Multi-Service Business Routers (MSBR)

Access, Data, Voice & Security

Session Border Controller (SBC)

Configuration Guide

Configuring Mediant MSBR for Hosting SBC Voice with Two WAN Interfaces

HD VoIP Sounds Better

Version 6.8

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Notice

This document describes IP network configuration using the CLI management interface for AudioCodes Multi-Service Business Routers (MSBR).

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Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Document Revision Record

LTRT	Description
31680	Initial document release.
31681	Updates for configuration of the SBC to direct calls to two different WAN voice interfaces.

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1 Introduction

This document describes how to configure SBC Mediant Hosted Voice on the MSBR.

The SBC hides its network topology behind a NAT. Since its data-routing functionality is CLI managed, this document will use the CLI as the management interface.

The SBC application can provide connectivity between two VoIP networks. This document describes how to configure the SBC so that the WAN leg automatically "binds" the SIP interface to the MSBR's WAN interface. This functionality thereby allows the SBC to direct calls to two different SIP interfaces via the MSBR's WAN port.

Figure 1-1: Mediant MSBR Behind NAT

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2 Configuration Scenario Objectives

The configuration scenario objectives for the MSBR include the following issues:

- The SBC and MSBR must be configured in an appropriate manner so that the SIP local SDP IP address is the IP address of the WAN interface that is used to deliver the SIP message and RTP media outside the MSBR. This is to ensure that incoming SIP and media packets have routable IP addresses.
- The MSBR automatically creates port forwarding rules to redirect all incoming SIP and media packets to the SBC WAN leg interface.
- Upon a WAN IP address change, the MSBR and SBC update the SBC's local SDP information.
- The MSBR includes a single physical WAN interface that is configured with two logical VLAN interfaces, one for each of the ISPs.
- When multiple WAN interfaces are used and the primary WAN interface fails, if an alternative route is configured and is valid in the MSBR routing table, this route is chosen by the MSBR as the new WAN interface. For example, if calls are originally routed to ISP1 and this route fails, calls are then routed to ISP2. The SBC's local SDP will be updated accordingly with the new WAN interface IP address.

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3 Configuring SBC Functionality

The SBC configuration includes the following SBC legs:

- **WAN leg** – connects the SBC to the rest of the VoIP network.
- **LAN leg** – connects the SBC to the internal VoIP network located on the LAN side.
- **Gateway leg** – connects all gateway PSTN interfaces to the SBC, providing advanced features such as fallback to PSTN upon network failure.

These leg interfaces are shown in the figure below:

Figure 3-1: Leg Interfaces on Mediant MSBR

The configuration of the LAN and Gateway legs is trivial and should not require any special SIP manipulations. Configuration of the WAN leg in regards to the SBC interface requires understanding of the MSBR as a system containing both a SIP entity and a router entity.

The MSBR employs NAT on its WAN interfaces to hide all internal networks on its LAN side. The only routable addresses (public IP addresses) are the MSBR WAN IP addresses.

WAN IP addresses are volatile and are subject to modification as a result of dynamic IP address allocation, such as by DHCP PPP and etc. After the SBC WAN leg is configured, the SBC queries the MSBR (data-router) for the best route for the WAN interface to use for reaching the SIP proxy server. The SBC then uses the relevant WAN interface as its local SDP IP address and expects all SIP control and media to be incoming and outgoing on the current interface.

Upon WAN interface failure, the SBC queries the MSBR data-route again and if an alternative and valid route was configured and the SIP proxy server can be reached, it will use this as the alternative WAN interface. The new SBC local SDP will be updated accordingly.

The following chapter explains how to configure the SBC WAN leg.

4 Configuring the SBC WAN Leg

Follow the basic definitions described in this section to activate the binding functionality of the SBC to the MSBR WAN interfaces.

1. **MSBR configuration:** All WAN interfaces that are part of the SBC WAN connectivity must be NAPT activated. If more than one WAN is used, each interface must be activated by the NAPT functionality. In this example, the WAN is built using two sub interfaces on the Gigabit 0/0 interface.

```
interface GigabitEthernet 0/0.100
    ip address 192.168.1.2 255.255.255.0
    mtu auto
    desc "WAN Copper.100"
    no ipv6 enable
    no service dhcp
    ip dns server static
    napt
    no firewall enable
    no shutdown
   exit
   interface GigabitEthernet 0/0.200
    ip address 192.168.2.2 255.255.255.0
    mtu auto
    desc "WAN Copper.200"
    no ipv6 enable
    no service dhcp
    ip dns server static
    napt
    no firewall enable
    no shutdown
   exit
```

2. **SBC configuration:**

   a. Configure Layer 2 interfaces by assigning LANs to network-devices. VLAN IDs must be configured in the data configuration. The “vlan 100” and “vlan 200” will become saved names for later use.

```
interface network-dev 1
    vlan-id 100
    name "vlan 100"
    activate
   exit
   interface network-dev 2
    vlan-id 200
    name "vlan 200"
    activate
   exit
```

   b. Create a layer 3 interface and assign the previously defined layer 2 interfaces to the layer 3 interface.

```
interface network-if 1
    application-type media-control
    ip-address 192.168.100.2
    prefix-length 24
    gateway 192.168.100.1
```

```
    name "Voice-100"
    underlying-dev "vlan 100"
    activate
   exit
   interface network-if 2
    application-type media-control
    ip-address 192.168.200.2
    prefix-length 24
    gateway 192.168.200.2
    name "Voice-200"
    underlying-dev "vlan 200"
    activate
```

c. Create Media Realms.

```
voip-network realm 1
    name "VLAN100_REALM"
    ipv4if "Voice-100"
    port-range-start 6000
    session-leg 5954
    port-range-end 65530
    activate
   exit
   voip-network realm 2
    name "VLAN200_REALM"
    ipv4if "Voice-200"
    port-range-start 6000
    session-leg 5954
    port-range-end 65530
    activate
   exit
   voip-network realm 3
    name "MR_WAN"
    ipv4if "WAN"
    port-range-start 6000
    session-leg 10
    port-range-end 6090
    activate
   exit
```

d. Create SRDs and assign them to the Media Realms.

```
voip-network srd 0
    name "Voice-100"
    media-realm-name "VLAN100_REALM"
    activate
   exit
   voip-network srd 1
    name "Voice-200"
    media-realm-name "VLAN200_REALM"
    activate
   exit
   voip-network srd 2
    name "SRDWAN"
    media-realm-name "MR_WAN"
```

```
    activate
   exit
```

e. Create SIP interfaces.

```
   voip-network sip-interface 0
    interface-name "Voice-100"
    network-interface "Voice-100"
    application-type sbc
    activate
   exit
   voip-network sip-interface 1
    interface-name "Voice-200"
    network-interface "Voice-200"
    application-type sbc
    srd 1
    activate
   exit
   voip-network sip-interface 2
    interface-name "WAN"
    network-interface "WAN"
    application-type sbc
    srd 2
    activate
   exit
```

f. Create IP Groups.

```
   voip-network ip-group 1
    description "Voice-100"
    proxy-set-id 1
    media-realm-name "VLAN100_REALM"
    activate
   exit
   voip-network ip-group 2
    description "Voice-200"
    proxy-set-id 2
    srd 1
    media-realm-name "VLAN200_REALM"
    activate
   exit
   voip-network ip-group 3
    description "IPG_WAN"
    proxy-set-id 3
    srd 2
    media-realm-name "MR_WAN"
    activate
   exit
```

g. Create SIP proxy records.

```
voip-network proxy-ip 0
    proxy-address "192.168.100.100"
    proxy-set-id 1
    activate
   exit
   voip-network proxy-ip 1
```

```
    proxy-address "192.168.200.100"
    proxy-set-id 2
    activate
   exit
   voip-network proxy-ip 2
    proxy-address "192.168.10.2"
    proxy-set-id 3
    activate
   exit
```

h. Verify that there is no WAN binding configuration in the system section configuration (see highlighted below):

```
MSBR>  sh run system

# Running Configuration Mediant 500 - MSBR


## System Configuration

  configure system
   cli-terminal
    wan-ssh-allow on
    wan-telnet-allow on
    ssh on
    activate
   exit
   cwmp
    tls-context 0
    activate
   exit
   logging
    debug-level detailed
    activate
   exit
   ntp
    set primary-server "0.0.0.0"
    activate
   exit
   radius
    set shared-secret "$1$woS2sLC0opqIjoKZng== "
    activate
   exit
   snmp
    no activate-keep-alive-trap
    activate
   exit
   web
   wan-http-allow on
   exit
  hostname "Mediant 500 - MSBR"
  configuration-version 0
  bind interface loopback 1 voip
  exit
```

3. Verify that the SBC was properly associated with the relevant WAN interface:
   - The `showrun` provides the information at the end of its output:

```
   # Note: The following WAN ports are in use by system
services,
   #       conflicting rules should not be created:
   #         Ports 80 - 80 --> HTTP
   #         Ports 22 - 22 --> SSH CLI
   #         Ports 82 - 82 --> TR069
   #         Ports 6000 - 6090 --> RealmPortPool::MR_WAN
```

   - The `show voip wan-bindings` command also provides this information:

```
sh v wan-bindings
WAN interface was defined by configuration (Loopback 1, ip
address 0.0.0.0)
The following WAN ports are in use by VOIP services:
    Ports 6000 - 6090 --> RealmPortPool::MR_WAN
```

5 Full Configuration - Binding SBC Behind NAT with Two WAN Interfaces

The complete configuration for binding SBC behind NAT on the MSBR is shown below:

```
CPE# sh run

# Running Configuration CPE


## VoIP Configuration

  configure voip
   tls 0
    name default
    tls-version unlimited
    ciphers-server "RC4:EXP"
    ciphers-client "ALL:!ADH"
    ocsp-server disable
    ocsp-port 2560
    ocsp-default-response reject
   exit
   appli-enabling
    enable-sbc on
    activate
   exit
   coders-and-profiles coders-group-0 0
    name "g711Alaw64k"
    p-time 20
    activate
   exit
   interface network-dev 0
    name "vlan 1"
    activate
   exit
   interface network-dev 1
    vlan-id 100
    name "vlan 100"
    activate
   exit
   interface network-dev 2
    vlan-id 200
    name "vlan 200"
    activate
   exit
   interface network-if 0
    ip-address 192.168.0.2
    prefix-length 24
    gateway 192.168.0.1
    name "Voice"
```

```
 primary-dns 192.168.0.1
 underlying-dev "vlan 1"
 activate
exit
interface network-if 1
 application-type media-control
 ip-address 192.168.100.2
 prefix-length 24
 gateway 192.168.100.1
 name "Voice-100"
 underlying-dev "vlan 100"
 activate
exit
interface network-if 2
 application-type media-control
 ip-address 192.168.200.2
 prefix-length 24
 gateway 192.168.200.2
 name "Voice-200"
 underlying-dev "vlan 200"
 activate
exit
voip-network realm 0
 name "DefaultRealm"
 ipv4if "Voice"
 port-range-start 6000
 session-leg 5954
 port-range-end 65530
 is-default true
 activate
exit
voip-network realm 1
 name "VLAN100_REALM"
 ipv4if "Voice-100"
 port-range-start 6000
 session-leg 5954
 port-range-end 65530
 activate
exit
voip-network realm 2
 name "VLAN200_REALM"
 ipv4if "Voice-200"
 port-range-start 6000
 session-leg 5954
 port-range-end 65530
 activate
exit
voip-network realm 3
 name "MR_WAN"
 ipv4if "WAN"
 port-range-start 6000
```

```
 session-leg 10
 port-range-end 6090
 activate
exit
voip-network srd 0
 name "Voice-100"
 media-realm-name "VLAN100_REALM"
 activate
exit
voip-network srd 1
 name "Voice-200"
 media-realm-name "VLAN200_REALM"
 activate
exit
voip-network srd 2
 name "SRDWAN"
 media-realm-name "MR_WAN"
 activate
exit
voip-network sip-interface 0
 interface-name "Voice-100"
 network-interface "Voice-100"
 application-type sbc
 activate
exit
voip-network sip-interface 1
 interface-name "Voice-200"
 network-interface "Voice-200"
 application-type sbc
 srd 1
 activate
exit
voip-network sip-interface 2
 interface-name "WAN"
 network-interface "WAN"
 application-type sbc
 srd 2
 activate
exit
voip-network proxy-set 0
 proxy-name ""
 activate
exit
voip-network proxy-set 1
 proxy-name ""
 activate
exit
voip-network proxy-set 2
 srd-id 1
 activate
exit
```

```
voip-network proxy-set 3
 srd-id 2
 activate
exit
voip-network ip-group 1
 description "Voice-100"
 proxy-set-id 1
 media-realm-name "VLAN100_REALM"
 activate
exit
voip-network ip-group 2
 description "Voice-200"
 proxy-set-id 2
 srd 1
 media-realm-name "VLAN200_REALM"
 activate
exit
voip-network ip-group 3
 description "IPG_WAN"
 proxy-set-id 3
 srd 2
 media-realm-name "MR_WAN"
 activate
exit
gw digitalgw rp-network-domains 1
 name "dsn"
 activate
exit
gw digitalgw rp-network-domains 2
 name "dod"
 activate
exit
gw digitalgw rp-network-domains 3
 name "drsn"
 activate
exit
gw digitalgw rp-network-domains 5
 name "uc"
 activate
exit
gw digitalgw rp-network-domains 7
 name "cuc"
 activate
exit
gw digitalgw digital-gw-parameters
 answer-detector-cmd 10486144
 energy-detector-cmd 587202560
 activate
exit
ldap
 ldap-search-server-method sequentialy
```

```
 activate
exit
media udp-port-configuration
 udp-port-spacing 10
 activate
exit
sbc routing ip2ip-routing 0
 src-ip-group-id 1
 dst-host "300"
 dst-ip-group-id 3
 activate
exit
sbc routing ip2ip-routing 1
 src-ip-group-id 2
 dst-user-name-prefix "3"
 dst-ip-group-id 3
 activate
exit
sbc routing ip2ip-routing 2
 src-ip-group-id 3
 dst-user-name-prefix "2"
 dst-ip-group-id 2
 activate
exit
services least-cost-routing routing-rule-groups 0
 lcr-default-cost highest-cost
 activate
exit
sip-definition advanced-settings
 set ldap-primary-key "telephoneNumber"
 activate
exit
tdm
 pcm-law-select mulaw
 activate
exit
voip-network proxy-ip 0
 proxy-address "192.168.100.100"
 proxy-set-id 1
 activate
exit
voip-network proxy-ip 1
 proxy-address "192.168.200.100"
 proxy-set-id 2
 activate
exit
voip-network proxy-ip 2
 proxy-address "192.168.10.2"
 proxy-set-id 3
 activate
exit
```

```
  exit

## System Configuration

  configure system
   cli-terminal
    wan-ssh-allow on
    ssh on
    activate
   exit
   cwmp
    tls-context 0
    activate
   exit
   logging
    debug-level detailed
    activate
   exit
   ntp
    set primary-server "0.0.0.0"
    activate
   exit
   radius
    set shared-secret "$1$woS2sLC0opqIjoKZng== "
    activate
   exit
   snmp
    no activate-keep-alive-trap
    activate
   exit
   web
    wan-http-allow on
    set https-cipher-string "RC4:EXP"
    activate
   exit
  no packetsmart enable
  hostname CPE
  configuration-version 0
  bind interface loopback 1 voip
  exit

## Data Configuration

  configure data
   interface GigabitEthernet 0/0
    ip address dhcp
    no ip dhcp-client default-route
    mtu auto
    desc "WAN Copper"
    no ipv6 enable
    speed auto
```

```
 duplex auto
 no service dhcp
 ip dns server static
 napt
 no firewall enable
 no shutdown
exit
interface shdsl 0/2
 mode atm
 no group 0
 no group 1
 no group 2
 no group 3
exit
interface Fiber 0/1
 no ip address
 mtu auto
 desc "WAN Fiber"
 no ipv6 enable
 no service dhcp
 ip dns server static
 no shutdown
exit
interface EFM 0/2
#This interface is DISABLED due to physical layer configuration
 no ip address
 mtu auto
 desc "WAN DSL"
 no ipv6 enable
 no service dhcp
 ip dns server static
 no shutdown
exit
interface GigabitEthernet 1/1
 speed auto
 duplex auto
 switchport mode trunk
 switchport trunk native vlan 1
 no shutdown
exit
interface GigabitEthernet 1/2
 speed auto
 duplex auto
 switchport mode trunk
 switchport trunk native vlan 1
 no shutdown
exit
interface GigabitEthernet 1/3
 speed auto
 duplex auto
 switchport mode trunk
```

```
    switchport trunk native vlan 1
    no shutdown
   exit
   interface GigabitEthernet 1/4
    speed auto
    duplex auto
    switchport mode trunk
    switchport trunk native vlan 1
    no shutdown
   exit
   interface VLAN 1
    ip address 192.168.0.1 255.255.255.0
    mtu auto
    desc "LAN switch VLAN 1"
    no ipv6 enable
    ip dhcp-server network 192.168.0.3 192.168.0.8 255.255.255.0
    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 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
   ip nat translation udp-timeout 120
   ip nat translation tcp-timeout 3600
   ip nat translation icmp-timeout 6
   # Note: The following WAN ports are in use by system services,
   #       conflicting rules should not be created:
   #         Ports 80 - 80 --> HTTP
   #         Ports 22 - 22 --> SSH CLI
   #         Ports 82 - 82 --> TR069
   #         Ports 6000 - 6090 --> RealmPortPool::MR_WAN
   ip domain name home
   ip domain localhost msbr
   pm sample-interval minute 5
   pm sample-interval seconds 15
  exit

CPE#
```

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