

# Mediant MSBR

## Simplifying Network Configuration

Version 7.2



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## Abbreviations and Terminology

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## Related Documentation

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Mediant 500 MSBR User's Manual
Mediant 500L MSBR User's Manual
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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

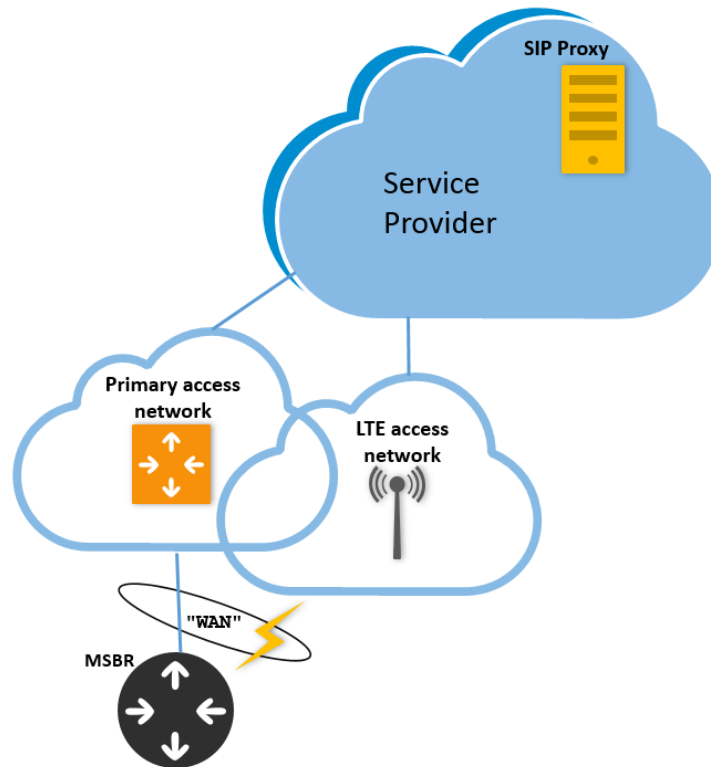
sip-interface 1
interface-name "SIP_WAN"
network-interface "WAN"
application-type sbc
srd-name WAN_SRD
media-realm-name "MR_WAN"
activate
exit
```

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

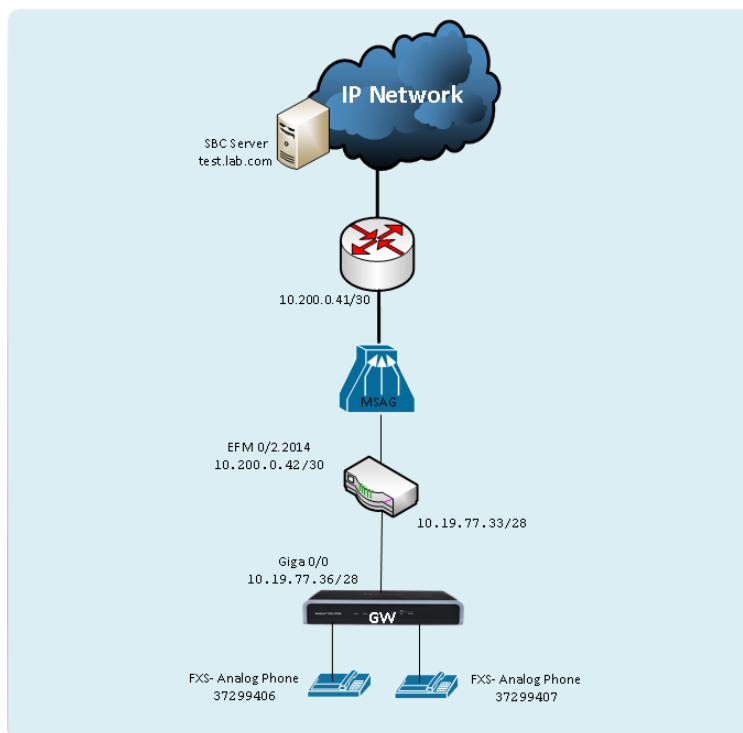
This document includes the following example scenarios:

- 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



Back to [scenarios](#) menu.

#### 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
```

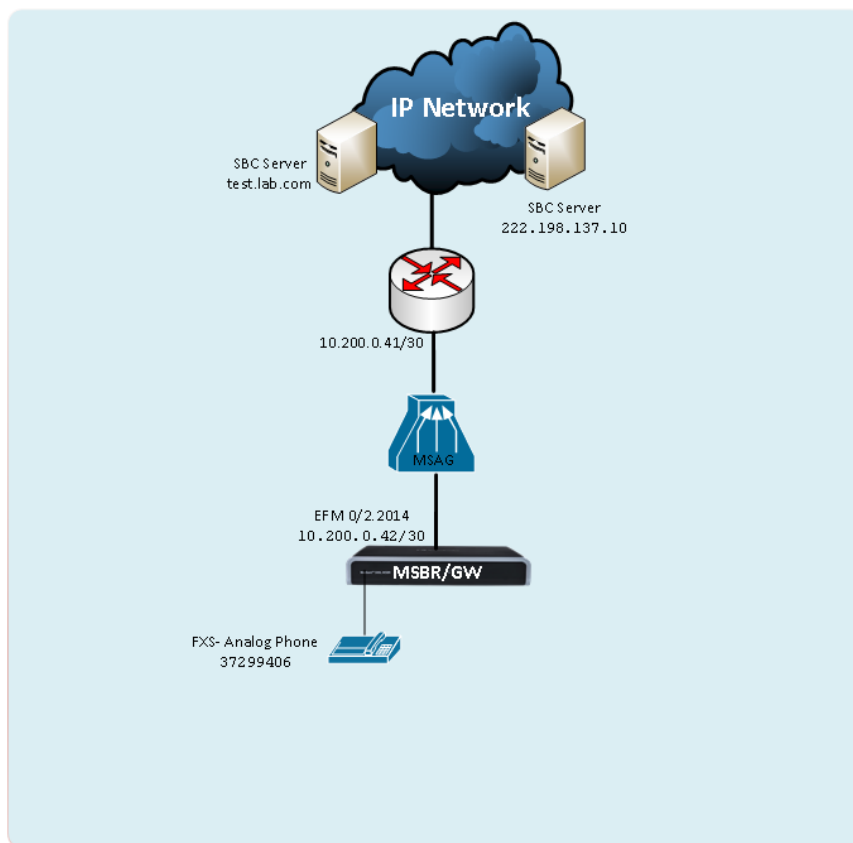
## 4 MSBR Router with Voice Application (using Tel-to-IP Routing Table)

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 2uvr702Bs4GP 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
```

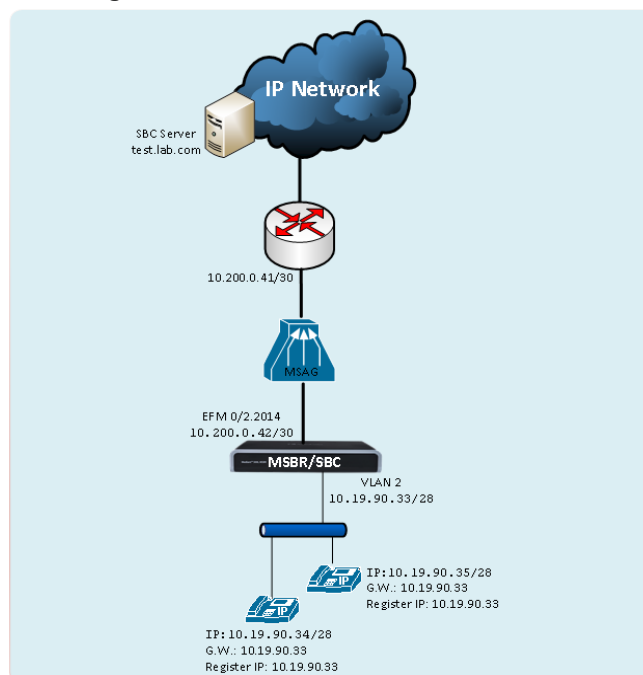
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## 5 MSBR with SBC Application

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

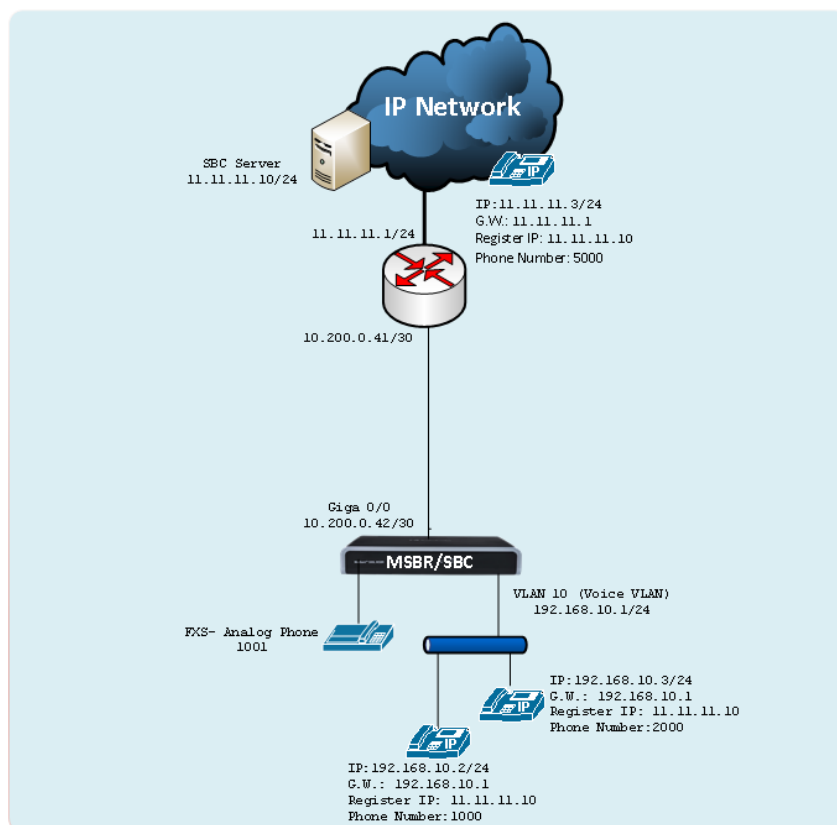
```
sbc routing ip2ip-routing 0
  route-name "Options Termination"
  request-type options
  dst-type dst-address
  dst-address "internal"
  activate
exit
sbc routing ip2ip-routing 1
  route-name "IPP==>Broadsoft"
  src-ip-group-name "IP_Phone"
  dst-ip-group-name "BroadSoft"
  activate
exit
sbc routing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

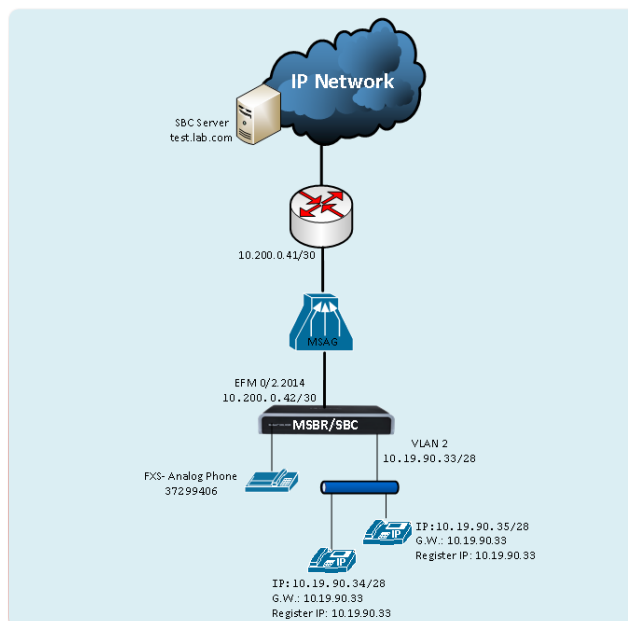
### 6.8.15 Enabling Registration

```
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)**



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### 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 2uvr702Bs4GP 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

```

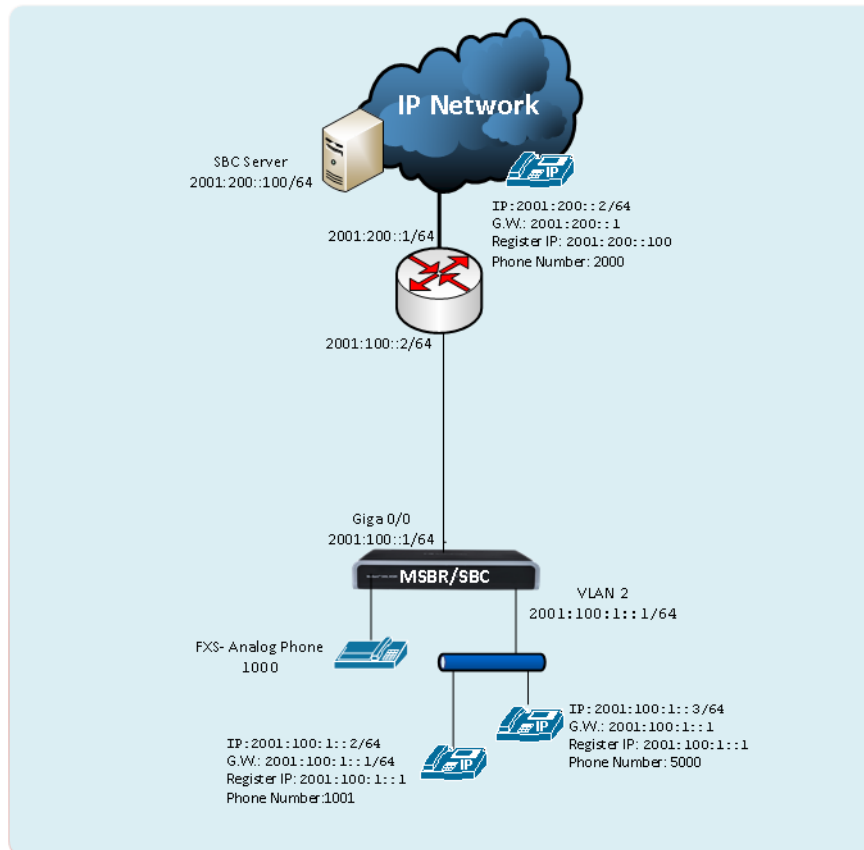
sip-definition proxy-and-registration
    authentication-mode per-endpoint
    enable-registration on
    activate
    exit
sbc settings
    keep-contact-user-in-reg unique-param
    activate
    exit

```

## 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**



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### 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

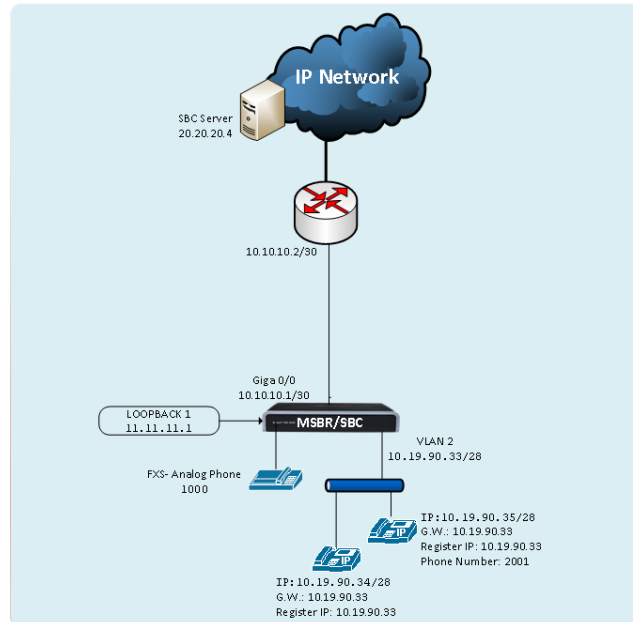
NAT & Port FW rules used by VoIP Applications:
-----

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 known address when using two WAN interfaces. For example, WAN Copper and A/DSL or WAN Copper and 4G.

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



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### 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

```

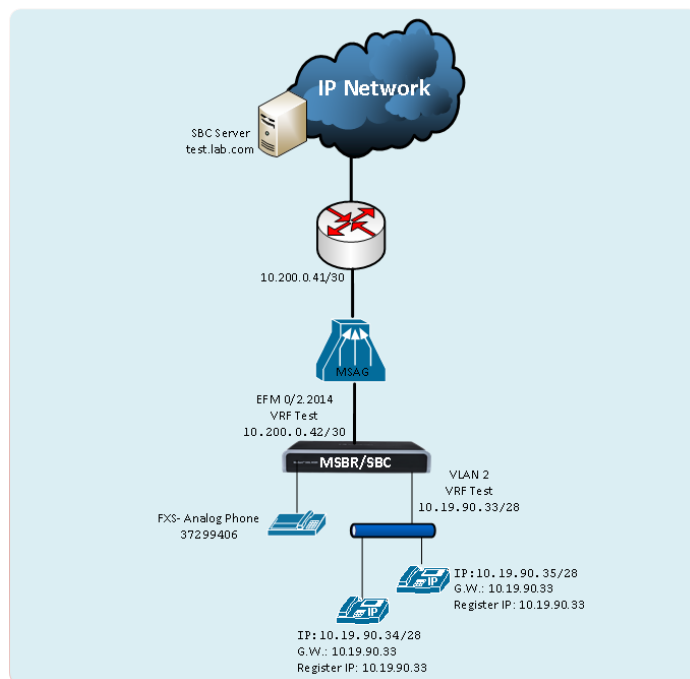
sip-definition proxy-and-registration
  authentication-mode per-endpoint
  enable-registration on
  activate
  exit
sbc settings
  keep-contact-user-in-reg unique-param
  activate
  exit

```

## 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)



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### 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
sbcrouting 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

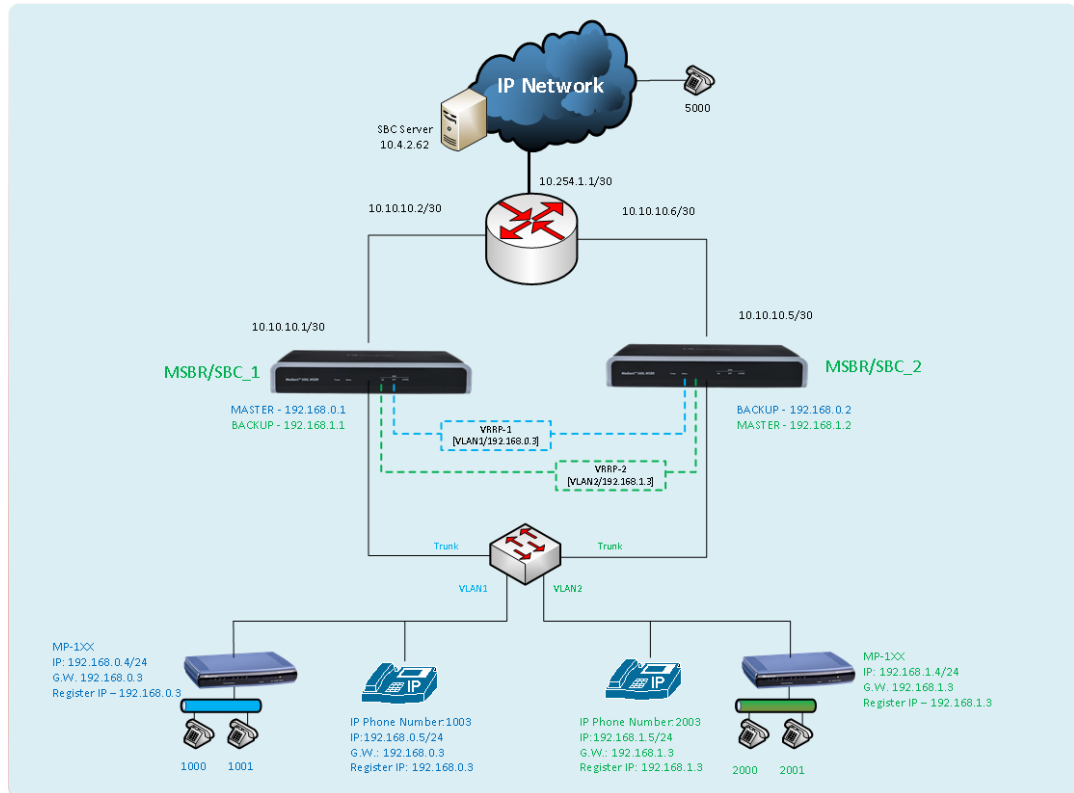
```



# 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	
<pre>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</pre>	<pre>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</pre>
Setting Physical LAN Ethernet 1/1 as trunk and assign VLAN2	
<pre>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</pre>	<pre>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</pre>
Creating VRRP 1 under VLAN 1 (MSBR/SBC1 will be the MASTER)	
<pre>interface VLAN 1 ip address 192.168.0.1 255.255.255.0 vrrp 1 timers advertise 1</pre>	<pre>interface VLAN 1 ip address 192.168.0.2 255.255.255.0 vrrp 1 timers advertise 1</pre>

MSBR/SBC1	MSBR/SBC2
<pre>vrrp 1 preempt vrrp 1 priority 250 vrrp 1 ip 192.168.0.3 vrrp 1 track 1 decrement 200 no shutdown exit</pre>	<pre>vrrp 1 preempt vrrp 1 priority 100 vrrp 1 ip 192.168.0.3 vrrp 1 track 1 decrement 200 no shutdown exit</pre>
<b>Creating VRRP 2 under VLAN 2 (MSBR/SBC2 will be the MASTER)</b>	
<pre>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</pre>	<pre>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</pre>
<pre>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</pre>	<pre>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</pre>

### 11.2.1 MSBR Voice Configuration (Entire Configuration)

This section shows the MSBR voice configuration.

MSBR/SBC1	MSBR/SBC2
<b>Setting Voice Coders</b>	
<pre>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</pre>	<pre>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</pre>

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

MSBR/SBC1	MSBR/SBC2
<pre> activate exit </pre>	<pre> activate exit </pre>
<b>Creating LAN_1 SIP Interface</b>	
<pre> 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 </pre>	<pre> 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 </pre>
<b>Creating LAN_2 SIP Interface</b>	
<pre> 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 </pre>	<pre> 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 </pre>
<b>Creating WAN SIP Interface</b>	
<pre> sip-interface 3   interface-name "WAN_IF"   network-interface "WAN"   application-type sbc   srd-name "WAN_SRD"   media-realm-name "MR_WAN"   activate   exit </pre>	<pre> sip-interface 3   interface-name "WAN_IF"   network-interface "WAN"   application-type sbc   srd-name "WAN_SRD"   media-realm-name "MR_WAN"   activate   exit </pre>
<b>Assigning Proxy Set 2 to SRD_WAN and setting Proxy Server (IP or Hostname) and registration to 30 sec.</b>	
<pre> 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 </pre>	<pre> 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 </pre>

MSBR/SBC1	MSBR/SBC2
<pre> 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 </pre>	<pre> 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 </pre>
Creating IP Group for LAN_1	
<pre> 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 </pre>	<pre> 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 </pre>
Creating IP Group for LAN_2	
<pre> 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 </pre>	<pre> 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 </pre>
Creating IP Group for WAN Side	
<pre> ip-group 3     name "BroadSoft"     proxy-set-name "WAN_Proxy"     srd-name "WAN_SRD"     media-realm-name "MR_WAN"     activate </pre>	<pre> ip-group 3     name "BroadSoft"     proxy-set-name "WAN_Proxy"     srd-name "WAN_SRD"     media-realm-name "MR_WAN"     activate </pre>

MSBR/SBC1	MSBR/SBC2
exit	exit
<b>Creating SBC IP-to-IP Routing Rules</b>	
<pre>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==&gt;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==&gt;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==&gt;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==&gt;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==&gt;Broadsoft"   src-ip-group-name "GW_1"   dst-ip-group-name "BroadSoft"</pre>	<pre>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==&gt;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==&gt;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==&gt;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==&gt;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==&gt;Broadsoft"   src-ip-group-name "GW_1"   dst-ip-group-name "BroadSoft"   activate exit sbc routing ip2ip-routing 6</pre>

MSBR/SBC1	MSBR/SBC2
<pre> activate exit sbc routing ip2ip-routing 6 route-name "GW_2==&gt;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 </pre>	<pre> route-name "GW_2==&gt;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 </pre>

## 11.3 MSBR System Configuration (Entire Configuration)

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



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

## 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)

The screenshot shows the 'Proxy & Registration' configuration page. The left sidebar contains a tree view with categories like System, VoIP, Network, Security, Media, Services, Applications Enabling, Control Network, SIP Definitions, General Parameters, Advanced Parameters, Account Table, Proxy & Registration, RADIUS Accounting Settings, Coders and Profiles, and GW and IP to IP. The main area is titled 'Proxy & Registration' and contains a list of settings with dropdown menus and checkboxes.

Setting	Value
Use Default Proxy	Yes
Proxy Set Table	+
Proxy Name	
Redundancy Mode	Parking
Proxy IP List Refresh Time	60
Enable Fallback to Routing Table	Disable
Prefer Routing Table	No
Use Routing Table for Host Names and Profiles	Disable
Always Use Proxy	Enable
Redundant Routing Mode	Disable
SIP ReRouting Mode	Standard Mode
Enable Registration	Enable
Registrar Name	
Registrar IP Address	
Registrar Transport Type	Not Configured
Registration Time	30
Re-registration Timing [%]	80
Registration Retry Time	30
Registration Time Threshold	0
Re-register On INVITE Failure	Disable
ReRegister On Connection Failure	Disable
Gateway Name	
Gateway Registration Name	

The screenshot shows the 'Default Proxy Set Table' configuration page. The left sidebar is the same as the previous screenshot. The main area is titled 'Default Proxy Set Table' and contains a table for proxy sets and a section for proxy settings.

Proxy Set ID	Proxy Address	Transport Type
1	192.168.0.3	
2		
3		
4		
5		

Setting	Value
Enable Proxy Keep Alive	Disable
Proxy Keep Alive Time	60
Proxy Load Balancing Method	Disable
Is Proxy Hot Swap	No

### 11.4.4 Setting Voice Coders

The screenshot shows the 'Coders Table' configuration page. The left sidebar is the same as the previous screenshots. The main area is titled 'Coders Table' and contains a table for voice coders.

Coder Name	Packetization Time	Rate	Payload Type	Silence Suppression
G.711A-law	20	64	8	Disabled
G.711U-law	20	64	0	Disabled

## 11.4.5 Setting up an Extension

The screenshot shows the 'Endpoint Phone Number Table' configuration window. On the left is a navigation tree with 'Basic' selected. The main area contains a table with 4 rows and 4 columns: Channel(s), Phone Number, Hunt Group ID, and Tel Profile ID.

	Channel(s)	Phone Number	Hunt Group ID	Tel Profile ID
1	1	1000	1	0
2				
3				
4				

## 11.4.6 Setting Hunt Group

The screenshot shows the 'Hunt Group Settings' configuration window. On the left is a navigation tree with 'Basic' selected. The main area contains a table with 12 rows and 6 columns: Hunt Group ID, Channel Select Mode, Registration Mode, Serving IP Group ID, Gateway Name, and Contact User.

Hunt Group ID	Channel Select Mode	Registration Mode	Serving IP Group ID	Gateway Name	Contact User
1	By Dest Phone Number				
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

## 11.4.7 Setting IP to Hunt Group Routing

The screenshot shows the 'IP To Hunt Group Routing Table' configuration window. On the left is a navigation tree with 'Basic' selected. The main area contains a table with 12 rows and 9 columns: Dest. Host Prefix, Source Host Prefix, Dest. Phone Prefix, Source Phone Prefix, Source IP Address, Hunt Group ID, IP Profile ID, and Source IP Group ID.

	Dest. Host Prefix	Source Host Prefix	Dest. Phone Prefix	Source Phone Prefix	Source IP Address	Hunt Group ID	IP Profile ID	Source IP Group ID
1						1	0	-1
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

## 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).

The screenshot shows the 'Proxy & Registration' configuration page. The left sidebar contains a tree view with categories like System, VoIP, Network, Security, Media, Services, Applications Enabling, VoIP Network, SIP Definitions, General Parameters, Advanced Parameters, Account Table, Proxy & Registration, RADIUS Accounting Settings, Tag Policy & Manipulation, Coders and Profiles, GW and IP to IP, Hunt Group, Manipulations, Routing, DTMF and Supplementary, Analog Gateway, and SBC. The main area is titled 'Proxy & Registration' and contains a table of settings:

Use Default Proxy	No
Proxy Name	
Redundancy Mode	Parking
Proxy IP List Refresh Time	60
Enable Failback to Routing Table	Disable
Prefer Routing Table	No
Always Use Proxy	Disable
Redundant Routing Mode	Routing Table
SIP ReRouting Mode	Standard Mode
Enable Registration	Enable
Registrar Name	
Registrar IP Address	
Registrar Transport Type	Not Configured
Registration Time	60
Re-registration Timing [%]	50
Registration Retry Time	30
Registration Time Threshold	0
Re-register On INVITE Failure	Disable
ReRegister On Connection Failure	Disable
Gateway Name	
Gateway Registration Name	
DNS Query Type	A-Record
Proxy DNS Query Type	A-Record
Subscription Mode	Per Endpoint
Number of RTT Before Next Sync	1

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

The screenshot shows the 'IP Settings' configuration page. The left sidebar is similar to the previous page, with 'Full' selected under 'Basic'. The main area is titled 'IP Settings' and contains a table of settings:

Single IP Settings	
IP Address	192.168.1.4
Subnet Mask	255.255.255.0
Default Gateway Address	192.168.1.3
VoIP DNS Settings	
DNS Primary Server IP	8.8.8.8
DNS Secondary Server IP	
Multiple Interface Settings	
Multiple Interface Table	

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

The screenshot shows the 'Proxy & Registration' configuration window. The left sidebar lists various configuration categories, with 'Proxy & Registration' selected. The main area contains a list of settings for proxy and registration, including:

- Use Default Proxy: Yes
- Proxy Set Table: [Select]
- Proxy Name: [Text Field]
- Redundancy Mode: [Select]
- Proxy IP List Refresh Time: 60
- Enable Failback to Routing Table: Disable
- Prefer Routing Table: No
- Use Routing Table for Host Names and Profiles: Disable
- Always Use Proxy: Enable
- Redundant Routing Mode: Disable
- SIP ReRouting Mode: Standard Mode
- Enable Registration: Enable
- Registrar Name: [Text Field]
- Registrar IP Address: [Text Field]
- Registrar Transport Type: Not Configured
- Registration Time: 30
- Re-registration Timing [%]: 80
- Registration Retry Time: 30
- Registration Time Threshold: 0
- Re-register On INVITE Failure: Disable
- Re-register On Connection Failure: Disable
- Gateway Name: [Text Field]
- Gateway Registration Name: [Text Field]

The screenshot shows the 'Default Proxy Sets Table' configuration window. The left sidebar lists various configuration categories, with 'Proxy & Registration' selected. The main area contains a table for proxy sets and several checkboxes for proxy settings:

Proxy Set ID	Proxy Address	Transport Type
1	192.168.1.3	[Select]
2	[Text Field]	[Select]
3	[Text Field]	[Select]
4	[Text Field]	[Select]
5	[Text Field]	[Select]

Below the table, there are several checkboxes and dropdowns:

- Enable Proxy Keep Alive: Disable
- Proxy Keep Alive Time: 60
- Proxy Load Balancing Method: [Select]
- Is Proxy Hot Swap: No

### 11.5.4 Setting Voice Coders

The screenshot shows the 'Coders Table' configuration window. The left sidebar lists various configuration categories, with 'Coders' selected. The main area contains a table for coders with the following columns:

Coder Name	Packetization Time	Rate	Payload Type	Silence Suppression
G.711A-law	20	64	8	Disabled
G.711U-law	20	64	0	Disabled
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]
[Text Field]	[Text Field]	[Text Field]	[Text Field]	[Text Field]

## 11.5.5 Setting up an Extension

The screenshot shows the 'Endpoint Phone Number Table' configuration window. On the left is a navigation tree with 'Basic' selected. The main area contains a table with 4 columns: Channel(s), Phone Number, Hunt Group ID, and Tel Profile ID. The first row is pre-filled with values 1, 2000, 1, and 0 respectively.

	Channel(s)	Phone Number	Hunt Group ID	Tel Profile ID
1	1	2000	1	0
2				
3				
4				

## 11.5.6 Setting Hunt Group

The screenshot shows the 'Hunt Group Settings' configuration window. On the left is a navigation tree with 'Basic' selected. The main area contains a table with 7 columns: Hunt Group ID, Channel Select Mode, Registration Mode, Serving IP Group ID, Gateway Name, and Contact User. The first row is pre-filled with values 1, By Dest Phone Number, and 1 respectively.

	Hunt Group ID	Channel Select Mode	Registration Mode	Serving IP Group ID	Gateway Name	Contact User
1	1	By Dest Phone Number				
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

## 11.5.7 Setting IP to Hunt Group Routing

The screenshot shows the 'IP To Hunt Group Routing Table' configuration window. On the left is a navigation tree with 'Basic' selected. The main area contains a table with 9 columns: Dest. Host Prefix, Source Host Prefix, Dest. Phone Prefix, Source Phone Prefix, Source IP Address, Hunt Group ID, IP Profile ID, and Source IP Group ID. The first row is pre-filled with values 1, 1, 1, 1, 1, 1, 0, and -1 respectively.

	Dest. Host Prefix	Source Host Prefix	Dest. Phone Prefix	Source Phone Prefix	Source IP Address	Hunt Group ID	IP Profile ID	Source IP Group ID
1						1	0	-1
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

## 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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