The background of the slide is a dark blue network map. It consists of a dense web of thin, light blue lines connecting various nodes. The nodes are represented by small black dots of varying sizes, some of which are larger and more prominent. The overall shape of the network map is roughly circular, with a curved edge on the left side.

Enabling the PCM Traces using the Call Router

All Mediatrix Units

DGW 49.2.2941

2023-08-09

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PCM Traces

The PCM traces are two different RTP streams made specifically to record all analog or digital signals that are either sent or received by the telephony ports of the Mediatrix unit.

These RTP streams are sent to a configurable IP address, normally an IP address on your network where it can be recorded with a packet sniffer (such as Wireshark). Moreover, they are independent from the regular RTP streams of the VoIP call. On the analog devices, the streams are sent instantly at device start-up, with an average ptime of 5 ms. The resulting streams, depending on the model, are around 15 kB/s.

Only the configured port, port #1 and/or #2 send the PCM traces for a maximum of four simultaneous RTP streams.

All streams are sent instantly at start-up with an average ptime of 15 ms. This means that until the PCM traces are disabled, even an idle unit will continuously send up to $66.6 \text{ packets/s} \times 4 \text{ streams} = 267 \text{ packets/s}$ using approximately 174 bytes each, for a total of 46 Kbytes of upstream bandwidth.

On digital devices, the streams will be sent once a call is in process of being established (ISDN SETUP, SIP INVITE). This means no data will be sent if the gateway is idle with no calls in progress.

PCM Traces are useful at identifying problems with:

- Echo in the network
- DTMF signals
- Caller ID signals
- Fax signals (or false Fax detection)
- Message Waiting Indicator signals
- Any other analog signal
- Any voice quality issue

Important Information to Know Before Starting

This document describes how to enable PCM traces on a unit based on the Calling E164.

- RTP stream port 5001 is used for the PCM stream received from the peer.
- RTP stream port 6001 for the PCM stream sent to the peer.
- Test calls must be done on the configured port or the call router mapping must be created to start the PCM trace.

Note: Because of the resulting RTP traffic, enabling the **Update List of Packets in Real Time** parameter has been known to wrongly report 40% packet loss in Wireshark, which may totally impair our analysis capabilities. This feature must be disabled in Wireshark.

Note: PCM traces are not recommended in real deployments, unless it is for a short period of time, but rather in a lab environment and is meant for troubleshooting purposes only.

Note: The PCM traces destination must be set so it can be recorded in a Wireshark capture on your network, normally sent to the PC doing the capture.

Note: If a port is receiving several calls at a time, the capture will be performed on the first call until it is completed, and only then will a capture be performed on another call. Traces are taken as soon as the port is opened.

Note: The IP address of the PC running Wireshark does not have to be listening on UDP ports, as it is easy to filter out ICMP "port unreachable" messages afterwards.

Enabling the PCM Traces of the Port Used by a Route

Information

The PCM traces captured for a route by the Call Router starts only once the call has been established, so anything pre-call is not included in the traces (e.g. early media, DTMF...). If a port is receiving several calls at a time (i.e. through a digital trunk), the capture will be performed on the first call until it is completed, and only then will a capture be performed on another call. In this case, traces are taken as soon as the call is routed by the call router.

Steps

Enable the PCM traces for the port used by the route using either the CLI, UMN, or a configuration script, refer to:

- a) [Enabling PCM Traces Using the DGW Web Interface](#) (p.5)
- b) [Enabling PCM Traces of a Port Using the CLI](#) (p.6)
- c) [Enabling the PCM Traces of a Port Using UMN](#) (p.6)
- d) [Enabling PCM Traces of a Port Using the Configuration Script](#) (p.7)

Next Step

[Enabling PCM traces of a unit based on the Calling E164](#) (p.9)

Enabling PCM Traces Using the DGW Web Interface

Steps

- 1) Go to **Management/Configuration Scripts/Execute**.
- 2) If you are not using HTTPS, click **Activate unsecure file importation from the Web browser**.
- 3) In the **Execute Inline Script** table, type the following commands:
 - a) `Mipt.PcmCaptureEnable = Enable`
 - b) `Mipt.PcmCaptureAddr = "IP address of PC running Wireshark"`
- 4) Click **Execute**.
- 5) When the capture is done, make sure to disable the **Mipt.PcmCaptureEnable** MIB parameter.

Note: For example `Mipt.PcmCaptureEnable = Disable` or `Mipt.PcmCaptureEnable = 0`

Result

Execute Inline Script	
<pre>Mipt.PcmCaptureEnable = Enable Mipt.PcmCaptureAddr = "IP address of PC running Wireshark"</pre>	<p>(Clear Script)</p>
<input type="button" value="Execute"/>	

All the lines of the script will be transferred to the unit, executed in batch in background, and applied to the running configuration. The **Scripts Status Execute** table will display the current state and result of the execution.

Enabling PCM Traces of a Port Using the CLI

Steps

- 1) Using the CLI, set the **Mipt.PcmCaptureEnable** parameter to **Enable**.

Note: For example **Mipt.PcmCaptureEnable=Enable** or **Mipt.PcmCaptureEnable=1**

- 2) Set the **Mipt.PcmCaptureIpAddr** MIB parameter to the IP address of the PC running Wireshark.

Note: For example **Mipt.PcmCaptureIpAddr = 192.168.0.17**

- 3) When the capture is done, make sure to disable the **Mipt.PcmCaptureEnable** MIB parameter.

Note: For example **Mipt.PcmCaptureEnable = Disable** or **Mipt.PcmCaptureEnable = 0**

Result

The value of **Mipt.PcmCaptureEnable**, **Mipt.PcmCaptureIpAddr** and **Mipt.PcmCaptureEndpoint** should reflect the values configured.

Enabling the PCM Traces of a Port Using UMN

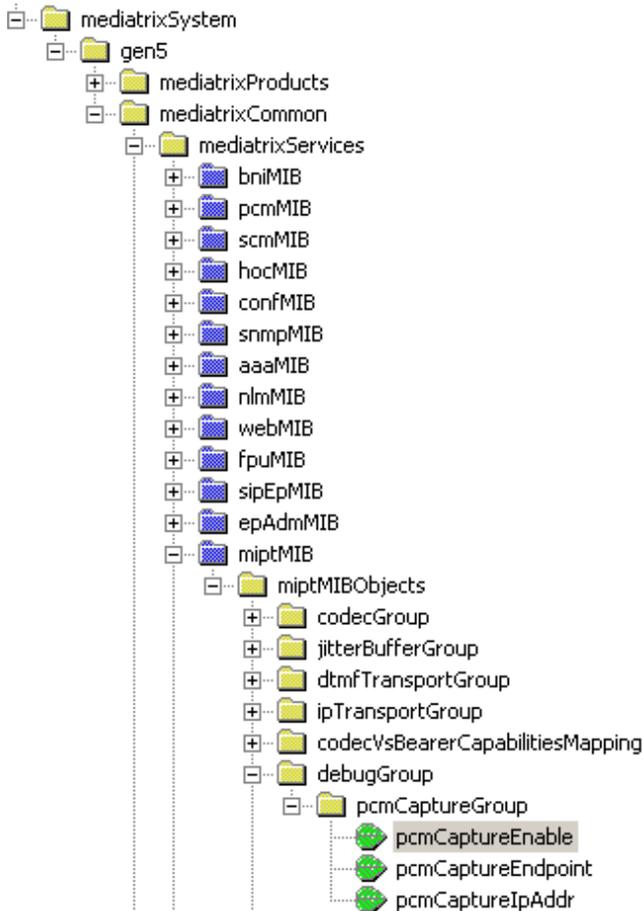
Steps

- 1) Using UMN, right click the name of the unit and select **Edit SNMP...**
- 2) Browse to: `mediatrixSystem/gen5/mediatrixCommon/mediatrixServices/miptMIB/miptMIBObjects/debugGroup/pcmCaptureGroup`.
- 3) Set the **pcmCaptureEnable** MIB parameter to **Enable**.
- 4) Set the **pcmCaptureIpAddr** MIB parameter to the IP address of the PC running Wireshark.

- 5) When the capture is done, make sure to disable the **Mipt.PcmCaptureEnable** MIB parameter.

Note: For example **Mipt.PcmCaptureEnable = Disable** or **Mipt.PcmCaptureEnable = 0**

Result



Enabling PCM Traces of a Port Using the Configuration Script

Steps

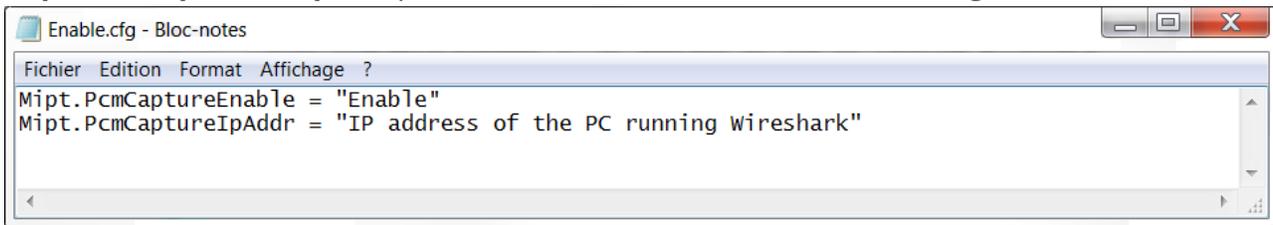
- 1) Create a txt file, and save it as a *.cfg.
- 2) Enter **Mipt.PcmCaptureEnable = Enable** or **Mipt.PcmCaptureEnable=1**
- 3) Enter **Mipt.PcmCaptureIpAddr = Value** , where **Value** is the IP address of the PC running Wireshark.
- 4) Import the *.cfg file into the system. Refer to [DGW Configuration Guide - Configuration Scripts Import and Export](#) published on the [Media5 Documentation Portal](#).

- 5) When the capture is done, make sure to disable the **Mipt.PcmCaptureEnable** MIB parameter.

Note: For example **Mipt.PcmCaptureEnable = Disable** or **Mipt.PcmCaptureEnable = 0**

Result

In the configuration script, the value of **Mipt.PcmCaptureEnable**, **Mipt.PcmCaptureIpAddr** and **Mipt.PcmCaptureEndpoint** parameters should reflect the values configured.



The screenshot shows a Notepad window titled "Enable.cfg - Bloc-notes". The window contains the following configuration parameters:

```
Mipt.PcmCaptureEnable = "Enable"  
Mipt.PcmCaptureIpAddr = "IP address of the PC running wireshark"
```

Enabling PCM traces of a unit based on the Calling E164

Steps

- 1) Go to **Call Router/Route Config**.
- 2) In the **Transformations** table, click **+**.
- 3) Give a name to the transformation.
- 4) In the **Criteria Based On** field, select **Calling E164**.
- 5) In the **Transformation Applies To** field, select **Debug**.

Note: The Transformation keyword Debug is case sensitive.

- 6) Click **Save**.

Result

Configure New Transformation	
	Value
Name	<input type="text" value="%example"/>
Criteria Based On	<input type="text" value="Calling E164"/>
Transformation Applies To	<input type="text" value="Debug"/>
Config Status	

Next Step

[Creating a PCM Capture Transformation \(p.10\)](#)

Creating a PCM Capture Transformation

Before you start

You must have completed the task [Enabling PCM traces of a unit based on the Calling E164](#) (p.9)

Steps

- 1) Go to **Call Router/Route Config**.
- 2) In the **Transformation Rules** table, click **+**.
- 3) In the **Name** field, select from the drop-down list or enter the name that you assigned in the [Enabling PCM traces of a unit based on the Calling E164](#) (p.9) step.
- 4) In the **Criteria** field, type the calling number you want to debug.
- 5) In the **Transformation** field, type PcmCapture.

Note: The transformation keyword PcmCapture is case sensitive.

- 6) Click on **Save**.

Result

✦ Transformation Rules

Configure Transformation Rule 1		
	Value	Suggestion
Type	Calling E164 to Debug	
Name	<input type="text" value="\$Example"/>	--- Suggestion ---
Criteria Rule	<input type="text" value="\$123Example"/>	--- Suggestion ---
Transformation Rule	<input type="text" value="PcmCapture"/>	--- Suggestion ---
Next Transformation	<input type="text"/>	--- Suggestion ---
Config Status		

Next Step

[Adding a Transformation to a Route](#) (p.11)

Adding a Transformation to a Route

Information

The Transformation created in the [Creating a PCM Capture Transformation](#) (p.10) step with the "\$Example" name is now added in both PRI to SIP and SIP to PRI routes.

Steps

- 1) Go to **Call Router/Route Config**.
- 2) In the **Routes** table, click  next to the route you want to configure.
- 3) In the **Transformations** field, select the transformation you want to add.
- 4) Click **Save**.

Result

Routes							
Index	Sources	Criteria Property	Criteria Rule	Transformations	Signaling Properties	Destination	
1	isdn-PRI1	None		\$Example		sip-default	   
2	sip-default	None		\$Example		isdn-PRI1	   
							

Online Help

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.

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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