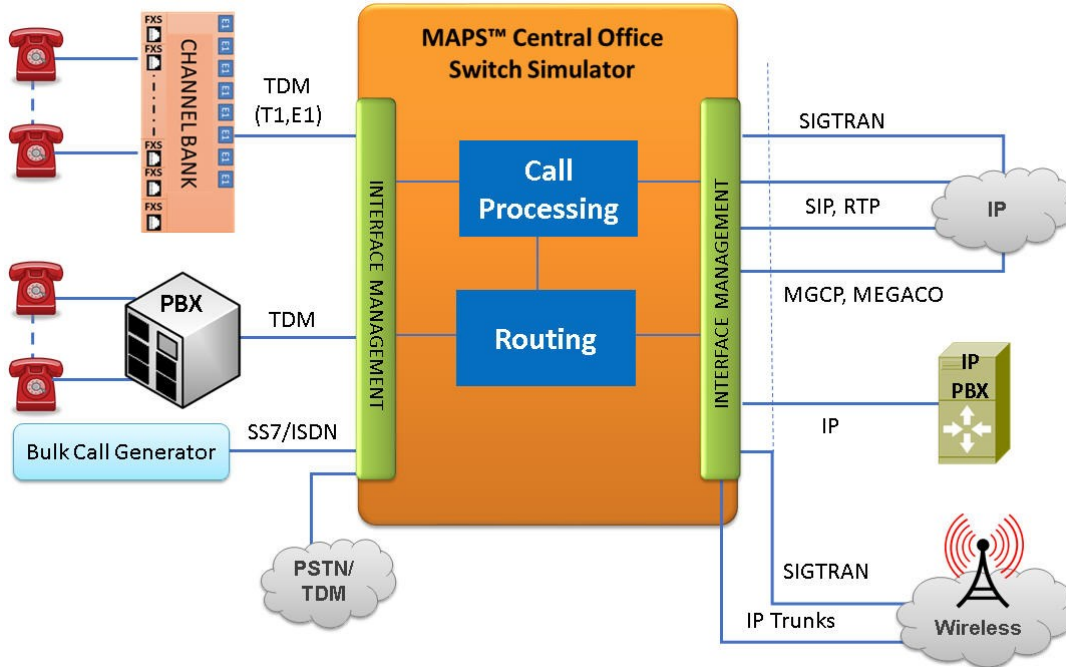# MAPS™ Central Office Switching Simulation

(PSTN, TDM and IP Networks)

Overview

GL's **MAPS™** Central Office Switching Simulator (CO) is ideal for simulating and testing advanced telecom networks and products, including PBX, switches, gateways, and transmission systems. The simulator performs complex switching functions for routing TDM and PSTN calls, while providing voice/data throughput, and protocol conversion during call switching. MAPS™ CO platform can emulate both ends (or one end) of a complex switching network, and the switching equipment itself such as the SS7 SSP for routing T1 E1 calls to/from local PSTN telephone exchange. All signaling, and traffic actions are easily controlled via scripts and provides all the flexibility required from a telephony test equipment.

The CO Switching Simulator can also be used to verify all PSTN, IP and T1/E1 signaling protocols over different transport within the network infrastructure. These protocols include T1/E1 CAS, PRI ISDN, SS7, FXO, FXS, and IP protocols. It can also simulate a variety of traffic generation such as, digits, tones, voice file, fax, depending on the network.

The CO Switching Simulator can be controlled remotely using the optional Remote MAPS™, Client/Server applications (CLI), and scripting with which users can capture the performance of networks in a wide variety of scenarios. The Remote Capability allows full control of many COs from a single client as well as many clients accessing a single CO.

For more information, please visit MAPS™ Central Office Switching Simulator (CO) web page.

Main Features

- A single-box system to test Central Office, PBX, Gateway, Analog/ IP Networks
- Provides a complete network infrastructure for PSTN, IP, digital T1/E1 trunks, SS7, ISDN, and POTS (Plain Old Telephone Set)
- Call Switching/Routing among TDM-PSTN networks with protocol conversion capability
- Automatic Bulk Call Generation/Reception for load testing
- Automate the call establishment and traffic generation / detection process through scripts
- Monitoring voice quality using PESQ (ITU-T P.862.1/2), POLQA (ITU-T P.863)
- Call status/graphs, link status, message statistics, capture events, error events, user-defined call statistics and graphs
- APIs and CLI access through multiple command-line based clients (Java, VBScripts, TCL, and Python)
- Unlimited number of remote client user access using Remote Controller client-server module.

Testbed Configuration

The testbed setup window allows users to setup the required test environment with MTP3 configuration in MAPS™ CO interface.

Test Bed setup is provided to establish communication between MAPS™ CO and the PSTN/TDM. It includes parameters for configuring T1/E1 (GL) server, PSTN/TDM protocol specific parameters.

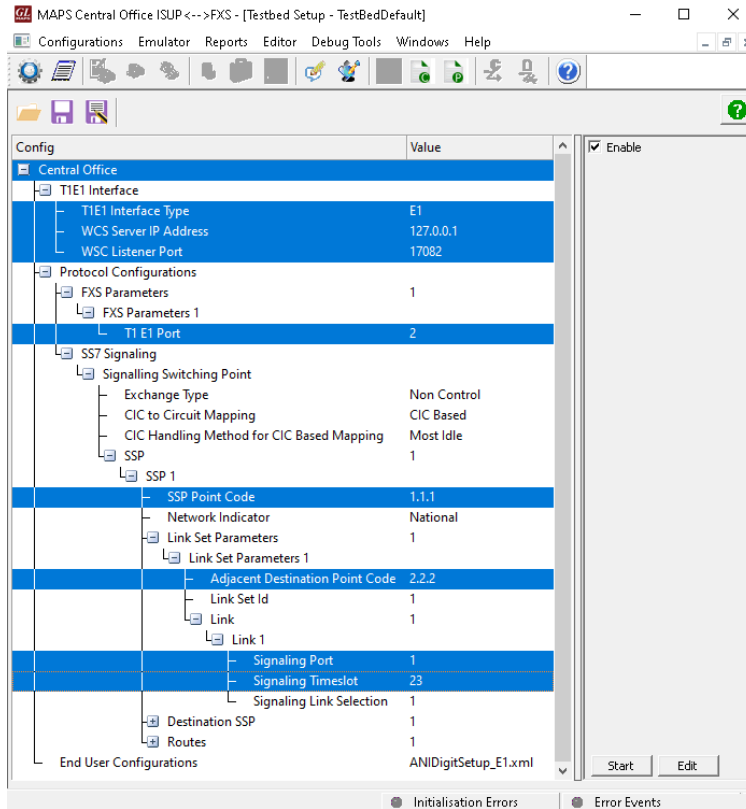Default ANIDigitSetup_E1.xml file is used to configure end-user parameters.

Figure: Testbed Setup

Incoming Call Handler

The Incoming Call Handler contains a list of message types, each with a corresponding script. At the receiving end the expected initial message is compared with this list of messages, and if a match is found, the corresponding script is executed. Loaded answer scripts against the messages expected from the DUT.
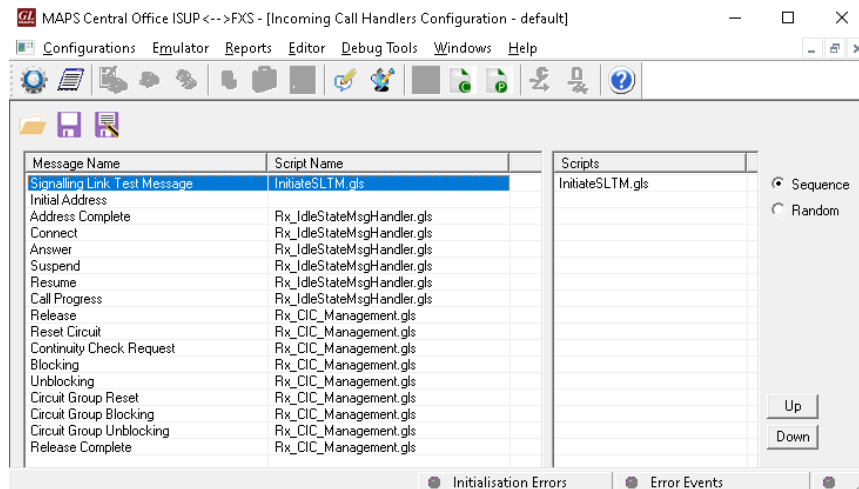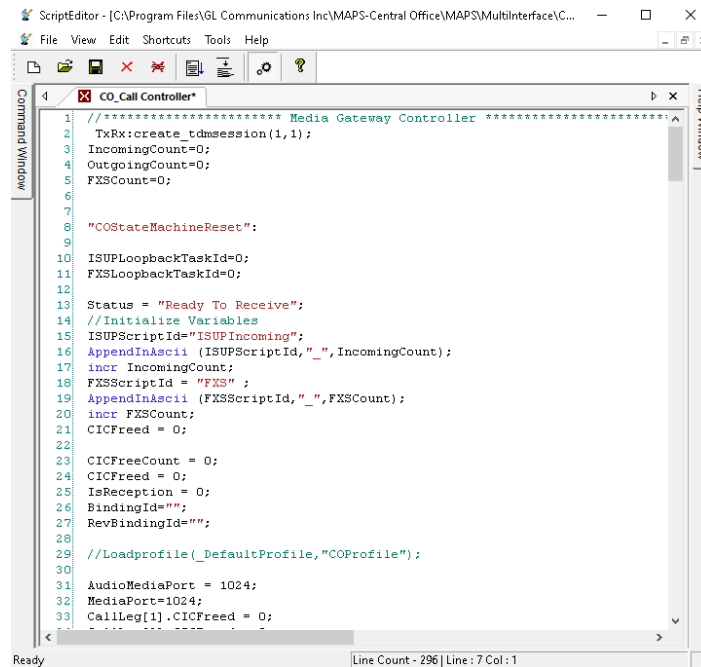

Figure: Incoming Call Handler Configuration

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Pre-processing Tools

Script Editor

The script editor allows the user to create / edit scripts and access protocol fields as variables for the message template parameters. The script uses pre-defined message templates to perform send and receive actions.

Figure: Script Editor

Profile Editor

This feature allows loading profile to edit the values of the variables using GUI, replacing the original value of the variables in the message template. An XML file defines a set of multiple profiles with varying parameter values that allow users to configure call instances in call generation and to receive calls.

The ANIDigitSetup_E1.xml includes ANI and TS parameter required to configure MAPS™ CO to switch calls between PSTN and TDM networks. Each line is configured with Called Number (ANI) and is associated with the timeslot/trunk.
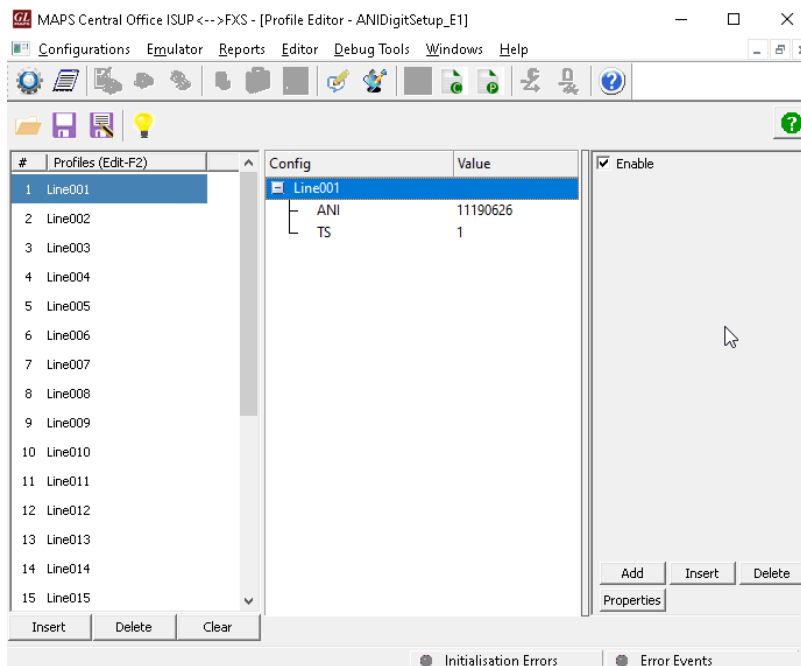

Figure: Profile Editor

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Call Conversion

In call generation, MAPS™ is configured for the out going messages, while in call receive mode, it is configured to respond to incoming messages. Tests can be configured to run once, multiple iterations and continuously. Also, allows users to create multiple entries using quick configuration feature.

The editor allows to run the added scripts sequentially or randomly. The test scripts are started manually at call generation; and at the call reception, the script is automatically triggered by incoming messages.

Call Switching from SS7 to PSTN:

The following screenshot depicts MAPS™ CO Simulator configured to switch and route incoming SS7 calls to Analog (FXO) terminal. MAPS™ CO receives the called number in the SS7 message and uses the number to identify the subscriber on the FXO side and routes the call on the associated timeslot/trunk towards FXO.
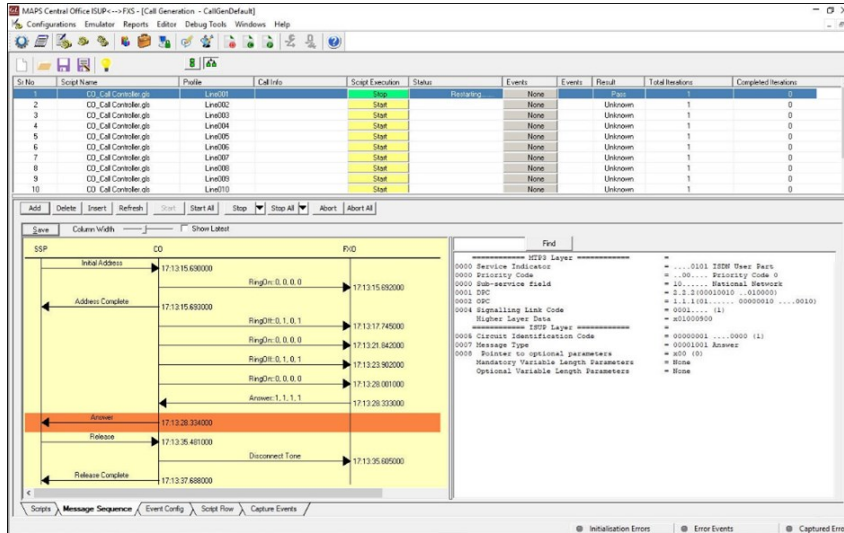

Figure: SS7 to Analog Call Conversion

Call Switching from PSTN to SS7:

The following screenshot depicts MAPS™ CO Simulator configured to switch and route incoming Analog calls to SS7 system. Each line is configured with Called Number (ANI) and is associated with the timeslot/trunk. When the PSTN call is received, MAPS™ CO forwards the received dialled number to SS7 system and switches the incoming call based on the number dialed (called/calling number).
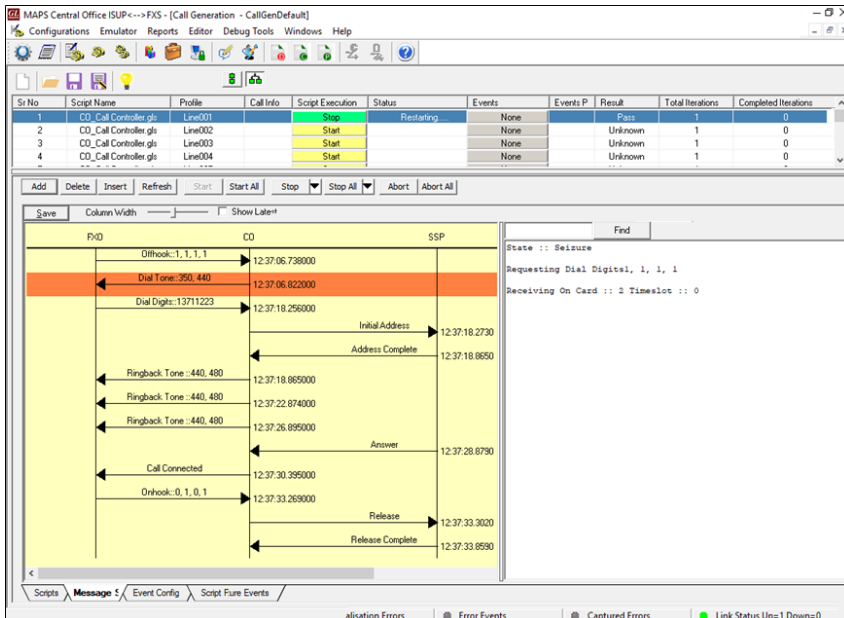

Figure: Analog to SS7 Call Conversion

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Buyer's Guide

Item No	Related Software
XX651	MAPS™ CAS Emulator
XX649	MAPS™ SS7 Emulator
XX648	MAPS™ ED137 Recorder (includes PKS102)
PKS111	MAPS™ Remote Controller
PKS170	CLI Support for MAPS™

Item No	Related Hardware
XTE001	Dual T1 E1 Express (PCIe) Boards
FTE001	QuadXpress T1E1 Main Board
ETE001	OctalXpress T1E1 Main Board plus Daughter Board
UTE001	Dual Laptop T1/E1 Hardware USB Base Unit
HTE001	HD Universal Dual T1/E1 Card
PTE001	tProbe™ T1 E1 Base Unit

For more information, please visit Signaling and traffic simulator web page.