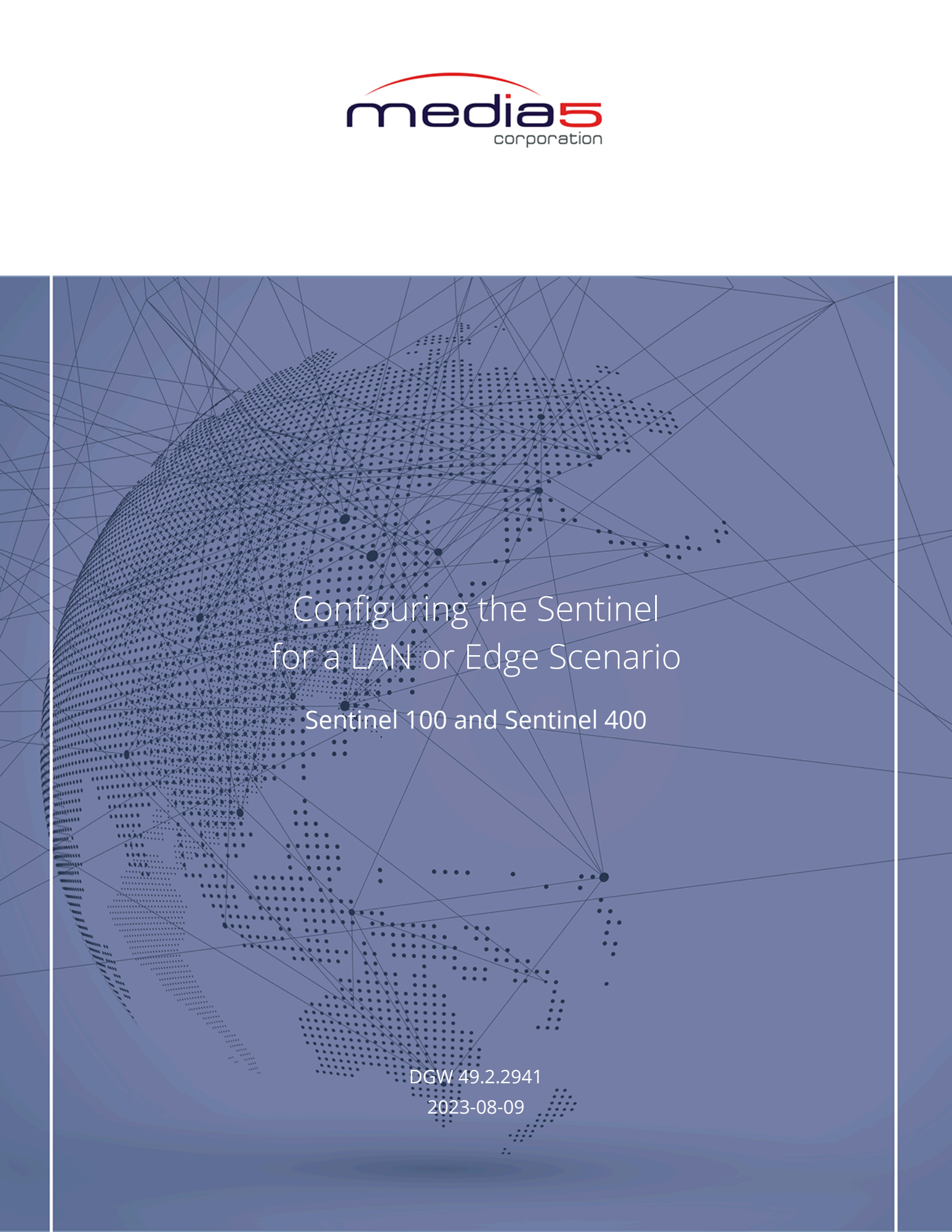


The background of the page is a dark blue gradient with a complex, abstract graphic. It features a dense network of thin, light blue lines connecting various points, creating a mesh-like structure. Overlaid on this is a large, curved, dotted shape that resembles a stylized globe or a network boundary. The overall effect is technical and digital.

Configuring the Sentinel for a LAN or Edge Scenario

Sentinel 100 and Sentinel 400

DGW 49.2.2941
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1 Basic Concepts

1.1 Sentinel 100 and Sentinel 400

This technical bulletin explains how the physical and logical network ports can be configured to suit different needs whether the Sentinel needs to be in the Lan or on the Edge of the network.



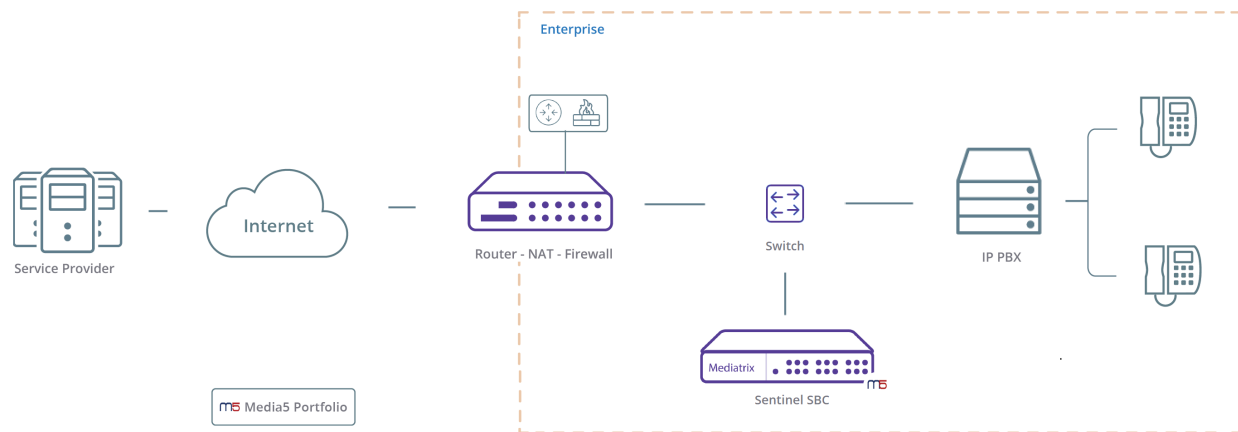
The Sentinel 100 or 400 includes:

- 1x Gigabit Ethernet WAN
- 4x Gigabit Ethernet LAN switch
- VLAN, PPPoE, 802.1X
- Multiple IP (different subnets) support per network interface
- Multiple VLANs per network interface
- Static IP Routing
- Stateful local and network Firewall
- NAT

For more details visit the Media5 Corporation official Web site at <https://www.media5corp.com> or the [Media5 Documentation Portal](#).

1.2 Sentinel on the LAN

The Sentinel 100 or 400 is designed to fit different network roles and topologies. It can be deployed inside a LAN behind a NAT firewall.

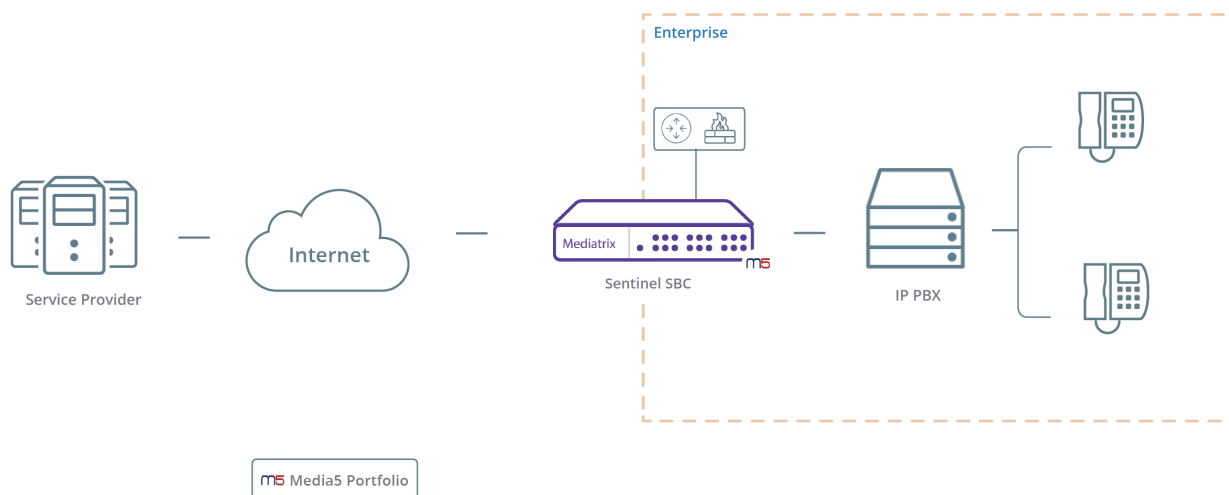


In this scenario, the Sentinel is usually configured as follows:

- Private (local) IP assigned to LAN port, Internal SIP clients (e.g. IP phones and IP PBX) also on the same LAN network.
- The Uplink Network interface is associated with the Wan/Eth1 physical link.
- The Lan1 Network interface is associated with the LAN/Eth2-5 physical link.
- The LAN signaling and media interfaces are not used.
- A signaling and media interface (pbx_s and pbx_m) will be created to avoid port conflicts when configuring the Call agents. They will be assigned associated to the LAN/Eth2-5 network interface
- Local firewall rules created to protect the SBC from outside attack (to complement the Edge NAT firewall router, optional). For more details refer to the [Configuring Local Firewalls](https://documentation.media5corp.com) Configuration guide published on the Media5 documentation portal at <https://documentation.media5corp.com>
- Port forwarding for SIP and RTP ports set up on the edge NAT firewall router
- SBC SIP near end NAT traversal is configured
- SBC rules to process VoIP calls

1.3 Sentinel on the Edge

The Sentinel 100 or 400 is designed to fit different network roles and topologies. It can be deployed on the network Edge, with a public IP address and firewall enabled.



The Sentinel located on the Edge is usually configured as follows:

- Public IP assigned to WAN/Eth1 port
- Uplink Network interface is associated with the WAN/Eth1
- Lan1 network interface is associated with the LAN/eth2-5
- Private (local) IP assigned to LAN port
- Local firewall rules created to protect the SBC from outside attack, for reference: <https://documentation.media5corp.com/display/DGWLATEST/Configuring+Local+Firewalls>
- NAT, IP forwarding and Network Firewall are enabled if Sentinel is used as a router (this is optional, the Sentinel by default does not forward any IP packets between the WAN and LAN) for local IP clients, for reference: <https://documentation.media5corp.com/display/DGWLATEST/Configuring+a+Mediatix+unit+as+a+NAT-Firewall+between+the+LAN+and+the+Internet> , <https://documentation.media5corp.com/display/DGWLATEST/Configuring+the+Network+Firewall>
- SBC rules to process VoIP calls

1.4 Signaling and Media Interfaces

The Signaling Interface is used for SIP signaling and the Media Interface is used for media (RTP, UDPTL) processing.

When configuring a Call Agent, you must select a Signaling Interface and a Media Interface. These interfaces are used whenever SIP signaling or media packets are sent to or received by the Call Agent.

It is possible to create several Signaling and Media Interfaces on the same Network Interface but for different purposes. For example, one set of Signaling and Media Interfaces for a WAN SIP Trunk and another set of Signaling and Media Interfaces for remote user calls. This means, for instance, that two Signaling Interfaces will be created on the same Network Interface, using the same IP address, but with a port range that will differ according to their intended use and to avoid conflicts.

A Media or Signaling Interface can be used by more than one Call Agent, but a specific Signaling or Media Interface can be created for a specific Call Agent. This provides the liberty to define

non conflicting range of contactable interfaces on any physical network interfaces of the units for your network structure needs (such as Vlans, PPPoE interfaces, multiple Ethernet ports or multiple addresses on a link).

The following Signaling and Media Interfaces are supplied by default:

- **lan1_m**
- **lan1_s**
- **loop_m**
- **loop_s**
- **uplink_s**
- **uplink_m**

loop_m and **loop_s** interfaces are used to communicate with the internal services of the unit. For example, the loop interfaces can be used to communicate with the SipEp service to access phone ports.

1.5 Default Network Interfaces

There are four Network Interfaces created by default on the Mediatrix unit: Uplink, Lan 1, UplinkV6, and Rescue.

- The **Uplink** network interface defines the uplink information required by the Mediatrix unit to properly connect to the WAN. (By default eth1 for all platforms, except for the 4102S which is WAN . By default, this interface uses the **IpDhcp (IPv4 DHCP)** connection type. If you are using only one Network Interface, you must use **Uplink**.
- The **Lan1** network interface defines the information required by the Mediatrix unit to properly connect to the LAN.(By default eth2-5 for all platforms, except for the 4102 which is LAN) By default, the **Lan1** Network Interface uses the **IpStatic (IPv4 Static)** connection type. The **Lan1** network interface can only be added on units with 2 network ports.
- The **Rescue** network interface, is used to display the **Rescue** Management Interface when a partial reset of the unit is performed. By default, the **Rescue** network interface
 - is disabled and automatically enabled when a partial reset is performed.
 - uses the **IpStatic (IPv4 Static)** or the **Ip6Static (IPv6 Static)** addresses.

The **Rescue** Network Interface cannot be deleted. Refer to the [Technical Bulletin - Performing a Partial Reset](#) document published on the [Media5 Documentation Portal](#).

- The **UplinkV6** network interface defines the IPv6 uplink information required by the Mediatrix unit to properly connect to the WAN. By default, this interface uses the **IP6autoConf (IPv6 Auto-Conf)** configuration mode.

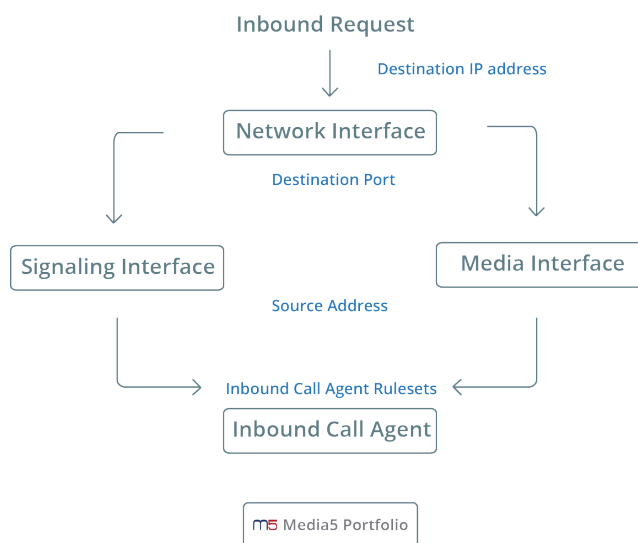
It is possible to create up to 48 Network Interfaces.

1.6 Call Agents

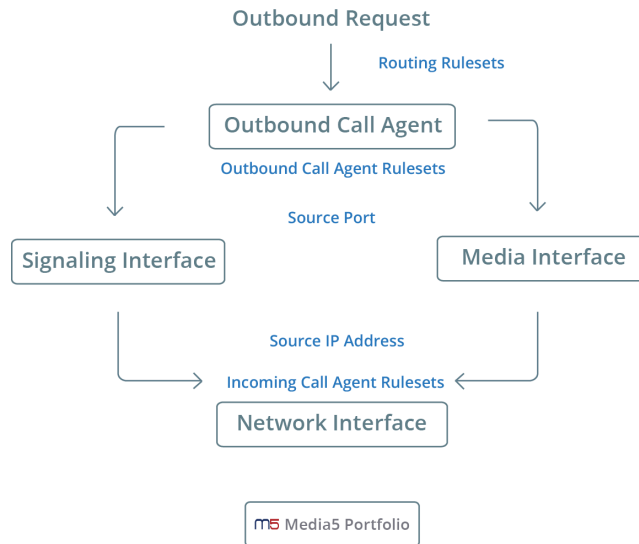
Call Agents represent logical end-points that connect the Mediatrix unit to peers.

For security reasons, the Mediatrix unit communicates by default only with well-known and defined peers. When a request cannot be associated with a Call Agent, it is rejected. Each Call Agent is tied to a specific peer, ensuring all inbound and outbound communications with that peer. Routing rulesets are used to route SIP signaling between Call Agents, where inbound requests from a Call Agent are sent to another (or the same) Call Agent that will send an outbound request to it's related peer. Call Agents can be associated with one or several Rulesets which can be applied to the inbound or the outbound requests.

When there is an inbound request, to determine the Call Agent the inbound request will go through, the Mediatrix unit uses the destination IP address to choose the Network interface. Then the destination port of the inbound request will determine the Signaling or Media Interface used. Finally, the source address and the source port, will allow the Mediatrix unit to direct the request to the appropriate Call Agent. At this point any Rulesets associated with the Call Agent will be applied in order of priority.



When a request is sent out, i.e. there is an outbound request, the Routing Rulesets will determine which Call Agent will be used. Then the Call Agent Rulesets will be applied to the outbound request, in reverse priority order. The outbound request will then be sent through the Signaling and Media Interface associated with the Call Agent. If the public IP address is used, then the SIP request will use this address as the source IP address. The outbound request will then be sent to the peer address of the Call Agent or according to the routing Ruleset if the peer is a Network.

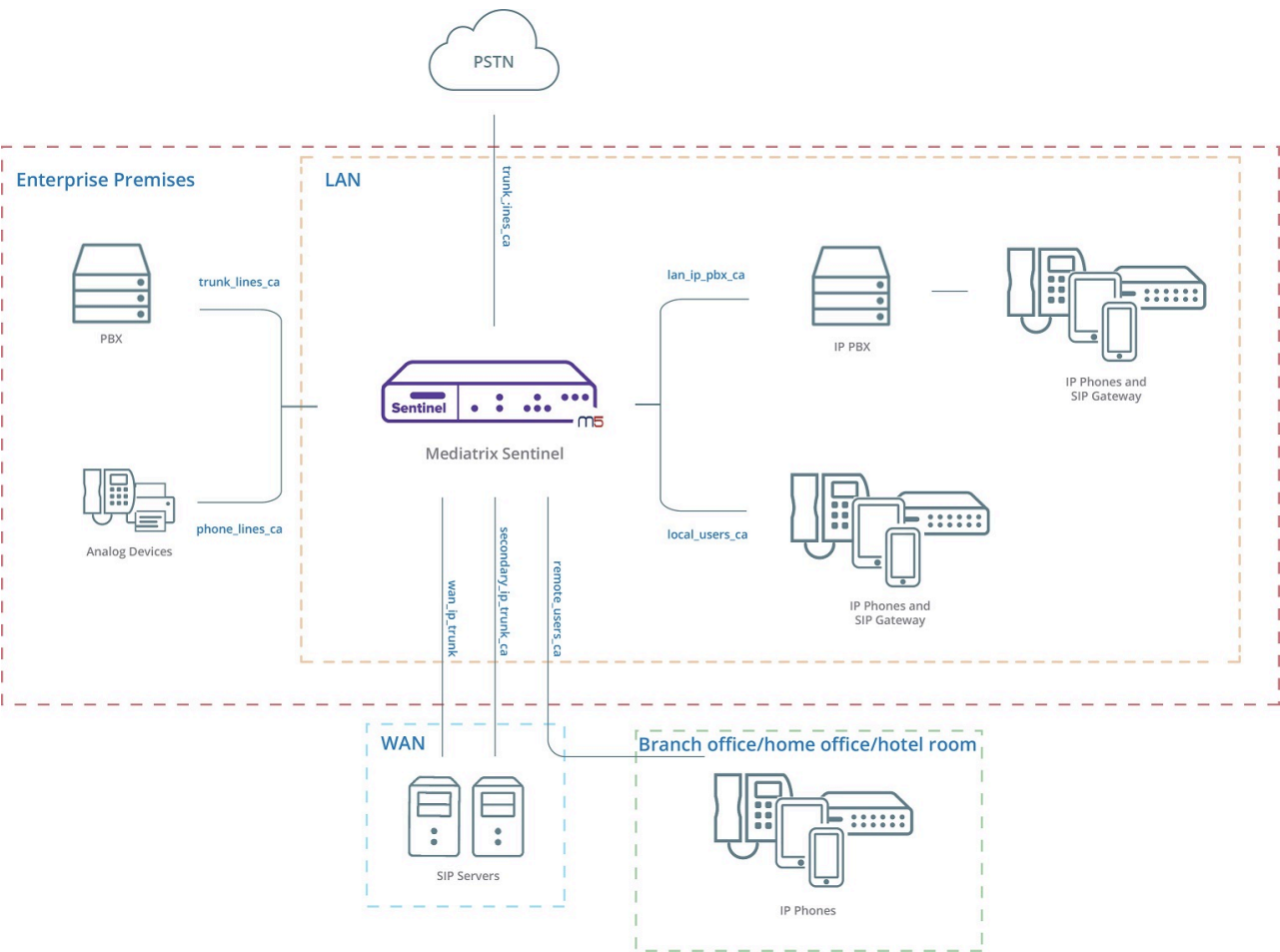


In addition, a Call Agent tracks REGISTER requests or monitor the peer host using SIP options. When these features are activated, the Call Agent registration state and monitoring state are updated allowing a Routing Ruleset to select another Call Agent based on the state of a primary Call Agent.

Eight default types of Call Agents were created for Mediatrix unit. This should be enough to cover all your needs. However, for advanced users, it is possible to create new Call Agents.

Seven of the eight default Call Agents allow the Mediatrix unit to communicate with seven different types of end-points.

Call Agent Name	SIP or Endpoint Peer
wan_ip_trunk_ca	SIP server located on the WAN.
trunk_lines_ca	Public Switch Telephony Network (PSTN), through PRI, BRI or FXO ports.
phone_lines_ca	Telephones, through FXS ports.
lan_ip_pbx_ca	IP Private branch exchange (PBX) located on the LAN.
local_users_ca	Users via SIP telephony located on the LAN.
remote_users_ca	Users using SIP telephony located on the WAN.
registration_ca	Used to route the registrations issued by the Registration Agent.
secondary_ip_trunk_ca	SIP server if the wan_ip_trunk_ca Call Agent is not available.



2 Basic Tasks

2.1 Configuring the Network Interfaces

Before you start

When configuring network interfaces, Media5 recommends to have a syslog client properly configured and enabled in order to receive any message related to the network interfaces behaviour. The interface used to access the syslog client must also be properly enabled.

Information

In the Edge scenario both the **Uplink** and **Lan1** network interface will be used.

Steps

- 1) Go to **Network/Interfaces**.

IMPORTANT: Use extreme care when configuring network interfaces, especially when configuring the network interface used to contact the unit for management. Be careful never to disable or delete the network interface used to contact the unit. Also be careful to always set the unit's management interface to be an interface that you can contact.

- 2) In the **Network Interface Configuration** table, make sure the **Uplink** network interface is configured as follows:
 - a) **Link= eth1**
 - b) **Type= IpStatic (IPv4 Static)**
 - c) **Static IP Address=** IP address and Network mask of Network Interface
 - d) **Activation=Enable**
- 3) In the **Network Interface Configuration** table, make sure the **Lan1** network interface is configured as follows:
 - a) **Link= eth2-5**
 - b) **Type= IpStatic (IPv4 Static)**
 - c) **Static IP Address=** IP address and Network mask of Network Interface
 - d) **Static Default Router=**IP address of the default router of the network interface.
 - e) **Activation=Enable**
- 4) Click **Apply**.

Result

Network Interface Configuration						
Name	Link	Type	Static IP Address	Static Default Router	Activation	
Lan1	eth2-5	IpStatic (IPv4 Static)	Static IP address		Enable	—
Uplink	eth1	IpStatic (IPv4 Static)	Static IP address	Static IP address	Enable	—
						+

Next Step

[Configuring Signaling and Media Interfaces for LAN Scenarios \(p.11\)](#)

[Configuring Signaling and Media Interfaces for Edge Scenarios \(p.14\)](#)

2.2 Network Interface Binding for LAN Scenarios

2.2.1 Configuring Signaling and Media Interfaces for LAN Scenarios

Information

For the LAN scenarios, the default uplink Signaling and Media interfaces are used as well as a custom signaling and media interface that will bind to the LAN1 Network interface.

Steps

- 1) Go to **SBC/Configuration**.
- 2) In the **Signaling Interface Configuration**, click **—** located on the same line as **lan1_s** to delete it.
- 3) On the **uplink_s** line, complete the fields as follows:
 - a) **Network**=Uplink
 - b) **Port** = 5064
 - c) **Secure Port**=0
 - d) **Allowed Transport**=All
 - e) **TLS Mode**=Client
 - f) **Public Address**=NAT/FW IP address
- 4) click **+** at the bottom of the table to add a new signalling interface. Complete the fields as follows:
 - a) **Name**=pbx_s
 - b) **Network**=Lan1
 - c) **Port**=5060
 - d) **Secure Port**=0
 - e) **Allowed Transport**=All
 - f) **TLS Mode**=Client
 - g) **Public Address**=leave empty

- 5) In the **Media Interface Configuration** table, click  located on the same line as **lan1_m** to delete it.
- 6) On the **uplink_m** line, complete the fields as follows:
 - a) **Network=Uplink.**
 - b) **Port Range=20000-20999**
 - c) **Public Address=NAT/FW IP address**
- 7) Click  at the bottom of the table to add a new signalling interface. Complete the fields as follows:
 - a) **Name=pbx_m**
 - b) **Network=Lan1**
 - c) **Port Range=21000-21999**
 - d) **Public Address=leave empty**
- 8) Click **Apply**

Result

Signaling Interface Configuration							
Name	Network	Port	Secure Port	Allowed Transports	Tls Mode	Public Address	
loop_s	Loop	0	0	All	Client		
uplink_s	Uplink	5064	0	All	Client	NAT/FW IP address	
pbx_s	Lan1	5060	0	All	Client		
							

Media Interface Configuration				
Name	Network	Port Range	Public Address	
loop_m	Loop	20000-20999		
uplink_m	Uplink	20000-20999	NAT/FW IP address	
pbx_m	Lan1	21000-21999		
				

Next Step

[Configuring the lan_ip_pbx_ca Call Agent for LAN Scenarios \(p.12\)](#)

2.2.2 Configuring the lan_ip_pbx_ca Call Agent for LAN Scenarios

Information

If you are not familiar with the meaning of the fields and buttons, click **Show Help**, located at the upper right corner of the Web page. When activated, the fields and buttons that offer online help will change to green and if you hover over them, the description will be displayed.

Steps

- 1) Go to **SBC/Configuration**.
- 2) In the **Call Agent Configuration** table, click  next to **lan_ip_pbx_ca**.

- 3) In the **Configure Call Agent** table, complete the fields as follows:
 - a) Select the **Enable** check box.
 - b) From the **Signaling Interface** selection list, select **pbx_s**.
 - c) From the **Media Interface** selection list, select **pbx_m**.
 - d) Set the **Peer Host** to IP address of the IP PBX.
- 4) Click **Save**.
- 5) Click **Apply** to apply all changes to the configuration.

Result

No will be displayed in the **Config.Modified** field, indicating that the configuration that was modified is now applied to the system. When the Mediatrix SBC will use the selected Call Agent for a communication, the selected parameters will be applied.

Configure Call Agent

Configure Call Agent		Value
Call Agent Parameters		
Name	lan_ip_pbx_ca	
Enable	☒	
Gateway		
Signaling Interface	pbx_s	
Media Interface	pbx_m	
Peer Host	IP PBX address	
Peer Network		
Force Transport	None	
Monitoring and Blacklisting Parameters		
Keep-Alive Interval	0	
Blacklisting Duration	0	
Blacklisting Delay	0	
Blacklisting Error Codes		

Call Agent Rulesets		
Priority	Name	Parameters
+		

2.3 Network Interface Binding for Edge Scenarios

2.3.1 Configuring Signaling and Media Interfaces for Edge Scenarios

Information

For the Edge scenarios, the default uplink and lan Signaling and Media interfaces are used.

Steps

- 1) Go to **SBC/Configuration**.
- 2) In the **Signaling Interface Configuration**, on the **uplink_s** line, complete the fields as follows:
 - a) **Network**=Uplink
 - b) **Port**=5060
 - c) **Secure Port**=All
 - d) **Allowed Transport**=All
 - e) **TLS Mode**=Client
 - f) **Public Address**=leave empty

- 3) On the same line as **lan1_s**, complete the fields as follows:
 - a) **Network=Lan1**
 - b) **Port=5060**
 - c) **Secure Port=0**
 - d) **Allowed Transport=All**
 - e) **TLS Mode=Client**
 - f) **Public Address=leave empty**
- 4) In the **Media Interface Configuration** table, on the **uplink_m** line, complete the fields as follows:
 - a) **Network=Uplink**
 - b) **Port Range=20000-20999**
 - c) **Public Address=leave empty**
- 5) On the **lan1_m** line, complete the fields as follows:
 - a) **Name=lan1_m**
 - b) **Network=Lan1**
 - c) **Port Range=20000-20999**
 - d) **Public Address=leave empty**
- 6) Click **Apply**

Result

Signaling Interface Configuration							
Name	Network	Port	Secure Port	Allowed Transports	Tls Mode	Public Address	
loop_s	Loop	0	0	All	Client		-
uplink_s	Uplink	5060	0	All	Client		-
lan1_s	Lan1	5060	0	All	Client		-
							+

Media Interface Configuration				
Name	Network	Port Range	Public Address	
loop_m	Loop	20000-20999		-
uplink_m	Uplink	20000-20999		-
lan1_m	Lan1	20000-20999		-
				+

Next Step

[Configuring the lan_ip_pbx_ca Call Agent for Edge Scenarios \(p.15\)](#)

This is an example on how to configure the **lan_ip_pbx_ca** Call Agent.

2.3.2 Configuring the lan_ip_pbx_ca Call Agent for Edge Scenarios

This is an example on how to configure the **lan_ip_pbx_ca** Call Agent.

Information

If you are not familiar with the meaning of the fields and buttons, click **Show Help**, located at the upper right corner of the Web page. When activated, the fields and buttons that offer online help will change to green and if you hover over them, the description will be displayed.

Steps

- 1) Go to **SBC/Configuration**.
- 2) Select the **Enable** check box located next to **lan_ip_pbx_ca**.
- 3) In the **Call Agent Configuration** table, click  next to **lan_ip_pbx_ca**.
- 4) In the **Configure Call Agent** table, complete the fields as follows:
 - a) From the **Signaling Interface** selection list, select **lan1_s**.
 - b) From the **Media Interface** selection list, select **lan1_m**.
 - c) Set the **Peer Host** to IP address of the IP PBX.
- 5) Click **Save**.
- 6) Click **Apply** to apply all changes to the configuration.

Result

No will be displayed in the **Config.Modified** field, indicating that the configuration that was modified is now applied to the system. When the Mediatrix SBC will use the selected Call Agent for a communication, the selected parameters will be applied.

Configure Call Agent		Value
Call Agent Parameters		
Name		lan_ip_pbx_ca
Enable		☒
Gateway		
Signaling Interface		lan1_s
Media Interface		lan1_m
Peer Host		IP PBX address
Peer Network		
Force Transport		None
Monitoring and Blacklisting Parameters		
Keep-Alive Interval		0
Blacklisting Duration		0
Blacklisting Delay		0
Blacklisting Error Codes		

3 DGW Documentation

Mediatrix devices are supplied with an exhaustive set of documentation.

Mediatrix user documentation is available on the [Media5 Documentation Portal](#).

Several types of documents were created to clearly present the information you are looking for. Our documentation includes:

- **Release notes:** Generated at each GA release, this document includes the known and solved issues of the software. It also outlines the changes and the new features the release includes.
- **Configuration notes:** These documents are created to facilitate the configuration of a specific use case. They address a configuration aspect we consider that most users will need to perform. However, in some cases, a configuration note is created after receiving a question from a customer. They provide standard step-by-step procedures detailing the values of the parameters to use. They provide a means of validation and present some conceptual information. The configuration notes are specifically created to guide the user through an aspect of the configuration.
- **Technical bulletins:** These documents are created to facilitate the configuration of a specific technical action, such as performing a firmware upgrade.
- **Hardware installation guide:** They provide the detailed procedure on how to safely and adequately install the unit. It provides information on card installation, cable connections, and how to access for the first time the Management interface.
- **User guide:** The user guide explains how to customise to your needs the configuration of the unit. Although this document is task oriented, it provides conceptual information to help the user understand the purpose and impact of each task. The User Guide will provide information such as where and how TR-069 can be configured in the Management Interface, how to set firewalls, or how to use the CLI to configure parameters that are not available in the Management Interface.
- **Reference guide:** This exhaustive document has been created for advanced users. It includes a description of all the parameters used by all the services of the Mediatrix units. You will find, for example, scripts to configure a specific parameter, notification messages sent by a service, or an action description used to create Rulesets. This document includes reference information such as a dictionary, and it does not include any step-by-step procedures.

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