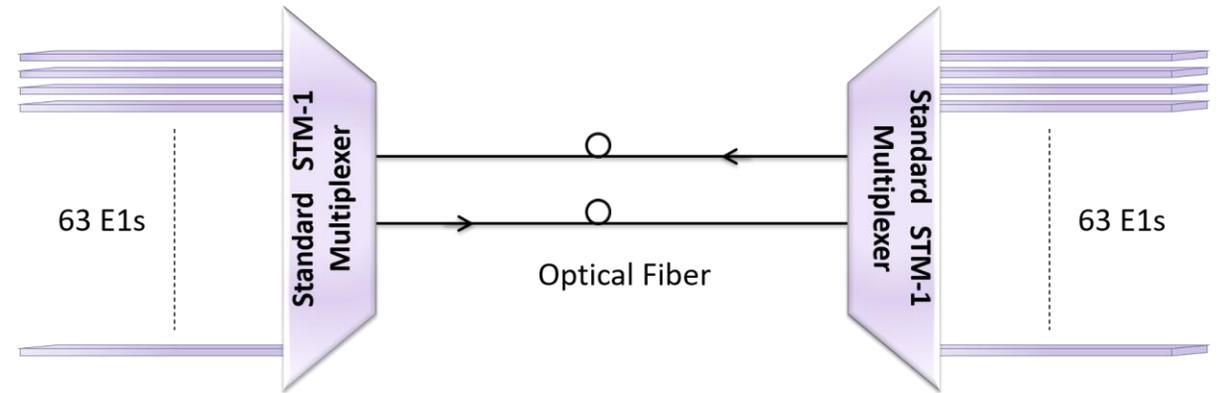

STM-1 Mux and Traffic Capture/Analysis (63 E1 over STM-1 Multiplexer)



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: <https://www.gl.com>

STM-1 Mux Demux (SME063)

- Cost effective access to all 63 E1's in an STM – 1 optical signal; two are required to non-intrusively access both directions of the optical signal
- Standard 63 E1 Mux Configuration for point-to-point applications
- ITU-T G .703 compliant E1 ports, 75Ω/120 Ω options, with on-line error monitoring and loop-back function
- 1U height, 19" rack mount size, high integration, compact design
- Topologies supported include point to point, chain, ring, hub, and mesh
- ADM (Add Drop Mux) function is NOT included
- Optional 2 STM -1 optical interfaces for protection switching - one redundant, one online
- Optical interface supports ALS (Auto Laser Shutdown) function

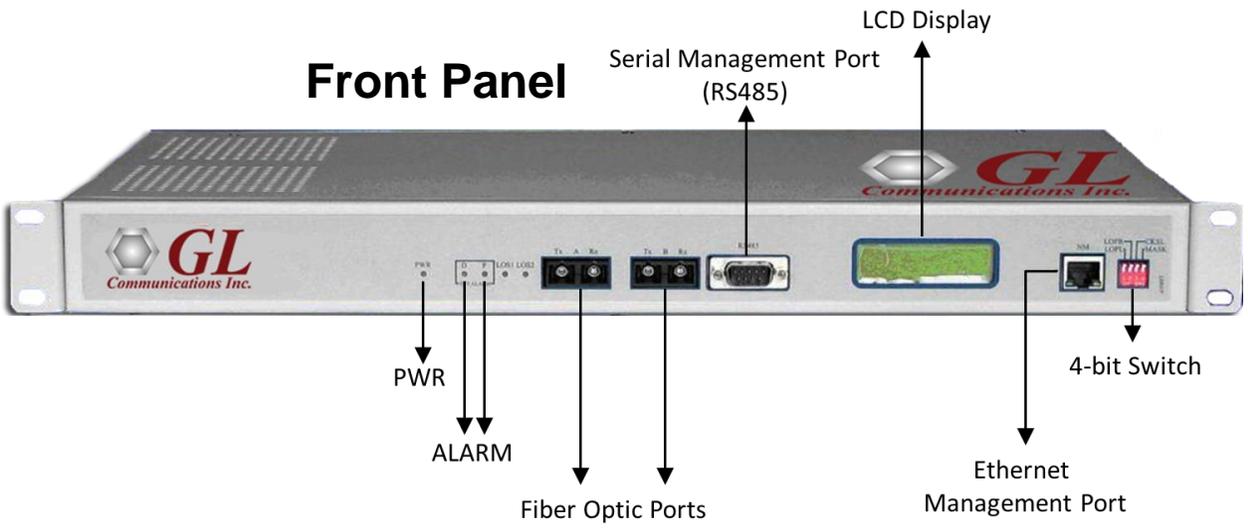


Key Features

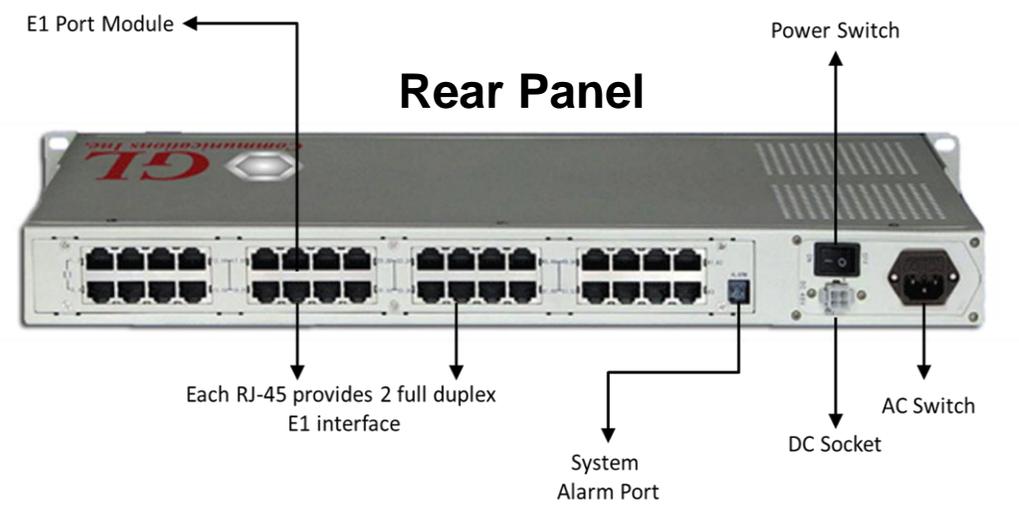
- Inter-works with popular SDH products of various vendors – Motorola, Lucent, and Huawei
- Supports TUG3-TUG2-TU12 tributary channel numbering and time slot numbering
- Supports internal, STM-1 line clock, external and tributary clocking modes
- LCD display for system configuration and alarm
- Supports remote power-off alarming function
- Supports online upgrading
- Easy commissioning and maintenance, high reliability

Hardware Interfaces

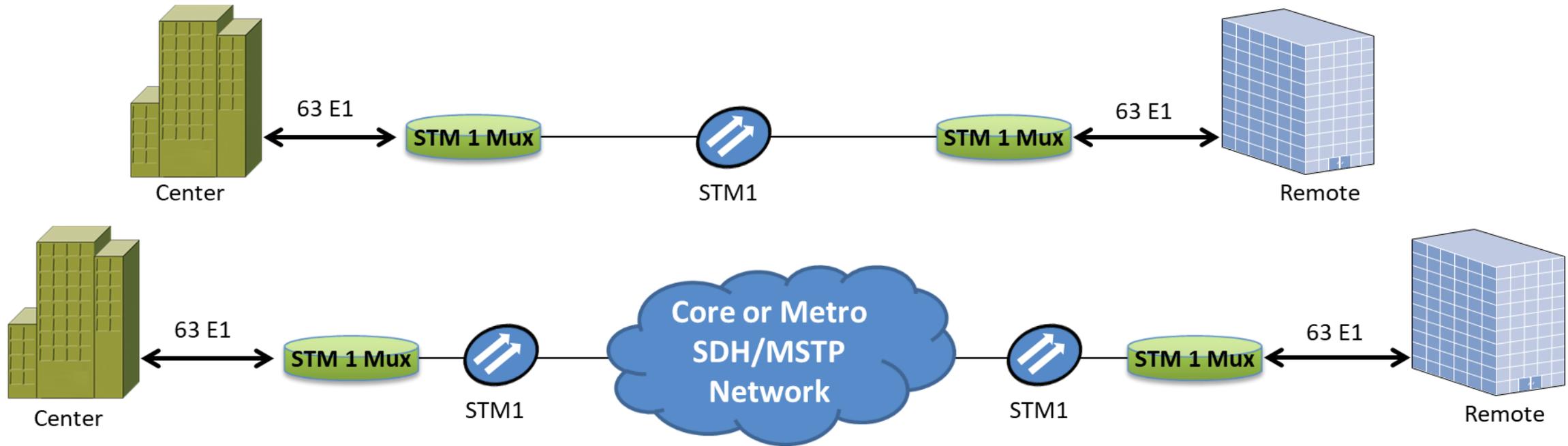
Front Panel



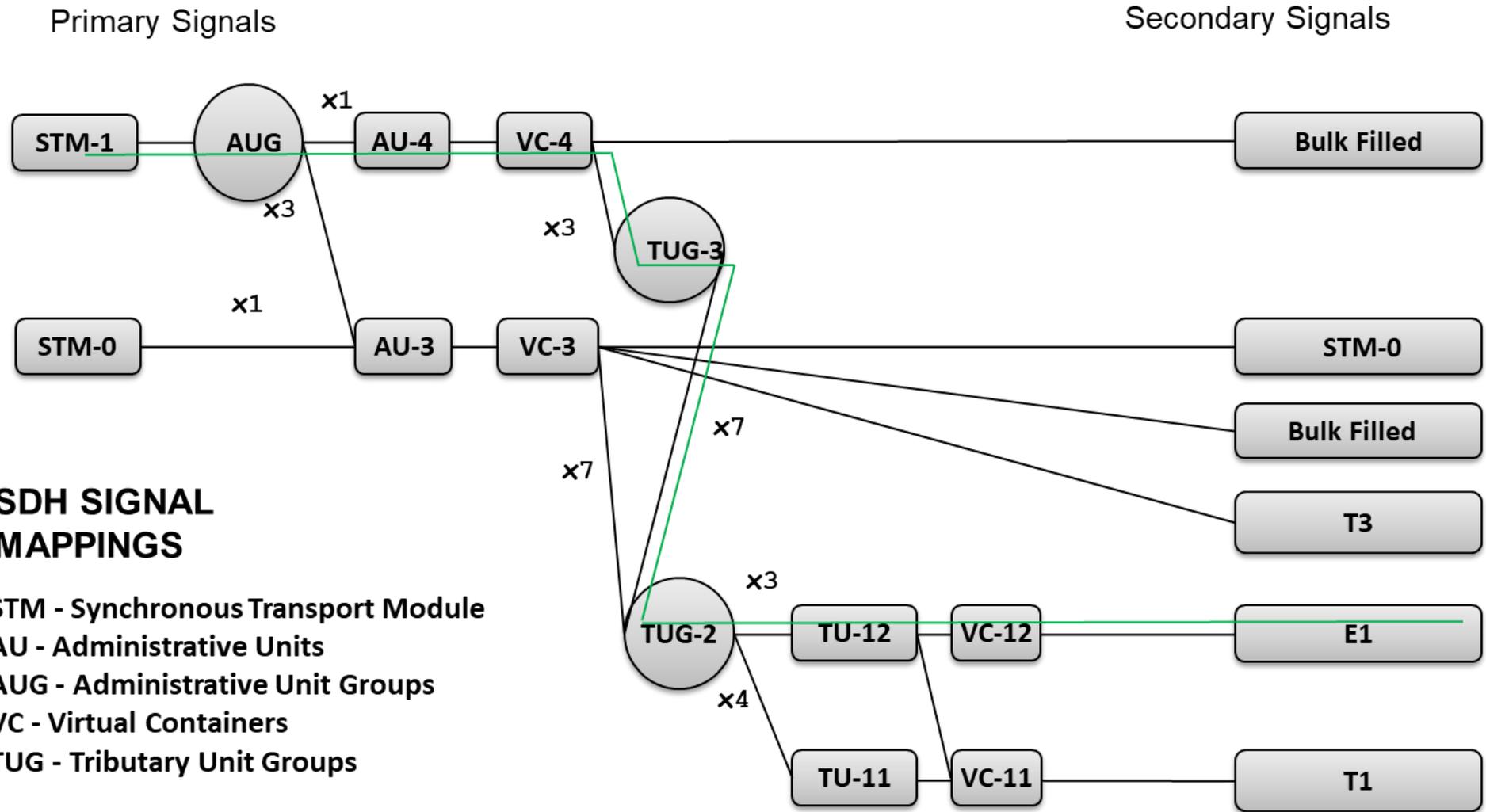
Rear Panel



Point-to-point Application of STM-1 Mux



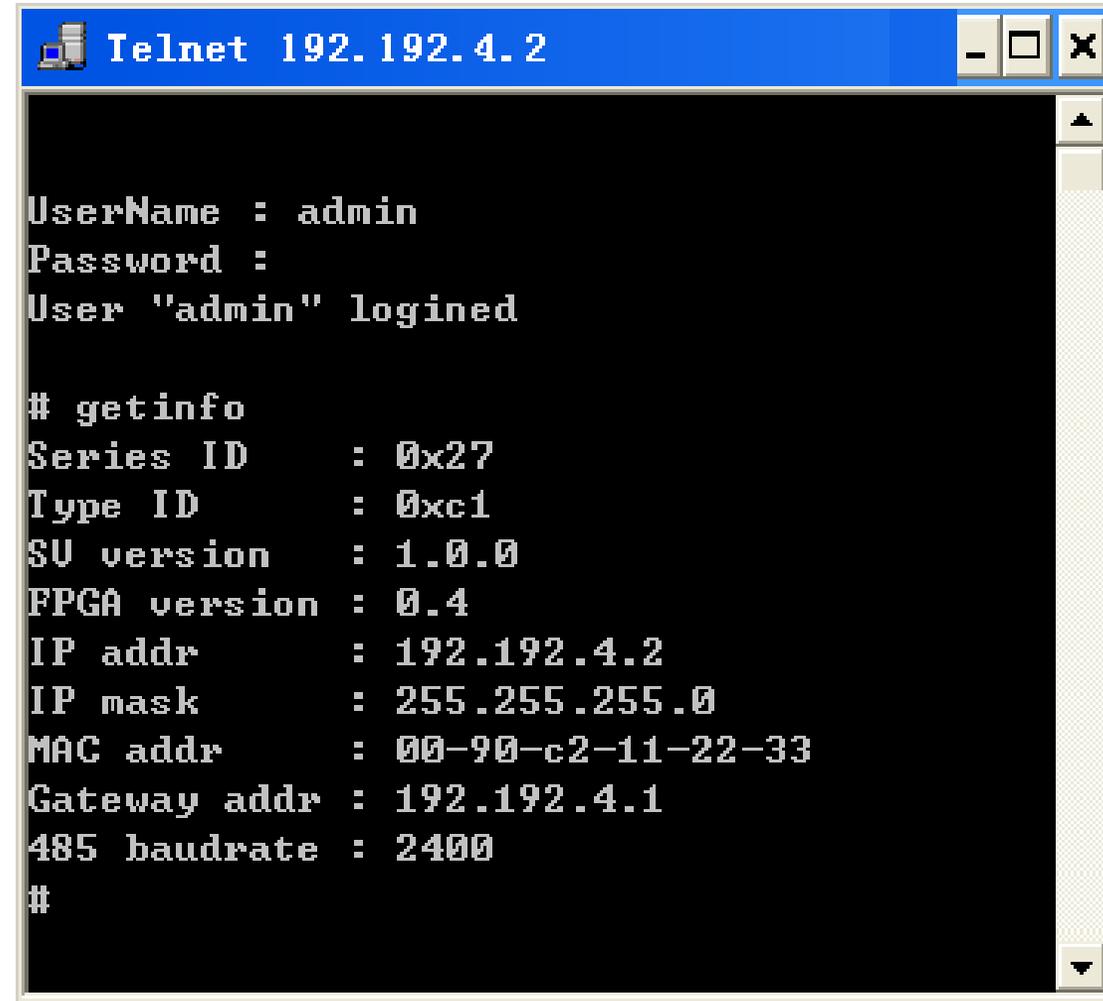
TUG3-TUG2-TU12 Tributary Channel Numbering



Network Management Software

- 63 E1 over STM-1 multiplexer can be managed configuring parameters using Telnet commands

Telnet Settings



```
Telnet 192.192.4.2
UserName : admin
Password :
User "admin" logged

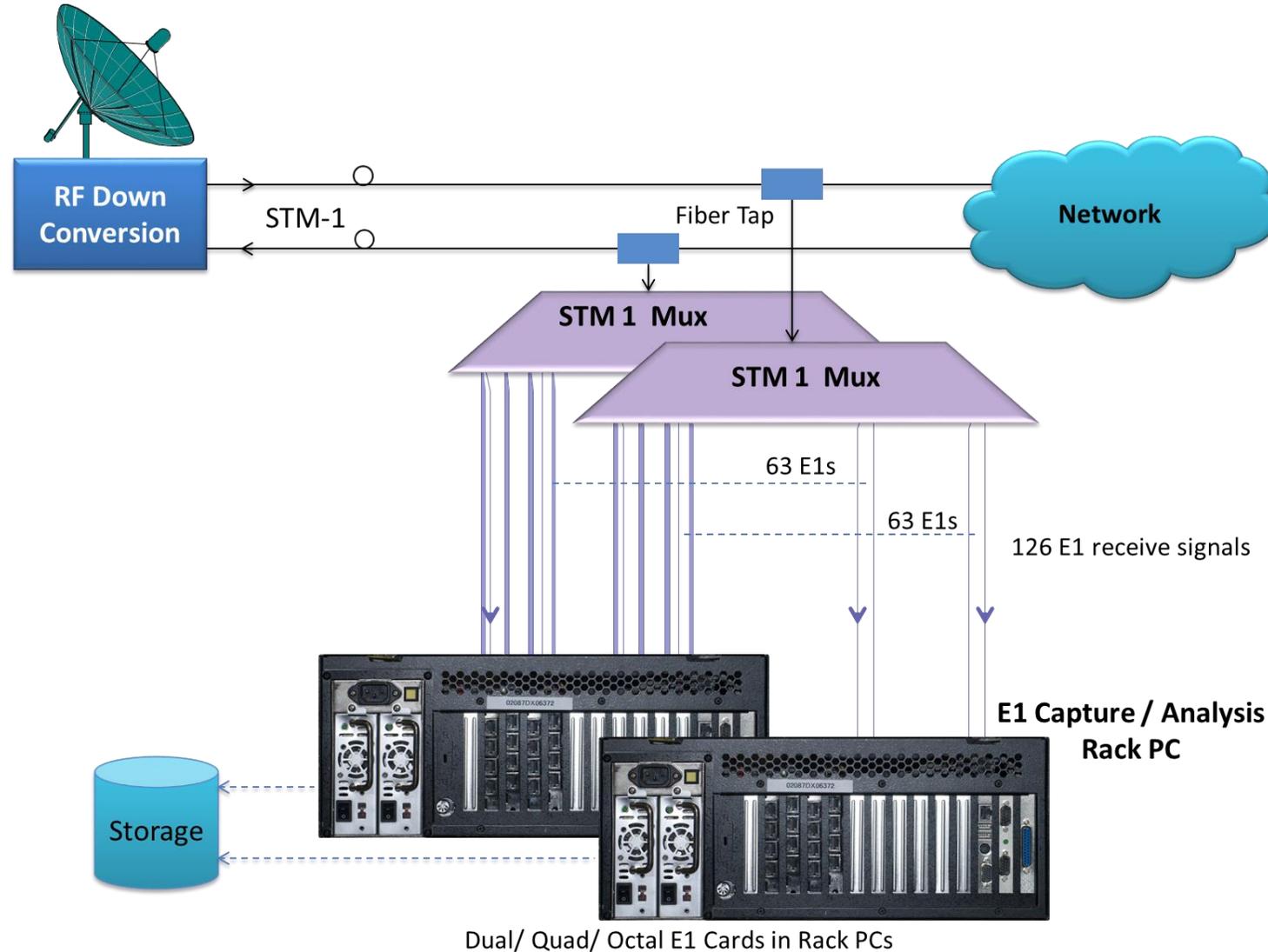
# getinfo
Series ID      : 0x27
Type ID       : 0xc1
SU version    : 1.0.0
FPGA version  : 0.4
IP addr       : 192.192.4.2
IP mask       : 255.255.255.0
MAC addr      : 00-90-c2-11-22-33
Gateway addr  : 192.192.4.1
485 baudrate  : 2400
#
```

Network Management Software (Contd.)

- Used to control various SDH parameter settings, loop-back controls, status, alarm monitoring, and others

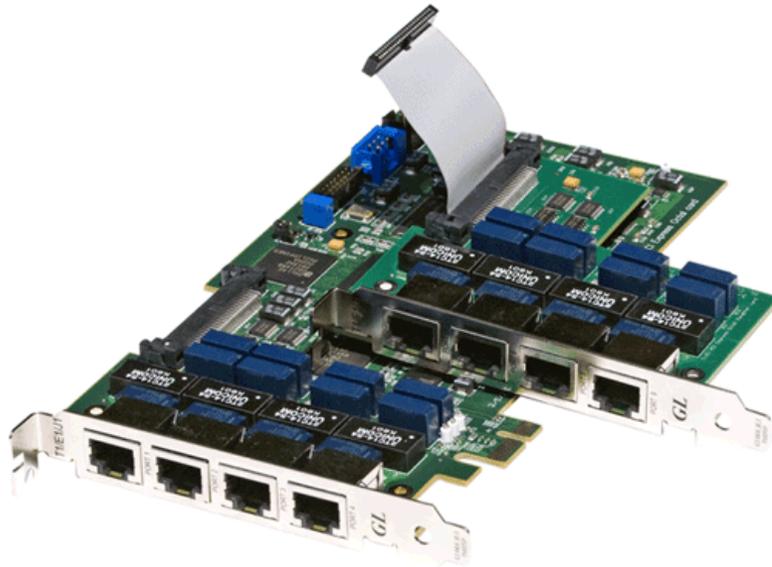
The screenshot shows a software window titled "4.3 [CardSlot0: MB]". It features a tabbed interface with the following tabs: "E1 Alarm", "E1 Config", "E1 Err Cnt.", "Trap", "Unit Info.", "Configure", "Alarm", "VC Alm", and "OLT Err Cnt.". The "Configure" tab is active, displaying the "SDH Clock" section. This section includes a "Clock Status:" label, a "Clock Select:" dropdown menu currently set to "STM Line Clock", and a "Local Clock" label. Below these are two checkboxes labeled "Successfully sent." and two buttons labeled "Query(Q)" and "Set(S)". The "OLT Port ALS Information" section follows, containing four radio button options: "Port 1 Forbid", "Port 1 Force to Close ALS", "Port 2 Forbid", and "Port 2 Force to Close ALS", each with an associated checkbox. At the bottom of this section are another "Successfully sent." checkbox and "Query(E)" and "Set(E)" buttons. A "Close (C)" button is located at the bottom right of the window.

Typical Application with GL's Quad, and Octal E1 Analysis Cards

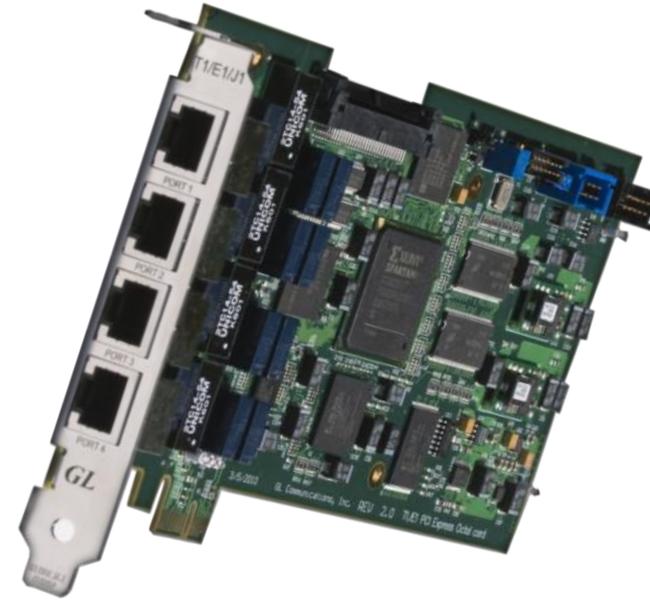


GL's Dual, Quad, and Octal T1 E1 Cards

QUAD T1 E1 Board



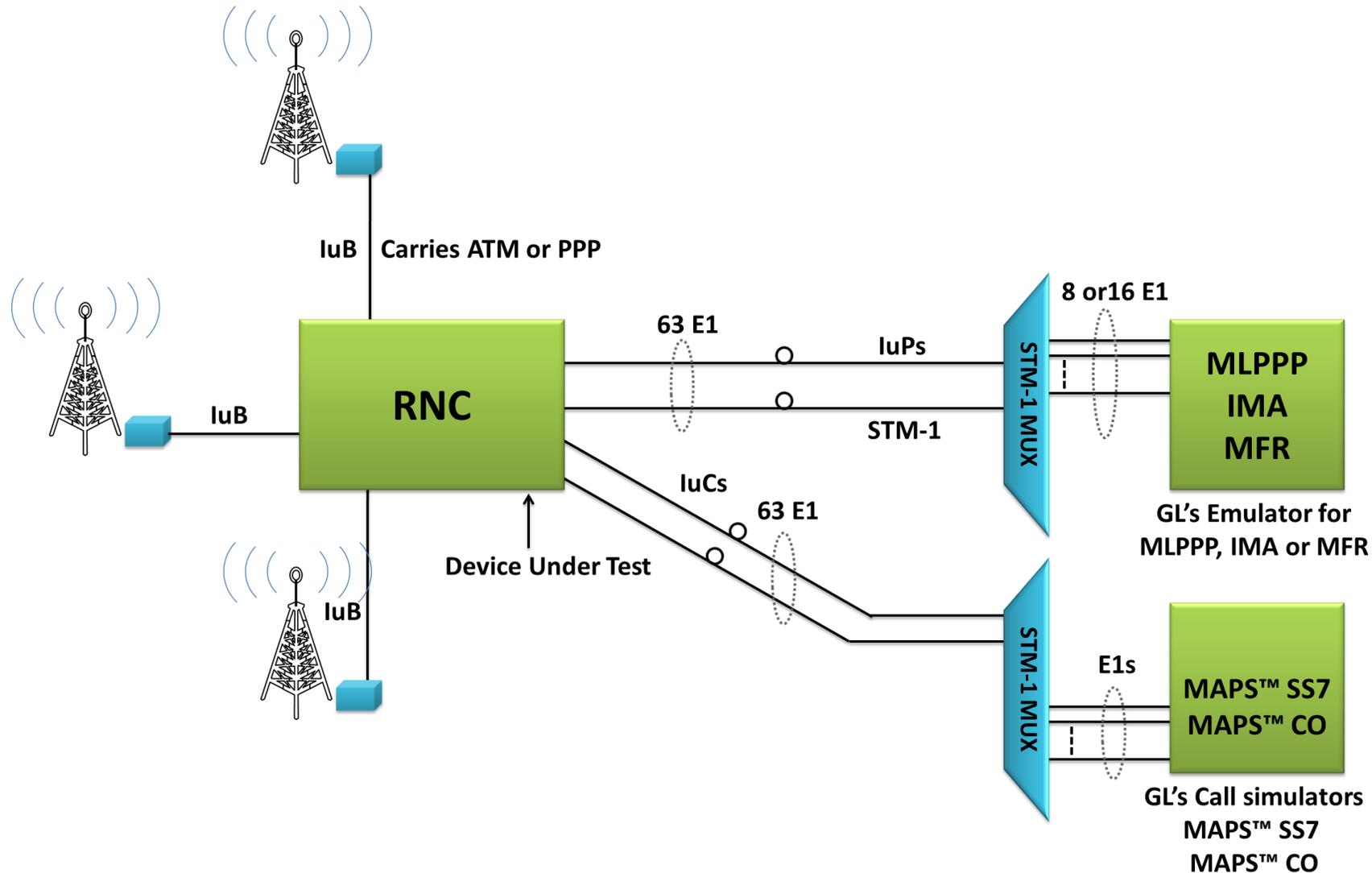
OCTAL T1 E1 Board



OCTAL T1 E1 Boards on Rack PC



Typical Application with GL Applications (MAPS™ SS7, MLPPP, MFR Emulators)

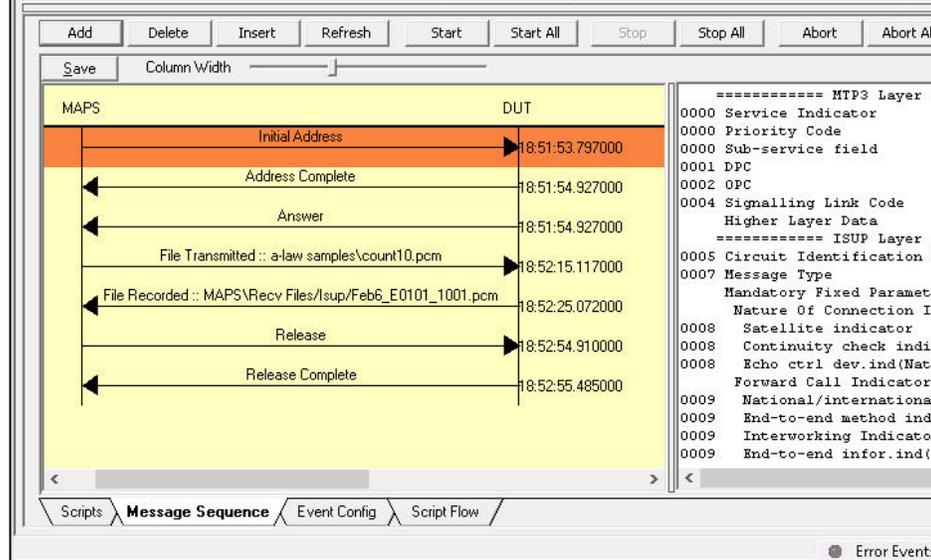


MAPS™ SS7 Call Simulation

MAPS (Message Automation Protocol Simulation) SSP (ISUP ITU MTP2) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

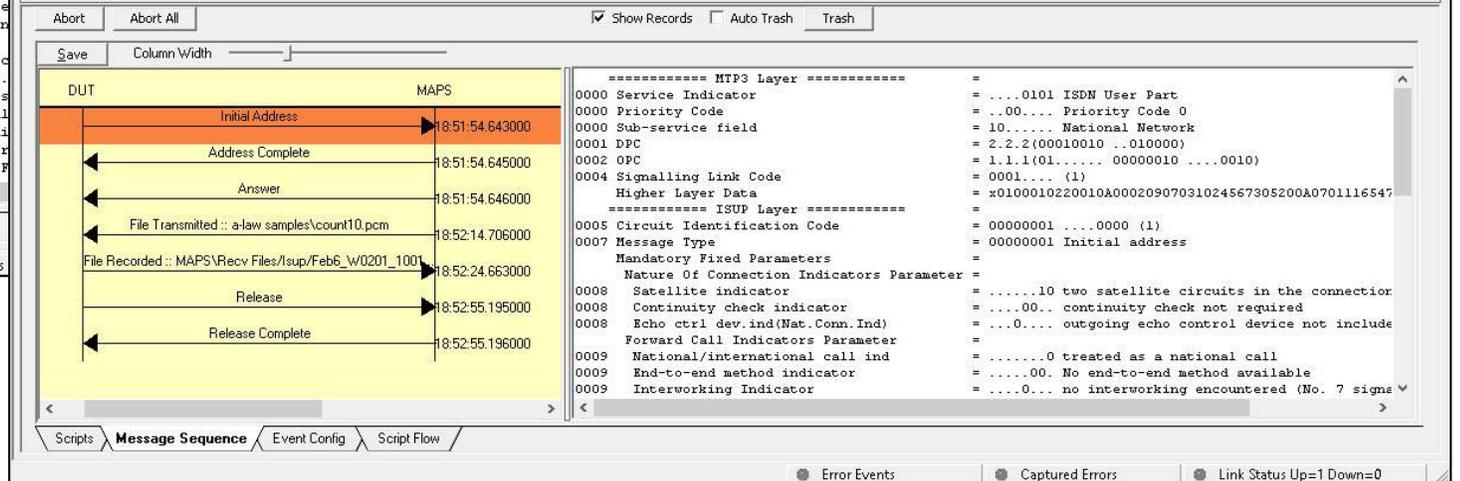
Sr No	Script Name	Profile	Call Info	Script Execution	Status	Events	Result	Total Iterations	Completed Iterations
1	Isup_Call.gls	Card1TS01	1.1.1.2.2.2.1	Start	ISUP Call Released	None	Pass	1	1
2	Isup_Call.gls	Card1TS02	1.1.1.2.2.2.2	Stop	File Recorded	Terminate Call ...	Pass	1	0
3	Isup_Call.gls	Card1TS03	1.1.1.2.2.2.3	Stop	File Recorded	Terminate Call ...	Pass	1	0
4	Isup_Call.gls	Card1TS04	1.1.1.2.2.2.4	Stop	File Recorded	Terminate Call ...	Pass	1	0
5	Isup_Call.gls	Card1TS05	1.1.1.2.2.2.5	Stop	File Recorded	Terminate Call ...	Pass	1	0
6	Isup_Call.gls	Card1TS06	1.1.1.2.2.2.6	Stop	File Recorded	Terminate Call ...	Pass	1	0
7	Isup_Call.gls	Card1TS07	1.1.1.2.2.2.7	Stop	File Recorded	Terminate Call ...	Pass	1	0
8	Isup_Call.gls	Card1TS08	1.1.1.2.2.2.8	Stop	File Recorded	Terminate Call ...	Pass	1	0



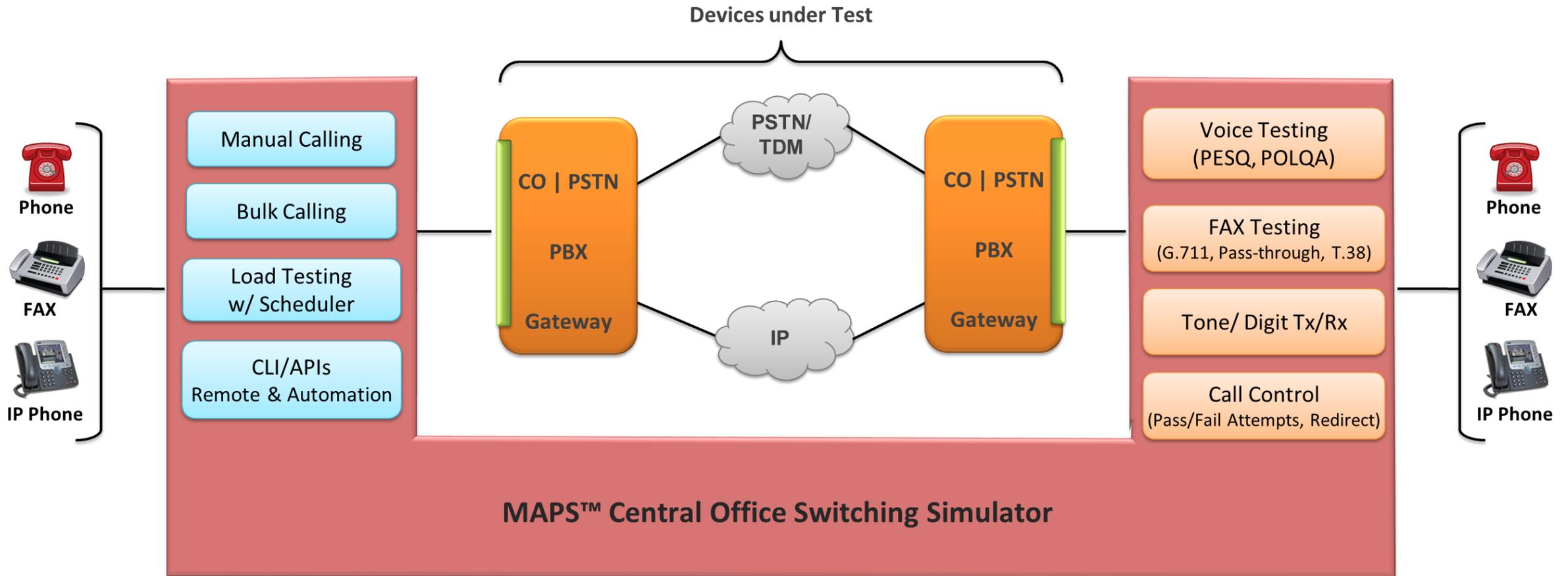
MAPS (Message Automation Protocol Simulation) SSP (ISUP ITU MTP2) - [Call Reception]

Configurations Emulator Reports Editor Debug Tools Windows Help

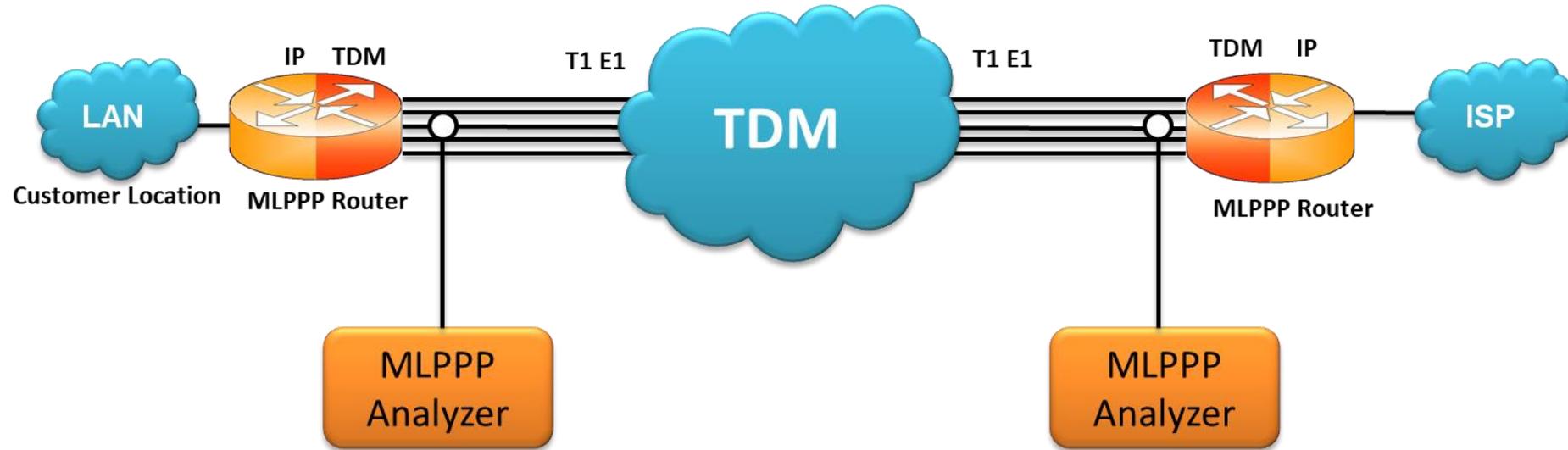
Sr No	Script Name	Call Info	Script Execution	Status	Events	Events Profile	Results
1	SLTM.gls	2.2.2.1.1.1	Stop	MTP3 Active	Initiate SLTM		Pass
2	Isup_Call.gls	2.2.2.1.1.1	Completed	ISUP Call Released	None		Pass
3	Isup_Call.gls	2.2.2.1.1.2	Completed	ISUP Call Released	None		Pass
4	Isup_Call.gls	2.2.2.1.1.3	Completed	ISUP Call Released	None		Pass
5	Isup_Call.gls	2.2.2.1.1.4	Completed	ISUP Call Released	None		Pass
6	Isup_Call.gls	2.2.2.1.1.5	Completed	ISUP Call Released	None		Pass
7	Isup_Call.gls	2.2.2.1.1.6	Completed	ISUP Call Released	None		Pass
8	Isup_Call.gls	2.2.2.1.1.7	Completed	ISUP Call Released	None		Pass
9	Isup_Call.gls	2.2.2.1.1.8	Completed	ISUP Call Released	None		Pass
10	Isup_Call.gls	2.2.2.1.1.9	Completed	ISUP Call Released	None		Pass



MAPS™ CO Call Generation and Reception



MLPPP Emulation using Client Server



Multi Link PPP Emulation using Client Server (XX636)

The screenshot shows the MC-MLPPP Emulator window. At the top, there is a menu bar with 'File', 'Action', and 'Help'. Below the menu bar is a 'Simulation' dropdown menu set to 'MLPPP'. There are four tabs: 'MLPPP View', 'PPP View', 'Action', and 'Tx/Rx Verification'. The 'MLPPP View' tab is active, displaying a table with the following data:

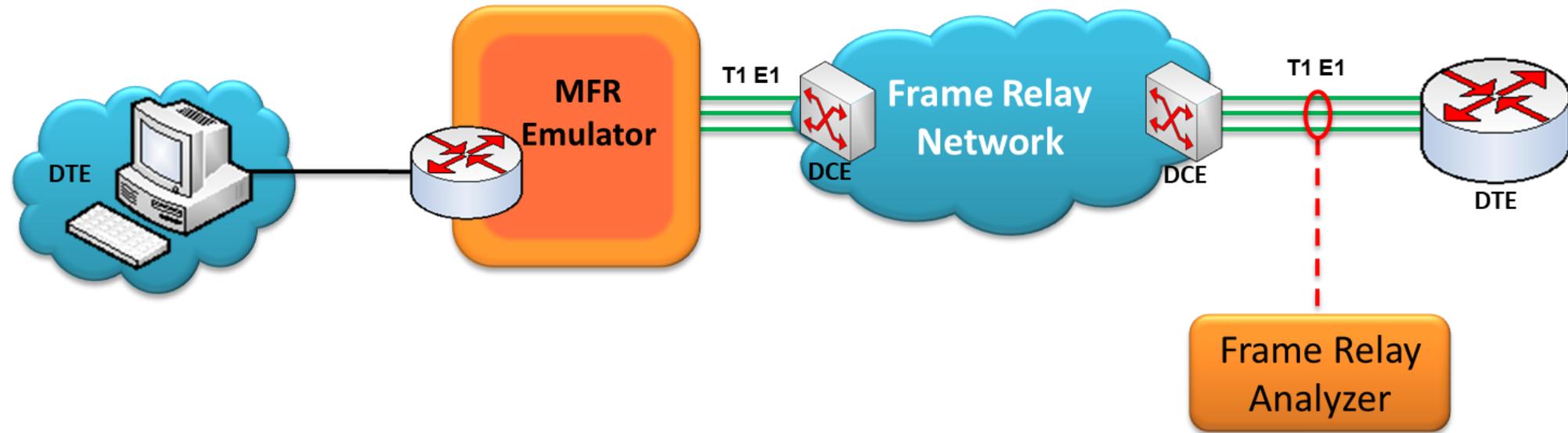
Link Name	Action	LCP Status	NCP Status	Tx/Rx Status
#1:1	Close	Link UP	Link UP	Tx: No Action, Rx: No Action
#1:2	Open	Link Down	Link UP	Tx: No Action, Rx: No Action
#1:3	Close	Link UP	Link UP	Tx: No Action, Rx: No Action

Below the table are buttons for 'Add', 'Delete', 'Open', and 'Close'. Underneath these are more tabs: 'LCP Configuration', 'NCP Configuration', 'Link Test', 'Statistics', 'HDLC Statistics', and 'Impairments'. The 'LCP Configuration' tab is selected, showing the following settings:

- LCP
- Maximum Receive Unit: 1500
- Protocol Field Compression
- Address and Control Field Compression
- Magic-Number: 302

On the right side of the LCP Configuration panel, there is a section for 'LCP Negotiated Values' which contains a text box with the message 'Link is not configured...'. At the bottom right, there is a checkbox for 'Flags between frames' set to 100, and a 'Set Flags' button.

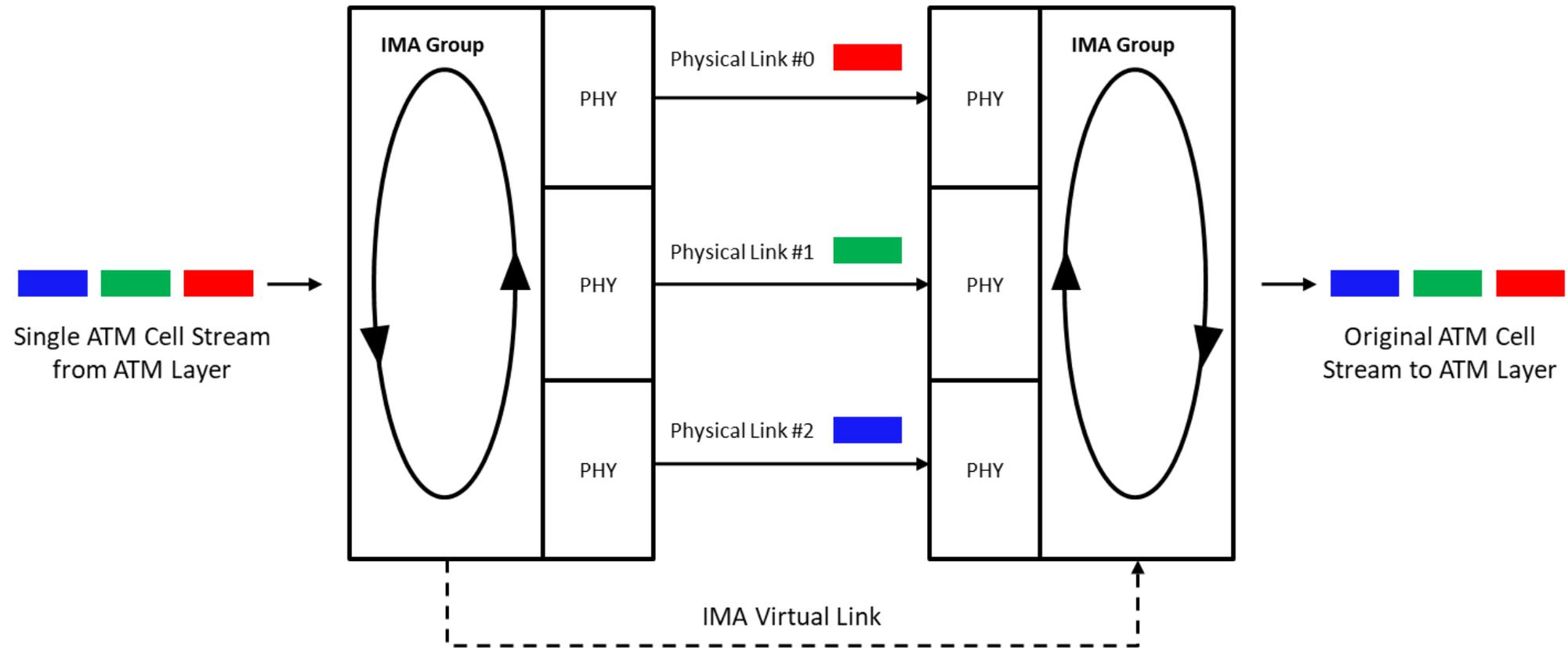
Multi Link Frame Relay Emulation Using Client-Server



MFR Emulator

The screenshot displays the MFR Emulator - FR Simulation - Untitled window. The interface includes a menu bar (File, Action, Simulation, Help), a Connection Status indicator (green dot), and a Links dropdown menu set to #1:1..10. The main workspace is divided into tabs: Link View, Action, VC Statistics, and Tx/Rx Verification. The VC Statistics tab is active, showing configuration for DLCI - 1. The configuration is split into TX and RX parameters. Both TX and RX parameters are set to SEQNUM source/sink type, LSB order, and a length of 4. The start values are 0 and the increment is 1. The Prefix Header checkbox is unchecked. The Duration Spec section has Continuous transmission/reception selected, with Limited frames set to 0 and EOF unselected. The Payload Len is set to 1500. At the bottom, there are buttons for Start Tx, Start Rx, Start All Tx, and Start All Rx, along with an Impairments button. An 'Add VC' dialog box is open on the right, showing a DLCI No of 1 and an OK button.

Inverse Multiplexing for ATM (IMA) Emulation using Client-Server



Tx direction: cells distributed across links in round robin sequence
Rx direction: cells recombined into single ATM stream

Thank you