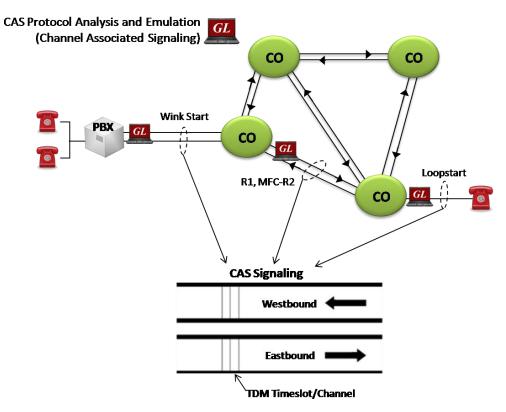
# **Channel Associated Signaling (CAS) Simulator**



#### **Overview**

Channel Associated Signaling (CAS) is a method of signaling in telephone networks where each channel or timeslot carrying speech also carries with it the signaling and addressing to set up and tear down that same channel. CAS signaling types include Loopstart, Groundstart, Feature Group D (FGD), Winkstart, MFC-R2 and others.

GL's <u>Channel Associated Signaling (CAS) Simulator</u> is a client-side application that works along with GL's T1/E1 Analyzer Cards and Windows Client/Server software. It is an optional application that simulates any user defined CAS protocol by providing signaling bit transitions and forward/backward frequency digits and tones.

CAS emulation is also available with GL's **Message Automation and Protocol Simulation (MAPS™)**. MAPS<sup>™</sup> is a multi-protocol, multitechnology platform used for the emulation of a variety of communication protocols over IP, TDM, and Wireless networks. <u>MAPS<sup>™</sup> CAS</u> can automate the testing procedure allowing the users to establish calls, and send/receive TDM traffic such as DTMF/MF digits, Tones, Fax, and Voice.

In addition, GL supports various E1 MFCR2 analysis and simulation solutions.

For more information, please visit MFC R2 Analysis Simulation webpage.

### **Supported Protocols**

- E1 MFC-R2 (All variants, full /semi compelled)
- E1 European Digital CAS (EUC), Digital E & M, International Wink Start
- E1 AP2 (Australian P2 protocol)
- T1 Winkstart (R1 wink)
- T1 Loopstart , Groundstart, Immediate Start , Feature Group D
- Any User-Defined CAS Protocol

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#### **Main Features**

- Accesses the T1 (or E1) analyzer remotely
- Supports called number and calling number identification
- Customized signaling for each channel through scripts
- Ready-to-use scripts for quick testing.

# **Call Generation/Reception with Signaling Status**

GL's CAS Simulator processes the receipt of Dialed Number Identification Service (DNIS) and Automatic Number Identification (ANI) information, which is used to support addressing, routing and other functions. The screenshots to the right display the manual call generation, and call control features available in GL's CAS Simulator.

GL Protocol State Machine Manual Call Generation (1)	🕱 📘 🖾 SL Protocol State Machine Manual Call Generation (2)
Trunk Hide Panel Help	Trunk Hide Panel Help
Dial Number 123456 🔽 1 sec Place Call Interval	Dial Number
Place Call Trunk Answer Call Trunk Release A	All Calls Place Call Trunk Answer Call Trunk Release All Calls
Call Functions; E1; trunk 0	Call Functions; E1; trunk 1
	ce Call (26) Place Call (1) Place Call (9) Place Call (18) Place Call (26)
	De Call (27) Place Call (2) Place Call (10) Place Call (19) Place Call (27)
	De Call (28) Place Call (3) Place Call (11) Place Call (20) Place Call (28)   De Call (29) Place Call (4) Place Call (12) Place Call (21) Place Call (29)
	ce Call (23) Answer Call (5) Place Call (13) Place Call (22) Place Call (30)
	ce Call (31) Place Call (6) Place Call (14) Place Call (23) Place Call (31)
Place Call (7) Place Call (15) Place Call (24)	Place Call (7) Place Call (15) Place Call (24)
Place Call (8) Place Call (17) Place Call (25)	Place Call (8) Place Call (17) Place Call (25)
Signaling Settings	Signaling Settings
Giobal Start Global Stop	Giobal Start Global Stop
TimeSlot 5	TimeSlot 5
🔽 Enable Signaling	🔽 Enable Signaling
Signaling Script:	Signaling Script:
Machine Scripts\OPS_Network.STA Browse	Machine Scripts\OPS_Terminal.STA Browse
Edit Signaling Script	Edit Signaling Script
0 Send Signaling (0-F) in Current Trunk	Send Signaling (0-F) in Current Trunk

Figure: Call Generation/Reception with Signaling Status

#### **Flash Hook**

The application also provides a way for the users to send a Flash Hook signal manually. Users can vary Flash Hook On Signal (0-F), Flash Hook Off Signal (0-F) and Flash Hook Interval (ms) for a given timeslot.

Signaling Settings	Flash Hook
Hook On Interval (ms)	
454 ≑	Set Default
Hook On Signaling (O F	 F)
Hook Off Signaling (O	
Send Flash Ho	ok To TimeSlot 5

**Figure: Flash Hook** 

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#### **Capture Events**

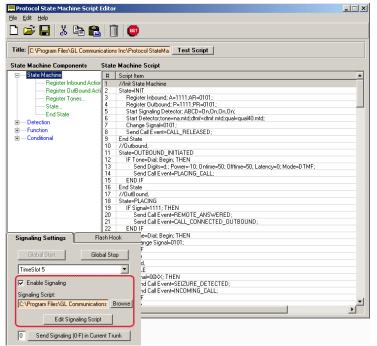
GL's CAS Simulator **Status Events** screen chronologically lists the entire CAS State Machine signaling bit transitions, digit detections, and tone detections generated by each timeslot of trunks. These transitions can be directed to a text (.txt) file is real-time or after they have appeared in the events list.

Eile Irunk B	ol State Ma Edit Manual				Hannadi Ata	a			
GL 👔 🖞	8	?)							
_		γ			I- State Machine Si	analian Clahus			
Signaling	Settings		Flash	Hook	State Machine St				
01-1-	l Start				_			Display Binar	у
GIODA	si Start	_	Global S	orop		Signaling Actived			
TimeSlot	5			-	Signal Off (0)	Signal Off (8)	Signal O		
11110000			Signal Off (1)	Signal Off (9)	Signal 0				
✓ Enable Signaling			Signal Off (2)	Signal Off (10)					
Signaling	Script				Signal Off (3) Signal Off (4)	Signal Off (11) Signal Off (12)			
	m Files\Gl Co	-	o atione I	Browne	Hex 0 (5)	Signal Off (13)			
Jora togra	an riiga von Ge	ATTICATO	C-GROUTE I	321511355	Signal Off (6)	Signal Off (14)			
	Edit Sig	naling	Script	1	Signal Off (7)	Signal Off (15)			
0 Se	end Signaling	(0-F) in	Current	Trunk		click on times			
					dou	ble-click on ti	meslot to s	tart/stop	
	Events			r –	WCS Client Board Config			Board Config	
Timestamp	Setup Time	TS	Trunk	·	Send Signaling		Rec	ceive Signaling	
16:31:39	0.001	0	T1:1	0,0,0,0					
16:31:39	0.027	0	T1:1	dtmf-555.	1234				
16:31:39	0.028		T1:1	PLACING_	CALL				
16:31:39			T1:0			000	10		
16:31:39 16:31:39	0.000		T1:0 T1:0	1,0,0,0 SEIZURE I	RTRCTRD				
16:31:39	0.001		T1:0		0,-13,440,-13				
16:31:39	0.043		T1:1	digit st.					
16:31:39	0.091		T1:0				£5(48.000		
16:31:39	0.139		T1:1			tor	e(0,0,0,0	0,48.000)	
16:31:39	0.144		T1:0	tone end					
16:31:39 16:31:39	0.155		T1:0 T1:1				e(40.000)		
16:31:39	0.229		T1:0				£5(48.000)		-
	ate Machine I						owse	Counter	109
1 1::0 Call Sta	te: PLACING								
Current Load Co	onfiguration:								

**Figure: Capture Events** 

### **Script Editor**

The GL CAS Simulator script is based on a self-describable language that can define the behavior of CAS Call Control procedure. Functions such as Place Call, Answer Call, Incoming Call, and Disconnect call are all defined within the script. Additionally more advanced script may also be defined in the script editor. Definitions for Signaling Bit Transitions and forward/backward digits/tones are user definable within each script.



**Figure: Script Editor** 

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#### **MAPS™ CAS Emulator**

MAPS<sup>™</sup> CAS Emulator automates the testing procedure allowing the users to establish calls, and send/receive TDM traffic such as DTMF/MF digits, Tones, Fax, and Voice .

Supports testing of various protocols such as T1 Wink Start (R1 wink), T1 Loop Start and T1 Ground Start, T1 Feature Group D, T1 Immediate Start, E1 MFC-R2 (All variants, full /semi compelled), E1 European Digital CAS (EUC), E1 Digital E & M, E1 International Wink Start, and Any User-Defined CAS Protocol.

E1 MFC-R2 Signaling defined by the ITU Recommendations Q.421-Q.442, uses a multi-frequency compelled signaling protocol to exchange address information. Sends MFC-R2 forward and backward tones per CCITT specifications. Currently, MAPS<sup>™</sup> CAS includes ready profiles for India, China, and Mexico. Different country specific implementations will be supported in future.

For more information, please visit <u>MAPS<sup>™</sup> CAS</u> webpage.

G MAPS (Message Automation Protocol Simu	lation) (CAS ) - [Ca	ill Genera	tion - Untitled]				_ 5 ×
S Configurations Emplator Reports Eartor w	gindows <u>H</u> eip						×
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📄 🔛 🖬 💡 🛛 💷	8 क						
Sr Script Name Pr		Call Info	Script Execution	Status	Events	Events Profile Result	Total Itera C
1 T1_R1_Place Call.gls	Card1-TS00	0	Abort	Call Connected	OutboundReleaseCall	Pass	1
Add Delete Insert Sta	Abort Abort	Refresh	Start All Abo	ort All			
View Executing Line							
Script Contents							<b></b>
"mainloop": // Signalling Handl	er section will	detect	the received sign	hals, checks Sta	te and control will	be sent to respectiv	re states 📕
waitforevent (CASsignaldetected,	5 sec);						
EventLog ("Detected Signal if (State=="IDLE")	=",CASDetectedS:	ignals);					
Tdmtonedetected=0;							
CASsignaldetected=0; ActiveUserEvent:"PlaceCall";							
	e value of Type	OfCall,	if 1 goto Place (	Call, If O goto :	Inbound, IDLE //	_	-
							•
<b>Scripts</b> ∠ Message Sequence ∠ Event Con	fig \ Script Flow /						
÷							1-1-1-1
📁 Events							
Event Log Error Events Ca	aptured Errors						
		<u> </u>					
Data/Time	Call Trace I	d Sa	ript Id		Captured Eve	nto	
2012-1-4 18:03:39.000656	1		otScriptId 108	200025 2055	· · ·		
2012-1-4 18:03:39.000656	1		otScriptId_108		-		
2012-1-4 18:03:39.000890	1		otScriptId_108				
2012-1-4 18:03:42.000843	1		otScriptId_100 otScriptId_107		-		
2012-1-4 18:03:42.000843	1		otScriptId 107				
2012-1-4 18:03:47.000843	1	_	otScriptId 107				
2012-1-4 18:03:47.000843	1		otScriptId_107				
2012-1-4 18:03:47.000843	1		otScriptId 107			onnoagoa	
2012-1-4 18:03:49.000906	1		otScriptId 108			ected	
2012-1-4 18:03:49.000906	1		otScriptId 108				
2012-1-4 18:03:49.000906	1	Pr	otScriptId 108	398936-2065	Detected Sign	nal=1, 1, 1, 1	
2012-1-4 18:03:52.000859	1	Pr	otScriptId_107	586936-2064	Detected Sign		
2012-1-4 18:03:57.000890	1	Pr	otScriptId_107	586936-2064	Detected Sign	nal=0, 0, 0, 0	
2012-1-4 18:04:02.000906	1	Pr	otScriptId_107	586936-2064	Detected Sign	nal=0, 0, 0, 0	
2012-1-4 18:04:04.000000	1	Pr	otScriptId_132	867936-2066	Detected Sign	nal=1, 1, 1, 1	
2012-1-4 18:04:04.000000	1	Pr	otScriptId_132	867936-2066	Seizure Detec	ted	
2012-1-4 18:04:04.000218	1		otScriptId_132				
2012-1-4 18:04:04.000343	1		otScriptId_107				
2012-1-4 18:04:09.000343	1		otScriptId_107		-		
2012-1-4 18:04:14.000250	1		otScriptId_132		-	ected	
2012-1-4 18:04:14.000250	1		otScriptId_132				
2012-1-4 18:04:14.000359	1		otScriptId_107				
2012-1-4 18:04:19.000390	1	Pr	otScriptId_107	586936-2064	Detected Sign	hal=0, 0, 0, 0	<b>•</b>
Clear							

Figure: Call Generation/Reception and Event Log

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# **Buyer's Guide**

Item No	Product Description
<u>XX625</u>	w/Channel Associated Signaling Simulator
Item No	Related Software
<u>XX651</u>	MAPS™ CAS Protocol Emulator
<u>XX022</u>	DTMF/MF/MFR2 Detector and Generator Software
<u>XX020</u>	Record/Playback File Software
<u>XX030</u>	MFC-R2 Call Capture and Analysis Software
<u>XX610</u>	w/ Transmit and Receive File Capability
<u>XX620</u>	w/ DTMF/MF/MFC-R2 + answer/place call Capability
<u>XX630</u>	w/ DSP Capability
Item No	Related Hardware
<u>UTE001</u>	tProbe™ Dual T1 E1 Laptop Analyzer (Requires Basic Software)
<u>HTE001</u>	QuadXpress T1E1 Main Board
<u>PTE001</u>	OctalXpress T1E1 Main Board plus Daughter Board
<u>FTE001,</u> <u>ETE001</u>	Universal T1/E1 Card (Requires Basic Software)

For more information, please visit <u>Channel Associated Signaling Simulator</u> webpage.



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