



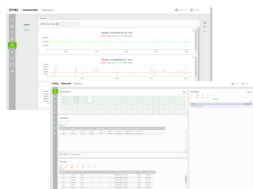




Broadband Access Infrastructure

OLT key features

Category	Model	Key features
Whitebox OLTs	SDA3016SS2	<ul style="list-style-type: none"> Disaggregated open whitebox OLT with 16 SFP+ ports with All-in-One (AIO) PON technology ITU-T mode GPON, XGS-PON, C-PON (GPON+XGSPON) and 10G Active Ethernet IEEE mode EPON, 10G-EPON, C-PON (EPON+10G-EPON) and 10G Active Ethernet Time synchronization compliant with IEEE 1588v2 PTP ETSI-Rack compliant, 260 mm depth, 1U height, temperature-hardened
		
	SDA3016SS	<ul style="list-style-type: none"> Disaggregated open whitebox OLT with 16 SFP+ ports with All-in-One (AIO) PON technology Each AIO PON port supports GPON, XGS-PON or C-PON (GPON+XGS-PON) ETSI-Rack compliant, 260 mm depth, 1U height, temperature-hardened
		
PON OLTs	OLT1408B-IA	<ul style="list-style-type: none"> Eight ITU-T G.984-compliant GPON ports; each port supports up to 128 ONTs Four 10G and eight 1G/2.5G uplink ports Comprehensive QoS for network efficiency Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation Compact size and front access design for easy installation and deployment
		
	OLT1404B-IA	<ul style="list-style-type: none"> Four ITU-T G.984-compliant GPON ports; each port supports up to 128 ONTs Four 10G and eight 1G/2.5G uplink ports Comprehensive QoS for network efficiency Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation Compact size and front access design for easy installation and deployment
		
Network management	NetAtlas EMS	<ul style="list-style-type: none"> Intuitive Graphical User Interface (GUI) Fast system recovering Up to 300 concurrent remote login clients Periodical configuration file backup Batch firmware upgrade and service provisioning XML/SOAP northbound interface supported
		







OLT feature matrix

Model	SDA3016SS	SDA3016SS2
Product name	1U Pizza Box 16-port Combo PON SDN Access OLT	1U Pizza Box 16-Port All-In-One (AIO) PON SDN Access OLT with Timing-Synchronization
Power	-38.4 to -72 V DC 100 to 240 V AC	-38.4 to -72 V DC 100 to 240 V AC
Operating temperature	-40°C to 65°C	-40°C to 65°C
Operating humidity	10% to 95% RH	10% to 95% RH
Interface		
Uplink	1000BASE-T	-
	SFP slot (2.5G/1G)	-
	SFP+ slot (10G/2.5G/1G)	-
	SFP28 slot (25G/10G/1G)	2
	QSFP28 slot (100G/40G)	2
Downlink	AIO PON interface	16
	Combo PON interface (G/XGS-PON)	16
	XGS-PON interface	16
	GPON interface	16
	Combo PON interface (1GE/10GE PON)	16
	EPON interface	16
	10G-EPON interface	16
	VDSL2 interface	-
	GbE interface	-
	10GbE interface	8
PON		
Maximum splitter ratio	Combo (G/XGS-PON): 1:256 + 1:128 10G PON: 1:256 GPON: 1:128	Combo (G/XGS-PON): 1:256 + 1:128 10G PON: 1:256 GPON: 1:128
Type B protection	Yes, HW ready	Yes, HW ready
AES	Yes, HW ready	Yes, HW ready
SFP digital diagnostic management	Yes, HW ready	Yes, HW ready
QoS		
802.1p priority queue	8	8
802.1q tag-based VLAN	Yes	Yes
SPQ/WFQ	Yes	Yes
DBA	Yes	Yes
Security		
IGMP v2, v3	Yes, HW ready	Yes, HW ready
IGMP fast leave	Yes, HW ready	Yes, HW ready
Multicast VLAN	Yes, HW ready	Yes, HW ready
MLDv1 & MLDv2 snooping and proxy	Yes, HW ready	Yes, HW ready
Management		
SNMP v2c, v3	-	-
Web management	-	-
CLI management	Yes	Yes
EMS management	-	-
Timing		
IEEE1588v2	-	Yes
Sync-E	-	Yes
1PPS	-	Yes
Time of Day (ToD)	-	Yes
Physical specifications		
Dimensions (WxDxH)(mm/in.)	440 x 260 x 44.5/17.32 x 10.23 x 1.75	440 x 260 x 44.5/17.32 x 10.23 x 1.75
Weight (kg/lb.)	5.1/11.24	5.1/11.24

OLT feature matrix

Model	OLT1408B-IA	OLT1404B-IA
Product name	1U Pizza Box 8-port GPON OLT	1U Pizza Box 4-port GPON OLT
Power	-36 to -72 V DC 100 to 240 V AC Battery charger	-36 to -72 V DC 100 to 240 V AC Battery charger
Operating temperature	-40°C to 65°C	-40°C to 65°C
Operating humidity	10% to 95% RH	10% to 95% RH
Interface		
Uplink		
1000BASE-T	-	-
SFP slot (2.5G/1G)	8	8
SFP+ slot (10G/2.5G/1G)	4	4
SFP28 slot (25G/10G/1G)	-	-
QSFP28 slot (100G/40G)	-	-
Downlink		
AIO PON interface	-	-
Combo PON interface (G/XGS-PON)	-	-
XGS-PON interface	-	-
GPON interface	8	4
Combo PON interface (1GE/10GE PON)	-	-
EPON interface	-	-
10G-EPON interface	-	-
VDSL2 interface	-	-
GbE interface	-	-
10GbE interface	-	-
PON		
Maximum splitter ratio	1:128	1:128
Type B protection	Yes	Yes
AES	Yes	Yes
SFP digital diagnostic management	Yes	Yes
QoS		
802.1p priority queue	8	8
802.1q tag-based VLAN	Yes	Yes
SPQ/WFQ	Yes	Yes
DBA	Yes	Yes
Security		
IGMP v2, v3	Yes	Yes
IGMP fast leave	Yes	Yes
Multicast VLAN	Yes	Yes
MLDv1 & MLDv2 snooping and proxy	Yes	Yes
Management		
SNMP v2c, v3	Yes	Yes
Web management	Yes	Yes
CLI management	Yes	Yes
EMS management	NetAtlas EMS	NetAtlas EMS
Timing		
IEEE1588v2	-	-
Sync-E	-	-
1PPS	-	-
Time of Day (ToD)	-	-
Physical specifications		
Dimensions (WxDxH)(mm/in.)	440 x 250 x 44/17.32 x 9.84 x 1.73	440 x 250 x 44/17.32 x 9.84 x 1.73
Weight (kg/lb.)	4/8.8	4/8.8

Carrier and access switch key features

Category	Model	Key features
Layer 2		MGS3760-28F <ul style="list-style-type: none"> • Four combo ports (Fixed RJ-45 1G BASE-T or SFP open slot), four SFP 1GbE fiber ports, and 16 SFP ports (up to 1GbE/2.5GbE) • Four 10GbE/2.5GbE/1GbE SFP+ uplinks flexibility • Fully managed Layer-2 switching • ITU-T G.8032 Ethernet ring protection switching • Future-proof with IPv6 support • Policy-based QoS optimizes multi-service quality • Temperature-hardened for flexible installation • Operating temperature: -40°C to 65°C
		MGS3530-28 <ul style="list-style-type: none"> • Four 10GbE SFP+ uplink flexibility • 24 100/1000BASE-TX ports • 128 Gbps non-blocking switching fabric; 95.2 Mpps forwarding rate • 16K MAC address table; 12 KB jumbo frame; 4K multicast forwarding table • Front access design; external alarm block • Operating temperature: 0°C to 50°C
		MGS3530-16F <ul style="list-style-type: none"> • Four 10GbE SFP+ uplink flexibility • 12 combo Gigabit ports (RJ-45/SFP open slots) • 128 Gbps non-blocking switching fabric; 95.2 Mpps forwarding rate • 16K MAC address table; 12 KB jumbo frame; 4K multicast forwarding table • Front access design; external alarm block • Operating temperature: 0°C to 65°C
		MGS3520-28 <ul style="list-style-type: none"> • 24 100/1000BASE-TX ports and four combo Gigabit ports (RJ-45/SFP open slots) • 56 Gbps non-blocking switching fabric; 41.67 MPPs forwarding rate • 16K MAC address table; 12 KB jumbo frame; 4K multicast forwarding table • Front access design; external alarm block • Operating temperature: 0°C to 50°C
		MGS3520-28F <ul style="list-style-type: none"> • 24 GbE SFP open slots and four combo Gigabit ports (RJ-45/SFP open slots) • 56 Gbps non-blocking switching fabric; 41.67 MPPs forwarding rate • 16K MAC address table; 12 KB jumbo frame; 4K multicast forwarding table • Front access design; external alarm block • Operating temperature: 0°C to 50°C
		MGS-3712F <ul style="list-style-type: none"> • Eight SFP ports and four combo Gigabit ports (RJ-45/SFP open slots) • 24 Gbps non-blocking switching fabric; 17.8 MPPs forwarding rate • Multilayer-aware (L2/L3/L4) ACL for security protection • Front access design; external alarm block • Supports CO-LPR (Dying Gasp); errdisable recovery trap; CPU protection • Operating temperature: 0°C to 65°C

Carrier and access switch feature matrix

Model	MGS3760-28F	MGS3530-28	MGS3530-16F	MGS3520-28	MGS3520-28F	MGS-3712F
Product name	24-port GbE/Multi-GbE L2 Switch with Four 10GbE SFP+ Uplink	24-port GbE L2 Switch with Four 10GbE SFP+ Uplink	12-port Combo GbE L2 Switch with Four 10G SFP+ Fiber Uplinks	28-port GbE L2 Switch with GbE Uplink	28-port GbE L2 Switch with GbE Uplink	12-port GbE L2 Switch with Four GbE Uplink
Switch class	Layer 2	Layer 2	Layer 2	Layer 2	Layer 2	Layer 2
Hardware						
1 Gigabit RJ-45 ports	-	24	-	24	-	-
1 Gigabit SFP slots	4	-	-	-	24	8
Combo Gigabit ports (RJ-45/SFP)	4	-	12	4	4	4
SFP with up to 1GbE/2.5GbE	16	-	-	-	-	-
1GbE/2.5GbE/10GbE SFP+ ports	4	-	-	-	-	-
10 Gigabit XFP/SFP+ slots	-	4	4	-	-	-
Wire-speed	Yes	Yes	Yes	Yes	Yes	Yes
Backplane bandwidth (Gbps)	176	128	128	56	56	24
Forwarding rate (Mbps)	131.1	95.32	95.32	41.67	41.67	17.8
MAC addresses	16000	16000	16000	16000	16000	16000
Management						
CLI, web, GUI	Yes	Yes	Yes	Yes	Yes	Yes
Alarm block	Yes	Yes	Yes	Yes	Yes	Yes
Out-of-band management port	Yes	-	-	-	-	Yes
Routing/redundancy						
Spanning tree (STP/MSTP/RSTP)	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
Backup power support (DC 12 V)	Dual-power AC & -72 V DC	Yes	Yes	Yes	Yes	Dual-power AC & 48 V DC
Quality of Service (QoS)						
Priority queues	8	8	8	8	8	8
Data prioritization (SPQ/WRR/WFQ)	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes	Yes/Yes/Yes
ACL data prioritization (L2/L3/L4)	Yes	Yes	Yes	Yes	Yes	Yes
IGMP snooping (v1/v2/v3)	Yes	Yes	Yes	Yes	Yes	Yes
MVR	Yes	Yes	Yes	Yes	Yes	Yes
Jumbo frame forwarding	Yes	Yes	Yes	Yes	Yes	Yes
802.1p class of service	Yes	Yes	Yes	Yes	Yes	Yes
Security						
MAC freeze/intrusion lock	Yes	Yes	Yes	Yes	Yes	Yes
802.1X authentication	Yes	Yes	Yes	Yes	Yes	Yes
TACACS+	Yes	Yes	Yes	Yes	Yes	Yes
ACL security filter L2/L3/L4	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS MAC login	Yes	Yes	Yes	Yes	Yes	Yes
VLAN stacking (Q-in-Q)	Yes	Yes	Yes	Yes	Yes	Yes
Selective Q-in-Q	Yes	Yes	Yes	Yes	Yes	Yes
Green features						
Fan type	Swappable fan	Fanless	Fan	Fanless	Fan-tray	Fan-tray
Others						
IPv6	Yes	Yes	Yes	Yes	Yes	Yes
Physical specifications						
Dimensions (WxDxH)(mm/in.)	440 x 250 x 44.35/17.32 x 9.84 x 1.74	441 x 269 x 45/17.36 x 10.59 x 1.77	441 x 269 x 45/17.36 x 10.59 x 1.77	440 x 270 x 44/17.32 x 10.63 x 1.73	440 x 270 x 44/17.32 x 10.63 x 1.73	440 x 225 x 44/17.32 x 8.86 x 1.73
Weight (kg/lb.)	5.6/12.345	3.6/7.9	3.6/7.9	3.1/6.8	3.7/8.2	3.5/7.7

MSAN/DSLAM product portfolio

OSP | Remote/central



	GES2104-R55 GES2104-A55	GES1116-FSA	GES1316-FSA	VES1724-55C	VES1724-56B2	VES1724-58V	IES-1000	IES4105	IES-5106	IES-5112	IES-6000	IES4204	IES5206	IES5212	IES6217
	4-port G.fast DPU	16-port G.fast DPU	8/16-port G.fast DPU	24-port VDSL2 Box DSLAM	24-port VDSL2 Box DSLAM	24-port VDSL2 Box DSLAM	1U 2-slot Remote MSAN	2U 5-slot Chassis MSAN	5U 6-slot Chassis MSAN	8U 12-slot Chassis MSAN	12.5U 17-slot Chassis MSAN	2U 4-slot Chassis MSAN	5U 6-slot Chassis MSAN	8.3U 12-slot Chassis MSAN	14U 17-slot Chassis MSAN

Port density																
ADSL2+	-	-	-	-	-	-	24	128	360	720	1152	-	-	-	-	-
ADSL2+ Combo	-	-	-	-	-	-	-	-	240	480	768	-	-	-	-	-
SHDSL	-	-	-	-	-	-	32	-	240	480	768	-	-	-	-	-
VDSL2	-	-	-	-	24	24	-	96	240	480	768	-	-	-	-	-
VoIP	-	-	-	-	-	24	-	256	360	720	1152	-	-	-	-	-
VDSL2/ Vectoring	-	-	-	24	-	-	-	-	-	-	-	96	192	2 x 192	3 x 192	-
1G AON	-	-	-	-	-	-	-	-	120	240	384	80	200	400	600	-
10G AON	-	-	-	-	-	-	-	-	-	-	-	80	200	400	600	-
PON	-	-	-	-	-	-	-	-	-	-	-	32	64	160	-	-
10G PON	-	-	-	-	-	-	-	-	-	-	-	32	64	-	-	-
Combo PON	-	-	-	-	-	-	-	-	-	-	-	32	64	-	-	-
G.fast	4 (106 MHz)	16 (106 MHz)	8 (212 MHz)/ 16 (106 MHz)	-	-	-	-	-	-	-	-	-	-	-	-	-

MSAN/DSLAM key features

Category	Model	Key features
Central MSAN	IES-6000	<ul style="list-style-type: none"> Maximum 1152-port VoIP density, 1152-port ADSL2+ density, 768-port ADSL2+ combo density, 768-port SHDSL density, 768-port VDSL2 density, or 384-port Gigabit Ethernet density Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Full redundancy of management card and power module Comprehensive QoS to enhance triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
	IES6217	<ul style="list-style-type: none"> Maximum 192x3-port vectoring VDSL density, 600-port Gigabit Ethernet density Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Board-Level Vectoring (BLV) and System-Level Vectoring (SLV) Full redundancy of management card and power module Comprehensive QoS enhanced triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
	IES-5112	<ul style="list-style-type: none"> Maximum 720-port ADSL2+ density, 480-port ADSL2+ combo density, 480-port SHDSL density, 480-port VDSL2 density, 720-port VoIP density, or 240-port Gigabit Ethernet density Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Full redundancy of management card and power module Comprehensive QoS to enhance triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
	IES5212	<ul style="list-style-type: none"> Maximum 192x2-port vectoring VDSL density, 400-port Gigabit Ethernet density, or 160-port GPON density Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Board-Level Vectoring (BLV) and System-Level Vectoring (SLV) Full redundancy of management card and power module Comprehensive QoS enhanced triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
	IES-5106	<ul style="list-style-type: none"> Maximum 360-port ADSL2+ density, 240-port ADSL2+ combo density, 240-port SHDSL density, 240-port VDSL2 density, 360-port VoIP density, or 120-port Gigabit Ethernet density Flexible ACL, VLAN-aware DHCP and anti-IP/MAC address spoofing to prevent malicious attack DHCP option 82 and PPPoE IA features support versatile IP address assignment Comprehensive QoS to enhance triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
IES5206	<ul style="list-style-type: none"> Maximum 192-port vectoring VDSL density, 200-port Gigabit Ethernet density, 64-port GPON density or 64-port XGS-PON density or 64-port Combo PON density Supports symmetric XGS-PON for residential, cloud, and enterprise services Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Board-Level Vectoring (BLV) and System-Level Vectoring (SLV) Full redundancy of management card and power module Comprehensive QoS enhanced triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation 	

Category	Model	Key features
Central MSAN	IES4204	<ul style="list-style-type: none"> Maximum 96-port vectoring VDSL density, 80-port Gigabit Ethernet density, 32-port GPON density, or 32-port XGS-PON density or 32-port Combo PON density Supports symmetric XGS-PON for residential, cloud, and enterprise services Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Full redundancy of management cards and power module Comprehensive QoS enhanced triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
	IES4105	<ul style="list-style-type: none"> Maximum 128-port ADSL2+ density, 96-port VDSL2 density, or 256-port VoIP density Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks DHCP option 82 and PPPoE IA features support versatile IP address assignment Comprehensive QoS enhanced triple-play experience Field-proven IGMP snooping and proxy for IPTV deployments Sophisticated OAM&P features Temperature-hardened for flexible installation
Remote MSAN/DSLAM	IES-1000	<ul style="list-style-type: none"> Maximum 24-port ADSL2+ density, or 32-port SHDSL density Two Fast Ethernet interfaces for uplink Supports 802.1p QoS, priority queuing, 802.1q VLAN tag, and multicast 1U, DC or AC power, and built-in POTS splitter 2 FE electrical interface for uplinks and subtending
	VES1724-56B2 VES1724-55C VES1724-58V	<ul style="list-style-type: none"> Maximum 24-port VDSL2 density (VES1724-56B2, VES1724-58V), 24-port VoIP density (VES1724-58V), or 24-port vectoring VDSL density (VES1724-55C) Complies with VDSL2 standards including ITU-T G.993.2, G994.1, and G.997.1 VDSL2 bonding and G.INP SIP and H.248 for smooth voice over IP migration (VES1724-58V) AC or DC dual-power with battery charge (VES1724-58V) Fanless design for energy-saving and energy-saving and extended product life (VES1724-56B2, VES1724-55C) Comprehensive QoS enhanced triple-play experience Sophisticated OAM&P features Temperature-hardened for flexible installation
	GES1316-FSA GES1116-FSA	<ul style="list-style-type: none"> G.fast with G.vectoring and VDSL2/35b fallback (GES1316-FSA) Multi-service interfaces including G.fast, VDSL2, GPON, and fiber-based GbE Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks Field-proven IGMP snooping and proxy for IPTV deployments Comprehensive QoS enhanced triple-play experience Sophisticated OAM&P features AC/DC dual-power with battery charge function Fanless design for energy-saving and extended product life Temperature-hardened for flexible installation
	GES2104-R55 GES2104-A55	<ul style="list-style-type: none"> G.fast with G.vectoring and VDSL2 fallback Multi-service interfaces including G.fast, VDSL2, GPON, and fiber-based GbE services Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks Field-proven IGMP snooping and proxy for IPTV deployments Comprehensive QoS enhanced triple-play experience Sophisticated OAM&P features Environmental-hardened for flexible installation Fanless design for energy-saving and extended product life
	OSP	<ul style="list-style-type: none"> G.fast with G.vectoring and VDSL2 fallback Multi-service interfaces including G.fast, VDSL2, GPON, and fiber-based GbE services Flexible ACL, VLAN-aware DHCP, and anti-IP/MAC address spoofing to prevent malicious attacks Field-proven IGMP snooping and proxy for IPTV deployments Comprehensive QoS enhanced triple-play experience Sophisticated OAM&P features Environmental-hardened for flexible installation Fanless design for energy-saving and extended product life

MSAN/DSLAM feature matrix

		Central MSAN						
		IES6217	IES5212	IES5206	IES4204	IES-6000	IES-5112	IES-5106
Product name		14U 17-slot Temperature-Hardened Chassis MSAN	8.3U 12-slot Temperature-Hardened Chassis MSAN	5U 6-slot Temperature-Hardened Chassis MSAN	2U 4-slot Temperature-Hardened Chassis MSAN	12.5U 17-slot Temperature-Hardened Chassis MSAN	8U 12-slot Temperature-Hardened Chassis MSAN	5U 6-slot Temperature-Hardened Chassis MSAN
Power		-36 to -72 V DC	-36 to -72 V DC	-36 to -72 V DC or 100 to 240 V AC	-36 to -72 V DC or 110 to 240 V AC battery charger	-36 to -72 V DC	-36 to -72 V DC	-36 to -72 V DC
Power redundancy		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operating temperature		-40°C to 65°C	-40°C to 65°C	-40°C to 65°C	-40°C to 65°C	-40°C to 65°C	-40°C to 65°C	-40°C to 65°C
Operating humidity		10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH
Slot	Uplink	2/1	2	2/1	2	2/1	2	1
	Downlink	15/16	10	4/5	2	15/16	10	5
Interface								
Uplink	1000BASE-SX/LX	8	8	8	4 + 4	4	4	4
	1000BASE-SX/LX/ZX	8	8	8	4 + 4	2	2	2
Downlink	Combo PON interface	-	-	64 Combo PON	32 Combo PON	-	-	-
	10G PON interface	-	-	64 XGS-PON	32 XGS-PON	-	-	-
	PON interface	-	160	64	32	-	-	-
	GE interface	600	400	200	80	384	240	120
	VDSL2 interface	192 x 3 (Vectoring)	192 x 2 (Vectoring)	192 (Vectoring)	96 (Vectoring)	768	480	240
	ADSL2+ interface	-	-	-	-	1152	720	360
	ADSL2+ combo interface	-	-	-	-	768	480	240
	G.SHDSL.bis interface	-	-	-	-	768	480	240
	VoIP interface	-	-	-	-	1152	720	360
PON								
Maximum splitter ratio		-	GPON 1:128	Combo PON: 1:256 10G PON: 1:256 GPON: 1:128	Combo PON: 1:256 10G PON: 1:256 GPON: 1:128	-	-	-
Type B protection		Yes	Yes	Yes	Yes	-	-	-
AES		Yes	Yes	Yes	Yes	-	-	-
SFP digital diagnostic management		Yes	Yes	Yes	Yes	-	-	-
QoS								
802.1p priority queue		8	8	8	8	8	8	8
802.1q tag-based VLAN		Yes	Yes	Yes	Yes	Yes	Yes	Yes
SPQ/WFQ		Yes	Yes	Yes	Yes	Yes	Yes	Yes
DBA		Yes	Yes	Yes	Yes	-	-	-
Security								
IGMP v2, v3		Yes	Yes	Yes	Yes	Yes	Yes	Yes
IGMP fast leave		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multicast VLAN		Yes	Yes	Yes	Yes	Yes	Yes	Yes
MLDv1 & MLDv2 snooping and proxy		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management								
SNMP v2c, v3		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Web management		Yes	Yes	Yes	Yes	Yes	Yes	Yes
CLI management		Yes	Yes	Yes	Yes	Yes	Yes	Yes
EMS management		NetAtlas EMS	NetAtlas EMS	NetAtlas EMS	NetAtlas EMS	NetAtlas EMS	NetAtlas EMS	NetAtlas EMS
Physical specifications								
Dimensions (WxDxH)(mm/in.)		440 x 275 x 622/ 17.32 x 10.83 x 24.49	440 x 275 x 370/ 17.32 x 10.83 x 14.57	440 x 275 x 222/ 17.32 x 10.83 x 8.74	440 x 285 x 89/ 17.32 x 11.22 x 3.5	440 x 250 x 544/ 17.32 x 9.84 x 21.41	440 x 250 x 363/ 17.32 x 9.84 x 14.29	440 x 250 x 215/ 17.32 x 9.84 x 8.46
Weight (kg/lb.)		25.5/56.22	15.5/34.17	13/28.66	10.6/23.37	15/33.07	13.34/29.41	10.2/22.49

MSAN/DSLAM feature matrix

		Remote MSAN/DSLAM					OSP
		IES4105	IES-1000	VES1724-56B2 VES1724-55C VES1724-58V	GES1316-FSA	GES1116-FSA	GES2104-R55 GES2104-A55
Product name		2U 5-slot Temperature-Hardened Chassis Remote MSAN	1U 2-slot Remote MSAN and Line Cards	24-port Temperature-Hardened VDSL2 Box DSLAM	8/16-port Temperature-Hardened G.fast DPU	16-port Temperature-Hardened G.fast DPU	4-port Environmental-Hardened G.fast DPU
Power		-36 to -72 V DC or 100 to 240 V AC or dual power	-36 to -72 V DC or 100 to 240 V AC	-36 to -72 V DC or 100 to 240 V AC	-36 to -72 V DC or 100 to 240 V AC battery charger	-36 to -72 V DC or 100 to 240 V AC battery charger	100 to 240 V AC or reverse power feeding
Operating temperature		-40°C to 65°C	0°C to 50°C	-40°C to 65°C	-40°C to 60°C	-40°C to 65°C	-40°C to 65°C
Operating humidity		10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH	10% to 95% RH
Slot	Uplink	1	-	-	-	-	-
	Downlink	4	-	-	-	-	-
Interface							
Uplink	100BASE-SX/LX	-	2	-	-	-	-
	1000BASE-SX/LX	2	-	2	-	-	1
	10000BASE-SX/LX/ZX	-	-	-	2	2	-
Downlink	VDSL2 interface	96	-	24	-	-	-
	ADSL2+ interface	128	24	-	-	-	-
	G.SHDSL.bis interface	-	32	-	-	-	-
	VoIP interface	256	-	24 (IES1724-58V)	-	-	-
	G.fast interface	-	-	-	8/16	16	4
QoS							
802.1p priority queue		8	8	8	8	8	8
802.1q tag-based VLAN		Yes	Yes	Yes	Yes	Yes	Yes
SPQ/WFQ		Yes	Yes	Yes	Yes	Yes	Yes
Security							
IGMP v2, v3		Yes	Yes	Yes	Yes	Yes	Yes
IGMP fast leave		Yes	Yes	Yes	Yes	Yes	Yes
Multicast VLAN		Yes	Yes	Yes	Yes	Yes	Yes
MLDv1 & MLDv2 snooping and proxy		Yes	-	Yes	Yes	Yes	Yes
Management							
SNMP v2c, v3		Yes	-	Yes	Yes	Yes	Yes
Web management		Yes	Yes	Yes	Yes	Yes	Yes
CLI management		Yes	Yes	Yes	Yes	Yes	Yes
EMS management		Yes	Yes	Yes	Yes	Yes	Yes
Physical specifications							
Dimensions (WxDxH)(mm/in.)		441.2 x 262 x 88.8/ 17.37 x 10.31 x 3.5	440 x 320 x 44/ 17.32 x 12.60 x 1.73	440 x 250 x 44.35/ 17.32 x 9.84 x 1.75	440 x 250 x 44.25/17.32 x 9.84 x 1.73	440 x 250 x 44.25/17.32 x 9.84 x 1.73	438 x 216 x 104/17.24 x 8.5 x 4.09
Weight (kg/lb.)		3.2/7.05	3.7/8.16	4.7/10.36	6.0/13.23	6.0/13.23	13/28.66

MSAN/DSLAM line card information

Linecard type	Model	Description	IES6217	IES5212	IES5206	IES4204	IES-6000	IES-5112	IES-5106	IES4105	IES-1000
Management and switching cards	MSC1324GB	Management and switching card with 2 10G and 4 GbE combo ports					•	•	•		
	MSC1324GC	Management and switching card with 2 10G and 4 GbE combo ports					•	•	•		
	MSC1280XB	Management card with 8 10G SFP+ open slots	•	•	•						
	MSC1240QA	Management card with 4 10G SFP+ open slots				•					
	MSC1002GA	Management card with 2 GbE combo ports									•
VDSL line cards	VLC1424G-56	24-port DMT-based VDSL2 line card, Annex A, 30a profile					•	•	•		
	VLC1348G-51	48-port DMT-based VDSL2 line card 17a profile, Annex A/Annex B					•	•	•		
	VLC1348G-53	48-port DMT-based VDSL2 line card 17a profile, Annex A/Annex B					•	•	•		
	VLC1448X-51S	48-port vectoring VDSL2 Annex A line card with built-in ETSI&ANSI POTS splitter, 17a profile	•	•	•	•					
	VLC1448X-51F	48-port dual-line vectoring VDSL2 Annex A line card with built-in ETSI & ANSI POTS splitter, 17a profile				•					
	VLC1448X-51D	48-port dual-line vectoring VDSL2 Annex A line card (over POTS), 17a profile				•					
	VLC1448X-51	48-port vectoring VDSL2 Annex A/B/M/J line card, 17a profile	•	•	•	•					
	VLC1124A-51	24-port VDSL line card, Annex A and 17a profile with built-in splitter									•
ADSL line cards	ALC1372G-51	72-port Annex A ADSL2/ADSL2+ line card (over POTS)					•	•	•		
	ALC1348G-51C	48-port Annex L and Annex M ADSL2+/VoIP combo card					•	•	•		
	ALC1132A-51	32-port Annex A ADSL2/2+ line card (over POTS) with built-in splitter									•
	AAM1212-51	12-port Annex A ADSL2/ADSL2+ module (over POTS)									•
VoIP line cards	VOP1164A-61	64-port VoIP line card. H.248 or SIP									•
	VOP1372G-61 (SIP/H.248)	72-port SIP/H.248 VoIP line card					•	•	•		
Vectoring line card	VEC1001X	192-port vectoring engine card	•	•	•						
GbE line cards	GLC1320G-55	20-port Gigabit Ethernet SFP (1000BASE-FX, 1000BASE-BX, and 1000BASE-LX)					•	•	•		
	GLC1540X-55A	40-port Gigabit Ethernet Line Card with 20 C-SFP/SFP Slots	•	•	•	•					
	GLC1440X-55A	40-port Gigabit Ethernet line card (20 x C-SFP/SFP slots)	•	•	•	•					
GPON line cards	OLC3416B-IA	16-port GPON Line Card		•	•	•					
AIO PON line card	OLC3816-IA	16-port All-In-One (AIO) PON Line Card			•	•					
SHDSL line cards	SLC1348G-22	48-port G.SHDSL.bis line card					•	•	•		
	SAM1316-22	12-port G.SHDSL.bis extension module									•

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