

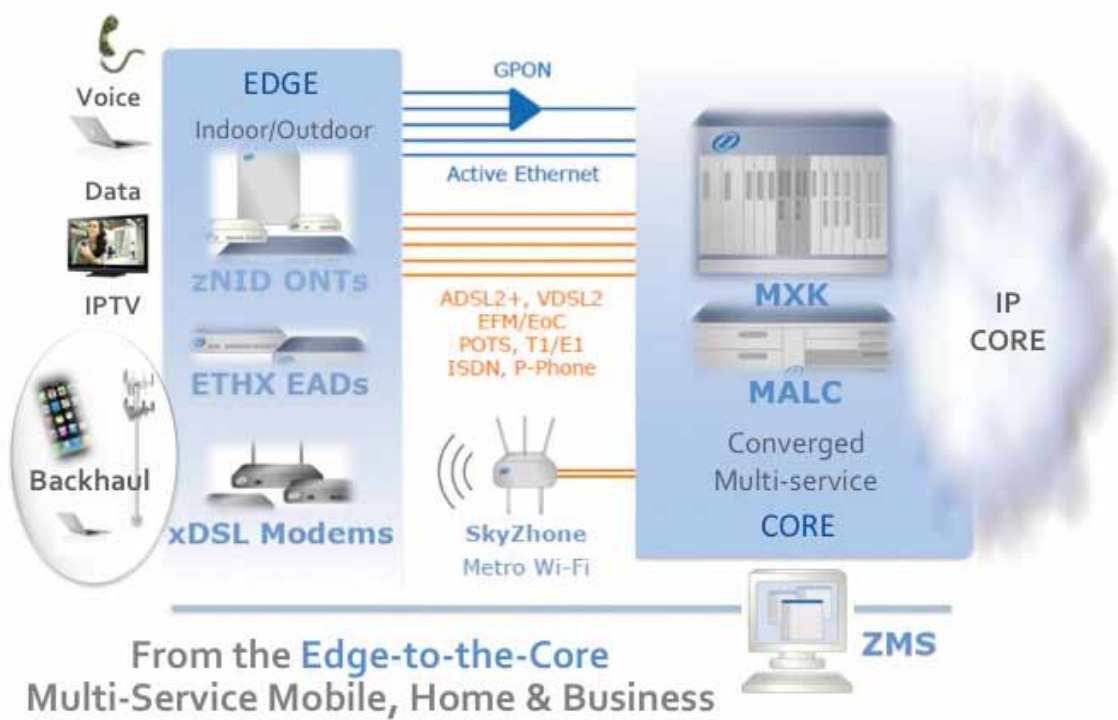


Quick Reference Products Guide

Bandwidth Changes Everything!™

THE IP ZHONE

First Responders • Medical • Education • Military and Government • Small and Large Business • Public Utility • Residential



As a worldwide leader in access technologies, Zhone provides the industry's broadest portfolio of Multi-Service Access Platform (MSAP), FTTx, and enhanced IP DSLAM solutions. Delivering voice, data, video, and wireless services in one converged architecture, Zhone provides an intelligent access approach for any service provider need.

FTTx Solutions

Zhone's MXK™ intelligent terabit access concentrator features non-blocking capacity of up to 3,600 100 Mbps GPON subs or 360 1G Active Ethernet subs. Beyond sheer bandwidth, the MXK leverages Zhone's SLMS access operating system to guarantee high quality of experience for subscribers, along with ease of management.



MXK FTTx OLT

8 and 4 port GPON cards and 10 and 20 port Active Ethernet cards for the MXK.



	GPON	Active Ethernet
Standard	ITU G.984.1-4, Class B+, C optics	IEEE 802.3, 802.1Q/p, & 802.3ah EFM
Speeds: upstream/downstream	2.5G downstream, 1.25 Gbps upstream	100/1000 Ethernet Interfaces (SFP-based)
Scale (8U)	9216	360



zNID 4210 ONT



zNID 2520 Indoor GPON ONT



WDM Combiner
RF video overlay



PON Splitters
Chassis/splitter modules
1U, 2U or 4U Models

zNID™ Model Reference Chart

Model	2204	2244	2284	2501	2511	2516	2520	4220	4221	4222	4223	4224	4225	4240	4241	4242	4243	4224	4225	5114	5120	7310	8224	8324	9108
Type																									
GPON				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Active E.	•	•	•					•		•		•		•		•		•		•		•		•	
Location																									
Outdoor								•	•	•	•	•	•	•	•	•	•	•	•			•		•	
Indoor	•	•	•	•	•	•	•													•	•		•	•	
Application																									
Residential	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
Residential Gateway	•	•	•			•				•	•	•	•	•	•	•	•	•	•					•	
Business																				•	•	•	•	•	
Power																									
Battery Backup Support	•	•	•					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Interfaces																									
Fast Ethernet	3	3	3		4		4																24	24	
Gigabit Ethernet	1	1	1	1		4		2	2	2	2	2	2	2	2	2	2	2	2	4	4	1		9	
Voice		4	8		2	2	4	2	2	2	2	2	2	4	4	4	4	4	4	2	2	8		24	
PWE (T1/E1)																				4	8	2			
RFOG RFR									•						•										
RF Video					•				•		•		•		•		•		•						
HPNA - Coax/Phone										•	•	•	•			•	•	•	•						
WiFi						•																			
Management																									
ZMS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

*Includes SMART OMCI™, Zhone's fully standards compliant implementation of management of multi-vendor ONTs with interop proven through FSAN testing

OSP/OPX Solutions

Zhone's OPX cabinets are factory-equipped for easy installation and are fully tested to Telcordia GR-4487-CORE specifications. Fiber and/or copper service configurations are offered, along with power, cable and accessibility options to meet every need. Models include wall, pole and pad mounting configurations in various sizes for both chassis and 1U products.

Cabinets

	Pad mount	Pole mount	Wall mount	Battery option	Rectifier	Alarms	Protection	HVAC	Capacity
	5200	•	•	•	•	•	•	•	200-1800 ports
	4300	•	•	•	•	•	•	•	50-300 ports
	Raptor XP	•	•		•	•	•		48 ports ADSL2+
	MALC XP	•	•		•	•	•		48 ports POTS, 48 ports ADSL2+

Access Aggregation Platforms

Zhone's Multi-Service Access Platforms (MSAP), support copper and/or fiber line cards for every service need. MXK is the industry's first intelligent terabit-scale access concentrator, leading the field across the full spectrum of next-generation multi-service access platform capabilities, whether over fiber or copper. MALC™ combines functionality normally found in BLC, Ethernet Aggregation and DSLAM systems into an integrated, powerful service engine. The Raptor™ line is the MALC hardware without voice services software.

Scalable Access solutions

MSAP Products			
Applications POTS VOIP Broadband Data IPTV Triple Play Ethernet Services			
	MXK 823/819/319	MALC 723/719/319	MALC XP

IP DSLAM Products			
Applications Broadband Data IPTV Ethernet Services			
	Raptor 319 Raptor 719 Raptor 723	Raptor XP	Bitstorm™ HP

Line Connectivity Options

Line Cards (subs)	MXK 823/819	MXK 319	MALC 723/719	MALC 319
TDM / Copper				
POTS			48-912/720	48-384
POTS/ADSL2+	48-384/288	48-144	48-432/384	48-192
ISDN			24-432/384	24-192
T1/E1 PWE			24-432/384	24-192
T1/E1 ATM			32-640/512	32-256
DS3/E3 subending			4-80/64	4-32
DSL / Copper				
ADSL2+	48-864/672	48-336	48-960/768	48-384
ADSL2+ with splitters	48-384/288	48-144	48-432/384	48-192
ReachDSL			24-480/384	24-192
G.SHDSL 2 wire			12-960/768	12-384
VDSL2	24-432/336	24-168	24-480/384	24-192
Ethernet / Copper				
EFM T1/E1 PKT			24-480/384	24-192
EFM G.SHDSL	24-432/336	24-168	24-480/384	24-192
Fiber				
GPON-4*	256-4608/3584	256-1792		
GPON-8*	512-9216/7168	512-3584		
Active Ethernet-Single Slot	20-360/280	20-140		
Active Ethernet-Dual Slot	20-160/120	20-60		
Service Cards				
MTAC with POTS ringer	●	●	●	●
Enhanced MTAC (integrated test)	●	●	●	
Voice Gateway			8 or 32 T1/E1	8 or 32 T1/E1

*Assumes 64 splits

MSAP 1U

Line Cards	MALC XP
POTS/ADSL2+	48 POTS, 48 ADSL2+

IP DSLAM

Line Cards	Raptor 319, 719, 723	Raptor XP	Bitstorm HP
TDM / Copper	T1/E1 ATM and DS3/E3 subending same as MALC		
DSL / Copper	Same as MALC	48-port ADSL2+ and 48-port ADSL2+ with splitters 24-port SHDSL.bis 24-port VDSL2	24-port VDSL2

High Density Line Card Options

Copper and/or fiber line cards can be used in any combination in any chassis. Both residential and business services may be supported from a single shelf. The flexibility to add or combine services based on need without requiring adjunct equipment or specialty modules means a more future-proof approach to service provisioning and a faster and more efficient path to new revenues for an operator.

Center stage in MXK design is non-blocking capacity up to 3,600 100 Mbps GPON subscribers or 360 1G Active Ethernet subscribers per chassis, served by an all-IP switching fabric capable of scaling to hundreds of Gbps. With fully redundant, dual-star 20 Gbps connections to every slot in the chassis, MXK provides unmatched non-blocking bandwidth for HD- and unicast-rich services

On MALC, Voice Gateway functionality provides smooth and flexible migration path for legacy TDM to pure packet voice over an all-IP network without affecting subscribers' phones and services.

Access Aggregation Product Specifications

MSAP platforms leverage Zhone's unique Single-Line, Multiple Services (SLMS) architecture. SLMS allows deployment flexibility as any service blade can be inserted in any service slot. It also future-proofs the platform because services can be added and enhanced via software upgrades – not expensive hardware replacements.

MXK, MALC and Bitstorm Features & Specifications



	MXK 823/819/319	MALC 723/719/319	MALC XP	Bitstorm
Physical				
Configuration	Chassis	Chassis	Self-contained	Self-contained
Size	8U x 19 or 23" rack 3U x 19	7U x 19 or 23" rack 3U x 19" rack	1U x 19" rack	1U x 19" rack
Power	-48V DC	-48V DC	-48V DC	-48V DC 110/220V A
Power Options	NA	NA	LP/AC (separate PS)	NA
Uplink Slots	2	2	NA	NA
Line Card Slots	18/14/7	19/15/8	NA	NA
Ambient Temperature	-40C to +65C	-40C to +65C	-40C to +65C	-40C to +65C
Card Replace	Hot swap	Hot swap	Unit replacement	Unit replacement
Uplinks				
10 GigE	●			
Gig.E	●	●	●	●
Gig.E RPR		●	●	
10/100 Base-T	●	●	●	
T1/E1		●		
OC3/STM-1		●		
Management				
RADIUS	●	●	●	
ZMS/CLI	●	●	●	●
Web GUI	●	●	●	
Data Features				
Layer 2 Bridging	●	●	●	●
Layer 3 Routing	●	●	●	●
DHCP Server/Relay	●	●	●	Relay
802.1p QoS	●	●	●	●
802.1Q VLAN	●	●	●	●
Video Features				
IGMPv2 Aware	●	●	●	●
Active Query	●	●	●	●
Access Control	●	●	●	●
RTSP Unicast	●	●	●	●
Video Bridging	●	●	●	●
Video Routing	●	●	●	●
RF video Overlay	●	●		
Voice Features				
GR-303 / V5.2		●		
Voice Gateway		●		
Emergency Standalone (ESA)		●	●	
MGCP VoIP	●	●	●	
SIP VoIP	●	●	●	
H.248 VoIP	●	●	●	

Ethernet over Copper

MXK and MALC provide the highest port density for copper Ethernet port aggregation in the market. Loop Bonding is supported with high density 24-port cards that allow bonding across all ports. 802.3ah EFM and pre-standard Net to Net (N2N) bonding are also fully supported.

Copper Ethernet Aggregation

	MXK 823/819	MXK 319	MALC 723/719	MALC 319	Raptor-XP-170
SHDSL.bis	432/336 ports	168 ports	480/384 ports	192 ports	24 ports
T1/E1			480/384 ports	192 ports	

- MXK/MALC-EFM-SHDSL-24 NTP-EXT (Network Timing with Line Power)
- MXK/MALC-EFM-SHDSL-24 NTWC-EXT (Network Timing with Wetting Current)
- MALC-EFM-T1/E1-24
- Raptor-XP-170 1U Product

Ethernet Access Devices (EADs)

	3400 Series	3200 Series	3100 Series	3000 Series	2200 Series	2100 Series	TNE	SNE	ENE
WAN Interface	SHDSL.bis 11.4 Mbps	SHDSL.bis 11.4 Mbps	T1/E1, SHDSL.bis 11.4 Mbps	SHDSL.bis 11.4 Mbps	DS3 45Mbps	SHDSL.bis 5.7 Mbps	T1 1.544 Mbps	SHDSL 2.3 Mbps	E1 2.048 Mbps
WAN Ports	4 or 8	1, 2, or 4	4	1, 2 or 4	1 or 2	1 or 2	1, 2, 4 or 8	1, 2 or 4	1, 2, 4 or 8
Bandwidth (at max ports)	Up to 91.2 Mbps	Up to 45.6 Mbps	Up to 45.6 Mbps	Up to 45.6 Mbps	Up to 90 Mbps	Up to 11.4Mbps	Up to 12 Mbps	Up to 9.2 Mbps	Up to 16 Mbps
Loop Bonding	802.3ah EFM N2N	802.3ah EFM	802.3ah EFM	802.3ah EFM	N2N	N2N	N2N	N2N	N2N
LAN Interfaces 10/100 Base-T	4	4	4	4	4	1 or 2	1 (1/2 port) 4 (4/8 port)	1	1 (1/2 port) 4 (4/8 port)
Management	CLI, Web, SNMP	CLI, Web, SNMP	CLI, Web, SNMP	CLI, Web, SNMP	CLI, Web, SNMP	CLI, Web, SNMP	CLI, Web, SNMP (4/8 port)	Unmanaged	CLI, Web, SNMP (4/8 port)
QoS	802.1p	802.1p	802.1p	802.1p	802.1p	802.1p	802.1p		802.1p
Layer 2	Bridging	Bridging	Bridging	Bridging	Bridging	Bridging	Bridging	Bridging	Bridging
Layer 3	Routing	Routing	Routing	Routing	Routing L3 aware	Routing L3 aware	Routing L3 aware		Routing L3 aware
Voice Ports		4 or 8							



EtherXtend™ EADs

- 1–8 pair T1/E1 and SHDSL.bis copper bonding
- Up to 100 Mbps bonded bandwidth
- Bookend or Aggregation application
- 1–4 Ethernet LAN interface options
- T1/E1 Psuedowire



SkyZhone™

The industry's first metro Wi-Fi system designed to cost effectively deliver high-capacity, high-reliability, multi-service networks. Features:

- 802.11n, all-MIMO antenna architecture, integrated DSL backhaul, and line powering.
- Designed to address the challenges most directly affecting system operational costs and performance.
- Fully integrated with Zhone's MALC multi-service access platform

Customer Premises Equipment

CPE Quick Reference Guide



Model	DSL Tech.	Chip	Annex	Ethernet ports	USB ports	Phone filter	TR-069	IGMP	DELT	Bridge/Router	NAT/DHCP	WiFi
1511	ADSL2+	Broadcom	A, L, M	1	0		●	●	●	Bridging Routing	●	
1512	ADSL2+	Broadcom	A, L, M	4	0		●	●	●	Bridging Routing	●	
1518	ADSL2+	Broadcom	A, L, M	4	0		●	●	●	Bridging Routing	●	802.11 b/g
1611	ADSL+	Broadcom	A, L, M	1	0			●		Bridging Routing	●	
6211	ADSL2+	Broadcom	A, B, L, M	1	1	●		●	●	Bridging Routing	●	
6212	ADSL2+	Broadcom	A, L, M, B	4	0	●	●	●	●	Bridging Routing	●	
6218	ADSL2+	Broadcom	A, L, M	4	0	●	●	●	●	Bridging Routing	●	802.11 b/g
6219	ADSL2+	Broadcom	A, L, M	4	0	●	●	●	●	Bridging Routing	●	802.11 b/g 400m W
6228	Bonded ADSL2+	Broadcom	A, L, M G.998.1 Bond	4	0	●	●	●	●	Bridging Routing	●	802.11 b/g
6381	Reach/ADSL2+	TI	A	1	1	●		●		Bridging Routing	●	
6388	Reach/ADSL2+	TI	A	4	0	●		●		Bridging Routing	●	802.11 b/g
6610	VDSL2	Conexant	A, B	1	0	●		●		Bridging		
6618	VDSL2	Conexant	A, B	4	2		●	●		Bridging Routing	●	802.11 b/g
6652	VDSL2	Ikanos	A, B, C	4	0		●	●		Bridging Routing	●	
6718	VDSL2/ADSL2+	Broadcom	A, B, C, L, M	4	1		●	●	●	Bridging Routing	●	802.11 b/g
1740	SHDSL	Conexant	G.998.1 Bond	4	0			●		Bridging Routing	●	

Customized Private Branding

Putting your name in front of the customer can help highlight your differentiated services. Zhone offers a range of special programs that let you put your own brand on CPE products, including packaging.



Carrier OSS	<ul style="list-style-type: none"> Single integration to manage complete access network 	
Zhone OSS Gateway	<ul style="list-style-type: none"> Powerful client-server architecture Flexible and completely programmable Function calls to all of ZMS 	
ZMS Element Management System	<ul style="list-style-type: none"> Manage all Zhone network elements with one tool Service definition, control, and reporting 	
Web GUI, CLI, scripts	<ul style="list-style-type: none"> Direct configuration interface Easy-to-use GUI Powerful CLI 	

Management Systems

ZMS™ is a standards-based, carrier-class element management solution that provides management support for Zhone multi-service networks. The ZMS client-server architecture uses proven industry standard components to provide a robust platform. ZMS automates a number of complex, tedious and error-prone tasks, thereby raising productivity, improving accuracy and reducing costs for operators.

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Z H O N E

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