

BroadSoft Partner Configuration Guide

Mediatix Sentinel SBC

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BroadWorks® Guide

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Version	Reason for Change
1.1	Introduced document for Media5 Mediatrix Sentinel SBC version Dgw2.0.32.599 validation with BroadWorks Release 21.sp1.
1.2	Edited and published document.

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1 Overview

This guide describes the configuration procedures required for the Media5 Mediatrix Sentinel SBC for interoperability with BroadWorks.

The Mediatrix Sentinel SBC is an enterprise SBC that has been validated with BroadWorks.

This guide describes the specific configuration items that are important for use with BroadWorks. It does not describe the purpose and use of all configuration items on the Mediatrix Sentinel SBC. For those details, see the *SBC Service User Guide for Mediatrix Sentinel Units* [1] supplied by Media5.

2 Interoperability Status

This section provides the known interoperability status of the Media5 Mediatrix Sentinel SBC with BroadWorks. This includes the version(s) tested, the capabilities supported, and known issues.

Interoperability testing validates that the device interfaces properly with BroadWorks via the Session Initiation Protocol (SIP) interface. Qualitative aspects of the device or device capabilities not affecting the SIP interface, such as performance, are not covered by interoperability testing. Requests for information and/or issues regarding these aspects should be directed to Media5.

2.1 Verified Versions

The following table identifies the verified Media5 Mediatrix Sentinel SBC and BroadWorks versions and the month/year the testing occurred. If the device has undergone more than one test cycle, versions for each test cycle are listed, with the most recent listed first.

Compatible Versions in the following table identify specific Mediatrix Sentinel SBC versions that the partner has identified as compatible so should interface properly with BroadWorks. Generally, maintenance releases of the validated version are considered compatible and are not specifically listed here. For any questions concerning maintenance and compatible releases, contact Media5.

NOTE: Interoperability testing is usually performed with the latest generally available (GA) device firmware/software and the latest GA BroadWorks release and service pack at the time the testing occurs. If there is a need to use a non-verified mix of BroadWorks and device software versions, customers can mitigate their risk by self-testing the combination themselves using the *BroadWorks Session Border Controller Interoperability Test Plan* [\[5\]](#).

Verified Versions

Date (mm/yyyy)	BroadWorks Release	Mediatrix Sentinel SBC Verified Version	Mediatrix Sentinel SBC Compatible Versions
10/2015	Release 21.sp1	Dgw2.0.32.599	Any maintenance revisions of the verified version.

2.2 Interface Capabilities Supported

The Media5 Mediatrix Sentinel SBC has completed interoperability testing with BroadWorks using the *BroadWorks Session Border Controller Interoperability Test Plan* [5]. The results are summarized in the following table.

The BroadWorks test plan is composed of packages, each covering distinct interoperability areas, such as “Basic” call scenarios and “Redundancy” scenarios. Each package is composed of one or more test items, which in turn, are composed of one or more test cases. The test plan exercises the SIP interface between the device and BroadWorks with the intent to ensure interoperability sufficient to support the BroadWorks feature set.

The *Supported* column in the following table identifies the Media5 Mediatrix Sentinel SBC’s support for each of the items covered in the test plan packages, with the following designations:

- Yes Test item is supported
- No Test item is not supported
- NA Test item is not applicable to the device type
- NT Test item was not tested

Caveats and clarifications are identified in the *Comments* column.

NOTE: *DUT* in the following table refers to the *Device Under Test*, which in this case is the Media5 Mediatrix Sentinel SBC.

BroadWorks Session Border Controller Interoperability Test Plan Support Table

Test Plan Package	Test Plan Package Items	Supported	Comments
Basic	Call Origination	Yes	
	Call Termination	Yes	
	Session Audit	Yes	
	Session Timer	Yes	
	Ringback	Yes	
	Forked Dialog	Yes	
	Early UPDATE	Yes	
	Early-Session	Yes	
	181 Call Being Forwarded	Yes	
	DTMF – Inband	Yes	
	DTMF – RFC 2833	Yes	
	DTMF – DTMF Relay	Yes	
BroadWorks Services	Third-Party Call Control – Basic	Yes	
	Third-Party Call Control – Advanced	Yes	
	Message Waiting Indicator – Unsolicited	Yes	

BroadWorks Session Border Controller Interoperability Test Plan Support Table

Test Plan Package	Test Plan Package Items	Supported	Comments
	Message Waiting Indicator – Solicited	Yes	
	Voice Portal Outcall	Yes	
	Advanced Alerting	Yes	
	Calling Line ID – Non-Trusted Endpoint	Yes	
	Calling Line ID with Unicode Characters – Non-Trusted Endpoint	Yes	
	Calling Line ID – Trusted Endpoint	Yes	
	Calling Line ID with Unicode Characters – Trusted Endpoint	Yes	
	Diversion Header	Yes	
	History-Info Header	Yes	
	Deny Calls from Unregistered Users	Yes	
	Enterprise Trunking – Originating Trunk Group (OTG)	Yes	
	Enterprise Trunking – Destination Trunk Group (DTG)	No	
	Enterprise Trunking –Trunk Group (TGRP)	No	
Access Device Services – Call Control Services	Call Waiting	Yes	
	Call Hold	Yes	
	Call Transfer	Yes	
	Local Conference	Yes	
	Network Conference	Yes	Network Conference initiated by a Polycom phone will be supported in Dgw2.0.33.x version.
	Call Forwarding	Yes	
Access Device Services – Registration and Authentication	Registration – Register Authentication	Yes	
	Registration – Maximum Registration	Yes	
	Registration – Minimum Registration	Yes	
	Authentication – Invite Authentication	Yes	
	Authentication – Re-Invite or Update Authentication	Yes	
	Authentication – Refer Authentication	Yes	
	Authentication – Access Device Authenticating BroadWorks	Yes	
	SIP Trunk GIN Registration – GIN Register	No	
	SIP Trunk GIN Registration – Call to PBX User	No	

BroadWorks Session Border Controller Interoperability Test Plan Support Table

Test Plan Package	Test Plan Package Items	Supported	Comments
	SIP Trunk GIN Registration – Call from PBX User	No	
	SIP TrunkPilot Registration – Pilot Register	Yes	
	SIP TrunkPilot Registration – Call to PBX User	Yes	
	SIP TrunkPilot Registration – Call from PBX User	Yes	
	Surrogate Registration – Pilot Register	Yes	
	Surrogate Registration – Call to PBX User	Yes	
	Surrogate Registration – Call from PBX User	Yes	
Access Device Services – Fax	G711 Fax Passthrough	Yes	
	G711 Fax Fallback	Yes	
	T38 Fax Messaging	Yes	
Advanced Phone Services – Busy Lamp Field	Busy Lamp Field	Yes	
	Maximum Monitored Users	Yes	
Advanced Phone Services – Feature Key Synchronization	Do Not Disturb	Yes	
	Call Forwarding	Yes	
	Call Center Agent Logon/Logoff	Yes	
	Call Recording	Yes	
	Security Classification	Yes	
Advanced Phone Services – Shared Call Appearance	Line-Seize Events	Yes	
	Call-Info Events	Yes	
	Multiple Call Arrangement	Yes	
	Bridging	Yes	
Advanced Phone Services – Call Recording	Call Recording Controls	Yes	
	Call Recording Video	Yes	
Advanced Phone Services – Security Classification	Security Classification	Yes	
Redundancy	DNS SRV Lookup	Yes	
	Register Failover/Failback	Yes	
	Invite Failover/Failback	Yes	
	Bye Failover	Yes	
Video – Basic Video Calls	Call Origination	Yes	
	Call Termination	Yes	

BroadWorks Session Border Controller Interoperability Test Plan Support Table

Test Plan Package	Test Plan Package Items	Supported	Comments
	Call Hold	Yes	
	Call Transfer	Yes	
Video – BroadWorks Video Services	Auto Attendant	Yes	
	Auto Attendant – HD	Yes	
	Voice Messaging	Yes	
Video – BroadWorks Video Conference	Network Conference	Yes	
	Network Conference – HD	Yes	
	Collaborate – Video	Yes	
	Collaborate – Video– HD	Yes	
Remote Survivability	Register	Yes	
	Local Calls – Without Subscriber Data	Yes	
	PSTN Calls – Without Subscriber Data	Yes	
	SCA Call – Without Subscriber Data	No	
	Register for Subscriber Data	No	
	Local Calls – With Subscriber Data	No	
	PSTN Calls – With Subscriber Data	No	
	SCA Call – With Subscriber Data	No	
IPV6	Call Origination	No	
	Call Termination	No	
	Ringback	No	
	Call Control	No	
	Registration with Authentication	No	
	T38 Fax Messaging	No	
	Busy Lamp Field	No	
	Redundancy	No	
	Video	No	
	Dual Stack with Alternate Connectivity	No	

2.3 Known Issues

This section lists the known interoperability issues between BroadWorks and specific partner release(s). Issues identified during interoperability testing and known issues identified in the field are listed.

The following table provides a description of each issue and, where possible, identifies a workaround. The verified partner device versions are listed with an “X” indicating that the issue occurs in the specific release. The issues identified are device deficiencies or bugs, so typically not BroadWorks release dependent.

The *Issue Number* is a tracking number for the issue. If it is a Media5 issue, the issue number is from Media5's tracking system. If it is a BroadWorks issue, the issue number is from BroadSoft's tracking system.

For more information on any issues related to the particular partner device release, see the partner release notes.

Issue Number	Issue Description	Partner Version			
		Dgw2.0.32.599			
----	None.				

3 Mediatrix Sentinel SBC Configuration

This section describes the configuration settings required for the Mediatrix Sentinel SBC integration with BroadWorks, primarily focusing on the SIP interface configuration. The Mediatrix Sentinel SBC configuration settings identified in this section have been derived and verified through interoperability testing with BroadWorks. For configuration details not covered in this section, see the *SBC Service User Guide for Mediatrix Sentinel Units* [1] for Mediatrix Sentinel SBC.

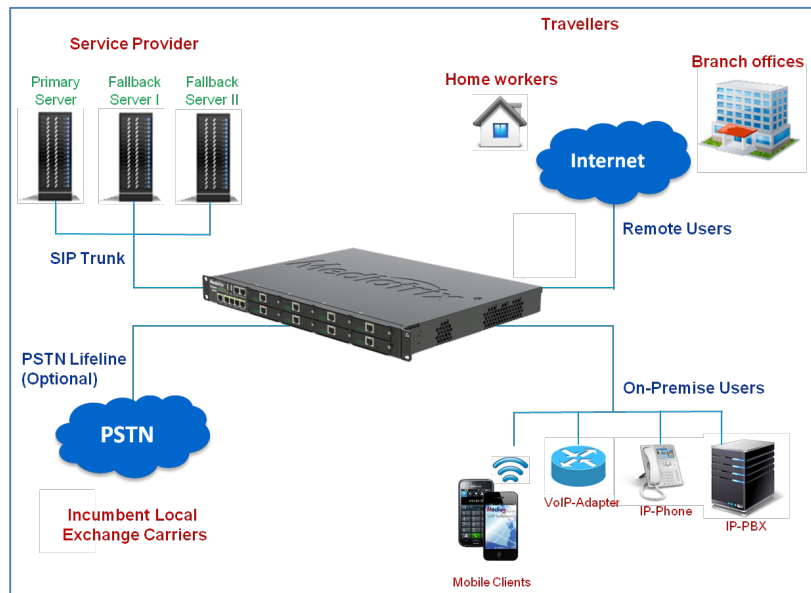


Figure 1 Application Diagram

Typically, the Sentinel is deployed as a premise-based Session Border Controller. It sits at the edge of a corporate network, transparently handling all SIP-based traffics between IP phones, IP PBX, soft clients, ATA and the BroadSoft core switch. It provides SIP mediation for interoperability and security, service continuity by handling server failover seamlessly, as well as local survivability during WAN failure.

Conceptually, the configuration of the Sentinel SBC involves the following:

- Configuring Network interfaces (the LAN and the WAN, as well as the SIP port and RTP ports).
- Configuring BroadWorks SIP Peer also known as, Call Agent (CA), for example, *wan_ip_trunk_ca*; this is the SIP Peer facing BroadWorks. This includes binding the SIP peer to the corresponding SIP and RTP interface, and applying the corresponding rulesets (actions based on conditions).
- Configuring SIP Access (Local Users) Peer (*local_users_ca*, this is the SIP peer facing local SIP access devices like IP phones and ATA. This includes binding the SIP Peer to the corresponding SIP and RTP interface, and applying the corresponding ruleset.
- Add the Routing Rulesets to direct traffics between the BroadWorks SIP Peer and the Local Users SIP Peer.

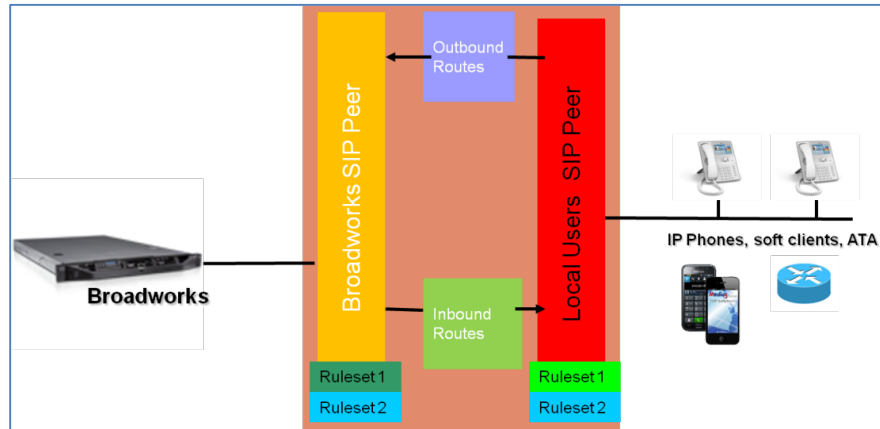


Figure 2 Configuration Concepts

3.1 Configuration Method

The Mediatrix Sentinel can be configured with a configuration file using the Trivial File Transfer Protocol (TFTP), HTTP, HTTPS for download, or Command Line Interface (CLI) or through its embedded web GUI.

Configuration Files

Mediatrix Sentinel Configuration Files	Description
MediatrixSentinel_Dgw_2.0.32.599_STN L-MX-D2000-22.zip	Contains the device firmware load.
Configuration File Name: No default name, it could be an arbitrary name, for example, <i>mydevice.cfg</i> .	Contains configurable parameters for the session controller device.
Ruleset Files: No default name	The Sentinel is pre-loaded with some rulesets in the factory. BroadWorks specific rulesets can be downloaded from the Media5 Support Portal (http://www.media5corp.com/en/support). Ruleset is the building block for the SBC functions. One can also create ruleset from the unit's web GUI with its powerful embedded ruleset editor.

3.2 System Configuration

This section describes system configuration items required for the Mediatrix Sentinel.

3.2.1 Configure Network Interfaces

This section describes how to configure the Mediatrix Sentinel network interfaces.



Figure 3 Mediatrix Sentinel Network Interfaces

```
ETH1 = WAN Uplink(10/100/100BaseT)
ETH2-5 = LAN (10/100/1000BaseT, 4-port switch)
```

Step	Command	Description
Step 1	Log into the Mediatrix Web GUI.	By default, LAN (ETH2-5) has default IP address 192.168.0.10, Uplink (ETH1) is defaulted to DHCP; dial *#*0 from a phone to check the Uplink IP address. Default username: "public". No Password.
Step 2	Go to Network->Interfaces page.	Configure Network interface settings.
Step 3	Go to Network->Host page.	Configure DNS, NTP.

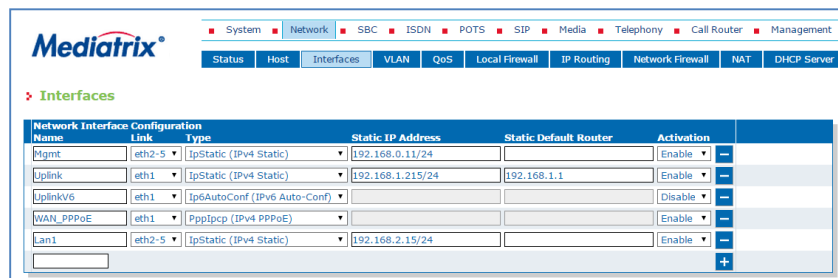


Figure 4 Interface Configuration

3.2.1.1 Configure SIP and Media Ports

Once the network interfaces are configured, the next step is to create SIP and Media Interface ports for the SIP Peers.

Step	Command	Description
Step 1	Go to SBC → Configuration page, the SIP port and Media Port settings are in the Signaling Interface Configuration section and Media Interface Configuration section respectively.	
Step 2	Hit the "+" button to create new interface if necessary. In most cases, you can reuse the default interfaces.	
Step 3	Set the port number for SIP port.	0 is equivalent to 5060 in SIP ports.
Step 4	Set the port number range for Media port.	By default, the range is UDP port 10000-20000.
Step 3	If the SIP or Media interface is behind a NAT firewall, put the public IP address in the Public Address column for near-end NAT Traversal handling.	

Signaling Interface Configuration					
Name	Network	Port	Secure Port	Tls Mode	Public Address
loop_s	Loop	5060	0	Client	
lan1_s	Lan1	5060	0	Client	
uplink_s	WAN_PPpOE	5060	0	Client	
uplink_192_168_1_0_s	Uplink	5060	0	Client	65.94.167.140
uplink2_s	Uplink	5064	5065	Client	
+					

Media Interface Configuration			
Name	Network	Port Range	Public Address
loop_m	Loop	20000-21000	
lan1_m	Lan1	21001-22000	
uplink_m	WAN_PPpOE	20000-20010	
uplink_192_168_1_0_m	Uplink	20000-21000	65.94.167.140
uplink2_m	Uplink	21001-21010	
+			

Save Apply Cancel Edits

Figure 5 Signaling and Media Port Configuration

3.3 SIP Configuration

This section identifies the Mediatrix Sentinel configuration to enable SIP on the access and core side of the SBC.

3.3.1 Configure SIP Core Side

3.3.1.1 Configure SIP Parameters

This section describes how to configure SIP parameters such as, timers and headers.

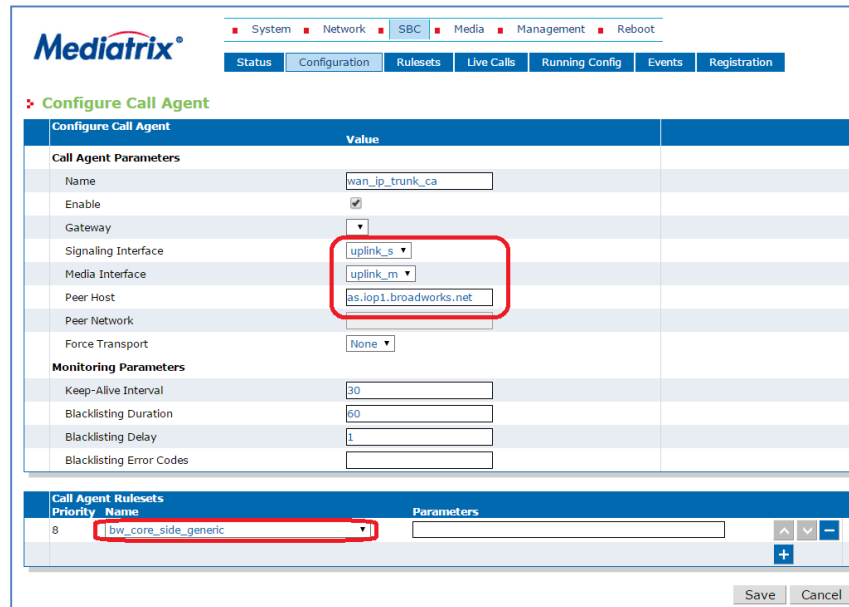
Step	Command	Description
Step 1	SIP Timer is not user configurable in this release. Header manipulation is handled by the pre-defined rulesets (in the SIP Peer configuration step).	

3.3.1.2 Configure BroadWorks SIP Peers

This section describes how to configure the Mediatrix Sentinel with BroadWorks Application Server and Network Server peer(s). SIP Peer is also known as Call Agent in Mediatrix term.

Step	Command	Description
Step 1	Go to <i>SBC</i> → <i>Configuration</i> webpage.	
Step 2	Edit the Call Agent <i>wan_ip_trunk_ca</i> .	<i>wan_ip_trunk_ca</i> is the Call Agent facing BroadSoft.
Step 3	Check the Enable box.	This will turn on the BroadWorks SIP Peer.
Step 4	Bind the Signaling and Media Interface to Uplink network interfaces.	In this example, BroadWorks SIP Peer traffics will use the WAN link (uplink).
Step 5	Enter BroadWorks Proxy FQDN in the Peer Host.	You may also put an IP address there.
Step 6	In the Call Agent Ruleset section, hit "+" to add ruleset.	

Step	Command	Description
Step 7	In the ruleset drop down, select "bw_core_side_generic"	If the <i>bw_core_side_generic</i> ruleset is not available in the drop down, go to Media5 Support Portal or contact your Media5 support.
Step 8	Hit "Save"	



Mediatrix

System Network SBC Media Management Reboot

Status Configuration Rulesets Live Calls Running Config Events Registration

Configure Call Agent

Configure Call Agent	Value
Call Agent Parameters	
Name	wan_ip_trunk_ca
Enable	☒
Gateway	
Signaling Interface	uplink_s
Media Interface	uplink_m
Peer Host	as.lap1.broadworks.net
Peer Network	
Force Transport	None
Monitoring Parameters	
Keep-Alive Interval	30
Blacklisting Duration	60
Blacklisting Delay	1
Blacklisting Error Codes	

Call Agent Rulesets	Parameters
Priority	Name
8	bw_core_side_generic

Save Cancel

Figure 6 SIP Peer Configuration for BroadWorks

3.3.1.3 Configure Survivability (Blacklisting) Timer

This section describes how to configure the Mediatrix Sentinel SIP Peer monitoring settings.

By default, these monitor parameters are all set to "0", that is, disabled. If local survivability is not required, you can leave these values as is.

If survivability is required, you can fine tune with the following parameters:

- Keep-Alive Interval – Frequency of the SIP Option keep-alive message (for example, 30 seconds).
- Blacklisting Duration – this is the minimum duration of a SIP Peer will remain down (for example, 60 seconds).
- Blacklisting Delay – Delay (in milliseconds) a SIP Peer is considered down after expiration of the SIP timer (for example, 1 milliseconds).
- Blacklisting Error Codes – SIP Error Codes which will put down the SIP Peer (for example, 503, 604).

Monitoring Parameters	
Keep-Alive Interval	30
Blacklisting Duration	60
Blacklisting Delay	1
Blacklisting Error Codes	

Figure 7 Survivability Timer

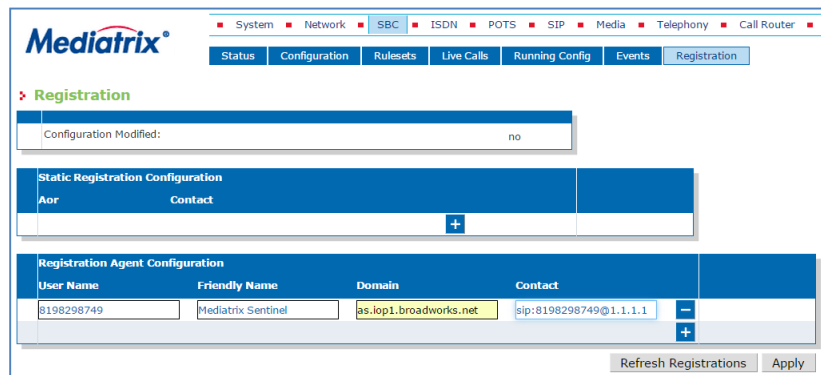
3.3.1.4 Configure Registration

This section describes how to configure the Mediatrix Sentinel core-side registration settings.

Normally, it is not required the Mediatrix Sentinel SBC to register with BroadSoft. The IP phones and SIP access devices behind the SBC will register to BroadSoft via the Sentinel SBC as the SIP Outbound Proxy.

If you must require the Mediatrix to register (for example, surrogate registration), use the following steps.

Step	Command	Description
Step 1	Go to SBC -> Registration page.	
Step 2	Put the SIP account username in the User Name field.	
Step 3	Put the SIP Caller Name in the Friendly Name field.	
Step 4	Domain is the BroadWorks SIP Domain.	
Step 5	Build the SIP Contact URI in the Contact field.	The Contact URI is in the form: sip:username@wan_ip_address_of_Sentinel , for example, sip:8198298749@1.1.1.1 .
Step 6	Go to SBC → Configuration Page, enable <i>registration_ca</i> .	
Step 7	Modify the <i>wan_ip_trunk_ca</i> , add the "uac_authentication_out" ruleset.	In the parameter field, enter the SIP authentication username and password, for example, <i>USERNAME=8198298749 PASSWORD=1234</i> .



The screenshot shows the Mediatrix web interface. The top navigation bar includes tabs for System, Network, SBC, ISDN, POTS, SIP, Media, Telephony, and Call Router. The 'SBC' tab is selected, and the 'Registration' sub-tab is active. Below the navigation bar, there's a 'Registration' section with a 'Configuration Modified' status set to 'no'. The main configuration area is divided into two sections: 'Static Registration Configuration' and 'Registration Agent Configuration'. The 'Static Registration Configuration' section has a table with columns 'Aor' and 'Contact'. The 'Registration Agent Configuration' section has a table with columns 'User Name', 'Friendly Name', 'Domain', and 'Contact'. The 'User Name' field contains '8198298749', 'Friendly Name' contains 'Mediatrix Sentinel', 'Domain' contains 'as.lsp1.broadworks.net', and 'Contact' contains 'sip:8198298749@1.1.1.1'. There are '+' and '-' buttons to add or remove rows. At the bottom right, there are 'Refresh Registrations' and 'Apply' buttons.

Figure 8 Core-Side Registration Configuration

3.3.1.5 Configure Failover/Failback for BroadWorks Redundancy

This section describes how to configure the Mediatrix Sentinel failover and failback mechanism to support BroadWorks redundant Application Servers and Network Servers.

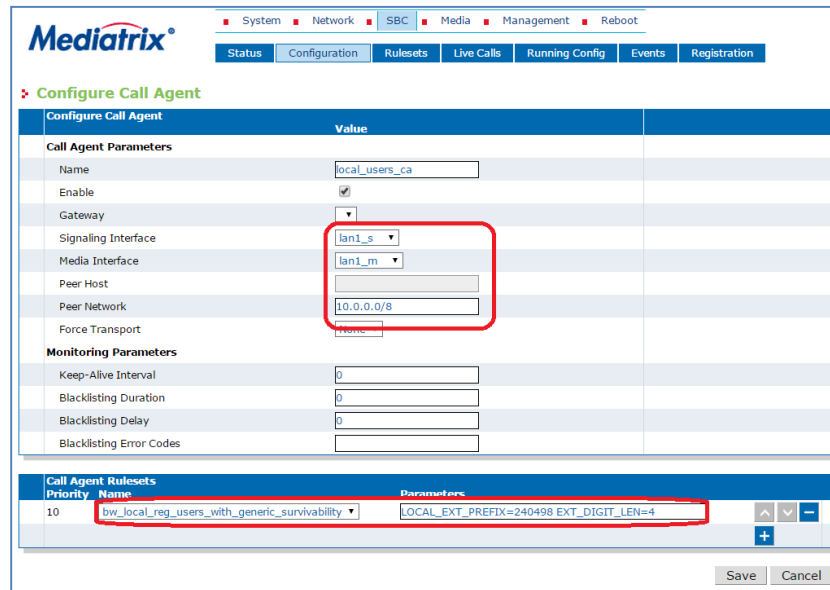
Step	Command	Description
Step 1	No Configuration is needed if FQDN (DNS-SRV) is used in the SIP Peer host	

3.3.1 Configure SIP Access Side

3.3.1.1 Configuration for Registering Devices

This section describes how to configure the Mediatrix Sentinel for registering access device peers such as SIP phones.

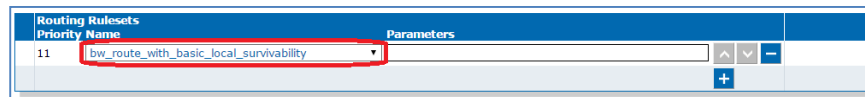
Step	Command	Description
Step 1	Go to SBC -> Configuration web page.	
Step 2	Edit the Call Agent <i>local_users_ca</i> .	<i>local_users_ca</i> is the Call Agent facing SIP Phones and ATA sitting on the local network.
Step 3	Set this Call Agent to Enable.	
Step 4	Bind this Call Agent to its corresponding SIP and Media Interface.	This is the SIP and RTP ports used for local traffics.
Step 5	Set the Peer Network.	This is the subnet where all these SIP phones and ATAs locate, for example, 10.0.0.0/8 for all phones in the Class A 10.x.x.x subnet.
Step 6	In the Call Agent Ruleset, hit "+" button to add a new ruleset entry, select from the drop down menu " <i>bw_local_reg_users_with_generic_survivability</i> " ruleset.	There are parameters to accommodate short extension dialing (in survivable mode). In the following example, all the local extensions have prefix 242111, and the length of the extension is 4, hence the parameter <i>LOCAL_EXT_PREFIX=242111</i> <i>EXT_DIGIT_LEN=4</i> .
Step 7	Click Save .	
Step 8	Go back to SBC -> Configuration page.	
Step 9	Add the Routing Ruleset (hit the "+" button), " <i>bw_route_with_basic_local_survivability</i> " ruleset.	
Step 10	Click Apply to complete.	



The screenshot shows the 'Configure Call Agent' interface in the Mediatix web console. The 'Call Agent Parameters' section is expanded, showing fields for Name (local_users_ca), Enable (checked), Gateway (dropdown), Signaling Interface (lan1_s), Media Interface (lan1_m), Peer Host (text field), Peer Network (10.0.0.0/8), and Force Transport (radio buttons). The 'Monitoring Parameters' section shows Keep-Alive Interval, Blacklisting Duration, Blacklisting Delay, and Blacklisting Error Codes. Below this is a table for 'Call Agent Rulesets' with one entry: Priority 10, Name 'bw_local_reg_users_with_generic_survivability', and Parameters 'LOCAL_EXT_PREFIX=240498 EXT_DIGIT_LEN=4'. A red box highlights the Signaling Interface, Media Interface, Peer Host, and Peer Network fields. Another red box highlights the rule entry in the table.

Figure 9 SIP Access-Side Registration Configuration and Calling Rule

Routing Ruleset



The screenshot shows the 'Routing Rulesets' table in the Mediatix web console. It has two columns: 'Priority' and 'Name'. There is one entry with Priority 11 and Name 'bw_route_with_basic_local_survivability'. A red box highlights the Name field.

Figure 10 Routing Ruleset for Local Survivability of Registering Devices

3.3.1.2 Configuration for Non-registering Devices

This section describes how to configure the Mediatix Sentinel for access devices that do not register. This configuration includes surrogate registration on behalf of the non-registering access device and any special considerations for NAT traversal with a static peer.

Step	Command	Description
Step 1	Follow the Steps in 3.3.1.4 to configure surrogate registration on behalf of the non-registering access device.	
Step 2	Go to SBC → Configuration webpage.	
Step 3	Create a SIP Peer (Call Agent) for the non-registering device; if it is an IP PBX, you can reuse the "lan_ip_pbx_ca" call agent.	
Step 4	Set the SIP and Media interface (you can simply reuse the default lan_s and lan_m interface unless you need different port number).	
Step 5	Set the Peer Host IP address.	This is the IP address of the non-registering device (for example, 192.168.1.104).
Step 6	Add the "bw_surrogate_registration_or_pilot_number" ruleset.	
Step 7	Click Save to exit.	

Step	Command	Description
Step 8	Go back to SBC → Configuration page.	
Step 9	Add the Routing Ruleset "bw_route_surrogate_reg_or_pilot_number_trunk" ruleset.	You will need to set the Pilot number in the parameter field, for example, <i>PILOT_NUM=2404986200</i> . And if you are not using <i>lan_ip_pbx_ca</i> Call agent as the IP PBX SIP Peer, you need to include DEST_CA parameter as well, for example, DEST_CA = second_ip_pbx_ca.
Step 10	Click Apply to complete.	

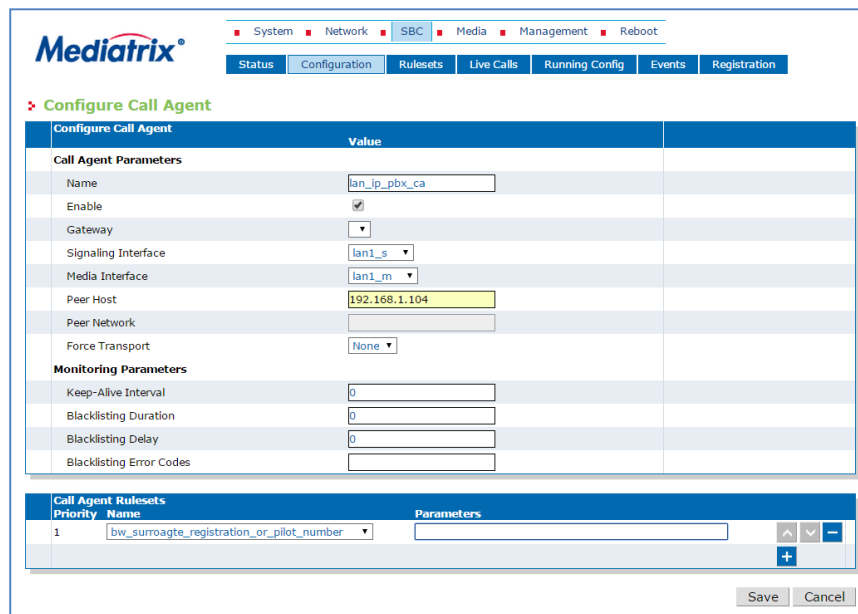


Figure 11 SIP Access-Side Non-Register Configuration and Calling Rule

Routing Ruleset:

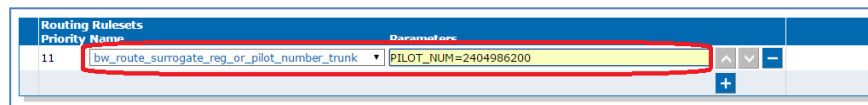


Figure 12 Routing Ruleset for Local Survivability of Non-Registering Devices

3.3.1.3 Configuration for GIN Registering Devices

This section describes how to configure the Mediatix Sentinel for IP-PBX and PBX trunking gateways that register the main line only via Generate Implicit Numbers (GIN) registration. Users behind the PBX device are implicitly registered.

GIN is not supported.

3.3.1.4 Configuration for Pilot Registering Devices

This section describes how to configure the Mediatrix Sentinel for IP-PBX and PBX trunking gateways that register the main line only but do not support GIN. Users behind the PBX device are implicitly registered.

Step	Command	Description
Step 1	Follow the Steps 2-10 in 3.3.1.2	The registration of the pilot number is coming directly from the IP PBX, so Step 1 to set up registration on the Sentinel is no longer required. The rest is the same as surrogate registration setup.

3.4 Remote Survivability Configuration

This section describes the settings necessary for remote survivability when the BroadWorks server(s) cannot be reached for call control. In this case, the session controller facilitates calls between users behind the SBC as well as off-net calls.

Step	Command	Description
Step 1	Remote survivability to facilitate calls among local users is turned on automatically by the default rulesets applied to the BroadWorks and local user SIP Peers. No configuration is required.	
Step 2	Off-Net calls through a local voice interface port (either a FXO or PRI) is possible by routing call to the <i>trunk_lines_ca</i> Call Agent	The setup is similar to the following scenario with the local SIP Proxy. Instead of routing the traffics to an external gateway, the call is routed internally to one of the Sentinel's PRI or FXO port. Loopback interface is used.
Step 3	Off-Net calls through a local SIP proxy (FXO/PRI gateway) is possible by routing calls to its corresponding Call Agent	For example, you can use a local FXO or PRI gateway for PSTN access as a backup. The following examples shows a configuration on the Mediatrix Sentinel. The <i>trunk_lines_ca</i> SIP Peer is assigned with the IP of this external SIP gateway. The traffics are routed to this gateway when a WAN or softswitch outage is detected. For more information, contact your Media5 Support or the Media5 website.

Mediatix®

System Network SBC Media Management Reboot

Status Configuration Rulesets Live Calls Running Config Events Registration

✚ Configure Call Agent

Configure Call Agent	Value
Call Agent Parameters	
Name	trunk_lines_ca
Enable	☒
Gateway	▼
Signaling Interface	lan1_s ▼
Media Interface	lan1_m ▼
Peer Host	10.1.120.232
Peer Network	
Force Transport	None ▼
Monitoring Parameters	
Keep-Alive Interval	0
Blacklisting Duration	0
Blacklisting Delay	0
Blacklisting Error Codes	

Call Agent Rulesets	Priority	Name	Parameters
1		trunk_lines_local_call	

Save Cancel

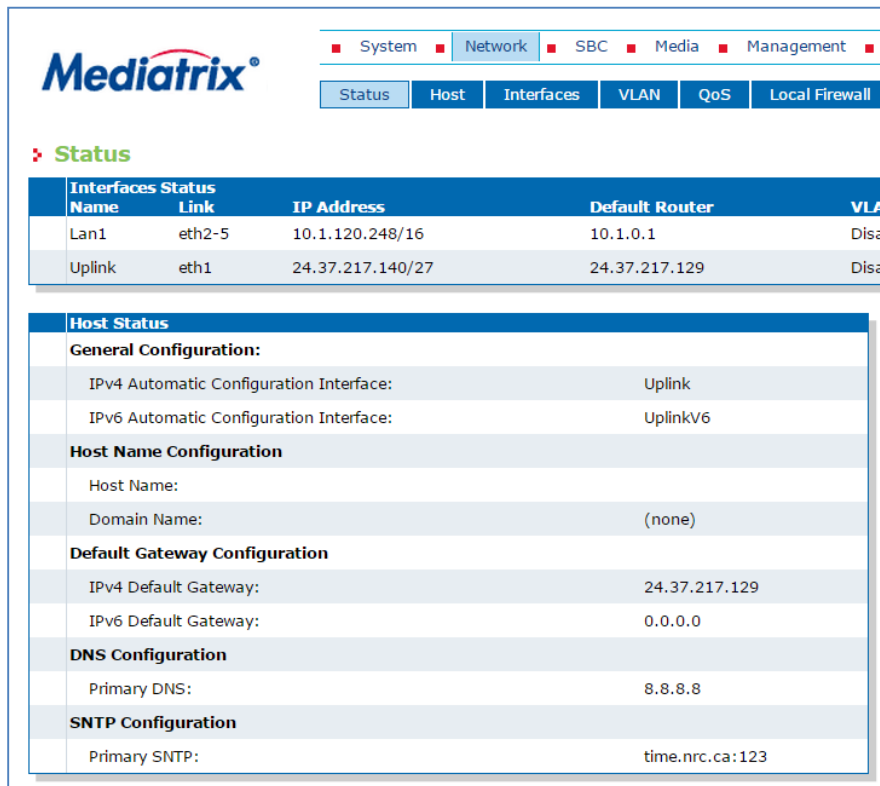
Routing Rulesets	Priority	Name	Parameters
6		local_users_fallover_to_trunk_lines	PSTNPREFIX=9 CALLAGENT=wan_ip_trunk_ca
10		trunk_lines_to_local_user	
11		BW_route_with_basic_local_survivability	

Figure 13 Remote Survivability Configuration

Appendix A: Reference Mediatrix Sentinel SBC Configuration

The following is a reference configuration for the Mediatrix Sentinel SBC and is configured for use with BroadWorks.

- 1) Assign Network Parameters to the corresponding interfaces.



Mediatrix

System Network SBC Media Management

Status Host Interfaces VLAN QoS Local Firewall

Status

Interfaces Status	Link	IP Address	Default Router	VLAN
Lan1	eth2-5	10.1.120.248/16	10.1.0.1	Disa
Uplink	eth1	24.37.217.140/27	24.37.217.129	Disa

Host Status

General Configuration:

IPv4 Automatic Configuration Interface: Uplink

IPv6 Automatic Configuration Interface: UplinkV6

Host Name Configuration

Host Name:

Domain Name: (none)

Default Gateway Configuration

IPv4 Default Gateway: 24.37.217.129

IPv6 Default Gateway: 0.0.0.0

DNS Configuration

Primary DNS: 8.8.8.8

SNTP Configuration

Primary SNTP: time.nrc.ca:123

Figure 14 Network Status

- 2) Configure the SBC (under SBC → Configuration)
 - Configure the SIP and Media interface for both local (lan_s and lan_m) and traffics to the BroadSoft core (uplink_s and uplink_m). You will be asked to restart the SBC service if the SIP or Media interface is re-configured, just follow the instruction on the web GUI.
 - Enable the wan_ip_trunk_ca SIP Peer (Call Agent) – for BroadWorks
 - i. Set Peer Host (FQDN or IP address of the BroadWorks Application server or the SBC).
 - ii. Add *bw_core_side_generic ruleset*.
 - iii. Set Call Agent Monitoring parameters if local survivability is required.
 - Enable the local_users_ca SIP Peer (Call Agents) – for local SIP phones/ATAs
 - iv. Set the Peer Network (subnet of the LAN).
 - v. Add *bw_local_reg_users_with_generic_survivability ruleset* – this ruleset seamlessly handles normal traffics as well as providing local SIP phones calling service during survivability mode.

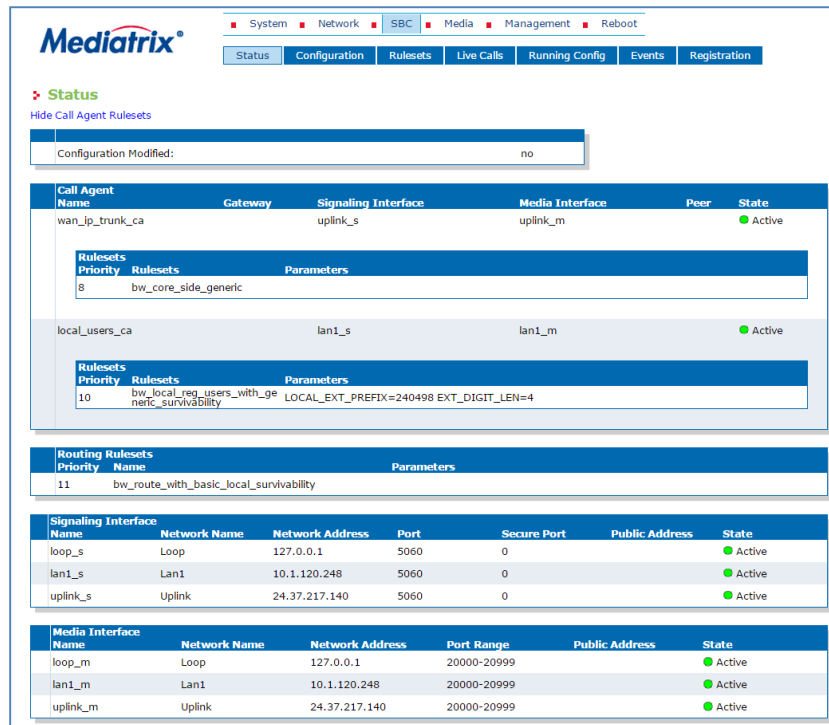
vi. If you want short extension dialing, set the following parameters and apply them to the above ruleset:

1. *LOCAL_EXT_PREFIX* – prefix of the local extensions.
2. *EXT_DIGIT_LEN* – digit length of local extensions.
3. The final parameter will look like (local extension in the form 240498xxx):

LOCAL_EXT_PREFIX=240498 EXT_DIGIT_LEN=4

- Add the routing ruleset *bw_route_with_basic_local_survivability* to direct traffics between the BroadWorks and Local IP phones SIP peers.

Click **Apply** to finish up the configuration. The following screen shot appears.



The screenshot shows the Mediatrix SBC configuration interface. At the top, there are tabs for System, Network, SBC, Media, Management, and Reboot. Below these are sub-tabs for Status, Configuration, Rulesets, Live Calls, Running Config, Events, and Registration. The 'Status' tab is active, showing a 'Configuration Modified' status of 'no'. Below this, there are sections for 'Call Agent', 'Rulesets', 'Routing Rulesets', 'Signaling Interface', and 'Media Interface'. Each section contains a table of configuration details.

Call Agent Name	Gateway	Signaling Interface	Media Interface	Peer	State
wan_ip_trunk_ca		uplink_s	uplink_m		Active
local_users_ca		lan1_s	lan1_m		Active

Rulesets Priority	Rulesets	Parameters
8	bw_core_side_generic	
10	bw_local_reg_users_with_generic_survivability	LOCAL_EXT_PREFIX=240498 EXT_DIGIT_LEN=4

Routing Rulesets Priority	Name	Parameters
11	bw_route_with_basic_local_survivability	

Signaling Interface Name	Network Name	Network Address	Port	Secure Port	Public Address	State
loop_s	Loop	127.0.0.1	5060	0		Active
lan1_s	Lan1	10.1.120.248	5060	0		Active
uplink_s	Uplink	24.37.217.140	5060	0		Active

Media Interface Name	Network Name	Network Address	Port Range	Public Address	State
loop_m	Loop	127.0.0.1	20000-20999		Active
lan1_m	Lan1	10.1.120.248	20000-20999		Active
uplink_m	Uplink	24.37.217.140	20000-20999		Active

Figure 15 Configure SBC

Configuration Script Example

```
#####
# Configuration Script.
# Automatically generated on 29/09/2015 16:08:20.
#####
# System Name      : Mediatrix Sentinel
# Firmware         : Dgw 2.0.32.599
# Profile          : STNL-MX-D2000-22
# MAC Address      : 0090f80a9e6d
# Serial Number    : 000900000M346140010
# Description      : Automatically generated on 29/09/2015 16:08:20.
#####

# Initiate a unit reboot only if the new hardware settings require it.
Conf.RebootIfNeeded

# Eth Service
```

```
Eth.Vlan.DeleteAllRows
```

```
# Hoc Service
```

```
Hoc.SntpConfigSource = "Static"
```

```
Hoc.StaticSntpServers[Priority=1].HostName = "time.nrc.ca"
```

```
Hoc.DnsServersConfigSource = "Static"
```

```
Hoc.StaticDnsServers[Priority=1].IpAddress = "8.8.8.8"
```

```
Hoc.StaticHosts.DeleteAllRows
```

```
# Bni Service
```

NOTE: The following commands remove the network interfaces and add them back. It is highly recommended that they are executed only when the unit is in a locked state (see EpAdm.UnitForceLock). Not doing so might result in unexpected behavior from the current calls in progress.

```
Bni.NetworkInterfaces.DeleteAllRows
```

```
Bni.AddNetwork Idx=2
```

```
Bni.AddNetwork Idx=3
```

```
Bni.AddNetwork Idx=4
```

```
Bni.NetworkInterfaces[Idx=1].InterfaceName = "Rescue"
```

```
Bni.NetworkInterfaces[Idx=2].InterfaceName = "Uplink"
```

```
Bni.NetworkInterfaces[Idx=3].InterfaceName = "UplinkV6"
```

```
Bni.NetworkInterfaces[Idx=4].InterfaceName = "Lan1"
```

```
Bni.NetworkInterfaces[Idx=1].LinkName = "eth1"
```

```
Bni.NetworkInterfaces[Idx=2].LinkName = "eth1"
```

```
Bni.NetworkInterfaces[Idx=3].LinkName = "eth1"
```

```
Bni.NetworkInterfaces[Idx=4].LinkName = "eth2-5"
```

```
Bni.NetworkInterfaces[Idx=3].ConnectionType = "Ip6AutoConf"
```

```
Bni.NetworkInterfaces[Idx=1].StaticIpAddr = "192.168.0.1/24"
```

```
Bni.NetworkInterfaces[Idx=2].StaticIpAddr = "24.37.217.140/27"
```

```
Bni.NetworkInterfaces[Idx=3].StaticIpAddr = ""
```

```
Bni.NetworkInterfaces[Idx=4].StaticIpAddr = "10.1.120.248/16"
```

```
Bni.NetworkInterfaces[Idx=2].StaticDefaultRouter = "24.37.217.129"
```

```
Bni.NetworkInterfaces[Idx=4].StaticDefaultRouter = "10.1.0.1"
```

```
Bni.NetworkInterfaces[Idx=2].Activation = "Enable"
```

```
Bni.NetworkInterfaces[Idx=4].Activation = "Enable"
```

```
Bni.NetworkInterfaces[Idx=1].Priority = "100"
```

```
Bni.NetworkInterfaces[Idx=4].Priority = "30"
```

```
# Lfw Service
```

```
Lfw.LocalRules.DeleteAllRows
```

```
Lfw.ApplyConfig
```

```
# Sbc Service
```

```
Sbc.CallAgent.DeleteAllRows
```

```
Sbc.AddCallAgent Id=1
```

```
Sbc.AddCallAgent Id=101
```

```
Sbc.AddCallAgent Id=102
```

```
Sbc.AddCallAgent Id=103
```

```
Sbc.AddCallAgent Id=104
```

```
Sbc.AddCallAgent Id=105
```

```
Sbc.AddCallAgent Id=106
```

```
Sbc.AddCallAgent Id=107
```

```
Sbc.CallAgent[Id=1].Name = "registration_ca"
```

```
Sbc.CallAgent[Id=101].Name = "trunk_lines_ca"
```

```
Sbc.CallAgent[Id=102].Name = "phone_lines_ca"
```

```
Sbc.CallAgent[Id=103].Name = "lan_ip_pbx_ca"
```

```
Sbc.CallAgent[Id=104].Name = "wan_ip_trunk_ca"
```

```
Sbc.CallAgent[Id=105].Name = "local_users_ca"
```

```
Sbc.CallAgent[Id=106].Name = "remote_users_ca"
Sbc.CallAgent[Id=107].Name = "secondary_ip_trunk_ca"
Sbc.CallAgent[Id=104].Enable = "Enable"
Sbc.CallAgent[Id=105].Enable = "Enable"
Sbc.CallAgent[Id=1].SignalingInterface = "1"
Sbc.CallAgent[Id=101].SignalingInterface = "2"
Sbc.CallAgent[Id=102].SignalingInterface = "1"
Sbc.CallAgent[Id=103].SignalingInterface = "2"
Sbc.CallAgent[Id=104].SignalingInterface = "3"
Sbc.CallAgent[Id=105].SignalingInterface = "2"
Sbc.CallAgent[Id=106].SignalingInterface = "3"
Sbc.CallAgent[Id=107].SignalingInterface = "3"
Sbc.CallAgent[Id=1].MediaInterface = "1"
Sbc.CallAgent[Id=101].MediaInterface = "2"
Sbc.CallAgent[Id=102].MediaInterface = "1"
Sbc.CallAgent[Id=103].MediaInterface = "2"
Sbc.CallAgent[Id=104].MediaInterface = "3"
Sbc.CallAgent[Id=105].MediaInterface = "2"
Sbc.CallAgent[Id=106].MediaInterface = "3"
Sbc.CallAgent[Id=107].MediaInterface = "3"
Sbc.CallAgent[Id=102].Gateway = "phone_lines_gw"
Sbc.CallAgent[Id=1].PeerHost = "127.0.0.1:5060"
Sbc.CallAgent[Id=101].PeerHost = "10.1.120.232"
Sbc.CallAgent[Id=104].PeerHost = "as.iop1.broadworks.net"
Sbc.CallAgent[Id=105].PeerNetwork = "10.1.0.0/16"
Sbc.CallAgent[Id=1].ForceTransport = "None"
Sbc.CallAgent[Id=101].ForceTransport = "None"
Sbc.CallAgent[Id=102].ForceTransport = "None"
Sbc.CallAgent[Id=103].ForceTransport = "None"
Sbc.CallAgent[Id=104].ForceTransport = "None"
Sbc.CallAgent[Id=105].ForceTransport = "None"
Sbc.CallAgent[Id=106].ForceTransport = "None"
Sbc.CallAgent[Id=107].ForceTransport = "None"
Sbc.CallAgentRuleset.DeleteAllRows
Sbc.AddCallAgentRuleset Id=57
Sbc.AddCallAgentRuleset Id=76
Sbc.AddCallAgentRuleset Id=77
Sbc.CallAgentRuleset[Id=57].CallAgent = "101"
Sbc.CallAgentRuleset[Id=76].CallAgent = "105"
Sbc.CallAgentRuleset[Id=77].CallAgent = "104"
Sbc.CallAgentRuleset[Id=76].Priority = "10"
Sbc.CallAgentRuleset[Id=77].Priority = "8"
Sbc.CallAgentRuleset[Id=57].Ruleset = "trunk_lines_local_call"
Sbc.CallAgentRuleset[Id=76].Ruleset = "bw_local_reg_users_with_generic_survivability"
Sbc.CallAgentRuleset[Id=77].Ruleset = "bw_core_side_generic"
Sbc.CallAgentRuleset[Id=76].Parameters = "LOCAL_EXT_PREFIX=240498 EXT_DIGIT_LEN=4"
Sbc.RoutingRules.DeleteAllRows
Sbc.AddRouteRuleset Id=13
Sbc.RoutingRules[Id=13].Priority = "11"
Sbc.RoutingRules[Id=13].Ruleset = "bw_route_with_basic_local_survivability"
Sbc.SignalingInterface.DeleteAllRows
Sbc.AddSignalingInterface Id=1
Sbc.AddSignalingInterface Id=2
Sbc.AddSignalingInterface Id=3
Sbc.SignalingInterface[Id=1].Name = "loop_s"
Sbc.SignalingInterface[Id=2].Name = "lan1_s"
Sbc.SignalingInterface[Id=3].Name = "uplink_s"
Sbc.SignalingInterface[Id=1].NetworkInterface = "Loop"
```

```
Sbc.SignalingInterface[Id=2].NetworkInterface = "Lan1"
Sbc.SignalingInterface[Id=3].NetworkInterface = "Uplink"
Sbc.SignalingInterface[Id=1].Port = "5060"
Sbc.SignalingInterface[Id=2].Port = "5060"
Sbc.SignalingInterface[Id=3].Port = "5060"
Sbc.MediaInterface.DeleteAllRows
Sbc.AddMediaInterface Id=1
Sbc.AddMediaInterface Id=2
Sbc.AddMediaInterface Id=3
Sbc.MediaInterface[Id=1].Name = "loop_m"
Sbc.MediaInterface[Id=2].Name = "lan1_m"
Sbc.MediaInterface[Id=3].Name = "uplink_m"
Sbc.MediaInterface[Id=1].NetworkInterface = "Loop"
Sbc.MediaInterface[Id=2].NetworkInterface = "Lan1"
Sbc.MediaInterface[Id=3].NetworkInterface = "Uplink"
Sbc.MediaInterface[Id=1].PortRange = "20000-20999"
Sbc.MediaInterface[Id=2].PortRange = "20000-20999"
Sbc.MediaInterface[Id=3].PortRange = "20000-20999"
Sbc.PeerMonitoring[Id=104].KeepAliveInterval = "30"
Sbc.PeerMonitoring[Id=104].BlackListingDuration = "60"
Sbc.PeerMonitoring[Id=104].BlackListingDelay = "1"
```

```
# Snmp Service
```

```
# Web Service
```

```
# Restart all the services that require it.
```

```
Scm.RestartRequiredServices
```

References

- [1] Media5 Corporation 2015. *SBC Service User Guide for Mediatrix Sentinel Units, Release Dgw2.0.32*. Available from Media5 at www.media5corp.com.
- [2] BroadSoft, Inc. 2015. *BroadWorks Redundancy Guide, Release 21.0*. Available from BroadSoft at xchange.broadsoft.com.
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- [5] BroadSoft, Inc. 2015. *BroadWorks Session Border Controller Interoperability Test Plan, Release 21.0*. Available from BroadSoft at xchange.broadsoft.com.