



## SIP Trunk Setup Guide for Metaswitch

## Overview

The following is a guide for configuring Metaswitch SIP Trunks to work with an iPECS LIK with phase 5.5 software. Metaswitch delivers SIP Trunk service as Provisioned (Configured SIP binding) SIP Trunks with Authentication. These trunks have a fixed SIP User to IP address binding; all calls to the SIP User ID are sent to a fixed IP address.

This guide only covers SIP Trunk configuration, other characteristics of the system such as Voice Mail, Station configurations, etc. may be required to meet the customer needs.

Mandatory settings are detailed and comments are provided for several common option settings. Should you need additional assistance contact your distributor.

## Metaswitch SIP Trunk Service

Before you begin to configure the SIP Trunks on the iPECS LIK, you must receive the following information from the Metaswitch service provider.

- SIP ID
- Domain or IPv4 address of the SIP Trunk host
- Authentication User ID:
- Authentication Password:
- Assigned number(s): 1 (NPA) Nxx-xxxx for DID a range should be provided
- Primary DNS

NOTE - You will need to provide a fixed IP for binding.

## Configuration Guide

All configuration options for SIP Trunks are done through the iPECS LIK Web Admin. Once the Web Admin is opened, use the steps below as a guide to your configuration. Remember this is a guide and the data displayed for the various attributes must be entered as provided from Metaswitch and not the values shown in this guide.

## Configuration Steps

1. System & Device IP Web page,
  - a. Enter and Save the System and Device IP addressing parameters.
  - b. Determine the logical number of the VoIP channels to use for the SIP Trunks, you will need this when assigning SIP CO Attributes.

**iPECS Administration** | S/W Upgrade | System Management | Log Out

MFIM/VD96M-E 5Db MAY/11  
Boot Version-1.0b MAY/10  
Kernel Version-5.5Db  
H/W Issue-3

Find PGM | Hide Menu

**System ID & Numbering Plans**

- System ID(100) [N]
- Device Port Num Change(101) [N]
- System&Device IP(102-103) [N]**
- CO GW Sequence Number(104) [N]
- Flexible Station Number(105) [N]
- Flexible Numbering Plan(106) [N]
- 8 Digit Table(238) [N]
- Station Data
- Board Based Data
- CO Line Data
- System Data
- Station Group Data
- ISDN Line Data
- SIP Data
- Tables Data
- Networking Data
- RSKM Data
- Tnet Data
- Zone Data
- Device Login

**[ System & Device IP address ]**

MFIM DHCP: OFF

MFIM/E IP Address: 10.10.10.2

MFIM/E Sub Net Mask: 255.255.0.0

Router IP Address: 10.10.10.1

System IP Range: 10.10.10.10 - 10.10.254.254

System Sub Net Mask: 255.255.0.0

Automatic IP Assign: ON

Second System IP Address: 0.0.0.0

Second System Net Mask: 255.255.0.0

Firewall IP Address: 66.210.52.67

First MAC Range: 000000000000 - 000000000000

Second MAC Range: 000000000000 - 000000000000

MFIM/E LAN2 Master IP Address: 1.2.3.4

MFIM/E LAN2 Slave IP Address: 1.2.3.5

DNS IP Address: 68.105.28.16

Save | System overview

Find | Show Hidden Item

Order	Seq	SVC	Hide	Logical Num	Type	DEV ID	MAC Address	IP Address	NET	ARP	Register	Version	CPU	Remark
<b>CO Gateway</b>														
1	1			1 - 6	VOIP GW	97	00405a2e6818	10.10.10.2	L	OFF	Multicast	E.5Db	MS828	
2	2			7 - 30	VODM24 GW	101	00405a2e66e6	10.10.10.10	L	OFF	Multicast	5.0Dd	MS828	
3	8			31 - 38	LOCAL LOOP S GW	114	00405a2e6818	10.10.10.14	L	OFF	Multicast	4.0Ja	MS828	
<b>STA</b>														
1	5			100	LIP-8012D	200	001a7eae887	10.10.10.11	L	OFF	Multicast	1.1Af	TI1050	
2	6			101	LIP-8012D	200	001a7eae884d	10.10.10.12	L	OFF	Multicast	1.1Cd	TI1050	
3	7			102	LIP-8012D	200	001a7eae8969	10.10.10.13	L	OFF	Multicast	1.1Cd	TI1050	
<b>MISC Gateway</b>														
1	3			1 - 10	MISC GW	9	00405a2e6818	10.10.10.2	L	OFF	Multicast	E.5Db	MS828	
<b>VSE Gateway</b>														

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2. SIP Common Attributes Web page
  - a. Enter the IPv4 address for the Primary DNS Address
  - b. Enter other optional attributes including the Secondary DNS.
  - c. Save the configuration

The screenshot shows the iPECS Administration web interface. The left sidebar contains a menu with categories like System ID & Numbering Plans, Station Data, Board Based Data, CO Line Data, System Data, Station Group Data, ISDN Line Data, and SIP Data. The SIP Data section is expanded, showing various attribute tables. The main content area displays the [SIP Attributes] configuration page. It features a table with columns for Order, Attribute, Value, Range, and Remark. The first row, 'Primary DNS Address', is highlighted with a red box. Below this table are sections for 'SIGNAL TLS OPTION' and 'MISCELLANEOUS OPTION', each containing several configuration items with dropdown menus and text input fields. At the bottom, a 'SIP Stack Status : OK' message and a 'Save' button are visible.

Order	Attribute	Value	Range	Remark
1	Primary DNS Address	68.210.52.68	Max 32 Chars	SYSTEM will be restarted after [SAVE]
2	Secondary DNS Address		Max 32 Chars	SYSTEM will be restarted after [SAVE]
3	Local Server UDP Port	5060	Port	SYSTEM will be restarted after [SAVE]
4	Local Server TCP Port	5060	Port	SYSTEM will be restarted after [SAVE]
5	Local Server TLS Port	5061	Port	SYSTEM will be restarted after [SAVE]
6	Check Message Send Timer	120	30-3600 sec	

**SIGNAL TLS OPTION**

7	Crypt Mode	RSA		SYSTEM will be restarted after [SAVE]
8	First TLS	NONE		SYSTEM will be restarted after [SAVE]
9	Second TLS	NONE		SYSTEM will be restarted after [SAVE]
10	Persistent Level	TRANSACTION_USER		SYSTEM will be restarted after [SAVE]
11	Capacity Level	70	0-100	SYSTEM will be restarted after [SAVE]
12	Connection Reuse(TLS)	ON		

**MISCELLANEOUS OPTION**

	OCS Prefix Code		MAX 8 Digits	OCS only
	SIP Pound Use	OFF		
	IP AUTH USAGE	OFF		
	SMS Domain		Max 32 Chars	

**SIP Stack Status : OK**

Save

### 3. SIP User ID Attributes Web page

Enter an index range for the SIP User Attributes Table (1 – 300) and click Load

- Enter the Registration User ID, which is the User ID from Metaswitch (generally the main DN), with the LIK Firewall address as ID@IP address.,
- Enter the Authentication ID and password provided from Metaswitch,
- Set "User ID Register" to 'Provision'; Metaswitch SIP Trunks do not require registration.
- Set User ID Usage to 'On', and
- Select the Ring Route Type to define the routing of incoming calls
  - Extension SIP User Attributes Table Index - SIP User Attribute Table index must be set in item 56 of at least one station.
  - Ring Assignment - CO/IP Line Type must be Normal (PGM 140) and Ring assignment for CO/IP Lines must be set in PGM 144
  - DID Conversion - CO/IP Line Type must be DID (PGM 140), set DID Service Attributes in PGM 145 and, if needed set destinations in Flex table (PGM 231)
- Enter other optional attributes
- Save the configuration

Station SIP Attributes

Enter SIP User ID Index Number:  -  Load Status Save

SIP User ID Index From 1 to 1

Order	Uncheck All	Attribute	Value
1	<input checked="" type="checkbox"/>	Registration User ID	6046981300@sbcc-vail
2	<input checked="" type="checkbox"/>	Authentication User ID	lg-ericsson
3	<input checked="" type="checkbox"/>	Authentication User Password	*****
4	<input checked="" type="checkbox"/>	Contact Number	
5	<input checked="" type="checkbox"/>	Contact Display Name	
6	<input checked="" type="checkbox"/>	Asc Station Number	
7	<input checked="" type="checkbox"/>	User ID Register	Provision
8	<input checked="" type="checkbox"/>	Authorized Representative ID Table Index	0
9	<input checked="" type="checkbox"/>	User ID Usage	ON
10	<input checked="" type="checkbox"/>	Ring Route Type	DID CONVERSION
11	<input checked="" type="checkbox"/>	DID Conversion Type	Modify Using Flexible DID Conversion Table
12	<input checked="" type="checkbox"/>	Number of Digits (2-4) Expected from DID Circuit	3
13	<input checked="" type="checkbox"/>	DID Digit Mask (4 digits: *,#,0-9)	****
14	<input checked="" type="checkbox"/>	SMS Received Station Number	

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#### 4. SIP CO Attribute settings are discussed over the next several pages

##### 4-1. SIP CO Attributes web page

Enter the SIP CO Line number range, see System & Device IP, and click Load

- Enter the Proxy Server IPv4 Address and set "Use Outbound Proxy" to 'On'. If a Proxy is not used, set "Use Outbound Proxy" to OFF.
- Enter the SIP Trunk host domain or IP address,
- Set the Contact Address Domain and From Address Domain to SIP G/W Address,
- If the system is behind a firewall, turn on "Firewall IP Apply"
- Enter other optional SIP CO attributes on the displayed page,
- Scroll down.

MFIM/VD96M-E 5Fa SEP/11  
Boot Version=1.06i MAY/10  
Kernel Version=5.50d  
H/W Issue=3

Find PGM  
Hide Menu

System ID & Numbering Plans  
Station Data  
Board Based Data  
CO Line Data  
System Data  
Station Group Data  
ISDN Line Data  
SIP Data  
SIP Common Attributes(210) [N]  
SIP CO Attributes(133) [N]  
SIP User ID Attributes(126) [N]  
SIP Phone Attributes(211) [N]  
SIP Phone Provisioning(212) [N]  
Provisioning File View&Delete [N]  
VMEX Station Data(215) [N]  
VMEX Connection Table(216) [N]  
Tables Data  
Networking Data  
RSGM Data  
Tnet Data

Administration S/W Upgrade System Management Log Out

[ SIP CO Attributes ]

Please be aware that the SIP Attributes settings are CO line-based in 5.5, instead of gateway-based as they were in 5.0

Enter CO Range :  -  Load

CO Range From 1 To 6

Attribute	Value	Range
Soft Switch Type	Normal	
Proxy Server Address	198.147.226.77	IP Address
Use Outbound Proxy	OFF	
Connection Mode	UDP	
Caller Name Service	USE	
181 Being Forwarded	NOT USE	
100rel support	OFF	
Use single codec only	OFF	
Use rport method	OFF	
Domain	198.147.226.77	Max 32 Chars
Invite Acceptance	From All	
Contact Address Domain	SIP GW Addr	
From Address Domain	Server Domain	
Firewall IP Apply	ON	
Diversion Recursing	Recursing	
DVU Answer Response	200 OK	
RTP Diversion Method	Recursing	
Virtual SIP Channel Mode	No	
Proxy Registration Timer	3600	

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##### Note

The Contact ID defines a direct route to the user that other elements in the SIP signaling path may use for future request. It also provides bindings information during registration.

- 4-2. SIP CO Attributes web page
- Scroll down to display "DTMF Type"
- Set "DTMF Type" to 2833
  - Enter other optional SIP CO attributes on the displayed page,
  - Scroll down

The screenshot shows the iPECS Administration web page. The left sidebar contains a menu with options like System ID & Numbering Plans, Station Data, Board Based Data, CO Line Data, System Data, Station Group Data, ISDN Line Data, SIP Data, Tables Data, Networking Data, RSGM Data, Tnet Data, Zone Data, and Device Login. The main content area is titled 'Administration' and contains a table of SIP CO attributes. The 'DTMF Type' attribute is highlighted with a red box and labeled 'a:'. The table includes sections for Primary Proxy Server, Secondary Proxy Server, ID Presentation Option, ID Individuality, and Offnet Call Route ID Transit.

Attribute	Value	Unit/Description
Diversion Recursing	Recurring	
DVU Answer Response	200 OK	
RTP Diversion Method	Recurring	
Virtual SIP Channel Mode	No	
Proxy Registration Timer	3600	
Proxy Server UDP Port	5060	Port
Proxy Server TCP Port	5060	Port
Proxy Server TLS Port	5061	Port
Registration UID Range		Max 300 Entries
<b>DTMF Type</b>	<b>2833</b>	
Action with REG Failure	IDLE	CO State
Media Port	6000 - 8800	UDP Port
<b>Secondary Proxy Server</b>		
Secondary Proxy Server Address		IP Address
Secondary Domain		Max 32 Chars
Secondary Proxy Server UDP Port	5060	Port
<b>ID Presentation Option</b>		
<b>ID Usage</b>		
P-Asserted-Identity	USE	
Remote-Party-ID	USE	
Privacy(CLIR) Presentation	Anonymous Name & anonymous Number	
<b>ID Individuality</b>		
From ID	Extension Outgoing-CLI	
From Display	SYS RULE	
P-Asserted-Identity	Fixed Table	
Contact ID	Extension Outgoing-CLI	
Remote-Party-ID	Extension Outgoing-CLI	
<b>Offnet Call Route ID Transit</b>		
<b>CO to Offnet Direct Call Route</b>		

Notes:

Action with REG Failure (previously FailOver Usage):

If set to Wait Idle and SIP Registration fails or the ID is not registered, the SIP CO is not available for use and returns reorder tone. Otherwise, the SIP Call Setup FailOver Options below define the call routing.

Secondary Proxy Server

These Admin fields are not presently supported.

### 4-3. SIP CO Attributes web page

Scroll down to display "ID Individuality" section. This section configures SIP identities the system must send to the host for a normal call placed on the SIP trunk. These must be set properly so the system can send well-constructed SIP messages.

- a. Set ID Individuality Ids as follows:

*From ID*: to provide unique IDs for outgoing calls, set to Extension Outgoing-CLI. The stations DID number should be entered as the Station CLI in the Station ISDN Attributes PGM 114 for use as the From ID for calls from the station. For the same id for all calls, set the *From ID* to Fixed ID and set the Fixed Table Assignment below to the proper index in the SIP User Attributes Table.

*From Display*: to provide Caller Name display on outgoing calls, set to Sys Rule. A Name should be entered for the Station Name Display and, in Station ISDN Attributes PGM 114, set COLP Display, CLIP Display and CLI Name Display to 'On'.

*P-Asserted ID*: the proven trusted identity of the sender also used in LIK to reference the SIP User Attribute Table index with the proper Authentication credentials. Set *P-Asserted ID* to Fixed ID and set the Fixed Table Assignment below to the proper index in the SIP User Attributes Table. This can also be achieved by setting *P-Asserted ID* to Extension SIP-User-ID-Table and entering the proper index in item 56 in Station Attributes.

*Contact ID*: to provide an accurate direct contact, set the *Contact ID* to the Extension Outgoing CLI, the domain is the Contact Address Domain and should be VoIP Gateway Address. See section 4.1.

*Remote Party ID*: is a rarely used privacy header that can be set to the Extension Outgoing CLI option,

- b. Enter other optional SIP CO attributes on the displayed page,
- c. Scroll down.

The screenshot shows the iPECS Administration web interface. The left sidebar contains a menu with categories like System ID & Numbering Plans, Station Data, Board Based Data, CO Line Data, System Data, Station Group Data, ISDN Line Data, SIP Data, Tables Data, Networking Data, RSGM Data, and Tnet Data. The 'SIP Data' category is expanded, showing 'SIP CO Attributes(133) [N]' as the selected item.

The main content area displays the 'SIP CO Attributes' configuration page. At the top, there are tabs for 'Administration', 'S/W Upgrade', and 'System Management'. Below these, there are sections for 'ID Presentation Option', 'ID Individuality', 'Offnet Call Route ID Transit', 'CO to Offnet Direct Call Route', 'Offnet Call Forward by Station', and 'Mobile Extension External Call'.

The 'ID Individuality' section is highlighted with a red box. It contains the following rows:

ID Usage	
<input checked="" type="checkbox"/> P-Asserted-Identity	USE
<input checked="" type="checkbox"/> Remote-Party-ID	USE
<input checked="" type="checkbox"/> Privacy(CLR) Presentation	Anonymous Name & anonymous Number

Below this, the 'ID Individuality' section contains the following rows:

<input checked="" type="checkbox"/> From ID	Extension Outgoing-CLI
<input checked="" type="checkbox"/> From Display	SYS RULE
<input checked="" type="checkbox"/> P-Asserted-Identity	Fixed Table
<input checked="" type="checkbox"/> Contact ID	Extension Outgoing-CLI
<input checked="" type="checkbox"/> Remote-Party-ID	Extension Outgoing-CLI

A red box highlights the 'P-Asserted-Identity' row in the 'ID Individuality' section, and a red 'a:' label points to it.

The bottom of the page shows the copyright notice: 'Copyright (C) 2010 by LG-Ericsson Co., Ltd. All Rights Reserved.'

#### 4-4. SIP CO Attributes Web page

Scroll down to display Fixed Table Assignment

- Enter the SIP User ID Attribute Table index (PGM 126) for the Fixed Table Assignment,
- Enter other optional SIP CO attributes on the displayed page,
- Scroll down

The screenshot shows the iPECS Administration web interface. The left sidebar contains a menu with categories like System ID & Numbering Plans, Station Data, Board Based Data, CO Line Data, System Data, Station Group Data, ISDN Line Data, SIP Data, Tables Data, Networking Data, RSGM Data, Tnet Data, Zone Data, and Device Login. The 'SIP Data' category is expanded, showing various SIP-related configuration options. The 'SIP CO Attributes(133) [N]' option is selected. The main content area displays the 'SIP CO Attributes' configuration page. The 'Fixed Table Assignment' section is highlighted with a red box, showing 'SIP User ID Table Index' set to '1'. Other sections include 'External CODEC Priority Configuration', 'SIP Call Setup FailOver Option', 'SIP Session Timer', 'URI Formatting and Rules', and 'Specific Formatting by Conversion'.

Attribute	Value	
From Contact ID	EXT	
From Display	SYS RULE	
P-Asserted-Identity	EXT	
Remote-Party-ID	EXT	
Diversion	NOT USE	
<b>Fixed Table Assignment</b>		
SIP User ID Table Index	1	
<b>External CODEC Priority Configuration</b>		
1st.priority	none	
2nd.priority	none	
3rd.priority	none	
4th.priority	none	
5th.priority	none	
<b>SIP Call Setup FailOver Option</b>		
Call Setup No Response Time	5	0, 3 - 15 Sec.
FailOver CO Group Number		1 - 73 CO Group
<b>SIP Session Timer</b>		
Session Timer Usage	OFF	
Session Timer Value	1800	90 - 3600 Sec.
Min SE	90	90 - 3600 Sec.
<b>URI Formatting and Rules</b>		
<b>General Formatting</b>		
To Field Method	sip: method	
Numbering Format	Local	
Local: include Area Code	NO	
Global: include phone-context	NO	
<b>Specific Formatting by Conversion</b>		
Numbering Case #1: From (4 dgt)	>	> To (6 dgt)
Numbering Case #2: From (4 dgt)	>	> To (6 dgt)

Notes:

Codec:

This section defines the priority for the various available Codecs selected from the drop-down menu.

#### SIP Call Setup FailOver Options

This section establishes the Fail-over routing when enabled (see "Action with REG Failure") and no response is received for a SIP Invite (the call setup fails).

#### 4-5. SIP CO Attributes web page

Scroll down to the bottom of page

- Set the Caller ID selection to "From ID", generally the received From ID contains the "Display Name" for an incoming call. To display the Name for an incoming call, in Station ISDN Attributes PGM 114, set COLP Display, CLIP Display and CLI Name display to 'On'.
- Save the configuration

The screenshot shows the iPECS Administration web interface. The left sidebar contains a navigation menu with categories like System ID & Numbering Plans, Station Data, Board Based Data, CO Line Data, System Data, Station Group Data, ISDN Line Data, SIP Data (highlighted), Tables Data, Networking Data, RSGM Data, Tnet Data, Zone Data, and Device Login. The main content area is titled 'Administration' and contains various configuration sections. The 'SIP Session Timer' section includes 'Session Timer Usage' (OFF), 'Session Timer Value' (1800), and 'Min SE' (90). The 'URI Formatting and Rules' section includes 'General Formatting' (To Field Method: sip: method, Numbering Format: Local, Local: include Area Code: NO, Global: include phone-context: NO) and 'Specific Formatting by Conversion' (Numbering Case #1 to #6). The 'SRTP SETTING' section includes 'SRTP Usage' (OFF), '1ST CRYPTO' (NONE), and '2ND CRYPTO' (NONE). The 'Incoming Caller ID' section includes 'Caller ID Selection' (From ID) and 'OutOfResource Reply' (486). The 'Miscellaneous set' section includes 'Save', 'Register', and 'UnRegister' buttons. A red box highlights the 'Caller ID Selection' dropdown, and a red 'a:' label points to it.

NOTE - There is no need to Register; Metaswitch SIP trunks employ a fixed binding.

5. Other System Admin that may need attention based on the SIP Trunk configuration:
  - A. Station Attributes  
Item 56 - SIP User ID Table Index, if "Extension SIP User ID Table is select for any ID, a valid index must be set.
  - B. Station ISDN Attributes:  
Item 1 - COLP Display, set to On  
Item 2 - CLIP Display, set to On  
Item 6 - Station CLI, set to station DID number  
Item 8 - CLI Name Display, set to On
  - C. Station Name Display
  - D. CO/IP Attributes:  
CO Type, set to DID  
CO/IP Group
  - E. CO Ring Assignments
  - F. DID Service Attributes
  - G. ISDN CO Line Attributes  
COLP Table Index, set to Station CLI  
CLIP Table Index, set to Station CLI  
Enblock Sending, set to On  
Station CLI Type, set to Station CLI 1
  - H. DID Flex Conversion Table

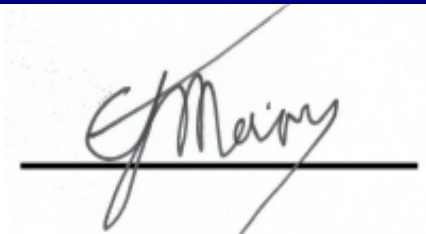


**PARTNER CERTIFIED SOLUTION**

*I hereby certify that*

**LG Ericsson LIK version LIK5.5Fc SIP protocol with MetaSphere CFS version 7.3**

has been demonstrated to have  
successfully completed the  
Metaswitch  
Networks Interoperability Test

A handwritten signature in black ink, appearing to read "Chris Mairs", is written over a solid black horizontal line.

Chris Mairs  
Chief Technology Officer

**12/5/2011**

Certification subject to any detailed restrictions listed at [www.metaswitch.com](http://www.metaswitch.com).