Configuration Note

Multi Service Business Routers Product Series

Mediant MSBR

Simplifying Network Configuration

Version 7.2

audiocodes

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Abbreviations and Terminology

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Related Documentation

Document Name
MSBR CLI Reference Guide
Mediant 500 MSBR User's Manual
Mediant 500L MSBR User's Manual
Mediant 800 MSBR User's Manual

Document Revision Record

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31940	Initial document release for Version 7.2.
31942	Max. VoIP-to-network binding interfaces.
31943	Limitations of VoIP-to-Network Binding.

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1 Introduction

Until now, the Mediant MSBR has been configured as two separate networking stacks with separate physical IP interfaces for 'Data' and 'Voice'. The user had to link applications, such as VoIP, Syslog, NTP and management to one of these networking stacks, and then make sure that connectivity had been properly configured. Now the MSBR can be configured as a single networking mode i.e. with a single IP interface with the capability to link applications, such as VoIP to run over this stack. Consequently this configuration (available from 6.80A.335) mode provides a much easy method to link services and applications.

To configure this new mode:

1. Restore the device to factory default settings.
2. Reset the device.
3. Configure the device with the following command settings:

```
configure network
  network-settings
    single-net-mode enable
```

4. Reset the device.

Once the unit has restarted, you will notice no more networking elements on the VoIP side, i.e. an IP interface is not configured on the VoIP side and instead, VoIP is now an application on top of the router stack comprising an SBC/gateway.

This operation mode is static, which implies that the "write factory" command cannot restore the configuration to dual network mode.

1.1 What you Need to Know?

To understand the configuration of the single network mode, the following elements are considered:

- The networking stack
- The applications
- The linking between the above elements

The router networking configuration and applications configuration has not changed. However, you now need to know how to bind the VoIP applications over the networking stack and to link other applications to the stack.

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2 Overview

This chapter provides an overview for the networking concepts that are described in this document.

2.1 VoIP Applications

The following key networking concepts are discussed in this document:

- VoIP over WAN – A group of IP interfaces from which a single interface is dynamically selected through which to send the VoIP traffic.
- VoIP over LAN – An explicit IP interface through which to send the VoIP traffic.

2.2 VoIP over WAN

Configuring the VoIP application to work over a group or pool of interfaces comprising the 'WAN' side is done as shown in the following example:

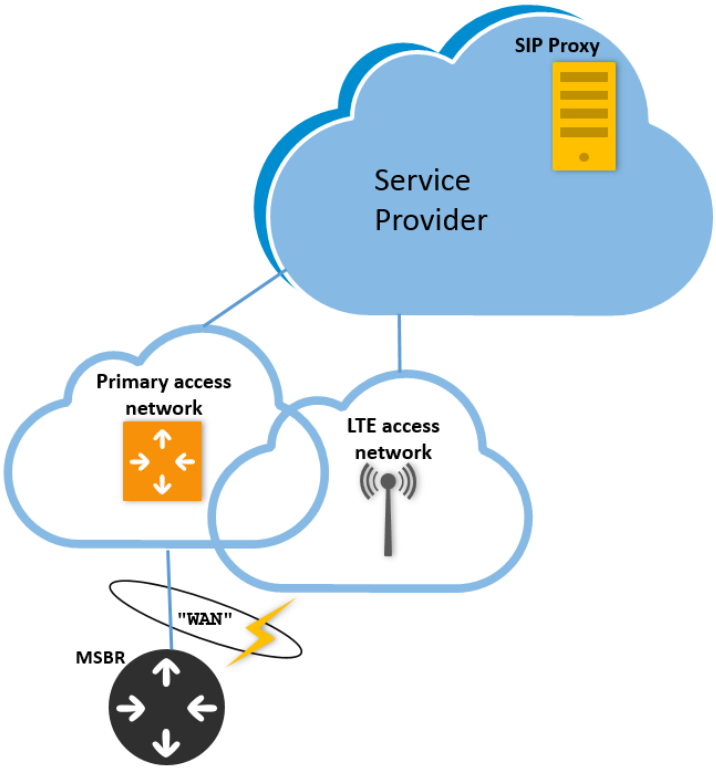
```
realm 1
name "MR_WAN"
ipv4if "WAN"
port-range-start 6000
session-leg 100
port-range-end 6990
activate
exit

sip-interface 1
interface-name "SIP_WAN"
network-interface "WAN"
application-type sbc
srd-name WAN_SRD
media-realm-name "MR_WAN"
activate
exit
```

This above configuration shows the use of the bolded keywords which represent a pool of WAN interfaces that can be used by the VoIP application. Full configuration examples are shown later in this document.

In the above example, the VoIP application searches for the proxy IP address through its pool of WAN interfaces, and decides over which WAN interface to run the voice traffic. Using this "WAN" concept, flexibility is maintained to choose from which interface to send the voice traffic. For example, failover from the primary interface to the 4G network interface.

The figure below illustrates an example scenario for VoIP over WAN.

Figure 2-1: VoIP over WAN



The WAN concept supports all the router options, including configuring of the VoIP application in a VRF mode:

```
realm 1
 name "MR_WAN"
 ipv4if "WAN VRF VoiceVRF"
 port-range-start 6000
 session-leg 100
 port-range-end 6990
 activate
exit


 sip-interface 1
 interface-name "SIP_WAN"
 network-interface "WAN VRF VoiceVRF"
 application-type sbc
 srd-name WAN_SRD
 media-realm-name "MR_WAN"
 activate
exit
```

2.3 VoIP over LAN

Configuring the VoIP application over a LAN interface differs from the WAN interface configuration described in Section 2.2. For VoIP over LAN, you only need to specify the router's LAN interface that you wish to attach the VoIP interface, which can be either a specific VLAN (for example 'VLAN 2') or a bridge Interface (for example 'BVI 1'):

```
   realm 2
    name "MR_LAN"
    ipv4if "VLAN 2"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit

   sip-interface 2
    interface-name "SIP_LAN"
    network-interface "VLAN 2"
    application-type sbc
    srd-name LAN_SRD
    media-realm-name "MR_LAN"
    activate
   exit
```

VLAN 2 is the router's VLAN 2:

```
configure data
  interface vlan 2
    ip address 192.168.1.1 255.255.255.0
    no shutdown
  exit
```

The application in this case searches for the VLAN IP address through which to run the traffic.

```
# show network voip-bindings

VoIP Applications to Network source bindings:
---------------------------------------------
VoIP bind to IPv4 VLAN 2 with ip address 192.168.1.1

VoIP bind to IPv4 WAN on VRF main-vrf with destination address
20.20.20.20,
  Current WAN interface is GigabitEthernet 0/0 with ip address
10.11.2.150

Interface VLAN 2 is bind to 169.254.254.218 for VoIP traffic
     udp Ports 6000 - 6999
     udp Ports 5060 - 5060
     tcp Ports 5060 - 5060
     tcp Ports 5061 - 5061

NAT & Port FW rules used by VoIP Applications:
```

```
-----------------------------------------------

The following WAN ports are in use by VOIP services:
    Ports 5060 - 5060 --> SIPUDP#219
    Ports 5060 - 5060 --> SIPLISTENING#0
    Ports 5061 - 5061 --> SIPLISTENING#0
The following NAT rules are in effect for VOIP services:
    SIPUDP#219: LAN ports 5060-5060 to WAN IP 10.11.2.150 ports 5060-
5060, interface GigabitEthernet 0/0
    SIPLISTENING#0: LAN ports 5060-5060 to WAN IP 10.11.2.150 ports 5060-
5060, interface GigabitEthernet 0/0
    SIPLISTENING#0: LAN ports 5061-5061 to WAN IP 10.11.2.150 ports 5061-
5061, interface GigabitEthernet 0/0
```

2.4 Limitations of VoIP-to-Network Binding

The following limitations exist for VoIP-to-network bindings (LAN and WAN):

- Configuration of up to **8** binding interfaces. You can verify which network interfaces are bound to the VoIP application, using the CLI command `show network voip-bindings`.

Note: If the interface name includes the "WAN" keyword, then this interface cannot be deleted.

- When setting up more than one IP address for an interface (configuring a secondary IP), network binding works only on the primary IP.
- When setting up more than one VRRP IP for an interface (secondary IP), VRRP works only on the primary IP (when the interface is set with VRRP, the primary VRRP group address is preferred over the local address of the interface).

2.5 Example Scenarios

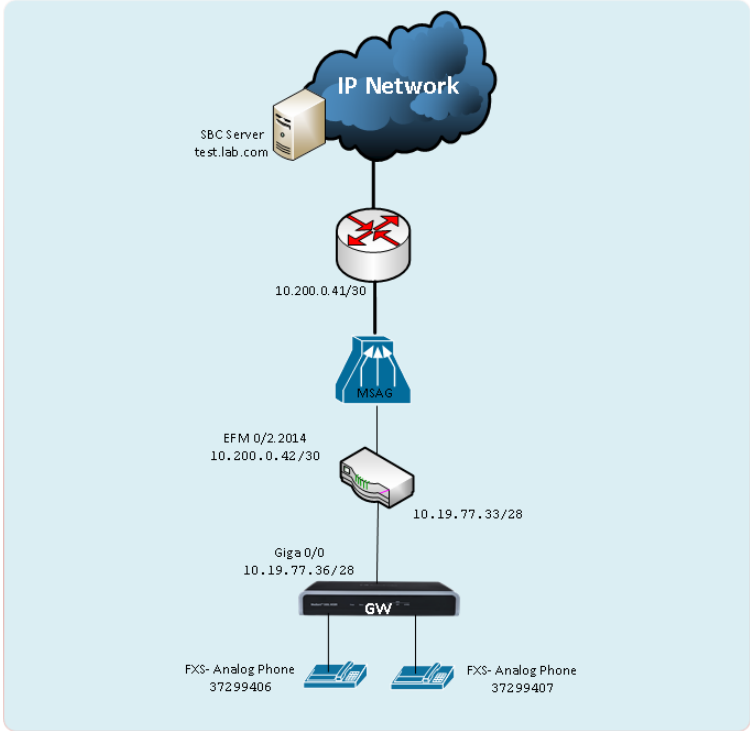
This document includes the following example scenarios:

- MSBR Router with Voice Application (using Proxy Server)
- MSBR Router with Voice Application (using Tel-to-IP Routing
- MSBR with SBC
- MSBR with SBC Application (using LLDP Intercept Feature and IPv4)
- MSBR Voice and SBC Applications with IPv6 Interface
- MSBR Voice and SBC Applications with Loopback Interface
- MSBR Voice and SBC Applications with VRF Interface
- Dual MSBRs with Voice and SBC Applications and VRRP

3 MSBR Router with Voice Application (using Proxy Server)

This example scenario shows how to route calls when the MSBR is configured as a simple voice application using a Proxy server and basic router configuration.

Figure 3-1: Gateway (Using Proxy) Scenario



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3.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the “write factory” command cannot restore the configuration to Dual network mode.

3.2 MSBR Data Configuration (Entire Configuration)

This section describes the data configuration.

3.2.1 Setting WAN IP Address

```
interface GigabitEthernet 0/0
    ip address 10.19.77.36 255.255.255.240
    mtu auto
    desc "WAN Copper"
    no ipv6 enable
    no service dhcp
    ip dns server static
    ip name-server 172.30.9.162 172.30.9.163
    napt
    firewall enable
    no shutdown
   exit
```

3.2.2 Setting Static IP Route

```
ip route 0.0.0.0 0.0.0.0 10.19.77.33 GigabitEthernet 0/0 1
```

3.3 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

3.3.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

3.3.2 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

```
realm 1
 name "MR_WAN"
 ipv4if "WAN"
 port-range-start 6000
 session-leg 100
 port-range-end 6990
 activate
exit
```

3.3.3 Creating WAN SRD and Assigning Media Realm WAN

```
srd 1
 name "SRD_WAN"
 activate
exit
```

3.3.4 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN

```
sip-interface 1
   interface-name "SIP_WAN"
   network-interface "WAN"
   srd-name "SRD_WAN"
   media-realm-name "MR_WAN"
   activate
  exit
```

3.3.5 Assigning Proxy Set 2 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "SRD_WAN"
   gwipv4-sip-int-name "SIP_WAN"
   activate
   proxy-ip 0
    proxy-address "test.lab.com"
    activate
   exit
  exit
```

3.3.6 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "SRD_WAN"
   media-realm-name "MR_WAN"
   activate
  exit
```

3.3.7 Enabling Registration

```
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
   exit
```

3.3.8 Setting an Extension

```
gateway trunk-group 0
   trunk-group-id 1
   first-b-channel 1
   last-b-channel 1
   first-phone-number "37299406"
   module 2
   activate
  exit
 gateway analog authentication 0
   user-name "37299406"
   password 2uvr7O2Bs4GP obscured
   activate
  exit
```

3.3.9 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
   trunk-group-id 1
   activate
  exit
```

3.3.10 Setting Hunt Group

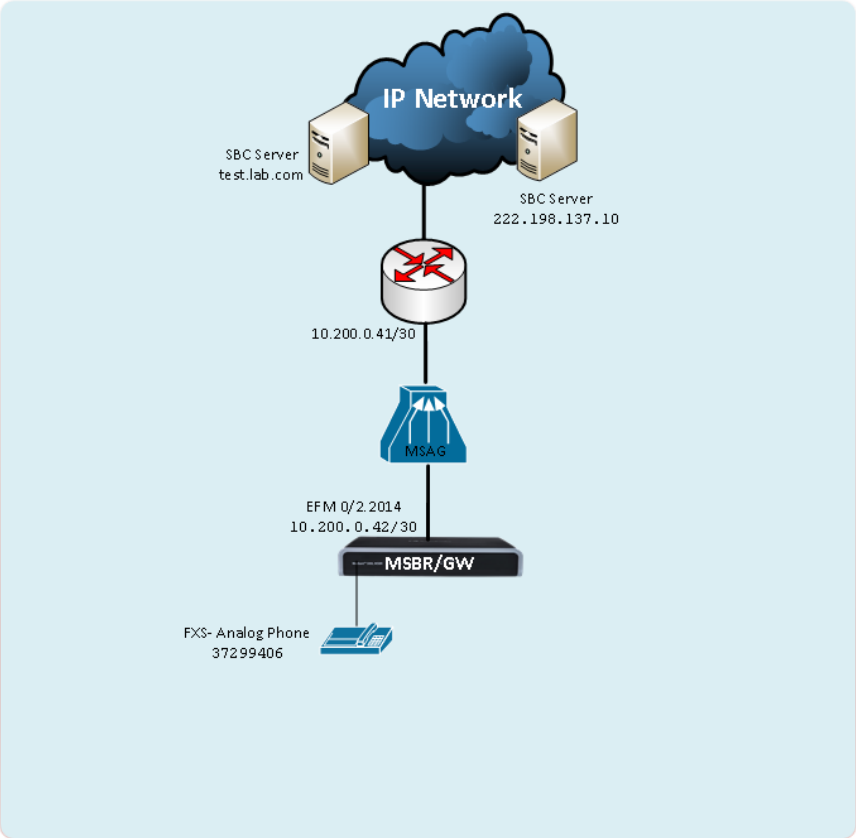
```
gateway trunk-group-setting 0
   trunk-group-id 1
   channel-select-mode dst-phone-number
   registration-mode per-endpoint
   serving-ip-group-name "BroadSoft"
   activate
  exit
```

4 MSBR Router with Voice Application (using Tel-to-IP Routing Table)

This example scenario shows how to route calls when the MSBR is configured as a voice application using the Tel-to-IP table and a basic router configuration.

Note: The Proxy server is only used in this scenario for the WAN binding to take effect. The calls will be routed according to the Tel-to-IP routing table.

Figure 4-1: Gateway Using Tel-to-IP Routing Table



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4.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the "write factory" command cannot restore the configuration to Dual network mode.

4.2 MSBR Data Configuration (Entire Configuration)

This section describes the data configuration.

4.2.1 Setting WAN IP Address

```
interface dsl 0/2
   #DSL configuration is automatic
   #Termination cpe
   no shutdown
  exit
interface EFM 0/2.2014
    ip address 10.200.0.42 255.255.255.252
    mtu auto
    ip name-server 172.30.9.162 172.30.9.163
    napt
    firewall enable
    no shutdown
   exit
```

4.2.2 Setting IP Route

```
ip route 0.0.0.0 0.0.0.0 10.200.0.41 EFM 0/2.2014 1
```

4.3 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

4.3.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

4.3.2 Creating WAN Media Realm and Assigning to Reserve Keyword WAN

```
realm 1
 name "MR_WAN"
 ipv4if "WAN"
 port-range-start 6000
 session-leg 100
 port-range-end 6990
 activate
exit
```

4.3.3 Creating WAN SRD and Assigning its Media Realm WAN

```
srd 1
 name "SRD_WAN"
 activate
exit
```

4.3.4 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN

```
sip-interface 1
   interface-name "SIP_WAN"
   network-interface "WAN"
   srd-name "SRD_WAN"
   media-realm-name "MR_WAN"
   activate
  exit
```

4.3.5 Assigning Proxy Set 1 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 0
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "SRD_WAN"
   gwipv4-sip-int-name "SIP_WAN"
   activate
   proxy-ip 0
    proxy-address "test.lab.com"
    activate
   exit
  exit
```

4.3.6 Creating IP Group for WAN Side

```
ip-group 0
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "SRD_WAN"
   media-realm-name "MR_WAN"
   activate
  exit
```

4.3.7 Enabling Registration and Setting Calls to Work with Routing Table

```
sip-definition proxy-and-registration
   authentication-mode per-endpoint
   enable-proxy use-proxy
   enable-registration on
   prefer-routing-table enable
   redundant-routing-m disable
   activate
  exit
```

4.3.8 Setting an Extension

```
gateway trunk-group 0
   trunk-group-id 1
   first-b-channel 1
   last-b-channel 1
   first-phone-number "37299406"
   module 2
   activate
  exit
 gateway analog authentication 0
   user-name "37299406"
   password 2uvr7O2Bs4GP obscured
   activate
  exit
```

4.3.9 Setting Tel-to-IP Routing Rules

```
gateway routing tel2ip-routing 0
   dst-phone-pattern "050"
   dst-ip-address "test.lab.com"
   dst-port 5060
   dest-sip-interface-name "SIP_WAN"
   activate
  exit
  gateway routing tel2ip-routing 1
   dst-phone-pattern "03"
   dst-ip-address "222.198.137.10"
   dst-port 5060
   dest-sip-interface-name "SIP_WAN"
   activate
  exit
```

4.3.10 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
   trunk-group-id 1
   activate
  exit
```

4.3.11 Setting Hunt Group

```
gateway trunk-group-setting 0
   trunk-group-id 1
   channel-select-mode dst-phone-number
   registration-mode per-endpoint
   serving-ip-group-name "BroadSoft"
   activate
  exit
```

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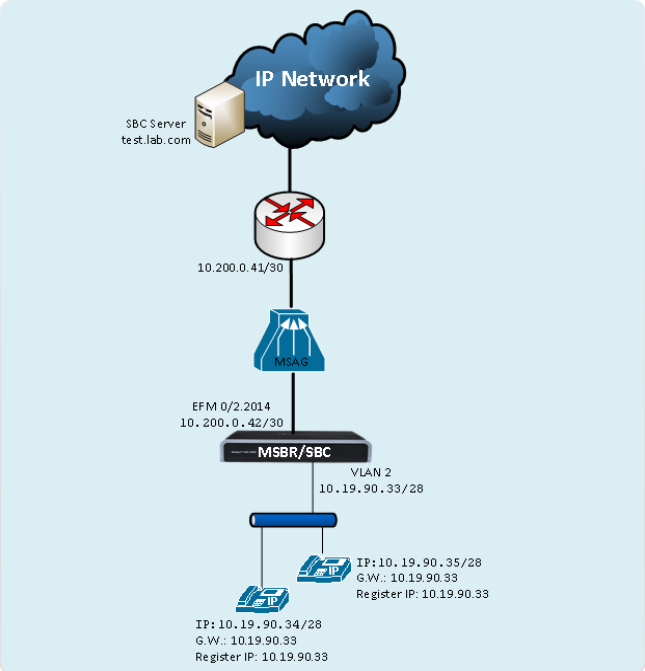
5 MSBR with SBC Application

This example scenario shows how to route calls when the MSBR is configured as an SBC application.

Figure 5-1: IP Phone Connected to SBC



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5.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the “write factory” command cannot restore the configuration to Dual network mode.

5.2 MSBR Data Configuration (Entire Configuration)

This section describes the data configuration.

5.2.1 Setting WAN IP Address

```
interface dsl 0/2
   #DSL configuration is automatic
   #Termination cpe
```

```
   no shutdown
  exit
interface EFM 0/2.2014
    ip address 10.200.0.42 255.255.255.252
    mtu auto
    ip name-server 172.30.9.162 172.30.9.163
    napt
    firewall enable
    no shutdown
   exit
```

5.2.2 Setting Physical LAN Ethernet 1/1 assign to VLAN 2

```
interface FastEthernet 1/1
    switchport mode trunk
    switchport trunk native vlan 2
    no shutdown
   exit
```

5.2.3 Setting Logical Interface VLAN 2

```
interface VLAN 2
    ip address 10.19.90.33 255.255.255.240
    desc "LAN switch VLAN 2"
    ip dhcp-server network 10.19.90.34 10.19.90.36 255.255.255.240
    ip dhcp-server lease 0 1 0
    service dhcp
    no shutdown
   exit
```

5.2.4 Setting IP Route

```
   ip route 0.0.0.0 0.0.0.0 10.200.0.41 EFM 0/2.2014 1
```

5.3 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

5.3.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

5.3.2 Creating LAN Media Realm and Assigning to VLAN 2

```
realm 1
   name "MR_LAN"
   ipv4if "VLAN 2"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

5.3.3 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

```
realm 2
   name "MR_WAN"
   ipv4if "WAN"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

5.3.4 Creating LAN SRD and Assigning Media Realm LAN to it

```
srd 1
   name "LAN_SRD"
   activate
  exit
```

5.3.5 Creating WAN SRD and Assigning its Media Realm WAN

```
srd 2
   name "WAN_SRD"
   activate
  exit
```

5.3.6 Creating LAN SIP Interface

```
sip-interface 1
   interface-name "LAN_IF"
   network-interface "VLAN 2"
   application-type sbc
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   activate
  exit
```

5.3.7 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN

```
sip-interface 2
   interface-name "WAN_IF"
   network-interface "WAN"
   application-type sbc
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

5.3.8 Assigning Proxy Set 2 to SRD _WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "WAN_SRD"
   sbcipv4-sip-int-name "WAN_IF"
   activate
   proxy-ip 0
    proxy-address "test.lab.com"
    activate
   exit
  exit
```

5.3.9 Creating IP Group for LAN Side

```
ip-group 1
   type user
   name "IP_Phone"
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   classify-by-proxy-set disable
   activate
  exit
```

5.3.10 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

5.3.11 Creating SBC IP-to-IP Routing Rules

```
sbc routing ip2ip-routing 0
   route-name "Options Termination"
   request-type options
   dst-type dst-address
   dst-address "internal"
   activate
  exit
  sbc routing ip2ip-routing 1
   route-name "IPP==>Broadsoft"
   src-ip-group-name "IP_Phone"
   dst-ip-group-name "BroadSoft"
   activate
  exit
  sbc routing ip2ip-routing 2
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc classification 0
   classification-name "IP_Phone"
   srd-name "LAN_SRD"
   src-sip-interface-name "LAN_IF"
   src-ip-group-name "IP_Phone"
   activate
  exit
```

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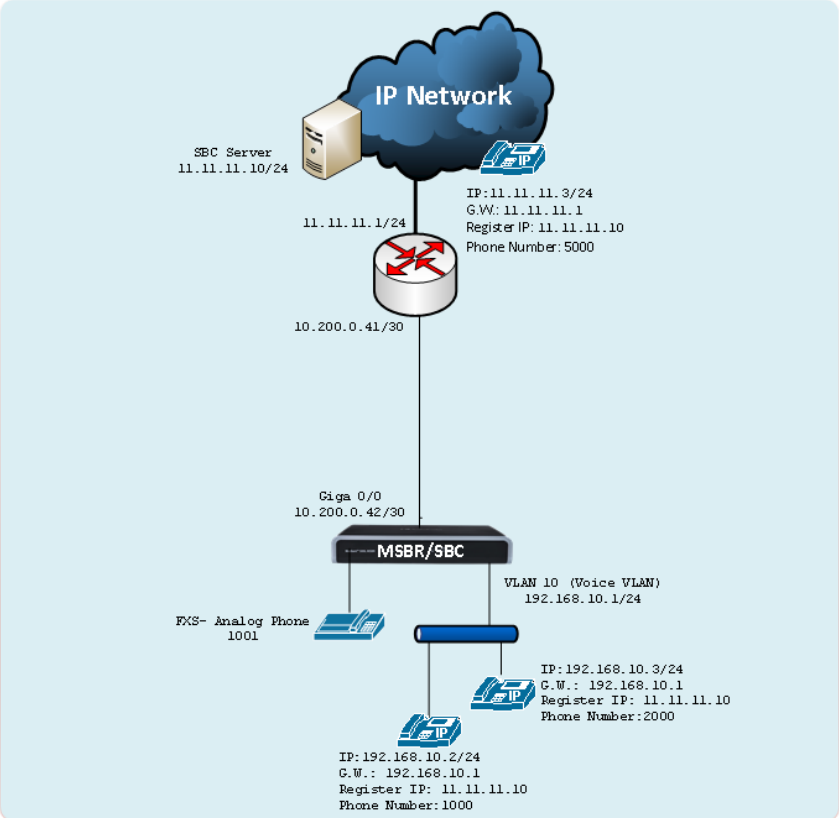
6 MSBR with SBC Application (using LLDP Intercept Feature and IPv4)

This example scenario shows how to route calls when the MSBR is configured as an SBC application using the LLDP Intercept feature and IPv4.

The LLDP protocol is enabled on the MSBR for sending the VLAN voice to the IP Phone. The Intercept feature is enabled for connecting the IP Phone for voice traffic which by default passes directly to the IP-PBX or SIP Server, and then redirecting this traffic to pass via the SBC.



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6.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the "write factory" command cannot restore the configuration to Dual network mode.

6.2 MSBR Data Configuration (Entire Configuration)

This section describes the data configuration.

6.2.1 Setting WAN IP Address

```
interface GigabitEthernet 0/0
    ip address 10.200.0.42 255.255.255.252
    mtu auto
    desc "WAN Copper"
    no ipv6 enable
    no service dhcp
    ip dns server static
    napt
    firewall enable
    no shutdown
   exit
```

6.3 Setting Physical LAN Ethernet assign to VLAN 10 Configured as VLAN Tagging

```
interface FastEthernet 1/1
    speed auto
    duplex auto
    switchport mode trunk
    switchport trunk allowed vlan add 10
    no shutdown
   exit
   interface FastEthernet 1/2
    speed auto
    duplex auto
    switchport mode trunk
    switchport trunk allowed vlan add 10
    no shutdown
   exit
```

6.4 Creating ACL for Intercepting Traffic to SBC

This ACL will be used later by the intercept feature (see Section **Error! Reference source not found.**).

```
access-list  sbc permit udp any eq 5060 host 11.11.11.10
```

6.5 Setting Logical Interface and Enabling Intercept Feature

```
interface VLAN 10
    ip address 192.168.10.1 255.255.255.0
    mtu auto
    desc "LAN switch VLAN 10"
    no ipv6 enable
    ip dhcp-server network 192.168.10.3 192.168.10.8 255.255.255.0
    ip dhcp-server dns-server 0.0.0.0
    ip dhcp-server netbios-name-server 0.0.0.0
    ip dhcp-server lease 0 1 0
    ip dhcp-server provide-host-name
    ip dhcp-server time-offset 0
    ip dhcp-server netbios-node-type 0
    ip dhcp-server ntp-server 0.0.0.0
    ip dhcp-server tftp-server 0.0.0.0
    ip dhcp-server override-router-address 0.0.0.0
    ip dhcp-server next-server 0.0.0.0
    service dhcp
    ip dns server static
    intercept ip destination sbc to local-voip
    no napt
    no firewall enable
    no link-state monitor
    no shutdown
   exit
```

6.6 Enable LLDP for Sending VLAN Voice to IP Phone

```
   lldp timer 5
   lldp network-policy profile 1
     voice vlan 10
     cos 7
     dscp 46
     exit
lldp run
```

6.7 Setting IP Route

```
   ip route 0.0.0.0 0.0.0.0 10.200.0.41 GigabitEthernet 0/0 1
```

6.8 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

6.8.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

6.8.2 Creating LAN Media Realm and Assigning to VLAN 10

```
realm 1
   name "MR_LAN"
   ipv4if "VLAN 10"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

6.8.3 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

```
realm 2
   name "MR_WAN"
   ipv4if "WAN"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

6.8.4 Creating LAN SRD and Assigning Media Realm LAN

```
srd 1
   name "LAN_SRD"
   activate
  exit
```

6.8.5 Creating WAN SRD and Assigning Media Realm WAN

```
srd 2
   name "WAN_SRD"
   activate
  exit
```

6.8.6 Creating LAN SIP Interface

```
sip-interface 1
   interface-name "LAN_IF"
   network-interface "VLAN 10"
   application-type sbc
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   activate
  exit
```

6.8.7 Creating WAN SIP Interface and Assigning Reserved keyword WAN

```
sip-interface 2
   interface-name "WAN_IF"
   network-interface "WAN"
   application-type sbc
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

6.8.8 Assigning Proxy Set 2 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "WAN_SRD"
   sbcipv4-sip-int-name "WAN_IF"
   activate
   proxy-ip 0
    proxy-address "11.11.11.10"
    activate
   exit
  exit
```

6.8.9 Creating IP Group for LAN Side

```
ip-group 1
   type user
   name "IP_Phone"
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   classify-by-proxy-set disable
   activate
  exit
```

6.8.10 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

6.8.11 Setting an Extension

```
gateway trunk-group 0
   trunk-group-id 1
   first-b-channel 1
   last-b-channel 1
   first-phone-number "1001"
   module 2
   activate
  exit
 gateway analog authentication 0
   user-name "1001"
   password 2uvr7O2Bs4GP obscured
   activate
  exit
```

6.8.12 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
   trunk-group-id 1
   activate
  exit
```

6.8.13 Setting Hunt Group

```
gateway trunk-group-setting 0
   trunk-group-id 1
   channel-select-mode dst-phone-number
   registration-mode per-endpoint
   serving-ip-group-name "BroadSoft"
   activate
```

```
  exit
```

6.8.14 Creating SBC IP-to-IP Routing Rules

```
sbc routing ip2ip-routing 0
   route-name "Options Termination"
   request-type options
   dst-type dst-address
   dst-address "internal"
   activate
  exit
  sbc routing ip2ip-routing 1
   route-name "IPP==>Broadsoft"
   src-ip-group-name "IP_Phone"
   dst-ip-group-name "BroadSoft"
   activate
  exit
sbc routing ip2ip-routing 2
    route-name " Broadsoft==>GW"
    src-ip-group-name "BroadSoft"
    dst-user-name-prefix "1001"
    dst-type gateway
    activate
   exit
sbc routing ip2ip-routing 3
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc classification 0
   classification-name "IP_Phone"
   srd-name "LAN_SRD"
   src-sip-interface-name "LAN_IF"
   src-ip-group-name "IP_Phone"
   activate
  exit
```

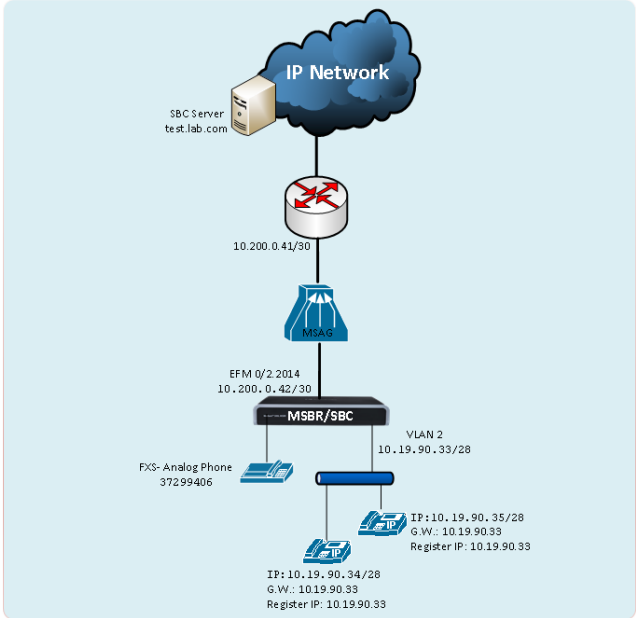
6.8.15 Enabling Registration

```
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
   exitsbc settings
   keep-contact-user-in-reg unique-param
   activate
  exit
```

7 MSBR Voice and SBC Applications with IPv4 Interface

This example scenario shows how to route calls when the MSBR is configured as both a voice and SBC application with a router configuration.

Figure 7-1: IP Phone and Gateway Connected to SBC (Using IPv4)



Back to scenarios menu.

7.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the “write factory” command cannot restore the configuration to Dual network mode.

7.2 MSBR Data Configuration (Entire Configuration)

This section describes the data configuration.

7.2.1 Setting WAN IP Address

```
interface dsl 0/2
   #DSL configuration is automatic
   #Termination cpe
```

```
   no shutdown
  exit
interface EFM 0/2.2014
    ip address 10.200.0.42 255.255.255.252
    mtu auto
    ip name-server 172.30.9.162 172.30.9.163
    napt
    firewall enable
    no shutdown
   exit
```

7.3 Setting Physical LAN Ethernet 1/1 Assign to VLAN 2

```
interface FastEthernet 1/1
    speed auto
    duplex auto
    switchport mode trunk
    switchport trunk native vlan 2
    no shutdown
   exit
```

7.4 Setting Logical Interface VLAN

```
interface VLAN 2
    ip address 10.19.90.33 255.255.255.240
    desc "LAN switch VLAN 2"
    ip dhcp-server network 10.19.90.34 10.19.90.36 255.255.255.240
    ip dhcp-server lease 0 1 0
    service dhcp
    no shutdown
   exit
```

7.5 Setting IP Route

```
   ip route 0.0.0.0 0.0.0.0 10.200.0.41 EFM 0/2.2014 1
```

7.6 MSBR Voice Configuration (Entire Configuration)

7.6.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

7.6.2 Creating LAN Media Realm and Assigning to VLAN 2

```
realm 1
   name "MR_LAN"
   ipv4if "VLAN 2"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

7.6.3 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

```
realm 2
   name "MR_WAN"
   ipv4if "WAN"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

7.6.4 Creating LAN SRD and Assigning Media Realm LAN

```
srd 1
   name "LAN_SRD"
   activate
  exit
```

7.6.5 Creating WAN SRD and Assigning Media Realm WAN

```
srd 2
   name "WAN_SRD"
   activate
  exit
```

7.6.6 Creating LAN SIP Interface

```
sip-interface 1
   interface-name "LAN_IF"
   network-interface "VLAN 2"
   application-type sbc
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   activate
  exit
```

7.6.7 Creating WAN SIP Interface and Assigning Reserved keyword WAN

```
sip-interface 2
   interface-name "WAN_IF"
   network-interface "WAN"
   application-type sbc
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

7.6.8 Assigning Proxy Set 2 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "WAN_SRD"
   sbcipv4-sip-int-name "WAN_IF"
   activate
   proxy-ip 0
    proxy-address "test.lab.com"
    activate
   exit
  exit
```

7.6.9 Creating IP Group for LAN Side

```
ip-group 1
   type user
   name "IP_Phone"
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   classify-by-proxy-set disable
   activate
  exit
```

7.6.10 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

7.6.11 Setting an Extension

```
gateway trunk-group 0
   trunk-group-id 1
   first-b-channel 1
   last-b-channel 1
   first-phone-number "37299406"
   module 2
   activate
  exit
 gateway analog authentication 0
   user-name "37299406"
   password 2uvr7O2Bs4GP obscured
   activate
  exit
```

7.6.12 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
   trunk-group-id 1
   activate
  exit
```

7.6.13 Setting Hunt Group

```
gateway trunk-group-setting 0
   trunk-group-id 1
   channel-select-mode dst-phone-number
   registration-mode per-endpoint
   serving-ip-group-name "BroadSoft"
   activate
  exit
```

7.6.14 Creating SBC IP-to-IP Routing Rules

```
sbc routing ip2ip-routing 0
   route-name "Options Termination"
   request-type options
   dst-type dst-address
   dst-address "internal"
   activate
  exit
sbc routing ip2ip-routing 1
```

```
   route-name "IPP==>Broadsoft"
   src-ip-group-name "IP_Phone"
   dst-ip-group-name "BroadSoft"
   activate
  exit
sbc routing ip2ip-routing 2
    route-name " Broadsoft==>GW"
    src-ip-group-name "BroadSoft"
    dst-user-name-prefix "3729940"
    dst-type gateway
    activate
   exit
sbc routing ip2ip-routing 3
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-user-name-prefix "372994"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc classification 0
   classification-name "IP_Phone"
   srd-name "LAN_SRD"
   src-sip-interface-name "LAN_IF"
   src-ip-group-name "IP_Phone"
   activate
  exit
```

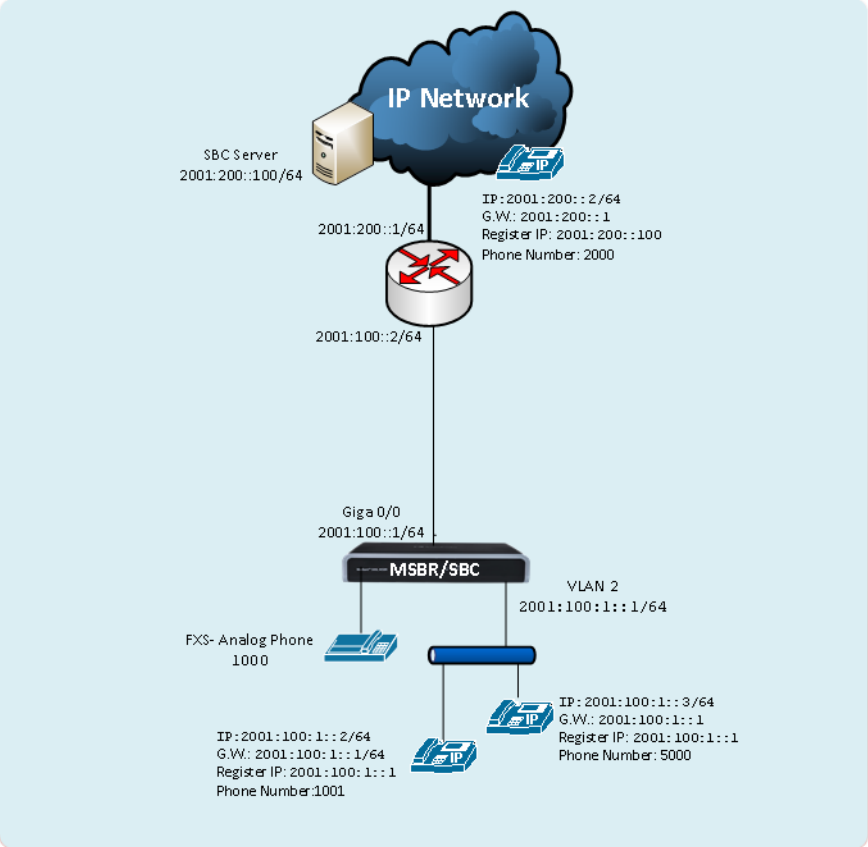
7.6.15 Enabling Registration

```
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
   exit
sbc settings
   keep-contact-user-in-reg unique-param
   activate
  exit
```

8 MSBR Voice and SBC Applications with IPv6 Interface

This example scenario shows how to route calls when the MSBR is configured as both a voice and SBC application with a router configuration.

Figure 8-1: IP Phone and Gateway Connected to SBC with a IPv6 Interface



Back to scenarios menu.

8.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the “write factory” command cannot restore the configuration to Dual network mode.

8.2 MSBR Data Configuration (Entire Configuration)

```
Setting WAN IP Address
interface GigabitEthernet 0/0
    no ip address
    mtu auto
    desc "WAN Copper"
    ipv6 enable
    ipv6 address 2001:100::1/64
    speed auto
    duplex auto
    no service dhcp
    ip dns server static
    firewall enable
    no shutdown
   exit
```

8.2.1 Setting Physical LAN Ethernet 1/1 and Assigning to VLAN 2

```
interface FastEthernet 1/1
    speed auto
    duplex auto
    switchport mode trunk
    switchport trunk native vlan 2
    no shutdown
   exit
```

8.2.2 Setting Logical Interface VLAN 2 (Option 1 – without DHCP Server)

```
interface VLAN 2
    no ip address
    mtu auto
    desc "LAN switch VLAN 2"
    ipv6 enable
    ipv6 address 2001:100:1::1/64
    no service dhcp
    ip dns server auto
    no firewall enable
    no link-state monitor
    no shutdown
   exit
```

8.2.3 Setting Logical Interface VLAN 2 (Option 2 –with DHCP Server – Stateful Mode)

```
interface VLAN 2
    no ip address
    mtu auto
    desc "LAN switch VLAN 2"
    ipv6 enable
    ipv6 address 2001:100:1::1/64
```

```
    ipv6 dhcp-server enable
    ipv6 dhcp-server network 2001:100:1::12 2001:100:1::18 0
    no service dhcp
    ip dns server auto
    no firewall enable
    no link-state monitor
    ipv6 nd managed-config-flag
    ipv6 nd other-config-flag
    no ipv6 nd ra suppress
    no shutdown
   exit
```

8.2.4 Setting IP Route

```
   ipv6 route ::/0 2001:100::2 GigabitEthernet 0/0 1
```

8.3 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

8.3.1 Creating IP Profile 1

This IP Profile must be created for using IPv6.

```
coders-and-profiles ip-profile 1
    profile-name "IPv6"
    early-media enable
    media-ip-version-preference only-ipv6
    early-answer-timeout 0
    reset-srtp-upon-re-key disable
    generate-srtp-keys only-if-required
    activate
   exit
```

8.3.2 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

8.3.3 Creating LAN Media Realm and Assigning to VLAN 2

```
realm 1
   name "MR_LAN"
   ipv6if "VLAN 2 IPv6"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

8.3.4 Creating WAN Media Realm and Assigning to Reserved Keyword WAN IPv6

```
realm 2
   name "MR_WAN"
   ipv6if "WAN IPv6"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

8.3.5 Creating LAN SRD and Assigning Media Realm LAN

```
srd 1
   name "LAN_SRD"
   activate
  exit
```

8.3.6 Creating WAN SRD and Assigning Media Realm WAN

```
srd 2
   name "WAN_SRD"
   activate
  exit
```

8.3.7 Creating LAN SIP Interface

```
sip-interface 1
   interface-name "LAN_IF"
   network-interface "VLAN 2 IPv6"
   application-type sbc
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   activate
  exit
```

8.3.8 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN IPv6

```
sip-interface 2
   interface-name "WAN_IF"
   network-interface "WAN IPv6"
   application-type sbc
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

8.3.9 Assigning Proxy Set 2 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "WAN_SRD"
   sbcipv6-sip-int-name "WAN_IF"
   activate
   proxy-ip 0
    proxy-address "2001:200::100"
    activate
   exit
  exit
```

8.3.10 Creating IP Group for LAN side

```
ip-group 1
   type user
   name "IP_Phone"
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   classify-by-proxy-set disable
   ip-profile-name "IPv6"
   activate
  exit
```

8.3.11 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   ip-profile-name "IPv6"
   activate
  exit
```

8.3.12 Setting an Extension

```
gateway trunk-group 0
   trunk-group-id 1
   first-b-channel 1
   last-b-channel 1
   first-phone-number "1000"
   module 2
   activate
  exit
 gateway analog authentication 0
   user-name "1000"
   password 1000
   activate
  exit
```

8.3.13 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
   trunk-group-id 1
   activate
  exit
```

8.3.14 Setting Hunt Group

```
gateway trunk-group-setting 0
   trunk-group-id 1
   channel-select-mode dst-phone-number
   registration-mode per-endpoint
   serving-ip-group-name "BroadSoft"
   activate
  exit
```

8.3.15 Creating SBC IP-to-IP Routing Rules

```
sbc routing ip2ip-routing 0
   route-name "Options Termination"
   request-type options
   dst-type dst-address
   dst-address "internal"
   activate
  exit
sbc routing ip2ip-routing 1
   route-name "IPP==>Broadsoft"
   src-ip-group-name "IP_Phone"
   dst-ip-group-name "BroadSoft"
   activate
  exit
sbc routing ip2ip-routing 2
    route-name " Broadsoft==>GW"
    src-ip-group-name "BroadSoft"
    dst-user-name-prefix "1000"
```

```
    dst-type gateway
    activate
   exit
sbc routing ip2ip-routing 3
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-user-name-prefix "1001"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc routing ip2ip-routing 3
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-user-name-prefix "5000"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

8.3.16 Enabling Registration

```
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
   exit
sbc settings
   keep-contact-user-in-reg unique-param
   activate
  exit
```

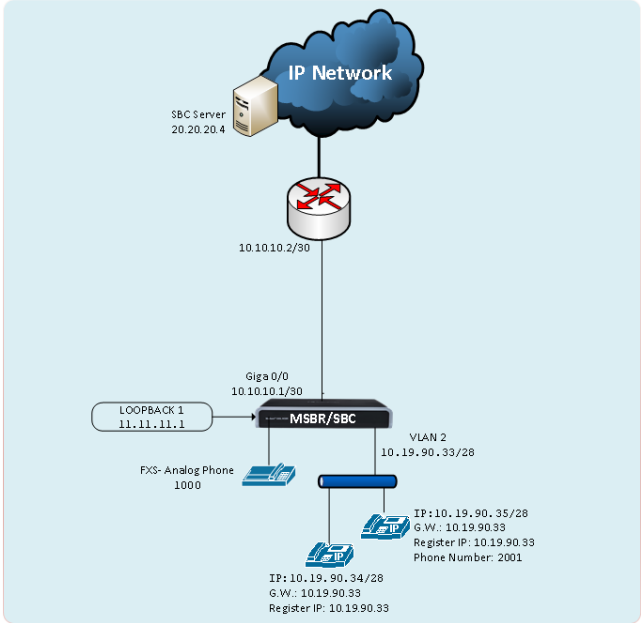
In the current configuration we use two interfaces (VLAN2 and WAN - reserved keyword). To verify which network interfaces are bound to VoIP application you can use the CLI command “show voip network-source-bindings”

```
M500L_IPv6_SBC# show network voip-bindings

VoIP Applications to Network source bindings:
---------------------------------------------

VoIP bind to IPv6 VLAN 2 with ip address 2001:100:1::1

VoIP bind to IPv6 WAN on VRF main-vrf with destination address
2001:200::100,
  Current WAN interface is GigabitEthernet 0/0 with ip address
2001:100::1

Interface VLAN 2 is bind to c0a1:b2d3:0:1::2 for VoIP traffic
     udp Ports 6000 - 6999
     udp Ports 5060 - 5060
     tcp Ports 5060 - 5060
     tcp Ports 5061 - 5061

NAT & Port FW rules used by VoIP Applications:
----------------------------------------------

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6999 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#196
    Ports 5060 - 5060 --> SIPLISTENING#2
    Ports 5061 - 5061 --> SIPLISTENING#2
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6999 to WAN IP
2001:100::1  ports 6000-6999, interface GigabitEthernet 0/0
    SIPUDP#196: LAN ports 5060-5060 to WAN IP 2001:100::1  ports
5060-5060, interface GigabitEthernet 0/0
    SIPLISTENING#2: LAN ports 5060-5060 to WAN IP 2001:100::1
ports 5060-5060, interface GigabitEthernet 0/0
    SIPLISTENING#2: LAN ports 5061-5061 to WAN IP 2001:100::1
ports 5061-5061, interface GigabitEthernet 0/0
```

9 MSBR Voice and SBC Applications with Loopback Interface

This example scenario shows how to route calls when the MSBR is configured as both a voice and SBC application with a router configuration. In this scenario, the Proxy server uses the IP address of the loopback interface and not the WAN IP. The benefit of using a loopback interface is that it serves as a fixed know address when using two WAN interfaces. For example, WAN Copper and A/VDSL or WAN Copper and 4G.

Figure 9-1: IP Phone and Gateway Connected to SBC (Using Loopback Interface)



Back to scenarios menu.

9.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the “write factory” command cannot restore the configuration to Dual network mode.

9.2 MSBR Data Configuration (Entire Configuration)

This section describes the MSBR data configuration.

9.2.1 Setting WAN IP Address

```
interface GigabitEthernet 0/0
    ip address 10.10.10.1 255.255.255.252
    napt
    firewall enable
```

9.2.2 Setting Loopback Interface

```
interface Loopback 1
    ip address 11.11.11.1
    mtu auto
    desc "LAN Loopback 1"
    network wan
    no napt
    no firewall enable
    no shutdown
```

9.2.3 Setting Physical LAN Ethernet 1/1 to VLAN 2

```
interface FastEthernet 1/1
    switchport mode trunk
    switchport trunk native vlan 2
    no shutdown
```

9.2.4 Setting Logical Interface VLAN 2

```
interface VLAN 2
    ip address 10.19.90.33 255.255.255.240
    ip dhcp-server network 10.19.90.34 10.19.90.36 255.255.255.240
    service dhcp
    no shutdown
```

9.2.5 Setting IP Route

```
   ip route 0.0.0.0 0.0.0.0 10.10.10.2 GigabitEthernet 0/0 1
```

9.3 MSBR Voice Configuration (Entire Configuration)

This section describes the MSBR voice configuration.

9.3.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

9.3.2 Creating LAN Media Realm and Assigning to VLAN 2

```
realm 1
   name "MR_LAN"
   ipv4if "VLAN 2"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

9.3.3 Creating WAN Media Realm and Assigning to Loopback Interface

```
realm 2
   name "MR_WAN"
   ipv4if "LOOPBACK 1"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

9.3.4 Creating LAN SRD and Assigning Media Realm LAN

```
srd 1
   name "LAN_SRD"
   activate
  exit
```

9.3.5 Creating WAN SRD and Assigning Media Realm WAN

```
srd 2
   name "WAN_SRD"
   activate
  exit
```

9.3.6 Creating LAN SIP Interface

```
sip-interface 1
   interface-name "LAN_IF"
   network-interface "VLAN 2"
   application-type sbc
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   activate
  exit
```

9.3.7 Creating WAN SIP Interface and Assigning to Loopback Interface

```
sip-interface 2
   interface-name "WAN_IF"
   network-interface "LOOPBACK 1"
   application-type sbc
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

9.3.8 Assigning Proxy Set 2 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "WAN_SRD"
   sbcipv4-sip-int-name "WAN_IF"
   activate
   proxy-ip 0
    proxy-address "20.20.20.4"
    activate
   exit
  exit
```

9.3.9 Creating IP Group for LAN Side

```
ip-group 1
   type user
   name "IP_Phone"
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   classify-by-proxy-set disable
   activate
  exit
```

9.3.10 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
```

```
    proxy-set-name "WAN_Proxy"
    srd-name "WAN_SRD"
    media-realm-name "MR_WAN"
    activate
   exit
```

9.3.11 Setting an Extension

```
gateway trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "1000"
    module 2
    activate
   exit
 gateway analog authentication 0
    user-name "1000"
    password 1000
    activate
   exit
```

9.3.12 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
    trunk-group-id 1
    activate
   exit
```

9.3.13 Setting Hunt Group

```
gateway trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group-name "BroadSoft"
    activate
   exit
```

9.3.14 Creating SBC IP-to-IP Routing Rules

```
sbc routing ip2ip-routing 0
    route-name "Options Termination"
    request-type options
    dst-type dst-address
    dst-address "internal"
    activate
   exit
sbc routing ip2ip-routing 1
    route-name "IPP==>Broadsoft"
    src-ip-group-name "IP_Phone"
    dst-ip-group-name "BroadSoft"
```

```
   activate
  exit
sbc routing ip2ip-routing 2
    route-name " Broadsoft==>GW"
    src-ip-group-name "BroadSoft"
    dst-user-name-prefix "1000"
    dst-type gateway
    activate
   exit
sbc routing ip2ip-routing 3
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-user-name-prefix "2001"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc classification 0
   classification-name "IP_Phone"
   srd-name "LAN_SRD"
   src-sip-interface-name "LAN_IF"
   src-ip-group-name "IP_Phone"
   activate
  exit
```

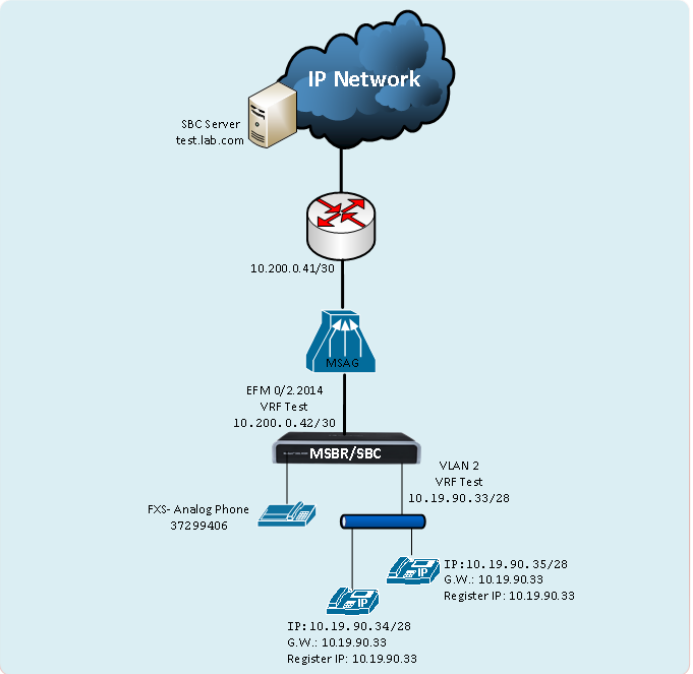
9.3.15 Enabling Registration

```
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
   exit
sbc settings
   keep-contact-user-in-reg unique-param
   activate
  exit
```

10 MSBR Voice and SBC Applications with VRF Interface

This example scenario describes how to route calls when the MSBR is configured as both a voice and SBC application with a basic router configuration.

Figure 10-1: IP Phone and Gateway Connected to SBC (Using VRF)



Back to scenarios menu.

10.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the “write factory” command cannot restore the configuration to Dual network mode.

10.2 MSBR Data Configuration (Entire Configuration)

This section describes the data configuration.

10.2.1 Creating VRF

```
configure data
   ip vrf Test
```

10.2.2 Setting WAN IP Address

```
interface dsl 0/2
   #DSL configuration is automatic
   #Termination cpe
   no shutdown
  exit
interface EFM 0/2.2014
    ip address 10.200.0.42 255.255.255.252
    ip name-server 172.30.9.162 172.30.9.163
    ip vrf forwarding Test
    napt
    firewall enable
```

10.2.3 Setting Physical LAN Ethernet 1/1 Assigning to VLAN 2

```
interface FastEthernet 1/1
    switchport mode trunk
    switchport trunk native vlan 2
    no shutdown
```

10.2.4 Setting Logical Interface VLAN 2

```
interface VLAN 2
    ip address 10.19.90.33 255.255.255.240
    desc "LAN switch VLAN 2"
    ip dhcp-server network 10.19.90.34 10.19.90.36 255.255.255.240
    service dhcp
    ip vrf forwarding Test
   exit
```

10.2.5 Setting IP Route

```
   ip route vrf Test 0.0.0.0 0.0.0.0 10.200.0.41 EFM 0/2.2014 1
```

10.3 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

10.3.1 Setting Voice Coders

```
coders-and-profiles audio-coders-groups 0
   coders-group-name "AudioCodersGroups_0"
   activate
   audio-coders 0
    name g711-alaw
    p-time 20
    rate 64
    activate
   exit
  exit
```

10.3.2 Creating LAN Media Realm and Assigning to VLAN 2

```
realm 1
   name "MR_LAN"
   ipv4if "VLAN 2"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

10.3.3 Creating WAN Media Realm and Assigning to VRF Test

```
realm 2
   name "MR_WAN"
   ipv4if "WAN VRF Test"
   port-range-start 6000
   session-leg 100
   activate
  exit
```

10.3.4 Creating LAN SRD and Assigning Media Realm LAN

```
srd 1
   name "LAN_SRD"
   activate
  exit
```

10.3.5 Creating WAN SRD and Assigning Media Realm WAN

```
srd 2
   name "WAN_SRD"
   activate
  exit
```

10.3.6 Creating LAN SIP Interface

```
sip-interface 1
   interface-name "LAN_IF"
   network-interface "VLAN 2"
   application-type sbc
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   activate
  exit
```

10.3.7 Creating WAN SIP Interface and Assigning to VRF Test

```
sip-interface 2
   interface-name "WAN_IF"
   network-interface "WAN VRF Test"
   application-type sbc
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

10.3.8 Assigning Proxy Set 2 to SRD_WAN and Setting Proxy Server (IP or Hostname)

```
proxy-set 2
   proxy-name "WAN_Proxy"
   proxy-enable-keep-alive using-options
   srd-name "WAN_SRD"
   sbcipv4-sip-int-name "WAN_IF"
   activate
   proxy-ip 0
    proxy-address "test.lab.com"
    activate
   exit
  exit
```

10.3.9 Creating IP Group for LAN Side

```
ip-group 1
   type user
   name "IP_Phone"
   srd-name "LAN_SRD"
   media-realm-name "MR_LAN"
   classify-by-proxy-set disable
   activate
  exit
```

10.3.10 Creating IP Group for WAN Side

```
ip-group 2
   name "BroadSoft"
   proxy-set-name "WAN_Proxy"
   srd-name "WAN_SRD"
   media-realm-name "MR_WAN"
   activate
  exit
```

10.3.11 Setting an Extension

```
gateway trunk-group 0
   trunk-group-id 1
   first-b-channel 1
   last-b-channel 1
   first-phone-number "37299406"
   module 2
   activate
  exit
 gateway analog authentication 0
   user-name "37299406"
   password 37299406
   activate
  exit
```

10.3.12 Setting IP-to-Tel Routing

```
gateway routing ip2tel-routing 0
   trunk-group-id 1
   activate
  exit
```

10.3.13 Setting Hunt Group

```
gateway trunk-group-setting 0
   trunk-group-id 1
   channel-select-mode dst-phone-number
   registration-mode per-endpoint
   serving-ip-group-name "BroadSoft"
   activate
  exit
```

10.3.14 Creating SBC IP-to-IP Routing Rules

```
sbc routing ip2ip-routing 0
   route-name "Options Termination"
   request-type options
   dst-type dst-address
   dst-address "internal"
   activate
  exit
sbc routing ip2ip-routing 1
```

```
   route-name "IPP==>Broadsoft"
   src-ip-group-name "IP_Phone"
   dst-ip-group-name "BroadSoft"
   activate
  exit
sbc routing ip2ip-routing 2
    route-name " Broadsoft==>GW"
    src-ip-group-name "BroadSoft"
    dst-user-name-prefix "3729940"
    dst-type gateway
    activate
   exit
sbc routing ip2ip-routing 3
   route-name "Broadsoft==>IPP"
   src-ip-group-name "BroadSoft"
   dst-user-name-prefix "372994"
   dst-ip-group-name "IP_Phone"
   activate
  exit
sbc classification 0
   classification-name "IP_Phone"
   srd-name "LAN_SRD"
   src-sip-interface-name "LAN_IF"
   src-ip-group-name "IP_Phone"
   activate
  exit
```

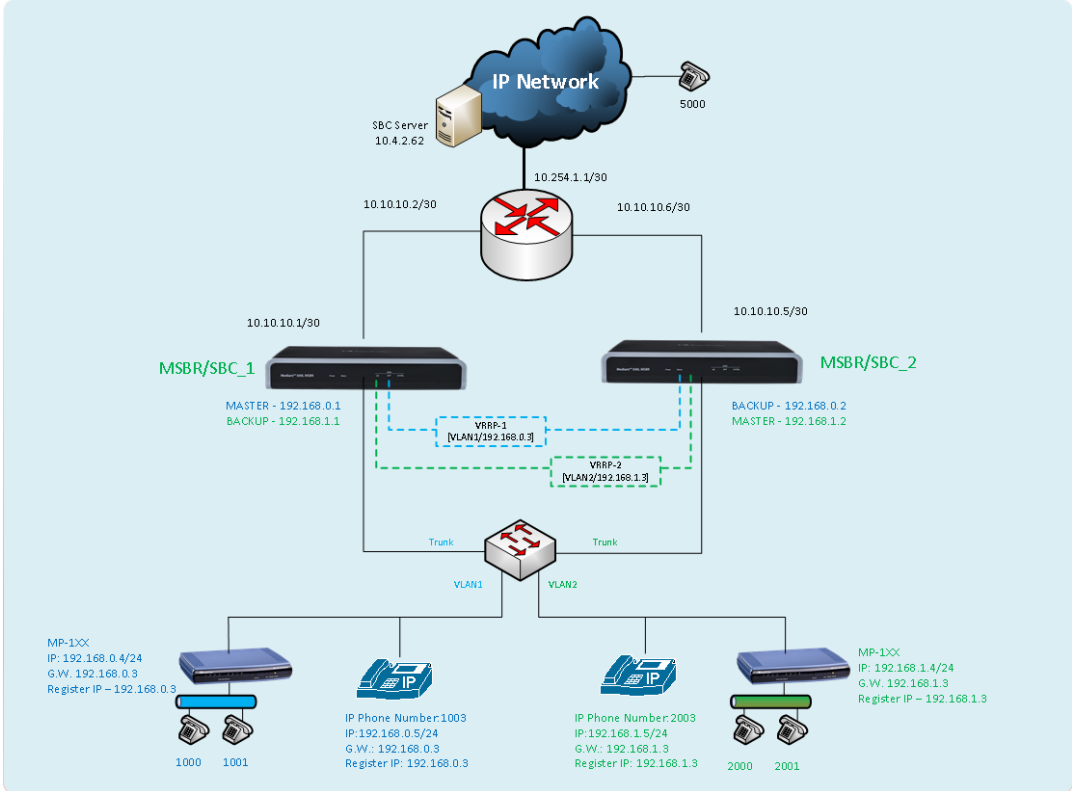
10.3.15 Enabling Registration

```
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
   exit
sbc settings
   keep-contact-user-in-reg unique-param
   activate
  exit
```

11 Dual MSBRs with Voice and SBC Applications and VRRP Interface

The example scenario describes how to route calls using dual MSBR devices as both a voice and SBC application with an advanced router configuration.

Figure 11-1: IP Phone and Gateway Connected to Two SBC using VRRP



In this scenario, two MSBRs (configured as both voice and SBC applications) are located at the customer site in a master and slave mode using two separate VRRP - virtual routers.

In this scenario, by using two VRRP instances, the capacity of two ISP connections are utilized, where two MSBRs operate in Active/Active mode.

This implies that some devices on the LAN side connect to VRRP-1 (operating as the 'Master' on MSBR/SBC1) and others connect to VRRP-2 (working as the 'Master' on MSBR/SBC2).

In case of failure on the MSBR/SBC1, all the devices that register to this device will send new registration requests through the Backup MSBR (MSBR/SBC2). The same mechanism applies for the devices that are connected to MSBR/SBC2.

Also, using two MSBR devices allows routing all the connected devices to work with one MSBR and to perform maintenance on the second MSBR.

Note: To support this configuration scenario, the 'Registration Time' to the SBC that is configured on the endpoint should be as low as possible. This is necessary to ensure a smooth failover for new voice calls (existing voice calls are dropped).

Back to scenarios menu.

11.1 MSBR System Configuration (Entire Configuration)

```
configure network
  network-settings
  single-net-mode enable
  activate
exit
```

Note: To configure this new mode, reset the device to default, reboot the unit, type the above command and then reboot the unit again. This operation mode is static, which implies that the "write factory" command cannot restore the configuration to Dual network mode.

11.2 MSBR Data Configuration (Entire Configuration)

This section shows the MSBR configuration for both of the SBC devices.

MSBR/SBC1	MSBR/SBC2
Setting WAN IP Address	
configure data interface GigabitEthernet 0/0 ip address **10.10.10.1 255.255.255.252** desc "WAN Copper" no ipv6 enable ip dns server static no shutdown exit	configure data interface GigabitEthernet 0/0 ip address **10.10.10.5 255.255.255.252** desc "WAN Copper" no ipv6 enable ip dns server static no shutdown exit
Setting Physical LAN Ethernet 1/1 as trunk and assign VLAN2	
interface FastEthernet 1/1 switchport mode trunk switchport trunk native vlan 100 switchport trunk allowed vlan add **1** switchport trunk allowed vlan add **2** no shutdown exit	interface FastEthernet 1/1 switchport mode trunk switchport trunk native vlan 100 switchport trunk allowed vlan add **1** switchport trunk allowed vlan add **2** no shutdown exit
Creating VRRP 1 under VLAN 1 (MSBR/SBC1 will be the MASTER)	
interface VLAN 1 ip address **192.168.0.1 255.255.255.0** vrrp 1 timers advertise 1	interface VLAN 1 ip address **192.168.0.2 255.255.255.0** vrrp 1 timers advertise 1

MSBR/SBC1	MSBR/SBC2
vrrp 1 preempt vrrp 1 priority 250 vrrp 1 ip 192.168.0.3 vrrp 1 track 1 decrement 200 no shutdown exit	vrrp 1 preempt vrrp 1 priority 100 vrrp 1 ip 192.168.0.3 vrrp 1 track 1 decrement 200 no shutdown exit
Creating VRRP 2 under VLAN 2 (MSBR/SBC2 will be the MASTER)	
interface VLAN 2 ip address **192.168.1.1 255.255.255.0** vrrp 2 timers advertise 1 vrrp 2 preempt vrrp 2 priority 100 vrrp 2 ip 192.168.1.3 vrrp 2 track 1 decrement 200 no shutdown exit	interface VLAN 2 ip address 192.168.1.2 255.255.255.0 vrrp 2 timers advertise 1 vrrp 2 preempt vrrp 2 priority 250 vrrp 2 ip 192.168.1.3 vrrp 2 track 1 decrement 200 no shutdown exit
track 1 IcmpEcho 10.10.10.2 GigabitEthernet 0/0 interval 1 retries 3 ip route 0.0.0.0 0.0.0.0 10.10.10.2 GigabitEthernet 0/0 1 exit	track 1 IcmpEcho 10.10.10.6 GigabitEthernet 0/0 interval 1 retries 3 ip route 0.0.0.0 0.0.0.0 10.10.10.6 GigabitEthernet 0/0 1 exit

11.2.1 MSBR Voice Configuration (Entire Configuration)

This section shows the MSBR voice configuration.

MSBR/SBC1	MSBR/SBC2
Setting Voice Coders	
coders-and-profiles audio-coders-groups 0 coders-group-name "AudioCodersGroups_0" activate audio-coders 0 name g711-alaw p-time 20 rate 64 activate exit	coders-and-profiles audio-coders-groups 0 coders-group-name "AudioCodersGroups_0" activate audio-coders 0 name g711-alaw p-time 20 rate 64 activate exit

MSBR/SBC1	MSBR/SBC2
exit	exit
Creating LAN_1 Media Realm and assign to VLAN1	
realm 1 name "MR_LAN_1" ipv4if "VLAN 1" port-range-start 6000 session-leg 100 activate exit	realm 1 name "MR_LAN_1" ipv4if "VLAN 1" port-range-start 6000 session-leg 100 activate exit
Creating LAN_2 Media Realm and assign to VLAN2	
realm 2 name "MR_LAN_2" ipv4if "VLAN 2" port-range-start 6000 session-leg 100 activate exit	realm 2 name "MR_LAN_2" ipv4if "VLAN 2" port-range-start 6000 session-leg 100 activate exit
Creating WAN Media Realm and assign to reserved keyword WAN	
realm 3 name **"MR_WAN"** ipv4if **"WAN"** port-range-start 6000 session-leg 100 activate exit	realm 3 name **"MR_WAN"** ipv4if **"WAN"** port-range-start 6000 session-leg 100 activate exit
Creating LAN_1 SRD and assign Media Realm LAN_1 to it (MR_LAN_1)	
srd 1 name "SRD_LAN_1" activate exit	srd 1 name "SRD_LAN_1" activate exit
Creating LAN_2 SRD and assign Media Realm LAN_2 to it (MR_LAN_2)	
srd 2 name "SRD_LAN_2" activate exit	srd 2 name "SRD_LAN_2" activate exit
Creating WAN SRD and assign Media Realm WAN to it (MR_WAN)	
srd 3 name **"WAN_SRD"**	srd 3 name **"WAN_SRD"**

MSBR/SBC1	MSBR/SBC2
activate exit	activate exit
Creating LAN_1 SIP Interface	
sip-interface 1 interface-name "SIP_LAN_1" network-interface "VLAN 1" application-type sbc srd-name "SRD_LAN_1" media-realm-name "MR_LAN_1" activate exit	sip-interface 1 interface-name "SIP_LAN_1" network-interface "VLAN 1" application-type sbc srd-name "SRD_LAN_1" media-realm-name "MR_LAN_1" activate exit
Creating LAN_2 SIP Interface	
sip-interface 2 interface-name "SIP_LAN_2" network-interface "VLAN 2" application-type sbc srd-name "SRD_LAN_2" media-realm-name "MR_LAN_2" activate exit	sip-interface 2 interface-name "SIP_LAN_2" network-interface "VLAN 2" application-type sbc srd-name "SRD_LAN_2" media-realm-name "MR_LAN_2" activate exit
Creating WAN SIP Interface	
sip-interface 3 interface-name **"WAN_IF"** network-interface **"WAN"** application-type sbc srd-name **"WAN_SRD"** media-realm-name **"MR_WAN"** activate exit	sip-interface 3 interface-name **"WAN_IF"** network-interface **"WAN"** application-type sbc srd-name **"WAN_SRD"** media-realm-name **"MR_WAN"** activate exit
Assigning Proxy Set 2 to SRD_WAN and setting Proxy Server (IP or Hostname) and registration to 30 sec.	
proxy-set 2 proxy-name "WAN_Proxy" proxy-enable-keep-alive using-options srd-name "WAN_SRD" sbcipv4-sip-int-name "WAN_IF" activate proxy-ip 0	proxy-set 2 proxy-name "WAN_Proxy" proxy-enable-keep-alive using-options srd-name "WAN_SRD" sbcipv4-sip-int-name "WAN_IF" activate proxy-ip 0

MSBR/SBC1	MSBR/SBC2
proxy-address "10.254.1.2" activate exit exit sip-definition proxy-and-registration registration-time 30 activate exit sbc settings keep-contact-user-in-reg unique-param activate exit	proxy-address "10.254.1.2" activate exit exit sip-definition proxy-and-registration registration-time 30 activate exit sbc settings keep-contact-user-in-reg unique-param activate exit
Creating IP Group for LAN_1	
ip-group 1 type user name "GW_1" srd-name "SRD_LAN_1" media-realm-name "MR_LAN_1" classify-by-proxy-set disable activate exit	ip-group 1 type user name "GW_1" srd-name "SRD_LAN_1" media-realm-name "MR_LAN_1" classify-by-proxy-set disable activate exit
Creating IP Group for LAN_2	
ip-group 2 type user name "GW_2" srd-name " SRD_LAN_2" media-realm-name " MR_LAN_2" classify-by-proxy-set disable activate exit	ip-group 2 type user name "GW_2" srd-name " SRD_LAN_2" media-realm-name " MR_LAN_2" classify-by-proxy-set disable activate exit
Creating IP Group for WAN Side	
ip-group 3 name "BroadSoft" proxy-set-name "WAN_Proxy" srd-name "WAN_SRD" media-realm-name "MR_WAN" activate	ip-group 3 name "BroadSoft" proxy-set-name "WAN_Proxy" srd-name "WAN_SRD" media-realm-name "MR_WAN" activate

MSBR/SBC1	MSBR/SBC2
exit	exit
Creating SBC IP-to-IP Routing Rules	
sbc routing ip2ip-routing 0 route-name "Options Termination" request-type options dst-type dst-address dst-address "internal" activate exit sbc routing ip2ip-routing 1 route-name "GW_1==>GW_2" src-ip-group-name "GW_1" dst-user-name-pattern "20" dst-ip-group-name "GW_2" activate exit sbc routing ip2ip-routing 2 route-name "GW_2==>GW_1" src-ip-group-name "GW_2" dst-user-name-pattern "10" dst-ip-group-name "GW_1" activate exit sbc routing ip2ip-routing 3 route-name "Broadsoft==>GW_1" src-ip-group-name "BroadSoft" dst-user-name-pattern "10" dst-ip-group-name "GW_1" activate exit sbc routing ip2ip-routing 4 route-name "Broadsoft==>GW_2" src-ip-group-name "BroadSoft" dst-user-name-pattern "20" dst-ip-group-name "GW_2" activate exit sbc routing ip2ip-routing 5 route-name "GW_1==>Broadsoft" src-ip-group-name "GW_1" dst-ip-group-name "BroadSoft"	sbc routing ip2ip-routing 0 route-name "Options Termination" request-type options dst-type dst-address dst-address "internal" activate exit sbc routing ip2ip-routing 1 route-name "GW_1==>GW_2" src-ip-group-name "GW_1" dst-user-name-pattern "20" dst-ip-group-name "GW_2" activate exit sbc routing ip2ip-routing 2 route-name "GW_2==>GW_1" src-ip-group-name "GW_2" dst-user-name-pattern "10" dst-ip-group-name "GW_1" activate exit sbc routing ip2ip-routing 3 route-name "Broadsoft==>GW_1" src-ip-group-name "BroadSoft" dst-user-name-pattern "10" dst-ip-group-name "GW_1" activate exit sbc routing ip2ip-routing 4 route-name "Broadsoft==>GW_2" src-ip-group-name "BroadSoft" dst-user-name-pattern "20" dst-ip-group-name "GW_2" activate exit sbc routing ip2ip-routing 5 route-name "GW_1==>Broadsoft" src-ip-group-name "GW_1" dst-ip-group-name "BroadSoft" activate exit sbc routing ip2ip-routing 6

MSBR/SBC1	MSBR/SBC2
activate exit sbc routing ip2ip-routing 6 route-name "GW_2==>Broadsoft" src-ip-group-name "GW_2" dst-ip-group-name "BroadSoft" activate exit sbc classification 0 classification-name "GW_1" srd-name "SRD_LAN_1" src-sip-interface-name "SIP_LAN_1" src-ip-group-name "GW_1" activate exit sbc classification 1 classification-name "GW_2" srd-name "SRD_LAN_2" src-sip-interface-name "SIP_LAN_2" src-ip-group-name "GW_2" activate exit	route-name "GW_2==>Broadsoft" src-ip-group-name "GW_2" dst-ip-group-name "BroadSoft" activate exit sbc classification 0 classification-name "GW_1" srd-name "SRD_LAN_1" src-sip-interface-name "SIP_LAN_1" src-ip-group-name "GW_1" activate exit sbc classification 1 classification-name "GW_2" srd-name "SRD_LAN_2" src-sip-interface-name "SIP_LAN_2" src-ip-group-name "GW_2" activate exit

11.3 MSBR System Configuration (Entire Configuration)

MSBR/SBC1	MSBR/SBC2
configure network network-settings **single-net-mode enable** activate exit exit configure system ntp secondary-server "1.asia.pool.ntp.org" primary-server "0.asia.pool.ntp.org" activate exit	configure network network-settings **single-net-mode enable** activate exit exit configure system ntp secondary-server "1.asia.pool.ntp.org" primary-server "0.asia.pool.ntp.org" activate exit

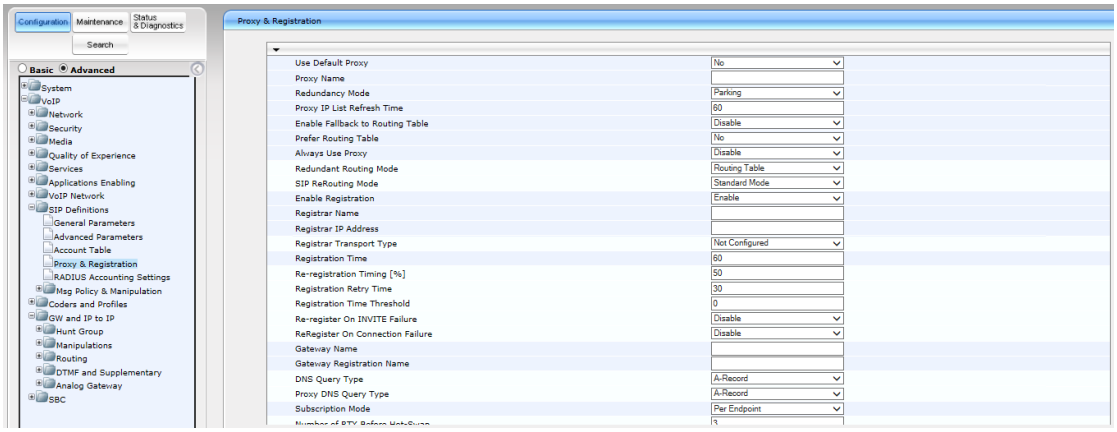
MSBR/SBC1	MSBR/SBC2
clock utc-offset 10800 activate exit hostname SBC_1 exit	clock utc-offset 10800 activate exit hostname SBC_2 exit

11.4 MP-1xx Configuration (Connected to VRRP1)

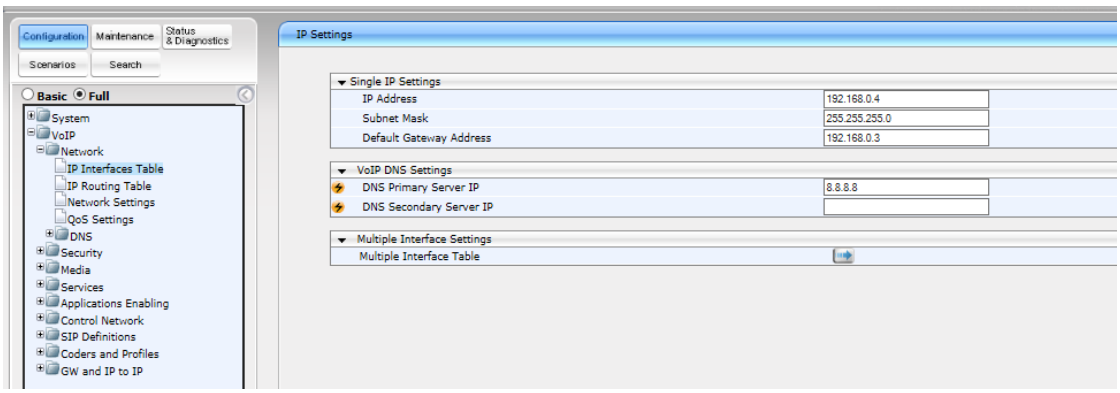
This section describes the configuration of the MP-1xx. In this example, the MP-1xx is the endpoint device. This endpoint device may also be an IP Phone.

11.4.1 Setting the Proxy Registration Time

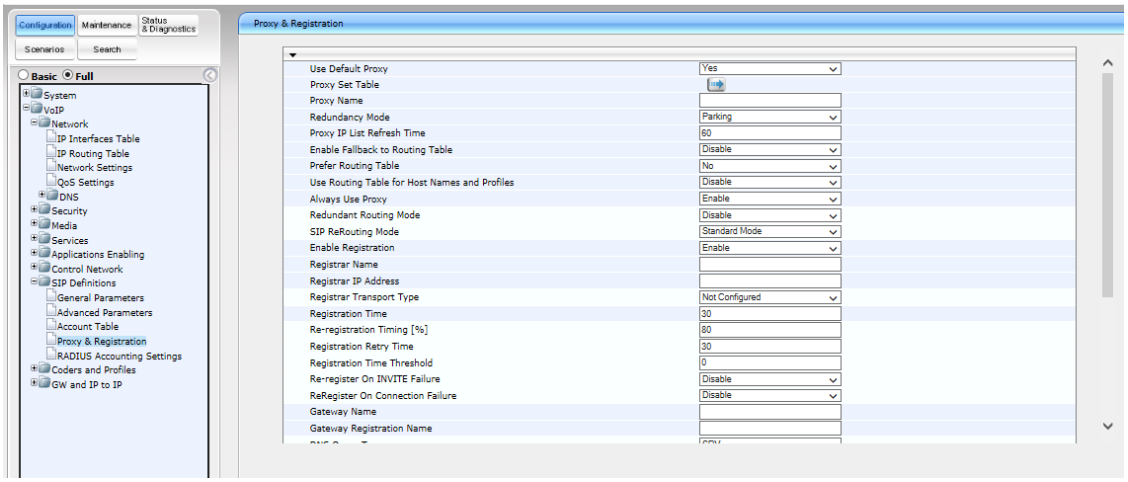
Note: To support this configuration scenario, the value of the 'Registration Time' parameter (configured in the Proxy & Registration table for defining the time interval (in seconds) for registering to a Proxy server) should be as low as possible. This is necessary to ensure a smooth failover for new voice calls (existing voice calls are dropped).

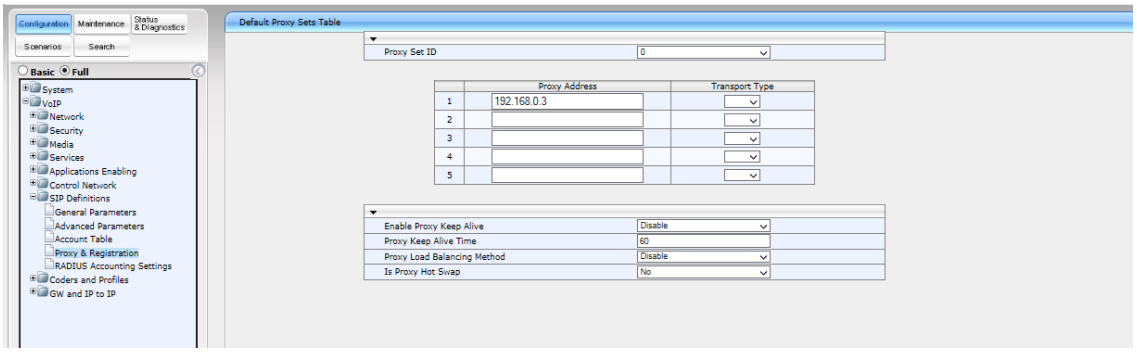


11.4.2 Setting IP Address (Default Gateway IP will be IP of VRRP1)

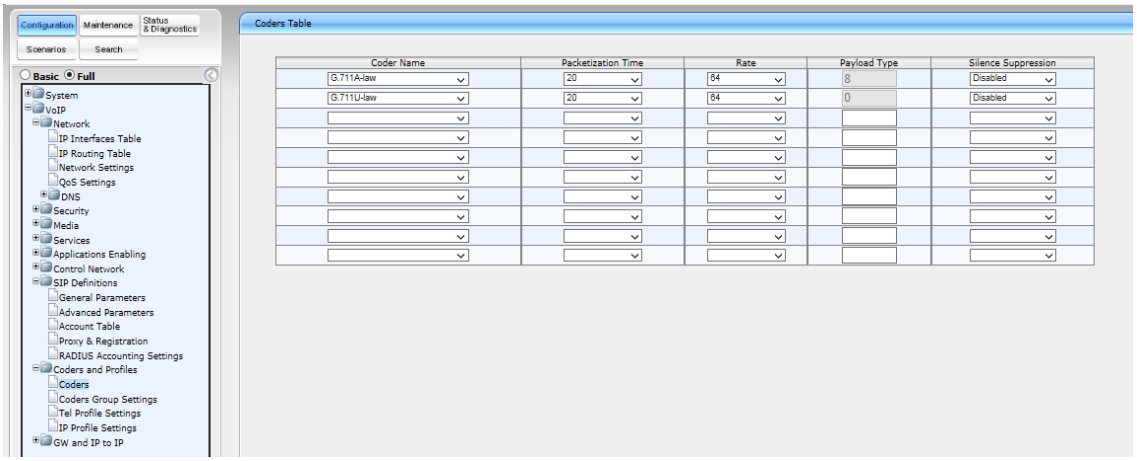


11.4.3 Setting Proxy IP Address (will be IP of VRRP1)

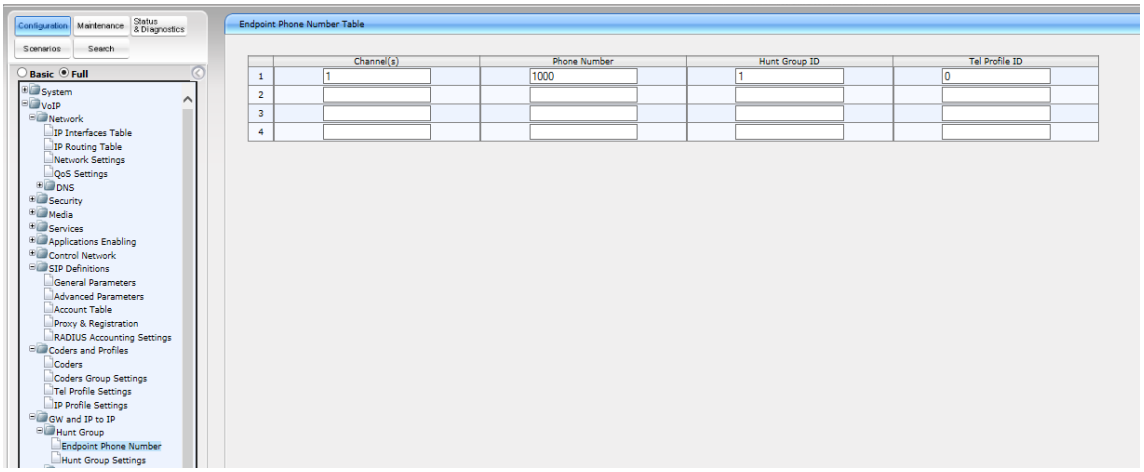




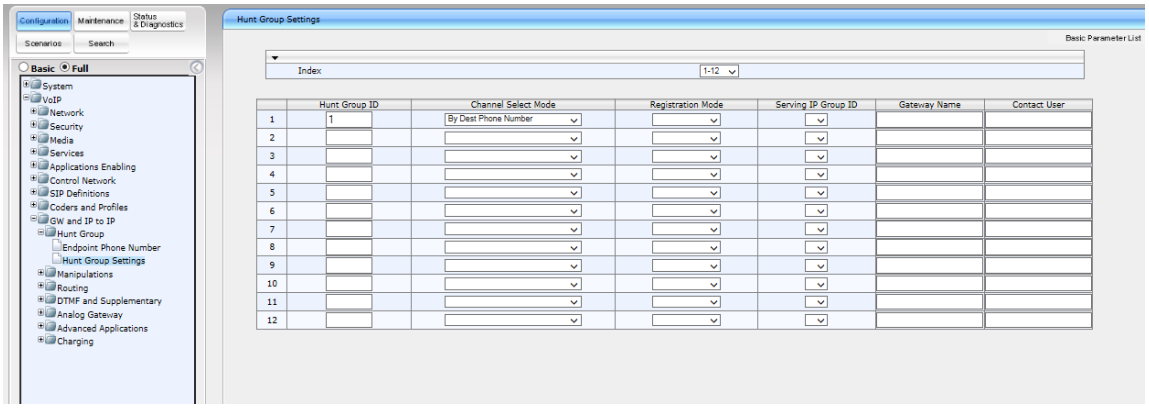
11.4.4 Setting Voice Coders



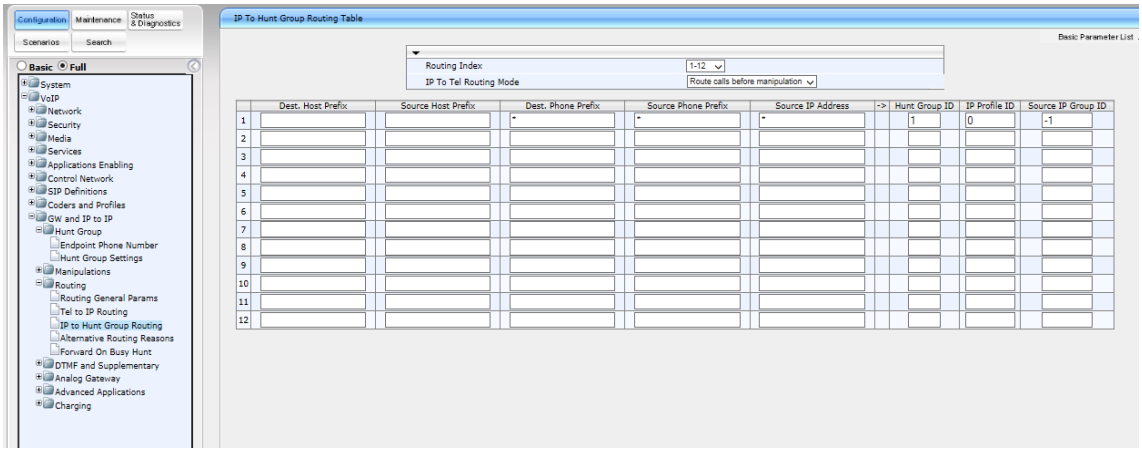
11.4.5 Setting up an Extension



11.4.6 Setting Hunt Group



11.4.7 Setting IP to Hunt Group Routing

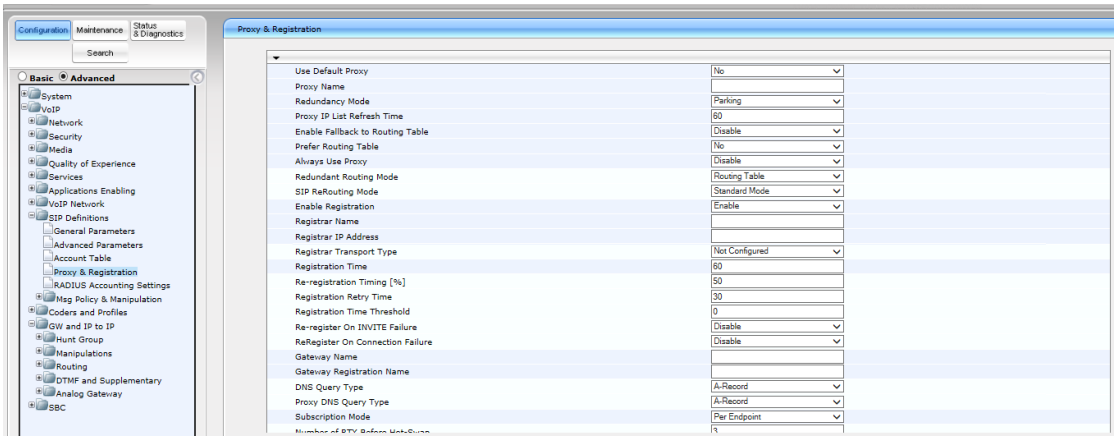


11.5 MP-1xx Configuration (Connected to VRRP2)

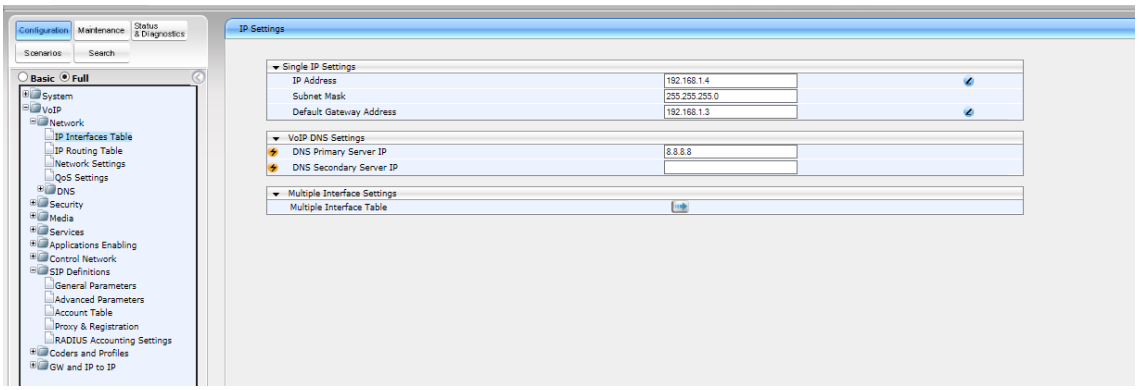
This section describes the configuration of the MP-1xx. In this example, the MP-1xx is the endpoint device. This endpoint device may also be an IP Phone.

11.5.1 Setting the Proxy Registration Time

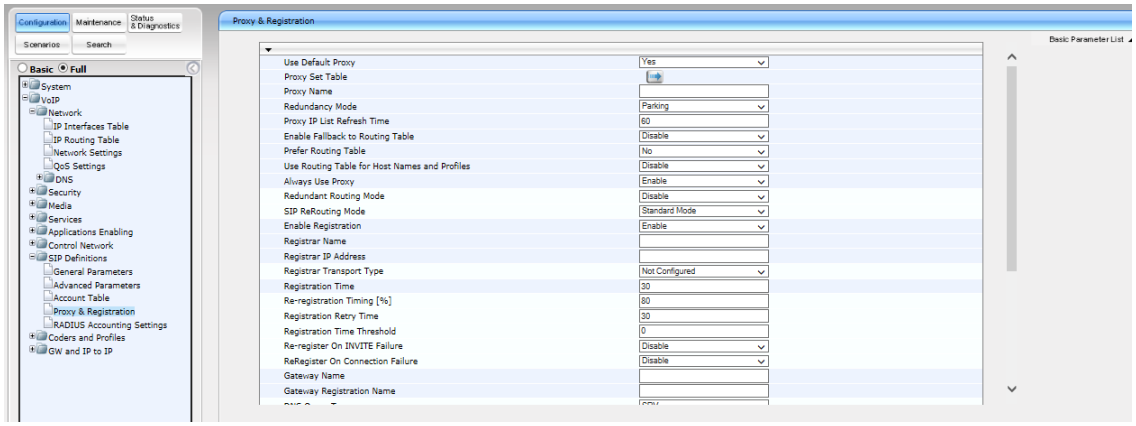
Note: To support this configuration scenario, the value of the 'Registration Time' parameter (configured in the Proxy & Registration table for defining the time interval (in seconds) for registering to a Proxy server) should be as low as possible. This is necessary to ensure a smooth failover for new voice calls (existing voice calls are dropped).

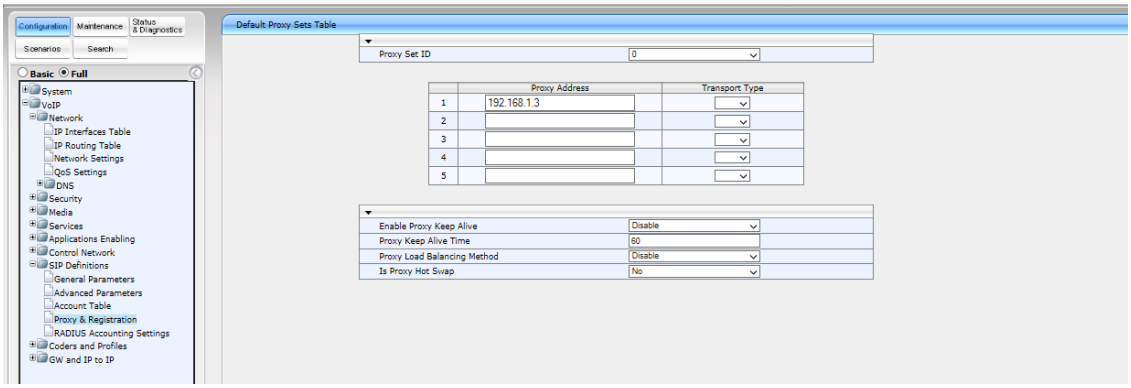


11.5.2 Setting IP Address (Default Gateway IP will be IP of VRRP2)

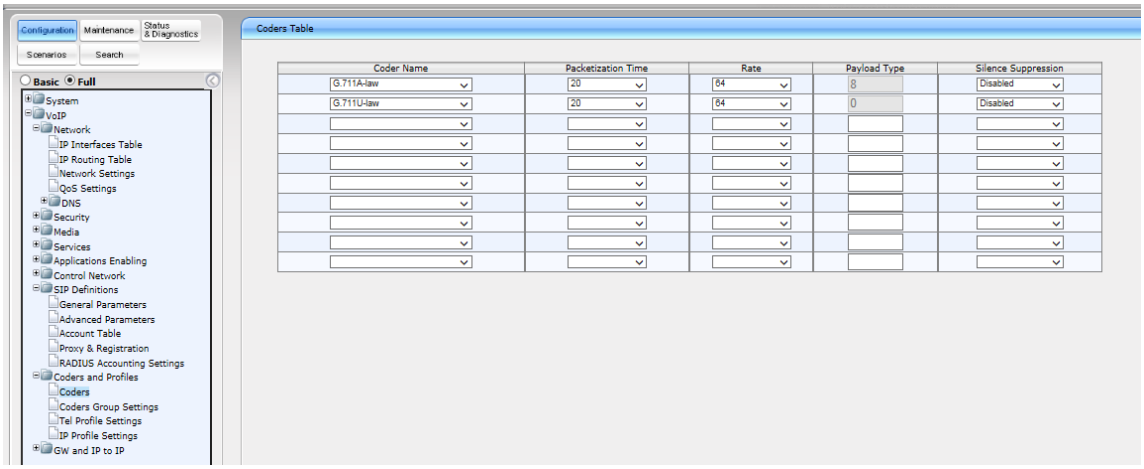


11.5.3 Setting Proxy IP Address (will be IP of VRRP2)

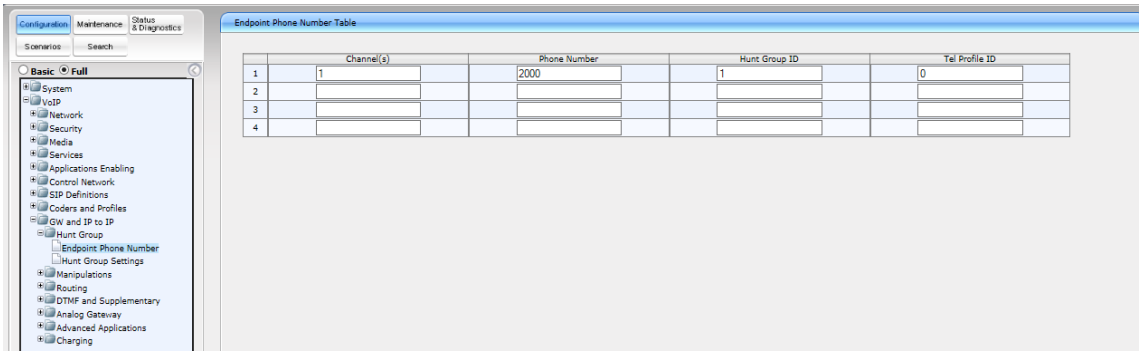




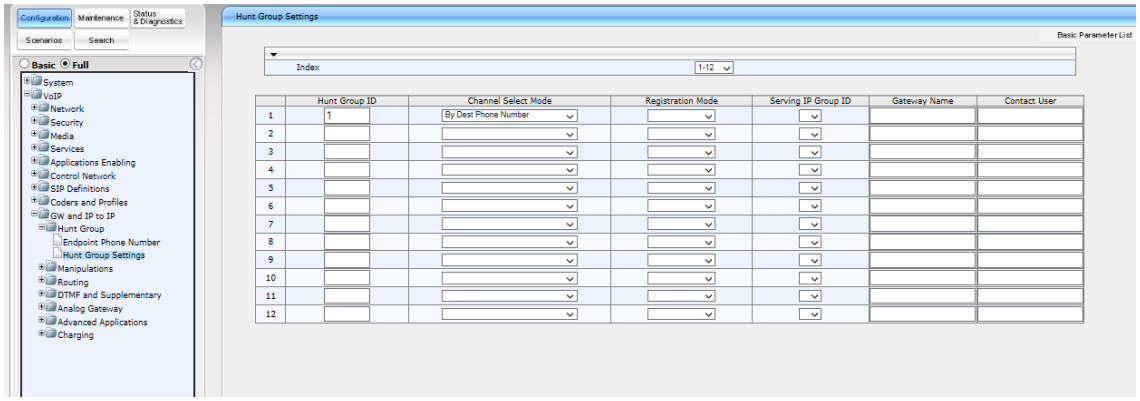
11.5.4 Setting Voice Coders



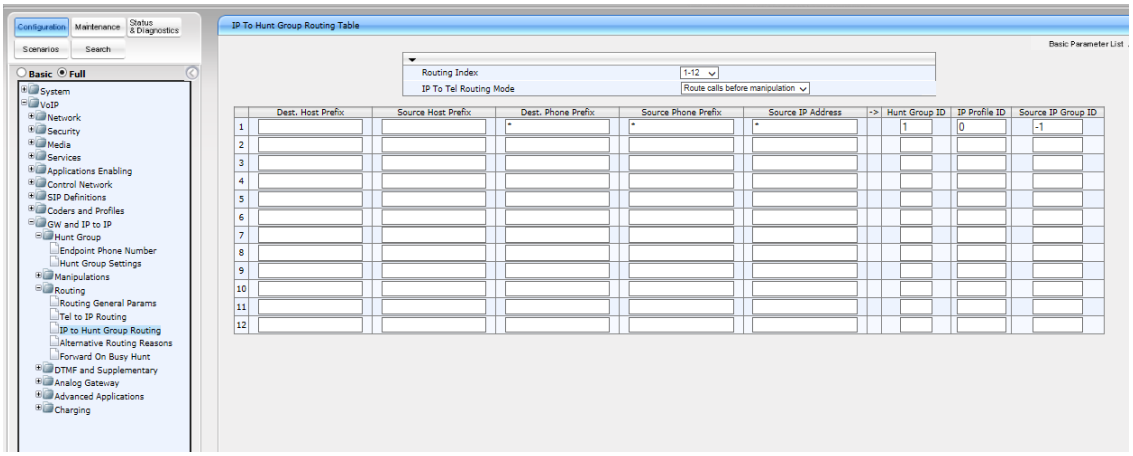
11.5.5 Setting up an Extension



11.5.6 Setting Hunt Group



11.5.7 Setting IP to Hunt Group Routing



12 Show Commands

This chapter describes show commands that can be used to show the VRRP and binding statuses.

12.1 VRRP Status

```
SBC_1# show data vrrp brief
Interface              Grp Pri Time,msec  Own Pre State  Master addr      Group addr
VLAN 2                 2   100 3609            Y  Backup 192.168.1.2      192.168.1.3
VLAN 1                 1   250 3023            Y  Master 192.168.0.1      192.168.0.3

SBC_2# show data vrrp brief
Interface              Grp Pri Time,msec  Own Pre State  Master addr      Group addr
VLAN 2                 2   250 3023            Y  Master 192.168.1.2      192.168.1.3
VLAN 1                 1   100 3609            Y  Backup 192.168.0.1      192.168.0.3
```

12.2 Binding Status

```
SBC_1# show network voip-bindings

VoIP Applications to Network source bindings:
---------------------------------------------

VoIP bind to IPv4 VLAN 1 with ip address 192.168.0.3

VoIP bind to IPv4 VLAN 2 with ip address 192.168.1.3

VoIP bind to IPv4 WAN on VRF main-vrf with destination address 10.10.10.2,
  Current WAN interface is GigabitEthernet 0/0 with ip address 10.10.10.1

Interface VLAN 1 is bind to 169.254.254.214 for VoIP traffic
     udp Ports 6000 - 6999
     udp Ports 5060 - 5060
     tcp Ports 5060 - 5060
     tcp Ports 5061 - 5061
Interface VLAN 2 is bind to 169.254.254.218 for VoIP traffic
     udp Ports 6000 - 6999
     udp Ports 5060 - 5060
     tcp Ports 5060 - 5060
     tcp Ports 5061 - 5061

NAT & Port FW rules used by VoIP Applications:
----------------------------------------------

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6999 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#197
    Ports 5060 - 5060 --> SIPLISTENING#3
    Ports 5061 - 5061 --> SIPLISTENING#3
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6999 to WAN IP 10.10.10.1 ports 6000-
6999, interface GigabitEthernet 0/0
    SIPUDP#197: LAN ports 5060-5060 to WAN IP 10.10.10.1 ports 5060-5060,
interface GigabitEthernet 0/0
    SIPLISTENING#3: LAN ports 5060-5060 to WAN IP 10.10.10.1 ports 5060-5060,
interface GigabitEthernet 0/0
    SIPLISTENING#3: LAN ports 5061-5061 to WAN IP 10.10.10.1 ports 5061-5061,
interface GigabitEthernet 0/0
```

```
SBC_2# show network voip-bindings

VoIP Applications to Network source bindings:
---------------------------------------------

VoIP bind to IPv4 VLAN 1 with ip address 192.168.0.3

VoIP bind to IPv4 VLAN 2 with ip address 192.168.1.3

VoIP bind to IPv4 WAN on VRF main-vrf with destination address 10.10.10.2,
  Current WAN interface is GigabitEthernet 0/0 with ip address 10.10.10.5

Interface VLAN 1 is bind to 169.254.254.214 for VoIP traffic
     udp Ports 6000 - 6999
     udp Ports 5060 - 5060
     tcp Ports 5060 - 5060
     tcp Ports 5061 - 5061
Interface VLAN 2 is bind to 169.254.254.218 for VoIP traffic
     udp Ports 6000 - 6999
     udp Ports 5060 - 5060
     tcp Ports 5060 - 5060
     tcp Ports 5061 - 5061

NAT & Port FW rules used by VoIP Applications:
----------------------------------------------

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6999 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#198
    Ports 5060 - 5060 --> SIPLISTENING#3
    Ports 5061 - 5061 --> SIPLISTENING#3
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6999 to WAN IP 10.10.10.5 ports 6000-
6999, interface GigabitEthernet 0/0
    SIPUDP#198: LAN ports 5060-5060 to WAN IP 10.10.10.5 ports 5060-5060,
interface GigabitEthernet 0/0
    SIPLISTENING#3: LAN ports 5060-5060 to WAN IP 10.10.10.5 ports 5060-5060,
interface GigabitEthernet 0/0
    SIPLISTENING#3: LAN ports 5061-5061 to WAN IP 10.10.10.5 ports 5061-5061,
interface GigabitEthernet 0/0
```

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