IES-1000
Multi-Service IP DSLAM

The importance of IP has been validated by year-after-year increases in new Internet applications. The adaptation of IP gives service providers much more flexibility and efficiency than the traditional ATM infrastructure. New advances in IP networking technology are changing the landscape of broadband service offerings.

The IES-1000 is an IP-based DSLAM that terminates all the ATM circuits and converts traffic directly into the Internet environment. IP-based DSLAMs provide a distinct advantage over typical ATM-based DSL access systems because IP offers better bandwidth utilization, ease of use, lower costs, and is the most natural approach for data transmission.

The IES-1000 supports both ADSL and G.shdsl over single copper pairs. Each enclosure accommodates two 8-port ADSL/ G.shdsl modules or a combination of both ADSL and G.shdsl modules with hot-swappable capabilities. The versatile service availability makes IES-1000 ideal for both multi-tenant unit (MTU) and central office applications.

The ADSL module—AAM1008/SHDSL module—SAM1008 bridges traffic between each ADSL/SHDSL port and built-in 100M Ethernet port as conventional Ethernet switches do. AAM1008/SAM1008 terminates all ADSL ATM cell traffic and converts it to IP packets. AAM1008/SAM1008 also provides customers with 8 ADSL/SHDSL ports and one 10/100M Ethernet interface for uplink connections. One IES-1000 can accommodate 2 AAM1008 or SAM1008 modules and may support up to 16 ADSL/SHDSL channels. Additional features include built-in POTS splitter circuitry to separate POTS and data traffic. The compact design of the IES-1000 totally eliminates the need for additional space.

The IES-1000 also offers service providers extensive management capabilities. The entire IES-1000 is managed using NetAtlas, ZyXEL's Element Management System (EMS). Information regarding configuration control, system status, performance index, alarm trap, and other functions are forwarded from the IES-1000 to the NetAtlas, which then delivers comprehensive reports to service providers showing service results. In addition to remote management, a console port may be used for local management.

With the award-winning design, service providers are able to quickly meet the diverse and ever-increasing broadband demands of customers at costs lower than previously possible.

Benefits

IP-based DSL Service

Most DSL services are based on ATM infrastructure. Compared to ATM, IP is more efficient and cost-effective for data service delivery. ZyXEL's IES-1000, an IP-based DSL access multiplexer (DSLAM), terminates all the ATM circuits and converts the traffic directly to the Internet environment. The deployment of the IES-1000 can save a lot of effort and cost in regards to ATM backbone investment and maintenance.

Best Solution for SME

Small-to-Medium Enterprises (SME) need the same broadband data services that large businesses enjoy. But most SMEs cannot afford the expensive enterprise data solutions, such as T1/E1 service, that large corporations employ. G.shdsl is an alternative technology to offer leased-line service over existing copper wires. The IES-1000 is the most cost-effective solution for service providers targeting the SME market.

New Advances for Broadband Service Offering

The VLAN feature in the IES-1000 offers the benefits of both security and performance. Multicasting design improves network bandwidth utilization for bandwidth-consuming applications such as video on demand. New mechanisms, such as 802.1p, have also emerged to ensure quality of service. The new advances in the IES-1000 enable service providers to more quickly deploy broadband service to customers, while being able to offer a lower cost than previously possible.

Port Bonding for Greater Bandwidth

Bonding several G.shdsl lines generates greater bandwidth over existing copper wires without the high expense of fiber deployment. When connecting two POPs (point of presence) or providing greater bandwidth to big customers, Port Bonding offers a cost-saving alternative that bridges the bandwidth gap between traditional DSL and fiber.

Scalable Platform for Future Expansion

The flexible design of the IES-1000 allows service providers to start ADSL/G.shdsl service at a minimum cost. As the number of subscribers and applications grow, the additional IES-1000 can be added to increase the available customer base.

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IES-1000 Multi-Service IP DSLAM

Features & Specifications

Dimensions
- 440mm (L) x 320mm (D) x 44.45mm (H)

Number of modules
- Two modules in one shelf

Uplink Interface
- One 10/100M Ethernet per module
- RJ-45 connector

ADSL Interface (AAM1008-61/63)
- 8-port ADSL over POTS or ISDN
- POTS splitter built-in
- Maximum transmission rate: 8Mbps downstream, 800Kbps upstream
- ADSL Compliance
  - ANSI T1.413 issue 2
  - G.DMT (ITU G.991.2)
  - G.LITE (ITU G.992.2)
  - G.HS (ITU G.994.1)
- ADSL Protocol
  - Multiple protocol over AAL5 (RFC 1483)
- RJ-11 connector

SHDSL Interface (SAM1008)
- 8-Port SHDSL
- Transmission rate: 192Kbps ~ 2.3Mbps at 64Kbps increment
- Compliant to ITU G.991.2
- TC-PAM modulation
- RJ-11 Connector

Console
- One console port per module
- RJ-11 connector

LED & Switch
- Power (PWR)
  - Light off: power off
  - Light on: power on
- Status (SYS)
  - Light off: line card not in service
  - Light on: line card in service
  - Light flashing: line card booting
- DSL
  - Light on: link on
  - Light off: link is not ready or no connection
- Alarm
  - Light on: Alarm state
- Ethernet
  - Green light: 10M Ethernet
  - Orange light: 100M Ethernet
  - Light off: Ethernet not ready or failed
  - Light on: Ethernet link ok; color will indicate if 10 or 100M LAN is on
  - Light flashing: Snd/Rcv
  - Power switch: for power on or off

OAM & P
- Alarm/status surveillance
  - Automatic alarm and status report
  - Alarm/event history
  - LED indication for alarm and system status
- Performance monitoring
  - Line rate
- Configuration
  - VLAN setting
  - DSL line rate setting (bandwidth control)
  - Software upgrade and download from EMS (through FTP/TFTP/web)
  - Default configuration
- Security and memory backup
  - Support login authorization and security levels
  - Provide non-volatile memory to back-up system database
  - Keep previous system parameters during re-booting
- Self diagnostics
  - FLASH memory
  - DRAM
  - LAN port
  - Line interface loop-back test(*)
- Remote reset

Ethernet
- Support 802.3/3u/3x
- Back pressure flow control for half duplex
- Flow control for full duplex (802.3x)

VLAN
- Port-based VLAN
- IEEE 802.1Q tag-based VLAN
- Support GVRP
- No. of IEEE802.1Q tag-based VLAN: 255

QoS
- 802.1p priority regeneration

Multicast
- Support IGMP snooping

Bridging
- 4K MAC addresses
- MAC address filtering

Network Management
- Local console
- Support SNMP v2
- Web-based management
- Support Telnet
- Provide fault, performance, configuration, and security management

MIB
- RFC 1213 MIB II
- RFC 1493 Bridge MIB
- RFC 2674 Bridge MIB Extensions (*)
- ADSL line MIB
- SHDSL line MIB

Temperature
- Operating: 0 ~ 50˚C
- Storage: -10 ~ 60˚C

Humidity
- 5 ~ 95% (non-condensing)

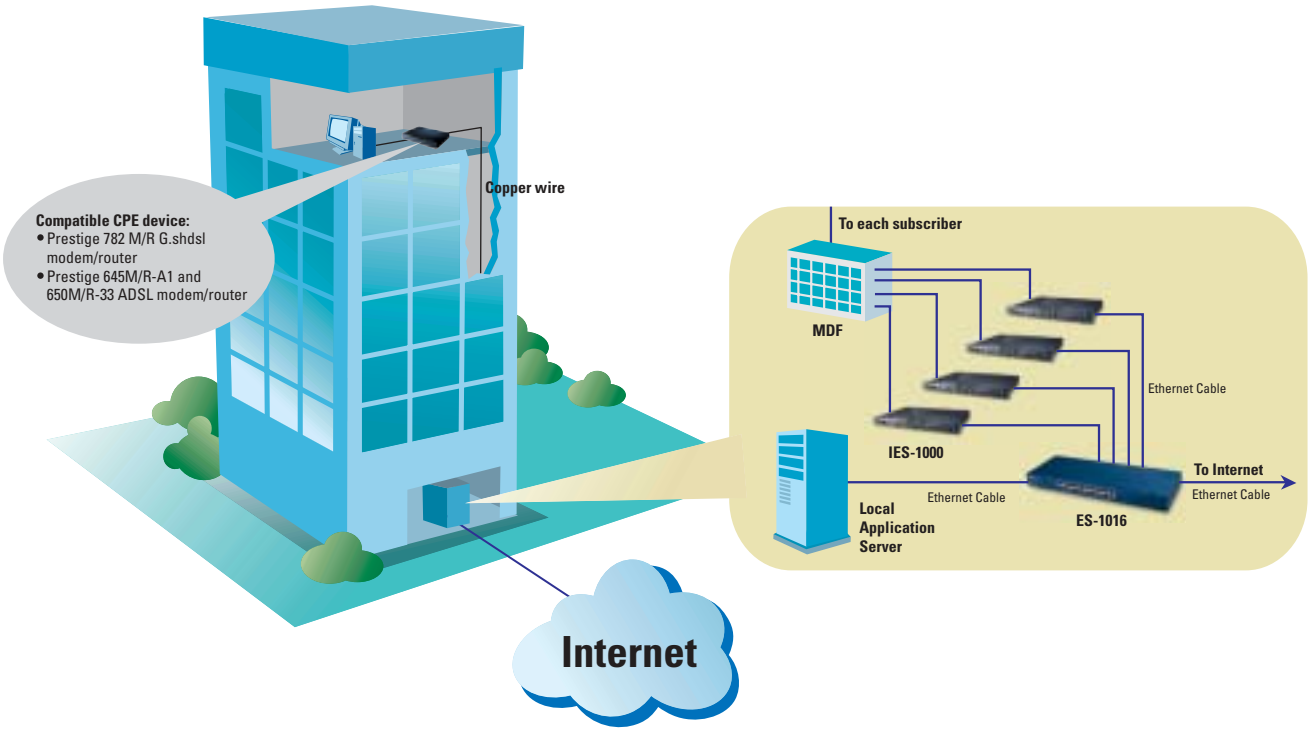
Power
- 100 ~ 240VAC, 50 ~ 60Hz

Certification Safety
- UL1950
- CSA C22.2 No. 950
- EN60950, IEC60950
- EMC
- FCC Part 15 Class A
- EN55022 Class A

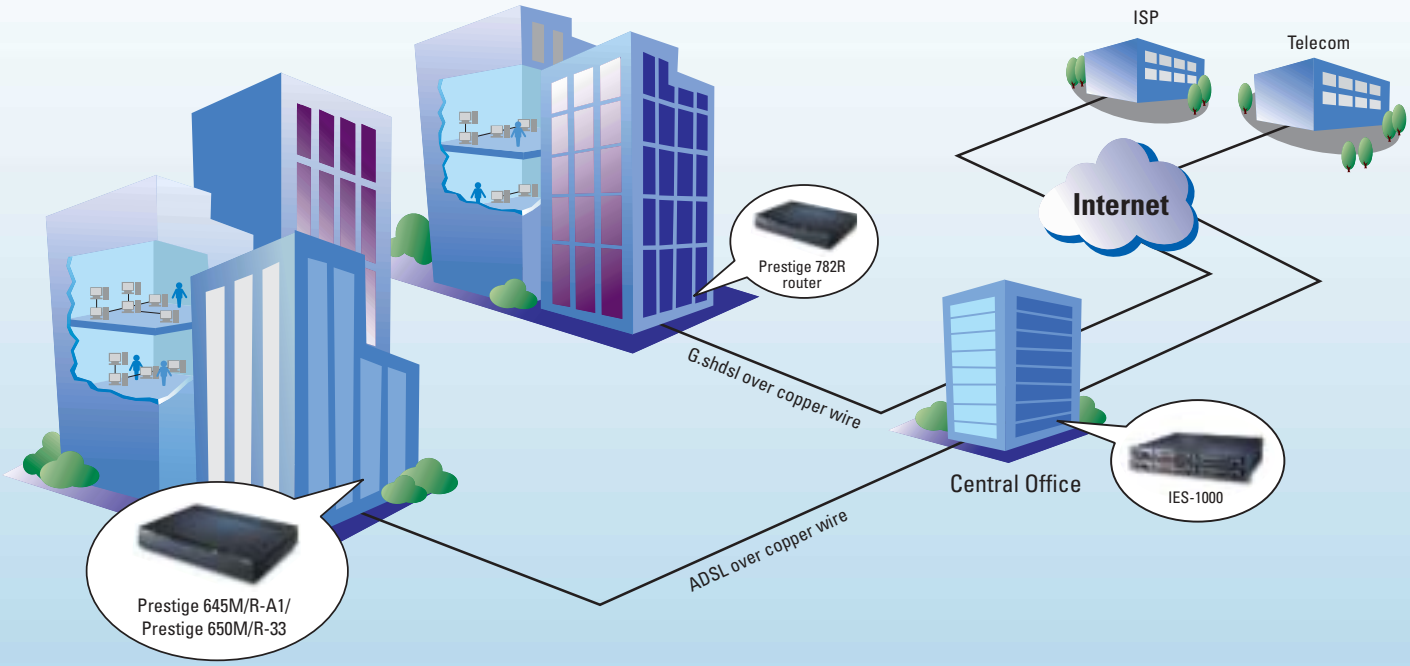
** for future release*

Application Diagram

MTU Application



Leased-line Application



IES-1000 Multi-Service IP DSLAM

Compatible CPE

Prestige 782M/R

Prestige 645M/R-A1

Prestige 650M/R-33

	Prestige 782M/R	Prestige 645M/R-A1 and 650M/R-33
Interface		
DSL interface	• One RJ-11 for G.shdsl connection • Transmission rate: 192k ~ 2.3Mbps at 64Kbps increment • Compliant to ITU-T G.991.2 • TC-PAM modulation	• One RJ-45 for ADSL connection • ADSL compliance ■ ANSI T1.413 issue 2 ■ G.DMT (ITU 992.1) ■ G.LITE (ITU 992.2) ■ G.HS (ITU 994.1) ■ Auto-negotiation rate adaptation • ADSL protocol ■ Multiple protocol over AAL5 (RFC1483)
Ethernet interface	• One RJ-45 for 10/100Mbps auto-sensing	• One RJ-45 for 10/100Mbps auto-sensing
Console port	• One DB9 console port	• One PS2 console port (optional)
Management		
System Control	• Web-based configuration • Menu-driven user interface • Command-line interface • Password-protected Telnet support • TFTP & FTP firmware upgrade and configuration backup • SNMP	• Web-based configuration • Menu-driven user interface • Command-line interface • Password-protected Telnet support • TFTP & FTP firmware upgrade and configuration backup • SNMP
Network Protocols	• RIP-1(RFC 1058), RIP-2(RFC 1389) • DHCP server and DHCP relay • DNS servers addresses to workstation (RFC2131, 2132)	• RIP-1(RFC 1058), RIP-2(RFC 1389) and static route • IP Alias • DHCP server and DHCP relay • Dynamic DNS • IP Policy Routing • IGMP for IP Multicast • Multi-to-Multi NAT
Physical & Environment		
Dimensions	• 230(L) x 161(D) x 35(H) mm	• 181(L) x 128(D) x 52(H) mm
Temperature	• 0ºC ~ 50ºC	• 5ºC ~ 40ºC
Humidity	• 5% ~ 90%	• 20% ~ 95%
Power Consumption	• 10W max	• 12W max
Certification	• UL 1950 • CSA (CSA 22.2) • CE mark • EN 60950	• UL 1950 • FCC Part 15 class B • FCC Part 68 • CE mark • EN 60950 • IEC 60950 • CSA 950

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