Configuration Note

Multi Service Business Routers Product Series

Mediant MSBR

Simplifying Network Configuration

Version 6.8

audiocodes

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Abbreviations and Terminology

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Related Documentation

Document Name
CLI Reference Guide
MSBR SIP User's Manual

Document Revision Record

LTRT	Description
31740	Initial document release for Version 6.8.
31741	General clarification for the operation of the Single network mode as static mode. Updates to the Dual MSBRs with Voice and SBC Applications and VRRP Interface data configuration.
31742	Updated logos, links and new formatting.

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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, reset the device to default, reboot the unit, type the following command and then reboot the unit again:

```
configure system
  config-networking
    single-net-mode enable
```

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:

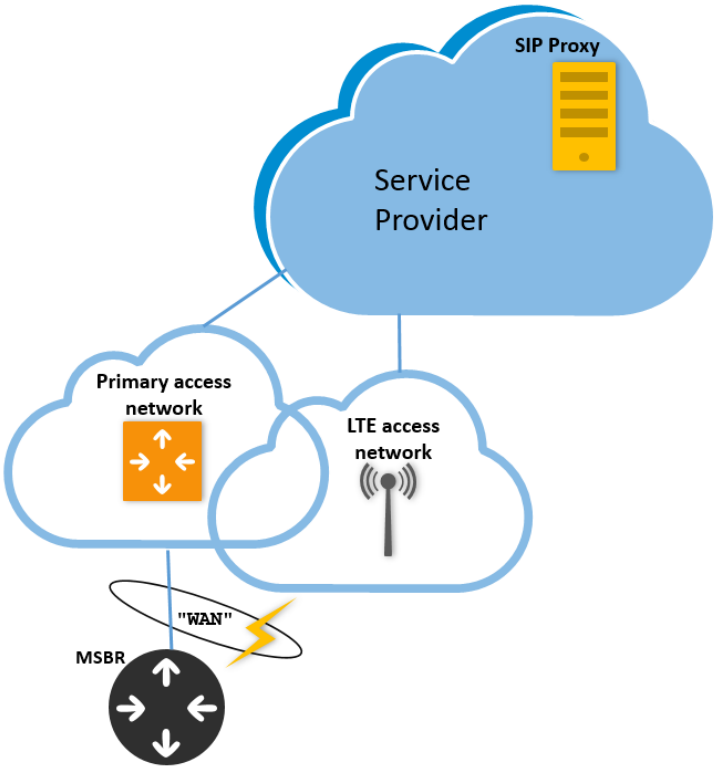
```
voip-network realm 1
 name "MR_WAN"
 ipv4if "WAN"
 port-range-start 6000
 session-leg 100
 port-range-end 6990
 activate
exit

voip-network sip-interface 1
 interface-name "SIP_WAN"
 network-interface "WAN"
 application-type sbc
 srd 1
 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:

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


 voip-network sip-interface 1
  interface-name "SIP_WAN"
  network-interface "WAN VRF VoiceVRF"
  application-type sbc
  srd 1
  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'):

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 2"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit

   voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 2"
    application-type sbc
    activate
   exit
```

VLAN 2 is the router's VLAN 2:

```
configure data
  interface vlan 2
    ip address 12.12.12.2 255.255.255.0
    no shutdown
  exit
```

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

```
MSBR# show voip network-source-bindings

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

VoIP bind to VLAN 2 with ip address 12.12.12.2

VoIP bind to WAN on VRF main-vrf with destination address
10.9.9.10:
  Current WAN interface is EFM 0/2.2014 with ip address
10.205.0.42

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

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
```

```
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP
10.205.0.42 ports 6000-6990, interface EFM 0/2.2014
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.205.0.42 ports
5060-5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.205.0.42
ports 5060-5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.205.0.42
ports 5061-5061, interface EFM 0/2.2014
```

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. In case you bind an interface and then you change it, it still remains bound to the VoIP application. You can verify which network interfaces are bound to the VoIP application using the CLI command "show voip network-source-bindings". (See an example of this scenario in Chapter 7).

  There are two ways to delete the interface bind from the VoIP side (in case the interface is no longer in use):
  - Delete the interface on the Data side.
  - Reset the MSBR.

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

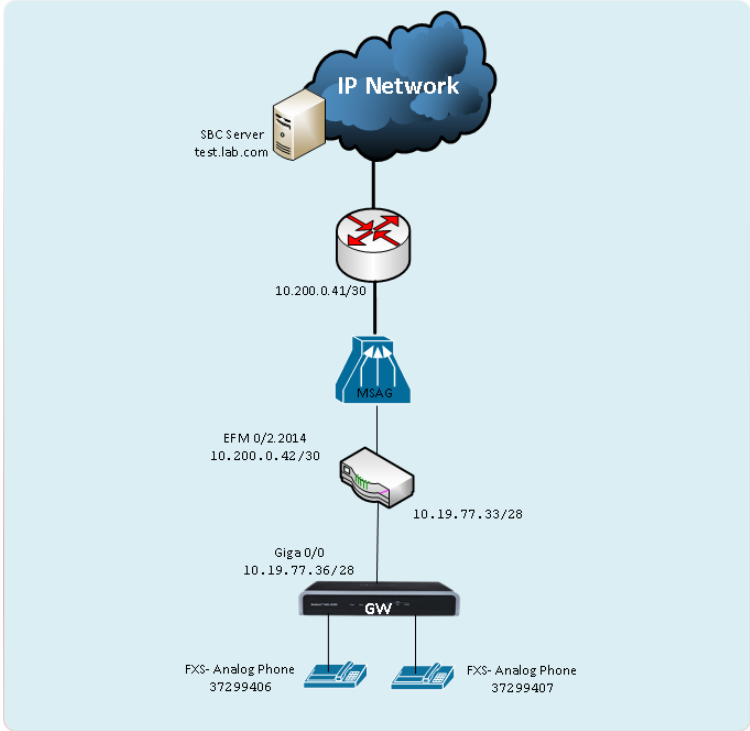
This document includes the following example scenarios:

- 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 system
   config-networking
    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
    speed auto
    duplex auto
    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 coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

3.3.2 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

```
voip-network 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

```
voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

3.3.4 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN

```
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface "WAN"
    srd 1
    activate
   exit
```

3.3.5 Assigning Proxy set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

3.3.6 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "BroadSoft"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    activate
   exit
```

3.3.7 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 0
    proxy-address "test.lab.com"
    proxy-set-id 2
    activate
   exit
```

3.3.8 Enabling Registration

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

3.3.9 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "37299406"
    module 2
    activate
   exit
gw analoggw authentication 0
    user-name "37299406"
    password Y1ZcQXV5eXQ== obscured
    activate
   exit
```

3.3.10 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    activate
   exit
```

3.3.11 Setting Hunt Group

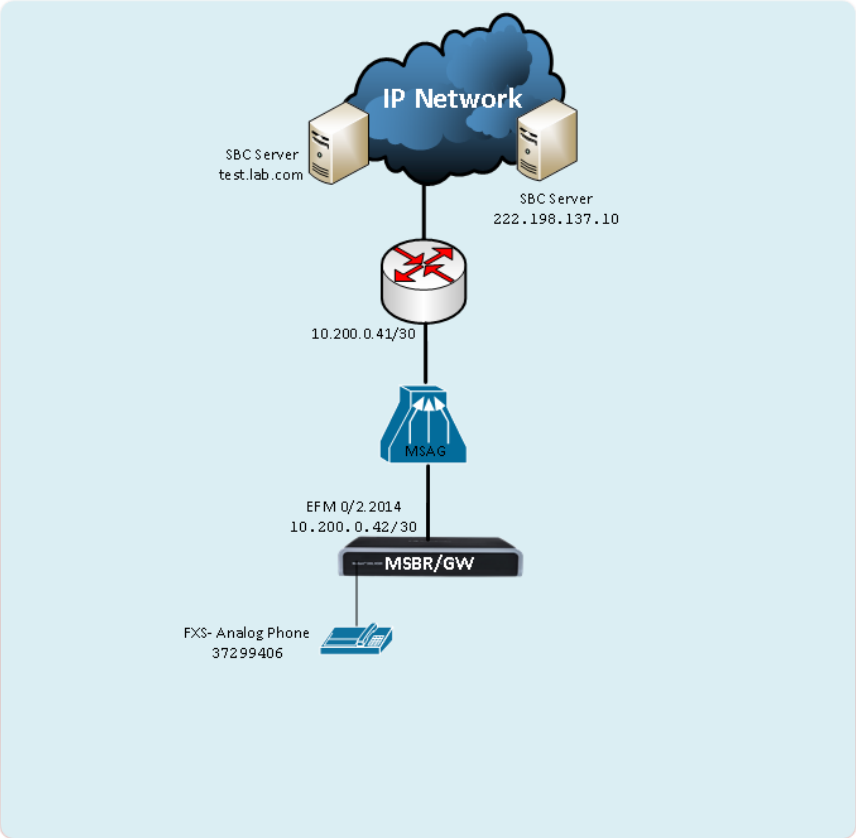
```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group 2
    activate
   exit
```

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 system
   config-networking
    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
    mode VDSL
    auto-switch-attempts vdsl 1 vdsl-v43 0 adsl 2
    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 coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    rate 0
    activate
   exit
   coders-and-profiles coders-group-0 1
    name "g711Ulaw64k"
    p-time 20
    rate 0
    activate
   exit
```

4.3.2 Creating WAN Media Realm and Assigning to Reserve Keyword WAN

```
voip-network realm 0
    name "MR_WAN"
    ipv4if "WAN"
    port-range-start 6000
    session-leg 200
    port-range-end 7990
    is-default true
    activate
   exit
```

4.3.3 Creating WAN SRD and Assigning its Media Realm WAN

```
voip-network srd 0
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

4.3.4 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN

```
voip-network sip-interface 0
    interface-name "SIP_WAN"
    network-interface "WAN"
    activate
   exit
```

4.3.5 Assigning Proxy Set 1 to SRD 0 (SRD_WAN)

```
voip-network proxy-set 1
    proxy-name ""
    activate
   exit
```

4.3.6 Creating IP Group for WAN Side

```
voip-network ip-group 1
    description "ProxyforWANB"
    proxy-set-id 1
    activate
   exit
```

4.3.7 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 1
    proxy-address "test.lab.com"
    proxy-set-id 1
    activate
   exit
```

4.3.8 Enabling Registration and Setting the Calls to Work with Routing Table

```
    sip-definition proxy-and-registration
    dns-query srv
    enable-registration on
    prefer-routing-table enable
    activate
   exit
```

4.3.9 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "37299406"
    module 2
    activate
   exit
gw analoggw authentication 0
    user-name "37299406"
    password Y1ZcQXV5eXQ== obscured
    activate
   exit
```

4.3.10 Setting Tel-to-IP Routing Rules

```
gw routing tel2ip-routing 0
    dst-phone-prefix "050"
    dst-ip-address "test.lab.com"
    ip-profile-id 0
    dst-port 5060
    dst-srd 0
    activate
   exit
   gw routing tel2ip-routing 1
    dst-phone-prefix "03"
    dst-ip-address "222.198.137.10"
    ip-profile-id 0
    dst-port 5060
    dst-srd 0
    activate
   exit
```

4.3.11 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    dst-host-prefix "*"
    src-host-prefix "*"
    activate
   exit
```

4.3.12 Setting Hunt Group

```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    activate
   exit
```

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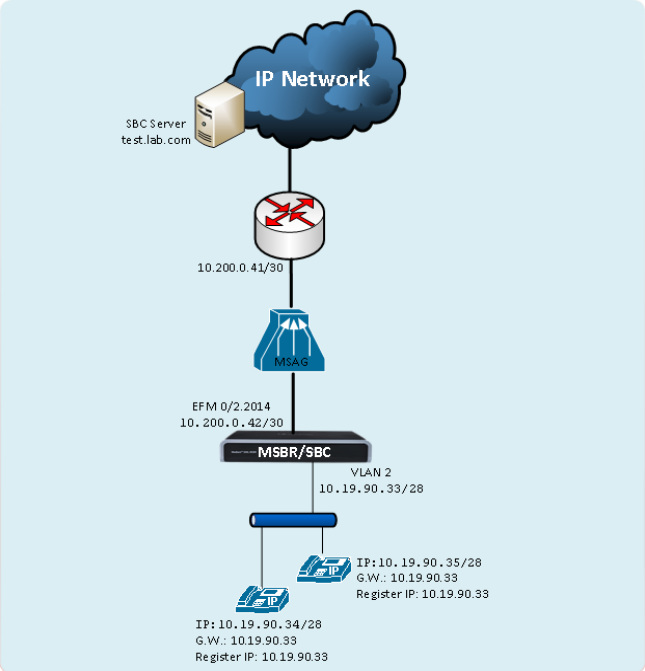
5 MSBR with SBC Application

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



Back to scenarios menu.

5.1 MSBR System Configuration (Entire Configuration)

```
configure system
   config-networking
    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
```

```
    mode VDSL
    auto-switch-attempts vdsl 1 vdsl-v43 0 adsl 2
    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 VLAN2

```
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 Enabling SBC Application

```
configure voip
   appli-enabling
    enable-sbc on
    activate
   exit
```

5.3.2 Setting Voice Coders

```
coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

5.3.3 Creating LAN Media Realm and Assigning to VLAN2

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 2"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit
```

5.3.4 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

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

5.3.5 Creating LAN SRD and Assigning Media Realm LAN to it

```
voip-network srd 0
    name "SRD_LAN"
    media-realm-name "MR_LAN"
    activate
   exit
```

5.3.6 Creating WAN SRD and Assigning its Media Realm WAN

```
voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

5.3.7 Creating LAN SIP Interface

```
voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 2"
    application-type sbc
    activate
   exit
```

5.3.8 Creating WAN SIP Interface and Assigning to Reserved Keyword WAN

```
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface "WAN"
    application-type sbc
    srd 1
    activate
   exit
```

5.3.9 Assigning Proxy Set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

5.3.10 Creating IP Group for LAN Side

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

5.3.11 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "BroadSoft"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    activate
   exit
```

5.3.12 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-id 1
    dst-ip-group-id 2
    activate
   exit
   sbc routing ip2ip-routing 2
    route-name "Broadsoft==>IPP"
    src-ip-group-id 2
    dst-user-name-prefix "372994"
    dst-ip-group-id 1
    activate
   exit
   sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

5.3.13 Setting Proxy Server (IP or Hostname)

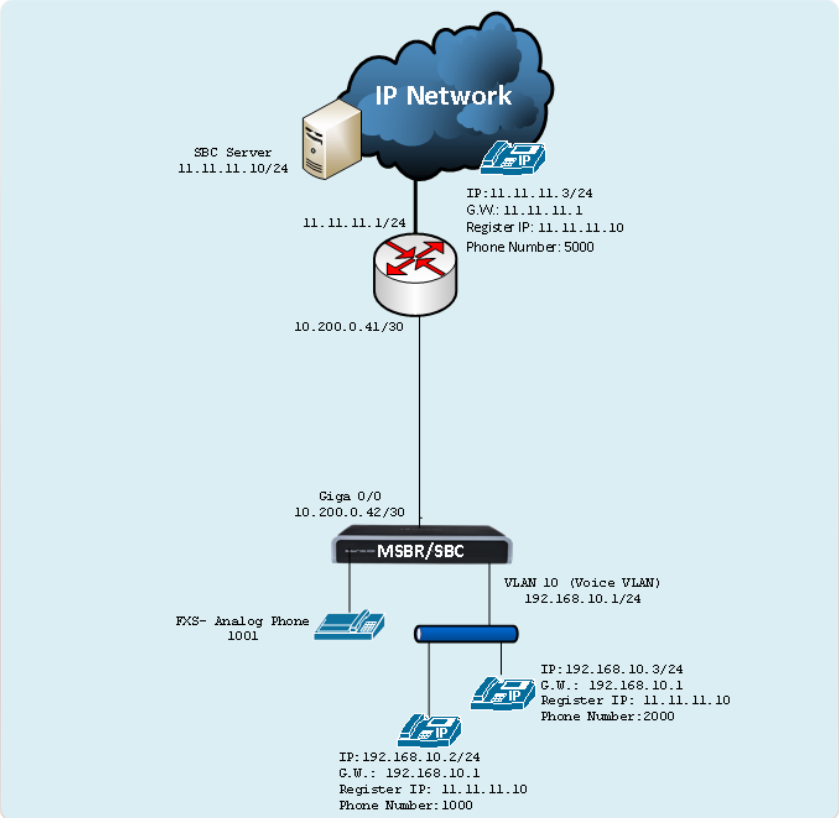
```
voip-network proxy-ip 0
    proxy-address "test.lab.com"
    proxy-set-id 2
    activate
   exit
  exit
```

This page is intentionally left blank.

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 system
   config-networking
    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
    speed auto
    duplex auto
    no service dhcp
    ip dns server static
    napt
    firewall enable
    no shutdown
   exit
```

6.3 Setting Physical LAN Ethernet assign to VLAN10 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 the traffic to the SBC

This ACL will be used later by the intercept feature (see Section 6.8.8).

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

6.5 Setting Logical Interface

```
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
    no napt
    no firewall enable
    no link-state monitor
    no shutdown
   exit
```

Note: Enabling the intercept feature is dependent on the voice configuration (Media Realm and SIP interface). If these entities are not configured, this feature cannot be activated.

6.6 Enable LLDP for Sending the VLAN Voice to the 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 Enabling SBC Application

```
configure voip
   appli-enabling
    enable-sbc on
    activate
   exit
```

6.8.2 Setting Voice Coders

```
coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

6.8.3 Creating LAN Media Realm and Assigning to VLAN10

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 10"
    port-range-start 6000
    session-leg 256
    port-range-end 8550
    activate
   exit
```

6.8.4 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

```
voip-network realm 1
    name "MR_WAN"
    ipv4if "WAN"
    port-range-start 7000
    session-leg 100
    port-range-end 7990
    activate
   exit
```

6.8.5 Creating LAN SRD and Assigning Media Realm LAN

```
voip-network srd 0
    name "SRD_LAN"
    media-realm-name "MR_LAN"
    activate
   exit
```

6.8.6 Creating WAN SRD and Assigning Media Realm WAN

```
Voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

6.8.7 Creating LAN SIP Interface

```
voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 10"
    application-type sbc
    activate
   exit
```

6.8.8 Enabling Intercept Feature

This section describes how to enable the intercept feature on the VLAN interface that was created for the voice in Section 6.5.

```
configure data
interface VLAN 10
    intercept ip destination sbc to local-voip
   exit
```

6.8.9 Creating WAN SIP Interface and Assigning Reserved keyword WAN

```
Configure voip
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface "WAN"
    application-type sbc
    srd 1
    activate
   exit
```

6.8.10 Assigning Proxy Set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

6.8.11 Creating IP Group for LAN side

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

6.8.12 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "IPPBX"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    activate
   exit
```

6.8.13 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "1001"
    module 2
    activate
   exit
gw analoggw authentication 0
    user-name "1001"
    password pass1001
    activate
   exit
```

6.8.14 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    activate
```

```
   exit
```

6.8.15 Setting Hunt Group

```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group 2
    activate
   exit
```

6.8.16 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==>IPPBX"
    src-ip-group-id 1
    dst-ip-group-id 2
    activate
   exit
sbc routing ip2ip-routing 2
    route-name "IPPBX==>GW"
    src-ip-group-id 2
    dst-user-name-prefix "1001"
    dst-type gateway
    activate
   exit
   sbc routing ip2ip-routing 3
    route-name "IPPBX==>IPP"
    src-ip-group-id 2
    dst-ip-group-id 1
    activate
   exit
   sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

6.8.17 Enabling Registration

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

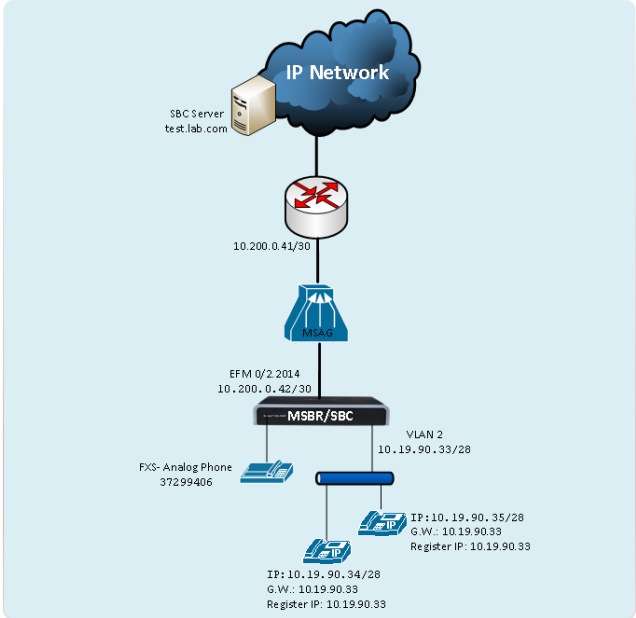
6.8.18 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 0
    proxy-address "11.11.11.10"
    proxy-set-id 2
    activate
   exit
  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 system
   config-networking
    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
```

```
    mode VDSL
    auto-switch-attempts vdsl 1 vdsl-v43 0 adsl 2
    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 VLAN2

```
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 Enabling SBC Application

```
configure voip
   appli-enabling
    enable-sbc on
    activate
   exit
```

7.6.2 Setting Voice Coders

```
coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

7.6.3 Creating LAN Media Realm and Assigning to VLAN2

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 2"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit
```

7.6.4 Creating WAN Media Realm and Assigning to Reserved Keyword WAN

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

7.6.5 Creating LAN SRD and Assigning Media Realm LAN

```
voip-network srd 0
    name "SRD_LAN"
    media-realm-name "MR_LAN"
    activate
   exit
```

7.6.6 Creating WAN SRD and Assigning Media Realm WAN

```
Voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

7.6.7 Creating LAN SIP Interface

```
voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 2"
    application-type sbc
    activate
   exit
```

7.6.8 Creating WAN SIP Interface and Assigning Reserved keyword WAN

```
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface "WAN"
    application-type sbc
    srd 1
    activate
   exit
```

7.6.9 Assigning Proxy Set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

7.6.10 Creating IP Group for LAN side

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

7.6.11 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "BroadSoft"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    activate
   exit
```

7.6.12 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "37299406"
    module 2
    activate
   exit
gw analoggw authentication 0
    user-name "37299406"
    password Y1ZcUldQXV5eXQ== obscured
    activate
   exit
```

7.6.13 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    activate
   exit
```

7.6.14 Setting Hunt Group

```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group 2
    activate
   exit
```

7.6.15 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-id 1
    dst-ip-group-id 2
    activate
   exit
   sbc routing ip2ip-routing 3
    route-name "Broadsoft==>GW"
    src-ip-group-id 2
    dst-user-name-prefix "3729940"
    dst-type gateway
    activate
   exit
   sbc routing ip2ip-routing 4
    route-name "Broadsoft==>IPP"
    src-ip-group-id 2
    dst-user-name-prefix "372994"
    dst-ip-group-id 1
    activate
   exit
   sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

7.6.16 Enabling Registration

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

7.6.17 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 0
    proxy-address "test.lab.com"
    proxy-set-id 2
    activate
   exit
  exit
```

7.7 Example of Limitation of Binds Interfaces

As mentioned in Section 2.4, up to **8** binds interfaces (LAN and WAN) can be configured.

In the example below, two new LAN interfaces are added to the current configuration (IP Phone and GW connected to SBC) and bound to the VoIP side (WAN interfaces can also be created).

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

```
MSBR# show voip network-source-bindings

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

VoIP bind to VLAN 2 with ip address 10.19.90.33

VoIP bind to WAN on VRF main-vrf with destination address 10.9.9.10:
  Current WAN interface is EFM 0/2.2014 with ip address 10.200.0.42

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

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP 10.200.0.42
ports 6000-6990, interface EFM 0/2.2014
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports 5060-5060,
interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports 5060-
5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.200.0.42 ports 5061-
5061, interface EFM 0/2.2014
```

7.7.1 Creating two LAN Interface (VLAN3 & VLAN4)

```
interface VLAN 3
    ip address 10.18.80.33 255.255.255.240
    desc "LAN switch VLAN 3"
    ip dhcp-server network 10.18.80.34 10.18.80.36 255.255.255.240
    service dhcp
    no shutdown
   exit

   interface VLAN 4
    ip address 10.20.80.33 255.255.255.240
    desc "LAN switch VLAN 4"
    ip dhcp-server network 10.20.80.34 10.20.80.36 255.255.255.240
    service dhcp
    no shutdown
   exit
```

7.7.2 Binding VLAN3 to VoIP Application

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 3"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit

voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 3"
    application-type sbc
    activate
   exit
```

By using the command “show voip network-source-bindings”, it can be observed that while VLAN3 binds to the VoIP application, VLAN2 still remain as bound to the VoIP application although it is no longer in use.

```
MSBR# show voip network-source-bindings

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

VoIP bind to VLAN 2 with ip address 10.19.90.33

VoIP bind to WAN on VRF main-vrf with destination address 10.9.9.10:
  Current WAN interface is EFM 0/2.2014 with ip address 10.200.0.42

VoIP bind to VLAN 3 with ip address 10.18.80.33

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

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP 10.200.0.42
ports 6000-6990, interface EFM 0/2.2014
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports 5060-5060,
interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports 5060-
5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.200.0.42 ports 5061-
5061, interface EFM 0/2.2014
```

7.7.3 Binding VLAN4 to VoIP Application

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 4"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit

voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 4"
    application-type sbc
    activate
   exit
```

By using the command “show voip network-source-bindings”, it can be observed that while VLAN4 binds to the VoIP application, VLAN2 and VLAN3 still remain as bound to the VoIP application although they are no longer in use.

```
MSBR# show voip network-source-bindings

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

VoIP bind to VLAN 2 with ip address 10.19.90.33

VoIP bind to WAN on VRF main-vrf with destination address 10.9.9.10:
  Current WAN interface is EFM 0/2.2014 with ip address 10.200.0.42

VoIP bind to VLAN 3 with ip address 10.18.80.33

VoIP bind to VLAN 4 with ip address 10.20.80.33

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

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP 10.200.0.42
ports 6000-6990, interface EFM 0/2.2014
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports 5060-5060,
interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports 5060-
5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.200.0.42 ports 5061-
5061, interface EFM 0/2.2014
```

There are two ways to delete the interface bind from the VoIP side (in case the interface is no longer in use):

- Delete the interface on the Data side.
- Reset the MSBR.

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

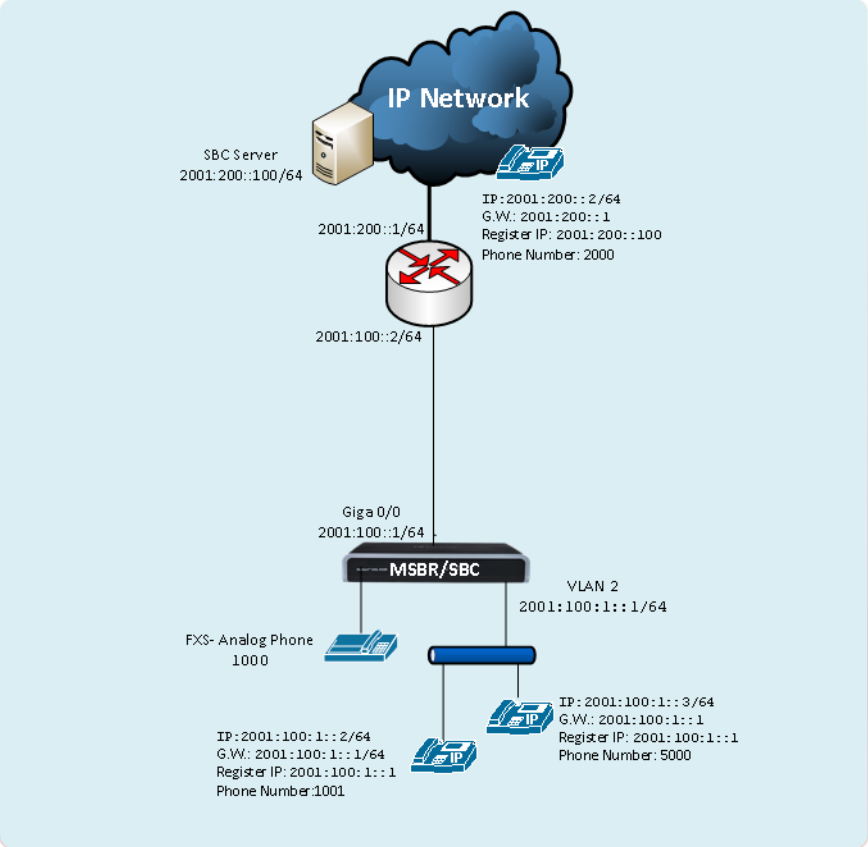
In the below example, it can be observed that after resetting the unit, only VLAN4 and WAN are bound to the VoIP application, while VLAN2 and VLAN3 have been removed.

```
MSBR# show voip network-source-bindings

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

VoIP bind to VLAN 4 with ip address 10.20.80.33

VoIP bind to WAN on VRF main-vrf with destination address
10.9.9.10:
  Current WAN interface is EFM 0/2.2014 with ip address
10.205.0.42

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

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP
10.200.0.42 ports 6000-6990, interface EFM 0/2.2014
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.200.0.42 ports
5060-5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.200.0.42
ports 5060-5060, interface EFM 0/2.2014
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.200.0.42
ports 5061-5061, interface EFM 0/2.2014
```

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 system
   config-networking
    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 VLAN2

```
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 using 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 – By using 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
```

8.2.5 MSBR Voice Configuration (Entire Configuration)

This section describes the voice configuration.

8.2.6 Enabling SBC Application

```
configure voip
   appli-enabling
    enable-sbc on
    activate
   exit
```

8.2.7 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
```

8.2.8 Setting Voice Coders

```
coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

8.2.9 Creating LAN Media Realm and Assigning to VLAN2

```
voip-network realm 0
    name "MR_LAN"
    ipv6if "VLAN 2 IPv6"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit
```

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

```
voip-network realm 1
    name "MR_WAN"
    ipv6if "WAN IPv6"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    activate
   exit
```

8.2.11 Creating LAN SRD and Assigning Media Realm LAN

```
voip-network srd 0
    name "SRD_LAN"
    media-realm-name "MR_LAN"
    activate
   exit
```

8.2.12 Creating WAN SRD and Assigning Media Realm WAN

```
voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

8.2.13 Creating LAN SIP Interface

```
voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 2 IPv6"
    application-type sbc
    activate
   exit
```

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

```
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface "WAN IPv6"
    application-type sbc
    srd 1
    activate
   exit
```

8.2.15 Assigning Proxy Set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

8.2.16 Creating IP Group for LAN side

```
voip-network ip-group 1
    type user
    description "IP_Phone"
    media-realm-name "MR_LAN"
    classify-by-proxy-set disable
    ip-profile-id 1
    activate
   exit
```

8.2.17 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "SBC Server"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    ip-profile-id 1
    activate
   exit
```

8.2.18 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "1000"
    module 2
    activate
   exit
gw analoggw authentication 0
```

```
    user-name "1000"
    password pass1000
    activate
   exit
```

8.2.19 Setting Tel-to-IP Routing

```
gw routing tel2ip-routing 0
    dst-phone-prefix "1001"
    ip-profile-id 0
    dst-ip-group-id 1
    src-trunk-group-id 1
    activate
   exit
```

8.2.20 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    activate
   exit
```

8.2.21 Setting Hunt Group

```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group 2
    activate
   exit
```

8.2.22 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==>SBC Server"
    src-ip-group-id 1
    dst-ip-group-id 2
    activate
   exit
```

```
   sbc routing ip2ip-routing 3
    route-name "SBC Server==>GW"
    src-ip-group-id 2
    dst-user-name-prefix "1000"
    dst-type gateway
    activate
   exit
   sbc routing ip2ip-routing 4
    route-name "SBC Server==>IPP"
    src-ip-group-id 2
    dst-user-name-prefix "1001"
    dst-ip-group-id 1
    activate
   exit
   sbc routing ip2ip-routing 5
    route-name "SBC Server==>IPP2"
    src-ip-group-id 2
    dst-user-name-prefix "5000"
    dst-ip-group-id 1
    activate
   exit
   sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

8.2.23 Enabling Registration

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

8.2.24 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 0
    proxy-address "2001:200::100"
    proxy-set-id 2
    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”

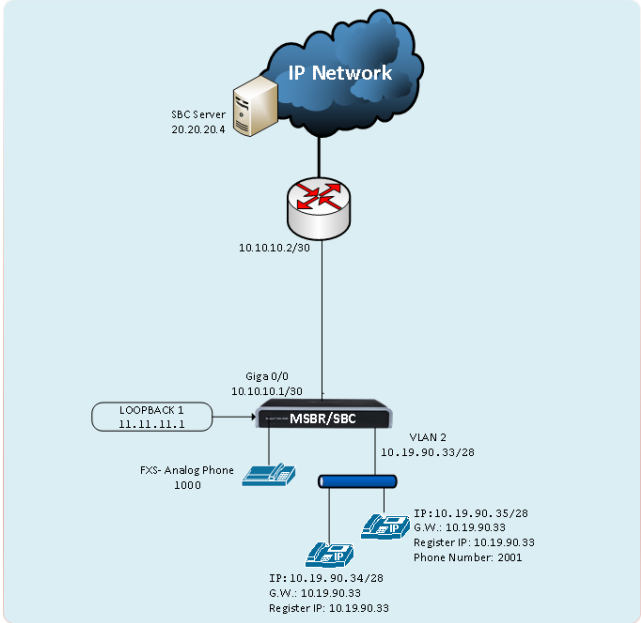
```
MSBR # show voip network-source-bindings

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

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

The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP 2001:100::1
ports 6000-6990, interface GigabitEthernet 0/0
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 2001:100::1 ports 5060-5060,
interface GigabitEthernet 0/0
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 2001:100::1 ports 5060-
5060, interface GigabitEthernet 0/0
    SIPLISTENING#1: 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 system
   config-networking
    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"
    no service dhcp
    network wan
    no napt
    no firewall enable
```

9.2.3 Setting Physical LAN Ethernet 1/1 to VLAN2

```
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 Enabling SBC Application

```
configure voip
   appli-enabling
    enable-sbc on
    activate
   exit
```

9.3.2 Setting Voice Coders

```
coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

9.3.3 Creating LAN Media Realm and Assigning to VLAN2

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 2"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit
```

9.3.4 Creating WAN Media Realm and Assigning to Loopback Interface

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

9.3.5 Creating LAN SRD and Assigning Media Realm LAN

```
voip-network srd 0
    name "SRD_LAN"
    media-realm-name "MR_LAN"
    activate
   exit
```

9.3.6 Creating WAN SRD and Assigning Media Realm WAN

```
voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

9.3.7 Creating LAN SIP Interface

```
voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 2"
    application-type sbc
    activate
   exit
```

9.3.8 Creating WAN SIP Interface and Assigning to Loopback Interface

```
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface " LOOPBACK 1"
    application-type sbc
    srd 1
    activate
   exit
```

9.3.9 Assigning Proxy Set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

9.3.10 Creating IP Group for LAN side

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

9.3.11 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "SBC Server"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    activate
   exit
```

9.3.12 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "1000"
    module 2
    activate
   exit
gw analoggw authentication 0
    user-name "1000"
    password 1000
    activate
   exit
```

9.3.13 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    activate
   exit
```

9.3.14 Setting Hunt Group

```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group 2
    activate
   exit
```

9.3.15 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==>SBC Server"
    src-ip-group-id 1
    dst-ip-group-id 2
    activate
   exit
   sbc routing ip2ip-routing 3
```

```
    route-name "SBC Server==>GW"
    src-ip-group-id 2
    dst-user-name-prefix "1000"
    dst-type gateway
    activate
   exit
   sbc routing ip2ip-routing 4
    route-name "SBC Server==>IPP"
    src-ip-group-id 2
    dst-user-name-prefix "2001"
    dst-ip-group-id 1
    activate
   exit
   sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

9.3.16 Enabling Registration

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

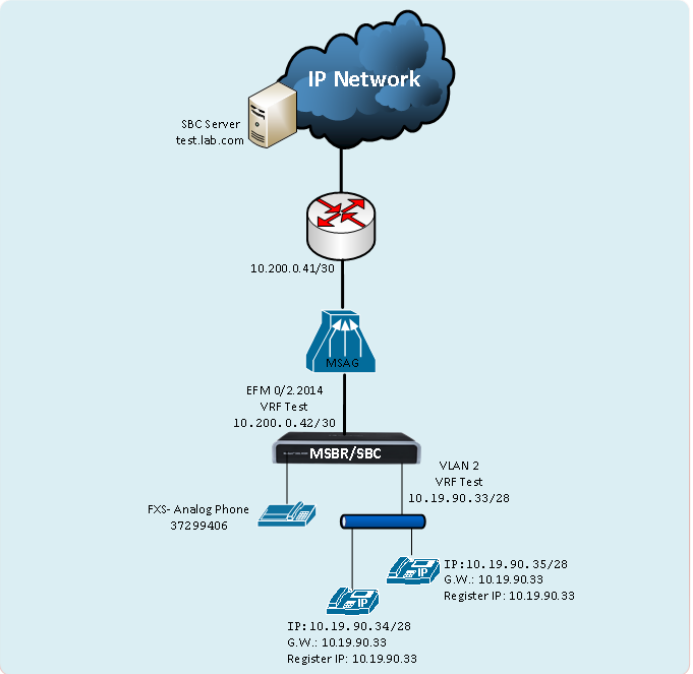
9.3.17 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 0
    proxy-address "20.20.20.4"
    proxy-set-id 2
    activate
   exit
  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 system
   config-networking
    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
    mode VDSL
    auto-switch-attempts vdsl 1 vdsl-v43 0 adsl 2
    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 VLAN2

```
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 Enabling SBC Application

```
configure voip
   appli-enabling
    enable-sbc on
    activate
   exit
```

10.3.2 Setting Voice Coders

```
coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
```

10.3.3 Creating LAN Media Realm and Assigning to VLAN2

```
voip-network realm 0
    name "MR_LAN"
    ipv4if "VLAN 2"
    port-range-start 6000
    session-leg 100
    port-range-end 6990
    is-default true
    activate
   exit
```

10.3.4 Creating WAN Media Realm and Assigning to VRF Test

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

10.3.5 Creating LAN SRD and Assigning Media Realm LAN

```
voip-network srd 0
    name "SRD_LAN"
    media-realm-name "MR_LAN"
    activate
   exit
```

10.3.6 Creating WAN SRD and Assigning Media Realm WAN

```
voip-network srd 1
    name "SRD_WAN"
    media-realm-name "MR_WAN"
    activate
   exit
```

10.3.7 Creating LAN SIP Interface

```
voip-network sip-interface 0
    interface-name "SIP_LAN"
    network-interface "VLAN 2"
    application-type sbc
    activate
   exit
```

10.3.8 Creating WAN SIP Interface and Assigning to VRF Test

```
voip-network sip-interface 1
    interface-name "SIP_WAN"
    network-interface " WAN VRF Test"
    application-type sbc
    srd 1
    activate
   exit
```

10.3.9 Assigning Proxy Set 2 to SRD 1 (SRD_WAN)

```
voip-network proxy-set 2
    proxy-enable-keep-alive using-options
    srd-id 1
    activate
   exit
```

10.3.10 Creating IP Group for LAN side

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

10.3.11 Creating IP Group for WAN Side

```
voip-network ip-group 2
    description "BroadSoft"
    proxy-set-id 2
    srd 1
    media-realm-name "MR_WAN"
    activate
   exit
```

10.3.12 Setting an Extension

```
gw hunt-or-trunk-group trunk-group 0
    trunk-group-id 1
    first-b-channel 1
    last-b-channel 1
    first-phone-number "37299406"
    module 2
    activate
   exit
gw analoggw authentication 0
    user-name "37299406"
    password Y1ZcdQXV5eXQ== obscured
    activate
   exit
```

10.3.13 Setting IP-to-Tel Routing

```
gw routing ip2tel-routing 0
    dst-phone-prefix "*"
    trunk-group-id 1
    src-phone-prefix "*"
    src-ip-address "*"
    activate
   exit
```

10.3.14 Setting Hunt Group

```
gw hunt-or-trunk-group trunk-group-setting 0
    trunk-group-id 1
    channel-select-mode dst-phone-number
    registration-mode per-endpoint
    serving-ip-group 2
    activate
   exit
```

10.3.15 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-id 1
    dst-ip-group-id 2
    activate
   exit
   sbc routing ip2ip-routing 3
    route-name "Broadsoft==>GW"
    src-ip-group-id 2
    dst-user-name-prefix "3729940"
    dst-type gateway
    activate
   exit
   sbc routing ip2ip-routing 4
    route-name "Broadsoft==>IPP"
    src-ip-group-id 2
    dst-user-name-prefix "372994"
    dst-ip-group-id 1
    activate
   exit
   sbc routing classification 0
    classification-name "IP_Phone"
    src-srd-id "0"
    src-ip-group-id "1"
    activate
   exit
```

10.3.16 Enabling Registration

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

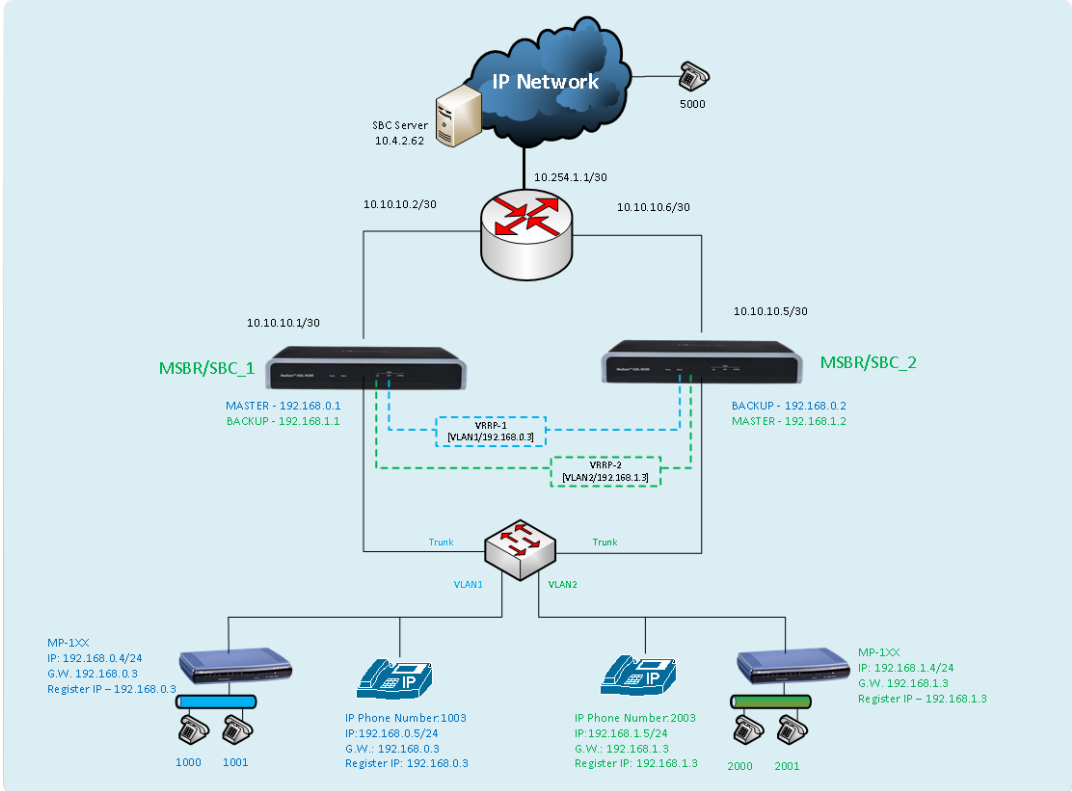
10.3.17 Setting Proxy Server (IP or Hostname)

```
voip-network proxy-ip 0
    proxy-address "test.lab.com"
    proxy-set-id 2
    activate
   exit
  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 system
   config-networking
    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

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
Enabling SBC Application	
configure voip appli-enabling enable-sbc on activate exit	configure voip appli-enabling enable-sbc on activate exit
Setting Voice Coders	
coders-and-profiles coders-group-0 0 name "g711Alaw64k" p-time 20 activate	coders-and-profiles coders-group-0 0 name "g711Alaw64k" p-time 20 activate

exit	exit
Creating LAN_1 Media Realm and assign to VLAN1	
voip-network realm 0 name "MR_LAN_1" ipv4if "VLAN 1" port-range-start 6000 session-leg 100 port-range-end 6990 is-default true activate exit	voip-network realm 0 name "MR_LAN" ipv4if "VLAN 1" port-range-start 6000 session-leg 100 port-range-end 6990 is-default true activate exit
Creating LAN_2 Media Realm and assign to VLAN2	
voip-network realm 2 name "MR_LAN_2" ipv4if "VLAN 2" port-range-start 6000 session-leg 100 port-range-end 6990 activate exit	voip-network realm 2 name "MR_LAN_2" ipv4if "VLAN 2" port-range-start 6000 session-leg 100 port-range-end 6990 activate exit
Creating WAN Media Realm and assign to reserved keyword WAN	
voip-network realm 1 name **"MR_WAN"** ipv4if **"WAN"** port-range-start 6000 session-leg 100 port-range-end 6990 activate exit	voip-network realm 1 name **"MR_WAN"** ipv4if **"WAN"** port-range-start 6000 session-leg 100 port-range-end 6990 activate exit
Creating LAN_1 SRD and assign Media Realm LAN_1 to it (MR_LAN_1)	
voip-network srd 0 name "SRD_LAN_1" media-realm-name "MR_LAN_1" activate exit	voip-network srd 0 name "SRD_LAN_1" media-realm-name "MR_LAN_1" activate exit
Creating LAN_2 SRD and assign Media Realm LAN_2 to it (MR_LAN_2)	
voip-network srd 2 name "SRD_LAN_2" media-realm-name "MR_LAN_2" activate exit	voip-network srd 2 name "SRD_LAN_2" media-realm-name "MR_LAN_2" activate exit

Creating WAN SRD and assign Media Realm WAN to it (MR_WAN)	
voip-network srd 1 name "**SRD_WAN**" media-realm-name "**MR_WAN**" activate exit	voip-network srd 1 name "**SRD_WAN**" media-realm-name "**MR_WAN**" activate exit
Creating LAN_1 SIP Interface	
voip-network sip-interface 0 interface-name "SIP_LAN_1" network-interface "VLAN 1" application-type sbc activate exit	voip-network sip-interface 0 interface-name "SIP_LAN_1" network-interface "VLAN 1" application-type sbc activate exit
Creating LAN_2 SIP Interface	
voip-network sip-interface 2 interface-name "SIP_LAN_2" network-interface "VLAN 2" application-type sbc srd 2 activate exit	voip-network sip-interface 2 interface-name "SIP_LAN_2" network-interface "VLAN 2" application-type sbc srd 2 activate exit
Creating WAN SIP Interface	
voip-network sip-interface 1 interface-name "**SIP_WAN**" network-interface "**WAN**" application-type sbc srd 1 activate exit	voip-network sip-interface 1 interface-name "**SIP_WAN**" network-interface "**WAN**" application-type sbc srd 1 activate exit
Assigning Proxy Set 2 to SRD 1 (SRD_WAN)	
voip-network proxy-set 2 srd-id 1 activate exit	voip-network proxy-set 2 srd-id 1 activate exit
Creating IP Group for LAN_1	
voip-network ip-group 1 type user description "GW_1" media-realm-name "MR_LAN_1"	voip-network ip-group 1 type user description "GW_1" media-realm-name "MR_LAN_1"

classify-by-proxy-set disable activate exit	classify-by-proxy-set disable activate exit

Creating IP Group for LAN_2	
voip-network ip-group 3 type user description "GW_2" srd 2 media-realm-name "MR_LAN_2" classify-by-proxy-set disable activate exit	voip-network ip-group 3 type user description "GW_2" srd 2 media-realm-name "MR_LAN_2" classify-by-proxy-set disable activate exit
Creating IP Group for WAN Side	
voip-network ip-group 2 description "B.S." proxy-set-id 2 srd 1 media-realm-name "MR_WAN" activate exit	voip-network ip-group 2 description "B.S." proxy-set-id 2 srd 1 media-realm-name "MR_WAN" activate 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==>B.S." src-ip-group-id 1 dst-ip-group-id 2 activate exit sbc routing ip2ip-routing 2 route-name "B.S.==>GW_1" src-ip-group-id 2 dst-ip-group-id 1 activate	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==>B.S." src-ip-group-id 1 dst-ip-group-id 2 activate exit sbc routing ip2ip-routing 2 route-name "B.S.==>GW_1" src-ip-group-id 2 dst-ip-group-id 1 activate

exit sbc routing ip2ip-routing 3 route-name "GW_2==>B.S." src-ip-group-id 3 dst-ip-group-id 2 activate exit sbc routing classification 0 classification-name "GW_1" src-srd-id "0" src-ip-group-id "1" activate exit sbc routing classification 1 classification-name "GW_2" src-srd-id "0" src-ip-group-id "3" activate	exit sbc routing ip2ip-routing 3 route-name "GW_2==>B.S." src-ip-group-id 3 dst-ip-group-id 2 activate exit sbc routing classification 0 classification-name "GW_1" src-srd-id "0" src-ip-group-id "1" activate exit sbc routing classification 1 classification-name "GW_2" src-srd-id "0" src-ip-group-id "3" activate
Setting Proxy Server (IP or Hostname) and registration to 30sec	
sip-definition proxy-and-registration registration-time 30 activate exit voip-network proxy-ip 0 proxy-address "10.254.1.2" proxy-set-id 2 activate exit exit	sip-definition proxy-and-registration registration-time 30 activate exit voip-network proxy-ip 0 proxy-address "10.254.1.2" proxy-set-id 2 activate exit exit

11.3 MSBR System Configuration (Entire Configuration)

MSBR/SBC1	MSBR/SBC2
configure system config-networking **single-net-mode enable** activate exit ntp set secondary-server "1.asia.pool.ntp.org"	configure system config-networking **single-net-mode enable** activate exit ntp set secondary-server "1.asia.pool.ntp.org"

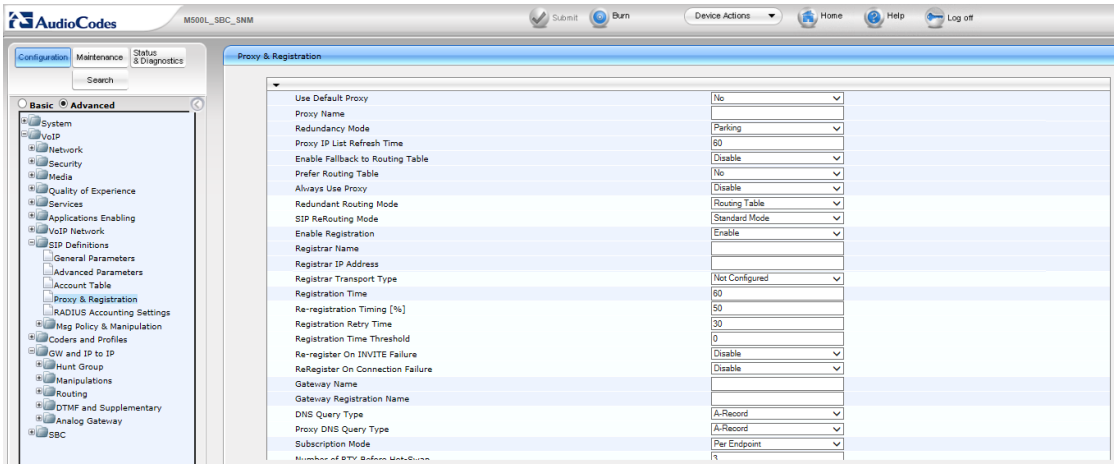
set primary-server "0.asia.pool.ntp.org" utc-offset 10800 activate exit hostname SBC_1 exit	set primary-server "0.asia.pool.ntp.org" utc-offset 10800 activate exit hostname SBC_2 exit

11.4 MP-1xx Configuration (Connected to VRRP1)

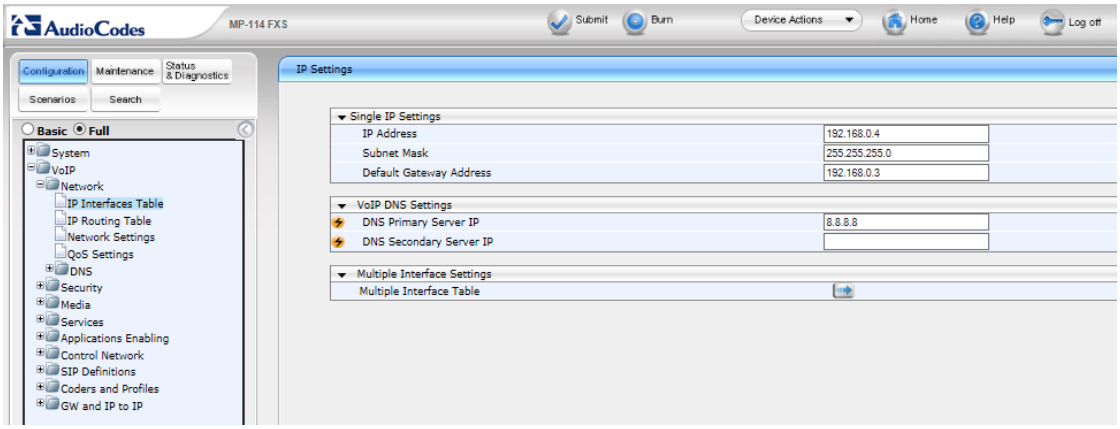
This section describes the configuration of the MP-1xx. In this example, the MP-1xx is the endpoint device. This endpoint device may also be an IP Phone.

11.4.1 Setting the Proxy Registration Time

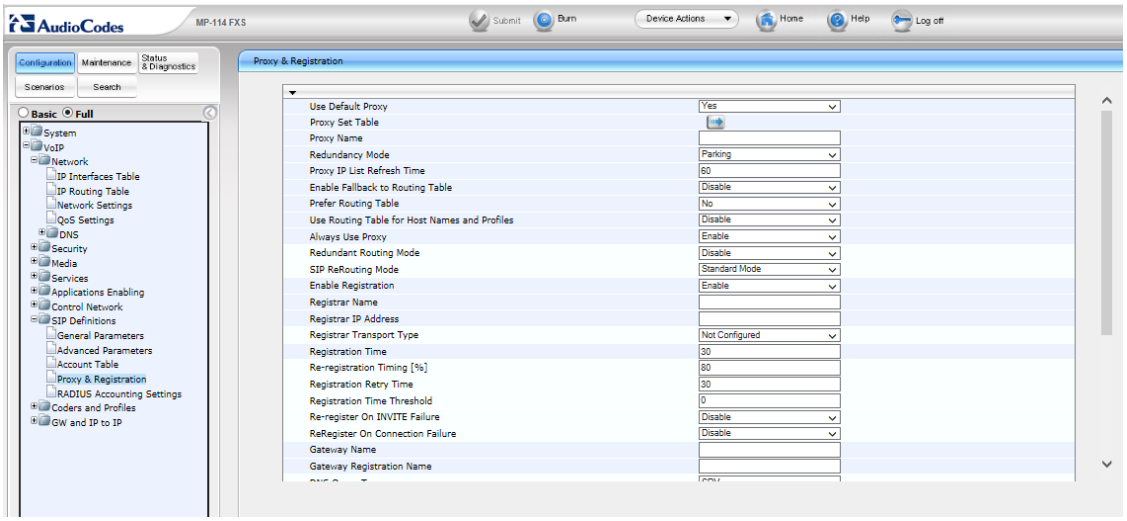
Note: To support this configuration scenario, the value of the 'Registration Time' parameter (configured in the Proxy & Registration table for defining the time interval (in seconds) for registering to a Proxy server) should be as low as possible. This is necessary to ensure a smooth failover for new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

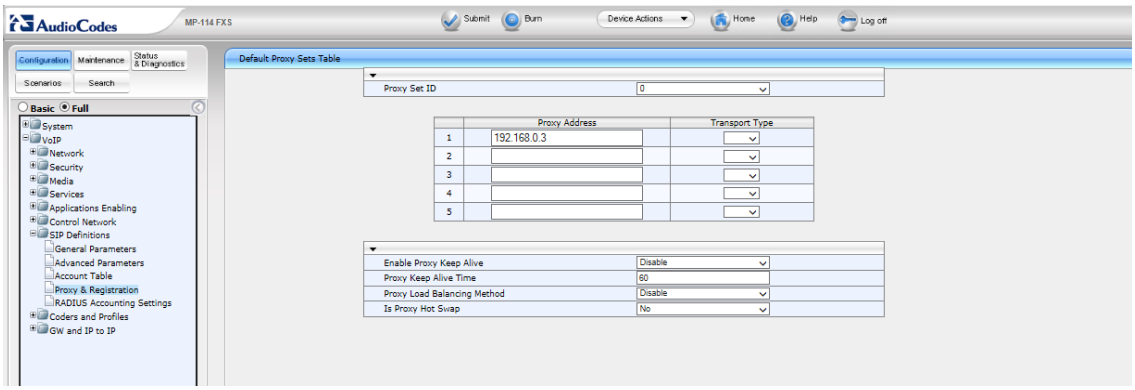


11.4.2 Setting IP Address (Default Gateway IP will be the IP of VRRP1)

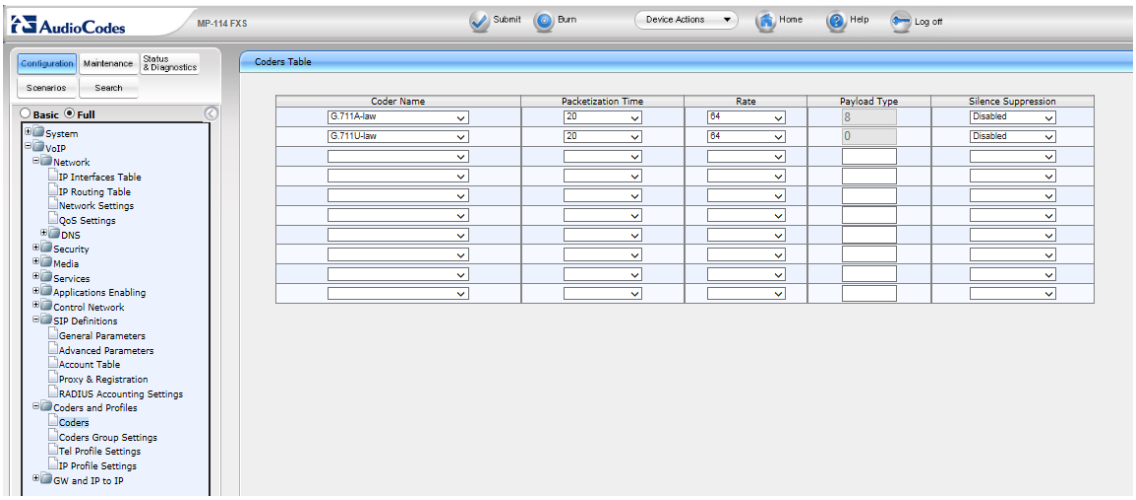


11.4.3 Setting Proxy IP Address (will be the IP of VRRP1)

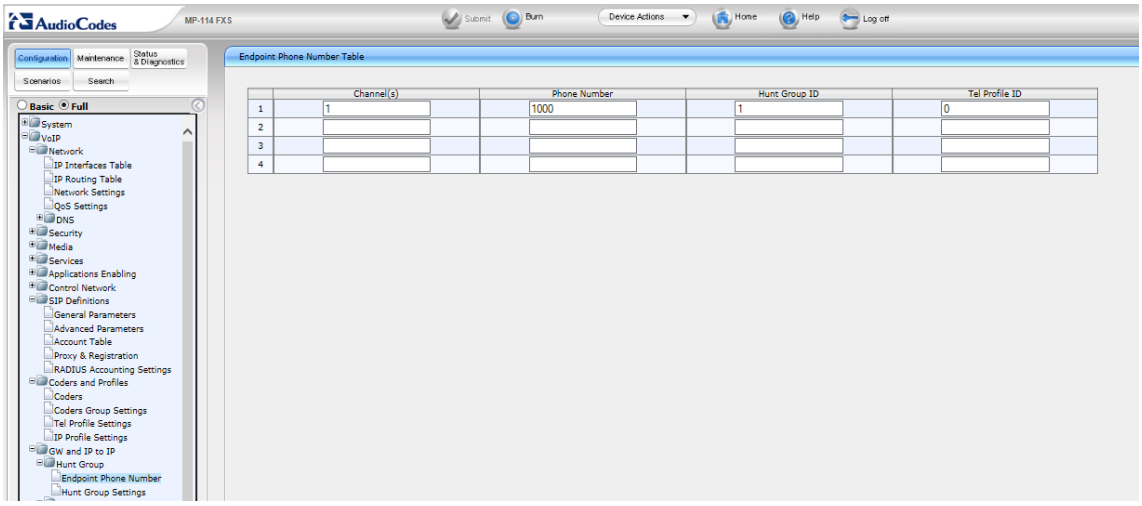




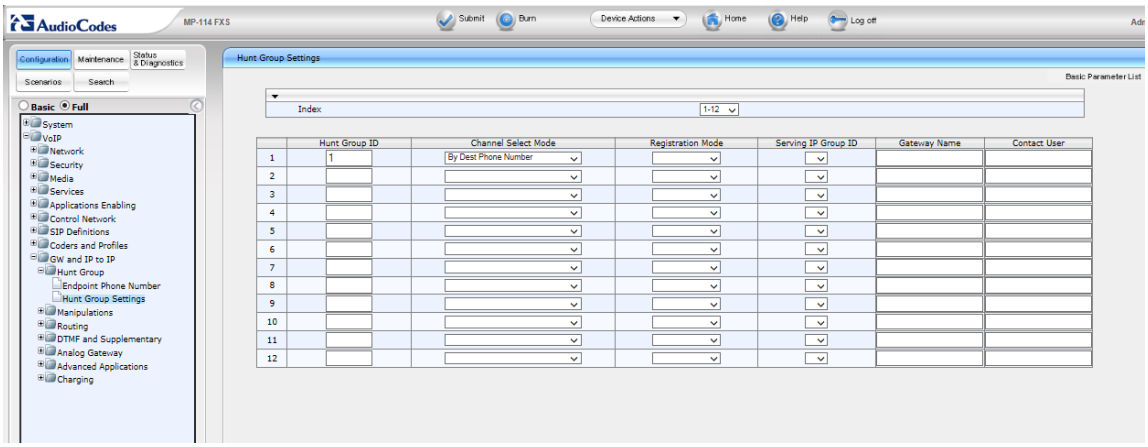
11.4.4 Setting Voice Coders



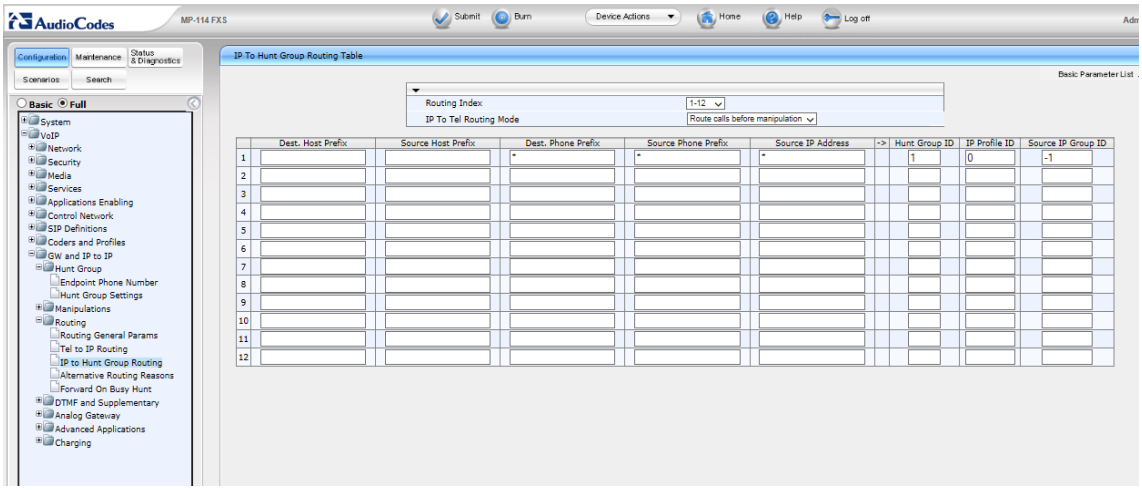
11.4.5 Setting up an Extension



11.4.6 Setting Hunt Group



11.4.7 Setting IP to Hunt Group Routing

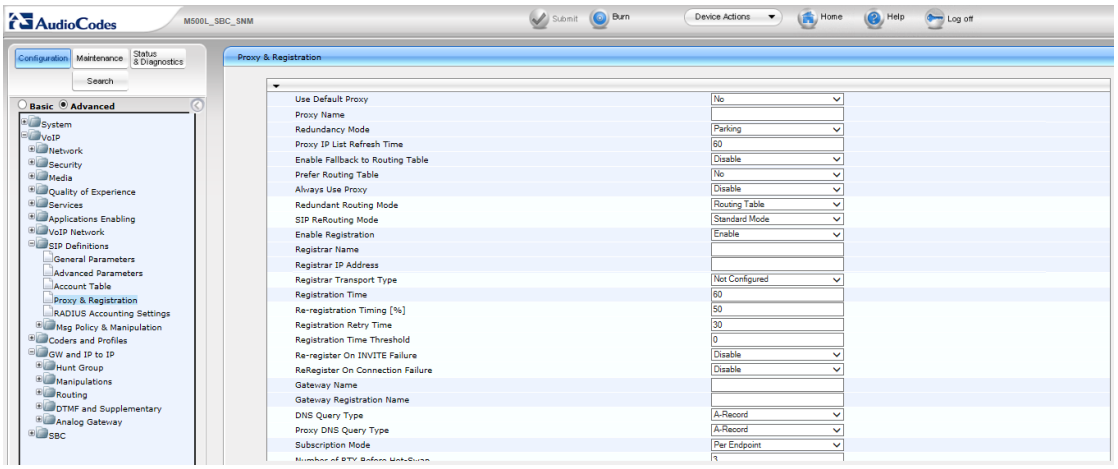


11.5 MP-1xx Configuration (Connected to VRRP2)

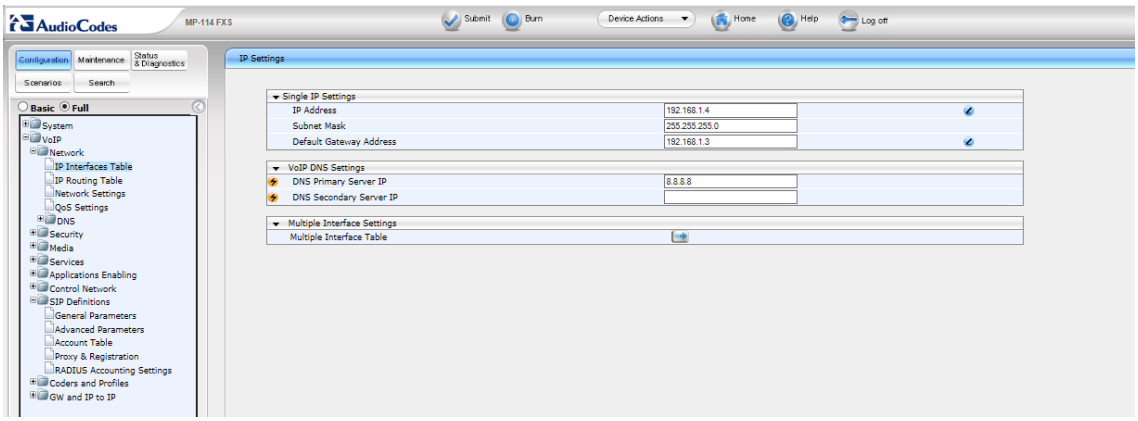
This section describes the configuration of the MP-1xx. In this example, the MP-1xx is the endpoint device. This endpoint device may also be an IP Phone.

11.5.1 Setting the Proxy Registration Time

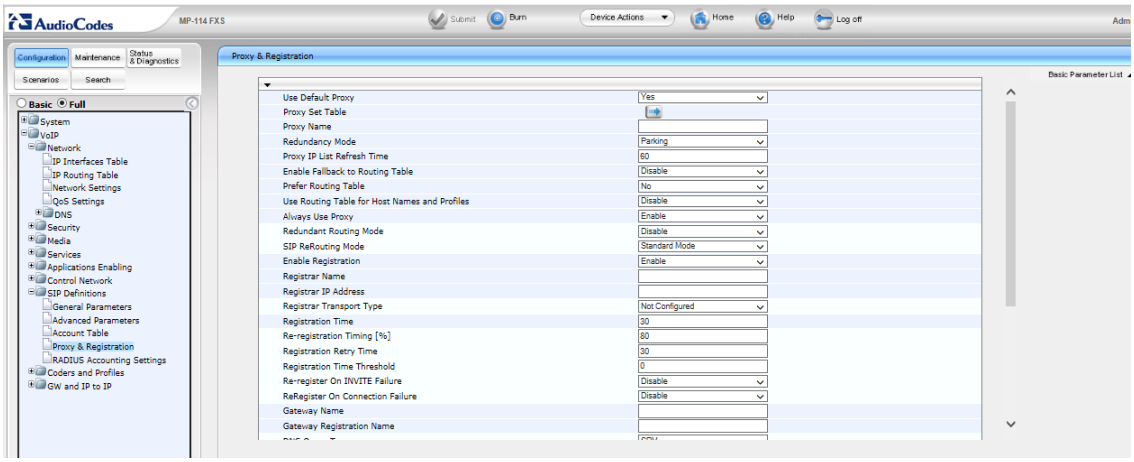
Note: To support this configuration scenario, the value of the 'Registration Time' parameter (configured in the Proxy & Registration table for defining the time interval (in seconds) for registering to a Proxy server) should be as low as possible. This is necessary to ensure a smooth failover for new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

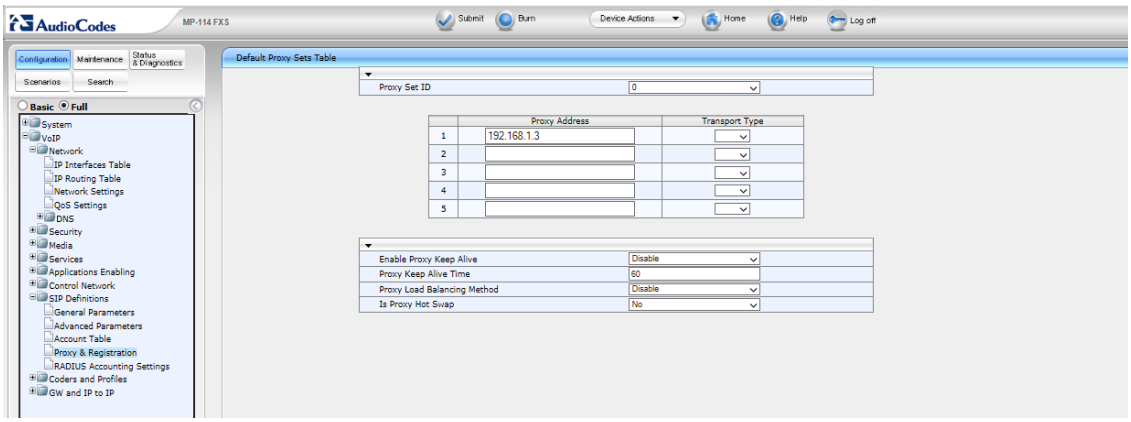


11.5.2 Setting IP Address (Default Gateway IP will be the IP of VRRP2)

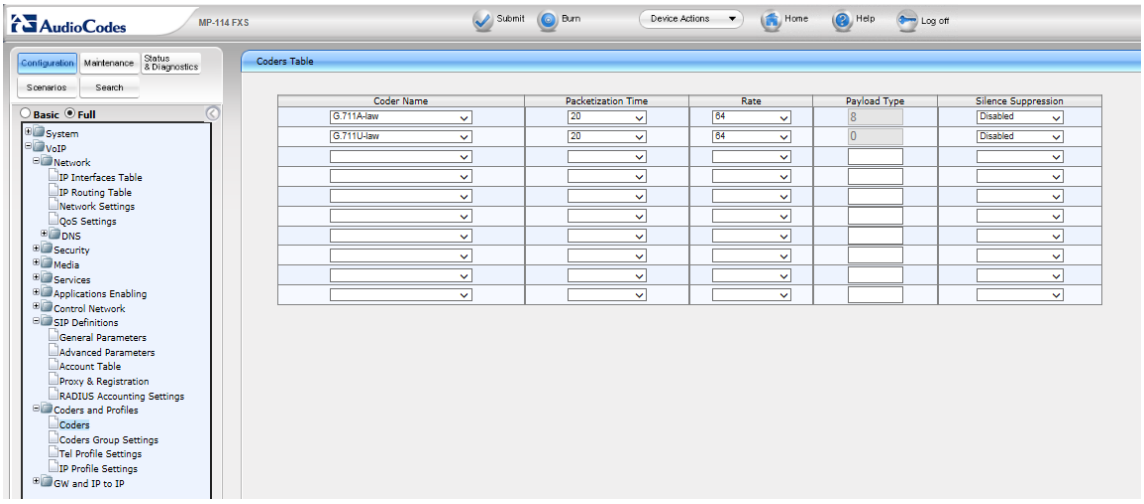


11.5.3 Setting Proxy IP Address (will be the IP of VRRP2)

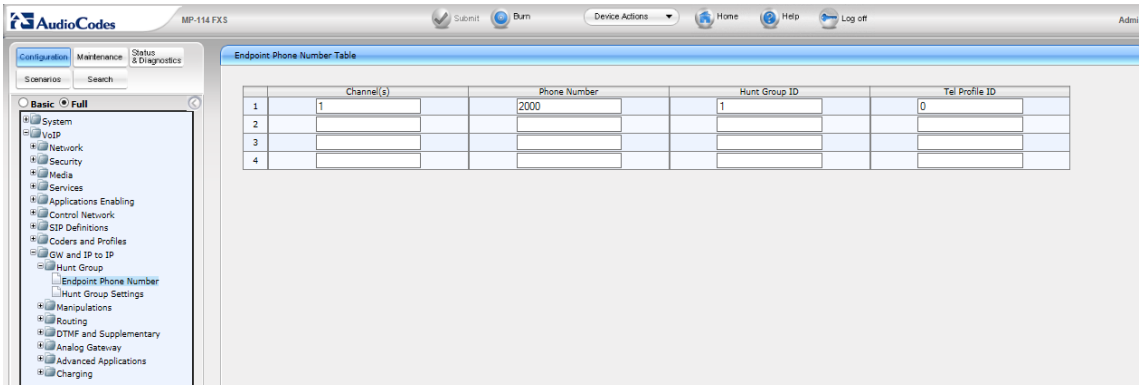




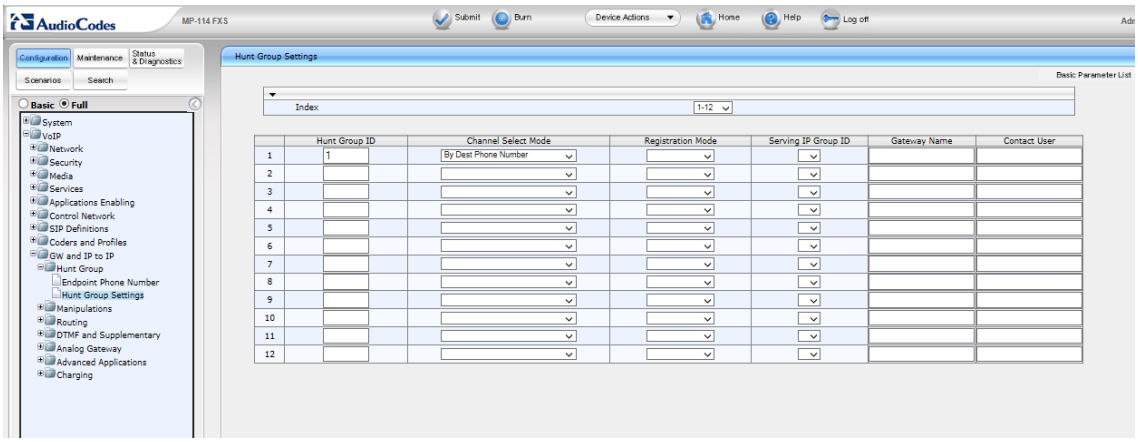
11.5.4 Setting Voice Coders



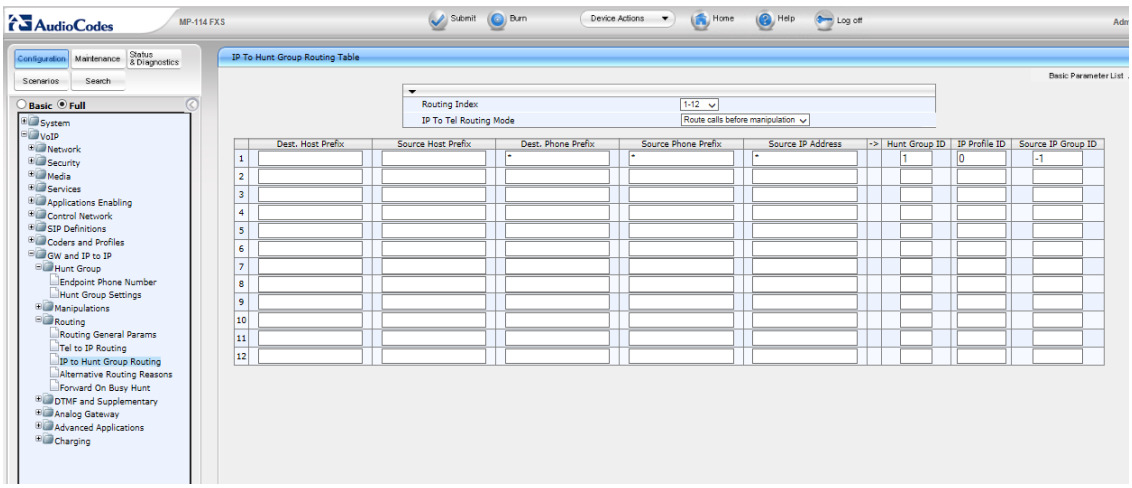
11.5.5 Setting up an Extension



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 voip network-source-bindings

VoIP Applications to Network source bindings:
---------------------------------------------
VoIP bind to VLAN 1 with ip address 192.168.0.3
VoIP bind to WAN on VRF main-vrf with destination address
10.254.1.2:
  Current WAN interface is GigabitEthernet 0/0 with ip address
10.10.10.1
VoIP bind to VLAN 2 with ip address 192.168.1.3

NAT & Port FW rules used by VoIP Applications:
----------------------------------------------
The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP
10.10.10.1 ports 6000-6990, interface GigabitEthernet 0/0
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.10.10.1 ports 5060-
5060, interface GigabitEthernet 0/0
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.10.10.1 ports
5060-5060, interface GigabitEthernet 0/0
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.10.10.1 ports
5061-5061, interface GigabitEthernet 0/0
```

```
SBC_2# show voip network-source-bindings

VoIP Applications to Network source bindings:
-----------------------------------------------
VoIP bind to VLAN 1 with ip address 192.168.0.3
VoIP bind to WAN on VRF main-vrf with destination address
10.254.1.2:
  Current WAN interface is GigabitEthernet 0/0 with ip address
10.10.10.5
VoIP bind to VLAN 2 with ip address 192.168.1.3

NAT & Port FW rules used by VoIP Applications:
-----------------------------------------------
The following WAN ports are in use by VOIP services:
    Ports 6000 - 6990 --> RealmPortPool::MR_WAN
    Ports 5060 - 5060 --> SIPUDP#1
    Ports 5060 - 5060 --> SIPLISTENING#1
    Ports 5061 - 5061 --> SIPLISTENING#1
The following NAT rules are in effect for VOIP services:
    RealmPortPool::MR_WAN: LAN ports 6000-6990 to WAN IP
10.10.10.5 ports 6000-6990, interface GigabitEthernet 0/0
    SIPUDP#1: LAN ports 5060-5060 to WAN IP 10.10.10.5 ports 5060-
5060, interface GigabitEthernet 0/0
    SIPLISTENING#1: LAN ports 5060-5060 to WAN IP 10.10.10.5 ports
5060-5060, interface GigabitEthernet 0/0
    SIPLISTENING#1: LAN ports 5061-5061 to WAN IP 10.10.10.5 ports
5061-5061, interface GigabitEthernet 0/0
```

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