![DCB - DATA COMM FOR BUSINESS logo]

Loop-V4150
DS0 Cross Connect System

Description

The Loop-V4150 DS0 Cross Connect System is a standard compliant high density DCS systems with full T1/E1 and STM-1/4 (OC-3/12) cross-connect rack system.   The V4150 DS0 Cross Connect System is designed to have full add and drop capability up to:

- 4 STM-4 (OC-12) tributaries*
- 16 STM-1 (OC-3) tributaries*
- 504 E1/T1 tributaries

With the system capacity of a 1008E1/1344T1 DS0 non-blocking cross connect matrix, the V4150 DS0 Cross Connect System can offer high density transport capacity up to 504E1/T1, 4 STM-4 (OC-12) *, or 16 STM-1 (OC-3)*.

V4150-DCS offers the service provider protection schemes including 1+1, 1:1 and 1:N protection for T1/E1 tributary cards.

All interfaces are fully compliant with the relevant ETSI standards and ITU recommendations. The V4150-DCS provides powerful Operation, Administration, Maintenance and Provisioning (OAM&P) functionality including fault management, performance monitoring, configuration management, and network security management. Through the console port, LAN port, In-band E1*, OAM&P can be achieved both locally and remotely via SNMP or menu-driven interfaces.

Future option

Features

- 6U height, full front access (ETSI) shelf
- Hot-swappable cross-connect modules, tributary modules and power modules
- Temperature controlled fan tray
- Digital cross-connect modules (controller modules)
  - System capacity support up to 1008E1/1344T1 DS0 non-blocking cross connect matrix
  - 1 + 1 protection
  - Type: Point to point and Broadcast
  - E1/T1 Signaling Conversion, A/µ Conversion
- Tributary modules
  - 8 tributary slots
    - Dual ports STM-1/4 (OC-3/12) module*
    - 16/32/63 ports E1/T1 tributary module
- Power Modules
  - DC module (-36 to -72 Vdc)
  - AC/DC hybrid module (100 to 240 Vac; -36 to -72 Vdc)
  - Dual power (1+ 1) protection
- Protection
  - Protection switching time less than 50ms
  - Controller-DCS protection:1+1
  - Tributary protection
    - E1/T1: 1+1 and 1:1 per card and per port, 1:N (n=1 to 7) per card
    - B155/622: 1+1 MSP *
- IPv4 and v6
- External/Internal/Line timing source with SSM
- Diagnostic: Test Access Path (TAP) with Monitor, Spilt and Release mode
- Management
  - Console port, VT100 menu-driven
  - Dual SNMP port: support v1 and v3
  - Telnet
  - Centralized management with Loop's EMS/NMS
  - LoopView GUI EMS Element Management System
  - TMN management (Loop-iNMS) with full FCAPS and end-to-end circuit management
  - SSH
- RoHS compliant

Ordering Information

Notes:
- RoHS compliant units are identified by the letter **G** appearing at the end of the ordering code.
- If different environmental requirements are needed, please contact Loop's Marketing & Sales Team regarding availability.

Model	Description	Notes
Main Unit		
Loop-V4150-R-CHA-**G**	6U height Rack chassis for V4150 without CPU and power modules	
Loop-V4150-R-CHAF-**G**	8U height Rack chassis for V4150 with Air Filter Rack and Cable Management. No CPU and power modules	
CPU Modules and Supporting Plug-in Modules		
Loop-V4150-R-CCA-**G**	CPU module support DCS unit and 2 SNMP ports	• One required for each chassis • Order two for redundancy
Loop-V4150-R-CBA-**G**	Connector Board	One required for each chassis
Loop-V4150-R-FANA-**G**	Fan Tray with temperature controlled board	One required for each chassis
Loop-V4150-FILRCMA-**G**	Air Filter Rack with cable management for V4150, 2U (88mm), air filter included	
Loop-V4150-AFGR-**G**	Air Flow Guide Rack 1U height (44mm) for air redirect	
Tributary Plug-in Modules		
Loop-V4150-R-63TE-**G**	63 E1(120 ohm) or 63 T1 software programmable interface plug-in module	Order two for redundancy
Loop-V4150-R-63E75-**G**	63 E1(75 ohm) interface plug-in module	Order two for redundancy
Loop-V4150-R-32TE-**G**	32 E1(120 ohm) or 32 T1 software programmable interface plug-in module	Order two for redundancy
Loop-V4150-R-32E75-**G**	32 E1(75 ohm) interface plug-in module	Order two for redundancy
Loop-V4150-R-16TE-**G**	16 E1(120 ohm) or 16 T1 software programmable interface plug-in module	Order two for redundancy
Loop-V4150-R-16E75-**G**	16 E1(75 ohm) interface plug-in module	Order two for redundancy
Loop-V4150-R-B16-**G**	STM-1/4 (OC-3/12) software programmable interface plug-in module without SFP (mini-GBIC) optical modules	• Order two for redundancy • Future Option

Accessories

User's Manual	
Loop-V4150-R-UMA	Optional, paper copy of User Manual. A CD version of the manual is already included as part of the standard package.
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. **Note**: For other sizes, please contact your nearest Loop sales representative.
Power Modules	
Loop-V4150-R-SD48-**G**	Single -48Vdc (-36 to -72Vdc) power module	• For redundancy purposes,

Loop-V4150-R-SAD-**G**	Single AC and DC (coexistent) power module (90 to 240Vac, 50/60Hz and -36 to -72Vdc)	ordering a second plug-in module will provide dual power. • For AC power module, choose an appropriate power cord.
Power Cord		
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	
Air Filter		
Loop-V4150-FIL	Air Filter to fit Loop-V4150-FILR Air Filter Rack	
Blank Panels		
30.001076.A00LF	Blank panel for power supply slots	
30.001077.A00LF	Blank panel for other slots	

Firmware Upgrade		
Loop-V4150-card-FWUPGR	Firmware Upgrade and Warranty Renewal. The Customer whose warranty has lapsed or desire to have a firmware upgrade can purchase this option. This will upgrade the firmware to the most current version and provide an additional 12 months of support.	For available card types, please refer to the table below for detail information.

For Firmware Upgrade:
■ **Where card is used to select card type:**

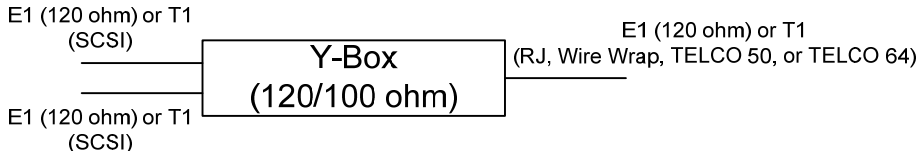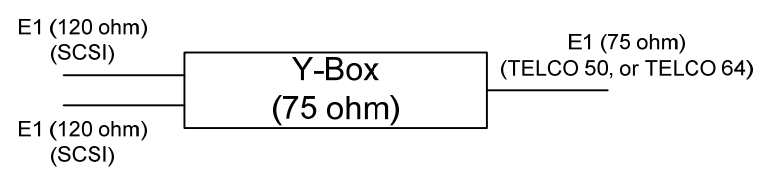| card=	Description	Notes
CCA	CPU card	
63TE	63 E1(120 ohm) or 63 T1 software programmable interface plug-in module	
63E75	63 E1(75 ohm) interface plug-in module	
32TE	32 E1(120 ohm) or 63 T1 software programmable interface plug-in module	
32E75	32 E1(75 ohm) interface plug-in module	
16TE	16 E1(120 ohm) or 63 T1 software programmable interface plug-in module	
16E75	16 E1(75 ohm) interface plug-in module	
B16	STM-1/4 (OC-3/12) software programmable interface plug-in module without SFP (mini-GBIC) optical modules	

Conversion Panels		
Loop-ACC-P-1SCSI-16RJ-**G**	One SCSI to sixteen RJ (1u height) without cable	Used with: Loop- V4150-R-16TE-**G,** Loop- V4150-R-32TE-**G,** Loop- V4150-R-63TE-**G**
Loop-ACC-P-1SCSI-16WW-**G**	One SCSI to sixteen Wire Wrap (1u height) without cable	Used with: All types of ET and E75 plug-in cards
Loop-ACC-P-1SCSI-16BNC-**G**	One SCSI to sixteen BNC (1.5u height) without cable	Used with: Loop- V4150-R-16E75-**G,** Loop- V4150-R-32E75-**G,** Loop- V4150-R-63E75-**G**
Y-box Panels for 120/100 ohm		

| E1 (120 ohm) or T1 (SCSI) | Y-Box (120/100 ohm) | E1 (120 ohm) or T1 (RJ, Wire Wrap, TELCO 50, or TELCO 64) |
| E1 (120 ohm) or T1 (SCSI) | | |

Loop-ACC-Y-2SCSI-16RJ-**G**	1u Y-box 16-port panel for two SCSI (E1(120 ohm) or T1) to 16 RJ (E1(120 ohm) or T1) connectors without cable	Using with Loop- V4150-R-16TE-**G,**
Loop-ACC-Y-2SCSI–16WW-**G**	1u Y-box 16-port panel for two SCSI (E1(120 ohm) or T1) to 16 Wire Wrap (E1(120 ohm) or T1) without cable	Using with Loop- V4150-R-16TE-**G,**
Loop-ACC-Y-2SCSI-2T50P8-16TE-**G**	1u 16-port Y-box panel in (E1(120 ohm) or T1) for two SCSI to two TELCO 50 (E1(120 ohm) or T1) connectors (8 ports per TELCO connector) without cable	Using with Loop- V4150-R-16TE-**G,**
Loop-ACC-Y-2SCSI-2T50P12-16TE-**G**	1u 16-port Y-box panel in (E1(120 ohm) or T1) for two SCSI to two TELCO 50 (E1(120 ohm) or T1) connectors (12 ports to the first TELCO connector, 4 ports to the second TELCO connector) without cable	Using with Loop- V4150-R-16TE-**G,**
Loop-ACC-Y-2SCSI-1T64P16-16TE-**G**	1u 16-port Y-box panel in (E1(120 ohm) or T1) for two SCSI to one TELCO 64 (E1(120 ohm) or T1) connectors (16 ports per TELCO connector) without cable	Using with Loop- V4150-R-16TE-**G,**
Loop-ACC-Y-4SCSI-4T50P8-32TE-**G**	1u 32-port Y-box panel in (E1(120 ohm) or T1) for four SCSI to four TELCO 50 (E1(120 ohm) or T1) connectors (8 ports per TELCO connector) without cable	Using with Loop- V4150-R-32TE-**G,** Loop- V4150-R-63TE-**G**
Loop-ACC-Y-4SCSI-3T50P12-32TE-**G**	1u 32-port Y-box panel in (E1(120 ohm) or T1) for four SCSI to three TELCO 50 (E1(120 ohm) or T1) connectors (12 ports to the first TELCO connector, 12 ports to the second TELCO connector and 8 ports to the third TELCO connector) without cable	Using with Loop- V4150-R-32TE-**G,** Loop- V4150-R-63TE-**G**
Loop-ACC-Y-4SCSI-2T64P16-32TE-**G**	1u 32-port Y-box panel in E1 120 ohm or T1 for four SCSI to two TELCO 64 (E1(120 ohm) or T1) connectors (16 ports per TELCO connector) without cable	Using with Loop- V4150-R-32TE-**G,** Loop- V4150-R-63TE-**G**

Y-box Panels for 75 ohm

| E1 (120 ohm) (SCSI) | Y-Box (75 ohm) | E1 (75 ohm) (TELCO 50, or TELCO 64) |
| E1 (120 ohm) (SCSI) | | |

Loop-ACC-Y-2SCSI-2T50P8-16E75-**G**	1u 16-port Y-box panel for two SCSI (E1(120 ohm)) to two TELCO 50 (E1(75 ohm)) connectors (8 ports per TELCO connector) without cable	Using with Loop- V4150-R-16TE-**G**
Loop-ACC-Y-2SCSI-2T50P12-16E75-**G**	1u 16-port Y-box panel for two SCSI (E1(120 ohm)) to two TELCO 50 (E1(75 ohm))connectors (12 ports to the first TELCO connector, 4 ports to the second TELCO) straight without cable	Using with Loop- V4150-R-32TE-**G,** Loop- V4150-R-63TE-**G**
Loop-ACC-Y-2SCSI-1T64P16-16E75-**G**	1u 16-port Y-box panel for two SCSI (E1(120 ohm)) to one TELCO 64 (E1(75 ohm))connectors (16 ports per TELCO connector) straight without cable	Using with Loop- V4150-R-16TE-**G**
Loop-ACC-Y-4SCSI-4T50P8-32E75-**G**	1u 32-port Y-box panel for four SCSI (E1(120 ohm)) to four TELCO 50 (E1(75 ohm))connectors (8 ports per TELCO connector) without cable	Using with Loop- V4150-R-16TE-**G**

Loop-ACC-Y-4SCSI-3T50P12-32E75-**G**	1u 32-port Y-box panel for four SCSI (E1(120 ohm)) to three TELCO 50 (E1(75 ohm))connectors (12 ports to the first TELCO connector, 12 ports to the second TELCO connector and 8 ports to the third TELCO connector) without cable	Using for Loop- V4150-R-32TE-**G**, Loop- V4150-R-63TE-**G**
Loop-ACC-Y-4SCSI-2T64P16-32E75-**G**	1u 32-port Y-box panel for four SCSI(E1(120 ohm)) to two TELCO 64 (E1(75 ohm))connectors (16 ports per TELCO connector) without cable	Using with Loop- V4150-R-32TE-**G**, Loop- V4150-R-63TE-**G**
Conversion Cable		
Loop-ACC-CAB-SCSI68M-200-1SCSI68M-**G**	SCSI68/ Male to one SCSI68/Male; Length 200 cm	Used for all Conversion Panels and Y-box Panels

*Protection Relay Shelf (Please refer to Protection Relay Shelf brochure for detail)*

Model	Description	Notes
Loop-ACC-PRSA-**G**	6U height Protection Relay Shelf with Telco-64 connectors at rear. The plug-in modules and power modules are not included.	
Loop-ACC-PRSA-PMMA-63-**G**	Protection Module for Main lines with 4 SCSI68 female connectors without cables	• Order up to 7 plug-in modules from 2nd to 8th slot • Order cable separately
Loop-ACC-PRSA-PTA-63-**G**	Protection Module for Protection line with 4 SCSI68 female connectors and 1 DB25 female connector which connect to connector board without cables	• For 1st slot only • Order cable separately
Loop-ACC-PRSA-SD48-**G**	Single -48Vdc (-36 to -72Vdc) power module	For redundancy purposes, ordering a second plug-in module will provide dual power.
Accessories		
User's Manual		
Loop- PRSA-UMA	Optional, paper copy of User Manual. A CD version of the manual is already included as part of the standard package.	
Conversion Cable		
Loop-ACC-CAB-SCSI68M-37-1SCSI68M-**G**	SCSI68/ Male to one SCSI68/Male ground; Cable length without connectors: 37cm	Used for Protection Module for **Main lines (PMMA)** for Protection Relay Shelf
Loop-ACC-CAB-DB25M-90-DB25M-**G**	DB25/ Male to one DB25/Male ground; Cable length without connectors: 90cm	Used for Protection Module for **Protection line (PTA)** for Protection Relay Shelf
Blank Panels		
30.001833.A00LF	Blank panel for power supply slots	
30.001834.A00LF	Blank panel for other slots	

Application Illustration:

Relay Protection Shelf is the Second Box in the diagram. The Protection Module of the Protection Line Card is always connected to the 63TE card Trib 1 of the V4150.   The Protection Modules are connected by cables wired from the 63TE cards of the V4150, TRIB2 to TRIB8, to the Relay Protection Shelf.

V4150 Relay Protection Shelf
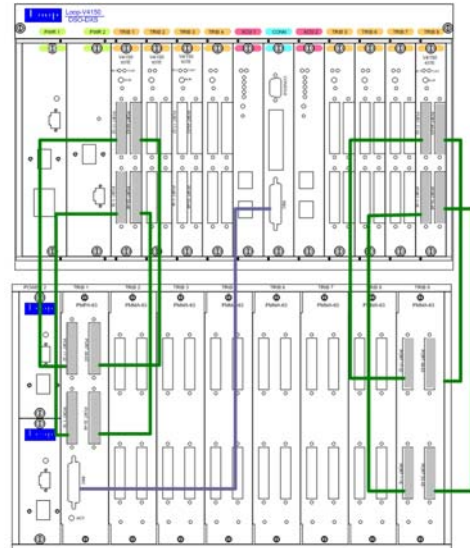
Loop-V4150 Product Specification

Max Capacity of Cross-connect Module (DCS Card)

System capacity support up to **1008E1/1344T1** DS0 non-blocking cross connect matrix
E1/T1 Signaling Conversion **:** Maximum 256 per group, Maximum 4 groups

Max Number of Tributary Modules

4 STM-4 (OC-12) tributaries
16 STM-1 (OC-3) tributaries
504 E1/T1 tributaries

E1 Interface

Line Rate	2.048 Mbps ± 50 ppm	Jitter	ITU G.823
Line Code	AMI/HDB3	Framing	Unframed, FAS with CRC enable/disable and MFAS with CRC enable/disable
Input Signal	ITU G.703	Impedance	75 ohm coax/120Ω twisted pair
Output Signal	ITU G.703	Connector	SCSI-II 68-pin
Output Mask	ETS 300 689 Sec.4.2.1.2 ITU G.703		Four connectors for 63 ports
			Two connectors for 32 ports
			One connectors for 16 ports

T1 Interface

Line Rate	1.544 Mbps ± 32 ppm	Jitter	ITU G.824
Line Code	AMI/B8ZS	Framing	SF(D4) and ESF
Input Signal	ITU G.703 DSX-1 0dB to –6dB	Impedance	100 ohm twisted pair
Output Signal	ITU G.703 DSX-1 w/short (0-110, 110-220, 220-330, 330-440, 440-550, 550-660 (feet)	Connector	SCSI-II 68-pin
			Four connectors for 63 ports
			Two connectors for 32 ports
Output Mask	Bellcore GR-499-core		One connectors for 16 ports

System Clock

Clock Source	Internal clock
	8 tributary clocks
	2 external input clocks (ITU-T G.703 - 2.048 Mhz or E1 FAS/CRC, T1 for D4/ESF)
Clock Output	2 external output clocks (ITU-T G.703 - 2.048 Mhz or E1 FAS/CRC, T1 for D4/ESF)

Management Interface

|	
LED Indicator	Multi colors
Console	Electrical: RS232, DCE
	Connector: DB9, female
	User interface: Menu driven VT-100
Ethernet	Connector: RJ45
SNMP	10/100 Base T, SNMPv1, v3/Telnet/SSH

Alarm Input/Output

Inputs

Ports	4	Activation current	3 mA
Internal resistance	1K	Deactivation current	1.5 mA
Connectors	RJ45		

Outputs

Ports	4	Maximum operation condition, please refer to the figure below.
Initial insul. resist.	Min. 100M ohm (at 500Vdc)	
Connectors	RJ45	
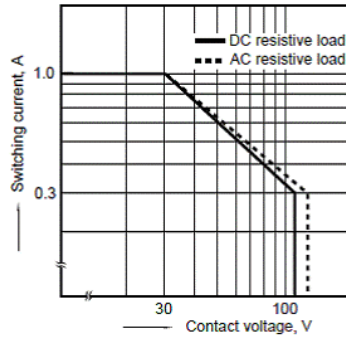
Diagnostics

Test Access Port (TAP):

Mode:	Monitor, Spilt and Release mode
Set:	Maximum: 28 sets

B155/622 card (Future Option)

Loopback Test	Local loopback, payload loopback, line loopback:	
BERT Test	Optical interface	Direction: to optical lines

E1/T1 card

Loopback Test	Local loopback, line loopback, DS0 loopback	
BERT Test	E1/T1 interface	Direction: to optical lines, to tributary lines
		DS0: system side, line side

Performance Monitor

Performance Reports	Performance Parameters: Error Second (ES), Burst Error Second (BES), Severe Error Second (SES), Unavailable Second (UAS), BPV

Alarm History	System Alarm	Alarm Cut Off, Power Loss/Uneqp, Fan Fail, Fan Module Uneqp, RBC Uneqp, Overheat, Timing Source Sync Loss, Logon and Logoff, Card Out, Card Type Mismatch, Card Port Number Mismatch, Card Fail, Card Registration, Trib Protection Sync, Standby XCU Takeover, Standby Trib Takeover, XCU Sync Future Option: Optical Port Uneqp, XCU Port Uneqp SNCP Switch,MSP Switch, SFP Tx Fail, SFP Rx Fail, SFP Temperature

	E1/T1 Alarm	LOS, LOF, AIS, RAI, ES, SES, UAS		
	SDH/SONET Line Alarm Future Option	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

Alarm Queue   Contains up to 300 alarm records of latest alarm types, alarm severity, date and time.

Power
AC and DC coexistent module   100 to 240Vac, 50/60Hz, -48Vdc (-36 to -72Vdc); 3.6A Max

DC module   -48Vdc (-36 to -72Vdc), 7A

Physical and Environmental

|	
Dimension for 6U	433 x 264 x 223.5mm (W/H/D)
Dimension for Air Flow Guide Rack	433 x 44 x 223.5mm (WxHxD)
Dimension for Air Filter Rack A with cable management	433 x 88 x 223.5mm (WxHxD)
Dimension for Relay Protection Shelf	433 x 264 x 203.50 mm (W/H/D)
Dimension for Y-Box	432 x 44 x 100 mm (Wx HxD)
Dimension for Conversion Panel	RJ connector: 432 x 44 x 23mm (WxHxD) WW connector: 432 x 44 x 40mm (WxHxD) BNC connector: 432 x66 x 53mm (WxHxD)
Temperature	0 to 50°C
Humidity	0-95%RH (non-condensing)
Mounting	Desk-top stackable, 19/23 inch rack mountable

Standards Compliance

ITU-T	G.703, G.823, G.824
ANSI	T1.105, T1.107
IEEE	802.1w (RSTP), 802.3u

Certification

EMC	FCC Part 15 Subpart B, Class A; EN 55022, Class A; EN55024; EN300 386
Safety	IEC60950-1/EN 60-950-1

Loop-V4150-DCS Front Panel
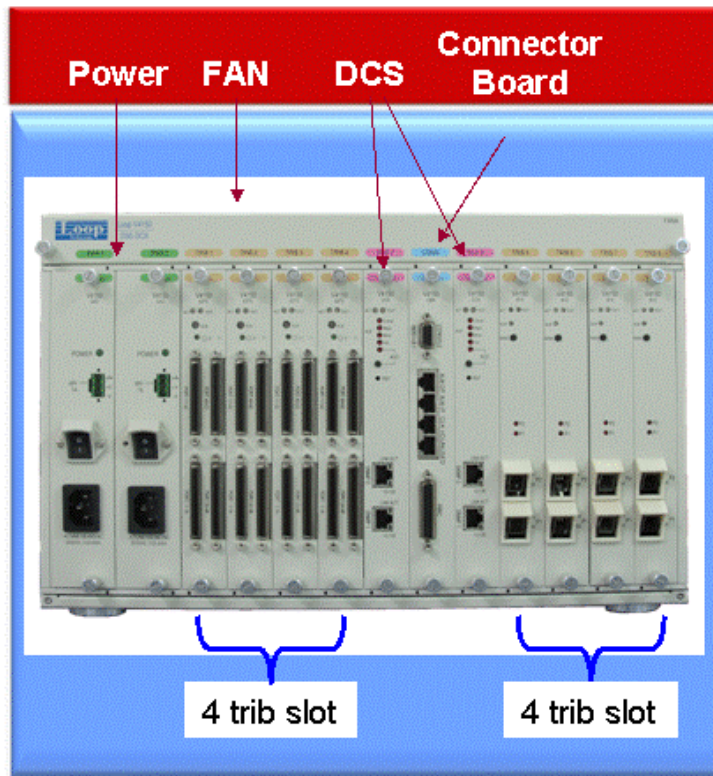
Loop-V4150 Card Type and Capacity Reference Table

Figure 1 Tributary cards without protection

Slot	Plug-in Card	E1/T1	Optical (SFP)	
			STM-1/OC-3	STM-4/OC12
HS	TRIB 1	63	2	1 Note 2
	TRIB 2	63	2	
	TRIB 3	63	2	1 Note 2
	TRIB 4	63	2	
	CCA			
HS	TRIB 6	63	2	1 Note 2
	TRIB 7	63	2	
	TRIB 8	63	2	1 Note 2
	TRIB 9	63	2	

Figure 2   Tributary cards with protection

| Slot	Plug-in Card	E1/T1	Optical (SFP)	
			STM-1/OC-3	STM-4/OC12
HS	TRIB 1	63	2	1
	TRIB 2	63 (B)	2 (B)	1 (B)
	TRIB 3	63	2	1
	TRIB 4	63 (B)	2 (B)	1 (B)
	CCA 1			
	CCA 2	(B)		
HS	TRIB 6	63	2	1
	TRIB 7	63 (B)	2 (B)	1 (B)
	TRIB 8	63	2	1
	TRIB 9	63 (B)	2 (B)	1 (B)

B) backup/protection
Note 2: To set up STM-4/OC12 without protection, put only one optical-module-with-protection in either TRIB 1 or TRIB2 slot.

Application Illustrations

Loop-V4150 DCS with O9550 SDH/SONET IMAP
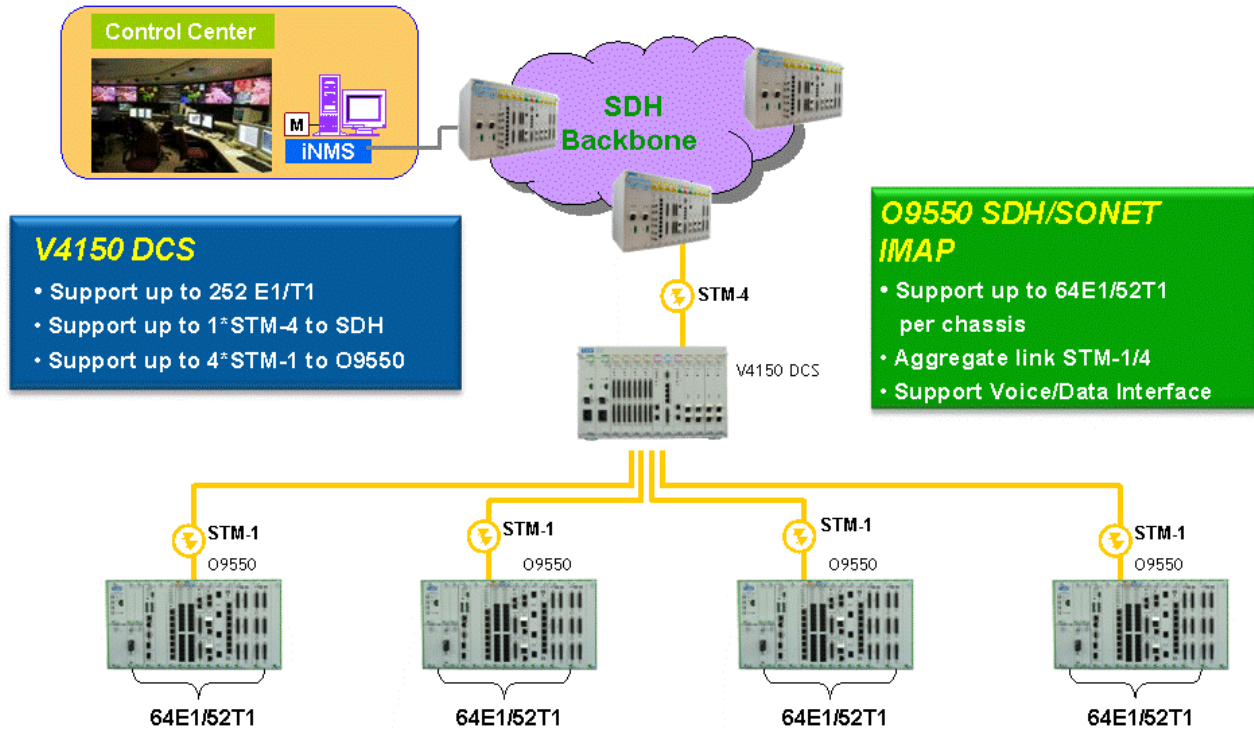
Loop-V4150 DCS with O9550 Multiple Ring
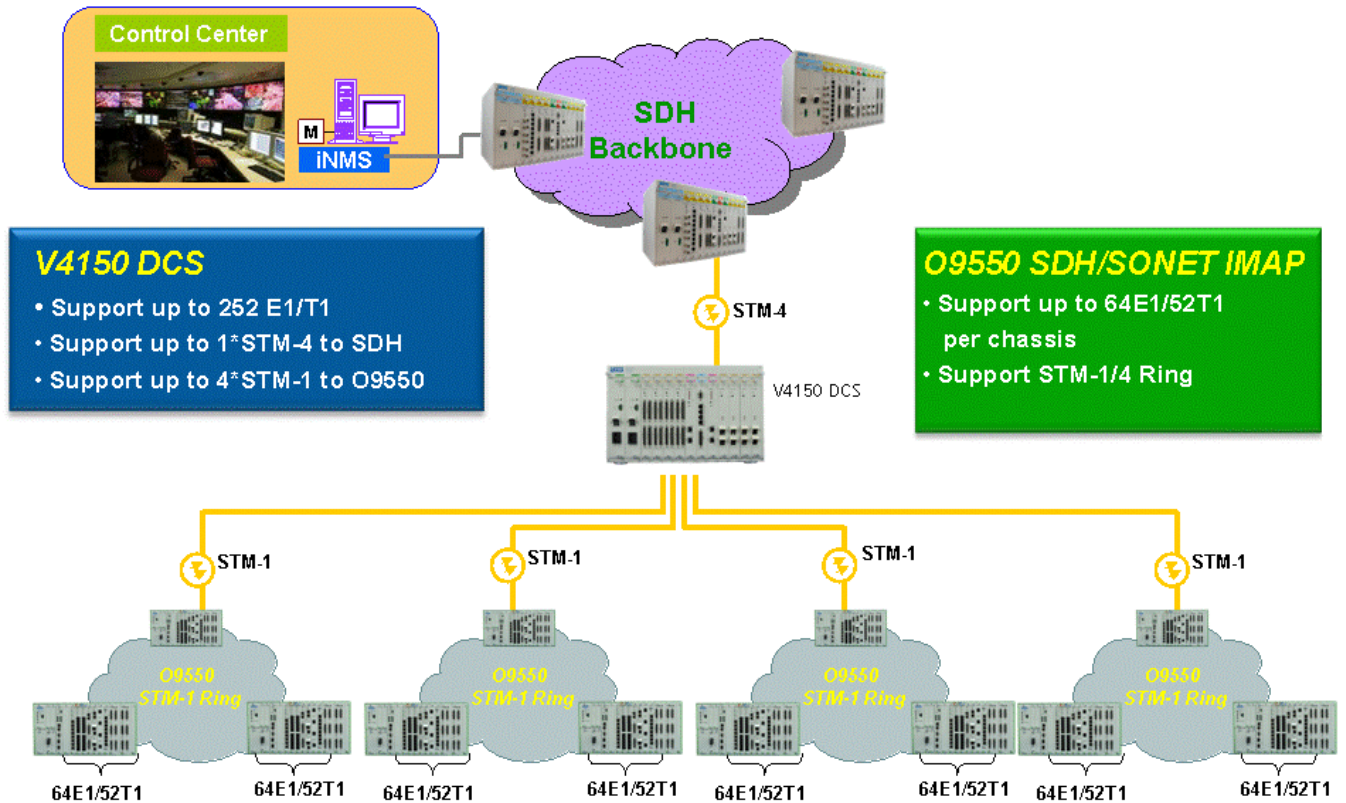
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