

Copper and Fiber Access + Transport Platform Delivering Optimized Voice, Video and Data

- ✓ *Universal Access for Triple Play*
- ✓ *IP Video / RF Video Overlay*
- ✓ *VOIP: SIP / MGCP / H.248*
- ✓ *TDM/ATM to Packet Migration*
- ✓ *POTS to Pure Packet*
- ✓ *ADSL2+ / EFM / PWE*
- ✓ *Narrowband, Specials, T1 / E1*



MALC is a full-featured multi-service access platform optimized for delivering voice, data, and video services over a pure packet access network. MALC give carriers the flexibility to cost-effectively deliver triple play services over existing facilities and to migrate these services to a pure packet network. This migration is accomplished without disrupting subscriber service or revenue streams, giving carriers the ultimate flexibility for optimizing their networks and serving their subscribers.

Deployed in the Central Office, Remote Terminal, outdoor cabinets or basements, MALC offers a range of chassis options supporting densities from 24 to 960 ports per shelf. With provisioning and management common to all chassis, MALC minimize training, stocking, and operating expenses.

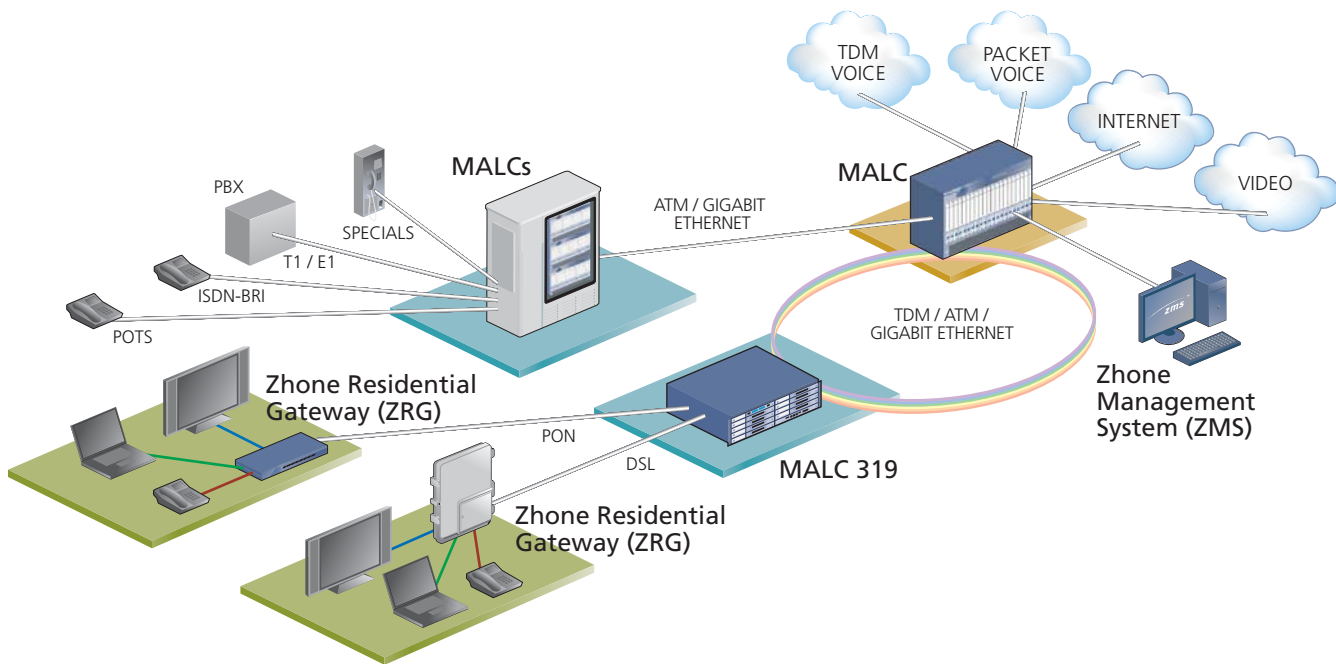
MALC enable service providers to deploy a wide variety of business and residential services in a single platform. MALC offers ADSL2+, ReachDSL, SHDSL, POTS, ISDN, T1/E1, and Pseudo-wire (PWE).

Enabling Residential & Business Services

The MSAP product line enables service providers the ability to offer high-end residential and business services on the same platform. Broadband, VOIP, IPTV, POTS, Ethernet and High Cap services can be offered over copper and/or fiber.

Flexibility

Service providers can leverage Zhone's flexible architecture to deploy different technologies such as POTS, xDSL, xPON, and EFM on its MSAPs in their Central offices or Remote Terminals. A range of form factors for all deployment sizes are offered.



Redundancy

The MALC chassis with its fault tolerant control software and redundant uplink hardware design increases the resiliency and the scalability of the product. It also offers Resilient Packet Ring (RPR) over Gigabit Ethernet to increase the reliability of the network.

Migration from TDM/ATM to IP

Software-selectable line and trunk interfaces provide elegant circuit-to-packet migration. A range of uplinks - including T1/E1 ATM (UNI and IMA), T1/E1 TDM (GR.303 and V5.2), SONET and Gigabit Ethernet - allow carriers to maintain existing TDM services while simultaneously retooling for VoIP services using SIP, MGCP or H.248 signaling. Moreover, Zhone's integrated ADSL + POTS technology eliminates cutovers and truck rolls by allowing carriers to provision broadband or narrowband services remotely.

Management

The MALC product line integrates into Zhone's Management system (ZMS) giving the service provider total control over their entire network. Using ZMS multiple MALC nodes can be managed from remote locations, customer provisioning, fault isolation, Auto discovery, alarm aggregation and maintenance can easily be performed without any service interruption.

Cost Savings/Operating Costs

Zhone's MALC provides the functions of a Broadband Loop Carrier (BLC), DSLAM, VoIP Line Access Gateway and a GR-303/V5.2-compliant voice gateway. The MALC allows access network operators to deliver Triple Play services concurrently over copper or fiber access lines. This flexibility provides Operators with reduced sparing, training, management and installation expenses, hence reducing overall operating cost

Cabinets

The Zhone access portfolio is completed with a full line of outside plant cabinets completely engineered to support Zhone's MALC product line. Zhone's cabinet line has configurations that are designed to support small density to large scale deployments, with a full range of options designed to meet Service Providers needs.

Technical Specifications

Dimensions

- MALC 319
 - 3U: 5.22 x 17.40 x 11.3 inches / 13.26 x 44.20 x 28.70 cm
 - Slots: 10; front card access
- MALC 719
 - 7U: 12.22 x 17.25 x 11.15 inches / 31.04 x 43.81 x 28.32 cm
 - Slots: 17; front card access
- MALC 723
 - 7U: 12.22 x 21.18 x 11.15 inches / 31.04 x 53.64 x 28.32 cm
 - Slots: 21; front card access

Power

- DC: -42 to -60 VDC
- Dual (A / B redundant) power feeds

Interfaces

- POTS
- POTS Specials
- ADSL (DMT / G.Lite) Annex A, B, C, M, S=1/2, 2+
- Combo ADSL2+ w/ Integrated POTS
- ADSL2+ w/ Integrated Splitters
- ReachDSL
- SHDSL (2w or 4w)
- SHDSL EFM 802.3ah with Bonding
- T1 / E1 ATM IMA
- T1 / E1 (CES) (structured, unstructured)
- T1 / E1 EFM Including Bonding
- Pseudo-wire (SAToP and CESoP)

Voice Support

- VoIP: MGCP (RFC 3435), SIP (RFC 3261), H.248
- VoATM: ATMf AAL2 LES
- G.711 encoding with G.168 echo cancellation
- G.726
- G.729 with fallback to G.711 for fax
- 2 Interface Groups per card
- GR-303 / V5.2
- Full GR-303 EOC and TMC implementation
- Integrated Specials: Ground Start, Dial Pulse, Metering, PLAR

Protocol Support

- RIP v1 (RFC 1058)/RIP v2 (RFC 2453)
- DHCP Server (RFC 2131, 2132)
- DHCP Relay
- Bridging 802.1D
- VLAN 802.1Q with 802.1p Priorities
- Multicast IGMP v1/v2
- IEEE 802.17 RPR

Management

- Terminals
 - ZMS (Zhone Management System) via SNMP v2c for GUI and CORBA IDL machine interface
 - Terminal for Command Line Interface (CLI)
 - Built-in GUI-based Management
- Management Interfaces
 - In-band IP over AAL5
 - Out-band IP over 10 / 100 Base-T Ethernet or V.24 serial for async terminal
 - Up to 12 external alarm closures

Regulatory Compliance

- NEBS compliant
- RUS listed
- Safety: UL 60950 3rd edition, CSA 950 3rd edition, EN 60950, AS / NZS 3260, TS 001
- Emissions: EN 55022A, CFR47 PART 15A (FCC)
- Immunity: NEBS GR-1089-Core level 3, EN 55024, EN 55082-1, T1.601-1992
- Environmental: NEBS GR-63-Core level 3, GR-487 compliant, ETS 300 019-2-x compliant, ISTA transportation and handling
- Network Certification: FCC Part 68, CTR-12, CTR-13, DOC CS-03, TSO 16, GR-57
- Telcordia OSMINE certification

Operating Requirements

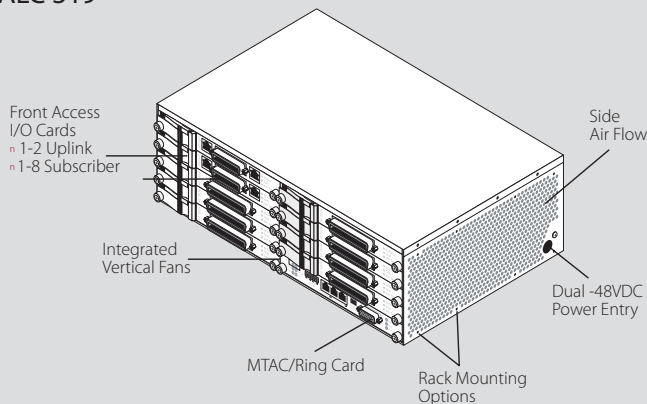
- Ambient operating temperature: -40°C to +65°C
- Relative operating humidity: up to 85% (non-condensing)
- GR-487 compliant
- Designed for outside plant deployment

Uplinks & Line Cards

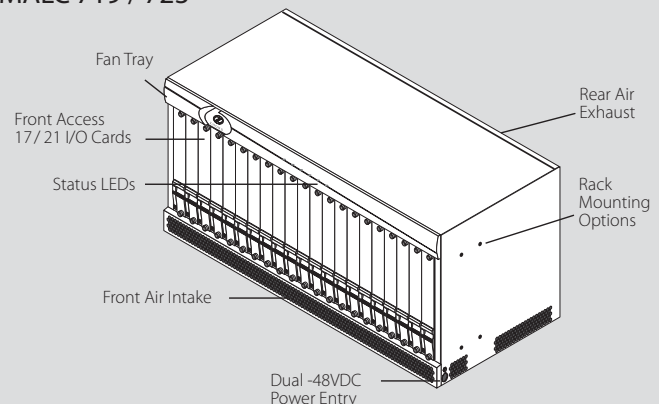
- Uplinks:
 - GE/FE/RPR w/ Optional TDM
- Copper based Line Cards:
 - ADSL2+/POTS Combo
 - POTS
 - P-Phone
 - Metallic Test Access/Ringer
 - Integrated Metallic Test Access
 - Voice Gateway
 - ADSL2+
 - ReachDSL
 - SHDSL Cell-based
 - SHDSL EFM
 - T1/E1 EFM/PKT
 - T1/E1 ATM/IMA
 - T1/E1 Circuit Emulation over IP/ATM
 - DS3/E3 Subtending

Purchase from Multicom  www.multicominc.com | 800-423-2594

MALC 319



MALC 719 / 723



Ordering Information

MALC Chassis

MALC-CHASSIS-319	3U, 19 Inch, 10 Slot Chassis
MALC-CHASSIS-19	7U, 19 Inch, 17 Slot Chassis
MALC-CHASSIS-23	7U, 23 Inch, 21 Slot Chassis

MALC Uplinks

MALC-UPLINK-2-FE/GE	2 port GigE Uplink Card
MALC-UPLINK-2-FE/GE-TDM	2 Port GigE Uplink with 8 Port T1/E1 TDM Uplink Ports

Residential DSL and Voice Access Line Cards

MALC-POTS-TDM/PKT-48	48 Port TDM and Packet POTS Line Card
MALC-POTS-GBL-TDM/PKT-24	24 Port TDM and Packet Line Card with Specials
MALC-POTS-EBS-TDM/PKT-24	24 Port P-Phone Line Card
MALC-ADSL+POTS-PKT-48A/M-2S	48 Port TDM and Packet Combo ADSL/POTS Line Card
MALC-VG-T1/E1-8-2S	8 Port Voice Gateway Line Card (2 Slot)
MALC-VG-T1/E1-32-2S	32 Port Voice Gateway Line Card (2 Slot)
MALC-ADSL-48A/M	48 Port ADSL2+ Line Card with Annex A, M support
MALC-ADSL+SPLTR-48A/M-2S	48 Port ADSL2+ Line Card with Integrated Splitters
MALC-ADSL-BCM-48A	48 Port ADSL2+ Line Card with Bonding Support, Annex A
MALC-ADSL-BCM-48B	48 Port ADSL2+ Line Card with Bonding Support, Annex B
MALC-ADSL+SPLTR-BCM-48A-2S	48 Port ADSL2+ Line Card, Integrated Splitters, Bonding Support, Annex A
MALC-ADSL+POTS-PKT-BCM-48A-2S	48 Port TDM and Packet Combo ADSL+POTS Line Card, Annex A
MALC-ADSL+POTS-PKT-BCM-48B-2S	48 Port TDM and Packet Combo ADSL+POTS Line Card, Annex B
MALC-REACHDSL-24	24 Port ReachDSL Line Card
MALC-REACHDSL+SPLTR-24	24 Port ReachDSL Line Card with Integrated Splitters

Ordering Information

Business Access Line Cards

MALC-ISDN-2B1Q-24	24 Port ISDN Line Card (Supports 2B1Q)
MALC-ISDN-4B3T-24	24 Port ISDN Line Card (Supports 4B3T)
MALC-EFM-T1/E1-24	24 Port T1/E1 EFM Line Card with Port Bonding
MALC-EFM-SHDLSL-24-NTP-EXT	24 Port SHDSL EFM Line Card with Port Bonding, Line Power, and Extended Rates
MALC-EFM-SHDLSL-24-NTWC-EXT	24 Port SHDSL EFM Line Card with Port Bonding, Wetting Current, and Extended Rates
MALC-SHDLSL-48	48 Port SHDSL Line Card
MALC-PWE-T1/E1-24	24 port T1/E1 Circuit Emulation Line Card
MALC-T1/E1-ATM-32	32 Port T1/E1 ATM/IMA Line Card
MALC-DS3/E3-4	4 port DS3/E3 Line Card

Metallic Test Access Line Cards

MALC-TAC-ITM-RING	Test Access Card with POTS Ringer supports Integrated Line Testing (719/723 Chassis Only)
MALC-MTAC/RING-FC	Metallic Test Access Card with POTS Ringer and Fan Controller (319 Chassis Only)
MALC-TAC-ITM-RING-FC	Test Access Card with POTS Ringer, Fan Controller and Integrated Line Testing (319 Chassis Only)

