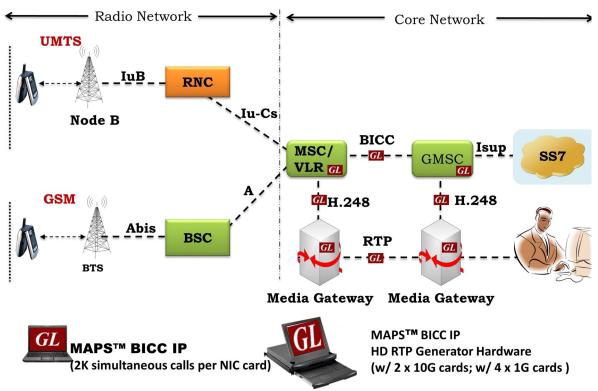
# **MAPS™ BICC over IP Emulator**

(Bearer Independent Call Control Protocol - SS7 Protocol Suite)



### Overview

GL's Message Automation & Protocol Simulation (MAPS<sup>™</sup>) architecture is a powerful Protocol Test platform supporting a wide range of protocols.

MAPS<sup>™</sup> BICC IP is a emulator for Bearer Independent Call Control (BICC) emulation over IP networks. Specifically, it can emulate BICC call control signaling as defined by the ITU-T standards between Mobile Switching Centre (MSC) and Gateway MSC (GMSC) server nodes. Functions supported includes testing network elements, error tracking, regression testing, conformance testing, load testing/call generation and generation of high volumes of traffic.

MAPS<sup>™</sup> BICC IP also supports transmission and detection of various RTP traffic such as, digits, voice file, tones, FAX, IVR, and User defined traffic over IP networks (requires additional RTP traffic licensing).

MAPS<sup>™</sup> BICCIP High Density supports generation of high volume of calls with traffic for load testing network using MAPS<sup>™</sup> RTP HD network appliance, specialized 1U rack mounted designed to easily achieve up to 20,000 endpoints per appliance (5000 simultaneous calls with duplex traffic per port). Network Simulation Appliance is available in the following appliance: 4x1GigE, 2x1/10 GigE, and 2x40/100 GigE.

MAPS<sup>™</sup> supports <u>Command Line Interface (CLI)</u> allowing remote controlling of the application through multiple command-line based clients

For more information, refer to <u>MAPS<sup>™</sup> BICC over IP Protocol Emulator</u> webpage.

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#### **Main Features**

- BICC emulation over IP network
- Supports BICC IP bearer control (call control or APM) messages
- Supported procedures includes Successful Basic Call, Additional Setup, Mid Call, Normal Call Release, Unsuccessful Call Setup, Codec modification/mid-call Codec Negotiation
- Access to all BICC Call Control Message Parameters OPC, DPC, calling number, called number, etc.
- Supports RTP traffic transmission and detection Digits, Voice, Tones, IVR, FAX
- High density of up to 20,000 calls with traffic is easily achievable per appliance (5000 calls per port)
- Simulate MSC and GMSC Nodes in the BICC over IP network
- CSV file configurations supporting multiple SCTP connections (up to 1024) scaling up the Serving Nodes client and server node configurations
- User-friendly GUI for configuring the M3UA, M2 PA Layers
- Supports Client-Server functionality with additional licensing. clients are "TCL", "Python", "VBScript" and ".Net"

### **Testbed Setup Configuration**

Test Bed setup is provided to establish communication between MAPS<sup>™</sup> BICC IP and the DUT. It allows users to configure SCTP layer parameters to transmit and receive messages over M3UA and M2PA layers. It supports multiple Serving Nodes (SCTP connection) configuration using CSV file as SCTP configuration source. This feature considerably contributes to increased performance of MAPS<sup>™</sup> application.

End User is configured with default XML file, which defines a set of multiple profiles with varying parameter values allowing users to configure call instances in call generation and to receive calls.

MAPS Serving Node (BICC-IP UK M3UA) - [Testbed Setup -TestBed]		
Configurations Emulator Reports Editor Debug Tools Wit	ndows Help _ &	×
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		9
Config	Value 🔽 Enable	_
Interface Serving Node		
- SCTP Mode	Server	
<ul> <li>SCTP Configuration Source</li> </ul>	Testbed	
- SCTP CSV Configuration		
<ul> <li>SCTP Config CSV File</li> </ul>	ConfigureServerNodes.csv	
<ul> <li>Max SCTP Connections</li> </ul>	1	
<ul> <li>Point Codes for Call Generation</li> </ul>	Random	
<ul> <li>M3UA Termination Type</li> </ul>	SGP	
– Exchange Type	Non Control	
<ul> <li>CIC Handling Method</li> </ul>	Most Idle	
- Serving Node	1	
La Serving Node 1		
<ul> <li>Serving Node IP Address</li> </ul>	192.168.12.41	
<ul> <li>Serving Node Port</li> </ul>	2905	
<ul> <li>Remote Serving Node IP Address</li> </ul>	192.168.12.35	
<ul> <li>Remote Serving Node Port</li> </ul>	2905	
<ul> <li>M3UA Parameters</li> </ul>		
<ul> <li>Routing Context Indicator</li> </ul>	Absent	
<ul> <li>Routing Context</li> </ul>	1	
<ul> <li>Signaling Link Selection</li> </ul>	1	
<ul> <li>Network Indicator</li> </ul>	National	
<ul> <li>Serving Node Point Code</li> </ul>	2.2.2	
Remote Serving Node Point Code	1.1.1	
- Call Instance		
- CIC Start	1	
<ul> <li>Number of CICs</li> </ul>	4000	
- Media Parameters		
<ul> <li>Enable RTP Simulation</li> </ul>	False	
<ul> <li>RTP Hardware Interface Type</li> </ul>	PC NIC	
- NIC Card RTP Media Configuration		
└ Media IP Address	192.168.12.219	
GL HD Card RTP Media Configuration		
L End User Configuration	MS_Profiles StartEdit	
	Initialisation Errors	

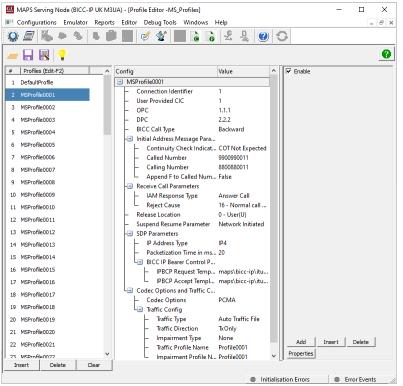
Figure: Testbed setup configuration

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#### **Pre-processing Tools**

#### **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. Traffic profiles are available supporting RTP auto traffic types - Digits, File, Tones, IVR, FAX, and also User-defined traffic.



**Figure: Profile editor** 

#### **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.

ScriptEditor - [C:\Program Files\GL Communications Inc\MAPS-BICCIP\MAPS\BICC-IP\UK\Serving Node\M3UA\Scripts\BI							
🔮 File View Edit Shortcuts Tools Help							
🗅 🖨 🖌 🛪 🗐 🗄 🔊	2						
Command Window 😐 🗴	4 BICC_Call*						
	l //Initialize Variables						
Conditional & Flow Control	2 KeyIdentifier: opc , dpc, cic ;						
- Variable	3 RtpSessionState = "NULL" ;						
···· Variable Declaration/Assignment	<pre>4 BICCState = "IDLE";</pre>						
Increment	5 Result = "Unknown";						
Decrement	6 MsgHandler:"BICCMessageHandler";						
SizeOf	7 NotificationRequired=0;						
Initialize Unique ID	8 AcceptIPBCP=0;						
Allocate Unique ID	9 RequestIPBCP=0;						
···· Reserve Unique ID	<pre>10 COTReceived = 0;</pre>						
Free Unique ID	11 Cause=16;						
Key Identifier	<pre>12 ModifyCodecInitiated=0;</pre>						
- Maps CLI	13 MidCallCodecInitiated=0;						
Send Client Response	14 BICCScriptId="BICC";						
CLI Command	<pre>15 LocalCICState="";</pre>						
Report Event	<pre>16 RemoteCICState="";</pre>						
€-Logs / Comment	<pre>17 FreeCount = 0;</pre>						
🔁 - Init	<pre>18 IsReception = 0;</pre>						
🔁 - Child Script	<pre>19 RtpCoreId = 1;</pre>						
. DataBase	<pre>20 CICFreeCount = 0;</pre>						
Send Report	<pre>21 FreeCICError = "";</pre>						
Resume	22 ////CLI Parameters						
Return	<pre>23 LoopCount1 = 0;</pre>						
Include	<						

**Figure: Script editor** 

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### Pre-processing Tools (Contd.)

#### **MESSAGE EDITOR**

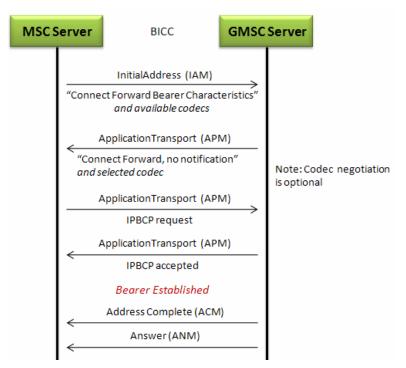
With message editor, users can build a template for each protocol message type. The value for each field may be changed in the message template prior to testing. The protocol fields comprises of mandatory fixed parameters, mandatory variable parameters, and optional variable parameters.

ns Message Editor	- InitialAddress _ 🗆 🗙
File View Direction Tools Help	
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BICC     Call Instance Code     Message Type     Mandatory Fixed Parameters     Nature 01 Connection Indicators Parameter     Nature 01 Connection Indicators Parameter     Continuity check indicator     Continuity check indicator     Echo ctil dev ind[Nat Conn.Ind]     Forward Call Indicators Parameter     Provend Call Indicators Parameter     Nature 01 Continuity check indicator     Forward Call Indicators Parameter     Nature 01 Content of the second call indicator Parameter     Nature 01 Content of the second call ind	Initial address = 1 Initial address = 1 Initial address = 1 Information request = 3 Information = 4 Continuity = 5 Address complete = 6 Connexty = 5 Address complete = 8 Reverse = 9 Release = 12 Supped = 13 Resume = 14
	<pre></pre>
Nature Of Connection Indicators Paramete	· - · · · · · · · · · · · · · · · · · ·
Ready	NUM

#### Figure: Message editor

#### **Typical BICC Call Procedure**

MAPS<sup>™</sup> BICC can be configured as MSC Server and also as GMSC Server nodes in the BICC IP network, initiating and processing the complete call procedure as indicated in the call flow below.



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### **Call Generation and Reception**

In call generation, MAPS<sup>™</sup> 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 (order in which the scripts are added in the window) or randomly (any script from the list of added script as per the call flow requirements). The test scripts may be started manually or they can be automatically triggered by incoming messages.

MAPS Serving Node (BICC-IP UK M3UA) - [Call Generation -CallGenDefault]		- 🗆 X
K Configurations Emulator Reports Editor Debug Tools Windows Help		_ <i>6</i> ×
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Sr No Script Name Profile Call Info Script Execution Status	Events Events Profile Result	Total Iterations Completed Iterations
1 BICC_Call.gls MSProfile0001 1.1.1,2.2.2,4000 Start BICC Cal	Released None Pass	1 1
		>
Add Delete Insert Refresh Start Start All Stop 🔻 Stop All 🔽 Abort Abort A	1	Terminate Call
Save Column Width — ] — Show Latest		
Serving Node Remote Serving Node	Find	
Serving Node Hemote Serving Node	MTP3 User Adaptation Layer	· · · · · ·
Initial Address 15:31:27.273000	0000 Version	= 00000001 Release 1.0 = 00000001 Transfer
Application Transport 15:31:27 778000	0002 Message Class 0003 Transfer Message Type	= 00000001 Transfer = 00000001 Payload Data
	0004 Message Length	= 88 (x0000058)
Application Transport 15:31:27.780000	Protocol Data 0008 Tag	= = x0210 Transfer Protocol D
Application Transport	000A Length	= 78 (x004E)
	Originating Point Code 000R Point Code	= = 1.1.1(001000 00001001)
Address Complete 15:31:27.810000	Destination Point Code	=
Answer 15:31:27.810000	0012 Point Code 0014 Service Indicator	= 2.2.2(010000 00010010) =1101 BICC
	0015 Network Indicator	=10 National Network
File Transmitted :: VoiceFiles\Send\G711\ALAW\vijay.glw 15:31:52.829000	0016 Message Priority 0017 Signalling Link Selection	<pre>=00 Priority Code 0 = 1 (x01)</pre>
Release 15:32:57.81 9000		
	Parameter Padding BICC Layer	= x0000
Release Complete 15:32:57.840000	0018 Call Instance Code	- = 4000 (xA00F0000)
	001C Message Type	= 00000001 Initial address
	Mandatory Fixed Parameters	
Scripts Message Sequence Event Config Script Flow	U	
Comprise V message sequence V commit V Script Flow		
Initialisation	Errors 🛛 🖨 Error Events 🖉 Captured	Errors 🗧 Link Status Up=1 Down=C 🎢

Figure: Call Generation at Client Node

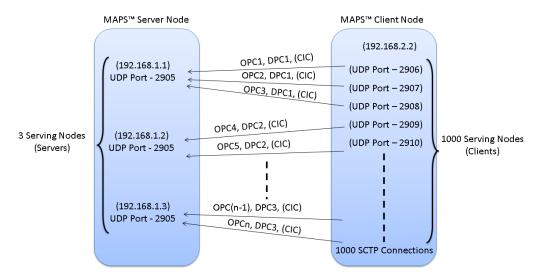
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No	Script Name		Profile	Call Info				Script Execution	Status	Events	Events Profile	Results	-
111	Tx_GRS.g	s			2.2	.2,1.1.1,348	9	Completed	Circuit Group Reset Ack Received	None		Pass	_
112	Tx_GRS.g	\$			2.2	.2,1.1.1,352		Completed	Circuit Group Reset Ack Received	None		Pass	
113	Tx_GRS.g	s			2.2	.2,1.1.1,355	3	Completed	Circuit Group Reset Ack Received	None		Pass	
114	Tx_GRS.g					.2,1.1.1,358		Completed	Circuit Group Reset Ack Received	None		Pass	
115	Tx_GRS.g					.2,1.1.1,361		Completed	Circuit Group Reset Ack Received	None		Pass	
116	Tx_GRS.g					.2,1.1.1,364		Completed	Circuit Group Reset Ack Received	None		Pass	
117	Tx_GRS.g					.2,1.1.1,368		Completed	Circuit Group Reset Ack Received	None		Pass	
118	Tx_GRS.g					.2,1.1.1,371		Completed	Circuit Group Reset Ack Received	None		Pass	
119	Tx_GRS.g					.2,1.1.1,374		Completed	Circuit Group Reset Ack Received	None		Pass	
120	Tx_GRS.g					.2,1.1.1,377		Completed	Circuit Group Reset Ack Received	None		Pass	
121	Tx_GRS.g					.2,1.1.1,380		Completed	Circuit Group Reset Ack Received	None		Pass	
122	Tx_GRS.g					.2,1.1.1,384		Completed	Circuit Group Reset Ack Received	None		Pass	
123	Tx_GRS.g Tx_GRS.g					.2,1.1.1,387		Completed Completed	Circuit Group Reset Ack Received Circuit Group Reset Ack Received	None		Pass Pass	
124	Tx_GRS.g					.2,1.1.1,390		Completed	Circuit Group Reset Ack Received	None		Pass	
125	Tx_GRS.g					.2.1.1.1.335		Completed	Circuit Group Reset Ack Received	None		Pass	
127	BICC Call					.2.1.1.1.400		Completed	BICC Call Released	None		Pass	
Stop	Stop All Abort		N V Show				Auto Trash			NOUR			>
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Stop <u>S</u> ave	Stop All Abort		Initial A Applicatio Applicatio Applicatio Address And	Show Latest  ddress  Transport  Transport  Transport  Send\G711\  aase	Select	t Active Cal	Auto Trash	Trash	Cals Find Find Version Moscage Class Transfer Message Type Moscage Class Transfer Message Type Moscage Length Project Cole Point Cole Point Cole Point Cole Point Cole Point Cole Point Cole Point Cole Point Cole Terrority Bignalling Link Selection Paul Parameter Dading Parameter Dading Parameter Cole Message Type Message Type Message Type Message Type Message Type Mandacory Fised Parameters Mature Of Connection Indicabor Set Allis tendicator Rebustor Parameters Parameters Mature Of Connection Indicator Rebustor Parameters Method Connection Indicator Rebustor Parameters Rebustor Parameters Rebust	n Layer 	00000001 Peless 00000001 Fransf 00000001 Fransf 8 (x00000058) x0210 Transfer 78 (x004E) 1.1.1(001000 2.2.2(.01000 10 Asion 00 Priori 1 (x01) xA00F0000011020 x0000 4000 (xA00F0000 00000001 Initia 00 no sati 00 no sati 00 no sati 00 no sati	e 1.0 ar J ata Protocol Dat 00001001) 00010010) 1 Address address ellite circulty check	77E

Figure: Call Reception at Server Node

## GL Communications Inc.

### **Multiple Serving Nodes Configurations**

MAPS<sup>™</sup> now supports multiple Serving Nodes (SCTP connection) configuration using CSV file as SCTP configuration source. A single MAPS<sup>™</sup> Server Node can be configured to scale-up the multiple (up to 1024) Client Nodes configuration. Multiple clients can be configured with a unique IP address and varying UDP port numbers (or) varying IP addresses with unique port creating multiple connections.



When MAPS<sup>™</sup> is configured with multiple Serving nodes, it accesses the SCTP and M3UA layer parameters from CSV file.

The CSV file includes the following necessary Serving Node parameters, which can be manually configured and saved. The Data Types of all the parameters are as per the specification. Some the parameters are - Connectionid, SourceIPAddress, SourcePort, DestinationIPAddress, DestinationPort, Opc, Dpc, and MediaIPAddress.

1       connectionid       SourcePort       Destination/PAddress       Destination/PAddress       Destination/PAddress       Destination/PAddress       Destination/PAddress       SubPrefix       ClCStart       ClCRange       RC       SLS       Net         2       int       string       int       string       int       <	1 connectio 2 int 3	nid SourceIPAddress string	SourcePort		E										
int         string         int         string         int         string         int         int </th <th>int</th> <th>string</th> <th></th> <th></th> <th>Destination Dest</th> <th></th> <th>-</th> <th>-</th> <th>1</th> <th>J</th> <th></th> <th>-</th> <th>M</th> <th>N</th> <th><u> </u></th>	int	string			Destination Dest		-	-	1	J		-	M	N	<u> </u>
1       192.168.1.36       2906       192.168.1.50       2905       1.1.1       2.1.1       4       1       5       12512       1         3       192.168.1.36       2907       192.168.1.50       2905       1.2.1       2.2.1       4       1       5       12512       1         4       192.168.1.36       2909       192.168.1.50       2905       1.3.1       2.3.1       4       1       5       12512       1         5       192.168.1.36       2910       192.168.1.50       2905       1.3.1       2.3.1       4       1       5       12512       1         6       192.168.1.36       2911       192.168.1.50       2905       1.3.1       2.3.1       4       1       5       1.5.50         7       192.168.1.36       2911       192.168.1.50       2914       192.168.1.50       2914       192.168.1.50       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15       392.06       132.23.15<		and the second se											NetInd	_MedialPAddre	ess 📖
2       192.168.1.36       2907       192.168.1.50       2905       1.2.1       2.1.1       4       1       5       12512       1         4       192.168.1.36       2908       192.168.1.50       2905       1.3.1       2.3.1       4       1       5       12512       1         4       192.168.1.36       2909       192.168.1.50       2905       1.2.1       2.3.1       4       1       5       12512       1         5       192.168.1.36       2910       192.168.1.50       2912       192.168.1.50       2912       192.168.1.50       2912       192.168.1.50       2913       192.168.1.50       2914       192.168.1.50       2914       192.168.1.50       2914       192.168.1.50       2914       192.168.1.50       192.168.1.50       192.168.1.50       2915       13.12.3.1       392.0       192.168.1.50       13.12.3.1       392.0       192.168.1.50       13.12.3.1       392.0       192.168.1.50       13.12.3.1       392.0       192.168.1.50       13.12.3.1       392.0       192.168.1.50       13.12.3.1       392.0       10.12.1.50       13.12.3.1       392.0       10.12.1.50       13.12.3.1       392.0       13.12.3.1       392.0       13.12.3.1       392.0       13.12.3.1	1					10000 C								string	
3       192.168.1.36       2908       192.168.1.50       2905       1.3.1       2.3.1       4       1       5       12512       1         4       192.168.1.36       2909       192.168.1.50       2905       1.3.1       2.3.1       4       1       5       12512       1         6       192.168.1.36       2910       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2911       192.168.1.50       2914       192.168.1.50       2914       192.168.1.50       2915       192.168.1.50       2915       192.168.1.50       2915       192.168.1.50       2915       192.168.1.50       2915       192.168.1.50       2915       192.168.1.50       2915       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       2916       192.168.1.50       1912.168.1.50       1912.168.1.50       1912.168.1.50       1912.168.1.50       1912.168.1.50       191	-							0.2						2 192.168.1.36 2 192.168.1.36	
4       192.168.1.36       2909       192.168.1.50         5       192.168.1.36       2911       192.168.1.50         6       192.168.1.36       2911       192.168.1.50         7       192.168.1.36       2912       192.168.1.50         8       192.168.1.36       2912       192.168.1.50         9       192.168.1.36       2914       192.168.1.50         9       192.168.1.36       2914       192.168.1.50         9       192.168.1.36       2915       192.168.1.50         10       192.168.1.36       2915       192.168.1.50         11       192.168.1.36       2915       192.168.1.50         12       192.168.1.36       2915       192.168.1.50         13       192.168.1.36       2916       192.168.1.50         14       192.168.1.36       2919       192.168.1.50         14       192.168.1.36       2919       192.168.1.50         14       192.168.1.36       2919       192.168.1.50         15       192.168.1.36       2919       192.168.1.50         16       192.168.1.36       2919       192.168.1.50         17       192.168.1.36       2920       192.168.1.50														2 192.168.1.36	
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11         192.168.1.36         2916         192.168.1.50         4         BCC_Cadge         HSP-Mo0005         1412411         Step         BIC Cad concerted         Termete Cad           12         192.168.1.36         2917         192.168.1.50         6         BIC Cad over the first step         BIC Cad over the firs	2											Terminate Call		Pass 1 Pass 1	0
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13     192.168.1.36     2918     192.168.1.50     9     BCC_Cadge     HSP-ModOB     14/12.15     Stor     BCC Cadge     HSP-ModOB       14     192.168.1.36     2919     192.168.1.50     10     BCC_Cadge     HSP-ModOB     15/12.15     Stor     BICC Cadge     HSP-ModOB       15     192.168.1.36     2920     192.168.1.50     10     BCC_Cadge     HSP-ModOB     15/12.15     Stor     BICC Cadge     HSP-ModOB       16     192.168.1.36     2921     192.168.1.50     12     BICC_Cadge     HSP-ModOB     BICC Cadge     HSP-ModOB     HSP-ModOB     BICC Cadge     HSP-ModOB     BICC Cadge     HSP-ModOB     BICC Cadge     HSP-ModOB	-				6	BICC_Call.g	Is MSProfile00	1.4.1,2.4.1	.3 Sh	p BICC	Call Connected	Terminate Call		Pass 1 Pass 1	0
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15         192.168.1.36         2920         192.168.1.50         11         BCC_Cade         MSP-MeM001         15.125.12         Stop         BIC Cal Convected         Termate Cal           16         192.168.1.36         2921         192.168.1.50         13         BIC Cade         MSP-MeM012         15.125.13         Stop         BIC Cal Convected         Termate Cal           17         192.168.1.36         2921         192.168.1.50         Termate Cal	-													Pass 1 Pass 1	0
16         192.168.1.36         2921         192.168.1.50         13         BICC_Calge         HSP-bried0013         151.251.4         Stop         BICC Cal Convended         Temmede Cal           17         192.168.1.36         2922         192.168.1.50         Add         Deinte         Temmede Cal         Add         Deinte         Temmede Cal         Temmede Cal           18         192.168.1.36         2923         192.168.1.50         Add         Deinte         Temmede Cal         Temmede Cal           19         192.168.1.36         2924         192.168.1.50         DUT         Temmede Cal           20         192.168.1.36         2925         192.168.1.50         DUT         Temmede Cal           21         192.168.1.36         2926         192.168.1.50         Appticition Tompod         7.303.32000         DOT         Temmede Cal           21         192.168.1.36         2926         192.168.1.50         Appticition Tompod         7.303.42000         DOT         Temmede Cal           21         192.168.1.36         2926         192.168.1.50         Appticition Tompod         7.303.42000         DOT         Temmede Cal           21         192.168.1.36         2926         192.168.1.50         Temmede Cal         Temmed	20					BICC_Callg	ls MSProfile01	1.5.1,2.5.1	.2 Sb	BICC	Call Connected	Terminate Call		Pass 1 Pass 1	0
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ady 1 - 7,2603.466000 000C Routing Context Protocol Data	ady 🛅						7	inswer				Protocol 1		-	x0210 Transfer Protocol
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Initialisation Errors
 Error Events
 Captured Errors
 Link Status Up=100 Down=0

## 🌑 GL Communications Inc.

### **Command Line Interface (CLI)**

MAPS<sup>™</sup> can be configured as server-side application, to enable remote controlling of the application through multiple command-line based clients. Supported clients include TCL, Python, VBScript, Java, and .Net.

Clients can remotely perform all functions such as start testbed setup, load scripts, and profiles, apply user events such as send digits/ file/tones, detect digits/file/tones, dial, originate call, terminate call, start and stop traffic and so on. User can also generate and receive calls through commands. This client application is distributed along with MAPS<sup>™</sup> Server application

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:: 2	019-3	3-8 1	0:37:	36.028	00:1	JserEvent	"Resume";											
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#### Figure: MAPS<sup>™</sup> CLI Server

🌛 Python 3.7.5 Shel	l i				×
File Edit Shell D	ebug Opti	ons Window Help			
Type "copyrigh	t", "cre	lits" or "license()" for more information.			-
>>>					
RESTART: C:\P	rogram F	iles\GL Communications Inc\MAPS-BICCIP\MAPSCLI\Python	Client\exam	ples\B	icc
<pre>Ip_RecvCall.py</pre>					
BICC IP Server					
BICC IP Testbe	d Starti	ng True			
BICC IP Profil	e Loadin	g True			
Waiting for BI	CC IP Ca	11 BICC CALL RECEIVED			
Set Traffic Ty	pe: 0				
BICC IP Call A					
BICC IP Call S	tatus	BICC CALL CONNECTED			
BICC IP Call H	old T	rue			
BICC IP Call R	etrieve.	. True			
BICC IP Call S	uspend	. True			
BICC IP Call R	esume	True			
BICC IP Call T	erminati	ng True			
BICC IP Call M	sgCount:	11			
BICC IP Call's	LastMSG	Rev			
Time Stamp	Route	Message			
10:43:20.774	<-	Release Complete			
***** BICC IP	Call Mes	sage Flow *****			
CLI	<> D	T			
Time Stamp	Route	Message			
10:43:10.239		Initial Address			
		Application Transport			
10:43:10.332	<-	Application Transport			
10:43:10.380	->	Address Complete			
10:43:10.450	->	Answer			
10:43:10.487	->	Call Progress			
10:43:12.557	->	Call Progress			
10:43:14.630	->	Suspend			
10:43:16.706	->	Resume			

Figure: Sample Python Client CLI Script

### 🌑 GL Communications Inc.

## **Supported Protocol and Specifications**

	BICC	
M		
M2PA	M2UA	M3UA
	SCTP	
	IP	

Supported Protocols	Standards Used
BICC	ITU-T Q.1902
IP BCP	RFC 2327
MTP3	ITU-T Q.782
M2PA	RFC 4165
M3UA	RFC 3332
SCTP	RFC 4960



## **Buyer's Guide**

Item No	Product Description
<u>PKS155</u>	MAPS <sup>™</sup> BICC over IP Protocol Emulator
<u>PKS109</u>	MAPS™ RTP HD
<u>PKS102</u>	RTP Traffic Option
<u>PKS108</u>	RTP Voice Quality Measurements
<u>PKS106</u>	RTP Video Traffic Generation
<u>PKS200</u>	RTP Pass Through Fax Emulation
Item No	Related Software
<u>XX649</u>	MAPS™ SS7
<u>XX647</u>	MAPS™ SS7 Conformance Test Suite (Test Scripts)
<u>XX649</u>	MAPS <sup>™</sup> MAP Protocol Emulator
<u>PKS132</u>	MAPS <sup>™</sup> MAP over IP Protocol Emulator
<u>XX648</u>	MAPS™ ISDN
<u>XX692</u>	MAPS™ GSM -A Interface Emulator
<u>XX693</u>	MAPS™ GSM- Abis Interface Emulator
<u>PKS130</u>	MAPS™ SIGTRAN (SS7 over IP)
<u>PKS135</u>	MAPS™ ISDN -SIGTRAN (ISDN over IP)
<u>XX100</u>	ISDN Analyzer Software
<u>XX120</u>	SS7 Analysis Software

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more information, please visit <u>Signaling and traffic simulator</u> webpage.



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