TechNote

Mitel MiVoice Office 400 - R5

May 18, 2017

XCAPI voiceoverIP

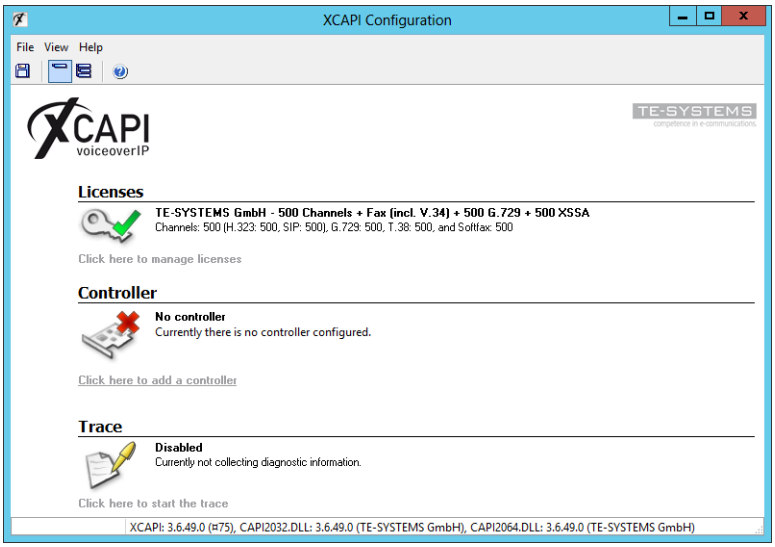
Introduction

This document is intended to support you with the integration of the latest XCAPI version into an existing environment of the Mitel MiVoice Office 400, formerly known as Aastra 400/470 series.
Though being based on the Mitel MiVoice Office 400 R5 and a Communication server Mitel 470, it is applicable to other versions given a few adjustments.
In the following sections we describe the essential configuration steps to allow optimal interworking of both the XCAPI and the Mitel MiVoice Office 400. At this point we suppose that the VoIP environment is in operation which means that the Mitel MiVoice Office 400, XCAPI and CAPI applications are properly installed.

For XCAPI basics please refer to the document **XCAPI TechNote (en) - Quick Start Guide.pdf**, which is available for registered users within our community download area. We also recommend to visit our YouTube channel for additional information and hints around XCAPI.

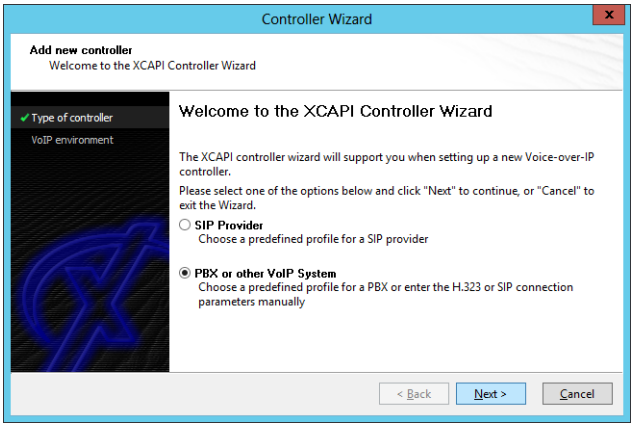
XCAPI Configuration

Please start up the XCAPI configuration to create a new controller assigned to the Mitel MiVoice Office 400. If you've just installed the XCAPI and start the configuration tool for the first time or no controller is available at all, the XCAPI controller wizard will pop up automatically. However, to start up the XCAPI controller wizard manually the hyperlink labeled **Click here to add a controller** on the main page has to be clicked.



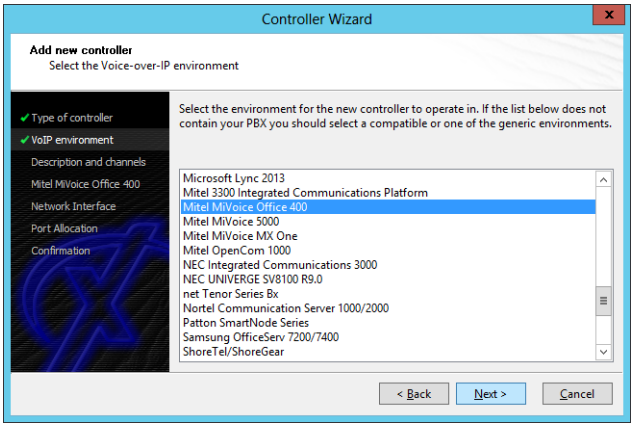
2.1 Type of Controller

On the first page of the controller wizard **PBX or other VoIP System** must be selected. Afterwards, please continue with pushing the **Next** button.



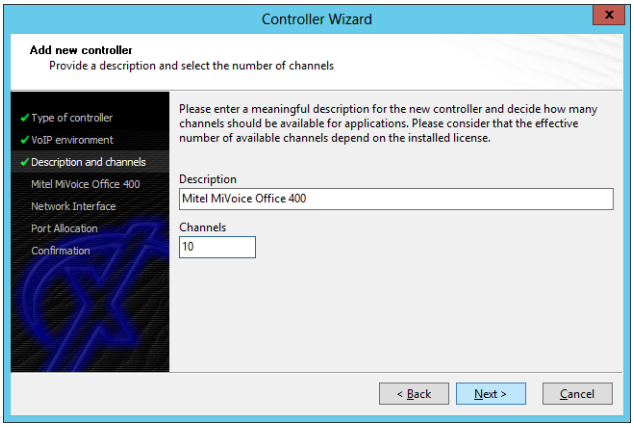
2.2 VoIP Environment

The **VoIP Environment** dialog shows a list of some common Voice-over-IP environments. Selecting one of those will configure the XCAPI controller with a selection of near-optimal presets for the kind of environment you have, sparing you quite a lot of manual configuration.



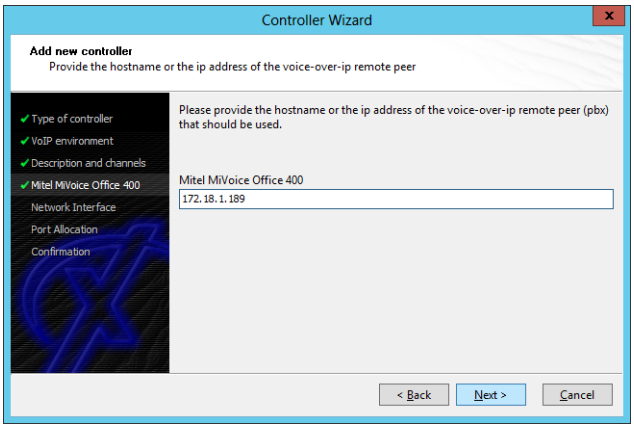
2.3 Description and Channels

When the VoIP environment was selected, the next dialog allows to set a meaningful description for the controller. Also the number of channels that the new controller will be able to provide to the CAPI 2.0 application can be set. So please enter how many simultaneous connections the XCAPI controller should handle when communicating with the Mitel MiVoice Office 400 and the CAPI 2.0 application.



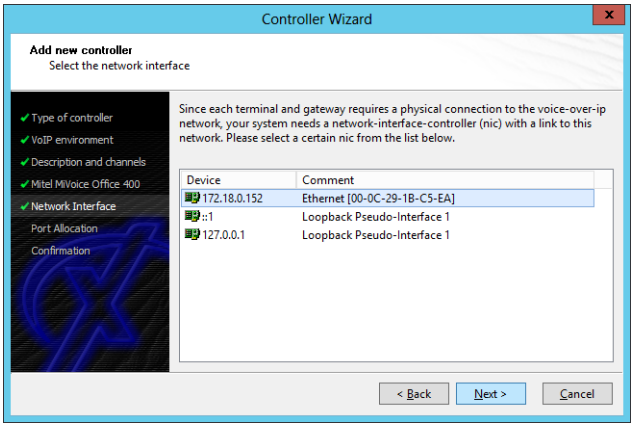
2.4 Gateway Address

Afterwards, please provide the IP address of the Mitel MiVoice Office 400 gateway.



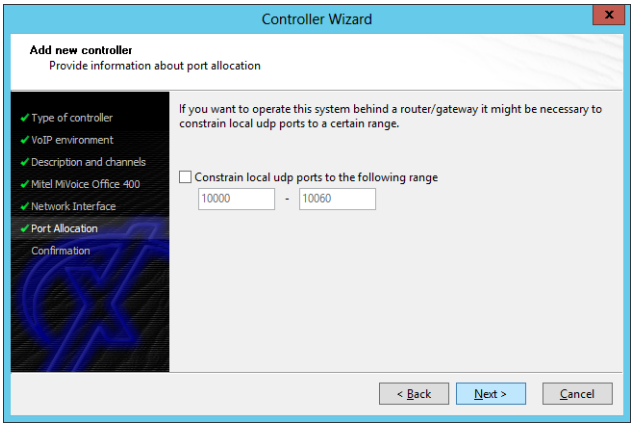
2.5 Network Interface

Next, select the network interface that will be used for the inbound and outbound communication for this controller.



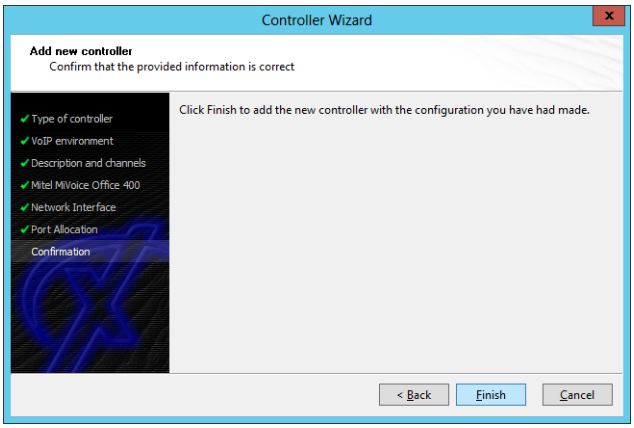
2.6 Port Allocation

On demand and in the case of any router or firewall restrictions for UDP (RTP/T.38) a port range can be specified. In this example no port range will be set which enables using a random port range between 1024 and 65535.

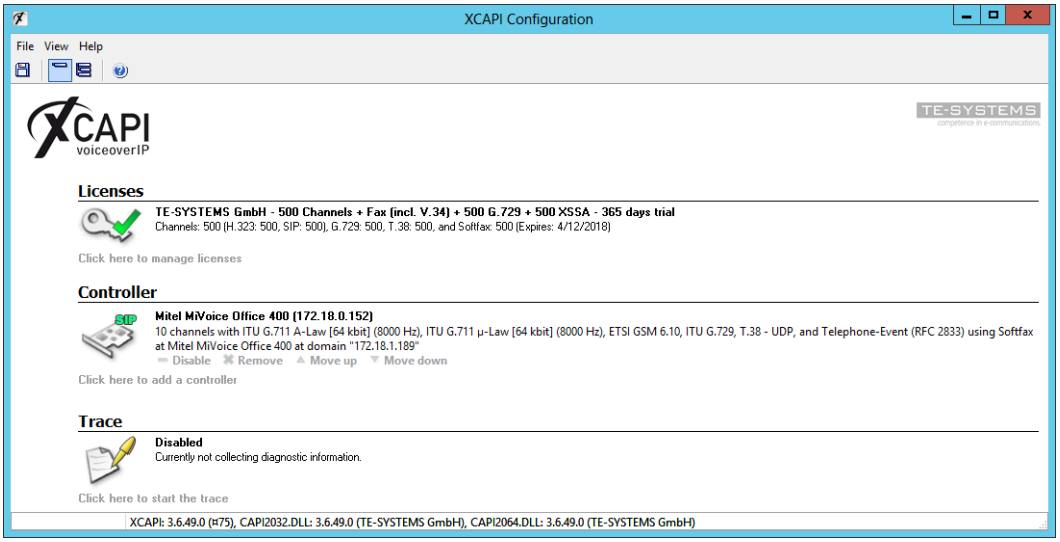


2.7 Confirmation

The final wizard dialog performs some checks on the configuration parameters you've made. If any errors are detected here, you can go back to the respective dialogs and correct the erroneous input. If everything is correct just push the **Finish** button in order to finally create the new XCAPI controller.



Now, the new created XCAPI controller appears on the main page of the configuration tool. As all XCAPI related configuration tasks are finished now, please save the changes and exit the configuration tool.



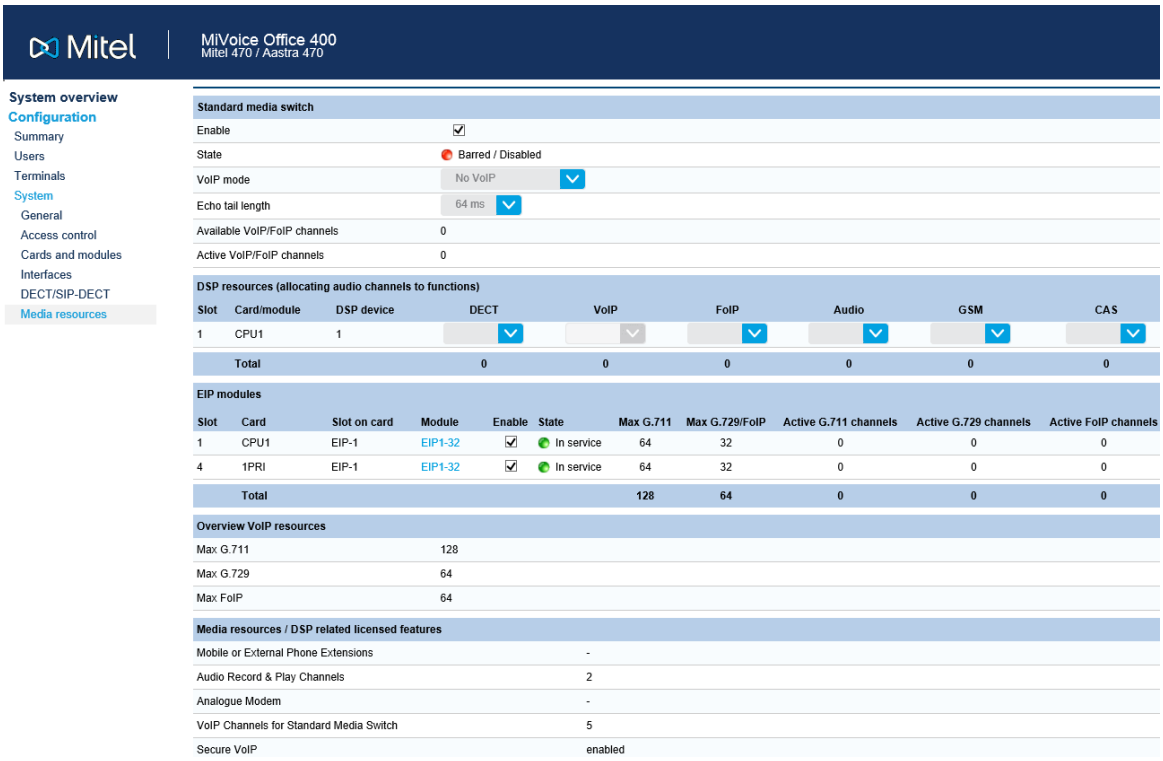
Please note that you always need to restart the bound CAPI application, in meaning of its services, for the changes to take effect. Restarting any XCAPI related services won't help at all. If enabled and on success, the XCAPI diagnostic monitor will pop-up with a reinit notification.

Mitel MiVoice Office 400 Configuration

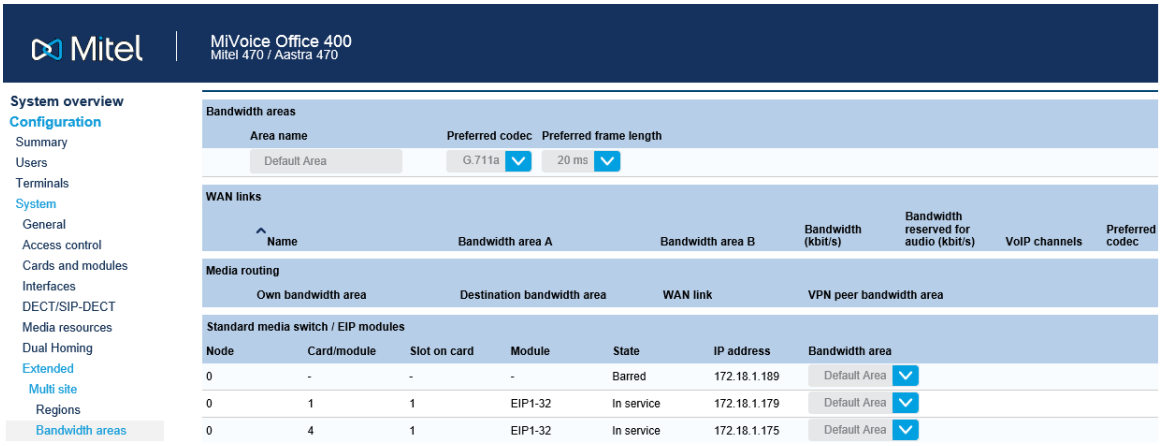
In order to establish a connection between the XCAPI and the Mitel 400, you need to setup the XCAPI as private SIP network (PISN) with all its appropriate configurations. The next chapters show a basic configuration which can't be assigned one-to-one to the environment. The according configuration dialogs have to be adapted to the PBX environment and hardware and the according CAPI application. Especially the DDI and Call Distribution Elements must reflect the local circumstances as well as specific SIP and numbering related parameters.

3.1 System Overview

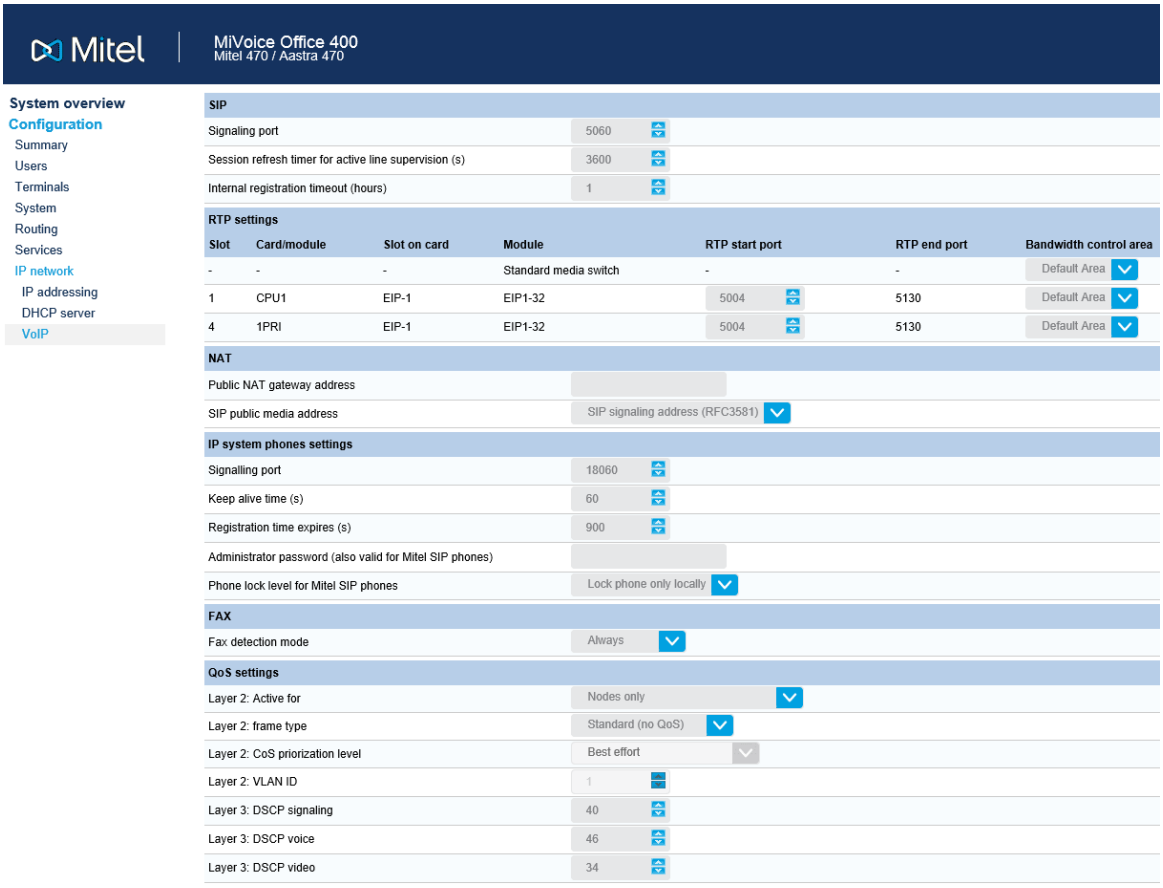
First we'll give a short overview of this example's Mitel 470 card integration and system configurations. The accordance of **VoIP mode VoIP** and **FoIP** channels within the DSP configuration depends on the installed cards.



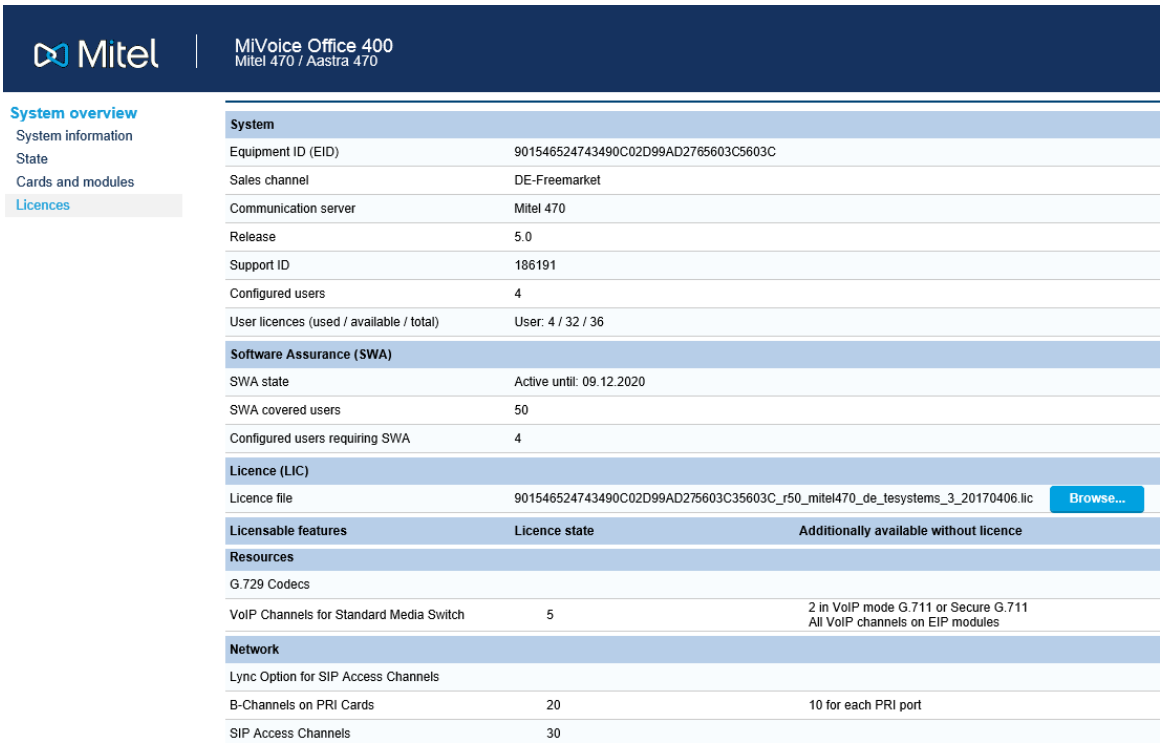
This environment uses the default bandwidth area which is related to the preferred codec and frame length **G.711a / 20 ms**. This frame length is also used by default from the XCAPI controller configuration.



Also the VoIP settings of the IP Network configuration are used with the system given defaults.



Ensure that the required **SIP Access Channels** license is available for appropriate SIP trunk interworking.



3.2 Private SIP Networking

XCAPI has to be added as new SIP Node within the Private SIP networking configurations of the Mitel communication server.

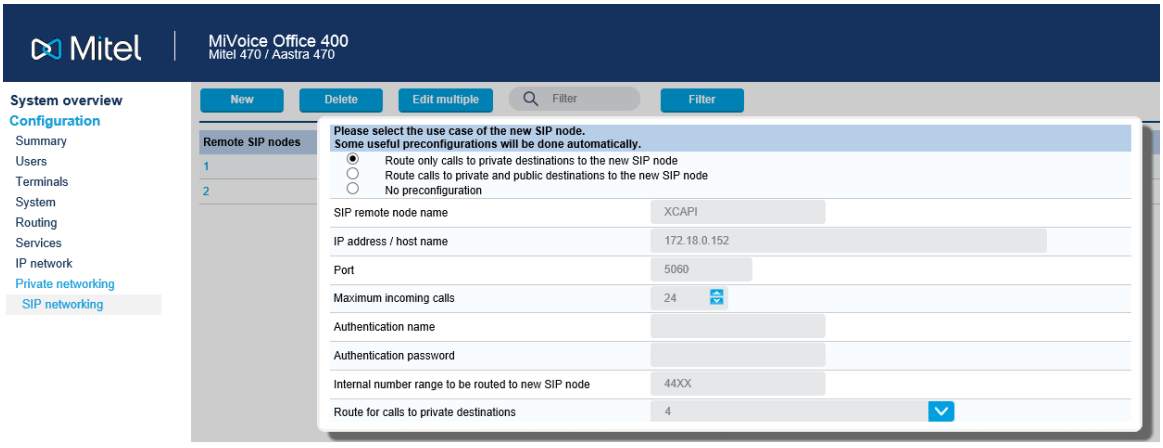
In this example the new node is added with the **Route only calls to private destinations to the new SIP node** selection. The **SIP remote node name** is entered and the **IP address / host name** is set to the XCAPI controller related Ethernet IP address, here IP address **172.18.0.152**. The **Port** is used with the default (port 5060). If the default port will be adjusted the XCAPI controllers used listening port (which is also set by default to port 5060) has to be set conform.

The **Authentication name** and **Authentication password** is left blank as no authentication is used here. The **Internal number range to be routed to new SIP node** is set to **4XX**. The **Route for calls to private destinations** is set to **Route** 4.

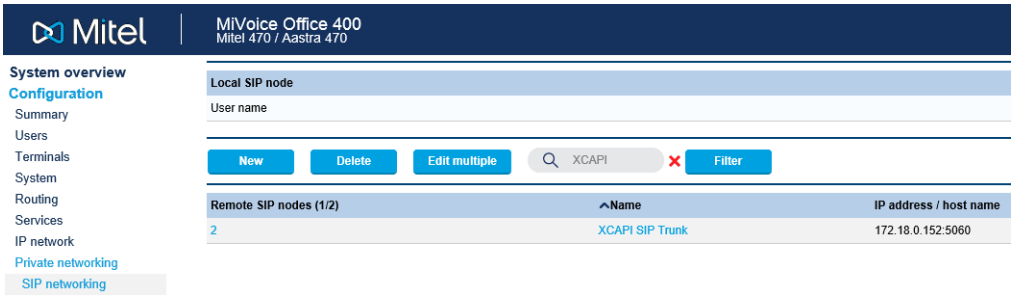
As soon as applied, several useful pre-configurations (SIP networking node, PISN user, SIP Trunk, SIP Interface) will be created. The according configuration details will be shown in the referring sections.
At this point the SIP trunk and routing of the PISN user is already in operation up to a certain level.

To allow appropriate routings of and between other nodes additional DDI plan configurations must be made. For example public calls via ISDN or SIP providers which has to related and routed to the PISN users numbering range for XCAPI.

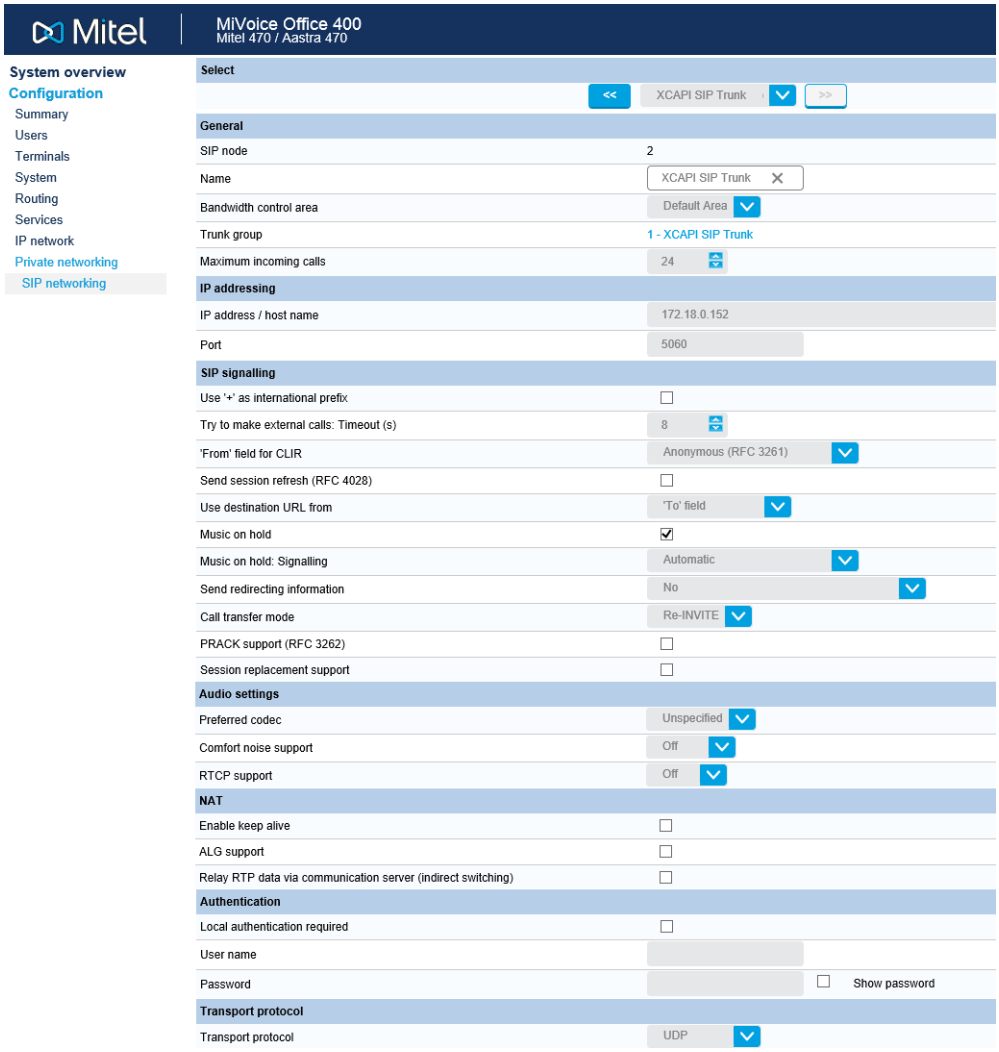
However, according to the local requirements and the VoIP environment, such pre-configurations needs additional adjustments which will be shown in the upcoming sections.



The newly created SIP trunk is now listed in the **SIP networking** overview as new remote sip node entry.

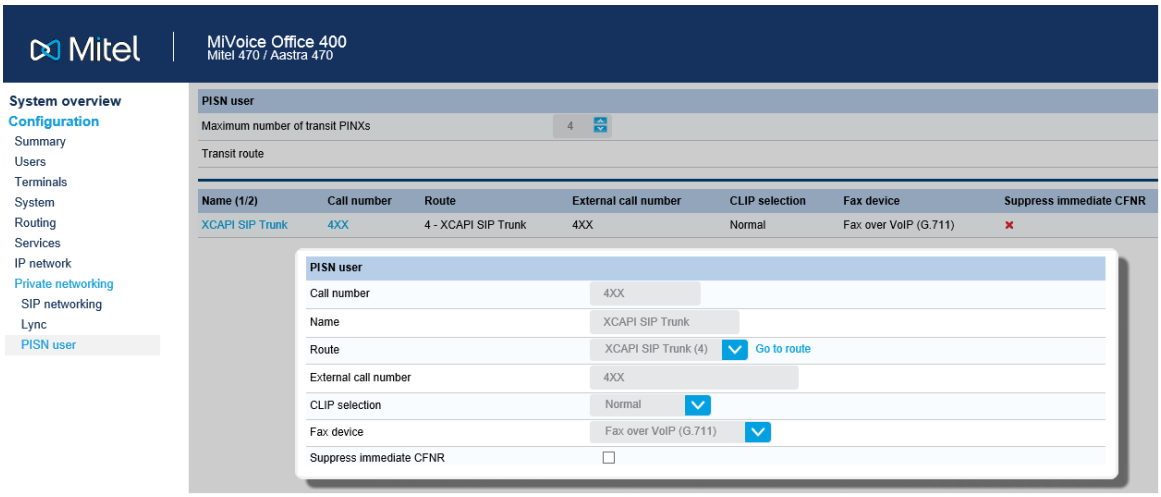


The XCAPI SIP trunk/node is here used with the preconfigured defaults.



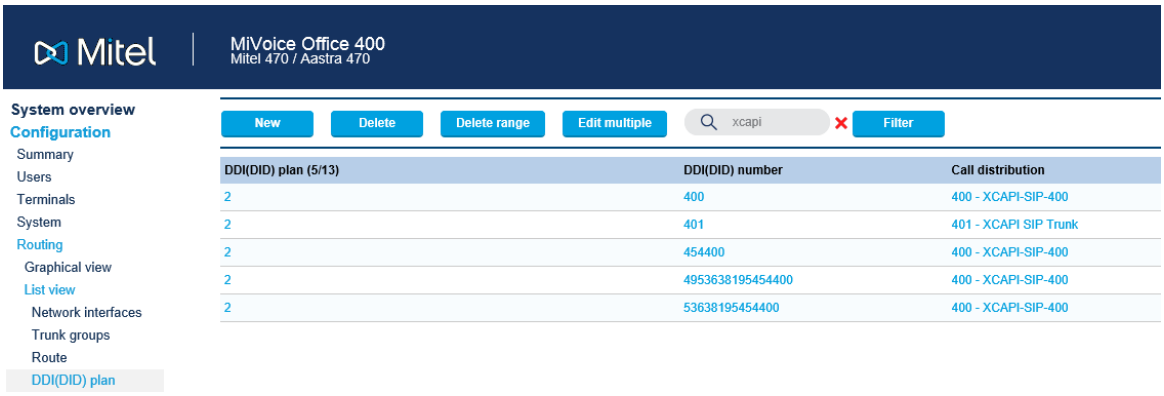
3.2.1 PISN User

The XCAPI related PISN user is used as shown on the next screenshot. For Softfax (G.711 fax pass through), **Fax over VoIP (G.711)** must be selected as **Fax device**. Additional Softfax information are given in the chapter **Softfax (G.711 fax pass through)** starting on page 18.

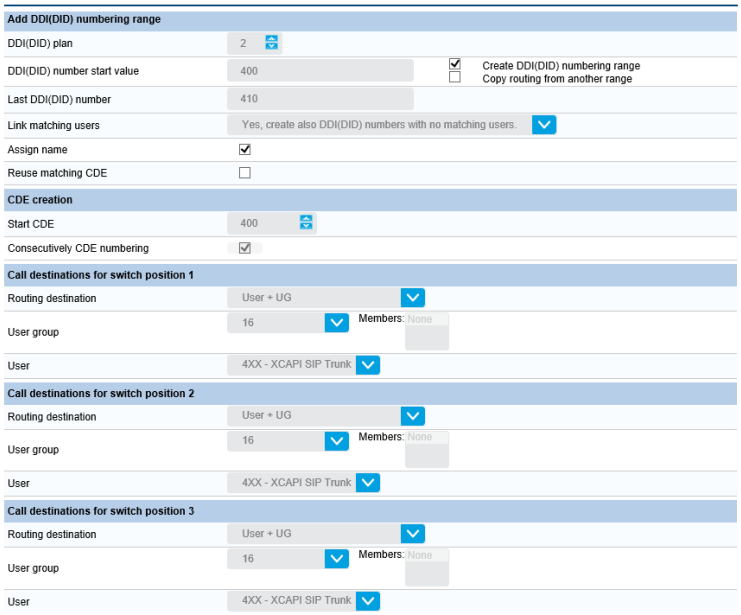


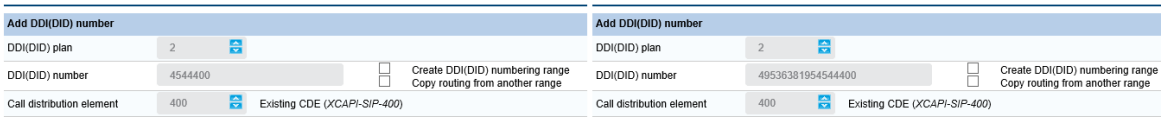
3.3 DDI Plan

Ensure that the DDI plans and delivered numbers and matchings will be made up to the local requirements. As showcase the DDI number range is here used from 400 to 410 with some Dialing in number variations and related to the **Call distribution elements (CDE)**.



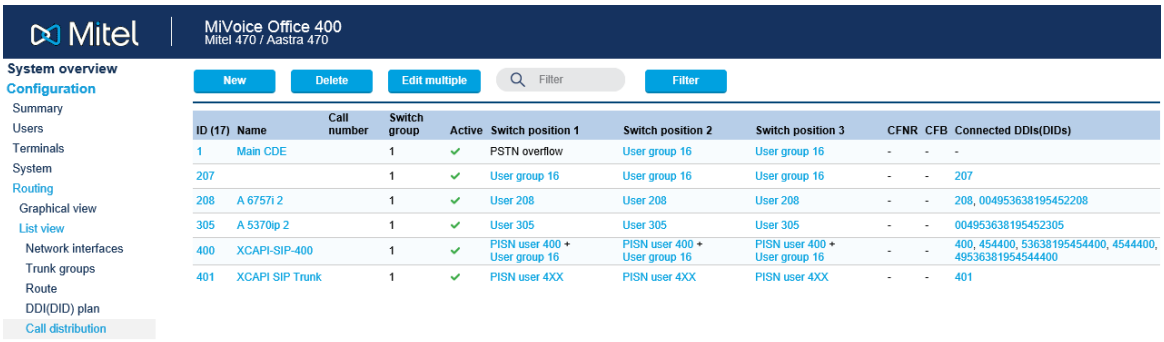
The DDI numbering range and single DDI numbers were added as shown below.





3.4 Call Distribution

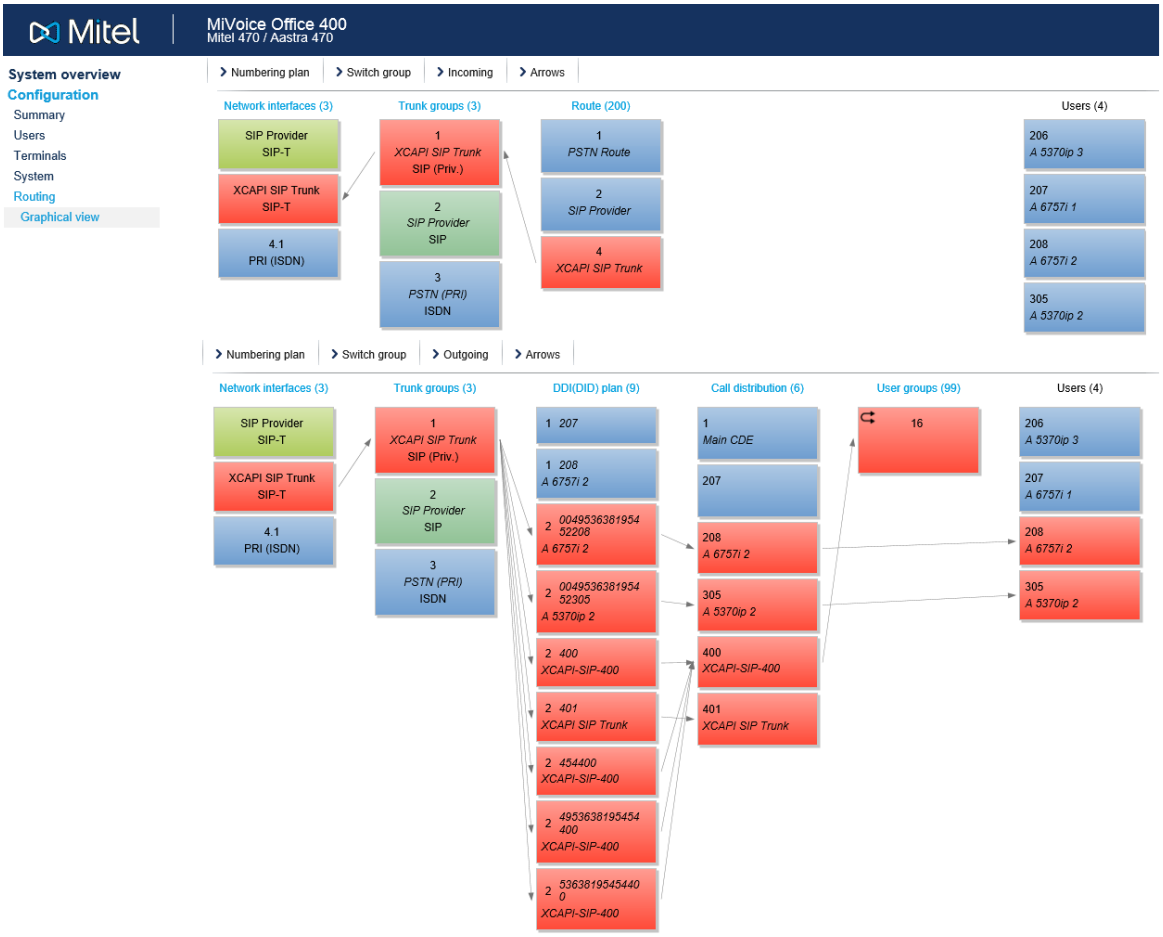
The call distribution gives the overview of the configured DDI numbering plan relations.



ID (17)	Name	Call number	Switch group	Active	Switch position 1	Switch position 2	Switch position 3	CFNR	CFB	Connected DDIs(DIDs)
1	Main CDE		1	✔	PSTN overflow	User group 16	User group 16	-	-	-
207			1	✔	User group 16	User group 16	User group 16	-	-	207
208	A 6757i 2		1	✔	User 208	User 208	User 208	-	-	208, 004953638195452208
305	A 5370ip 2		1	✔	User 305	User 305	User 305	-	-	004953638195452305
400	XCAPI-SIP-400		1	✔	PISN user 400 + User group 16	PISN user 400 + User group 16	PISN user 400 + User group 16	-	-	400, 454400, 53638195454400, 4544400, 49536381954544400
401	XCAPI SIP Trunk		1	✔	PISN user 4XX	PISN user 4XX	PISN user 4XX	-	-	401

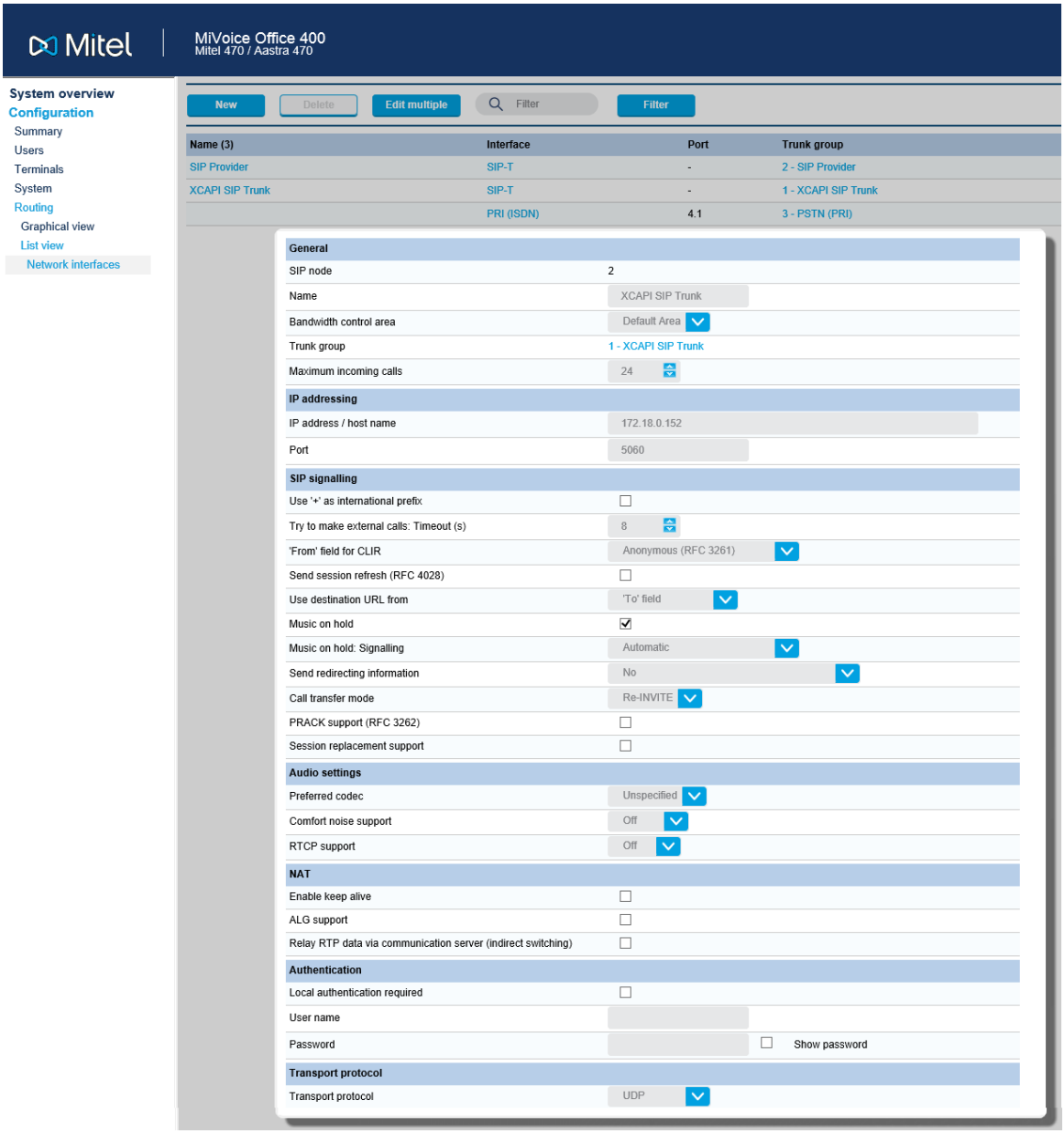
3.5 Routing Graphical View

The incoming and outgoing numbering plan relations are used as shown next.



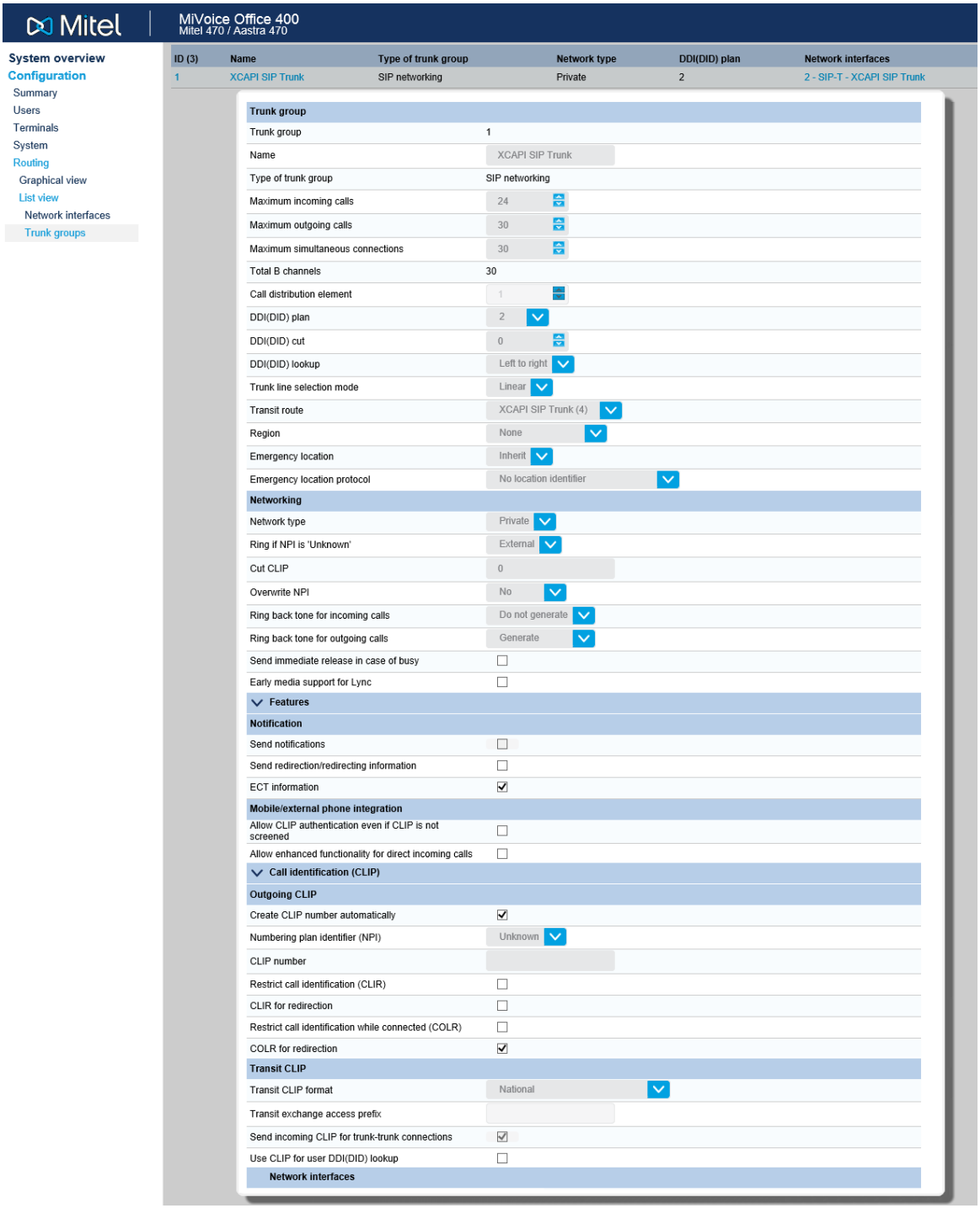
3.6 Network Interfaces

The XCAPI related network interface is used as shown next. Please note that enabling **Use '+' as international prefix** requires XCAPI controller adjustments which are not shown in this document. **PRACK support (RFC 3262)** is not supported by XCAPI and thus has to be disabled. **Nat** and **Authentication** is not used at all here. The **Audio settings** are used with the given defaults. The **Transport protocol** is used with the default (UDP).



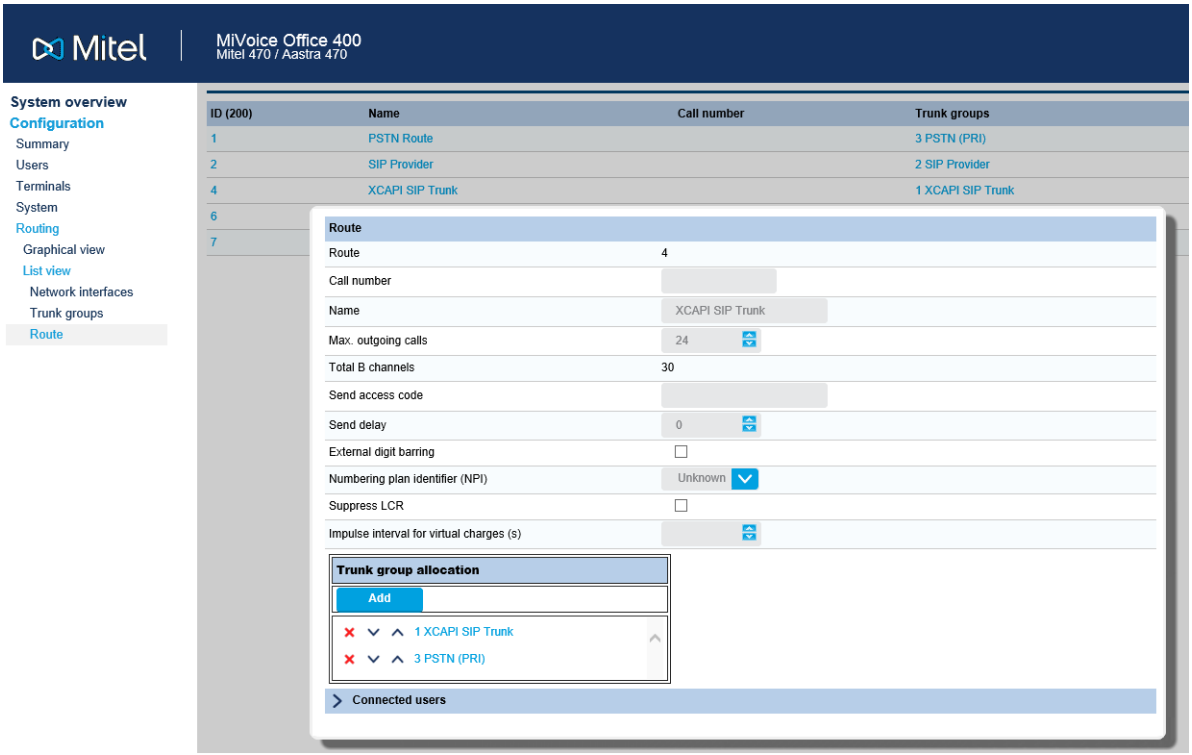
3.7 Trunk Groups

The XCAPI related trunk group is used as shown below.



3.8 Route

The XCAPI related route entry is used as shown below.

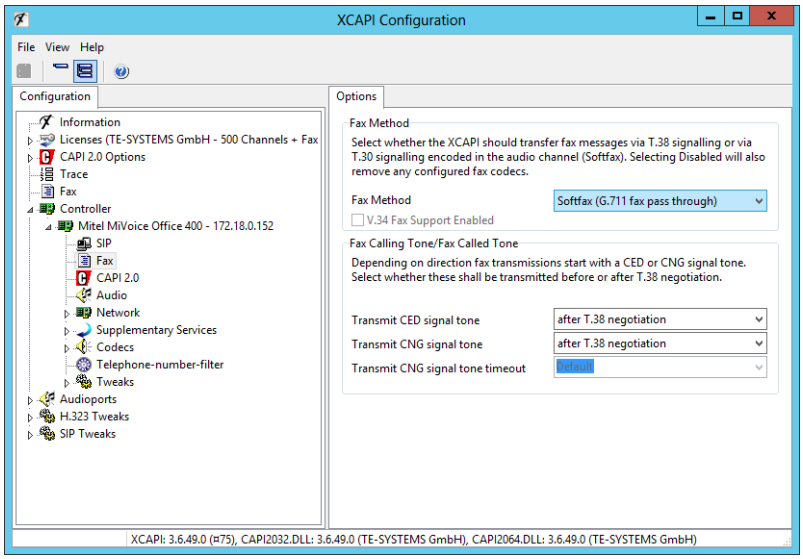


Configuration Notes

In these chapters you'll find some configuration hints and settings for supplementary services such as Softfax (via G.711), message waiting indication or call transfer. Such services are enabled by default to the XCAPI controller configuration. Nevertheless they should be reviewed just as the according gateway parameters for appropriate interworking.

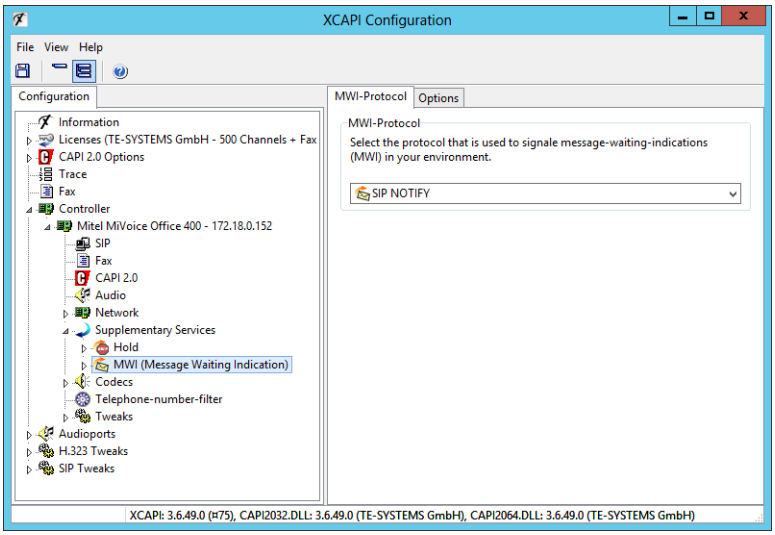
4.1 Softfax (G.711 fax pass through)

With the Softfax mode, the XCAPI simulates an analogue Fax device by transmitting modulated Fax-signals modem-like through the established G.711 audio channels. For enabling **Softfax (G.711 fax pass through)** it has to be set as **Fax Method** as shown next.



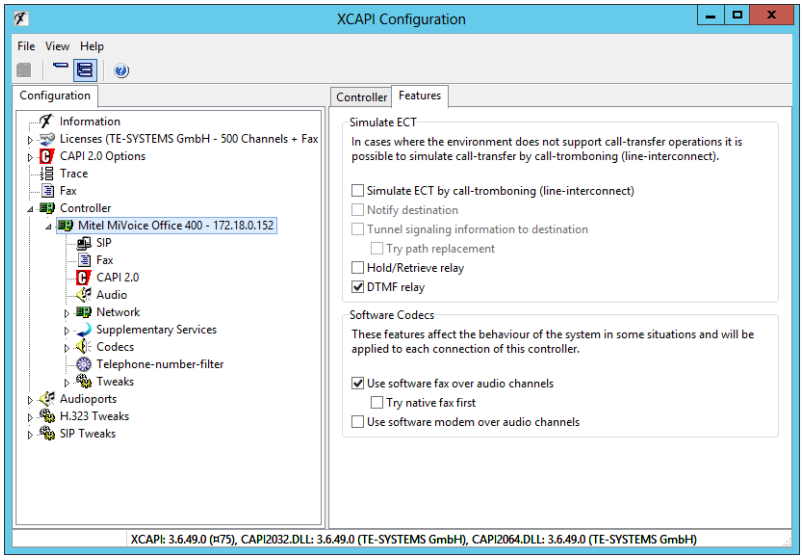
4.2 Message Waiting Indication

For enabling message waiting indications, please ensure that the **SIP NOTIFY** method is set within the XCAPI controller configuration. It's recommended to check if MWI is operable with all the different SIP devices (SIP phone and SIP extensions) that are connected to the Mitel MiVoice Office 400.



4.3 Call Transfer

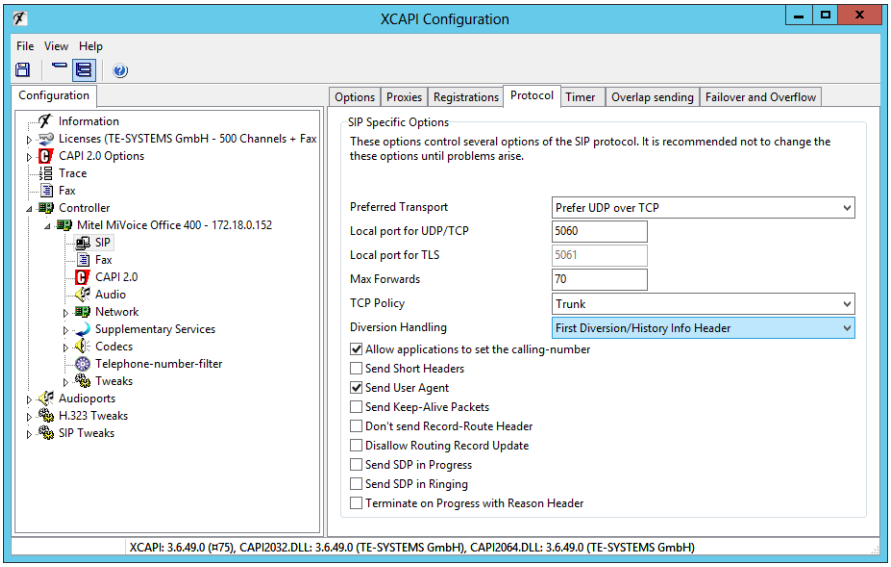
The **Simulated ECT by call-tromboning (line-interconnect)** parameter within the XCAPI controller **Features** tab must be disabled for allowing call transfer via **SIP REFER**.



4.4 Redirection Number

Several CAPI applications need to receive a redirection number, in meaning of the gateway generated SIP diversion header, beside of the origins calling number. Please ensure that according parameters are set, such as **Send redirecting information** of the SIP node, as shown in the chapter **Private SIP Networking** starting on page 10. If required, you can also adjust the XCAPI controller's **Diversion Handling**.

Ensure that the XCAPI related trunk group feature parameter **Send redirection/redirecting information** is enabled as shown in the chapter **Trunk Groups** starting on page 16.



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