

Standard Fax Configuration

All units with FXS ports

DGW 49.2.2941

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Fax Information Required for Troubleshooting

Information	Type	
Fax Transmission Protocol	Clear Mode	T.38
Fax Transmission Speed	High speed	Low speed
Fax mode	Automatic	Manual
Receiving fax	Model	Make
Sending fax	Model	Make
Fax mode	ECM	non- ECM
Firewall	Yes	No

T.38 Fax Transmission

T.38 is an ITU recommendation for allowing transmission of fax over IP networks in real time.

PROs

- Allows for redundancy, therefore increases the reliability of the transmissions.
- Faxes in T.38 are not as sensitive to network imperfection like packet loss or jitter as faxes in Clear Channel.

CONs

- The number of redundancy packets will increase the bandwidth used
- The higher the speed, the more bandwidth is used.
- May take more bandwidth than a fax in Clear channel.

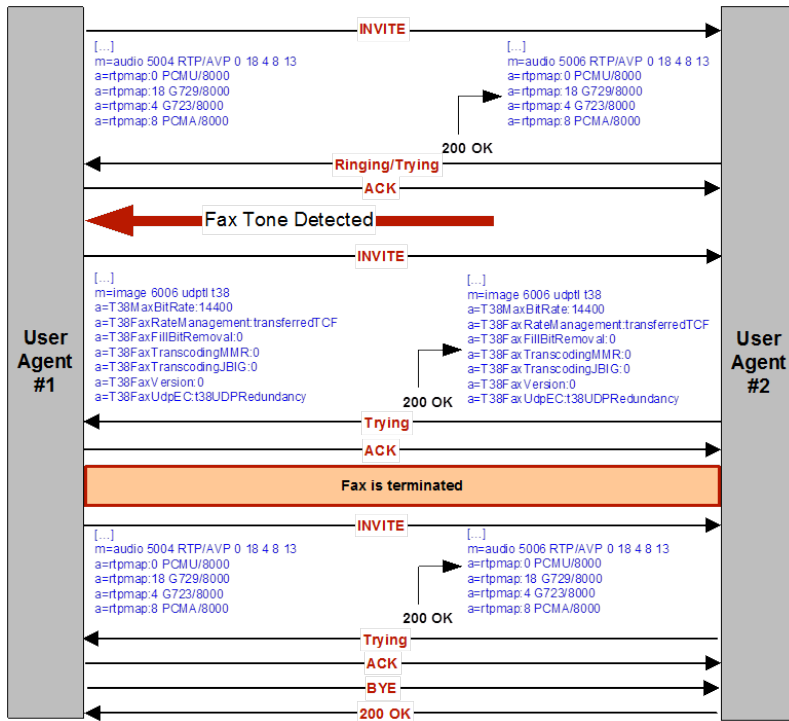
Requirements

- The Mediatrix must be able to detect a CNG , v21 preamble or T.38 packet to switch to T.38
- Reasonable delay, 1 second round trip is acceptable however 2 seconds could cause timeout or collision

Configuration

- [Enabling T.38 Fax Transmission](#) (p.6)
- [Setting the Redundancy Level](#) (p.7)
- [Allowing Unsecure T.38 with Secure RTP](#) (p.8)
- [Selecting the Base Port for T.38 Fax Calls](#) (p.9)
- [Configuring the Behavior of the T.38 INVITE Not Accepted](#) (p.9)

Call Flow



Enabling T.38 Fax Transmission

Steps

- 1) Go to **Media/Codecs**.
- 2) In the **Codec** section, click  located on the same line as **T.38**.
- 3) Set the **Enable** field to **Enable**.
- 4) Click **Apply**.

Result

T.38	
Enable:	Enable ▼
Priority:	10
Redundancy Level:	3
Detection Threshold:	Default ▼
Frame Redundancy Level:	0
No Signal:	Disable ▼
No Signal Timeout:	1

Setting the Redundancy Level

Steps

- 1) Go to **Media/Codecs**.
- 2) In the **Codec** section, click  located on the same line as **T.38**.
- 3) In the **T.38** table, set the **Redundancy Level**.

Note: Using redundancy increases transmission reliability, however the number of redundancy packets will also increase the bandwidth being used.

- 4) Set the **Frame Redundancy Level**.

Note: The repetition of the final frame will help prevent losing the end of a message, v.21 or end of page message. Losing the end of packet message can create a major problem in the transmission since the Redundancy is not use in this situation.

- 5) Click **Apply**.

Result

T.38	
Enable:	Enable ▼
Priority:	10
Redundancy Level:	3
Detection Threshold:	Default ▼
Frame Redundancy Level:	0
No Signal:	Disable ▼
No Signal Timeout:	1

Allowing Unsecure T.38 with Secure RTP

Information

The T.38 protocol must be enabled under **Media/Codec**.

This procedure is required only if SRTP is used and is available provided the **Select Endpoint** selection list is set to **Default**.

Steps

- 1) Go to **Media/Security**.
- 2) In the **Security** table, under the **RTP** section, set the **Mode** selection list to **Secure with fallback**.
- 3) Under the **T.38** section, set the **Allow Unsecure T.38 with Secure RTP** selection list to **Yes**.
- 4) Click **Apply**.

Result

Select Endpoint: Default ▾

Security	
RTP	
Mode:	Secure with fallback ▾
Key Management Protocol:	Key Management Protocol for SRTP ▾
Encryption:	AES_CM_128 ▾
T.38	
Allow unsecure T.38 with secure RTP:	Yes ▾

Selecting the Base Port for T.38 Fax Calls

Steps

- 1) Go to **Media/Misc.**
- 2) In the **Base Port** table, enter the first port to be used for T.38 Fax calls in the **T.38** field.

Note: If you do not know which port to use, refer to the [Technical Bulletin - Ports and Protocol Settings](#) published on the [Media5 Documentation Portal](#).

- 3) Click **Apply**.

Result

Base Ports	
RTP:	5004
SRTP:	5004
T.38:	First port number to use

Configuring the Behavior of the T.38 INVITE Not Accepted

This task allows you to set the unit's behaviour after receiving an error to a SIP INVITE for T.38 fax.

Steps

- 1) Go to **SIP/Interop**.
- 2) In the **Behavior on T.38 INVITE Not Accepted** table, from the **Behavior** selection list, set the required behavior for each **SIP Error Code**.
- 3) Click **Apply**.

Result

Behavior on T.38 INVITE Not Accepted		
SIP Error Code	Behavior	
406	Re-INVITE For Clear Channel Only	
415	Drop Call	
488	Re-INVITE For Clear Channel Only	
	Re-Establish Audio	
	Use Previous Media Negotiation	
606	Re-INVITE For Clear Channel Only	

Fax Transmission through a Firewall

Using T.38 with a Firewall

Requirements

- The communication channel must remain open for a fax to go through a firewall i.e. the unit sends "no signal" packets to fill the dead air intervals that could occur during a fax transmission and cause the closure of the firewall.

Configuration

- [Configuring the T.38 No Signal](#) (p.11)

Configuring the T.38 No Signal

Steps

- 1) Go to **Media/Codecs**.
- 2) Click  located on the same row as **T.38**.
- 3) Set the **No Signal** selection list to **Enable**.
- 4) Set the **No Signal Timeout** selection list to **Enable**.

Note: In order to keep RTP ports opened for T.38 packets, the unit will send 'no signal' packets to fill the dead air intervals that could occur during a fax transmission and cause the closure of the firewall.

- 5) Click **Apply**.

Result

T.38	
Enable:	Enable ▼
Priority:	10
Redundancy Level:	3
Detection Threshold:	Default ▼
Frame Redundancy Level:	0
No Signal:	Disable ▼
No Signal Timeout:	1

Clear Channel Fax Transmission

Modulated Fax information from the PSTN is passed in-band end-to-end over a voice speech path in a IP network.

There are 2 pass-through techniques.

- The configured voice codec is used for fax transmission. This technique works only when the configured codec is G711 with no VAD and no echo cancellation (EC) or when the configured codec is a clear channel codec or G.726/32. Low bit-rate codecs cannot be used for fax transmission.
- Gateway dynamically changes the codec from the codec configured for voice to G.711 with no VAD and no EC for the duration of the fax session. This method is referred to as "codec up speed" or "fax pass-through with up speed".

PROs

- Less intrusive, does not modify the packets
- Does not allow for redundancy
- Takes less bandwidth than a T.38 fax transmission
- The bandwidth usage is practically constant.
- Bandwidth only affected by the P-Time.

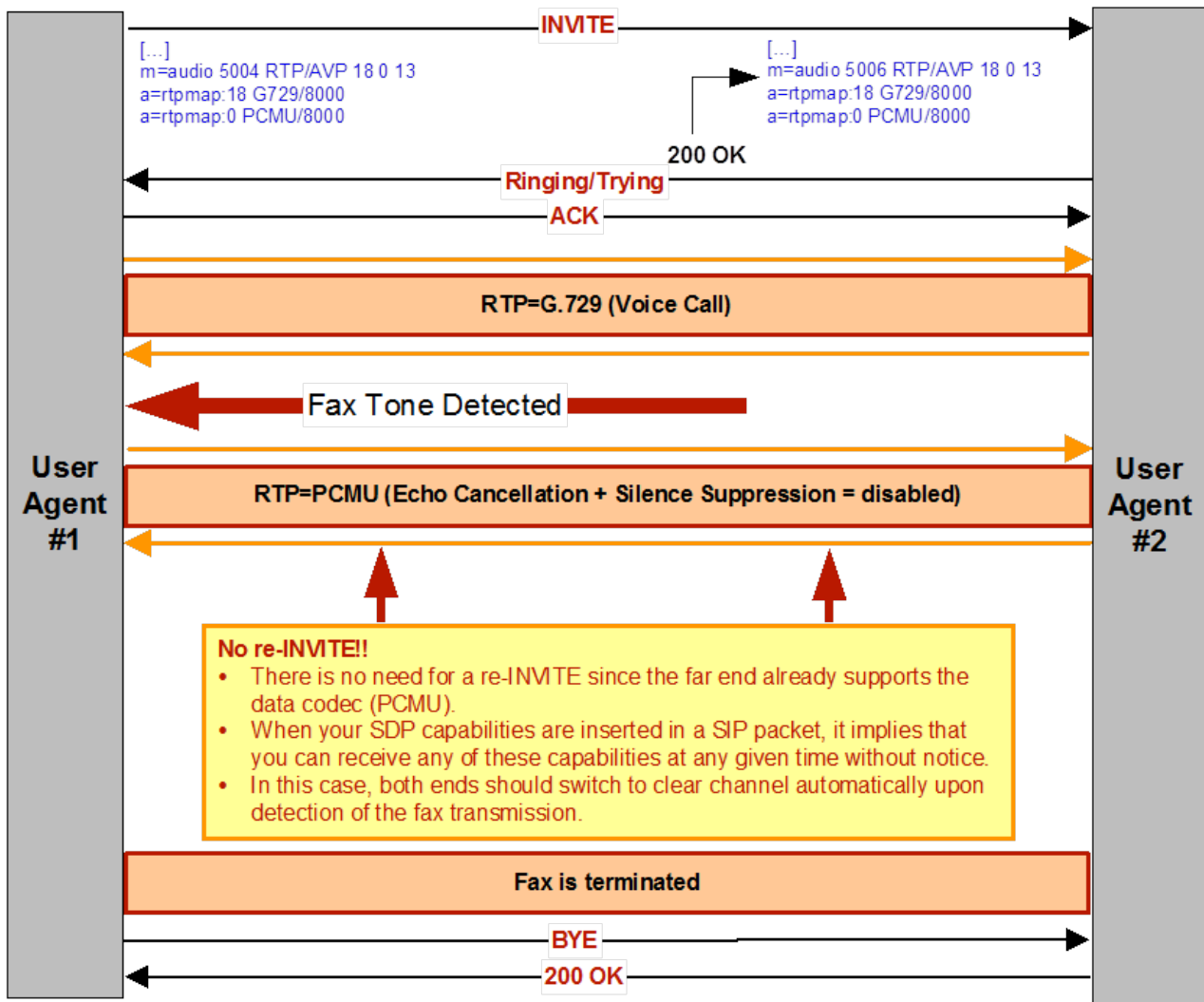
CONS

- Sensitive to network imperfection like packet loss or jitter

Configuration

[Configuring the Clear Channel Fax Transmission](#) (p.13)

Call Flow



Configuring the Clear Channel Fax Transmission

Steps

- 1) Go to **Media/Codecs**.
- 2) In the **Codec** section, click  located on the same line as the Codec you wish to use for Fax Transmission.
- 3) In the selected Codec table, set the fields as required.
- 4) Make sure to enable the **Data Transmission**.
- 5) Click **Apply**.

Result

For example:

Clear Mode		
Voice Transmission:	Disable ▾	
Voice Priority:	0	
Data Transmission:	Enable ▾	
Data Priority:	10	
Payload Type:	124	
Minimum Packetization Time:	10 ms ▾	
Maximum Packetization Time:	30 ms ▾	

FAX Detection Flow

IF	AND	THEN
If T.38 is enabled	- A CNG tone is detected, or - A V.21 preamble is detected, or - T.38 packets are received on the IP side	Then the Mediatix switches to T.38
- If a CED tone is detected (Answer Tone or ANS) and no other conditions indicates that a fax is present, or - If a fax is detected but T.38 is deactivated		Then the Mediatix unit switches to Clear mode.
If a CED Note: Note that the CED tone can be detected on both the IP side (egress side) or on the analog side (ingress side). is detected before a CNG		The Mediatix unit will first switch to Clear Channel and if T.38 is enabled, it will then switch to T.38.

Configuring Machine Detection

Information

Note: This procedure is only required if your fax machine is directly connected to a specific FXS port and if this port is not used for modem transmission.

Steps

- 1) Go to **Media/Misc.**
- 2) Set the **CNG Tone Detection** selection list to **Enable**.
- 3) Set the **CED Tone Detection** selection list to **Enable**.
- 4) Set the **V.21 Modulation Detection** selection list to **Enable**.

- 5) Set the **Behavior On CED Tone Detection** selection list to **Fax Mode**.
- 6) Click **Apply**.

Result

Machine Detection		
CNG Tone Detection:	Enable ▼	
CED Tone Detection:	Enable ▼	
V.21 Modulation Detection:	Enable ▼	
Behavior On CED Tone Detection:	Fax Mode ▼	

Parameters

Although the services can be configured in great part in the web browser, some aspects of the configuration can only be completed with the MIB parameters by:

- using a MIB browser, such as the Mediatrix Unit Manager Network (UMN);
- using the CLI;
- creating a configuration script containing the configuration parameters.

SipEp > Interop Parameters

Refer to the SipEp.InteropSdpT38ParametersEncoding parameter in the [DGW Configuration Guide - Reference Guide](#) published on the [Media5 Documentation Portal](#).

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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