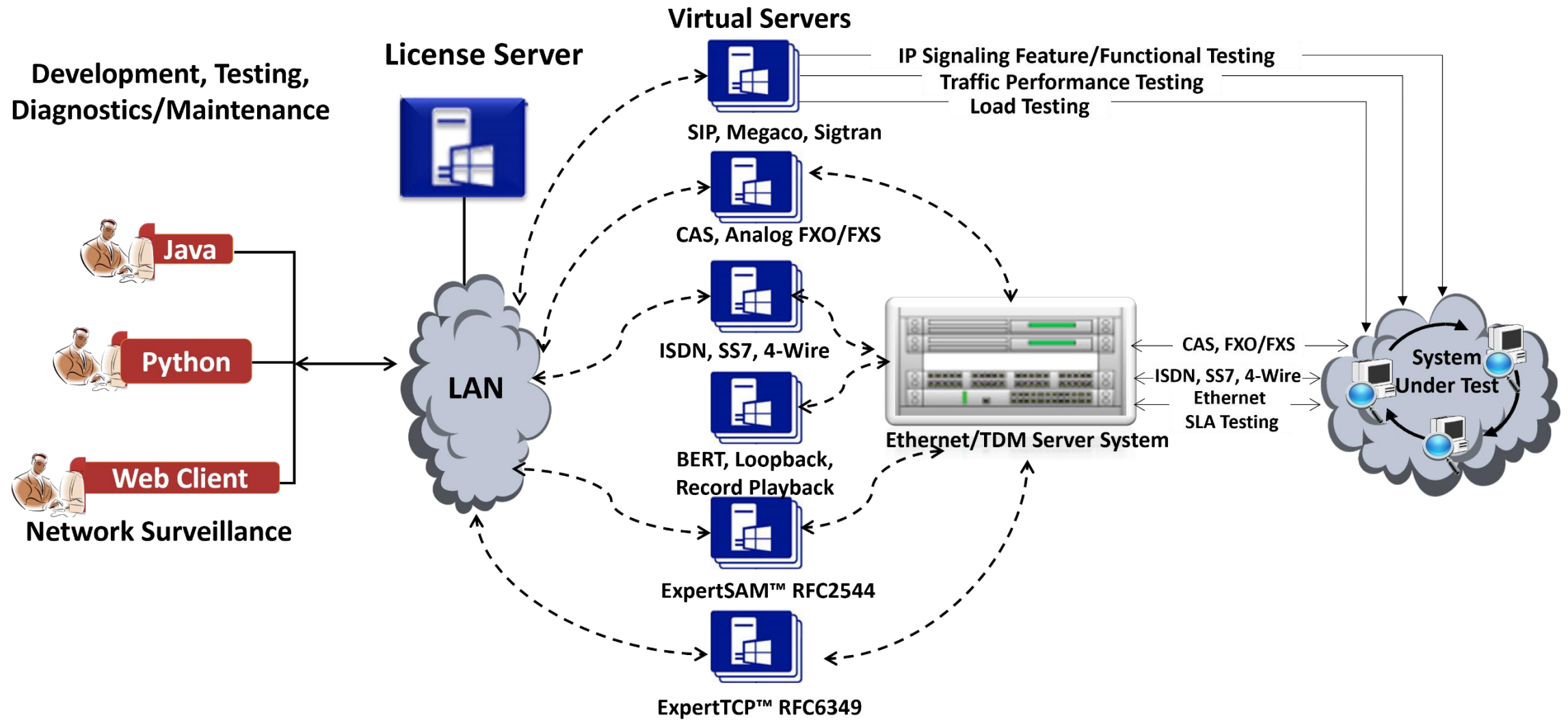

MAPS™ Remote Controller (PKS111 and PKS113)

Multi-node Multi -Interface Emulation

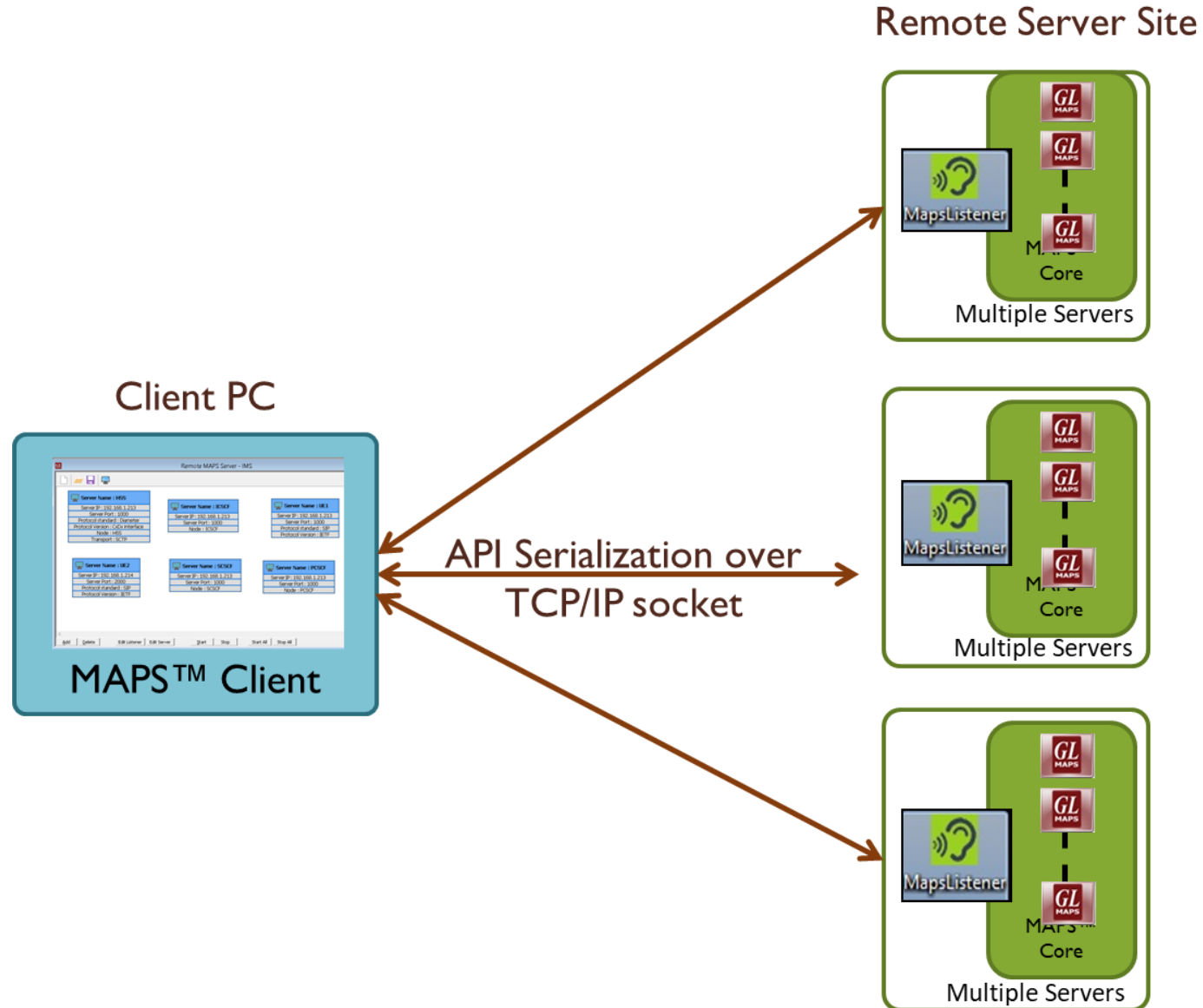


818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: <https://www.gl.com>

Remote MAPS™ Architecture



Network Architecture

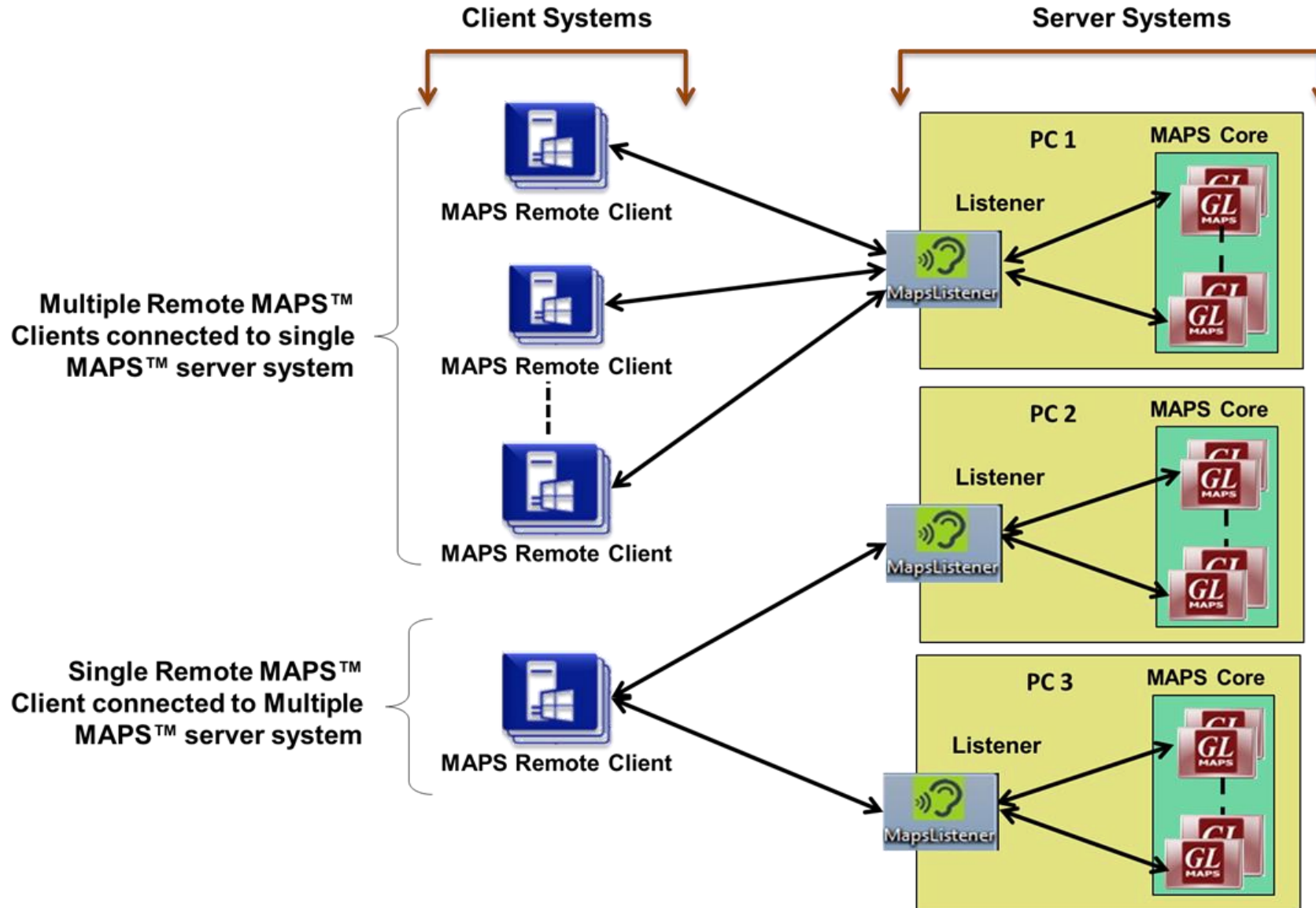


Features

- A single Remote Client GUI to remotely control/monitor all the network interfaces and elements emulated by MAPS™ Servers; one or more MAPS™ applications can be installed in a single Sever
- Allows integrated testing of different networks - Wireless, IP, TDM, and Analog (CAS, FXO, SIP, IMS, UMTS, ...)
- Suitable for testing any core network, access network, and inter-operability functions
- Remote MAPS™ provides access to all the functions of MAPS™ such as Testbed, Call generation, Call reception, Statistics and Results
- Client-server communication is facilitated through a Listener over TCP/IP
- Each Listener equates an independent instance of MAPS™ application at the server side. Each listener is associated with an Admin user
- Unlimited number of Remote client users can be defined at the server
- “Admin” has privileges to start /stop Testbed setup access, configuration files
- MAPS™ Remote Client to control one or more MAPS™ Server (PKS111) or at the MAPS™ Server systems (MAPS™ Server with Multi-user capability – (PKS113)
- Simultaneous traffic generation/reception at 100% on all servers

Working Principle

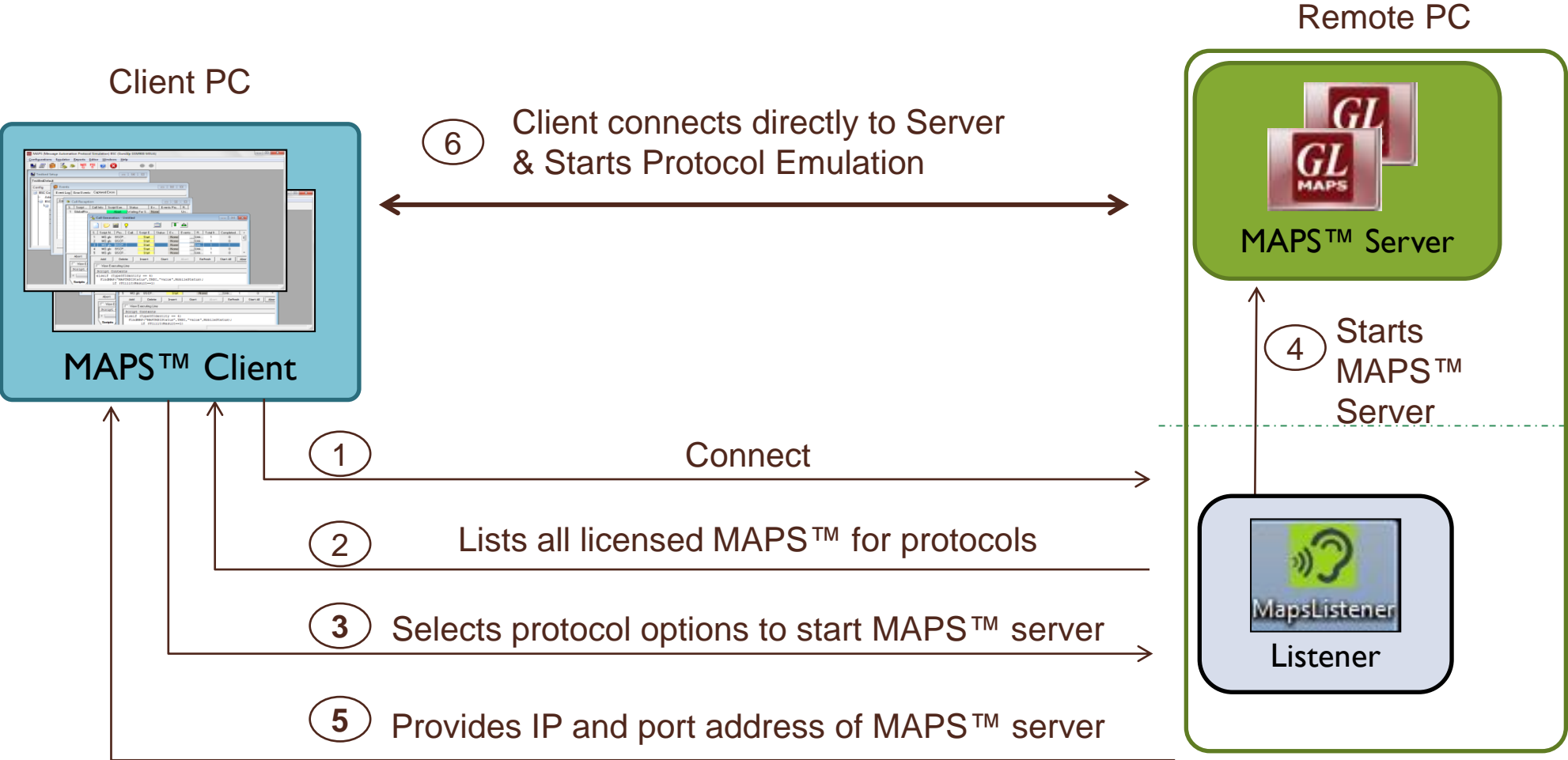
Remote MAPS™ (PKS111 and PKS113)



Software and License Requirements

	PKS 111	PKS 113
Client System	<p>Software Required: MAPS™ Remote Client software</p> <p>License Required: MAPS™ Remote Client license (PKS111)</p> <p>Configuration Required:</p> <ul style="list-style-type: none"> • Start Node Configuration • Admin User – Starts/Stops Test Bed • Other Users – Register Subscriber Profiles, Perform Call Emulation 	<p>Software Required: MAPS™ Remote Client software</p> <p>License Required: -nil-</p> <p>Configuration Required:</p> <ul style="list-style-type: none"> • Start Node Configuration • Admin User – Starts/Stops Test Bed • Other Users – Register Subscriber Profiles, Perform Call Emulation
Server System	<p>Software Required:</p> <ul style="list-style-type: none"> • MAPS™ Emulator Core software • MAPS™ Remote Server software <p>Configuration Required:</p> <ul style="list-style-type: none"> • User Configuration • Listener Configuration • Protocol Configuration <p>License Required:</p> <ul style="list-style-type: none"> • MAPS™ Emulator Core license 	<p>Software Required:</p> <ul style="list-style-type: none"> • MAPS™ Emulator Core software • MAPS™ Remote Server software <p>Configuration Required:</p> <ul style="list-style-type: none"> • User Configuration • Listener Configuration • Protocol Configuration <p>License Required:</p> <ul style="list-style-type: none"> • MAPS™ Emulator Core license • MAPS™ Multi User Server License (PKS113)

Client-Server Communication via Listener



Remote MAPS™ Call Flow

Listener added in Client
 IP: 192.168.1.64
 Port: 20005

Listener Started
 IP: 192.168.1.64
 Port: 20005

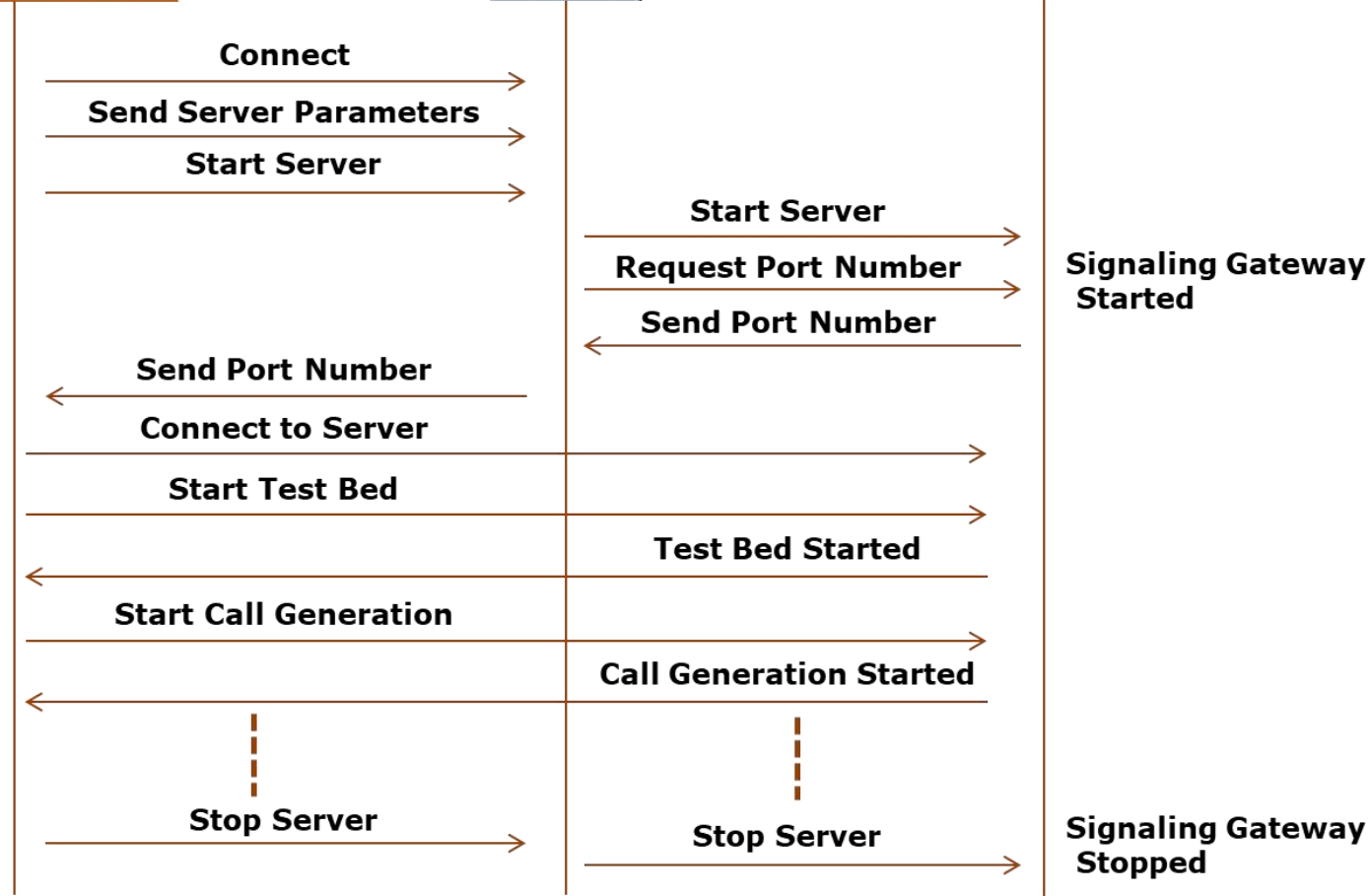
Server Name : SG1
 Server IP : 192.168.1.64
 Server Port : 20005
 Node : SignalingGateWay



MapsListener

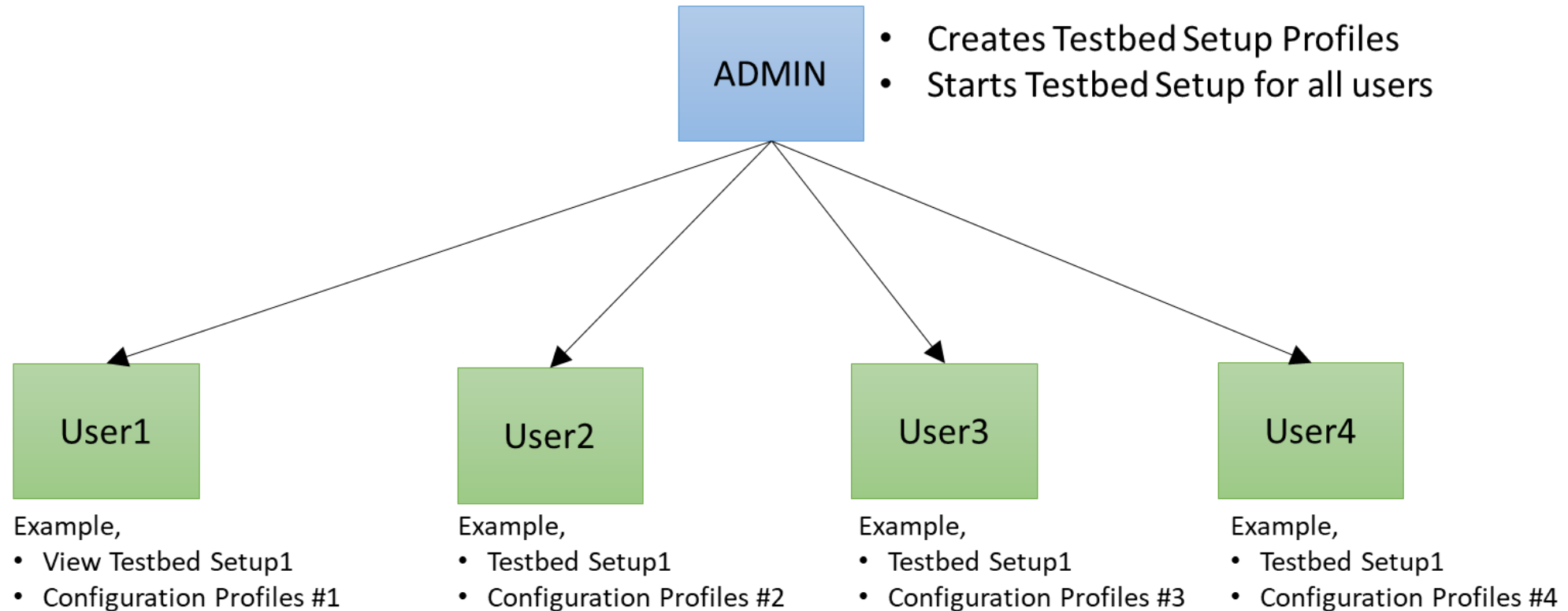


GL
MAPS



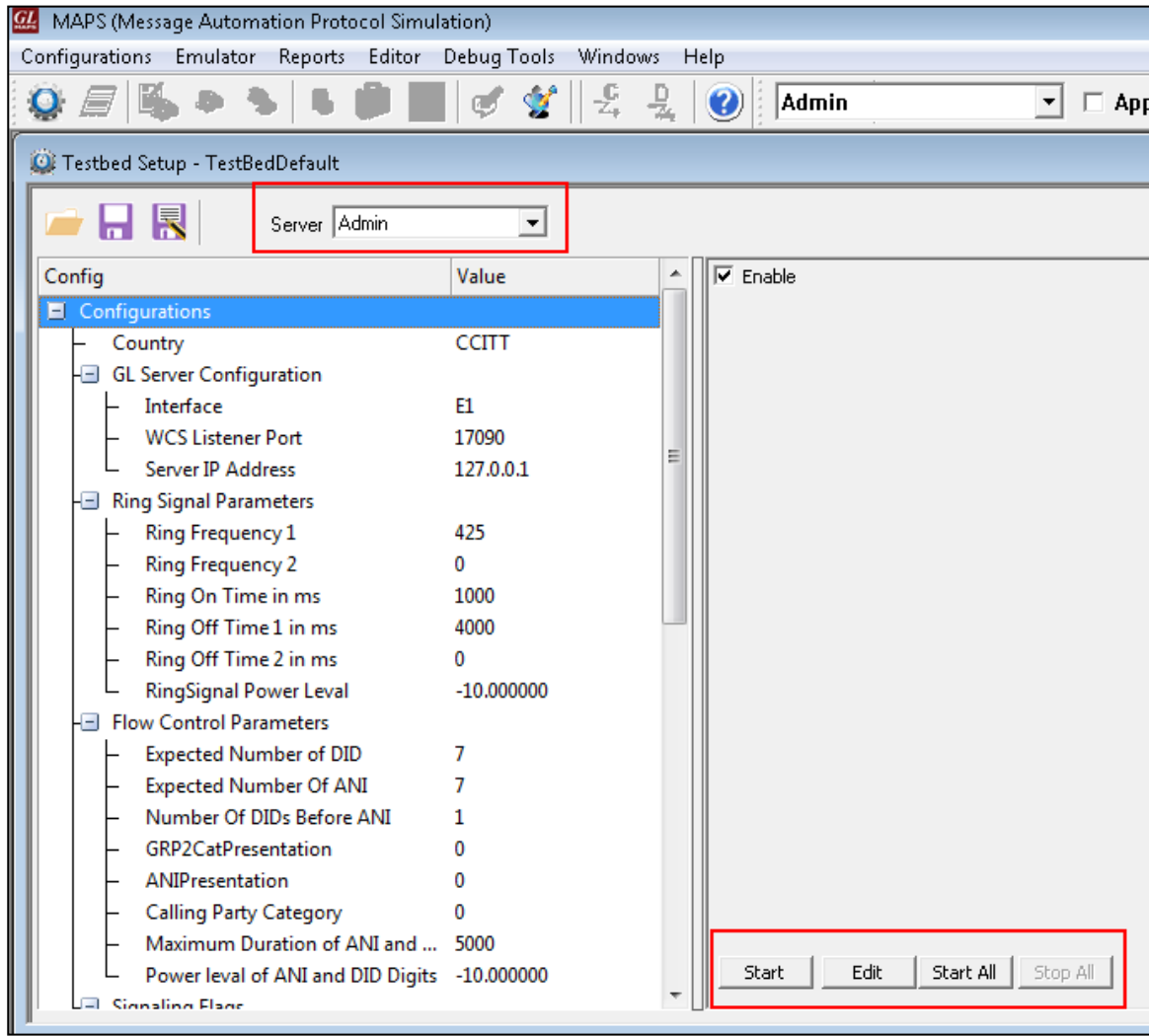
Multiple Users

- Multiples users can be created on each MAPS™ Server. One Admin user must be created to manage the test bed setup



Testbed Setup Configurations

For Admin

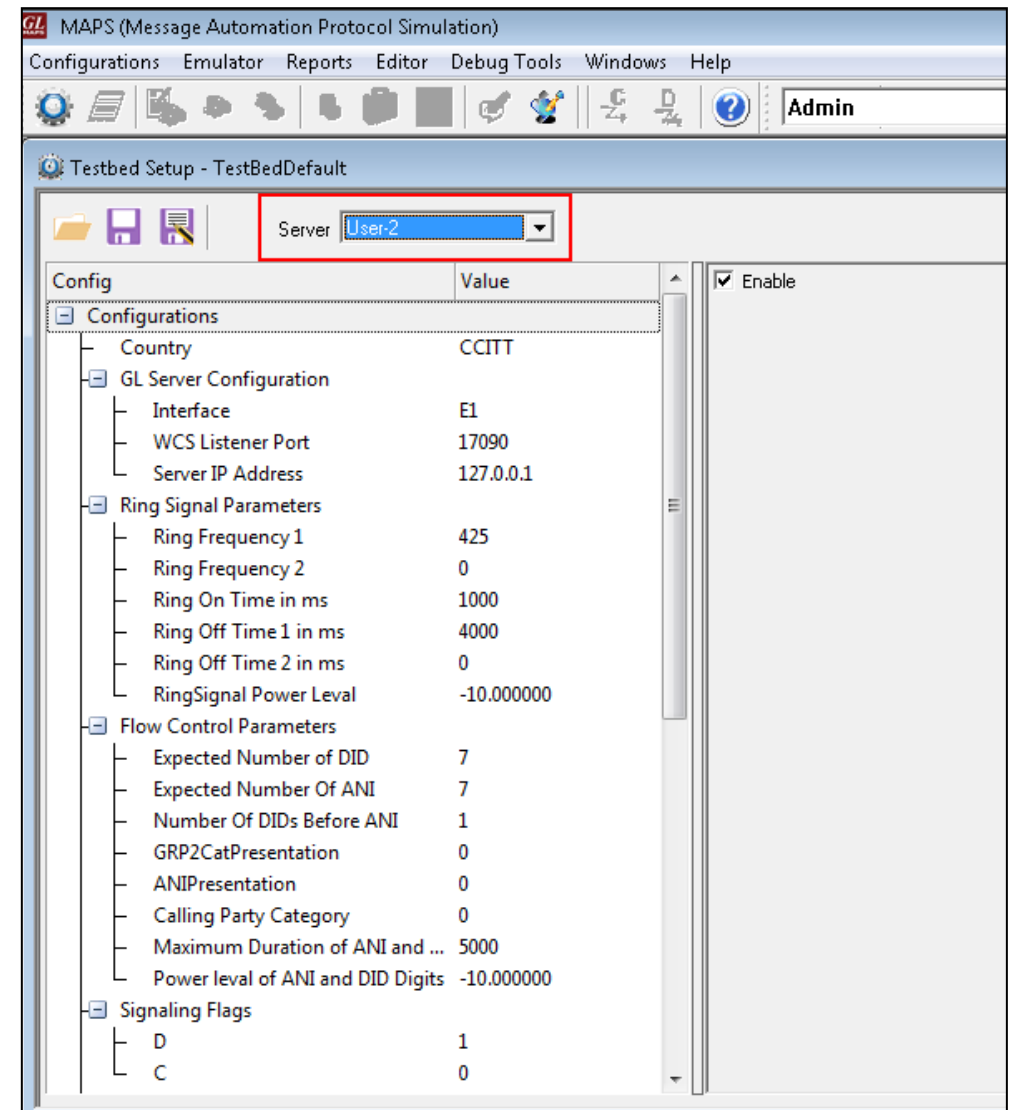


The screenshot shows the MAPS (Message Automation Protocol Simulation) interface for the 'Admin' user. The 'Server' dropdown menu is set to 'Admin' and is highlighted with a red box. The configuration table below shows various parameters for the testbed setup.

Config	Value	Enable
Country	CCITT	<input checked="" type="checkbox"/>
GL Server Configuration		
Interface	E1	
WCS Listener Port	17090	
Server IP Address	127.0.0.1	
Ring Signal Parameters		
Ring Frequency 1	425	
Ring Frequency 2	0	
Ring On Time in ms	1000	
Ring Off Time 1 in ms	4000	
Ring Off Time 2 in ms	0	
RingSignal Power Level	-10.000000	
Flow Control Parameters		
Expected Number of DID	7	
Expected Number Of ANI	7	
Number Of DIDs Before ANI	1	
GRP2CatPresentation	0	
ANIPresentation	0	
Calling Party Category	0	
Maximum Duration of ANI and ...	5000	
Power level of ANI and DID Digits	-10.000000	
Signaling Flags		

At the bottom of the configuration window, there are four buttons: 'Start', 'Edit', 'Start All', and 'Stop All', which are also highlighted with a red box.

For Users



The screenshot shows the MAPS (Message Automation Protocol Simulation) interface for the 'User-2' user. The 'Server' dropdown menu is set to 'User-2' and is highlighted with a red box. The configuration table below shows various parameters for the testbed setup.

Config	Value	Enable
Country	CCITT	<input checked="" type="checkbox"/>
GL Server Configuration		
Interface	E1	
WCS Listener Port	17090	
Server IP Address	127.0.0.1	
Ring Signal Parameters		
Ring Frequency 1	425	
Ring Frequency 2	0	
Ring On Time in ms	1000	
Ring Off Time 1 in ms	4000	
Ring Off Time 2 in ms	0	
RingSignal Power Level	-10.000000	
Flow Control Parameters		
Expected Number of DID	7	
Expected Number Of ANI	7	
Number Of DIDs Before ANI	1	
GRP2CatPresentation	0	
ANIPresentation	0	
Calling Party Category	0	
Maximum Duration of ANI and ...	5000	
Power level of ANI and DID Digits	-10.000000	
Signaling Flags		
D	1	
C	0	

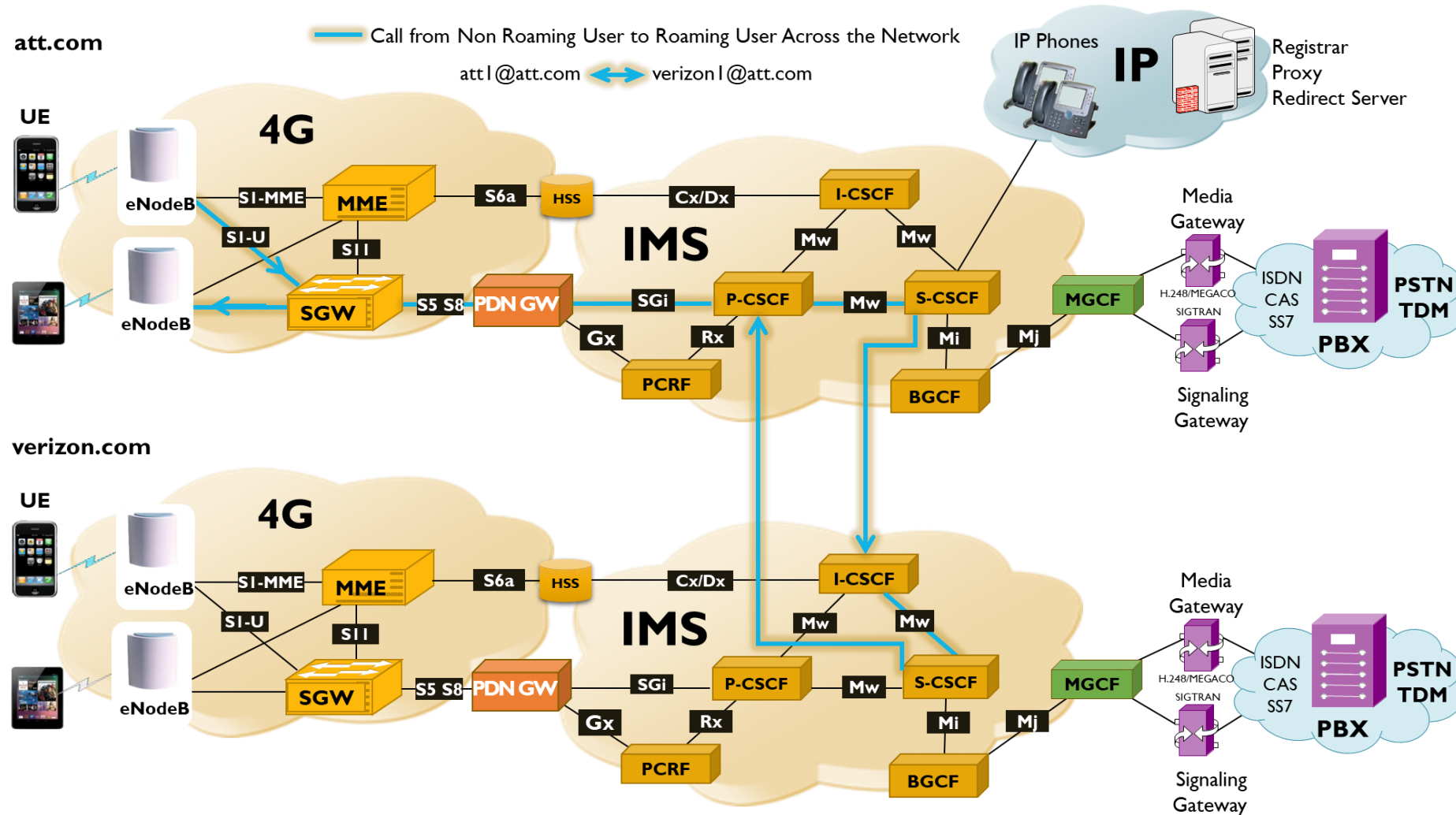
Remote MAPS™ for IMS Network

Remote MAPS™ Server Configuration

The screenshot displays the 'Remote MAPS Server - Configuration' window. It features a toolbar with icons for file operations and a main area containing ten server configuration cards arranged in two rows. Each card lists the server name, IP address, port, protocol standard, and node type. The bottom of the window has a control bar with buttons for 'Add', 'Delete', 'Edit Listener', 'Edit Server', 'Start', 'Stop', 'Start All', and 'Stop All'.

Server Name	Server IP	Server Port	Protocol standard	Protocol Version	Node	Transport
UE1	192.168.1.14	1000	SIP	IETF		
PCSCF-att	192.168.1.14	1000			PCSCF	
ICSCF-att	192.168.1.14	1000			ICSCF	
SCSCF-att	192.168.1.14	1000			SCSCF	
HSS-att	192.168.1.14	1000	Diameter	CxDx interface	HSS	SCTP
UE2	192.168.1.147	2000	SIP	IETF		
PCSCF-verizon	192.168.1.14	1000			PCSCF	
ICSCF-verizon	192.168.1.14	1000			ICSCF	
SCSCF-verizon	192.168.1.14	1000			SCSCF	
HSS-verizon	192.168.1.147	2000	Diameter	CxDx interface	HSS	SCTP

End-to-end Call from Non-Roaming User to Non-Roaming User Across the Network



End-to-End Registration and Call Control Procedures

Call Reception at Verizon Network

The screenshot shows the MAPS interface for 'Call Reception - ICSCF-verizon'. The top toolbar includes 'Configurations', 'Emulator', 'Reports', 'Editor', 'Windows', and 'Help'. Below the toolbar is a 'Server' dropdown set to 'ICSCF-verizon' and an 'Apply To All Views' checkbox. A table lists script execution results:

Sr No	Script Name	Call Info	Script Execution	Status	Events	Ev...	Results
1	ICSCFCallControl.gls	ProtScriptId_20_14813683-3715-2804	Stop		None		Unknown
2	ICSCFCallControl.gls	ProtScriptId_24_14815961-3721-2804	Stop		None		Unknown
3	ICSCFMobCallControl.gls		Completed		None		Unknown

Below the table are buttons for 'Abort', 'Abort All', 'Show Records', 'Auto Trash', and 'Trash'. The main area displays a 'Message Sequence' diagram with participants S-CSCF1, I-CSCF, HSS, and S-CSCF2. The sequence includes: INVITE (15:12:02.214000), 100 Trying (15:12:02.221000), Location-Info-Request (15:12:02.257000), Location-Info-Answer (15:12:02.293000), INVITE (15:12:02.293000), 100 Trying (15:12:02.300000), 183 Session Progress (15:12:02.300000), 183 Session Progress (15:12:02.536000), 180 Ringing (15:12:02.536000), 180 Ringing (15:12:02.769000), and 200 OK (15:12:22.140000). A right-hand pane shows SIP message details for the INVITE.

Call Reception at ATT Network

The screenshot shows the MAPS interface for 'Call Reception - SCSCF-att'. The top toolbar includes 'Configurations', 'Emulator', 'Reports', 'Editor', 'Windows', and 'Help'. Below the toolbar is a 'Server' dropdown set to 'SCSCF-att' and an 'Apply To All Views' checkbox. A table lists script execution results:

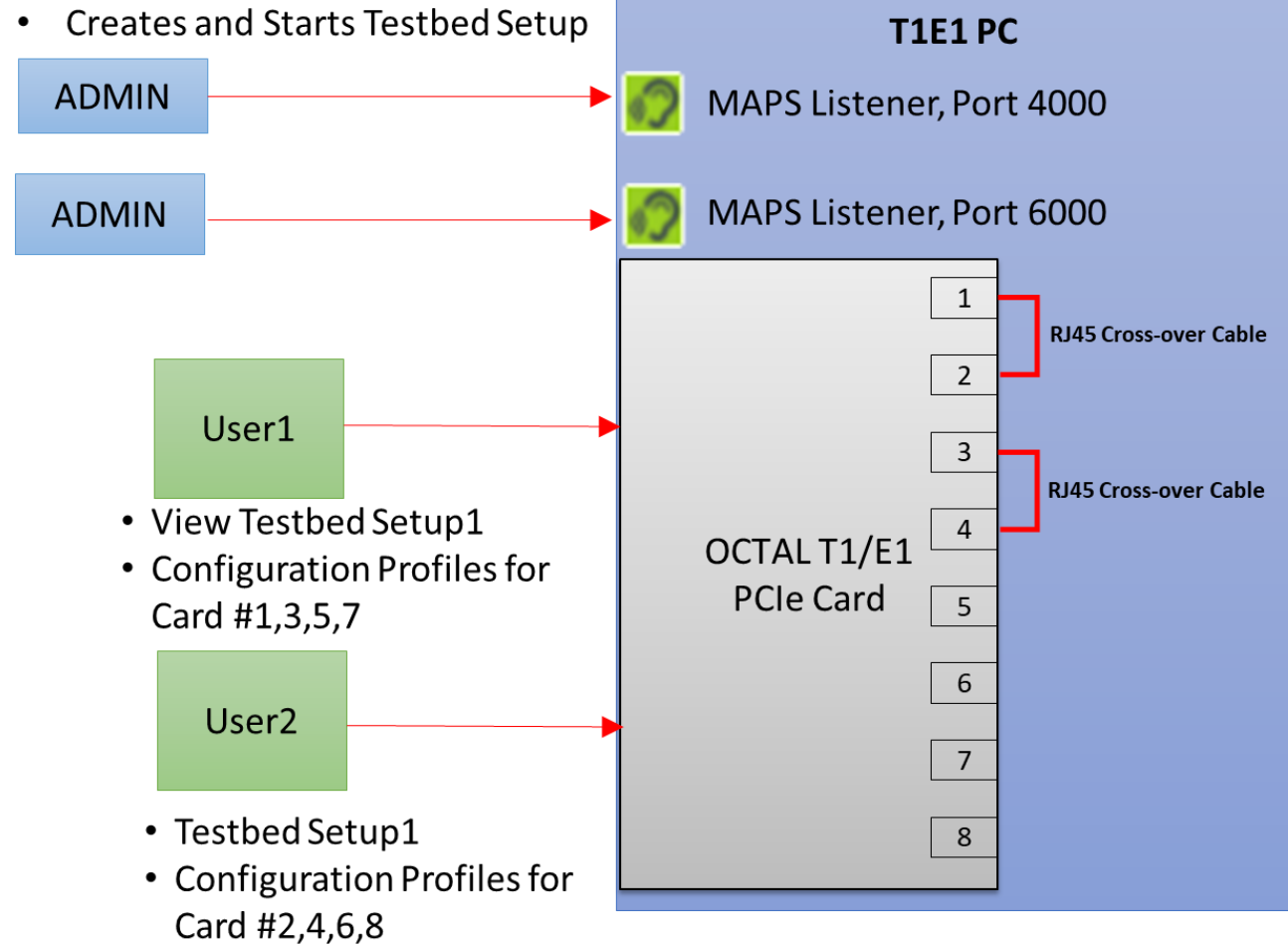
Sr No	Script Name	Call Info	Script Execution	Status	Events	Ev...	Results
1	SCSCFCallControl.gls	GL-MAPS_1_14799787-2819-4712@192.168.1.14	Completed		None		Unknown
2	SCSCFCallControl.gls	GL-MAPS_1_14799787-2819-4712@192.168.1.14	Stop		UE Registered		Pass
3	SCSCFMobToMobCallControl.gls	GL-MAPS_1_14829664-2827-4712@192.168.1.14	Completed		200 OK to INVITE		Unknown
4	SCSCFMobToMobCallControl.gls	GL-MAPS_1_14829664-2827-4712@192.168.1.14	Completed		Final Response To Prack Received		Unknown
5	SCSCFMobToMobCallControl.gls	GL-MAPS_1_14829664-2827-4712@192.168.1.14	Completed		Final Response To Update Received		Unknown
6	SCSCFMobToMobCallControl.gls	GL-MAPS_1_14829664-2827-4712@192.168.1.14	Completed		Call Connected		Pass
7	SCSCFMobToMobCallControl.gls	GL-MAPS_1_14829664-2827-4712@192.168.1.14	Completed		Call Terminated		Pass

Below the table are buttons for 'Abort', 'Abort All', 'Show Records', 'Auto Trash', and 'Trash'. The main area displays a 'Message Sequence' diagram with participants I-CSCF, S-CSCF, and HSS. The sequence includes: REGISTER (15:11:34.648000), 100 Trying (15:11:34.655000), Server-Assignment-Request (15:11:36.670000), Server-Assignment-Answer (15:11:36.702000), and 200 OK (15:11:36.706000). A right-hand pane shows SIP message details for the REGISTER.

Remote MAPS™ for TDM Network

Remote MAPS™ Server Configuration for T1E1

- Remote MAPS™ to show how multiple users share the channel resources on a single T1 E1 Server to emulate calls



Thank you