



# Loop-IP6750

## Service Aggregation & Access Device



ANSI Front View



ETSI Front View

## Description

The **Loop-IP6750 Service Aggregation & Access Device** is an effective way for service providers to build their network and achieve a fast return on investment. Currently providers need to transport both TDM and Packet traffic. These can be achieved using the E1/T1 and Gigabit Ethernet tributary ports of the IP6750.

In addition to working now, service providers also have to build the network to meet *future requirements*.

The IP6750 can handle temperature ranges of 0° to 65°C. It supports many protocols such as MEF-8 CESoETH, SyncE and IEEE1588v2 Precision Timing, G.8031 Ethernet Linear Protection Switching, and a RFC2544 built-in traffic generator.

The IP6750's durability and capabilities make it an important device for your network to meet the requirements of a carrier-grade Service Level Agreement (SLA).

## Product Features

### Mechanical and Electrical

- 1U height, 19" width ANSI/ETSI
- Power module
  - AC/DC dual feed slots
  - Hot swappable
- Temperature range from 0° to 65°C

### WAN Aggregate Interface

- 2 GbE ports with SFP housing
- IEEE 802.3ad Ethernet Link Aggregation
- G.8032 v1/v2 – Ethernet Ring Protection Switching (ERPS)\*
- G.8031 Ethernet Linear Protection Switching (ELPS)
- Compliant with MEF 8, 9 and 14.

### Timing

- Internal/Line
- External BITS I/O with RJ connector: 2 Mbps, 2 MHz, 1.544Mbps composite clock
- Adaptive Clock Recovery (ACR) and Differential Clock Recovery (DCR) for TDM Pseudowires
  - Jitter and Wander conforms to MEF 18, ITU-T G.8261, and G.823/824 for Traffic Interface
- SNTPv4

### Tributary Interface

- 4 hot-swappable slots for the following cards:
  - CGbE: Combo Gigabit Ethernet card
    - 2 port groups per card, (1 SFP optical, 1 electric) up to 8 port groups per system
  - E1 / T1 card
    - 4 ports per card, up to 16 ports per system
    - E1/T1 software configurable per card

### OAM

- Ethernet OAM
  - 802.1ag / Y.1731
  - 802.3ah
- Syslog and Dying Gasp alarm

### QoS

- Ingress Rate Limiting per port
- Ethernet Network Level
  - 3-bit Priority Code Point – PCP field within 802.1p / 802.1q Ethernet frames – CoS
  - 8 priority queues per port
- IP Network Level
  - 6-bit DiffServ Code Point – DSCP field – ToS
- Scheduling Algorithms

- SyncE (ITU-T G.8261) GE interfaces
- IEEE 1588v2 slave/boundary/transparent clock
- Internal stratum 3 clock (hold-over state)
- TOD interface
- 1PPS interface

### L2 Switching

- 5G non-blocking switching capacity
- Jumbo frame size up to 10K bytes
- Maximum 4K VLANs
- 802.1d MAC Table Learning (maximum 32K)
- 802.3x Flow Control on input ports
- 802.1d STP, 802.1w RSTP, 802.1s MSTP\*
- IGMP Snooping v2 RFC 2236 and v3 RFC4604\*

### Management

- SNMPv1/v2c/v3
- CLI command line interface
- Telnet and SSHv1/v2
- 802.1x (port access protocol)\*
- RADIUS Client

- Strict Priority (SP)
- Weighted Round Robin (WRR)
- Congestion Avoidance
  - Weighted Random Early Detection (WRED)\*
- Policing algorithm
  - Two-Rate Three-Color
  - Token Bucket

### Pseudowires

- TDM Pseudowires
  - Up to 64 concurrent pseudowires
  - Pseudowire protocols
    - SAToP
    - CESoPSN
    - MEF-8 (CESoETH)
  - Packet Delay Variation Compensation Depth up to 256 ms

### Diagnostics






- Built-in traffic generator to support RFC2544/Y.1564 and Y.1731 testing
- E1/T1 BERT & Loopback
- Ethernet loopback

\* Future option

## Ordering Information

**Note:** RoHS compliant units are identified by the letter **G** appearing at the end of the ordering code.

<b>Main Unit</b>		
<b>Name</b>	<b>Description</b>	<b>Notes</b>
Loop-IP6750-IE-aa-bb-cc-dd-pp1-pp2-add2- <b>G</b>	1U height ETSI chassis (full frontal access) with 2 GbE SFP aggregation ports, Console RS232 port, and SNMP RJ45 port.	Replace the <b>aa</b> , <b>bb</b> , <b>cc</b> , <b>dd</b> , <b>pp1</b> , <b>pp2</b> , <b>add1</b> , and <b>add2</b> fields with your selection from the choices below. If not needed then leave field blank.
Loop-IP6750-IA-aa-bb-cc-dd-pp1-pp2-add1-add2- <b>G</b>	1U height ANSI chassis (front and rear access) with 2 GbE SFP aggregation ports, Console RS232 port, and SNMP RJ45 port.	
<b>Loop-IP6750</b>		
<b>Plug-in Modules (aa, bb, cc, dd)</b>		
4IETDB37	Four E1/T1 ports with single DB37 interface (E1-120 ohms, E1-75 ohms, T1, software selectable per card)	SFP optical modules are ordered separately. Consult the SFP Optical Modules Brochure.
2ICGbEC	Combo GE/FE card with two port groups – one SFP interface and one RJ45 interface per port group	
<b>Power Supply (pp1, pp2)</b>		
ISD48	Single DC power plug-in module at -48 Vdc (-42 to -56 Vdc)	For redundancy purposes, order a second power module for dual backup power. Dual AC power is only available on ANSI chassis.
ISA	Single AC power plug-in module (110 to 240 Vac at 50 to 60 Hz)	
<b>Additional Options I (add1)</b>		
LCD	LCD front panel display	LCD front panel is for ANSI chassis only. LCD only supports temperature range 0° to 50° C (32°F to 122°F)
<b>Additional Options II (add2)</b>		
EXT	External Clock Input Port and Output Port (2 RJ45 ports) and 1PPS physical connector	Upgrading from EXT to EXT1588 is available via software upgrade at a later time. See accessories section below. EXT1588 contains the IEEE 1588v2 software upgrade already pre-installed.
1588	1PPS clock output , ToD (Time of Day) output, and full software capability from IEEE 1588v2.	
EXT1588	External Clock Input Port and Output Port. (2 RJ45 ports). 1PPS clock output , ToD (Time of Day) output, and full capability from IEEE 1588v2.	
<b>Separate Plug-in Modules</b>		
Loop-IP6750-4IETDB37- <b>G</b>	Four E1/T1 ports with single DB37 interface (E1-120 ohms, E1-75 ohms, T1, software selectable per card)	Cards are the same as shown in the Main Unit section above. Use this ordering code if you are ordering backup or additional cards.
Loop-IP6750-2ICGbEC- <b>G</b>	Combo GE/FE card with two port groups – one SFP interface and one RJ45 interface per port group	
<b>Separate Power Supplies</b>		
Loop-IP6750-ISD48- <b>G</b>	Single DC power plug-in module at -48 Vdc (-42 to -56 Vdc)	Power modules are the same as shown in the Main Unit section above. Use this ordering code if you are ordering backup or additional power modules.
Loop-IP6750-ISA- <b>G</b>	Single AC power plug-in module (110 to 240 Vac at 50 to 60 Hz)	
<b>Accessories</b>		
<b>Conversion Cable (All conversion cables are RoHS compliant)</b>		

Loop-ACC-COV-DB37M-WW-04	DB37 male to 4 ports wire-wrap conversion adaptor	
Loop-ACC-CAB-DB37M-100-4RJ48F- <b>GND</b>	DB37 male to 4RJ48 female ground conversion cable. Length: 100 cm	
Loop-ACC-CAB-DB37M-100-8BNCF- <b>GND</b> *	DB37 male to 8BNC (4 ports) male ground conversion cable. Length:100 cm	
Loop-ACC-CAB-DB37M-100-8BNCF- <b>GND</b> *	DB37 male to 8BNC (4 ports) female ground conversion cable. Length:100 cm	
Loop-ACC-CAB-BNCF-100-RF75M*	BNC Male to 1.0/2.3 RF connector (75 ohm impedance) male ground conversion cable (Length: 100 cm) (future option)	
* Future option		
<b>Power Cord (All power cords are RoHS compliant)</b>		
Loop-ACC-PC-USA	AC power cord for Taiwan/America	
Loop-ACC-PC-EU	AC power cord for Europe	
Loop-ACC-PC-UK	AC power cord for UK	
Loop-ACC-PC-AUS	AC power cord for Australia	
Loop-ACC-PC-CH	AC power cord for China	
<b>Blank Panels</b>		
	Blank panel for empty AC power slot	
	Blank panel for empty DC power slot	
	Blank panel for empty plug in module slot 1, 2, 3, or 4	
<b>User's Manual</b>		
Loop-IP6750-UM	User's Manual (optional, paper printed copy). A electronic version of the manual on a CD is included with every order.	
<b>SFP Optical Modules</b>		
SFP (small form-factor pluggable) optical modules are <b>NOT</b> included. To order please check the SFP optical module brochure or contact your Loop sales representative.		
<b>Ear Mounts</b>		
19"/23" ear mounts	A pair of 19"/23" ear mounts is supplied as part of the standard package. For other sizes please contact your Loop sales representative.	
<b>Firmware Upgrade</b>		
Loop-IP6750-FWUPGR	Firmware Upgrade. Customers who desire to have a firmware upgrade after their warranty has expired can purchase this option. This will upgrade the firmware to the most current version and provide an additional 12 months of software repair and patches on existing functionality as necessary.	
<b>IEEE 1588v2 PTP Software Upgrade</b>		
Loop-IP6750-1588UPGR	Software Upgrade to IEEE 1588v2. Customers who desire to use the IEEE 1588 v2 Precision Time Protocol (PTP) function can purchase this option. This option will provide an activation code and instructions on how to unlock the function on the device. This software option can only be purchased if the External Clock (EXT) is already equipped on the unit. The EXT1588 additional option already has this upgrade installed.	

## Ordering Examples

### Loop-IP6750-IE-4IETDB37-4IETDB37-4IETDB37-4IETDB37-ISD48-ISD48-EXT1588-G

#### Loop-ACC-PC-EU

Loop IP6750 main unit with ETSI front chassis, industrial temperature range. 4 E1/T1 plug in cards, a total of 16 E1/T1 ports on the unit. Dual DC power of -48 Vdc. External clock with 2 RJ45 input and output ports. IEEE 1588v2 software upgrade pre-installed. RoHS compliant. AC power cord for Europe.

### Loop-IP6750-IA-2ICGbEC-2ICGbEC-4IETDB37-4IETDB37-ISA-ISA-LCD-EXT-G

#### Loop-ACC-PC-USA

Loop IP6750 main unit with ANSI front chassis, industrial temperature range. 2 Combo Gigabit Ethernet cards and 2 E1/T1 cards. A total of four SFP ports, four RJ45 ports, and eight E1/T1 ports on the unit. Dual AC power. LCD front panel included. External clock with 2 RJ45 input and output ports included. RoHS compliant. AC power cord for America

## Loop-IP6750 Product Specification

### *E1 Tributary Interface Card (E1/T1 software selectable)*

Line Rate	2.048 Mbps $\pm$ 50 ppm
Line Code	HDB3
Framing	ITU G.704 (CRC: on/off, CAS: on/off, unframed)
Output Signal	ITU G.703
Input Signal	ITU G.703
Jitter	ITU G.823
Connector	DB37

### *T1 Tributary Interface Card (E1/T1 software selectable)*

Line Rate	1.544 Mbps $\pm$ 32 ppm
Line Code	AMI / B8ZS (selectable)
Framing	D4 / ESF/ ESF&T1.403/ OFF (unframed)
Output Signal	DS1 with LBO Setting
Input Signal	DS1
Pulse Template	Per AT&T TR 62411
Connector	DB37

### *Combo GE/FE Interface Card*

Number of Ports per Card	4 physical ports – 2 port groups with 1 RJ45 and 1 SFP port per port group
Speed	10/100/1000 BaseT

### *Gigabit Ethernet Aggregation Ports*

Number of Ports	2
Connector	SFP
Speed	1000-LX

### *SNMP Ethernet*

Ethernet Functions	10/100 BaseT, IEEE802.3 Auto-negotiation (10/100M) Auto MDI/MDIX Full or half duplex
Connector	RJ45

### *Alarm Relay*

Alarm Relay	Fuse alarm and performance alarm
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### *System Clock*

Clock Source	Internal clock E1/T1 line clock Sync Ethernet 1588V2 Ethernet
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### *Management and Administration*

Management ports	Console RS232 port and NMS RJ45 port
CLI	Fully manageable with CLI (command line interface)
Remote login	SSHv1 and v2, Telnet
SNMP	SNMP v1, v2c, v3
Dying Gasp Alarm	Supported
Web	HTTP, HTTPS (TLS 1.0, TLS1.1 and TLS 1.2)

### *Electrical*

DC Power Module	48 V (-36 to -72 Vdc), 24 Vdc (-18 to -36 Vdc) Second DC module is hot swappable
AC Power Module	100 to 240 Vac, 50 to 60 Hz
Power Consumption	< 65 W for 1U height

### *Physical and Environmental*

Dimensions	438 mm x 44 mm x 300 mm (width x height x depth)
Net Weight	4.0 Kg
Temperature	0°C to +65°C
Humidity	0% to 95% RH (non-condensing)

Mounting Desktop stackable, rack mount, wall mount  
 Cooling Built in fan unit

**Standards Compliance**

**IEEE**

802.1d MAC Table Learning and STP  
 802.1p Priority Code Point  
 802.1q VLAN  
 802.1s MSTP\*  
 802.1w RSTP\*  
 802.1x Port Access Protocol\*  
 802.1ad Tag Stacking (Q-in-Q)  
 802.1ag Ethernet CFM  
 802.3x Flow Control  
  
 802.3ad Link Aggregation  
 802.3ah Ethernet in the First Mile  
 1588 v2 Precision Time Protocol  
 1613 Environmental Testing for Power Substations

**IETF**

RFC2236 IGMP Snooping v2\*  
 RFC2544 Benchmark Testing for Network Interconnect Devices  
 RFC 4604 IGMP Snooping v3\*  
 RFC 4553 SAToP

**ITU**

G.823/G.824 Traffic and Synchronous Interface  
 G.8032 v1/v2 Ethernet Ring Protection Switching (ERPS)\*  
 G.8031 Ethernet Linear Protection Switching (ELPS)  
 G.8261 SyncE GE Interfaces  
 Y.1564 Ethernet SLA Validation Testing  
 Y.1731 OAM

**MEF**

8 CESoETH  
 9  
 14

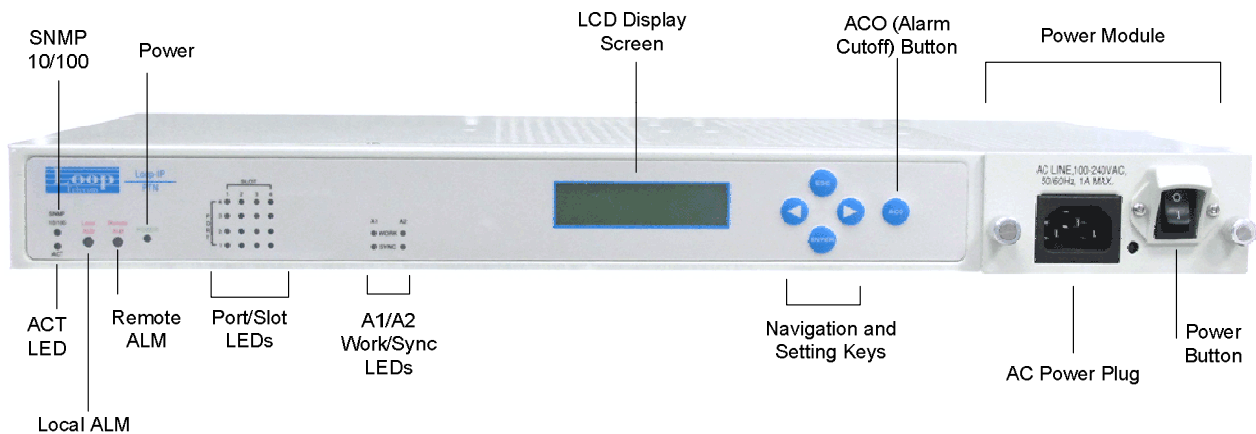
**Certifications**

EMC/EMI EN55022, EN50024, EN6100-3-3  
 IEEE 1613 Environmental Testing in Electric Power Substations\*  
 IEC 61850-3\*, 60068  
 Safety EN60950-1, IEC60950, UL60950  
 MEF MEF 9 & 14 CE1.0

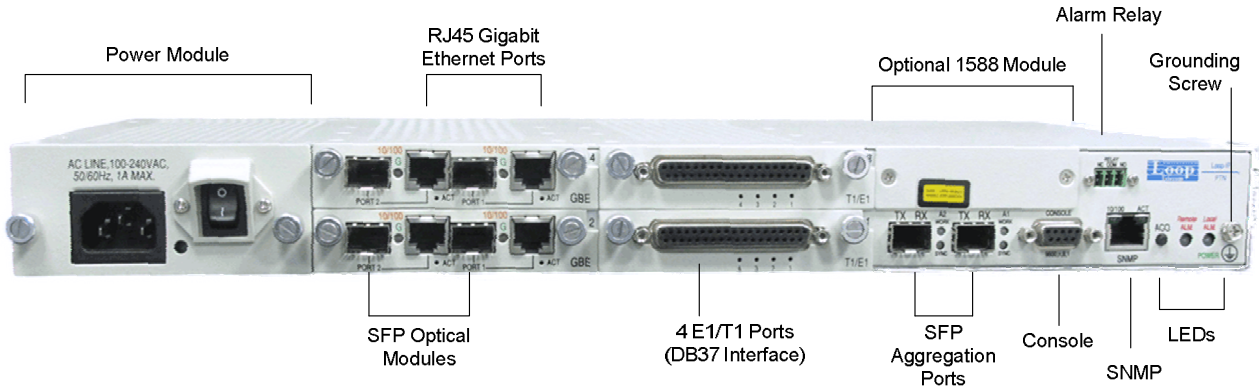


\* Future Option

**Panel Views**

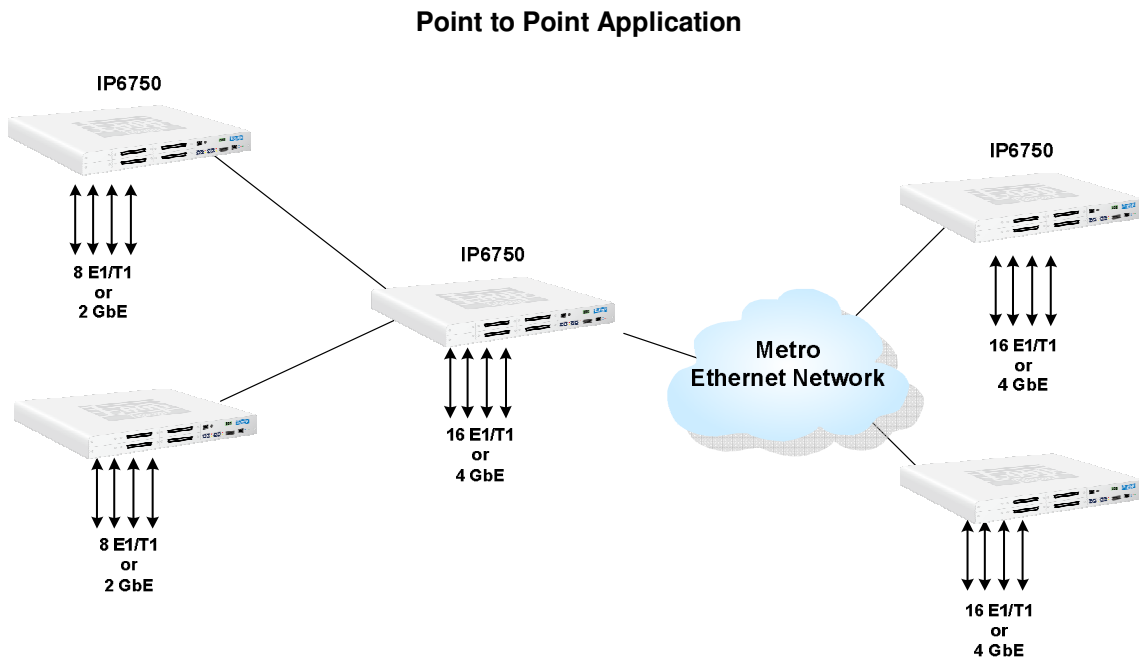
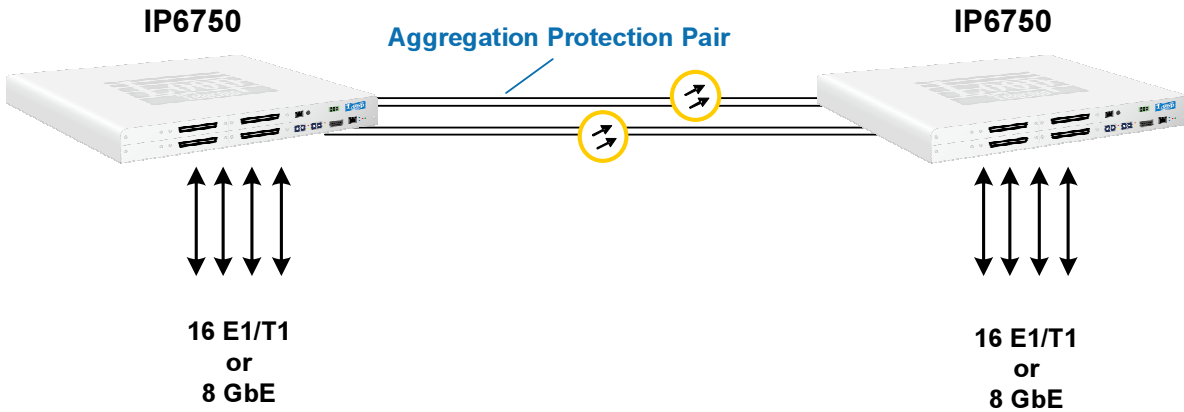


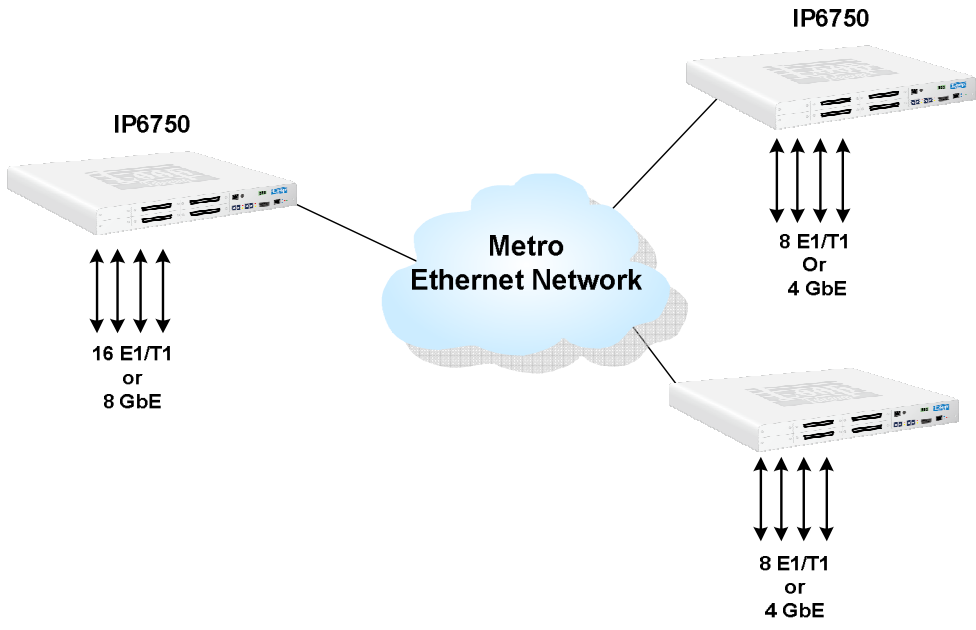
**ANSI Front Panel View with Single AC Power and LCD Display**



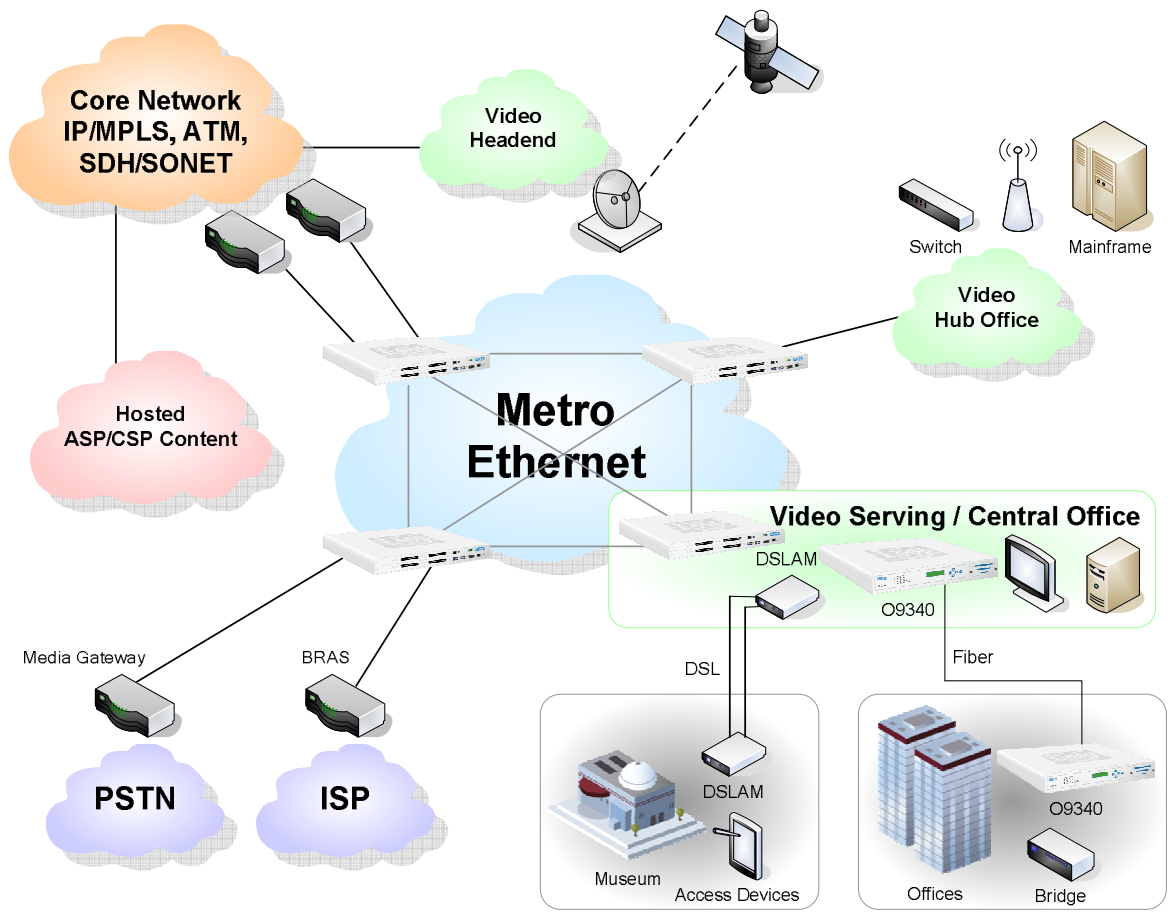
ETSI Front Panel View with Single AC Power, 2 Combo Gigabit Ethernet Cards, and 2 E1/T1 Cards

### Application Illustrations





Single Stage Multiplexer Application



Metro Ethernet Application





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**LOOP TELECOMMUNICATION INTERNATIONAL, INC.**  
**ISO 9001 / ISO 14001**

**Worldwide**

6F, No. 8, Hsin Ann Road  
 Hsinchu Science Park  
 Hsinchu, Taiwan 30078  
 +886-3-578-7696  
[sales@looptelecom.com](mailto:sales@looptelecom.com)

**Europe**

Rue de Culot, 13  
 BE-1402 Nivelles  
 Belgique  
 +32-496-54-27-44  
[eu\\_sales@looptelecom.com](mailto:eu_sales@looptelecom.com)

**America**

8 Carrick Road  
 Palm Beach Gardens  
 Florida 33418, U.S.A.  
 +1-561-627-7947  
[nca\\_sales@looptelecom.com](mailto:nca_sales@looptelecom.com)

**Australia & New Zealand**

3 Imperial Ave, Mount  
 Waverley, Victoria 3149,  
 Australia  
 +61-413-382-931  
[aus\\_sales@looptelecom.com](mailto:aus_sales@looptelecom.com)

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 Version 1 28th April 2017

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