# ZYXEL

# IES4204 Series
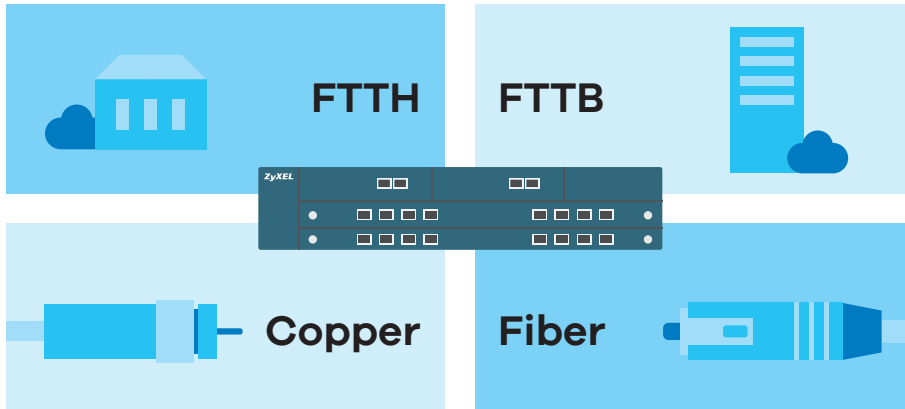
## 2U 4-slot Temperature-Hardened Chassis MSAN

## Benefits

### Unified platform for various scenarios

The Zyxel IES4204 Series 2U 4-slot Temperature-Hardened Chassis MSAN supports VDSL2, GPON and fiber-based GbE service access. Two service slots work with any service line cards. With full set line cards, the IES4202 Series provides up to 4K FTTH subscribers, 96 FTTB/VDSL subscribers or 80 active non-blocking Gigabit Ethernet fiber links. In various application scenarios, the IES4204 Series saves CAPEX significantly for operators. Using the same software and service line cards as IES5206, the IES4204 Series reduces operators' learning curve and spare part inventory, which further reduce maintenance costs for operators.

FTTH

FTTB

Copper

Fiber

Multi-service interfaces including VDSL2, GPON and fiber-based GbE

VDSL2 Vectoring support

Full redundancy of management card and power

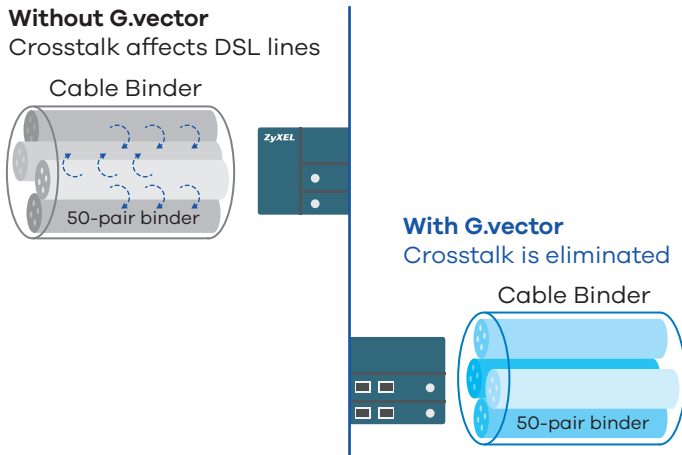Comprehensive QoS enhanced Triple play experience

Field-proven IGMP snooping and proxy for IPTV deployments

Datasheet IES4204 Series

## G.993.5 vectoring cancels far-end crosstalk for higher bandwidth

The Zyxel IES4204 Series of 2U 4-slot Temperature-Hardened Chassis MSAN is a vectoring xDSL network device featuring up to 96 ports for service providers, enterprises and large building complexes. The IES4204 Series conforms to G.993.2, G994.1 G.997.1, G.998.4 G.inp, and G.993.5 vectoring to ensure interoperability with standard-compliant VDSL CPEs. The IES4204 Series supports VDSL2 Vectoring (G.993.5) technology to mitigate performance degradation by cancelling the incurred crosstalk within multiple DSL lines.

**Without G.vector**
Crosstalk affects DSL lines

Cable Binder

50-pair binder

**With G.vector**
Crosstalk is eliminated

Cable Binder

50-pair binder

## Advanced Triple play and mass deployment functionalities

The Zyxel IES4204 Series inherits all the Layer-2 Quality of Service (QoS), security and multicast functionalities; it also supports IGMP snooping to prevent unnecessary forwarding of multicast traffics to all subscribers and thus optimizes bandwidth utilization for multicast applications such as broadcast video. The IES4204 Series also supports the multicast VLAN feature that distributes the source to all the VLANs requesting video streams. With a built-in splitter over POTS, the Series allows operators to provide Triple play services over the same copper wires.

**IES4204**          **Gateway**          **Application**
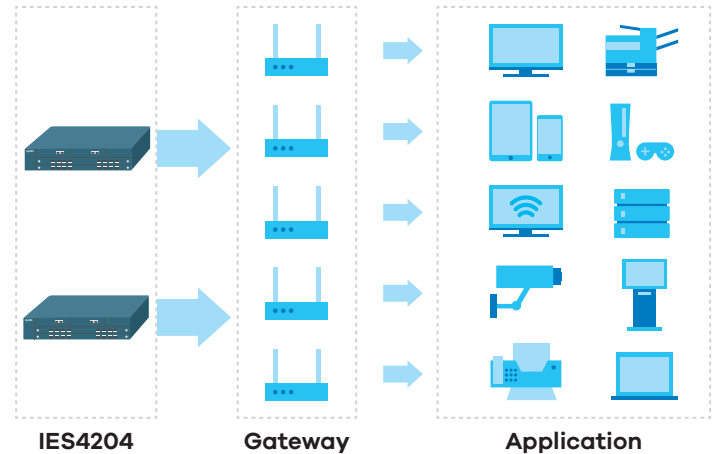
## Future-proof architecture

The Zyxel IES4204 Series is equipped with non-blocking backplane, failover-enabled Management Switch Cards (MSC), dual-input power modules and various high port density, multi-purpose line cards. With comprehensive IP-centric firmware features, the IES4204 Series is a small-capacity system that facilitates telcos/ISPs to deliver high-quality services for residential or business users at a competitive CAPEX/OPEX as well as to satisfy their need for reliability, flexibility and scalability necessary to the current and future infrastructures.

**Future**
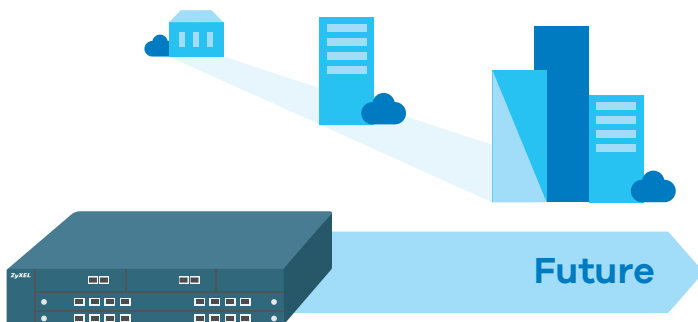
## Sophisticated OAM&P features

The Zyxel IES4204 Series provides various management methods: local console port, Telnet, local hosted Web GUI and SNMP v1/v2/v3-based EMS (NetAtlas EMS). The management functions include Alarm and Status Surveillance, Configuration Management, Performance Management and Fault Management. Both Series allow multiple administrative accounts with 3-level access privileges. The IES4204 Series supports user-friendly web GUI that allows operators to manage through any browser on any PC, laptop or smart phone.

# System Architecture

## Chassis



IES4204M

## Management Switch Card



MSC1240QA

## VDSL Line Cards



VLC1448X-51



VLC1448X-51S

## Gigabit Ethernet Line Card



GLC1440X-55A

## GPON Line Card



OLC3416-42A

# Specifications

## System Specifications

### DSL Compliant
- Comply G.993.2, G.993.5 (Vectoring), G.998.2 (PTM bonding), & G.998.4 (G.INP) profile 8a, 8b, 8c, 8d, 12a, 12b, 17a
- UPBO/DPBO
- Seamless rate adaptation
- Single End Loop Test (SELT)/Dual End Loop Test (DELT)
- On-line reconfiguration
- Impulse Noise Monitoring (INM)
- Virtual noise
- ADSL2+ fallback
- ADSL G.992.1 (G.DMT)
- ADSL2 G.992.3 Annex M
- ADSL2+ G.992.5 Annex M
- G.INP

### GPON Compliant
- ITU-T 984.1
- ITU-T 984.2
- ITU-T 984.3
- ITU-T 984.4
- ITU-T 984.7
- Dynamic bandwidth allocation for upstream bandwidth dynamic adjustment

- Forward error correction for upstream and downstream
- GPON encapsulation method fragmentation
- GPON Type-B protection
- Rogue ONT
- 1:128 ONT support per PON port

### L2 Protocol
- IEEE 802.3ad LACP
- IEEE 802.3X flow control
- IEEE 802.1D spanning tree protocol
- IEEE 802.1s rapid spanning tree protocol
- IEEE 802.1w multiple spanning tree protocol
- ITU-T G.8032 v2 ERPS
- Mirroring
- Port isolation
- MAC force forwarding
- LLDP

### VLAN
- 4K VLAN including dynamic and static VLAN
- VLAN bridging
- VLAN trunking
- VLAN translation
- VLAN stacking

### Security
- IEEE 802.1X (authentication)
- Rule-based packet filtering (L2 - L4 ACL)
- MAC count limiting
- ARP broadcast filtering
- DHCP broadcast filtering
- VLAN aware DHCP snooping
- IGMP filtering
- Anti IP/MAC address spoofing
- Support TACACS+ remote authentication

### Traffic Management
- IEEE 802.1p QoS with 8 priority queues per port
- Bandwidth control and broadcast/multicast/unknown unicast control on Gigabit Ethernet ports
- IP multicast forwarding
- IGMP v2, v3
- IGMP snooping/proxy
- IGMP multicasting channel limiting
- IGMP group count/filtering profile
- IGMP fast leave
- DHCP relay option 82 with sub-option 1 & 2
- Multicast bandwidth control
- L2 - L4 ACL

**OAM&P**
- Management via Zyxel Web GUI
- Telnet CLI: up to five concurrent users
- SNMP v2c & v3
- RJ-45 local console
- Out-of-band management
- NetAtlas EMS

## Hardware Specifications

### IES4204M
- 4-slot rack mountable enclosure, 19" chassis
- 2 slots for DSL or GPON line cards
- 2 slot for management and switch cards
- 2 DC power input module or one AC/DC power and Battery charger module
- One Alarm/FAN and dust filter module

### Management Switch Card— MSC1240QA
- Embedded non-blocking full duplex switching fabric
- MSC1240QA supports four 10G (SFP+) or four 1G uplink/subtending interfaces
- 4 optical fiber port (SFP+ modules)
- One mini-RJ11 console port
- One 10M/100M/1G out-of-band Mgmt interface

### Gigabit Ethernet Line Card— GLC1440X-55A
- Hot swappable 40-port active Gigabit Ethernet line card
- 20 open slots for Gigabit or Fast Ethernet SFP (1000/100BASE-FX/BX/LX/EX)
- 20 open slots C-SFP for 40 port Gigabit Ethernet
- One mini-RJ11 console

### VDSL Line Cards— VLC1448X-51/VLC1448X-51S
- Hot swappable 48-port vectored VDSL2 line card over POTS and over ISDN
- Support G.993.5, G.998.4, G.993.2, G.994.1, G.997.1

- Maximum transmission rate up to 100 Mbps/50 Mbps
- One mini-RJ11 console port
- Support VDSL2 profiles 8a, 8b, 8c, 8d, 12a, 12b and 17a
- Support frequency allocation band plan 998 and 997
- Support U0 band, customer PSD, RFI notch, single latency in PTM mode and INP
- Support UPBO and DPBO, Reed Solomon and trellis coding
- Support ADSL fall back with ADSL/ADSL2/ADSL2+ CPE in Annex A, J, M, L modes
- Support IEEE 802.1ag Connectivity Fault Management (CFM)

### GPON Line Card—OLC3416-42A
- 16 GPON SFP open slots compatible with class B+ and class C+ SFP
- 16 GPON class C+ SFP with SC Optical Receptacle
- Upstream signaling speed: 1.244 Gbps
- Downstream signaling speed: 2.488 Gbps
- 1:1 redundancy with another OLC3416-42A
- Fiber protection with another PON port from another OLC3416-42 when using 2:N splitter
- DDMI readout
- 40G switching capacity to backplane

## Physical Specifications

### IES4204M
- Item dimensions (WxDxH): 442 x 285 x 89 mm (17.4" x 11.22" x 3.5")
- Item weight: 6 kg (13.22 lb.)

### Management Switch Card— MSC1240QA
- Item dimensions (WxDxH): 146 x 254 x 30 mm (5.74" x 9.99" x 1.18")
- Item weight: 0.7 kg (1.54 lb.)

### VDSL Line Card—VLC1448X-51S
- Item dimensions (WxDxH): 391 x 258 x 25 mm (15.39" x 10.15" x 0.98")
- Item weight: 1.6 kg (3.52 lb.)

### VDSL Line Card—VLC1448X-51
- Item dimensions (WxDxH): 391 x 258 x 25 mm (15.39" x 10.15" x 0.98")
- Item weight: 1.2 kg (2.64 lb.)

### Gigabit Ethernet Line Card— GLC1440X-55A
- Item dimensions (WxDxH): 391 x 258 x 25 mm (15.39" x 10.15" x 0.98")
- Item weight: 1.1 kg (2.42 lb.)

### GPON Line Card—OLC3416-42A
- Item dimensions (WxDxH): 391 x 258 x 25 mm (15.39" x 10.15" x 0.98")
- Item weight: 1.1 kg (2.42 lb.)

## Power Consumption
- MSC1240QA: 65W
- VLC1448X-51: 73W
- VLC1448X-51S: 73W
- GLC1440X-55A: 83W
- OLC3416-42A: 69W

## Environmental Specifications
### Operating Environment
- Temperature: -40°C to 65°C (-40°F to 149°F)
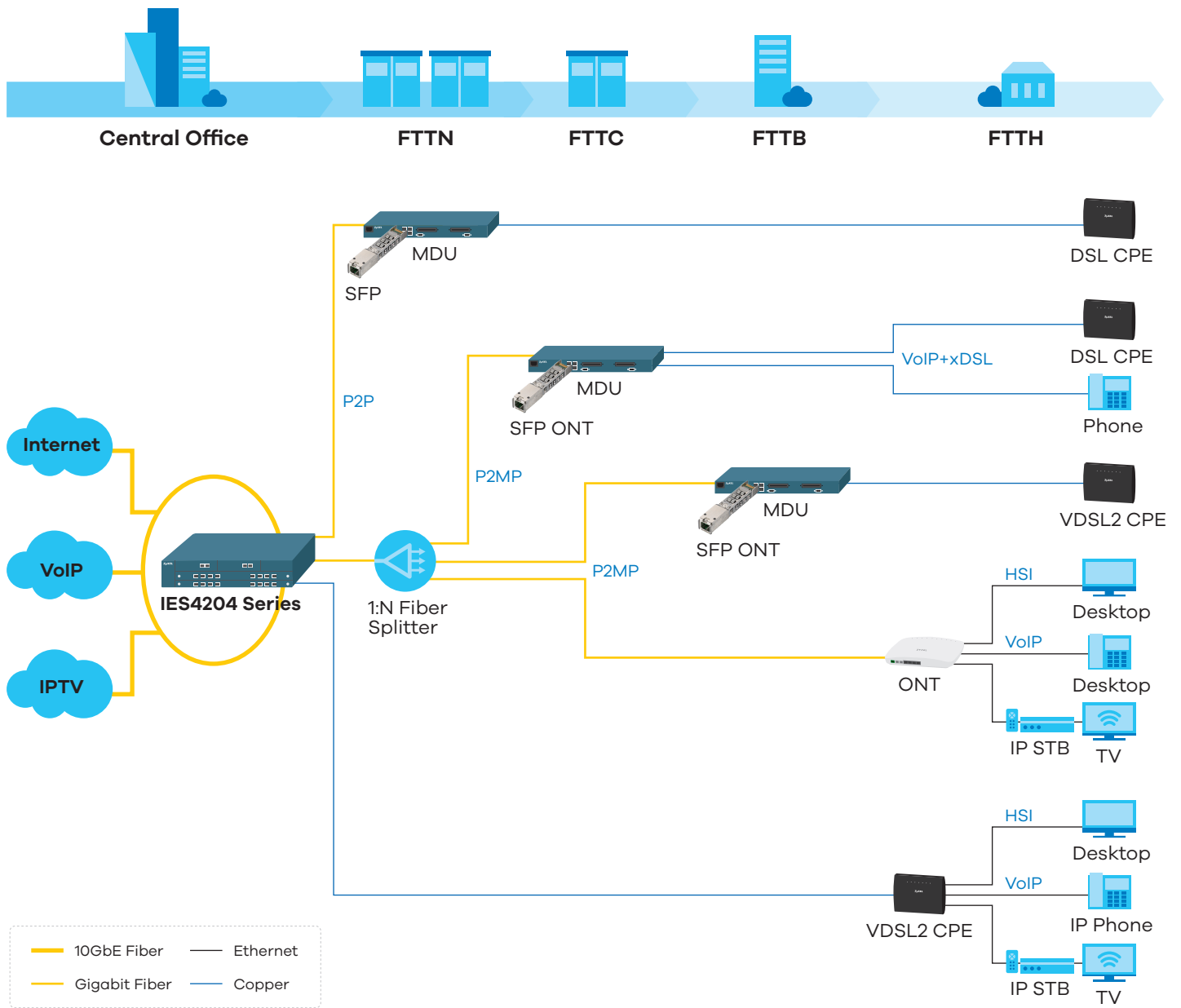- Humidity: 10% to 95% (Non-condensing)

### Storage Environment
- Temperature: -40°C to 70°C (-40°F to 158°F)
- Humidity: 10% to 95% (Non-condensing)

## Certification
- Safety:
  - EN60950-1
  - CSA60950-1
  - UL60950-1
  - IEC60950-1
- EMC:
  - EN55032 class A
  - EN55024 class A
  - ETSI 300 386 V1.6.1
  - FCC part 15 class A
- ITU-T K.20

# Application Diagram



Central Office — FTTN — FTTC — FTTB — FTTH

**Legend:**
- 10GbE Fiber
- Gigabit Fiber
- Ethernet
- Copper

Internet, VoIP, IPTV → IES4204 Series → 1:N Fiber Splitter

P2P, P2MP

SFP, MDU, DSL CPE

SFP ONT, MDU, VoIP+xDSL, DSL CPE, Phone

SFP ONT, MDU, VDSL2 CPE

ONT — HSI Desktop, VoIP Desktop, IP STB, TV

VDSL2 CPE — HSI Desktop, VoIP IP Phone, IP STB, TV

# ZYXEL
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Datasheet IES4204 Series

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