



Cloud managed & monitored
VoIP Gateways and Appliances

HOW TO N°2:

Configuration of beroNet Gateways with 3CX



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Requirements:

- How to N°1: Getting started with beroNet Gateways
- 3CX software installed on Windows
- 1 beroNet Gateway

The configuration of beroNet Gateways is a bit different depending on the module configuration it contains. This how to describes the different possible configuration.

1 – Configuration of a hybrid beroNet Gateway (2BRI/2FXS) on 3CX

Configuration:

Gateway BF4002S02FXSbox – module 2 BRI and 2 FXS

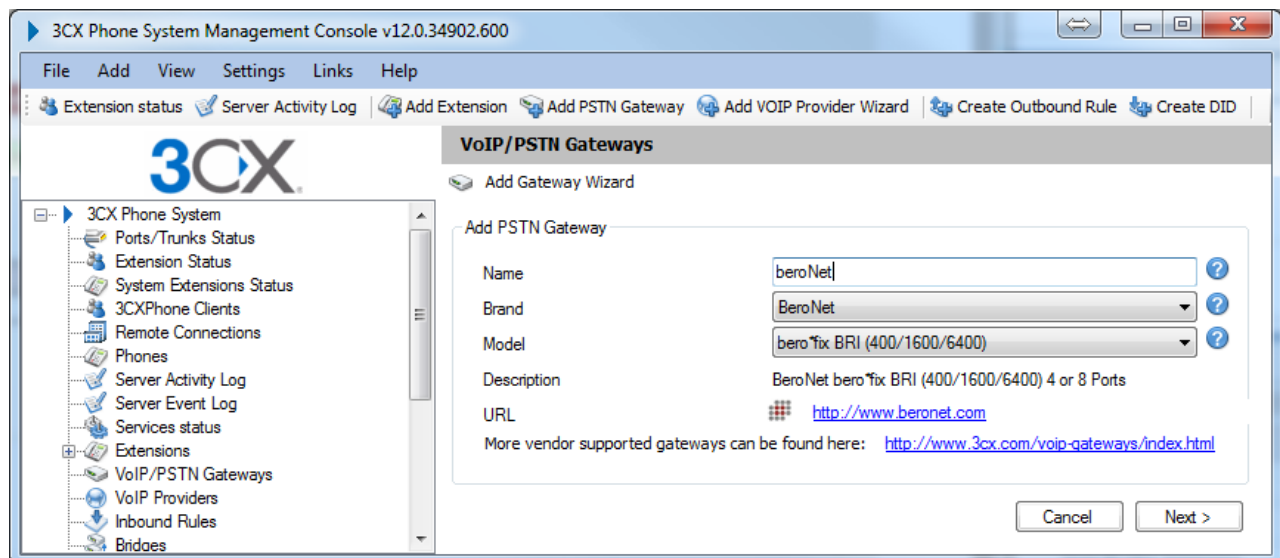
NOTE: the same would apply for every beroNet gateway with BRI ports (SBL as well).

NOTE: the gateway needs to have been configured following the how to N°1.

1.1 – Add a Gateway in 3CX

The configuration of beroNet gateways with 3CX is very simple. To configure the BRI ports, please follow these steps:

1. Click on “add gateway” in the 3CX interface and choose the BRI (400/1600/6400) device in the list;



2. Type the gateway's IP address in the field "Gateway Hostname or IP";

3CX Phone System Management Console v12.0.34902.600

File Add View Settings Links Help

Extension status Server Activity Log Add Extension Add PSTN Gateway Add VOIP Provider Wizard Create Outbound Rule Create DID

VoIP/PSTN Gateways

Specify VoIP Gateway Details

VOIP Gateway

Gateway Hostname or IP 172.20.29.101 ?

Gateway Port (default is 5060) 5060 ?

Number of ports 1 ?

Type BRI ?

Number of channels per port 2 ?

< Back Next >

3. Configure the SIP account;

3CX Phone System Management Console v12.0.34902.600

File Add View Settings Links Help

Extension status Server Activity Log Add Extension Add PSTN Gateway Add VOIP Provider Wizard Create Outbound Rule Create DID

VoIP/PSTN Gateways

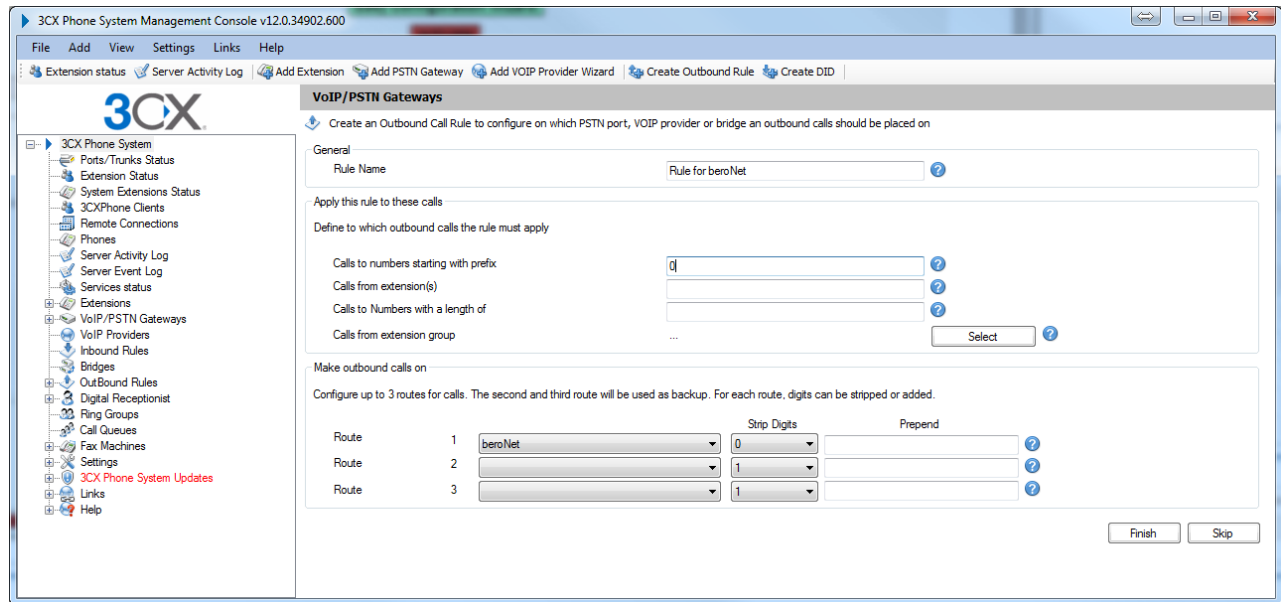
Create ports

The following ports will be created in the "Create Ports" screen. You can edit the Port identification and authentication settings before they are created. Note that the Port identification is used for identification purposes, and the internal line number is used by 3CX Phone System to address the line connected to the port on the VOIP Gateway. Therefore the Internal Line Number range should be different from the extension number range. You can configure to which extension incoming calls should be routed based on whether they are inside or outside office hours (Inbound route).

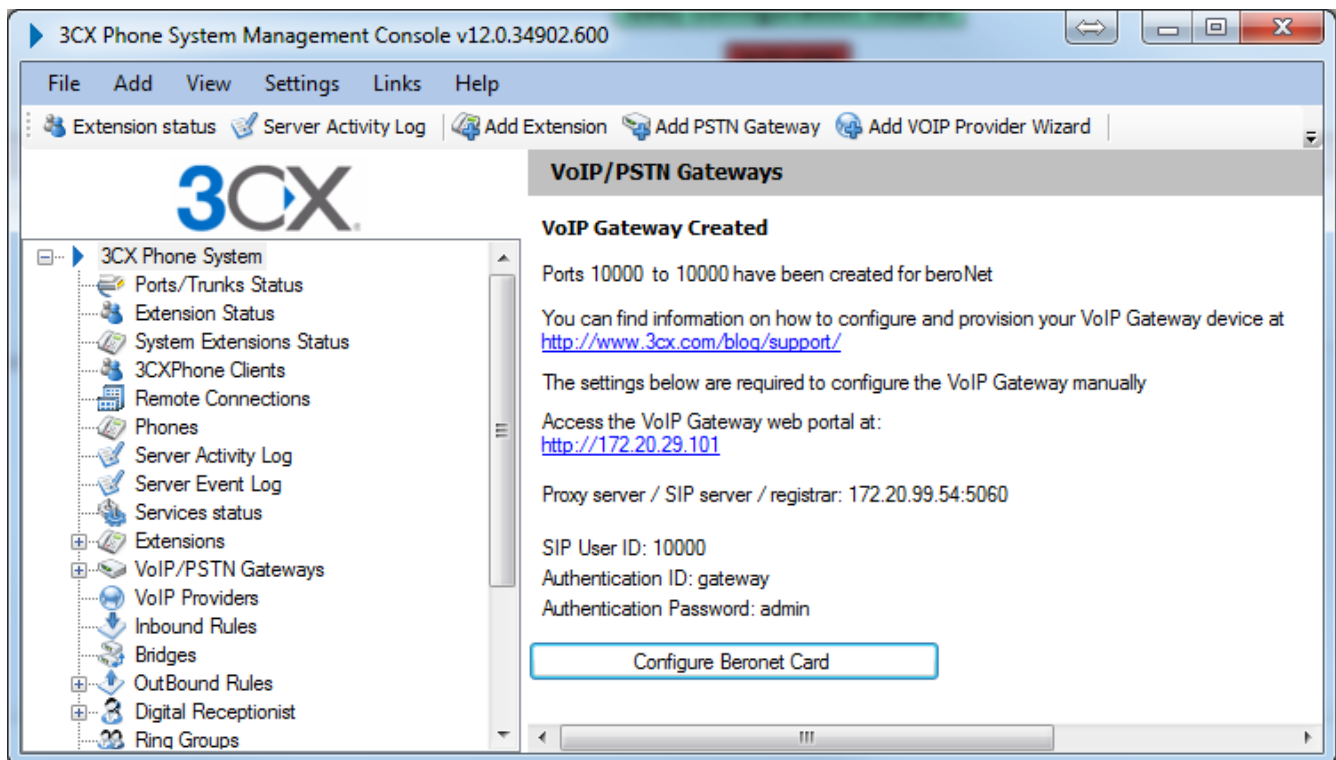
Remove selected	Virtual extension	Authentication ID	Authentication Password	Channels	Port Identification	Inbound Route Day	Inbound Route Night
☐	10000	gateway	admin	2	10000	100	100

< Back Next >

4. Create the outbound rule. You can put 0 as a prefix. Then click on "Finish".



5. At the end, the 3CX shows an overview of the configuration :



To finish the configuration on the gateway side, click on “configure beroNet Card” which will open the

3CX installation wizard.

1.2 – 3CX wizard:

1. Your favorite web-browser should open. Enter your credentials (admin / admin if you haven't changed them before). The following window then appears:

The screenshot shows a web browser window titled "3CX Wizard" with the address bar displaying "172.20.29.101/app/api/3CX.php". A password prompt from Google Chrome is visible above the main form. The form itself has a red header with the "berofix" logo and a title "3CX Wizard". It is divided into three main sections: "PSTN Outgoing options", "PSTN to FXS Redirection (for example analog Fax devices)", and "3CX options".

PSTN Outgoing options

Select your external ISDN BRI lines.	Available Ports Lif0: ☐ 1 ☐ 2
Are lines Point to Point (PTP) or Point to Multi Point (PMTP) ?	PTP ▼
For wich country should the tonset be configured ?	[de] ▼
Is "CLIP No Screening" activated on the lines ?	☐ yes ☒ no
Is "Call Deflection Partion Rerouting" activated on the lines ?	☐ yes ☒ no

PSTN to FXS Redirection (for example analog Fax devices)

Enter MSN/DID to redirect to/from FXS Port'1'	
Enter MSN/DID to redirect to/from FXS Port'2'	

3CX options

IP-Address of the 3CX Phone System machine:	
Auth-ID of the port created for gateway (eg 10000):	
AuthPassword of this port:	

Save

beronet

2. First choose which BRI port you want to configure for this SIP account. You can choose one or two (up to 4 if you have a 4BRI module)
3. Then select PTP or PTMP depending on your telecommunication system's configuration;
4. Choose the tone-set of your country;
5. The 2 following options depend on the configuration of your ISDN (check with the provider):

- CLIP means Calling line Identification Presentation. The “CLIP no screening” enables you to send a different CallerID when you make a phone call (to show a 0800 number for example). If it is not set on your ISDN configuration, you will not be able to use this function.

- Call-deflection (CD) and Partial Rerouting (PR) are supplementary Services that allow the user to redirect an incoming Call to an external Destination. By issuing a CD Request to the Network, the used B-Channels are cleared and the Destination Party will see the correct CallerID of the originating incoming Call.

6. PSTN to FXS Redirection – You can directly create a rule to route calls to the FXS ports of the gateway. If you write 119 for example, you will be able to reach your FXS port directly by dialing 119. A rule will also be created in the gateway's dialplan.

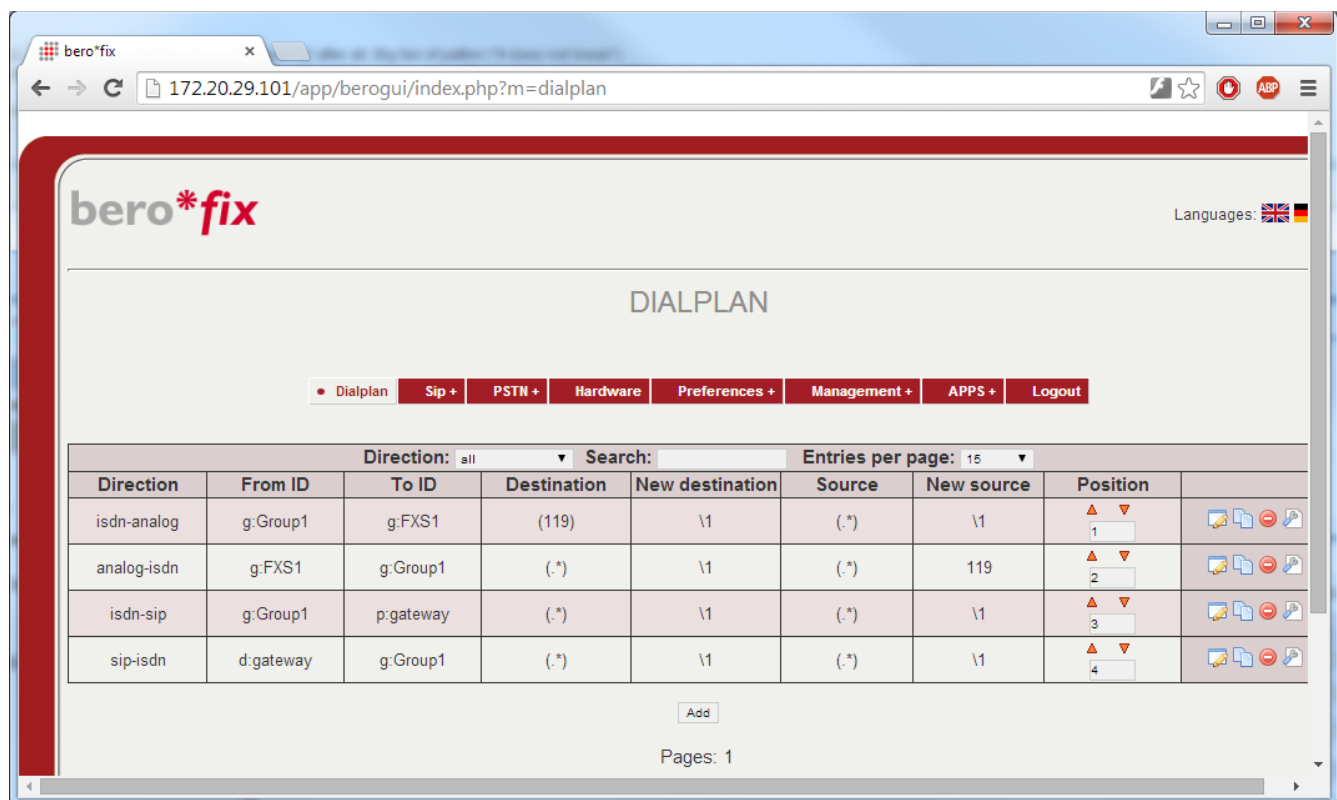
NOTE: to configure a FXS port as an internal extension in the 3CX, please see the specific HOW TO N°3.

7. Finally copy the 3CX options: enter its IP address (172.20.99.54 in our case), the authentication of the SIP account and the password. Then press save and a red “activate” button will appear. Click on it so that the gateway can reboot.

I.3 – beroNet Gateway analysis

The configuration of the BRI ports is done. Open your web-browser and type in the URL the IP address of the gateway. If you take a look at the beroNet Gateway's dialplan¹, you should get the following:

¹ To understand exactly how the Dial Plan works, please visit our [wiki](#).



The Wizard created 4 different rules: ISDN to ANALOG (in both directions) and SIP to ISDN (in both directions too).

1.3.1 – ISDN to ANALOG and ANALOG to ISDN

In our current dialplan, the FXS ports are configured in such a way that they are not considered as an internal extension in your 3CX. According to this configuration, the FXS port which is part of the group FXS1 (about port groups, see later) will be reached when you dial 119. You need to call out to reach them. In order to make them part of your IPBX, please see point 4 of this how to.

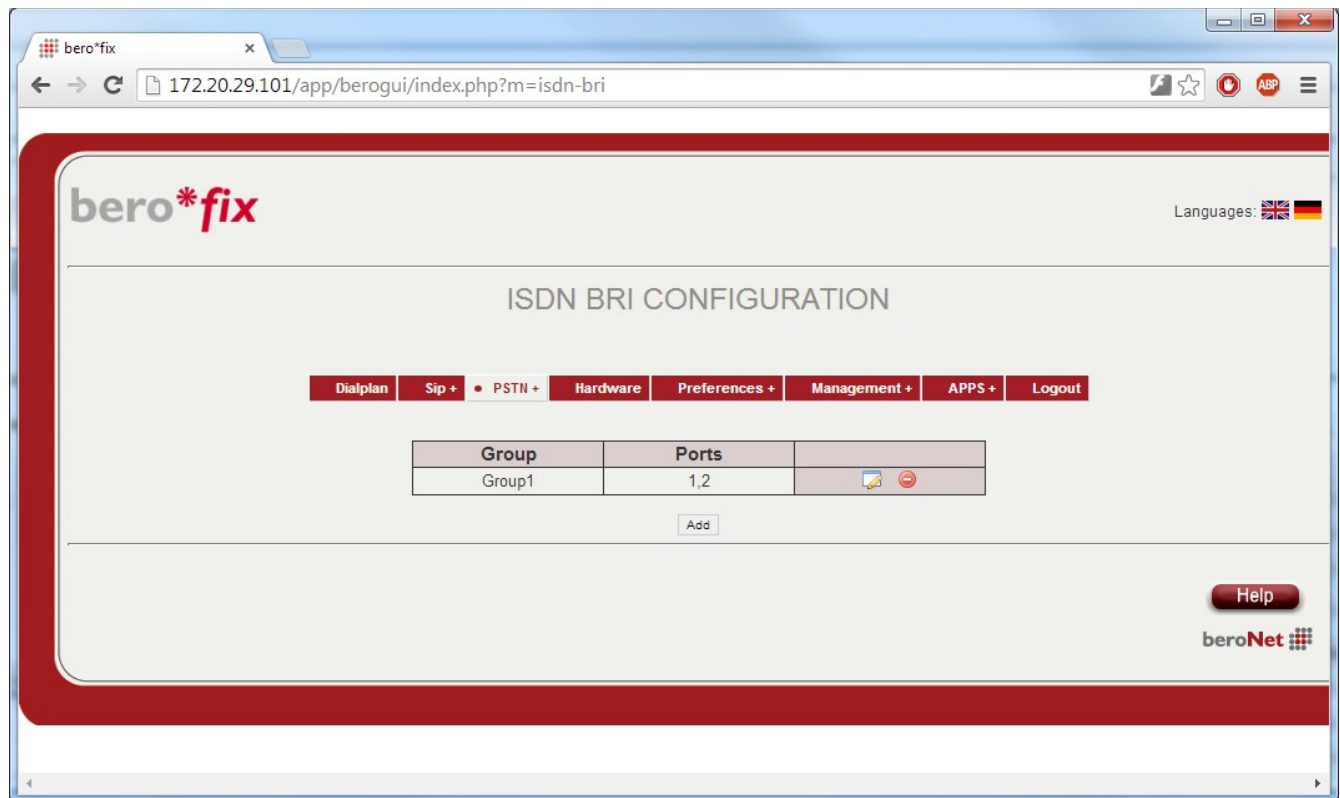
When you call from your analog extension, the call is automatically routed to your ISDN ports according to the second rule. “New source 119” means that the CallerID will become 119.

1.3.2 – ISDN to SIP and SIP to ISDN

Two rules have been created – one in each direction. From the BRI ports in “Group1” to the SIP account called “gateway”. If you click on “PSTN+” and then on “ISDN BRI” in the drop down menu you see that ports 1 and 2 are part of the group. It is the case because we ticked both of them during the configuration of the 3CX wizard (part 1.2.2).

It is possible to have a SIP account for each port. In order to do that, you need to create as many

groups as SIP accounts you want to have and put at least one port in each of them.



To get more information about the group of ports, please visit our wiki [here](#).

2 – Configuration of a FXO beroNet Gateway on 3CX

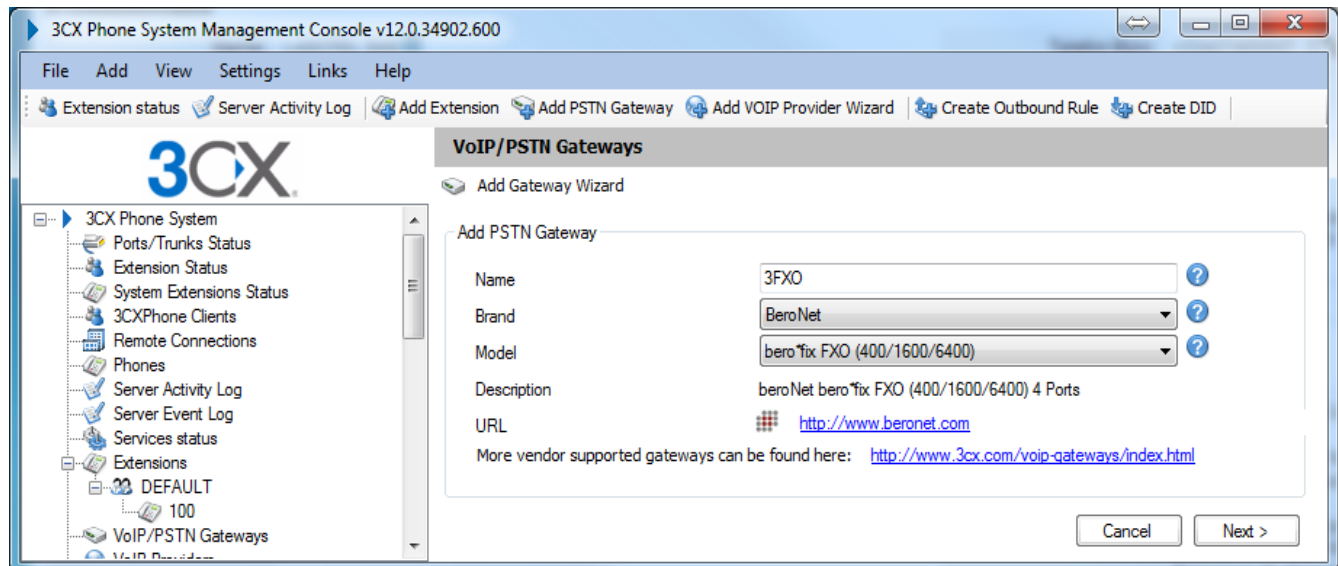
NOTE: The same would apply for our Small Business Line with 2 or 4 FXO ports.

NOTE: For teaching purposes, we will configure 3 ports in one sip account (2.1) and the 4th port in a separate one (2.2)

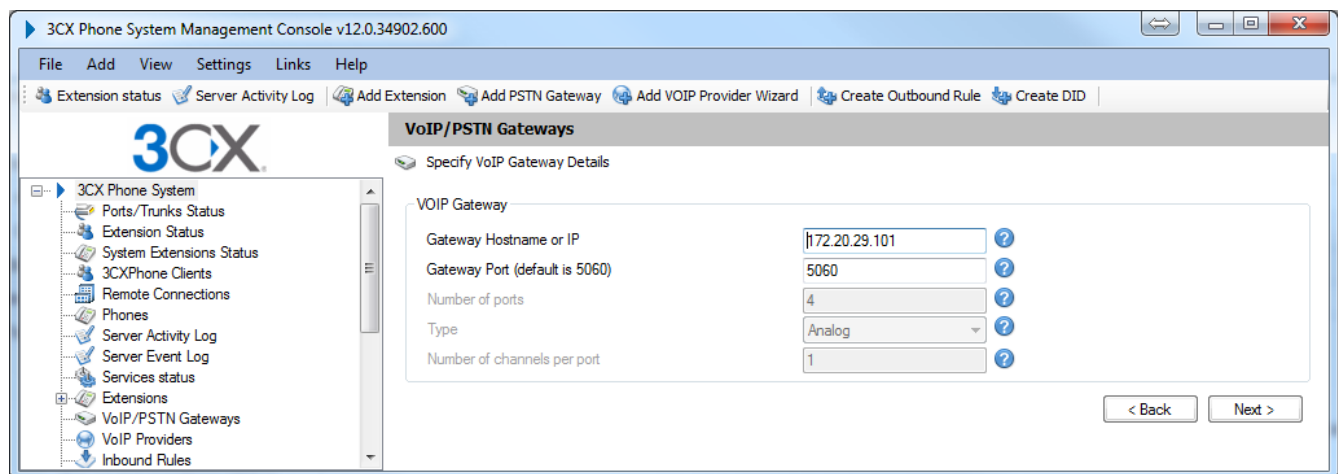
2.1 – Configuration of the 3 first FXO ports

2.1.1 – Add a gateway in the 3CX interface

a) Add a gateway in the 3CX Management Console and choose the beroNet 4FXO;



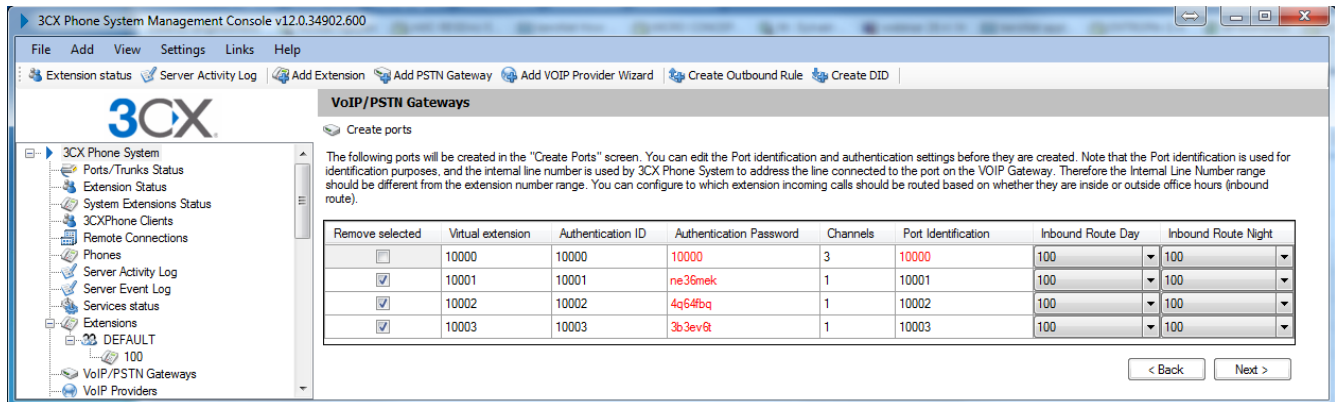
b) Enter the IP address of your gateway;



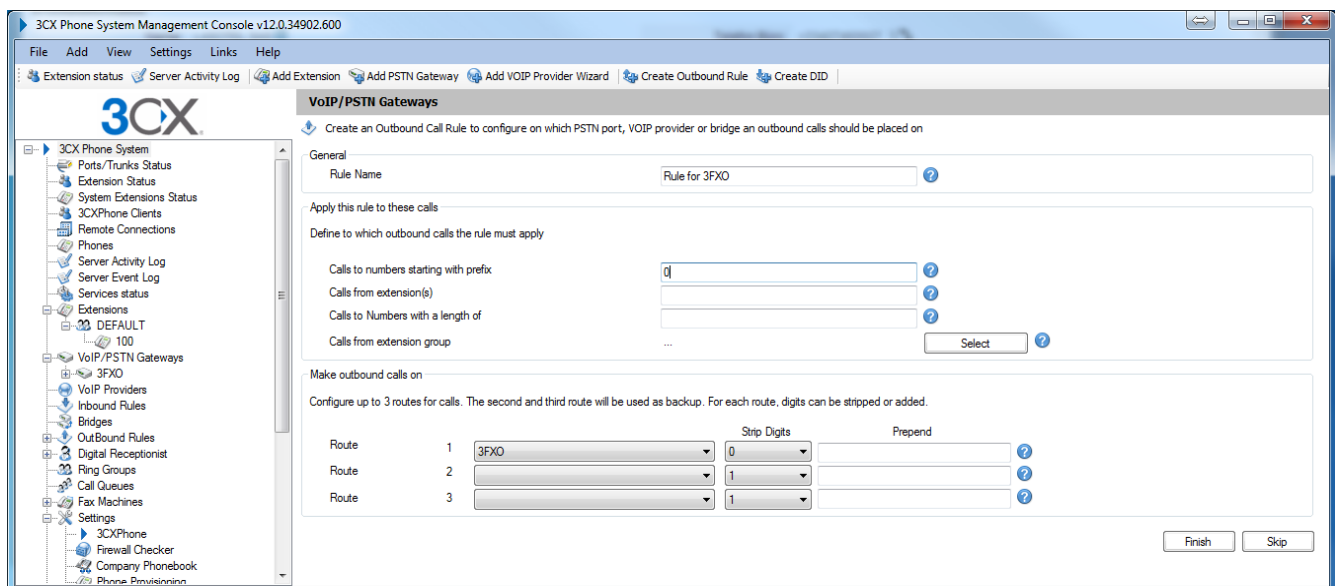
c) Configure your SIP account. **ATTENTION!** This part is a bit confusing:

- Remove the 3 last ports (only one shall be configured);
- Add an authentication ID and password;
- Put the numbers of channels (3 in our case because we configure 3 FXO ports in one SIP account).

NOTE: the 3CX console talks about “ports” but actually means “SIP accounts”. In order to configure everything well, you must create only one. Thus, remove 3 “ports” by ticking them out.

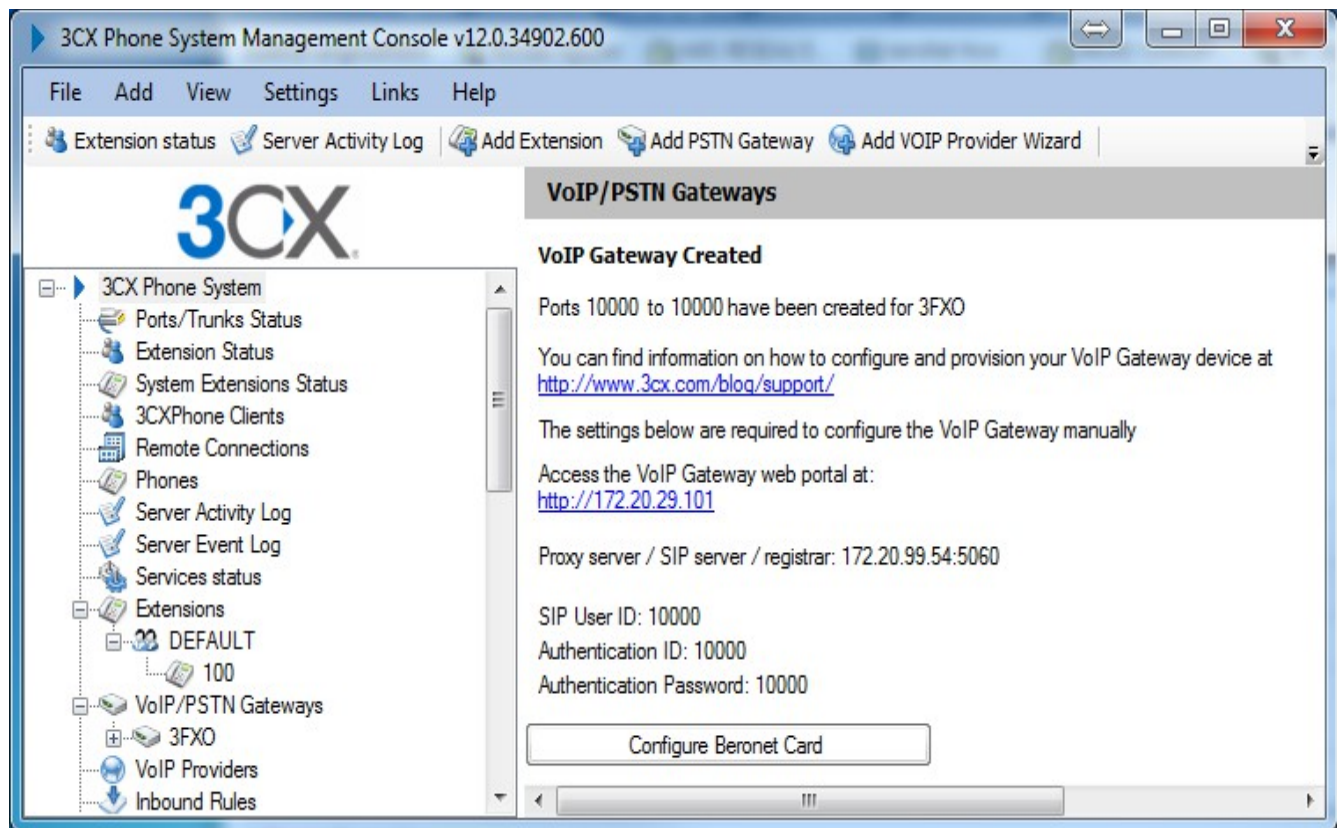


d) Create an outbound rule and click on finish.



e) You then get an overview of the SIP account you just configured. Click on “configure beroNet card”

to go to the next step.



2.1.2 – 3CX wizard:

- Select the ports you want to configure – 1,2 and 3 for us.
- Give them DIDs (this is optional)
- Select your country's FXO settings and tone-set
- enter the 3CX options and save

3CX Wizard

PSTN Outgoing options

Select your external analog FXO lines.	Available Ports Lif0: ☒ 1 ☒ 2 ☒ 3 ☐ 4
DID of FXO Port: 1	101
DID of FXO Port: 2	102
DID of FXO Port: 3	103
DID of FXO Port: 4	
Country specific FXO settings ?	GERMANY ▼
For wich country should the tonset be configured ?	[de] ▼

3CX options

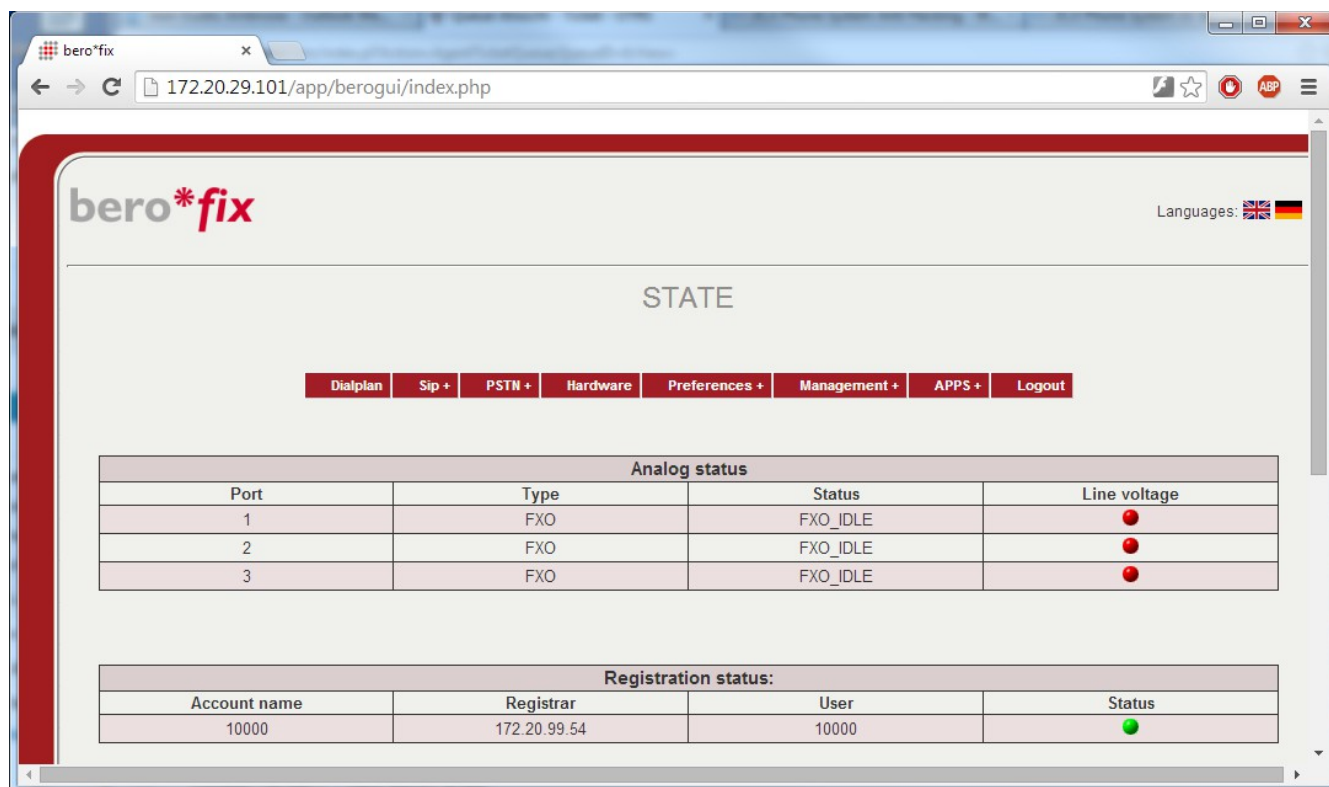
IP-Address of the 3CX Phone System machine:	172.20.99.54
Auth-ID of the port created for gateway (eg 10000):	10000
AuthPassword of this port:	

Save

e) enter your credentials (admin / admin if you have not changed them) and click on the red “activate”.

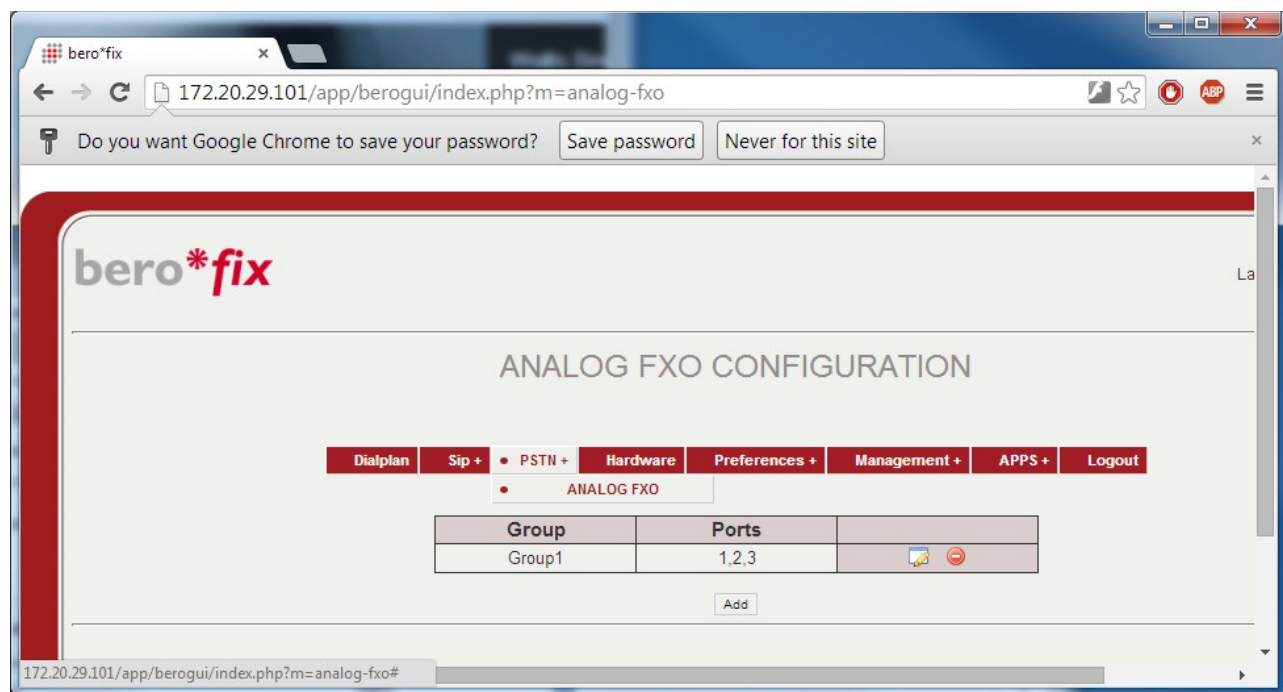
2.1.3 – Gateway analysis:

In the web interface of the gateway, you should see the following (the FXO ports on the picture are marked red because no line is plugged in).

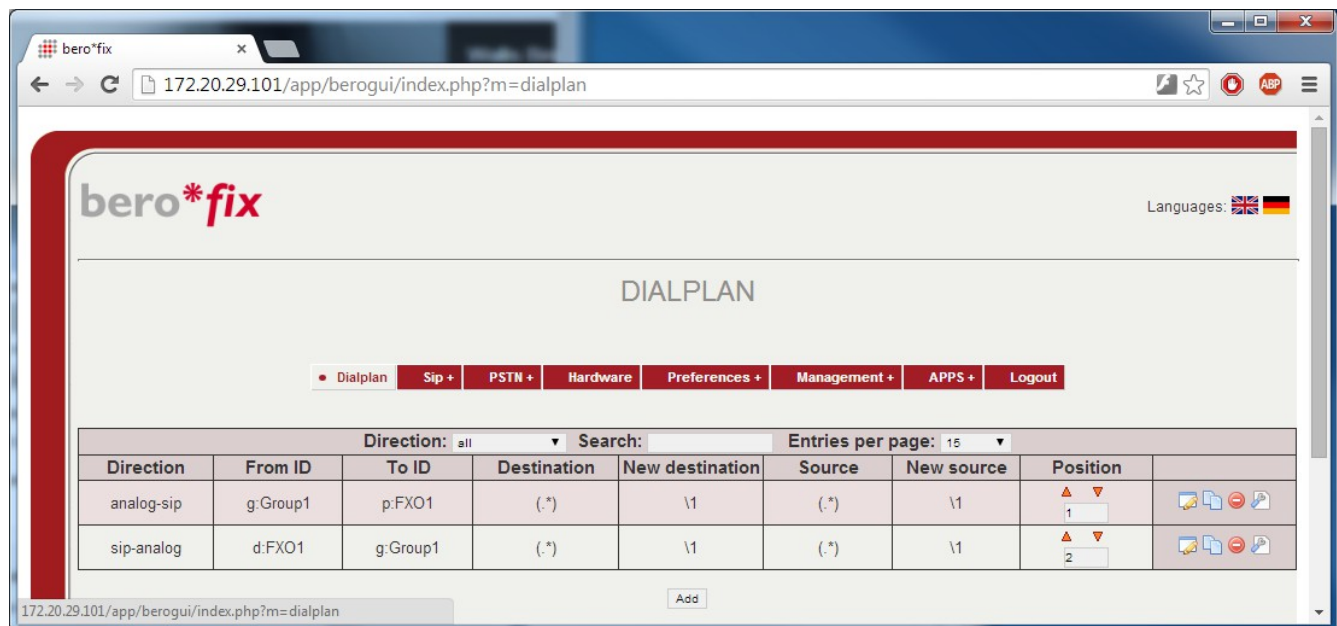


We can see that the registration with 3CX has worked and that 3 analog ports are configured. Logically they are all connected to one SIP account.

In the group of ports, there is one group with 3 FXO ports in it because all 3 of them have been selected in the 3CX wizard.



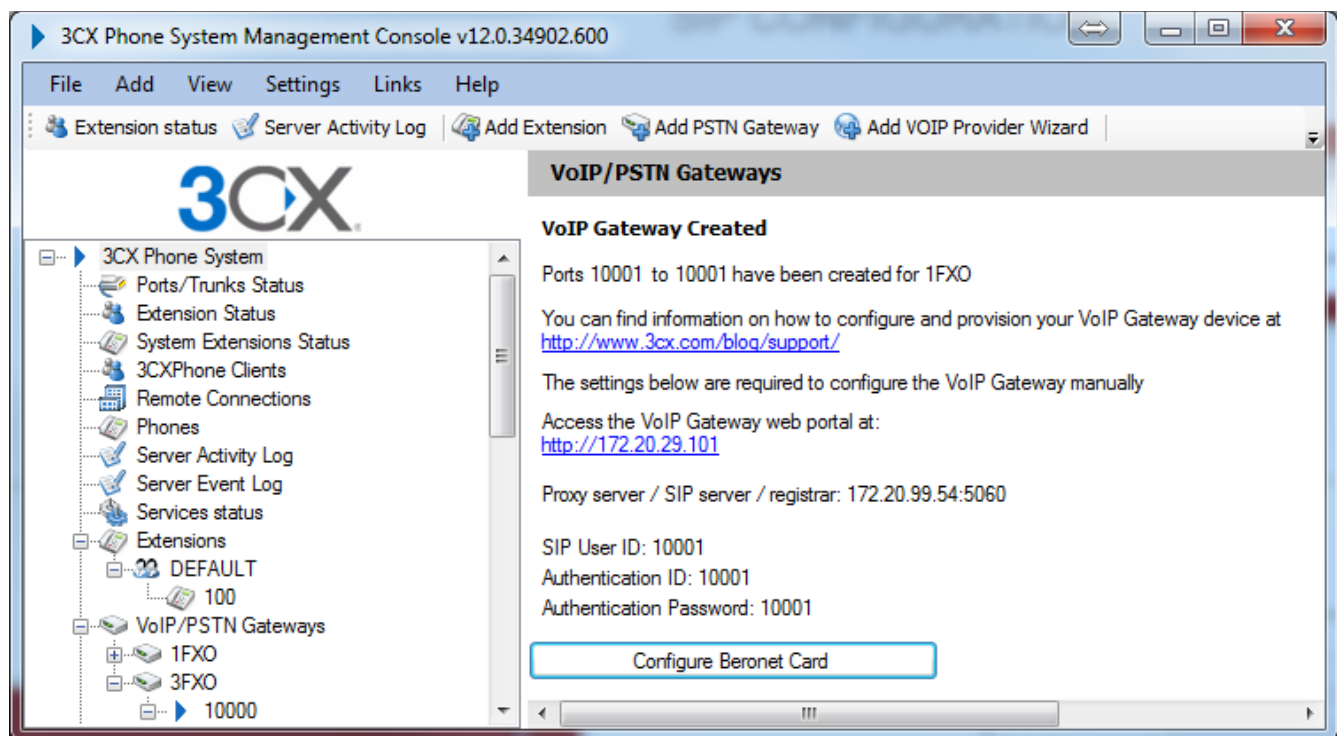
And in the Dialplan there are two rules:



Meaning: All calls coming from the analog lines will be routed to the SIP account and all calls coming from the SIP account will be routed to the group of analog ports. The system will then use the first line available.

However, when there are more than one analog line, it is usually better to differentiate them. In order to achieve this goal, it is necessary to configure the FXO ports separately. Here is the manual

www.beronet.com



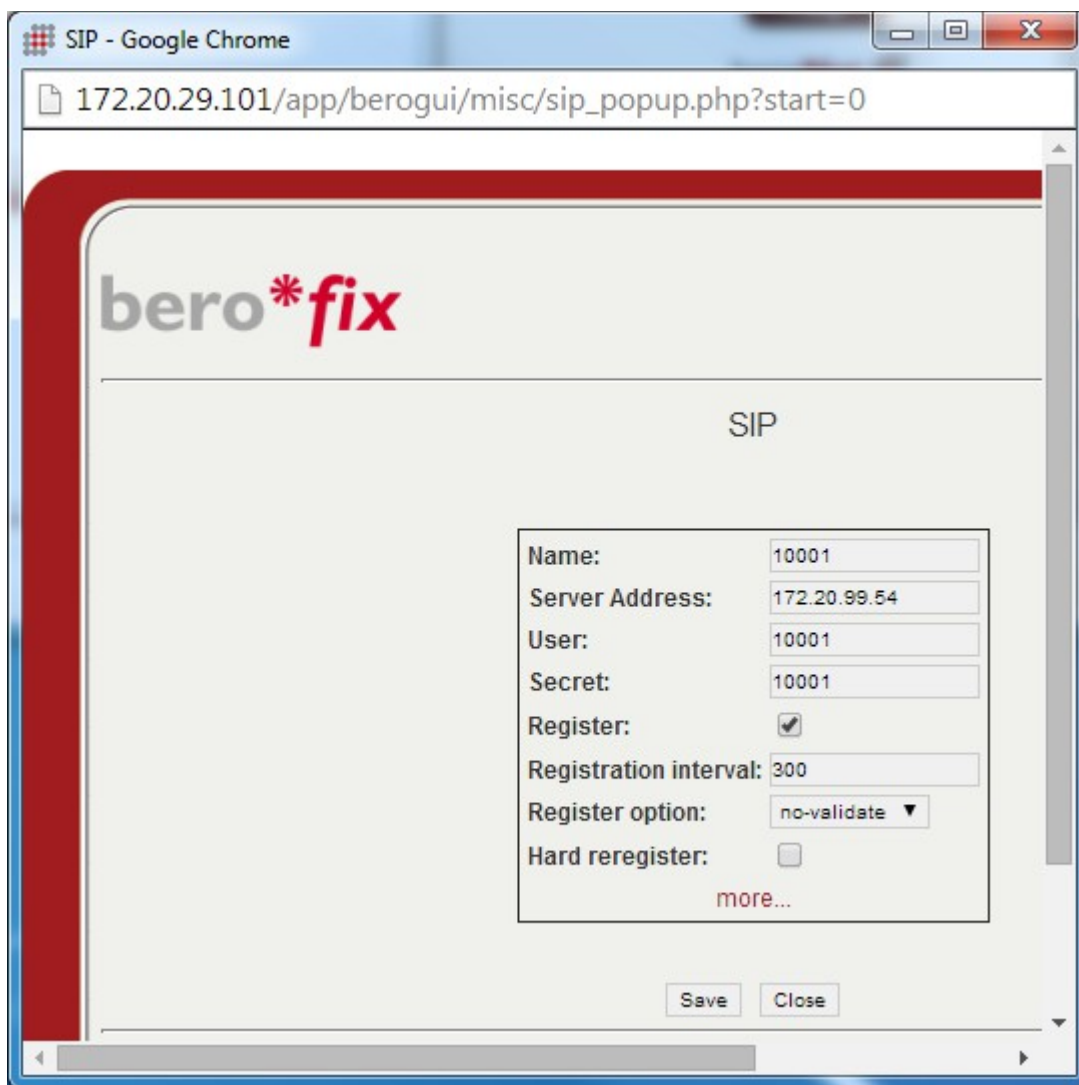
!!! ATTENTION!!! DO NOT CLICK ON “CONFIGURE BERONET CARD”!

2.2.2 – Create a new SIP account in the beroNet Web Interface

In the beroNet Web interface, click on “SIP+” and then on “SIP” in the drop-down menu. There's already the first SIP account connected to the 3CX.

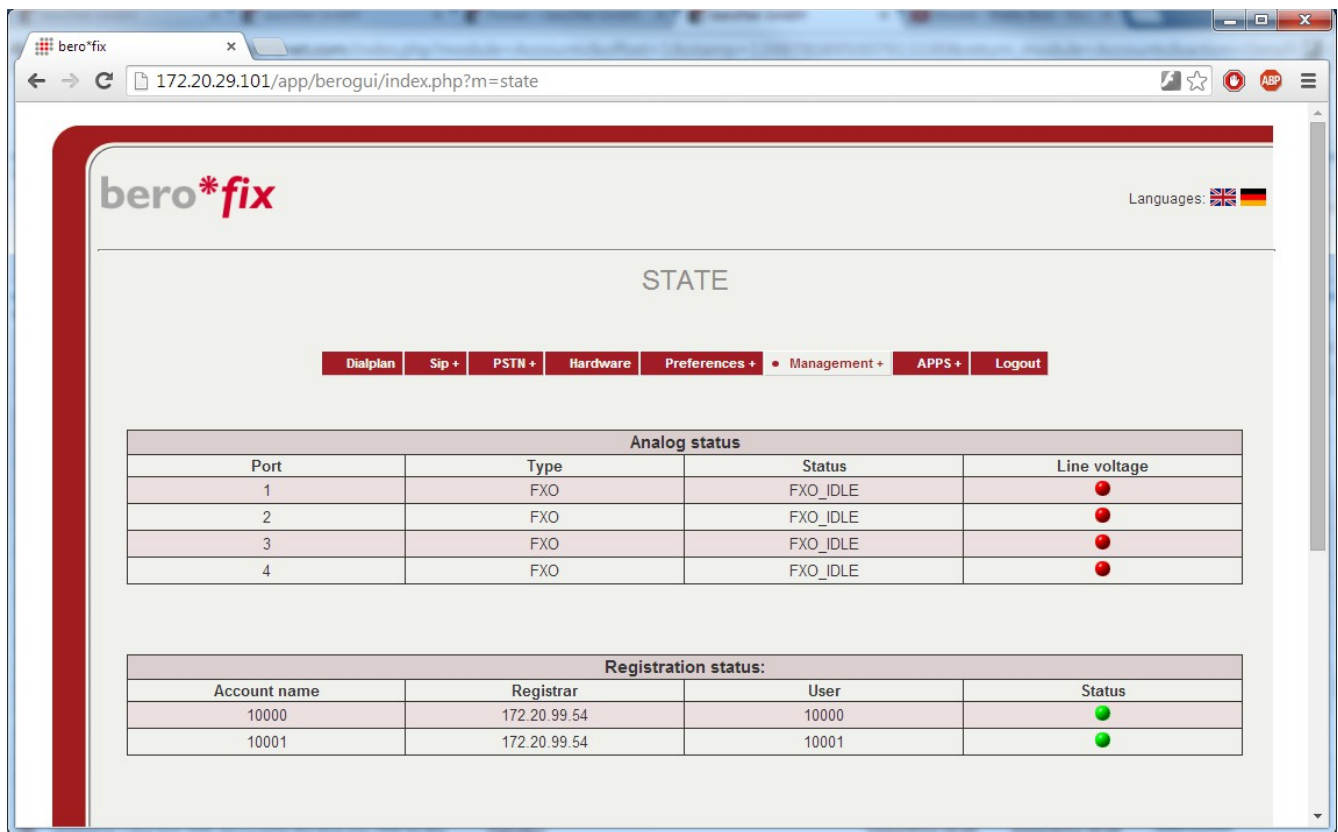
Click on the “Add” button. A pop-up window opens.

Fill in the requested information of the SIP account just created on the 3CX. Do not forget to tick the “register” box as shown hereunder:



Click on “save” and then on the yellow “activate”.

The 2 SIP accounts are now registered on the 3CX as their green states show it in “management+” and “state”.



It is necessary to create a new group of ports with the last FXO port before taking care of the dialplan rules.

2.2.3 – Create a new group of port

Go to “PSTN+” and click on “analog port”. Create a new group. A pop-up window opens:

- Give it a name. “Group2” in my case;
- Select the 4th FXO port;
- Add a CLIP (Calling Line Identification Presentation);
- Select “busy tone” as a “call ending signal” (optional);
- Save;
- Click on the orange “activate” and let the gateway reboot.

ANALOG - Google Chrome

172.20.29.101/app/berogui/misc/analog_popup.php?opt=FXO

bero*fix

PSTN

Group Name:

Ports:

	Li0(bf4FXO)	Li1()
Port 1	☒	
Port 2	☒	
Port 3	☒	
Port 4	☒	

Interdigit timeout initial:

Interdigit timeout:

Overlap Dialing: ☐

Tones:

CLIP:

CNIP:

Chan Sel:

Chan Sel direction:

Connect:

Wait for OAD:

Dialtone passthrough: ☐

Analog call ending signal:

Unobtainable Tone	☒
Busy Tone	☒

CID Detection mode:

[more...](#)

Save Close

There are then 2 group of ports: 1 with three FXO ports in it and 1 with one FXO port:



Finally, it is necessary to create 2 new rules in the dialplan.

2.2.4 – Create dialplan rules

You have to create 2 rules:

- One from the new analog port group to the new SIP account;
- One from the new SIP account to the new analog port group.

2.2.4.1 – ANALOG to SIP

- Click on “Add”. A pop-up window opens;
- In the field “From direction”, choose “ANALOG” and “g:Group2” in the field “From ID” (the second group of port which contains the right FXO port);
- In the field “To direction”, choose “SIP” and in the field “To ID” choose the new SIP account
- Leave the rest of the other settings as they are.

2.2.4.2 – SIP to ANALOG

Do the same as 2.2.4.1 but the other way around (“From” becomes SIP and “To” becomes Analog).

NOTE: In the “Match type” field, choose “From user”. If you choose “IP address”, it will not work as expected because both of the SIP accounts have the same IP address.

Click on the yellow “activate” and the following 4 rules should appear:

The screenshot shows the 'DIALPLAN' configuration page in the bero*fix web interface. The page features a red header with the logo and a language selector (English and German). A navigation bar includes links for 'Dialplan', 'Sip', 'PSTN', 'Hardware', 'Preferences', 'Management', 'APPS', and 'Logout'. Below the navigation bar, there is a table with 9 columns: 'Direction', 'From ID', 'To ID', 'Destination', 'New destination', 'Source', 'New source', 'Position', and a set of icons. The table contains 4 rows of rules. Below the table, there is an 'Add' button and 'Pages: 1'.

Direction	From ID	To ID	Destination	New destination	Source	New source	Position	
analog-sip	g:Group1	p:10000	(.*)	\1	(.*)	\1	1	
sip-analog	d:10000	g:Group1	(.*)	\1	(.*)	\1	2	
analog-sip	g:Group2	p:10001	(.*)	\1	(.*)	\1	3	
sip-analog	d:10001	g:Group2	(.*)	\1	(.*)	\1	4	

CONCLUSION:

To create one SIP account per FXO port, it is possible to use the 3CX wizard only once. It is then necessary to manually add the others.

To check if the configuration of the new SIP accounts and dialplan rules are right it is possible to check the configuration of the first one created by the wizard.

3 – Configuration of a GSM beroNet Gateway on 3CX

The configuration of GSM beroNet Gateways on 3CX is the same as the configuration of FXO beroNet gateways on 3CX.