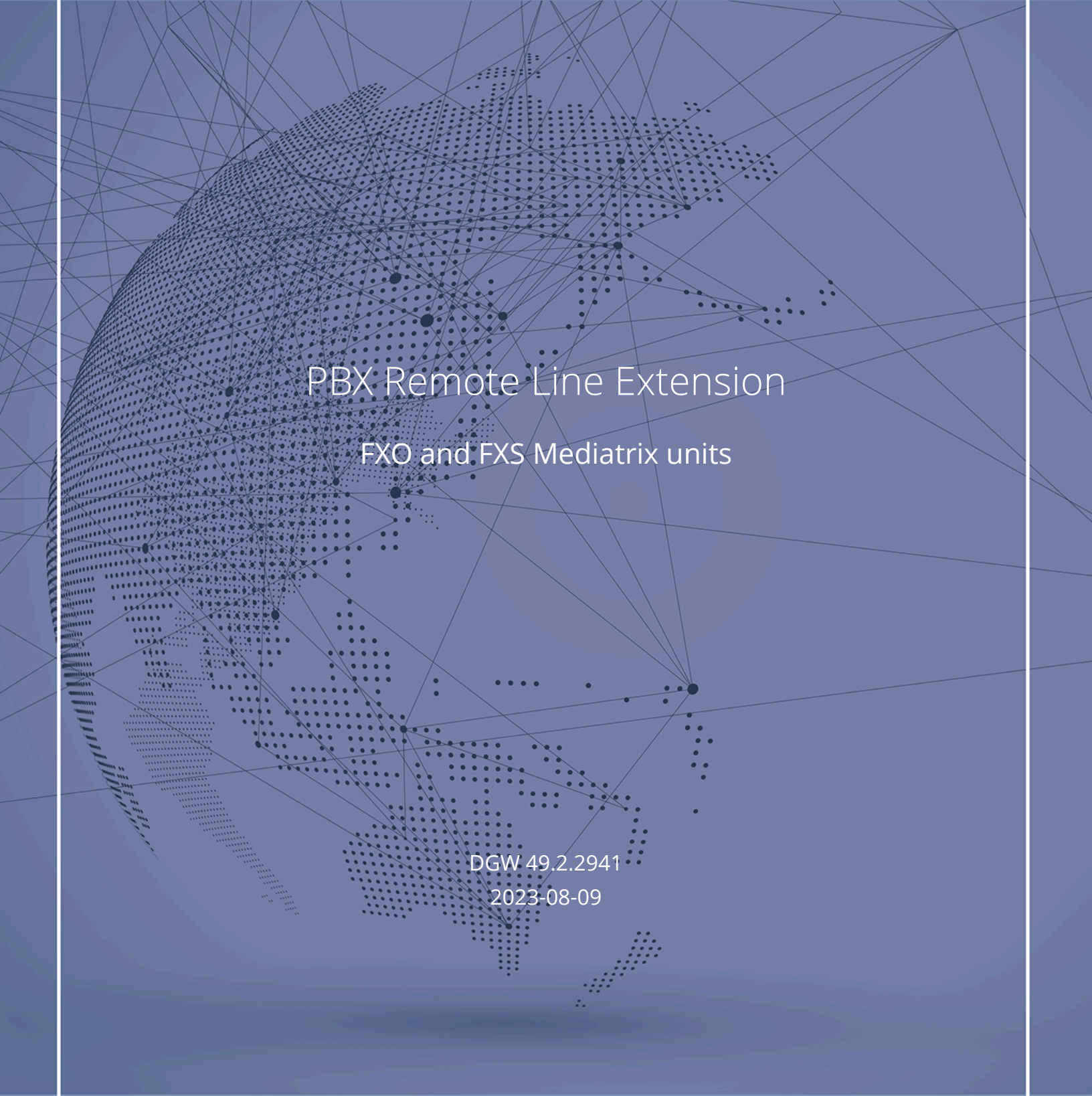


The background of the page is a dark blue gradient with a complex, abstract network graphic. It consists of numerous small black dots connected by thin, light gray lines, forming a dense, interconnected web that resembles a globe or a complex data structure. The lines and dots are more concentrated in the center and fade out towards the edges.

PBX Remote Line Extension

FXO and FXS Mediatrix units

DGW 49.2.2941

2023-08-09

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PBX Remote Line Extension

This configuration note explains how to configure Mediatrix units in a PBX Remote Line Extension scenario.

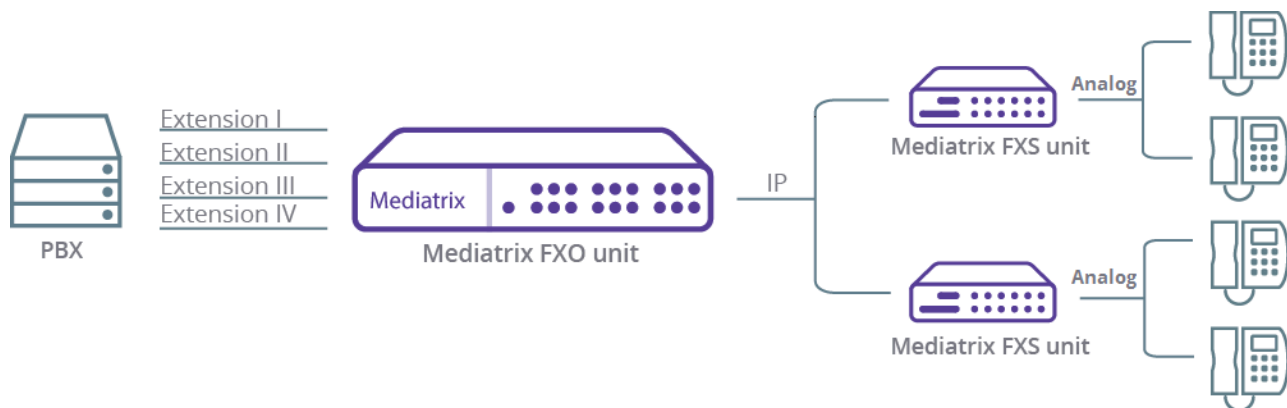
With VoIP, the distance limitation of extending copper wire from a PBX to a remote location is no longer an issue. Small remote branch offices (SOHOs) can now have existing analog phones installed at the remote site as analog extensions of the PBX system at the Main Office.

In this scenario, we consider that 4 extensions of the PBX need to be relocated to a remote site. Therefore,

- when a PBX user/extension initiates a call to one of the four (4) extensions, the extensions will ring on the remote site and vice versa:
- when one of the four (4) extensions on the remote site initiates a call, that call will be routed to the PBX, as if it was a local extension.

Additionally, the remote site has their analog telephone devices connected to two FXS Mediatrix units.

The routes are configured on the FXO unit, and the FXS port, corresponding to a phone extension, are configured on the FXS units.



Information to Know Before Starting

Before starting to use these configuration notes, complete the following table to make sure you have the required information to complete the different steps.

IMPORTANT: 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.

Note: The Mediatrix unit must be reinitialised to its factory default settings to make sure the configuration can be successfully executed.

Information	Value	Used in Step
IP address used by your Mediatrix unit to communicate with the Management Interface. If your computer is connected to the Ethernet port meant to be connected to the Local Area Network (LAN), i.e. Eth2 on most devices	Use this value 192.168.0.10	Logging on to the Mediatrix Unit Web Interface (p.6)
If your Mediatrix unit is configured to use a DHCP server, use the DHCP server-provided IP address.		Logging on to the Mediatrix Unit Web Interface (p.6)
IP address of the FXO Mediatrix unit		Linking the FXS Unit to the FXO Unit (p.7)
IP address of the FXS Mediatrix unit		Linking the FXO Unit to the FXS Unit (p.10)

Connecting

Logging on to the Mediatrix Unit Web Interface

Before you start

The computer IP address must be in the same TCP/IP network as the Mediatrix unit.

Information

For better performances, it is recommended to use the latest available version of Microsoft Internet Explorer, Google Chrome, or Mozilla Firefox.

Note: You may not be able to log on to the Mediatrix unit Web interface if you are using older browser versions.

Steps

- 1) In your Web browser, enter the IP address at which the Web interface of your Mediatrix unit can be reached.
 - If your network has an IPv4 DHCP server, connect the primary Ethernet port of the Mediatrix unit to the network (ETH1 port), use the provided DHCP server IP address.
 - You can also connect your computer to the secondary Ethernet port of the Mediatrix unit (ETH2), use the 192.168.0.10 IP address. However, the computer must also own an IP address in the 192.168.0.0/24 network.
- 2) Enter **admin** as your username and **administrator** as the password.

Note: You can also use **public** as a username and leave the password field empty; it has the full administration rights by default.

- 3) Click **Login**.

Result

The **Information** page of the Web interface is displayed.

Related tasks

[Linking the FXS Unit to the FXO Unit \(p.7\)](#)

Configuring the FXS Unit

Linking the FXS Unit to the FXO Unit

Information

Steps

- 1) Go to **SIP/Servers**.
- 2) In the **Default Servers** table, in the **Proxy Host** field, enter the IP address of the FXO unit.
- 3) Leave the other fields empty.
- 4) Click **Apply**.
- 5) Click **restart required services**.

Result

Default Servers			
Registrar Host:			
Proxy Host:	IP address of FXO unit		
Messaging Server Host:			
Outbound Proxy Host:			

Next Step

[Disabling Endpoint Registration \(p.7\)](#)

Disabling Endpoint Registration

Steps

- 1) Go to **SIP/Registrations**.
- 2) In the **Endpoints Registration** table, for all used endpoints, set the **Register** field to **Disable**.

Note: The endpoints that are used have a defined **User Name**. By default unused endpoints are disabled.

- 3) Click **Apply and Refresh**.
- 4) Click **restart required services** located at the top of the page.

Result

Disabled endpoints will no longer be registered individually.

Endpoints Registration						
Endpoint	User Name	Friendly Name	Register	Messaging	Gateway Name	
Port01	7102		Disable ▼	Disable ▼	all ▼	
Port02			Disable ▼	Disable ▼	all ▼	

Next Step

Configuring a Route from sip-default to FXO (p.9)

Configuring the FXO Mediatrix Unit

Configuring a Route from sip-default to FXO

Steps

- 1) Go to **Call Router/Route Config** .
- 2) In the **Routes** table, click **+** .
- 3) In the **Sources** field, type **sip-default** .
- 4) In the **Criteria Property** drop box, select **Calling E164**.
- 5) In the **Criteria Rule** field, set the first extension.
- 6) In the **Destination** drop box, select the first FXO port.
- 7) Repeat the tasks **2** to **6** for each extension.
- 8) Click **Save**.

Result

Calls incoming from the remote site to the Mediatrix FXS unit, will be routed to the proper FXO port of the FXO Mediatrix unit, according to the calling number/extension. Calls coming from the PBX to the FXO Mediatrix unit and having a called E164 specific extension, will be routed to the remote site.

Next Step

[Configuring a Route from FXO to sip-default \(p.9\)](#)

Configuring a Route from FXO to sip-default

Steps

- 1) Go to **Call Router/Route Config** .
- 2) In the **Routes** table, click **+** .
- 3) In the **Sources** field, from the **Suggestion** selection list select every FXO port used at the previous step.
- 4) In the **Criteria Property** drop box, select **None**.
- 5) Leave the **Criteria Rule** field empty.
- 6) In the **Destination** drop box, select **sip-default**.

Result

Configure New Route		
	Value	Suggestion
Sources	all FXO ports used	--- Suggestion ---
Criteria Property	None	
Criteria Rule		--- Suggestion ---
Transformations		--- Suggestion ---
Signaling Properties		--- Suggestion ---
Destination	sip-default	--- Suggestion ---
Config Status		

Next Step

Linking the FXO Unit to the FXS Unit (p.10)

Linking the FXO Unit to the FXS Unit

Information

Steps

- 1) Go to **SIP/Servers**.
- 2) In the **Default Servers** table, in the **Proxy Host** field, enter the IP address of the FXS unit.
- 3) Leave the other fields empty.
- 4) Click **Apply**.

Result

Default Servers		
Registrar Host:		
Proxy Host:	IP address of FXS unit	
Messaging Server Host:		
Outbound Proxy Host:		

Next Step

[Linking PBX Analog Extensions to Specific FXS Endpoints in Remote FXS Unit \(p.11\)](#)

Linking PBX Analog Extensions to Specific FXS Endpoints in Remote FXS Unit

Steps

- 1) Go to **Telephony/Services**.
- 2) At the top of the page, in the **Select Endpoint** drop box, choose the first FXO endpoint.
- 3) In the **Automatic Call** section, from the **Endpoint Specific** drop box, select **Yes**.
- 4) In the **Automatic Call Activation** drop box, select **Enable**.
- 5) In the **Automatic Call Target** field, type the URI.

Note: The URI is made up of the sip prefix, the extension number, and of the IP address of the target FXS Mediatrix unit that has this extension configured, for example: sip:210@192.168.0.32

- 6) Repeat the steps **2** to **5** for each FXO endpoint of the FXO Mediatrix unit.

Note: An FXO endpoint can only be linked to one FXS endpoint, and vice versa.

- 7) Click **Apply**.

Result

The Mediatrix unit redirects the call to a specific SIP endpoint upon off-hook.

Select Endpoint: Slot3/FXO

Services Configuration	Unit Defaults	Endpoint Specific
General Configuration		
Endpoint Specific:		No
Hook Flash Processing:	Process Locally	Process Locally
Automatic Call		
Endpoint Specific:		Yes
Automatic Call Activation:	Disable	Enable
Automatic Call Target:		sip:ext@IPaddress
Direct IP Address Call		
Direct IP Address Call Activation:	Disable	

Next Step

Configuring the Dial Tone Detection (p.12)

Configuring the Dial Tone Detection

Information

It allows the Mediatrix unit to wait for a dial tone before initiating the dialing sequence. If no dial tone is detected, the line is considered busy.

Steps

- 1) Go to **POTS/FXO Configuration**.
- 2) In the **FXO Dialing Configuration** table, from the **Dial Tone Detection Mode** drop box, select **CountryTone**.

Note: Not all PBX manufacturers produce the country dial tone on the extension line. If this is the case, make sure the **Dial Tone Detection Mode** is disabled, otherwise the Mediatrix unit will not output dialed digits.

Note: Not all PSTN switches produce the country dial tone on the PSTN line. If this is the case, make sure the **Dial Tone Detection Mode** is disabled, otherwise the Mediatrix unit will not output dialed digits.

- 3) Click **Apply**.

Result

FXO Dialing Configuration	
Pre Dial Delay (ms):	0
Dial Tone Detection Mode:	CountryTone
Dial Tone Detection Timeout (ms):	

Next Step

[Configuring the Answering Delay \(p.13\)](#)

Configuring the Answering Delay

Steps

- 1) Go to **POTS/FXO Configuration**.
- 2) In the **FXO Answering Configuration** table, complete the fields as required.

Note: If the PBX does not pass the caller ID to the Mediatrix unit, you can reduce the **Wait Before Answering Delay** to **2500** to reduce the time before the Mediatrix unit goes off-hook upon ring detection.

- 3) Click **Apply**.

Next Step

[Configuring the Far End Disconnect Parameters \(p.13\)](#)

Configuring the Far End Disconnect Parameters

Information

Steps

- 1) Go to **POTS/FXO Configuration**.
- 2) In the **FXO Force End of Call** table, from the **Force End Of Call On Tone Detection Mode** drop box, select **Custom Tone**.
- 3) Set the **Tone Detection Custom Frequency** field to **350**.

Note: Verify with your PBX supplier what tone (exact frequency and cadence) the PBX produces on the extension when the far end is disconnected.

- 4) Complete the other fields as required.
- 5) Click **Apply**.

Result

FXO Force End Of Call	
Force End Of Call On Call Failure:	Enable ▾
Call Failure Timeout (sec):	30
Force End of Call On Silence Detection Mode:	Disable ▾
Silence Detection Timeout (sec):	300
Force End Of Call On Tone Detection Mode:	Custom Tone ▾
Tone Detection Custom Frequency:	350
Tone Detection Custom Cadence:	
Detection Custom Repetition:	3 x

Next Step

[Making a Call in Both Directions](#) (p.15)

Testing the Configuration

Making a Call in Both Directions

Steps

- 1) Connect an analog phone to a port of the FXS Mediatix unit.
- 2) Pick up the phone.
You must hear a dial tone.
- 3) Dial any valid extension number of your PBX.
The dialled extension must ring.
- 4) Pickup a phone on the PBX and dial one of the extensions configured on the Mediatix unit.
The analog phone corresponding to the extension must ring.

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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