ZyXEL

A Cost-Effective Solution for Triple-Play Services in MxU and Sparsely Populated Markets

Benefits

Two Fast Ethernet Uplinks for Various Network Topologies

The ZyXEL IES-612-51A/IES-612-51 is a 12-port ADSL2/2+ mini DSLAM. It has 2 Fast Ethernet (100Base-Tx) WAN ports that can be configured as uplinks or cascading ports. In order to support more than 12 subscribers, three network topologies can be constructed for different circumstances: Daisy Chain is the one with the minimum number of uplink connections; Loop structure is the topology where the single point failure issue can be avoided in the uplink connections with RSTP (IEEE 802.1w) protocol; Tree structure is the most robust one where each IES-612-51 has its own uplink connections.

ADSL2+ Port-bonding for Higher Bandwidth in Longer Loops

The IES-612-51A/IES-612-51 is equipped with ATM-based multi-paired bonding feature. Two physical ports can be bonded together as a group, while all upper-layer traffics of a group can be segmented and transmitted over the member ports. If one of the member ports fails, the conveyed traffic will be moved to the other port. When the failed port recovers, it will seamlessly return to the group and share the transmission of the upper-layer traffics.

Within a bonded group, the underlying bit rates of the individual ports can be freely and independently changed by their respective PHY layer. The port-bonding feature not only provides higher bandwidth to subscribers, but also offers more reliable pipes for business applications.

Field-replaceable Power Module

The IES-612-51A/IES-612-51 can be powered thorough either AC or DC inputs; and the design of power modules allows replacement to be performed manually in the field. As a result, Telco operators can inventory the necessary PWBA first and order the correct power modules later for different requirements.

Sophisticated Features for Triple-Play Services

The IES-612-51A/IES-612-51 comes with complete ATM and Ethernet QoS, as well as various IP QoS features (Packet classification/Rate Limitation/Queue Scheduling). The seamless QoS-mapping not only allows consistent and appropriate traffic treatment of packets, but also enables fulfillment of triple-play services.

The number of supported multicast groups is 256, while each group can have 13 members. At least 30 multicast IGMP join/leave requests can be processed in one second and the maximum channel processing time is less than 250 ms. For security, anti MAC address spoofing, broadcast storm prevention, MAC count limiting and packet filtering features are provided. Triple-play services like high-speed Internet access, VoIP, Near VOD, Broadcast TV and TV on Demand can be easily provided as well.

- 12-port ADSL2/2+ Device with a Built-in Splitter for Broadband Access Applications
- ADSL2+ Standard Compliance:
  - G.992.1 Annex A
  - G.992.3 Annex A, Annex L, Annex M
  - G.992.5 Annex A, Annex M
- ATM Multi-paired Port Bonding (*)
- AC (100 V ~ 240 V) or DC (-36 V ~ -72 V) Power Input
- Easy Network Expansion for Subscriber Growth
- Sophisticated QoS Mechanism for Triple-play Services

12-port ADSL2+ IP DSLAM with AC/DC Power Input

**IES-612-51A
IES-612-51**

Specifications

Software Specifications

- Delivery of Ethernet in the first mile using legacy LAN technologies
- Support expandable configuration with device stacking
- 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
- 802.1Q VLAN aware bridging
  - IGMP snooping supports multicast traffic
  - QoS support with 802.1p
  - DHCP relay agent option 82
  - Port isolation
  - 256 static VLAN entries (full-range VLAN ID 1 ~ 4094)
  - 4 K 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 13 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 group of RMON
  - RFC2674
  - RFC2662 ADSL line MIB

Hardware Specifications

- DELT (Dual Ended Loop Test)
- SELT (Single End Loop Test)
- Power enhancement or ADSL power saving mode
- Rate adaptation
- 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
  - ATM-based multi-paired bonding (G.998.1)

Physical Specifications

- 19" 1U rack mountable
- Dimensions: 270 (W) x 350 (D) x 44.45 (H) mm
- Weight: 4.6 Kg
- One Telco 50 connectors for 12 ADSL2+ ports
- One mini RJ11 console port for local management
- Two 100Base-TX for uplink/cascading
- Status LEDs: System Status, Ethernet Link Status, Ethernet Active Status, ADSL2+ port status, Alarm

Power Supply (AC/DC)

IES-612-51A
- AC Power: 100 ~ 240 VAC, 50 ~ 60 Hz

IES-612-51
- DC Power: -36 ~ -72 V DC (*)

Power Consumption

- 23.62 Watt (AC power input)

Environmental Specifications

- Operating Temperature: 0°C ~ 50°C
- Storage Temperature: -20°C ~ 70°C
- Operating Humidity: 10% ~ 90% (non-condensing)
- Storage Humidity: 10% ~ 95% (non-condensing)

Certification

- RoHS
- 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 300 386
- Reliability
  - ETSI 300 019
- Telecom
  - ITU-T K20

(*) Firmware upgradeable for future enhancement

IES MSAN Family Matrix

Model	IES-612-51A IES-612-51	IES-708-22A IES-708-22	IES-1000	IES-1248-51	IES-1248-51V	IES-5005	IES-5000	IES-6000
System Overview								
Dimensions W x D x H (mm)	270 x 350 x 44.45	270 x 350 x 44.45	440 x 320 x 44.45	440 x 251 x 66	440 x 251 x 66	440 x 250 x 152	440 x 289 x 249	440 x 281 x 544
Splitter	Built in	N/A	Built in	Built in	Built in	Separated	Separated	Separated
Rack Mountable	19" 1U	19" 1U	19" 1U	19" 1.5U	19" 1.5U	19" 4U	19" 6.5U	19" 12.5U
Total Slot No.	Standalone	Standalone	2	Standalone	Standalone	5	10	17
Max DSL Line Card Slot	N/A	N/A	2	N/A	N/A	4	8	16
Max DSL Port No.	12 (ADSL2+)	8 (G.SHDSL)	24	48	48	192/288	384/576	786/1152
Management & Switching Card Redundancy	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes
Power Input	AC or DC	AC or DC	AC or DC	AC or DC	AC or DC	DC	DC	DC
Power Redundancy	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes
Hot Swappable	N/A	N/A	Yes	N/A	N/A	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	N/A	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL.bis Line Card	N/A	Yes	Yes	N/A	N/A	Yes	Yes	Yes
VDSL2 Line Card	N/A	N/A	Yes (Future)	N/A	N/A	Yes	Yes	Yes
VoIP Line Card	N/A	N/A	N/A	N/A	Built in	Yes	Yes	Yes
ADSL2/2+ Features								
Annex M	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes
SRA	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes
INP (Min=2)	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes
SELT	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes
DELT	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes
ADSL2+ Bonding	Yes (Future)	N/A	Yes	Yes	Yes (Future)	Yes	Yes	Yes
G.SHDSL Features								
G.SHDSL Bonding	N/A	Yes	N/A	N/A	N/A	Yes	Yes	Yes
QoS Function								
802.1p Priority Queuing	4 queue	4 queue	4 queue	4 queue	4 queue	8 queue	8 queue	8 queue
802.1q Tag-based VLAN	256 VLAN	256 VLAN	256 VLAN	1024 VLAN	1024 VLAN	4 K VLAN	4 K VLAN	4 K VLAN
SPQ/WRR	SPQ	SPQ	SPQ	SPQ	SPQ	SPQ, WRR	SPQ, WRR	SPQ, WRR
ATM QoS to 802.1p Priority Mapping	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Bridge	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes
Security Function								
IEEE 802.1x	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiple PVC per Port	Yes	Yes	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
Packet Filtering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IEEE 802.3ad Link Aggregation	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes
VoIP Function								
Signaling Protocol	N/A	N/A	N/A	N/A	SIP, H.248	SIP, H.248	SIP, H.248	SIP, H.248
Voice Codec: G.711 a/μ law, G.726, G.729 a/b & G.723.1	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Metallic Link Test	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
DTMF	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Fax/Modem (T.38)	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Call Waiting/Hold/Transfer	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Dial Tone, Ringing Tone, Busy Tone	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Multicast Function								
IGMP v1/v2/v3 — Snooping	Yes (no v3)	Yes (no v3)	Yes	Yes	Yes	Yes	Yes	Yes
IGMP v1/v2/v3 — Proxy	Yes (no v3)	Yes (no v3)	Yes	Yes	Yes	Yes	Yes	Yes
IGMP v1/v2/v3 — Multicast Group	256	256	256	512	512	512	256	512
VLAN — Static Multicast Group	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VLAN — 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	No	No	No	No	No	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 (Future)	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access	NetAtlas Access

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