethernet interfaces
- Port-based VLAN tagging
- Rate limiting (per port)
  - Up to 1 Mbps – 512 kbps steps
  - 1 Mbps up to 100 Mbps – 1 Mbps steps
  - 100 Mbps up to 1000 Mbps – 10 Mbps steps

ETHERNET OAM

- Ethernet Link OAM (IEEE 802.3ah)
- Ethernet Service OAM (IEEE 802.1ag / ITU-T Y.1731)

DIAGNOSTICS

- Terminal (Local) loopback
- Facility (Remote) loopback
- In-band loopback

PERFORMANCE MONITORING

- T1 / E1 (G.826)
  - 5 X 24-HOUR INTERVAL
  - 96 X 15-MINUTE INTERVAL
  - ES, SES, UAS

ALARMS

- T1
  - Alarm Indications Signal (AIS)
  - Remote Alarm Indication (RAI)
  - Loss of Signal (LOS)
  - Loss of Framing (LOF)
- E1
  - Alarm Indications Signal (AIS)
  - Remote Alarm Indication (RAI)
  - Loss of Signal (LOS)
  - Loss of Framing (LOF)
  - Loss of Multiframing (LOM)
  - Remote Loss of Frame Indication (RAIM)

TIMING

- Adaptive Clock Recovery (ACR)
- High Precision Clock Recovery (HPCR®; optional)
  - Telcordia TR-62411, ITU G.823, G.824, G.8261
- Internal: ±25 ppm (non-HPCR)
- Loopback timing

QOS MANAGEMENT

- 4 Levels of Prioritized Queuing (SP)
- Layer 3 Marking – DiffServ
- Layer 2 Marking – VLAN 802.1Q/P
- Jitter buffer – programmable up to 256 msec

MANAGEMENT SPECIFICATIONS

- In-band or out-of-band
- SNMP
- Syslog
- Command Line Interface (RS-232 / Telnet / SSH2)
- DragonVision NMS
- Remote Software Upgrade

DragonWave

www.dragonwaveinc.com