



- Multi-service access node, AC or DC power input with two slide-in slots for various DSL and VoIP line card
- 12-port ADSL/ADSL2/ADSL2+ line card with a splitter built-in for MTU application
- 16-port G.SHDSL.bis line card with m-pair bonding feature for business applications
- 24-port VoIP line card with SIP signaling protocol and MLT function support
- Line card cascading with Fast Ethernet uplinks
- 802.1p QoS, priority queuing, 802.1q VLAN tagging and multicasting support
- 802.1x authentication, MAC/Packet filtering and ACL filtering support
- Manageable with the Windows-based Element Management System (EMS)

IES-1000 Series 1U Remote MSAN/DSLAM with AC/DC Power

Flexible Provisioning of DSL and VoIP Services

Benefits

Comprehensive design for various market demand

IES-1000 Series is a pizza box IP-based multi-service access node (MSAN). It has two slots for various combinations of DSL and VoIP line cards to provide ADSL2+, G.SHDSL and VoIP services to residential and business customers. It terminates the ATM or EFM traffic of DSL connections and POTS voice signals to make them IP packets and route them through IP networks. With the highly compact design (1U high), AC and DC power input as well as simple installation, IES-1000 Series can be deployed at Telco and SMB environment to meet all kinds of market demands.

Robust ADSL2+ solution for Multiple Tenant Unit (MTU) services

With ADSL2+ line card, service providers can offer residential users high-bandwidth Internet access, on-demand entertainment services and IPTV services on a single network connection. The IES-1000 Series also offers businesses subscribers IP connectivity, VPNs, VLANs, high-quality video conferencing and legacy service interconnection with bandwidth up to 24 Mbps per port. Moreover, it supports ATM-based 2-port bonding to provide even higher bandwidth to distant customers. The ADSL2+ line card is a sophisticated device fully compliant with existing standards and with modern features like energy-saving, excellent performance and transparent backward to ADSL/ADSL2 compatibility.

Lease line G.SHDSL service for enterprise

With G.SHDSL technology, the IES-1000 Series is applicable for lease line replacement. Using the TC-PAM modulation technique, IES-1000 Series is compatible with other existing transmission technologies, allowing service providers to deploy at locations where broadband services already exist.

M-pair bonding G.SHDSL.bis solution

IES-1000 Series supports the new-generation G.SHDSL.bis line card to provide transmission rate up to 5.7 Mbps symmetrically in a single pair. It also comes with two 100 Mbps Ethernet interfaces toward Ethernet aggregation network. One IES-1000 Series can accommodate two SAM1316-22 modules to support 32 SHDSL connections. In addition, the SAM1316-22 supports ITU G.991.2 m-pair bonding in a physical layer manner. The m-pair bonding can be 2 or 4 pairs and the aggregated payload rate is around 22.76 Mbps.

VoIP line card to provide media gateway feature

In addition to FAX and modem services, VoIP line card provides a parallel and distributed media gateway architecture to empower VoIP services by taking advantage of POTS voice signals. With the architecture, the line card serves up to 24 POTS ports. As part of the benefit, there is no throughput bottleneck or single-point failure issue in this architecture. The media gateway provides G.711, G.723, G.726, G.729a/b and T.38 codecs while RFC3261 SIP network signaling protocols is supported.

Extensive management capabilities

The entire IES-1000 Series system can be administrated remotely with the Windows-based NetAtlas Access EMS (Element Management System) based on the SNMP-manageable SNMPC platform. NetAtlas Access EMS provides powerful advanced remote management capabilities that help service providers minimize daily operational costs. Its loop-back design helps isolating network problems while the new firmware and IP Express configuration allow changes to be done remotely, eliminating the need for “truck rolls” in order to provision services to new customers or to reconfigure services for existing customers.

Specifications

System Specifications

- Delivery of Ethernet in the first mile using legacy LAN technologies
- End-to-end provisioning by offering DSL circuit configuration through NetAtlas Access EMS
- Support expandable configuration with plug-and-play line card
- SNMP v1, v2 manageable
- Web management
- FTP/TFTP for firmware upload
- Console port configuration (RS-232)
- Telnet configuration and monitoring
- Spanning tree algorithm (802.1D) for loop free connection
- Configurable MTU value
- PPPoE intermediate agent compliant with TR-101
- G.998.1 ATM bonding
- ATM or EFM transmission convergence mode
- 802.1Q VLAN aware bridging
 - IGMP snooping supports multicast traffic
 - QoS support with 802.1p
 - DHCP relay agent option 82 per VLAN
 - Port isolation/per VLAN isolation
 - 256 static VLAN entries (full-range VLAN ID 1 ~ 4094)
 - 4K MAC address entries
- Packet prioritizing per 802.1p (QoS)
 - Static configuration—default priority setting
 - 4 priority queues per PVC (up to 4 PVCs)
- Multicast
 - IPv4 multicast forwarding (through L2 MAC)
 - Static multicast membership configuration
 - IGMP v1, v2 snooping & IGMP proxy mode support
 - Shared VLAN multicast
 - 256 multicast groups and each group can contain 18 members
 - IGMP filtering profile
 - IGMP count limiting
 - MVLAN
 - DSL port multicast bandwidth control

- Management support
 - CLI-based management from console/Ethernet port
 - SNMP v1, v2 and Telnet through inband Ethernet interface and NetAtlas Access, PC-based EMS management support
 - Web-based management through inband Ethernet interface
 - Secured host: configure remote host IP addresses for management
 - UNIX syslog
 - F/W upgrade, configuration backup & restore via FTP and Web
 - Text-based configuration file support
- Port configuration
- Alarm/status surveillance
- Performance monitoring
- Security and memory backup
- Self diagnostics
- Remote reset
- EMS management support
- MIB
- SNMP MIB II (RFC1213)
- SNMP v1
- SNMP v2
- RFC1493 Bridge MIB
- RFC1643 Ethernet MIB
- RFC1757 four groups of RMON
- RFC2674
- RFC2662 ADSL line MIB
- RFC4319 (formerly RFC3276) SHDSL line MIB

Hardware Specifications

IES-1000M

- 19" 1U rack mountable, 2 card slots chassis
- Dimensions: 440 (W) x 320 (D) x 44 (H) mm
- 2 line cards to accommodate different types of DSL services as well as VoIP services
- Fully hot-swappable design
- Support 12 to 48 ports in MDU/central office environment

- Temperature monitoring and alarm
- Auto-shutdown for over temperature
- Surge protection to prevent lightning damage

AAM1212-51 Line Card

- One Telco 50 connector for 12-port ADSL/ADSL2/ADSL2+ and splitter card over POTS
- One mini RJ11 console port for local management
- Two 10/100Base-TX for uplink
- DELT (Dual End Loop Test)
- SELT (Single End Loop Test)
- G.998.1 2-port ATM bonding
- Power enhancement or ADSL power saving mode
- Rate adaptation
- Status LEDs—System Status, Ethernet 1 and 2 Link Status, Ethernet 1 and 2 Active Status, ADSL ports status, Alarm
- ADSL compliance
 - DMT T1.413, issue 2
 - G.DMT (ITU G.992.1)
 - G.LITE (ITU G.992.2)
 - G.HS (ITU G.994.1)
 - Auto-negotiating rate adaptation
- ADSL2
 - G.992.3 Annex A
 - G.992.3 Annex L (RE-ADSL)
 - Annex M
- ADSL2+
 - G.992.5 Annex A, Annex M
 - G.992.3 Annex L (RE-ADSL)
 - Annex M
- ADSL2+
 - G.992.5 Annex A, Annex M

AAM1212-53 Line Card

- One Telco 50 connector for 12-port ADSL/ADSL2/ADSL2+ and splitter card over ISDN
- One mini RJ11 console port for local management
- Two 10/100Base-TX for uplink
- DELT (Dual End Loop Test)
- SELT (Single End Loop Test)
- Power enhancement or ADSL power saving mode
- Rate adaptation
- Status LEDs—System Status, Ethernet 1 and 2 Link Status, Ethernet 1 and 2 Active Status, ADSL ports status, Alarm
- ADSL compliance
 - DMT T1.413, issue 2
 - G.DMT (ITU G.992.1)
 - G.LITE (ITU G.992.2)
 - G.HS (ITU G.994.1)
 - Auto-negotiating rate adaptation
 - ADSL2: G.992.3 Annex B
 - ADSL2+: G.992.5 Annex B

SAM1316-22 Line Card

- One Telco 50 connector for 16-port G.SHDSL.bis
- One mini RJ11 console port for local management
- Two 10/100Base-TX for uplink
- In-band Ethernet management
- Status LEDs: System Status, Ethernet Link Status, Ethernet Active Status, G.SHDSL.bis ports status, Alarm
- Line coding: TC-PAM
- Transmit power: up to 16.8 dBm
- Density: 16 ports per line card
- SHDSL payload format: ATM or EFM
- Rate adaptation mode: fixed, line probing
- Ethernet in the First Mile (EFM) according to IEEE 802.3-2004
- SHDSL.bis, extended data rates up to 5.7 Mbit/s
- STU-C or STU-R mode
- Fully integrated one solution for Ethernet, Packet and ATM transport over 4/2 SHDSL channels

- Asymmetric PSDs according to ITU-T G.991.2 (2004) Annex A and B fully supported
- In compliance with
 - ETSI SDSL (ETSI TS 101 524 V 1.2.1)
 - ETSI SDSL.bis (ETSI TS 101 524 V 1.2.2)
 - ITU G.shdsl (ITU-T G.991.2)
 - ITU G.shdls.bis (ITU-T G.991.2 (2004))
 - ITU G.hs (ITU-T G.994.1)
 - IEEE EFM (IEEE 802.3-2004)
 - ITU-T G.998.1

VOP1224-61 Line Card

- One Telco 50 connector for 24 FXS ports over POTS
- One mini RJ11 console port for local management
- Two 10/100Base-TX for uplink
- Ringer Max output power: 14 Watt
- Support SIP singling protocol
- Support G.711, G.726, G.729 a/b, G.723.1
- Support T.38 fax/modem signal coding & fax relay (G.711 a/m)
- Echo cancellation based on ITU-T G.168, G.165
- Silence detection/suppression and Comfort Noise Generation (CNG)
- Voice Activity Detection (VAD)
- Caller ID detection (for VoIP packets from uplink)
- 10K Busy Hour Call Attempts (BHCA)
- Configurable jitter buffer
- Support the generation of dial tone, second dial tone, ringing tone (ring-back tone), busy tone, off-hook warning tone
- Support call waiting, call hold, call transfer, return and call back on busy
- MLT (Metallic loop testing for subscriber lines) and GR-909 loop diagnostic

Physical Specifications

IES-1000M

- Dimensions: 440 (W) x 320 (D) x 44 (H) mm
- Weight: 3.7 Kg

AAM1212-51

- Dimensions: 170 (W) x 320 (D) x 35 (H) mm
- Weight: 0.9 Kg

AAM1212-53

- Dimensions: 170 (W) x 320 (D) x 35 (H) mm
- Weight: 0.9 Kg

SAM1316-22

- Dimensions: 170 (W) x 320 (D) x 35 (H) mm
- Weight: 0.9 Kg

VOP1224-61

- Dimensions: 170 (W) x 320 (D) x 35 (H) mm
- Weight: 0.8 Kg

Environmental Specifications

- Power supply (AC/DC)
 - AC power: 100 ~ 240 V AC, 50 ~ 60 Hz
 - DC power: -36 ~ -72 V DC
- Power consumption
 - AAM1212-51: 25 W
 - AAM1212-53: 25 W
 - SAM1316-22: 25 W
 - VOP1224-61: 30 W
- Operating temperature: 0°C ~ 50°C
- Storage temperature: -40°C ~ 70°C
- Operating humidity: 10% ~ 90% (non-condensing)
- Storage humidity: 10% ~ 95% (non-condensing)

Certification

- Safety
 - UL 60950-1
 - CSA 60950-1
 - EN60950-1
 - IEC 60950-1
- EMC
 - FCC Part 15B Class A
 - EN55022 Class A
 - EN55024 Class A
 - ETSI 300386
- Reliability
 - ETSI 300019
- Telecom
 - ITU-T K20



1U Remote MSAN/DSLAM
with AC/DC Power
IES-1000



ADSL2+ Line Card
AAM1212-51/53



G.SHDSL.bis Line Card
SAM1316-22



VoIP Line Card
VoP1224-61

IES Series MSAN/DSLAM Family Matrix

Model No.	IES-612-51	IES-708-22A	IES-1000	IES-1248-51/53	IES-1248-51V	IES-5005	IES-5000	IES-6000
System Overview								
Category	Compact DSLAM (ADSL2+ only)	Compact DSLAM (G.SHDSL.bis only)	Remote MSAN (ADSL2+, G.SHDSL.bis & VoIP)	Remote MSAN (ADSL2+ only)	Remote MSAN (Both ADSL2+ & VoIP)	Remote MSAN (ADSL2+, VoIP, G.SHDSL.bis, VDSL2, Active Fiber-base Ethernet)	Central MSAN (ADSL2+, VoIP, G.SHDSL.bis, VDSL2, Active Fiber-base Ethernet)	Central MSAN (ADSL2+, VoIP, G.SHDSL.bis, VDSL2, Active Fiber-base Ethernet)
Dimensions W x D x H (mm)	270 x 350 x 44	270 x 350 x 44	440 x 320 x 44	440 x 250 x 66	440 x 250 x 66	440 x 250 x 152	440 x 285 x 289	440 x 285 x 544
Splitter	Built-in	-	Built-in	Built-in	Built-in	Separated, IES-5005ST	Separated, IES-5000ST	Separated, IES-3016ST
Rack Mountable	19" 1U	19" 1U	19" 1U	19" 1U	19" 1.5U	19" 3.5U	19" 6.5U	19" 12.5U
Total Slots	Standalone	Standalone	2	Standalone	Standalone	5	10	17
Max. Slots	Standalone	Standalone	2	Standalone	Standalone	4	8	16
Max. Ports	12	8	24/32/48	48	48	288	576	1152
Management & Switching Card Redundancy	-	-	-	-	-	-	Yes	Yes
Power Input	AC or DC	AC	AC or DC	AC or DC	DC	DC	DC	DC
Power Redundancy	-	-	-	-	-	Yes	Yes	Yes
Hot Swappable	-	-	Yes	-	-	Yes	Yes	Yes
Interfaces								
Uplink	2FE	2FE	2FE	2 100/1000Base-T or 2 Mini GBIC	2 100/1000Base-T or 2 Mini GBIC	4GE	4GE	8GE or 2 x 10G + 6 x GE
Subtending	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ADSL2/2+ Line Card	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL.bis Line Card	-	Yes	Yes	-	-	Yes	Yes	Yes
VDSL2 Line Card	-	-	-	-	-	Yes	Yes	Yes
VoIP Line Card	-	-	Yes	-	Built-in	Yes	Yes	Yes
Ethernet Line Card	-	-	-	-	-	Yes	Yes	Yes
E1 Line Card	-	-	-	-	-	Yes	Yes	Yes
ADSL2/2+								
Annex M	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
SRA	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
INP (Min=2)	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
SELT	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
DELT	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
ADSL2+ Bonding	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL								
N-wire Bonding (G.991.2)	-	Yes	Yes	-	-	Yes	Yes	Yes
ATM-based Multi-Pair Bonding (G.998.1)	-	Yes	Yes	-	-	Yes	Yes	Yes
IEEE 802.3-2004 (EFM)	-	-	Yes	-	-	Yes	Yes	Yes
VDSL2								
DS/US Speed (Mbps)	-	-	-	-	-	100/100	100/100	100/100
Max. Ports	-	-	-	-	-	24/48	24/48	24/48
ADSL2+ Fallback	-	-	-	-	-	Yes	Yes	Yes
CFM (802.1ag)	-	-	-	-	-	Yes	Yes	Yes
SELT	-	-	-	-	-	Yes	Yes	Yes
DELT	-	-	-	-	-	Yes	Yes	Yes
VoIP								
Signaling Protocol	-	-	SIP	-	SIP, H.248	SIP, H.248	SIP, H.248	SIP, H.248
Voice Codec (G.711a/u, G.723, G.726, G.729ab)	-	-	Yes	-	Yes	Yes	Yes	Yes
Metallic Line Test (MLT)	-	-	Yes	-	Yes	Yes	Yes	Yes
DTMF	-	-	Yes	-	Yes	Yes	Yes	Yes
Fax/Modem (T.38)	-	-	Yes	-	Yes	Yes	Yes	Yes
Call Waiting/Hold/Transfer	-	-	Yes	-	Yes	Yes	Yes	Yes
Dial Tone, Ringing Tone, Busy Tone	-	-	Yes	-	Yes	Yes	Yes	Yes
QoS Function								
802.1p	4 queue	4 queue	4 queue	4 queue	4 queue	8 queue	8 queue	8 queue
802.1q (VLAN#)	256	256	256	1024	1024	4k	4k	4k
SPQ/WRR	SPQ	SPQ	SPQ	SPQ	SPQ	SPQ, WRR	SPQ, WRR	SPQ, WRR
Security Function								
IEEE 802.1x	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiple PVC	8	8	8	8	8	8	8	8
Q in Q (VLAN Stacking)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DHCP Snooping	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DHCP Relay Option 82	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MAC/Packet Filtering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MAC Count Filtering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
802.3ad Link Aggregation	-	-	-	-	-	Yes	Yes	Yes
IP Bridge	-	-	-	Yes	Yes	Yes	Yes	Yes
Multicast Function								
IGMP v1/v2/v3	Snooping	Yes (no.v3)	Yes (no.v3)	Yes	Yes	Yes	Yes	Yes
	Proxy	Yes (no.v3)	Yes (no.v3)	Yes	Yes	Yes	Yes	Yes
Static Multicast	Multicast Group	256	256	256	512	512	256	1k
		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multicast VLAN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Network Management								
SNMP v1, v2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP v3	-	-	-	-	-	Yes	Yes	Yes
Web Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CLI Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMS Management	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access

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