Loop-IP6763
TDMoEthernet Aggregator

Description

As the core communications network migrates from TDM to IP, the Loop-IP6763 TDMoEthernet Aggregator is a cost effective choice to allows operators to transport up to 32 E1/T1*, STM-1/OC3, STM-4 /OC12* plus Ethernet signals over an IP network. The Loop-IP6763 TDMoEthernet provides flexible solutions with hot-swappable STM-1/OC3 and STM-4/OC12* plug-in card.

The IP network is connected through dual WAN ports. The WAN interface consists of dual combo Gigabit Ethernet ports with link aggregation. On the user side, the TDM ports can be multiple E1/T1*, STM-1/OC3 and STM-4/OC12*, each with timing preserved. The LAN interface is 3 x 10/100/1000 BaseT Ethernet ports.

Management choices include console port, Ethernet port, and SNMP port for communication with remote management centers.

For the transport of TDM signals, Jitter and Wander adheres to G.823 Traffic (+/- 1ppm) to provide excellent clock accuracy.

Features

- 1U height, ETSI shelf (full front access)
- Aggregate ports
  - 2 x WAN ports: combo Gigabit Ethernet (GbE) with SFP and RJ45 housing
  - Protection
    - 802.3ad Link Aggregation
- Tributary ports
  - Hot-swappable plug-in card type:
    - 2 Dual STM-1 / OC3 cards or
    - 1 Dual STM-4 / OC12* card (with 1+1 protection)
  - LAN interface: 3 x 10/100/1000 BT Ethernet ports, auto-negotiation
  - E1/ T1 Interface*: 8 E1/ T1*, 16 E1/ T1*, 32 E1/T1*
- Hot-swappable Power
  - Dual -48Vdc plug-in module (-36 to -72 Vdc)
- Bridging & Switching
  - Jumblo frame up to 13K bytes
  - Max. 4K VLAN
    - Assign VLAN based on MAC, IP, or protocol
    - VLAN based packet filtering
    - Translation on ingress and egress
    - Q-in-Q: add, remove, and translate both S-VLAN and C-VLAN
- QoS
  - 8 priority queues/port
  - User config CoS and DiffServ/ToS in outgoing IP frame
  - DSCP mapping
  - Strict priority, WRR, WDRR for queue shaping
  - RED and WRED for queue management
- Pseudo-Wire (PW)
  - Max. 1024 pseudo-wires
  - Each PW can be assigned a separate VLAN
  - Point to point and point to multi-point
- Support 802.1d MAC learning (max. 32K)
- Support 803.3x Flow control on input ports
- Support 802.1D STP, 802.1s MSTP, 802.1w RSTP
- Support IGMP Snooping (RFC 2236)
- Storm control: packet based or byte based
- Ingress rate limit per port from 8k bps to 1G bps
- Link-Level OAM*: 802.3ah*, Clause 57*
- Service-Level OAM*: 802.1ag*, ITU Y.1731*
- Support IPv4 Routing & IPv6* Routing
- Support 2 SNTP Timing References
- Support MPLS-TP*
- Alarm Relay and ACO (Alarm Cutoff) button
- Jitter and Wander
  - PPM: per G.823 Traffic (+/- 1ppm)
- Management port and interface
  - Console port, VT100 menu-driven
  - SNMP port, v1/ v3
  - SSH
  - Telnet via SNMP port
  - In-band management through
    - Ethernet WAN ports
    - A VLAN port
    - Any one of the DCC channels
- SAToP (RFC 4553), SONET/SDH CEP (RFC 4842), CESoPSN (RFC 5086), MEF-8, TDMoIP (RFC 5087)*, HDLCoPSN (RFC 5087, 4618)* Compliance
- RoHS Compliance

* Future option

Ordering Information

To specify options, choose from the list below:
Note: RoHS compliant units are identified by the letter **G** appearing immediately at the end of ordering code.

Model	Description	Note
Main Unit		
Loop-IP6763-1UE-PPM-s1-s2-pp1-pp2-add1-**G**	1U height ETSI chassis with G.823 traffic, with dual Combo Gigabit Ethernet (GbE) card for WAN port (SFP optical module not included), 3 LAN, and 1 SNMP.	• Where **s1, s2, pp1, pp2,** and **add1** are defined in the tables below.
Plug-in Modules		
Loop-IP6763-2B155	Dual STM-1/OC3 card	
Loop-IP6763-2B622	Dual STM-4/OC12 card	
Power Plug-in Power Module		
Loop-IP6763-S-SD48- **G**	Single -48 Vdc power plug-in module (-36 to -72 Vdc)	
FAN		
Loop-IP6763 -FANA-**G**	Fan board with “fan power” and “fan fail” LED indication.	
Filter		
Loop-IP6763-FIL-**G**	Air filter rack for IP6763, air filter included.	

Accessories		
User’s Manual		
Loop-IP6763-UM	User’s Manual (paper hard copy-optional). A CD version of the manual is already included as standard equipment.	
Firmware Upgrade		
Loop-IP6763-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.	
SFP Optical Modules		
Please place your order using the 5-digit alphanumeric codes listed in the separate SFP Optical Module Brochure.		
Ear Mounts		
19”/23” ear mounts	A pair of 19”/23” ear mounts is supplied as part of standard package.	• For other sizes, please contact your nearest Loop’s sales representative.
Blank Panel		
30.001757.A00LF	The blank panel for power.	
30.001758.A00LF	The blank panel for optical.	
Conversion Panels		
Loop-ACC-P-1SCSI-16RJ-**G**	One SCSI to sixteen RJ (1U height) without cable.	
Loop-ACC-P-1SCSI-16BNC-**G**	One SCSI to sixteen BNC (1.5U height) without cable.	
Conversion Cables		
Loop-ACC-CAB-SCSI68M-200-1SCSI68M-**G**	SCSI68/Male to one SCSI68/Male; Length 200cm	• Used for all conversion panels.

■ Where **s1** is used to select plug-in module for slot 1. If this module is not required, leave this field blank:

s1=	Description	Note
2B155	Dual STM-1/OC3 card	

■ Where **s2** is used to select plug-in module for slot 2. If this module is not required, leave this field blank:

s2=	Description	Note
2B155	Dual STM-1/OC3 card	▪ Maximum 2 dual STM-1/OC3 cards allowed. ▪ Maximum 1 dual STM-4/OC12 card allowed (with 1+1 protection). ▪ STM-4/OC12 card is future option.
2B622	Dual STM-4/OC12 card*	

■ Where **pp1 and pp2** are used to select the power module. If the second plug-in power module is not required, leave this field blank.

pp=	Description	Note
SD48	Single -48Vdc power plug-in module (-36 to -72 Vdc).	• For redundancy purpose, ordering a second plug-in module will provide dual power.

■ Where **add1** is manufacture option used to select a daughter card. If this is not required, leave this field blank. (future option)

add1=	Description	Note
8TE	8 E1/T1 card	▪ Support E1 75/120ohm and T1 100ohm. ▪ Please order separately for conversion panel.
16TE	16 E1/T1 card	
32TE	32 E1/T1 card	

Loop-IP6763 Product Specifications

SFP Optical Module Characteristic (Please refer to SFP optical module brochure for detail)

Aggregate –Combo Gigabit Ethernet (GbE) Interface

Number of Ports	2
Speed	RJ45: 10/100/1000 Mbps SFP: 100/1000 Mbps Auto-negotiation (10/100/1000M) Auto MDI/MDIX Full or half duplex
Connector	RJ45 for twisted pair GbE, SFP for optical GbE, auto detection

E1 Tributary Interface (E1/T1 Software-selectable)

Line Rate	2.048M bps ± 50 ppm
Line Code	AMI/ 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	SCSI-II 68 pin

T1 Tributary Interface (E1/T1 Software-selectable)

Line Rate	1.544M bps ± 32 ppm
Line Code	AMI / B8ZS (selectable)
Framing	D4 / ESF/ ESF&T1.403/ OFF (clear channel)
Output Signal	DS1 with LBO Setting
Input Signal	DS1
Pulse Template	Per AT&T TR 62411
Connector	SCSI-II 68 pin

LAN Ethernet Interface

Number of Port	3
Ethernet Functions	10/100/1000 BaseT, IEEE802.3 Auto-negotiation (10/100/1000M) Auto MDI/MDIX Full or half duplex
Connector	RJ45

L2 Switch

VLAN	802.1q: • VLAN support: Max. 4k • Assign VLAN based on MAC, IP, protocol, or flow • VLAN based packet filtering • Translation on ingress and egress • Q-in-Q: add, remove, and translate both S-VLAN and C-VLAN
QoS	802.1p: • Packet classification with 8 queues/port • User config CoS and DiffServ/ToS in outgoing IP frame • DSCP mapping • Strict priority, WRR, WDRR for queue shaping • RED and WRED for queue management
MAC	802.1d: • MAC learning: max. 32k entries

Flow Control	802.3x
Link Aggregation	802.1ad
Spanning Tree Protocol	802.1s MSTP, 802.1w RSTP support, and 802.1d STP Compatibility
IGMP Snooping	RFC2236 • a network switch to listen in on the IGMP conversation between hosts and routers
Ingress Rate Limit	• per port from 100kbps to 1 Gbps
IPv4	• RIP1, RIP2, OSPF, and Static Route.
IPv6*	

SNMP Ethernet

Number of Port	1
Ethernet Functions	10/100/1000 BaseT, IEEE802.3 Auto-negotiation (10/100/1000M) Auto MDI/MDIX Full or half duplex
Connector	RJ45

Clock Source (for System and Port)

Primary/Secondary Clock Internal, STM-1, WAN port, PW

External Clock

Input Signal	E1, T1, 2.048 MHz, 1.544 MHz (user selectable)
Output Signal	E1, T1, 2.048 MHz, 1.544 MHz (user selectable)
Connector	RJ48C, 2.048MHz, 1.544MHz

Alarm Input/Output

Input port	1
Internal Resistance	1K
Activation Current	3mA
Deactivation Current	1.5mA
Connector	RJ45
Output port	4
Initial Insul. Resist.	Min. 1000 ohm(at 500VDC)
Max. Current	1A for 30Vdc, 0.3A for 125 Vac

Network Management

Console Port		**SNMP Port**	
Electrical	RS232 interface	Protocol	Telnet (VT100), SSH and Embedded SNMP
Protocol	Menu driven VT-100 terminal	Connector	RJ45
Connector	DB9, female, and DCE		
In-band Management			
Interface	DCC(Data Communication Channel) of SDH/SONET		
L2	HDLC Encap		
Protocol	Telnet (VT100), SSH and Embedded SNMP		

Performance monitors

Performance Store	The last 24 hours performance in 15-minute intervals			
Performance Reports	Date &Time, Error Block (EB), Background Block Error (BBE), Error Second (ES), Burst Error Second (BES), Severe Error Second (SES), Unavailable Second (UAS)			
Alarm History	System Alarm	Alarm Cut Off, Power Loss/Uneqp, Fan Fail, Overheat, System Clock Loss, Log on and Log off, Optical Port Uneqp, Ethernet Link, Card In, Card Out, Card Type Mismatch, Card Port Number Mismatch, Card Fail, Card Registration, MSP Switch, SFP Tx Fail, SFP Rx Fail, SFP Temperature		
	SDH/SONET Alarm	SDH	Line	PI-LOS, RS-LOF, RS-TIM, RS-BIP UAS, MS-SD, MS-SF, MS-AIS, MS-RDI, MS-BIP UAS, MS-REI UAS
			Ho-Path	AU-LOP, AU-AIS, HP-SD, HP-SF, HP-TIM, HP-UNEQ, HP-PLM, HP-RDI-S, HP-RDI-C, HP-RDI-P, HP-BIP UAS, HP-REI UAS, LOM
			Lo-Path	TU-LOP, TU-AIS, LP-SD, LP-SF
		SONET	Line	LOS-PI, LOF-S, TIM-S, BIP-S UAS, SD-L, SF-L, AIS-L, RDI-L , BIP-L UAS, REI-L UAS
			STS-Path	LOP-P, AIS-P, SD-P, SF-P, TIM-P, UNEQ-P, PLM- P, RDI-S-P, RDI-C-P, RDI-P-P, BIP-P UAS, REI-P UAS, LOM
			VT-Path	LOP-V, AIS-V, SD-V, SF-V
		Multiplexing E1/T1	LOF, AIS, UAS, RAI/YEL	
	E1/T1 Alarm	LOS, LOF, AIS, UAS, RAI/YEL		
Alarm Queue	Contains up to 200 alarm records of latest alarm types, alarm severity, date and time.			

Diagnostics test (SDH, SONET)

Loopback Local loopback and line loopback

Diagnostics test (T1, E1)

Loopback	Remote loopback and local loopback

Power

-48 Vdc Module	-36 to -72 Vdc
Power Consumption	< 65 W for 1U height

Physical and /Environmental

Dimensions	438 mm x 44 mm x 225.5 mm (WxHxD)
Net Weight	4.0 Kg
Temperature	0 to -50°C (operation)
Humidity	5-95% RH (non-condensing)
Mounting	Desk-top stackable, rack mount

Certification

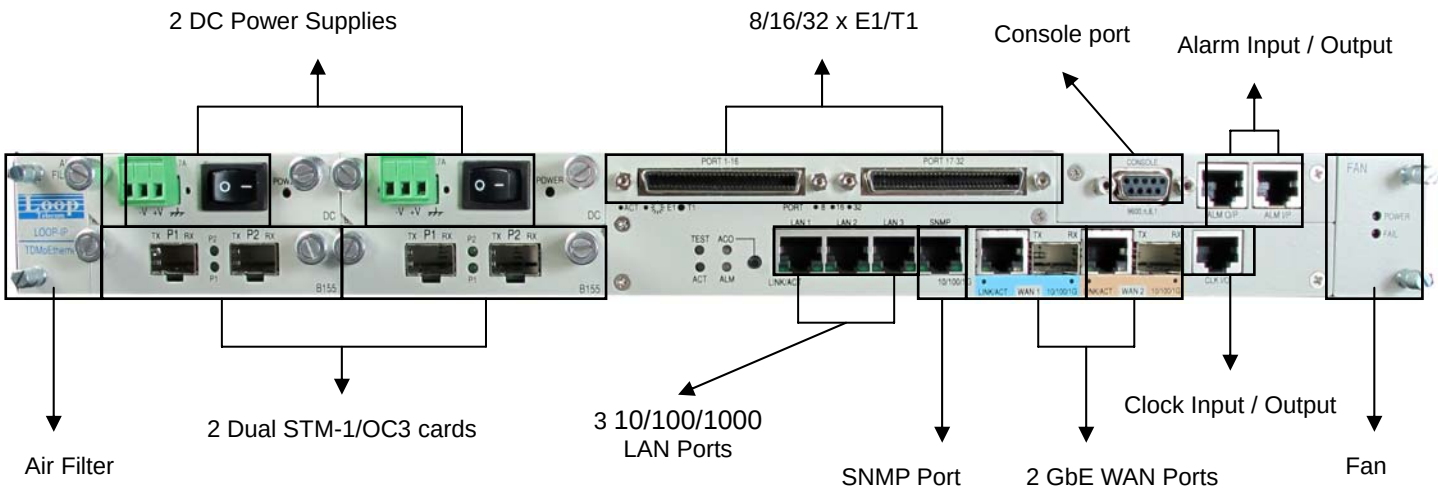
EMC	EN55022 Class A, EN55024, FCC15
Safety	EN60950-1

Standards and Compliance

ITU-T	G.703, G.704, G.823
IEEE	802.3, 802.3u, 802.3z, 802.3X, 802.1q, 802.1ad
IETF	RFC4553 (SAToP), RFC4842 (SONET/SDH CEP), RFC5086 (CESoPSN), RFC5087* (TDMoIP), RFC5087*, 4618* (HDLCoPSN), MEF-8*

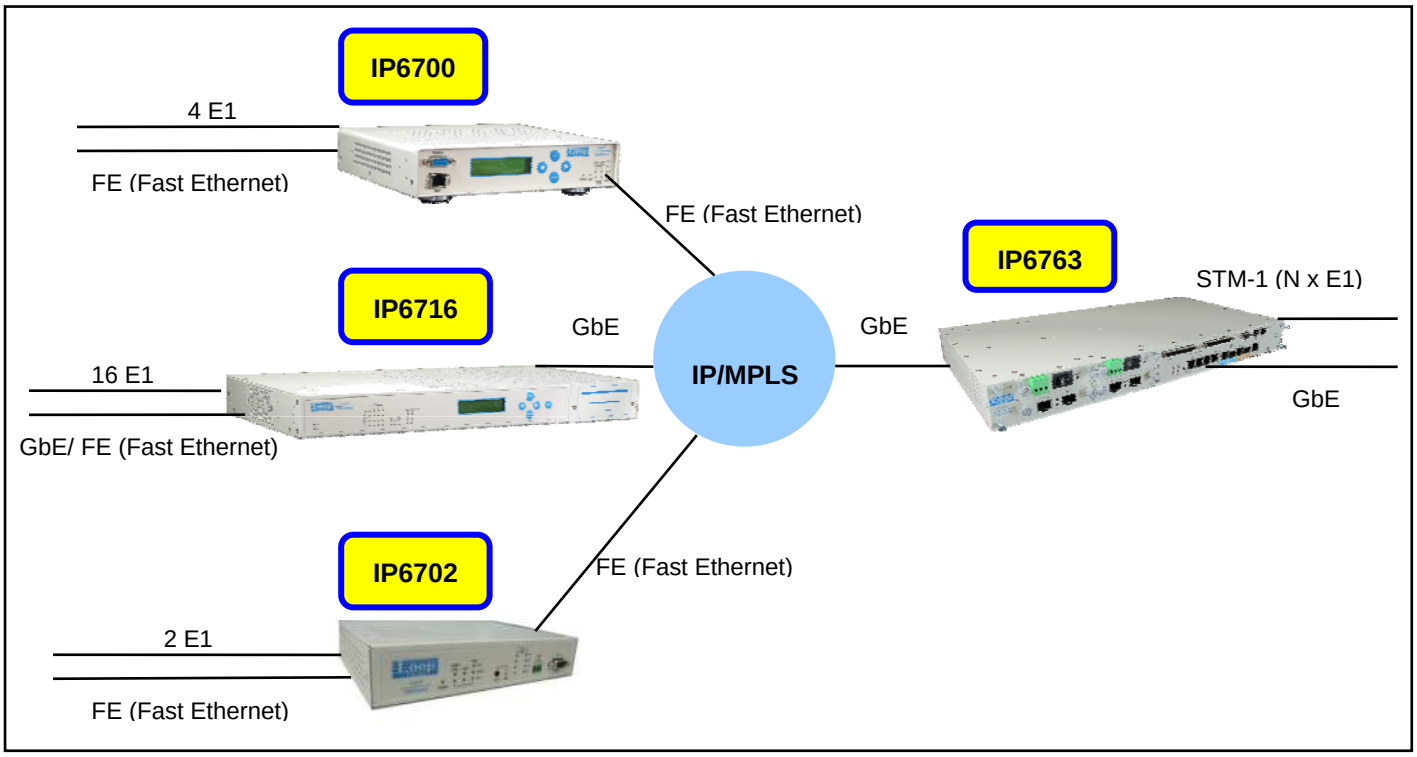
* Future option

Panel Views

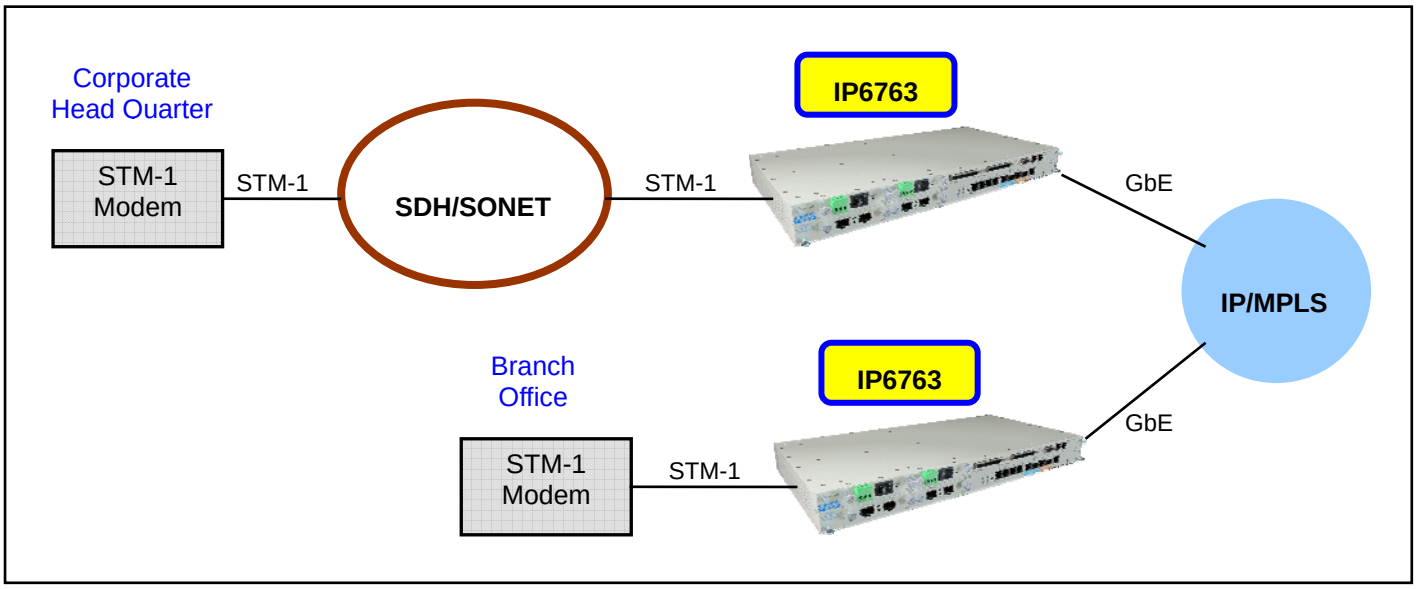


Application Illustrations

➲ **Transport of E1(T1) & LAN through IP/MPLS**



➲ **Extension of SDH/SONET Trunks through IP/MPLS**



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