



Loop-O9340R Multi-Services FOM Rack Card

Features:

- Hot pluggable interface card for C5600 Multi-Service shelf
- Aggregate port
 - 2 Gigabit Optical Interface with SFP housing
 - Protection
 - Aggregate Line(1+1) protection
 - Switch
 - Switching time will be within 50 ms
 - Switching mode: manual switch, automatic switch
 - Proprietary Optical Aggregate throughput up to 800 Mbps
- Tributary port
 - Up to 2 or 4 general purpose tributary slots supporting any of the following cards:
 - 4-port E1/T1 tributary card
 - Up to 4/8/12/16 E1/T1 for dual slot
 - E1/T1 software configurable per card
 - 8-port E1 tributary card (future option)
 - Up to 8/16/24/32 E1 for dual slot
 - 2 Combo Gigabit Ethernet (GbE) (2 RJ45 and 2 SFP housing) tributary card
 - Support GbE functions:
 - Packet Transparency: BPDU packet transparency; IEEE 802.1q VLAN, 802.1ad (Q-in-Q)
 - QoS: 4 priority queues for packet classification; 256K bytes of packet buffer per priority queue, IEEE 802.1p CoS
 - Traffic Rate Control: Rate limited with 256Kbps granularity; support pause frames according IEEE 802.3X standard
 - Support dual slots:
 - Up to 7 cards for C5600 shelf
 - Diagnostics: Loopback and BERT functions
 - Performance: Line and path performance
 - Firmware download to local unit and remote unit
 - Configuration upload and download
 - RoHS Compliant



Description:

The Loop-O9340R Multi-Services FOM is a flexible, cost-effective plug-in card which provides an ideal solution for 2G/3G BTS and buildings with fiber-based E1/T1 and Ethernet networks. The Loop-O9340R can transparently carry up to 16 E1/T1, 32E1(future option) and 8 Combo Gigabit Ethernet (GbE) or mix with both interfaces signals over proprietary Gigabit optical pipe.

The Loop-O9340R is a powerful device for data signal extension. It provides a high performance solution to transmit E1/T1 plus Combo Gigabit Ethernet (GbE) signals and broadband connectivity for enterprise and carrier network services in point-to-point applications. The bandwidth supports for full configuration of the speeds for each channel/service and allows service providers to offer combinations according to field application network requirement.

The Loop-O9340R provides two proprietary aggregate Gigabit Optical fiber links interface for 1+1 auto protection switch to protect data transmission over the fiber path. The Loop-O9340R supports configuration and diagnostics by using a local terminal or a remote Telnet, SNMP management or LoopView GUI EMS. This allows execution of diagnostics and fault isolation.

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 the ordering code.

Model	Description	Note
Plug-in Module		
Loop-O9340-R2-conn1-conn2-conn3-conn4- G	Dual slot plug-in module with two Aggregate ports, and four specified rear cards	<ul style="list-style-type: none"> Dual slot, one card will occupy two slots. Two aggregate ports (GbE optical interface with SFP housing), please order separately for SFP optical modules listed in the table below (future option) Where conn is defined in table below Temperature range 0 to 65°C
Loop-O9340-R2 - G	Dual slot plug-in module with two Aggregate ports, without rear cards	<ul style="list-style-type: none"> Dual slot, one card will occupy two slots. Two aggregate ports (GbE optical interface with SFP housing), please order separately for SFP optical modules listed in the table below (future option) Temperature range 0 to 65°C
Loop-O9340-R-conn- G	Rear card of O9340R	<ul style="list-style-type: none"> Where conn is defined in table below Temperature range 0 to 65°C

Accessories

Conversion Adaptor

Loop-ACC-CAP-DB37M-WW- G	DB37 male to wire-wrap conversion adaptor
Loop-ACC-CAP-DB37M-8RJ45F- G	DB37 male to 8 RJ45 female conversion adaptor

User's Manual

Loop-O9340-R-UM	User's Manual (optional, paper copy). A CD version of the manual is already included as standard equipment.
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■ Where **conn1**, **conn2**, **conn3** and **conn4** are used to select connectors of the plug-in module. (must select one)

conn	RoHS Compliant	Description	Note
4ETDB37	Available	4 E1/T1 with DB37 connector	
8EDB37*	Available	8 E1 with DB37 connector (future option)	
2CGbEC	Available	Giga Combo GbE Ethernet card with 2 RJ45 connectors and 2 SFP housing	

* Future Option

SFP Optical Module for Gigabit Optical Interface/Gigabit Ethernet (GbE) Interface

1.25G (mini GBIC) Dual Fiber Commercial (0 to 70°C)	MTAFW	Multi-mode optical module with dual uni-directional fiber, 1.25G, 850nm, 550m, LC connector w/o DDM, 1000Base-SX	<ul style="list-style-type: none"> Use 2 fibers for all SFP optical modules All 1.25G optical module downgrading to 622M data rate will be workable
	MTAFD	Single-mode optical module with dual uni-directional fiber, 1.25G, 850nm, 550m, LC connector with DDM, 1000Base-SX	
	MTBTD	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 2Km, LC connector with DDM, 1000Base-SX+	
	MTBTW	Multi-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 2Km, LC connector w/o DDM, 1000Base-SX+	
	PTB1W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 10Km, LC connector w/o DDM, 1000Base-LHX	
	PTB2W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 20Km, LC connector w/o DDM, 1000Base-LX	
	PTB4W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 40Km, LC connector w/o DDM, 1000Base-LHX	
	PTC5W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 50Km, LC connector w/o DDM, 1000Base-XD	

PTC6W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 60Km, LC connector w/o DDM, 1000Base-XD	
PTC8W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 80Km, LC connector w/o DDM, 1000Base-ZX	
PTC9W	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 90Km, LC connector w/o DDM, 1000Base-ZY	
PTCVW	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 110Km, LC connector w/o DDM, , 1000Base-APD	
PTCXW	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 120Km, LC connector w/o DDM1000Base-APD	
PTB1D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 10Km, LC connector with DDM, 1000Base-LX	
PTB3D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 30Km, LC connector with DDM, 1000Base-LHX	
PTB4D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1310nm, 40Km, LC connector with DDM, 1000Base-LHX	
PTC5D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 50Km, LC connector with DDM, 1000Base-XD	
PTC6D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 60Km, LC connector with DDM, 1000Base-XD	
PTC8D	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 80Km, LC connector with DDM, 1000Base-ZX	
PTC9D	Single-mode optical module, with dual unidirectional fiber, 1.25G, 1550nm, 90Km, LC connector with DDM	
PTCVD	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 110Km, LC connector with DDM, 1000Base-APD	
PTCXD	Single-mode optical module with dual uni-directional fiber, 1.25G, 1550nm, 120Km, LC connector with DDM, DDM1000Base-APD	
PKB1W	Single-mode optical module with dual uni-directional fiber, 622Mbps~1.25G, 1310nm, 10Km, LC connector w/o DDM, 1000Base-LX	

1.25G (mini GBIC) Bi-directional Single Fiber Commercial (0 to 70°C)	PTD1W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 10Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD1W to use with PTE1W ▪ Use 1 fiber
	PTE1W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 10Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE1W to use with PTD1W ▪ Use 1 fiber
	PTD2W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 20Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD2W to use with PTE2W ▪ Use 1 fiber
	PTE2W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 20Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE2W to use with PTD2W ▪ Use 1 fiber
	PTD4W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 40Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD4W to use with PTE4W ▪ Use 1 fiber
	PTE4W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 40Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE4W to use with PTD4W ▪ Use 1 fiber
	PTD6W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 60Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD6W to use with PTE6W ▪ Use 1 fiber
	PTE6W	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 60Km, LC connector w/o DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE6W to use with PTD6W ▪ Use 1 fiber
	PTD1D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 10Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD1D to use with PTE1D ▪ Use 1 fiber

PTE1D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 10Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE1D to use with PTD1D ▪ Use 1 fiber
PTD2D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 20Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD2D to use with PTE2D ▪ Use 1 fiber
PTE2D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 20Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE2D to use with PTD2D ▪ Use 1 fiber
PTD4D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 40Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD4D to use with PTE4D ▪ Use 1 fiber
PTE4D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 40Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE4D to use with PTD4D ▪ Use 1 fiber
PTD6D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 60Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD6D to use with PTE6D ▪ Use 1 fiber
PTE6D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 60Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE6D to use with PTD6D ▪ Use 1 fiber
PTD8D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1310 nm / Rx 1550 nm, 80Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1310 nm from master to slave ▪ Order PTD8D to use with PTE8D ▪ Use 1 fiber
PTE8D	Single mode optical module with single bi-directional fiber, 1.25G, Tx 1550 nm / Rx 1310 nm, 80Km, LC connector with DDM, GbE/1X fiber channel	<ul style="list-style-type: none"> ▪ 1550 nm from slave to master ▪ Order PTE8D to use with PTD8D ▪ Use 1 fiber

NOTE: For other special optical modules, please check SFP Optical Module brochure or contact your nearest Loop sales representative.

Example 1:

Loop-O9340-R2-4ETDB37-4ETDB37-2CgbEC-2CGbEC-G

Dual O9340 rack cards with two 4E1/T1 rear cards with DB37 connector and two rear cards of 2 Combo GbE ports.

Example 2:

Loop-O9340-R2

Dual slot of O9340 Rack Card (Temperature range 0 to 65°C)

Loop-O9340-R-4ETDB37

One O9340R rear card of 4E1/T1 with DB37 connector

O9340R Product Specifications

Optical SFP Module Characteristic for Gigabit Optical Interface/GbE Ethernet(GbE) Interface

SFP Optical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
MTAFW	dual uni-directional fiber	1.25G	850	LC without DDM	550 m
MTBTW	dual uni-directional fiber	1.25G	1310	LC without DDM	2 km
MTAFD	dual uni-directional fiber	1.25G	850	LC with DDM	550 M
MTBTD	dual uni-directional fiber	1.25G	1310	LC with DDM	2 km
PTB1W	dual uni-directional fiber	1.25G	1310	LC without DDM	10 km
PTB2W	dual uni-directional fiber	1.25G	1310	LC without DDM	20 km
PTB4W	dual uni-directional fiber	1.25G	1310	LC without DDM	40 km
PTC5W	dual uni-directional fiber	1.25G	1550	LC without DDM	50 km
PTC6W	dual uni-directional fiber	1.25G	1550	LC without DDM	60 km
PTC8W	dual uni-directional fiber	1.25G	1550	LC without DDM	80 km
PTC9W	dual uni-directional fiber	1.25G	1550	LC without DDM	90 km
PTCVW	dual uni-directional fiber	1.25G	1550	LC without DDM	110 km
PTCXW	dual uni-directional fiber	1.25G	1550	LC without DDM	120 km
PTB1D	dual uni-directional fiber	1.25G	1310	LC with DDM	10 km
PTB3D	dual uni-directional fiber	1.25G	1310	LC with DDM	30 km
PTB4D	dual uni-directional fiber	1.25G	1310	LC with DDM	40 km
PTC5D	dual uni-directional fiber	1.25G	1550	LC with DDM	50 km
PTC6D	dual uni-directional fiber	1.25G	1550	LC with DDM	60 km
PTC8D	dual uni-directional fiber	1.25G	1550	LC with DDM	80 km
PTC9D	dual uni-directional fiber	1.25G	1550	LC with DDM	90 km
PTCVD	dual uni-directional fiber	1.25G	1550	LC with DDM	110 km
PTCXD	dual uni-directional fiber	1.25G	1550	LC with DDM	120 km
PKB1W	dual uni-directional fiber	622M~1.25G	1310	LC without DDM	10 km

SFP Optical Module	Direction	Data Rate	Wavelength(nm)	Connector	Distance
PTD1W	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC without DDM	10 km
PTE1W	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC without DDM	10 km
PTD2W	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC without DDM	20 km
PTE2W	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC without DDM	20 km
PTD4W	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC without DDM	40 km
PTE4W	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC without DDM	40 km
PTD6W	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC without DDM	60 km
PTE6W	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC without DDM	60 km
PTD1D	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC with DDM	10 km
PTE1D	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC with DDM	10 km
PTD2D	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC with DDM	20 km
PTE2D	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC with DDM	20 km
PTD4D	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC with DDM	40 km
PTE4D	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC with DDM	40 km
PTD6D	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC with DDM	60 km
PTE6D	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC with DDM	60 km
PTD8D	bi-directional fiber	1.25G	Tx1310/Rx1550 nm	LC with DDM	80 km
PTE8D	bi-directional fiber	1.25G	Tx1550/Rx1310 nm	LC with DDM	80 km

Aggregate – Gigabit Optical Interface

Number of Ports	2
Speed	1000M bps
Connector	SFP housing with LC

Tributary - E1 Interface

Line Rate	2.048M bps ± 50 ppm
Line Code	AMI/ HDB3
Framing	ITU G.704 framing monitoring only (framing transparency)
Output Signal	ITU G.703
Input Signal	ITU G.703
Jitter	ITU G.823
Surge Protection	IEC 61000-4-5 class 3
Connector	DB37 (optional DB37 to wire-wrap adaptor and DB37 to 8 RJ45 adaptor available)

Tributary -T1 Interface

Line Rate	1.544M bps ± 50 ppm
Line Code	AMI / B8ZS(selectable)
Framing	D4 / ESF(selectable) framing monitoring only (framing transparency)
Output Signal	DSX-1
Input Signal	ABAM cable length up to 655 feet
Pulse Template	Per AT&T TR 62411
Surge Protection	IEC 61000-4-5 class 3
Connector	DB37 (optional DB37 to wire-wrap adaptor and DB37 to 8 RJ45 adaptor available)

Tributary-Combo Gigabit Ethernet(GbE) Interface

Speed	10/100/1000M bps
Surge Protection	IEC 61000-4-5 class 3
Connector	RJ45 for twisted pair GbE, LC for optical GbE, auto detection

Ethernet Function

Basic Features	MDI/MDIX for 10/100/1000M BaseT auto-sensing Ethernet Leased Line Transmission with Hard-segmentation among Ethernet ports Support Packet length up to 2000 bytes Link Fault Propagation (LFP)
Packet Transparency	Packet transparency support for all types of packet types including IEEE 802.1q VLAN and 802.1ad (Q-in-Q) BPDU packet transparency Pause Frame transparency
QoS	Packet classification based on the 802.1p CoS 4 priority queues for packet classification Support Strictly Priority or WRR Scheduling of the 4 priority queues
Traffic Control	Ingress packet Rate limiting with granularity of 256kbps Pause frame issued when the traffic exceeding the limited rate before packet dropped following IEEE802.3X
Aggregate throughput	256Kbytes of packet buffer per priority queue Up to 800 Mbps

Aggregate Diagnostics

Aggregate Loopbacks	Aggregate Local Loopback, Aggregate Remote Loopback
Bert	Off/PRBS 2 ¹⁵ -1

Tributary Diagnostics

E1/T1 Loopbacks	Local Loopback, Remote Loopback
E1/T1 Bert	Off/PRBS 2 ¹⁵ -1 (to aggregate)
GbE Loopbacks	Local Loopback, Remote Loopback
GbE Bert	Off/PRBS 2 ¹⁵ -1 (to aggregate)

Performance Monitor

Alarm History	Alarm Type (i.e. RAI, AIS, LOS, BPV, ES, UAS)
Alarm Queue	Maximum 500 alarm records which record the latest alarm type, location, and date & time
Alarm Threshold	BPV, ES, UAS

Aggregate Performance

Performance Store Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour intervals.
Performance Reports Date & Time, Errored Second, Severe Errored Second count, Unavailable Second.

E1/T1 Performance

Performance Store Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour summary line, user
Performance Reports Date & Time, Errored Second, Unavailable Second, Bursty Errored Second, Severe Errored Second count.

GbE Performance

Performance Store Last 24 hours performance in 15-minute intervals and last 7 days in 24-hour intervals.
Performance Reports Date & Time, Errored Second, Severe Errored Second count, Unavailable Second.

Physical and Environmental

Temperature range 0 -65°C (operation)
Humidity 0 – 95% RH (non-condensing)
Mounting Rack card fits into Loop-C5600 Rack Cage

Certification

EMC EN55022 Class A, EN55024, FCC Part 15 Class A
Safety EN60950-1, IEC60950-1

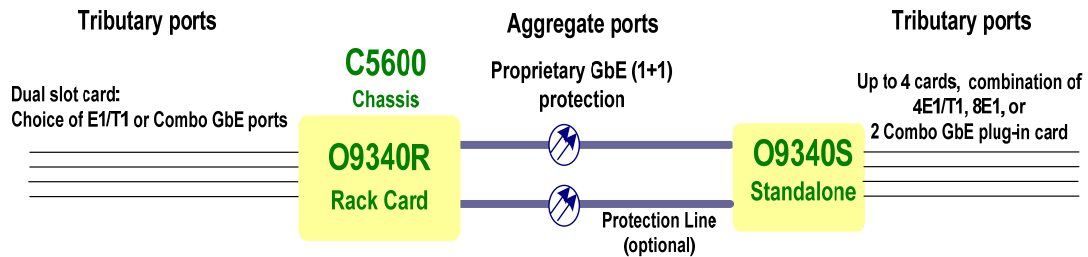
Standards Compliance

ITU-T G.703, G.704, G.823
IEC 61000-4-5 class 3
IEEE 802.3, 802.3u, 802.3z, 802.3X, 802.1q, 802.1ad

Application Illustration

Point-to-point application

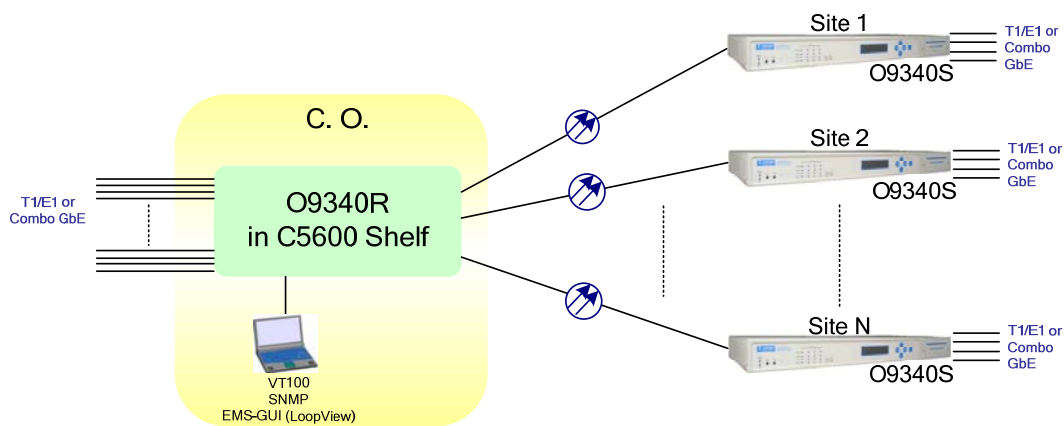
O9340 Dual Slot of Rack Card



Rack Application

The C5600 shelf supports up to 7 O9340R dual plug-in cards:

- Combination of 4/8/12/16 ports of E1/T1 or 2/4/6/8 ports of Combo GbE



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ISO 9001/ISO 14001

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