
SIP Trunking with Multiple IP Support

This article describes the steps necessary to configure the SBC Edge (SBC) for SIP Trunking using **Multiple IP Interface** support – available in since UX Release 1.0.2:

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Use Case Scenario

A typical use case scenario for the Multiple IP Interface support is:

The SBC is connected to both a public network and a private (Enterprise) network, acting as a Session Border Controller (SBC) which effectively hides the topologies, IP addressing, signaling attributes and policies established between these two networks from each other. Calls from one network to the other are terminated on SBC (i.e. at the network border) and SBC establishes a different call on the other network, and enables end-to-end conversation.

In this example, the SIP trunking provider and the SBC are connected using the 10.51.100.x network. The enterprise has a IP range of 134.56.225.x. The SBC's main application bridge is configured to 134.56.225.202 which is the default interface and has the default IP route pointing to it. The signaling and media packets for calls to and from OCS and LAN-1 endpoints will use 134.56.225.202 as the IP address of SBC.

When calls are established over the SIP trunk, LAN-2 interface is used. In this case the SIP calls must use the interface IP of 10.51.100.89 for the SIP messaging, SIP source IP address and RTP source IP address. This allows SBC to bridge the networks for calls and not simply route the IP packets.

The cleanest solution is to configure a single [SIP Signaling Group](#) for each network. The SIP SG pointing towards the ISP network should refer to LAN-2 interface. LAN-2 should be placed in ROUTED mode with an IP address in the 10.51.100.89/24 range. The SIP SG pointing to the Enterprise network should use the Application-IP interface, which is the default.

Topology

SBC Configuration

This article assumes that a **PSTN - SBC - OCS 2007 R2** configuration is already in place, therefore it is unnecessary to configure Media Profiles, Media List, SIP Profiles, SIP Server Tables, Tone Table, Telephony Mapping Table in this exercise.

From the SIP Trunking with Multiple IP configuration point of view, the following items must be configured in the SBC:

- [LAN Port 2/Ethernet 2 IP](#)
- [Translation Table](#)
- [Call Routing Table](#)
- [Signaling Group](#)

LAN Port 2/Ethernet 2 IP

Sonus SBC 2000

Configure the public IP address 10.51.100.89 in the SBC. In the WebUI, access **Tasks** and select **Modify Ethernet IP Address**.

Figure 1: Modify Ethernet IP

The screenshot shows the 'Modify Ethernet IP' web interface. The page title is 'Modify Ethernet IP' and the timestamp is 'October 10, 2014 08:53:57'. There are two main sections: 'Ethernet 1 IP Setup' and 'Ethernet 2 IP Setup'.
In the 'Ethernet 1 IP Setup' section:
- IP Assign Method: Static
- Primary Address: 192.168.20.168
- Primary Netmask: 255.255.255.0
- Configure Secondary Interface: Disabled
In the 'Ethernet 2 IP Setup' section:
- Configure Ethernet 2 IP: Yes
- IP Assign Method: Static
- Primary Address: 10.51.100.89
- Primary Netmask: 255.255.255.0
- Configure Secondary Interface: Disabled

i The LAN Port 1 134.56.225.202 is already configured on the node which you'd be using to URL into WebUI. Following screenshot depicts the verification of LAN 1 configuration:

Sonus SBC 1000

Configure the public IP address of 10.51.100.89 in the SBC. In the WebUI, access **Tasks** and select **Modify Ethernet IP Address**.

Figure 2: Modify Ethernet IP

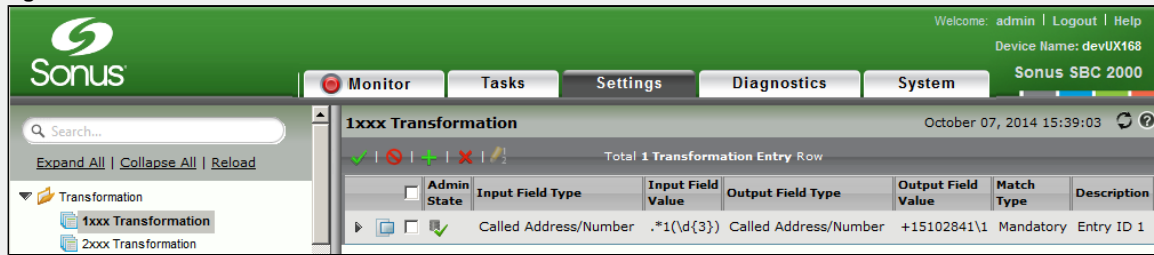
The screenshot shows the 'Modify Ethernet IP' web interface. The page title is 'Modify Ethernet IP' and the timestamp is 'March 20, 2013 11:54:14'. There are two main sections: 'Ethernet 1 IP Setup' and 'Ethernet 2 IP Setup'.
In the 'Ethernet 1 IP Setup' section:
- IP Assign Method: Static
- Primary Address: 192.168.28.62
- Primary Netmask: 255.255.255.0
- Configure Secondary Interface: Disabled
In the 'Ethernet 2 IP Setup' section:
- Configure Ethernet 2 IP: Yes
- IP Assign Method: Static
- Primary Address: 10.51.100.89
- Primary Netmask: 255.255.255.0
- Configure Secondary Interface: Disabled

Transformation Table

There are 4 different transformations used in this exercise:

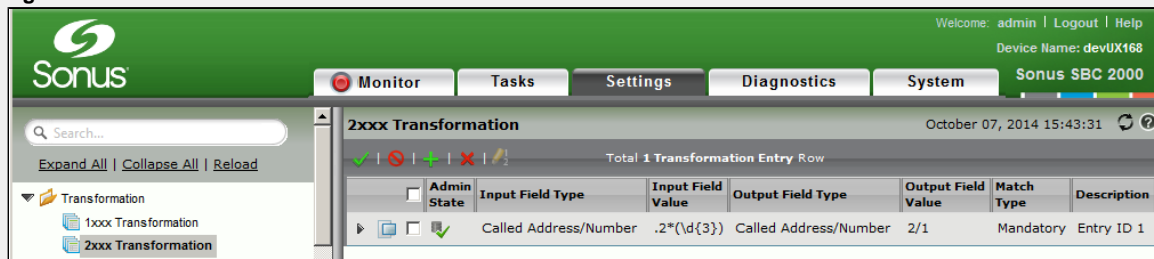
Translation table for OCS (1xxx) extensions

Figure 3: 1xxx Transformation



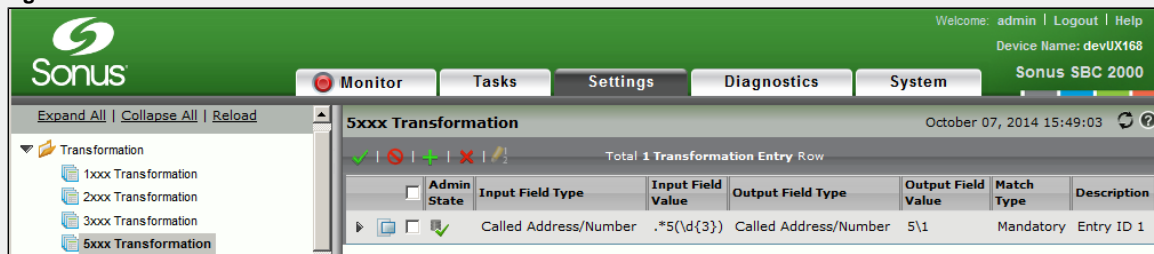
Translation table for LAN-1 (2xxx) extensions

Figure 4: 2xxx Transformation



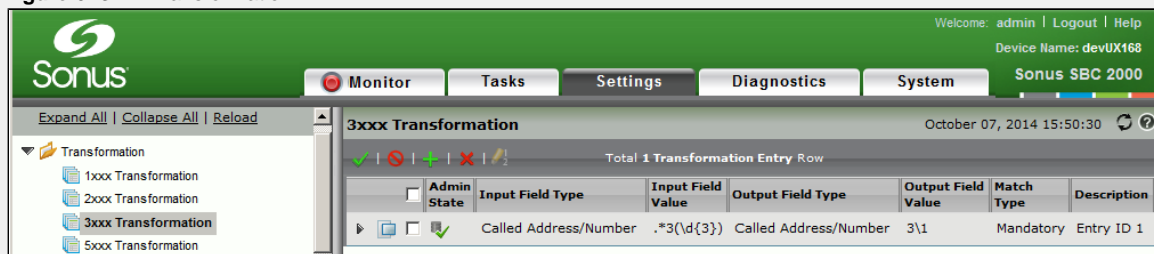
Translation table for LAN-2 (5xxx) extensions

Figure 5: 5xxx Transformation



Translation table for PSTN (3xxx) extensions

Figure 6: 3xxx Transformation



Call Routing Tables

There are 3 different Call Routing Table entries used in this exercise:

Routing Calls from OCS Endpoints

Figure 7: Routing Calls From OCS Endpoints

The screenshot shows the Sonus SBC 2000 web interface. The left sidebar lists various call routing tables, with 'From OCS Devices' selected. The main panel displays a table titled 'From OCS Devices' with the following data:

Admin State	Priority	Transformation Table	First Signaling Group	Description	Fork Call
<input checked="" type="checkbox"/>	1	1xxx Transformation	(SIP) SG for OCS	Entry ID 1	No
<input checked="" type="checkbox"/>	1	3xxx Transformation	(ISDN) ISDN SG for E1	Entry ID 2	No
<input checked="" type="checkbox"/>	1	2xxx Transformation	(SIP) LAN-1 Devices	Entry ID 3	No
<input checked="" type="checkbox"/>	1	5xxx Transformation	(SIP) LAN-2 Devices	Entry ID 4	No

Routing Calls from Multiple IP Endpoints (LAN-1 and LAN-2 endpoints)

Figure 8: Routing Calls From Multiple IP Endpoints

The screenshot shows the Sonus SBC 2000 web interface. The left sidebar lists various call routing tables, with 'From Multiple IP CR' selected. The main panel displays a table titled 'From Multiple IP CR' with the following data:

Admin State	Priority	Transformation Table	First Signaling Group	Description	Fork Call
<input checked="" type="checkbox"/>	1	1xxx Transformation	(SIP) SG for OCS	Entry ID 1	No
<input checked="" type="checkbox"/>	1	2xxx Transformation	(SIP) LAN-1 Devices	Entry ID 2	No
<input checked="" type="checkbox"/>	1	3xxx Transformation	(ISDN) ISDN SG for E1	Entry ID 3	No
<input checked="" type="checkbox"/>	1	5xxx Transformation	(SIP) LAN-2 Devices	Entry ID 4	No

Routing Calls from PSTN Endpoints

Figure 9: Routing Calls From PSTN Endpoints

The screenshot shows the Sonus SBC 2000 web interface. The top navigation bar includes 'Monitor', 'Tasks', 'Settings', 'Diagnostics', and 'System'. The left sidebar lists various call routing options, with 'From PSTN Devices' selected. The main content area displays a table titled 'From PSTN Devices' with the following data:

Admin State	Priority	Transformation Table	First Signaling Group	Description	Fork Call
<input checked="" type="checkbox"/>	1	1xxx Transformation	(SIP) SG for OCS	Entry ID 1	No
<input checked="" type="checkbox"/>	1	5xxx Transformation	(SIP) LAN-2 Devices	Entry ID 2	No
<input checked="" type="checkbox"/>	1	3xxx Transformation	(ISDN) ISDN SG for E1	Entry ID 3	No
<input checked="" type="checkbox"/>	1	2xxx Transformation	(SIP) LAN-1 Devices	Entry ID 4	No

Signaling Groups

Signaling Groups for OCS

Figure 10: Signaling Groups for OCS

Create SIP Signaling Group
November 14, 2014 14:50:37

Description

Admin State

SIP Channels and Routing

Action Set Table

Call Routing Table

No. of Channels * [1..960]

SIP Profile

SIP Mode

Agent Type

SIP Server Table

Load Balancing

Channel Hunting

Notify Lync CAC Profile

Challenge Request

Outbound Proxy

Outbound Proxy Port [1024..65535]

No Channel Available Override

Call Setup Response Timer [180..750] secs

QoE Reporting

Media Information

Audio/Fax Stream Proxy Mode

Audio/Fax Stream DSP Mode

Video/Application Stream Proxy Mode

Media List ID

Play Ringback

Tone Table

Early 183

Music on Hold

Mapping Tables

SIP To Q.850 Override Table

Q.850 To SIP Override Table

Pass-thru Peer SIP Response Code

SIP IP Details

NAT Traversal

Signaling/Media Source IP

Signaling DSCP * [0..63]

Listen Ports

Total 2 SIP Listen Port Rows

	Port	Protocol	TLS Profile ID
<input type="checkbox"/>	5060	UDP	N/A
<input type="checkbox"/>	5060	TCP	N/A
<input type="checkbox"/>	5061	TCP	N/A

Federated IP/FQDN

Total 0 SIP Federated IP Rows

	IP/FQDN	Netmask
<input type="checkbox"/>	134.56.225.162	255.255.255.255

Message Manipulation

Signaling Groups for LAN-1 endpoints

Figure 11: Signaling Groups for LAN-1 Endpoints

Create SIP Signaling Group
November 14, 2014 14:50:37

Description

Admin State

SIP Channels and Routing

Action Set Table

Call Routing Table

No. of Channels * [1..960]

SIP Profile

SIP Mode

Registrar

Agent Type

Registrar Min. TTL * secs[60..86400]

Load Balancing

Channel Hunting

Notify Lync CAC Profile

Challenge Request

Outbound Proxy

Outbound Proxy Port [1024..65535]

No Channel Available Override

Call Setup Response Timer [180..750] secs

QoE Reporting

Media Information

Audio/Fax Stream Proxy Mode

Audio/Fax Stream DSP Mode

Video/Application Stream Proxy Mode

Media List ID

Play Ringback

Tone Table

Early 183

Music on Hold

Mapping Tables

SIP To Q.850 Override Table

Q.850 To SIP Override Table

Pass-thru Peer SIP Response Code

SIP IP Details

NAT Traversal

Signaling/Media Source IP

Signaling DSCP * [0..63]

Listen Ports

Total 2 SIP Listen Port Rows

	Port	Protocol	TLS Profile ID
<input type="checkbox"/>	5060	UDP	N/A
<input type="checkbox"/>	5060	TCP	N/A

Federated IP/FQDN

Total 0 SIP Federated IP Rows

	IP/FQDN	Netmask
<input type="checkbox"/>	134.56.0.0	255.255.255.255

Message Manipulation

Signaling Groups for LAN-2 endpoints

This signaling group refers to the IP subnet used between SBC and the SIP trunking provider. There are two subcases here.

If there is a NAT device between SBC and the SIP-trunking peer, then **NAT Traversal** must be set to **STATIC NAT** and the public IP address of the NAT 20.40.60.89 must be specified as the **Application IP**. In addition, the NAT device should be configured such that it translates between the private address of 10.51.100.89 and the public address of 20.40.60.89.

If there is no NAT device between SBC and the SIP-trunking peer, then **NAT Traversal** must be set to **NONE** as shown below:

Figure 12: Signaling Groups for LAN-2 Endpoints

Create SIP Signaling Group
November 14, 2014 14:50:37

Description

Admin State

SIP Channels and Routing

Action Set Table

Call Routing Table

No. of Channels * [1..960]

SIP Profile

SIP Mode

Registrar

Agent Type

Registrar Min. TTL * secs[60..86400]

Load Balancing

Channel Hunting

Notify Lync CAC Profile

Challenge Request

Outbound Proxy

Outbound Proxy Port [1024..65535]

No Channel Available Override

Call Setup Response Timer [180..750] secs

QoE Reporting

Media Information

Audio/Fax Stream Proxy Mode

Audio/Fax Stream DSP Mode

Video/Application Stream Proxy Mode

Media List ID

Play Ringback

Tone Table

Early 183

Music on Hold

Mapping Tables

SIP To Q.850 Override Table

Q.850 To SIP Override Table

Pass-thru Peer SIP Response Code

SIP IP Details

NAT Traversal

Signaling/Media Source IP

Signaling DSCP * [0..63]

Listen Ports

Total 2 SIP Listen Port Rows

	Port	Protocol	TLS Profile ID
<input type="checkbox"/>	5060	UDP	N/A
<input type="checkbox"/>	5060	TCP	N/A

Federated IP/FQDN

Total 0 SIP Federated IP Rows

	IP/FQDN	Netmask
<input type="checkbox"/>	10.51.100.0	255.255.255.255
<input type="checkbox"/>	20.40.60.0	255.255.255.255

Message Manipulation

Signaling Group for PSTN endpoints

Figure 13: Signaling Group for PSTN Endpoints

Create ISDN Signaling Group
November 14, 2014 15:07:5

Description

Admin State Enabled

Channels and Routing

Channel Hunting Reverse Standard

Direction Bidirectional

Tone Table SBC-OCS Tone Table
Ringback *

Action Set Table None

Call Routing Table From PSTN Devices *

No Channel Available Override 34: No Circuit/Channel Available

Play Inband Message Post-Disconnect No

Call Setup Response Timer 255 [180..750] secs

Port and Protocol

Port Name (E1) Port 1:8
*

Fractional No

Switch Variant Euro ISDN

ISDN Side User

Play Ringback Auto

Overlap Receive Mode Disabled

Overlap Send Mode Disabled

Stop Far-End T310 Disabled

Indicated Channel Exclusive

Switch Specific Parameters

Send Calling Name Disabled

Add Progress Indicator To Setup None

Send Facility Message Passthrough Enabled

Send Redirecting Number in Facility Disabled

Include Channel Interface Identifier Disabled

Channel Number Bit Set

Timeout/Timer Settings

T301	<input style="width: 40px;" type="text" value="180"/>	<small>[1..255] secs</small>
T302	<input style="width: 40px;" type="text" value="15"/>	<small>[1..255] secs</small>
T303	<input style="width: 40px;" type="text" value="4"/>	<small>[1..255] secs</small>
T305	<input style="width: 40px;" type="text" value="30"/>	<small>[1..255] secs</small>
T308	<input style="width: 40px;" type="text" value="4"/>	<small>[1..255] secs</small>
T309	<input style="width: 40px;" type="text" value="6"/>	<small>[1..255] secs</small>
T310	<input style="width: 40px;" type="text" value="30"/>	<small>[1..255] secs</small>
T313	<input style="width: 40px;" type="text" value="4"/>	<small>[1..255] secs</small>
T314	<input style="width: 40px;" type="text" value="4"/>	<small>[1..255] secs</small>
T316	<input style="width: 40px;" type="text" value="120"/>	<small>[1..255] secs</small>
T322	<input style="width: 40px;" type="text" value="4"/>	<small>[1..255] secs</small>

Additional Configuration step for Sonus SBC SWe Lite

Adding Static IP Routes

The previous steps complete the necessary configuration requirements for implementing the Multiple IP feature on SBC Edge 1000/2000. However, if deploying a Sonus SBC SWE Lite, in addition to previous steps perform the following step to complete the Multiple IP feature support on Sonus SBC SWE Lite.



Note

All end-points located in a private or public network must be reachable through a next-hop gateway, as driven by the network environment.

Figure 14: Modifying Ethernet IP

The screenshot shows the Sonus configuration interface. The left sidebar contains a tree view with 'Protocols' expanded to 'IP', where 'Static Routes' is selected. The main area displays the 'Static IP Route Table' with a table containing two rows of route information.

Row ID	Destination IP	Mask	Gateway
1	134.56.225.0	255.255.255.0	134.56.225.5
2	10.56.100.0	255.255.255.0	10.56.100.1

