IP6300

Loop-IP6300 MSPLC

(Multi-Service Packet Loop Carrier)

Features:

- Carrier grade, intelligent Ethernet switch
- 4 fixed Gigabit Ethernet uplink interfaces on the front panel
  - 2 with combination of RJ45/SFP(Small Form Pluggable) connectors
  - 2 with RJ45 connectors only
- Downlink ports expandable up to 24 ports
  - 3 slots are supported on the rear panel
  - hot-swappable, user access plug-in cards
  - 8-port 10/100BASE-T Fast Ethernet option/per card
  - 8-port 100M-FX option/per card
- Hot swappable redundant AC* or DC power modules are supported
- Ideal for voice, data and video
- Support firmware remote upgrade
- Supports the configuration download and upload by means of TFTP
- Support IEEE 802.1Q and 802.1X
- Support IGMP Snooping and cross VLAN
- Support QoS DSCP rewrite and Mapping with CoS queue
- Support 100 ACL
- Multicolor LED indicators

Note: * Future option

CERTIFIED
ISO-9001

Description:

Loop Telecom's Loop-IP6300 MSPLC (Multi-Service Packet Loop Carrier) is a newly released carrier-grade, intelligent Ethernet switch that offers quality service and expandability at a very affordable price.

The Loop-IP-6300 switch has a daughter board with four Gigabit Ethernet uplink interfaces. Two of the uplink interfaces are equipped with combination of the RJ45/SFP connectors and the other two are restricted to RJ45 only.

The downlink, the user access interfaces, has been designed as hot-swappable plug-in cards. With three dedicated slots on the chassis, the user can install up to three cards and expand the number of interface ports up to 24. Options currently supported by the 8-port plug-in cards are 10/100M BASE-T Fast Ethernet and 100M FX.

Both copper and optical interface options are available to suit the customer's needs. Over longer distances, the optical interface is ideal for supporting fiber to the home to deliver video, voice and data service.

RoHS Compliance Statement

This product complies with DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the restriction of the use of certain hazardous substances in electrical and electronic equipment, dated 27 January 2003, including ANNNEX.

Ordering Information

To specify options, choose from list below.

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

Main Unit

Model	Description	Note
Loop-IP6300-S-4G-opt1-opt2-int1-int2-int3-pp1-pp2-**G**	Basic main board and fixed 4 uplink, Gigabit Ethernet daughter board with 2 SFP housings (SFP not included).	See ordering information below for **opt1, opt2, int1, int2, int3, pp1,** and **pp2**.

Interface Plug-in Cards

Loop-IP6300-S-8ETHEL-**G**	8 port Ethernet electrical interface card with RJ45 connector	• Hot-swappable 10/100Mbps • See **Product specifications**, below, • For optical connector information. • Use **WHD2S** with **WHE2S** • Use **WHE2S** with **WHD2S** • Special connectors. Contact Sales Dept. for details.
Loop-IP6300-S-8ETHNHB3S-**G**	8 port Ethernet optical interface card with NHB3S optical module	
Loop-IP6300-S-8ETHNHB5S -**G**	same as above but with NHB5S optical module	
Loop-IP6300-S-8ETHNHB3F-**G**	same as above but with NHB3F optical module	
Loop-IP6300-S-8ETHNHC2S-**G**	same as above but with NHC2S optical module	
Loop-IP6300-S-8ETHNHCUS-**G**	same as above but with NHCUS optical module	
Loop-IP6300-S-8ETHWHD2S-**G**	same as above but with WHD2S optical module	
Loop-IP6300-S-8ETHWHE2S-**G**	same as above but with WHE2S optical module	

Accessories

User's Manual		
Loop-IP6300-S-UM	User's Manual (optional, paper copy).	A CD version of the manual is already included as standard equipment
Power Module		
Loop-IP6300-S-SA	Single AC plug-in power supply (85 to 260 Vac, 50/ 60 Hz). Please choose an appropriate power cord. (Future Option)	For power redundancy, order extra power supply
Loop-IP6300-S-SD48	Single DC plug-in power supply module (48Vdc: -36 ~ -72 Vdc)	
Power Cord		
Loop-ACC-PC-USA	AC power cord for Taiwan/USA	
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	

■ where **opt** is used to select up to two SFP optical uplink modules (**opt1**, **opt2**) for fixed uplink.

opt =	Description	Note
NONE	No SFP optical module selected	
MTAFW	multi-mode optical module with dual uni-directional fiber, 1.25G, 850nm, LC connector, 550M reach (8.5dBm)	
MTATW	multi-mode optical module with dual uni-directional fiber, 1.25G, 850nm, LC connector, 2Km reach (10dBm)	
MTAFD	multi-mode optical module with dual uni-directional fiber, 1.25G, 850nm, LC connector with DDM, 550M reach (8.5dBm)	
MTATD	multi-mode optical module with dual uni-directional fiber, 1.25G, 850nm, LC connector with DDM, 2Km reach (10dBm)	
PTB1W	single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, LC connector, 10Km reach (15dBm)	
PTB3W	single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, LC connector, 30Km reach (20dBm)	
PTB4W	single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, LC connector, 40Km reach (19dBm)	
PTC5W	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector, 50Km reach (20dBm)	
PTC6W	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector,60Km reach (22dBm)	
PTC8W	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector, 80Km reach (24dBm)	
PTC9W	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector, 90Km reach (27dBm)	
PTCVW	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector, 110Km reach (30dBm)	
PTCXW	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector, 120Km reach (23dBm)	
PTB1D	single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, LC connector with DDM, 10Km reach (15dBm)	
PTB3D	single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, LC connector with DDM, 30Km reach (20dBm)	
PTB4D	single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, LC connector with DDM, 40Km reach (19dBm)	
PTC5D	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector with DDM, 50Km reach (20dBm)	
PTC6D	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector with DDM, 60Km reach (22dBm)	
PTC8D	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector with DDM, 80Km reach (24dBm)	
PTC9D	single-mode optical module, with dual unidirectional fiber, 1.25G, 1550nm, LC connector with DDM, 90Km reach (27dBm)	
PTCVD	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector with DDM, 110Km reach (30dBm)	
PTCXD	single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, LC connector with DDM, 120Km reach (23dBm)	

■ where **int** is used to select up to three hot-swappable, downlink interface plug-in cards (**int1, int2 int3**).

int=	Description	Note
8ETHEL	8-port Ethernet electrical interface card with RJ45 connector, without OAM management function	
8ETHNHB3S	8-port Ethernet optical interface card with NHB3S optical module, without OAM management function	• 100Mbps • See Product Specifications, below, • For optical connector information. • Use WHD2S with WHE2S • Use WHE2S with WHD2S • Special connectors. Contact Sales Dept. for details.
8ETHNHB5S	same as above but with NHB5S optical module	
8ETHNHB3F	same as above but with NHB3F optical module	
8ETHNHC2S	same as above but with NHC2S optical module	
8ETHNHCUS	same as above but with NHCUS optical module	
8ETHWHD2S	same as above but with WHD2S optical module	
8ETHWHE2S	same as above but with WHE2S optical module	

■ where **pp1** is used to select 1st power supply:

pp1 =	Description	Note
SA	Single AC plug-in power supply module (85 to 260Vac, 50/60 Hz) Please choose an appropriate power cord for SA version. (Future Option)	• For redundancy purposes, ordering a second plug-in module will provide dual power
SD48	Single DC plug-in power supply module (-48Vdc: -36~ -72Vdc)	

■ where **pp2** is used to select 2nd power supply
(optional - if power protection is not required, leave pp2 blank in the ordering field)

pp2 = optional	Description	Note
SA	Single AC plug-in power supply module (85 to 260Vac, 50/60 Hz) Please choose an appropriate power cord for SA version. (Future Option)	• For redundancy purposes, ordering a second plug-in module will provide dual power
SD48	Single DC plug-in power supply module (-48Vdc: -36~ -72Vdc)	

Loop-IP6300 MSPLC Product Specifications

Uplink - Ethernet Interface

Ethernet functions	10/100/1000BaseT, IEEE802.3u, IEEE802.3z Auto-negotiation (10/100/1000M) Auto MDI/MDIX Full or half duplex Flow control, IEEE802.3x,
Connector	RJ45 & SFP

Uplink - Daughter Board SFP Module Characteristics

Optical Module	Fiber Direction	Wavelength (nm)	Connector	Distance	Power (dBm)
MTAFW	dual uni-directional fiber	850	LC without DDM	550 M	8.5
MTATW	dual uni-directional fiber	850	LC without DDM	2 Km	10
MTAFD	dual uni-directional fiber	850	LC with DDM	550 M	8.5
MTATD	dual uni-directional fiber	850	LC with DDM	2 Km	10
PTB1W	dual uni-directional fiber	1310	LC without DDM	10 Km	15
PTB3W	dual uni-directional fiber	1310	LC without DDM	30 Km	20
PTB4W	dual uni-directional fiber	1310	LC without DDM	40 Km	19
PTC5W	dual uni-directional fiber	1550	LC without DDM	50 Km	20
PTC6W	dual uni-directional fiber	1550	LC without DDM	60 Km	22
PTC8W	dual uni-directional fiber	1550	LC without DDM	80 Km	24
PTC9W	dual uni-directional fiber	1550	LC without DDM	90 Km	27
PTCVW	dual uni-directional fiber	1550	LC without DDM	110 Km	30
PTCXW	dual uni-directional fiber	1550	LC without DDM	120 Km	23
PTB1D	dual uni-directional fiber	1310	LC with DDM	10 Km	15
PTB3D	dual uni-directional fiber	1310	LC with DDM	30 Km	20
PTB4D	dual uni-directional fiber	1310	LC with DDM	40 Km	19
PTC5D	dual uni-directional fiber	1550	LC with DDM	50 Km	20
PTC6D	dual uni-directional fiber	1550	LC with DDM	60 Km	22
PTC8D	dual uni-directional fiber	1550	LC with DDM	80 Km	24
PTC9D	dual uni-directional fiber	1550	LC with DDM	90 Km	27
PTCVD	dual uni-directional fiber	1550	LC with DDM	110 Km	30
PTCXD	dual uni-directional fiber	1550	LC with DDM	120 Km	23

NOTE: For other special optical modules, please contact your nearest Loop sales representative.

Downlink - Ethernet Interface

Ethernet functions	10/100BaseT, IEEE802.3u Auto-negotiation (10/100M) Auto MDI/MDIX Full or half duplex Flow control, IEEE802.3x,
Connector	RJ45

Downlink - Optical Fiber Interface Characteristics (100 Mbps)

Optical Module	Fiber Direction	Wavelength (nm)	Connector	Distance (Km)	Power (dB)
NHB3S	Singlel mode dual uni-directional fiber	1310	SC (Subscriber Connector)	30	19
NHB5S	Single mode dual uni-directional fiber	1310	SC (Subscriber Connector)	50	30
NHB3F	Single mode dual uni-directional fiber	1310	FC (Fiber Connector)	30	19
NHC2S	Single mode dual uni-directional fiber	1550	SC (Subscriber Connector)	15~20	17
NHCUS	Single mode dual uni-directional fiber	1550	SC (Subscriber Connector)	100	34
WHD2S	WDM mode single bi-directional fiber	1310 Tx / 1550 Rx	SC (Subscriber Connector)	15~20	19
WHE2S	WDM mode single bi-directional fiber	1550 Tx / 1310 Rx	SC (Subscriber Connector)	15~20	19

NOTE:

1. WHD2S (Master) is used with WHE2S (Slave).
2. For other special optical modules, please contact your nearest Loop sales representative.

For discussion on whether to choose uni-directonal or bi-directional fiber option, see white paper with that title.

Software Function

Switching

L2 MAC table	Support 8K MAC addresses MAC Limit: supports to configure the maximum allowable learned MACs for one port. The range at least should be 1-64.
Link Aggregation	Up to 6 trunk groups Randomly choose at most 8 10/100Base-Tx Ports or 4 Giga Ports into a logical trunk Support three types of criteria for load balancing: SA, DA or Both SA and DA
Rapid spanning tree	IEEE 802.1w standard individually enable or disable RSTP on each port Support edge port feature for access link
VLAN	Support IEEE 802.1Q VLAN Support Port based VLAN Supports 255 VLANs to work simultaneously Port Isolation: Even in the same VLAN, the member ports could also isolate with each other
CoS	supports 4 CoS queues Provides the mapping between IEEE 802.1p priority with CoS Queue
QOS	Support the reassignment of RFC 2475 DiffServ DSCP code point for incoming packets Support the 802.1p priority reassignment for different DSCP code point. The assignment will also affect which CoS queue will be used for the DSCP code point
Port Security	Support IEEE 802.1X Support Radius protocol to communicate with Radius server for client authentication Support multi-host feature
IP Multicast	Support 255 IP multicast groups Support static IP multicast group setting Support IGMP Snooping Support the allowable multicast range for any customer-side port Supports cross VLAN feature for IP multicast services
Storm	Support the traffic suppression of Broadcast, Multicast and Unknown. Unicast to prevent broadcast storm The granularity of the control rate should be n*1000 pps, where n starts from 1 to 255.
SNTP	Follows RFC 2030
DHCP	Support DHCP Relay and DHCP relay agent option 82

ACL	Support 100 ACL rules, which could filter VLAN,IP, TCP/UDP port number Applies a rule on any interfaces to permit or deny a kind of incoming packets to pass through the device
Port Mirroring	Supports the mirroring of tx or rx traffic on multiple ports to single port for debugging purpose
SNMP	Support RFC 1157, RFC 1213, RFC 1493, RFC 1643, RFC 1757, RFC 2674, RFC 2925, RFC 2233, Private MIB
User account management	Provides the role-based user authentication for CLI, telnet and SSH. Two level of access right supported
System Log	Supports remote Syslog (RFC 3164) Separates events into 5 severity levels Supports the visible level to control which levels or above should send to the remote SYSLOG serves

Management

Console port	Electrical:	RS232
	Connector:	DB9 at front panel
	Protocol:	VT-100 terminal
SNMP/Ethernet port	Connect:	RJ45 at front panel

Management Utility

Supporting Console CLI, Telnet , SSH , WEB and SNMP to manage the device

Alarm Relay

Connector	3 pin terminal block

Electrical

AC Power	85 to 260 Vac, 50/60 Hz (Future Option)
DC Power	-48Vdc: (-36 to -72Vdc)
Power Consumption	Max. 41.2 W

Physical and Environmental

Dimensions for 1U	438 mm x 44mm x 300 mm (W x H x D)
Temperature Range	0°C to 50°C
Humidity	5% - 90% Relative Humidity
Mounting	Stand-alone, 19 or 23 inch rack mount

Certifications

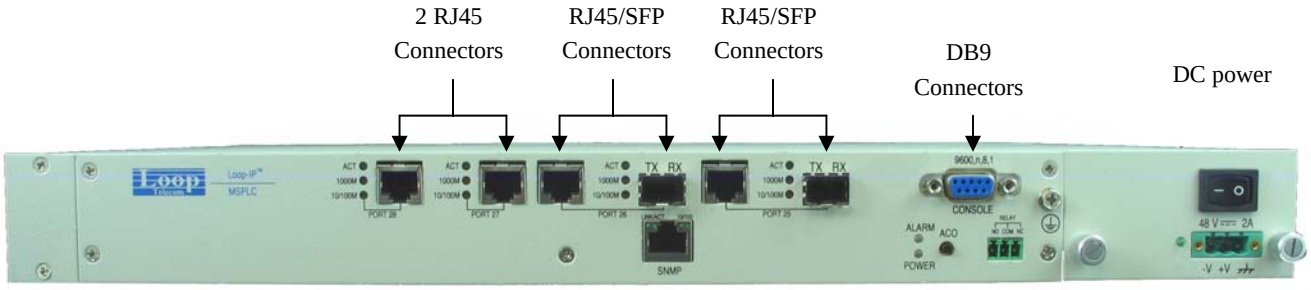
EMI/EMC	EN55022 Class A, EN55024, FCC Part 68 Subpart B, Class A
Safety	EN60950-1, IEC60950-1

Standards and Compliances

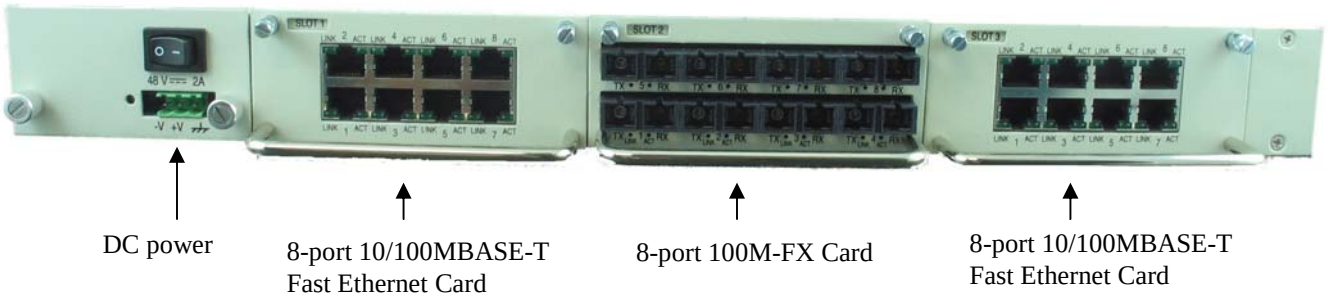
Standards Compliance	IEEE 802.3, 10BaseT IEEE 802.3u, 100BaseTX, 100BaseFX IEEE 802.3z, 1000Base-LX, 1000Base-SX, 1000Base-CX IEEE 802.3ab, 1000Base-T IEEE 802.3x Flow Control IEEE 802.1D, IEEE 802.1p Bridging, Spanning Tree Protocol, Priority Queuing IEEE 802.3ad Link Aggregation IEEE 802.1Q VLAN tagging
Standard MIBs	RFC 1213 MIB II RFC 1155 Structure Management Information (SMI) RFC 1157 Simple Network Management Protocol (SNMP) RFC 1442 Structure of Management Information for SNMP v2 RFC 1451 Manager-to-Manager MIB RFC 1493 Definitions of Managed Objects for Bridges RFC 1643 Definitions of Managed Objects for the Ethernet-like Interface Types RFC 1757 Remote Network Monitoring Management Information Base (4 groups) RFC 2233 The Interfaces Group MIB using SMIv2 RFC 2674 Managed objects for Bridges w/Traffic Classes, Multicast Filtering, VLAN extensions RFC 2933 Internet Group Management Protocol MIB
Other RFC Support	RFC 768 User Datagram Protocol (UDP) RFC 783 Trivia File Transfer Protocol (TFTP)

RFC 791 Internet Protocol (IP)
RFC 792 Internet Control Message Protocol (ICMP)
RFC 793 Transmission Control Protocol (TCP)
RFC 826 Ethernet Address Resolution Protocol (ARP)
RFC 854 Telnet Protocol Specification
RFC 879 TCP Maximum Segment Size and Related Topics
RFC 894 IP over Ethernet frames
RFC 896 Congestion control in IP/TCP internetworks
RFC 919 Broadcast Internet datagrams
RFC 920 Domain Requirements
RFC 922 Broadcast Internet datagrams in the presence of subnets
RFC 950 Internet standard subnetting procedure
RFC 951 Bootstrap Protocol (BOOTP)
RFC 1027 Using ARP to implement transparent subnet gateways
RFC 1042 Transmission of IP Datagrams Over IEEE 802 Networks
RFC 1071 Computing The Internet Checksum
RFC 1112 Internet Gateway Management Protocol (IGMP)
RFC 1123 Requirements For Internet Hosts
RFC 1155 Structure Management Information (SMI)
RFC 1157 Simple Network Management Protocol (SNMP)
RFC 1212 Concise MIB Definition
RFC 1215 A Convention for Defining Traps for use with the SNMP
RFC 1350 Trivial File Transfer Protocol (TFTP)
RFC 1533 DHCP Options and BOOTP Vendor Extensions
RFC 1624 Computation of the Internet Checksum
RFC 2131 Dynamic Host Configuration Protocol (DHCP)
RFC 2236 Internet Group Management Protocol (IGMP), Version 2

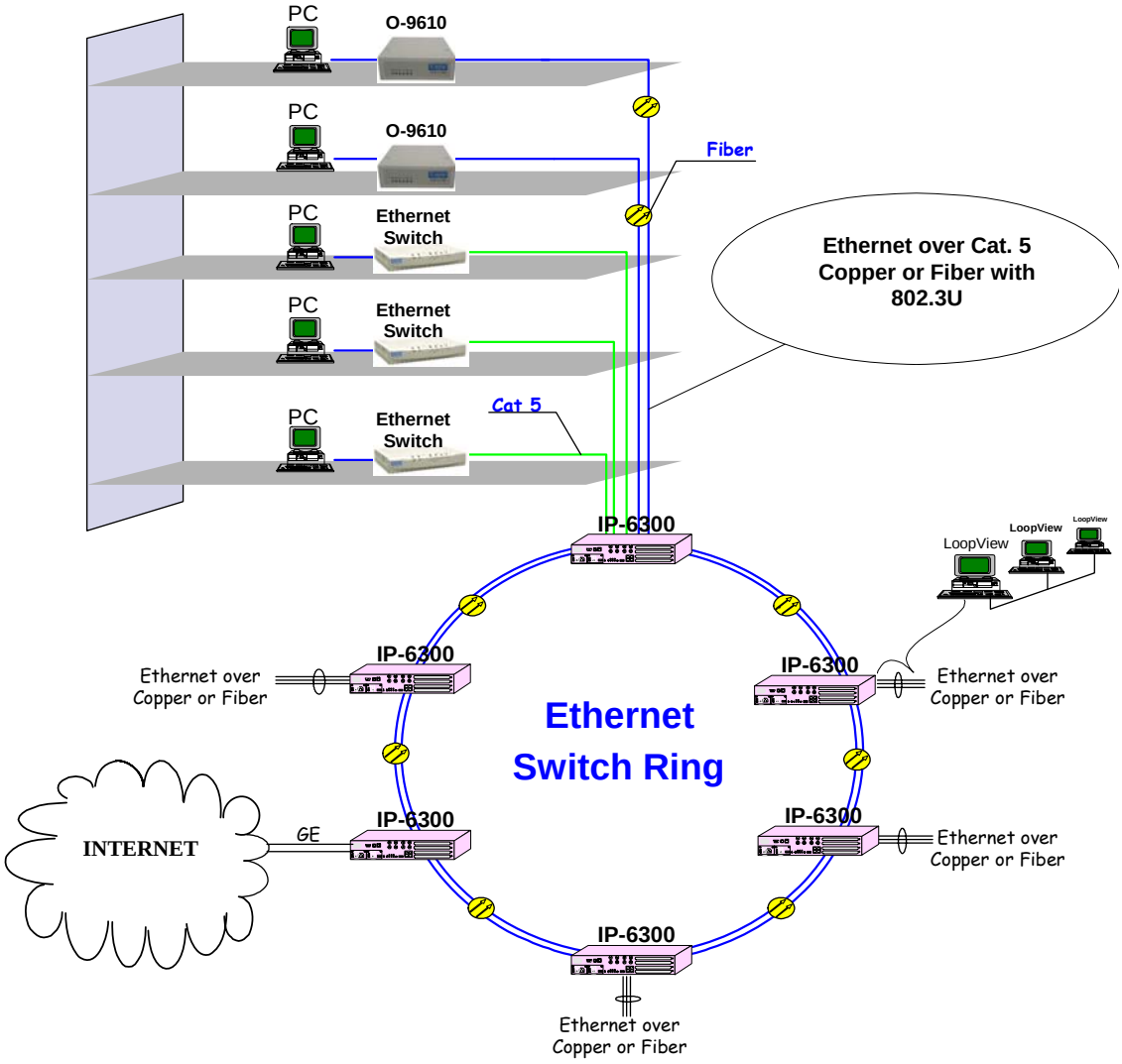
Front Panel



Rear Panel



Application Illustration



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