

# Installation manual for using 3CX with MachCloud



<b>Title</b>	Installation manual for using 3CX with MachCloud
<b>Owner</b>	MachCloud BV
<b>Last change</b>	15-11-2022
<b>Classification</b>	MachCloud Partners

## History

<b>Versie</b>	<b>Auteur</b>	<b>Status</b>	<b>Datum</b>
1.0	MachCloud	Final	2019-11-04
1.1	MachCloud	Final	2019-11-15
1.2	MachCloud	Final	2022-07-21
1.3	MachCloud	Final	2022-09-03
1.4	MachCloud	Final	2022-01-04
1.5	MachCloud	Final	2022-11-15

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## Introduction

This installation manual will help to setup a basic 3CX PBX configuration with a MachCloud provided SIP trunk.

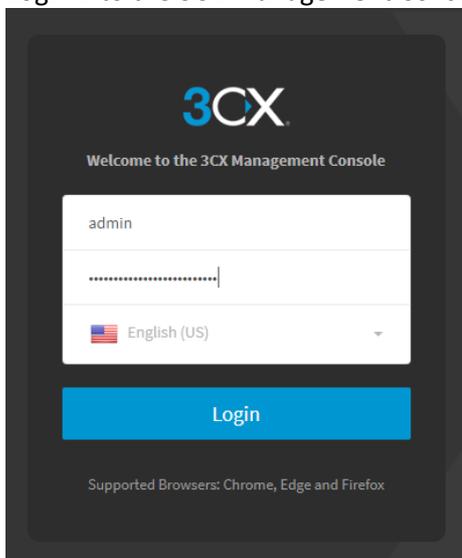
This manual assumes that the following is available.

- An operational 3CX Phone System version 18 (or higher) with admin rights.
- A MachCloud SIP trunk that has at least one phone number assigned to it.

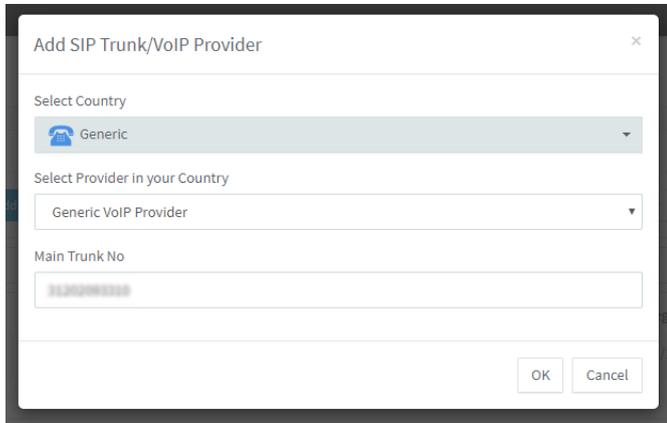
## Installation steps

Follow the steps to add a MachCloud Trunk to the 3CX PBX.

1. Login into the 3CX Management Console with administrator privileges via a web browser.



2. Open the SIP Trunks section and click on 'Add SIP Trunk'. Choose in the Country drop down box for 'Generic' and select in Provider in your Country for 'Generic VoIP Provider'.



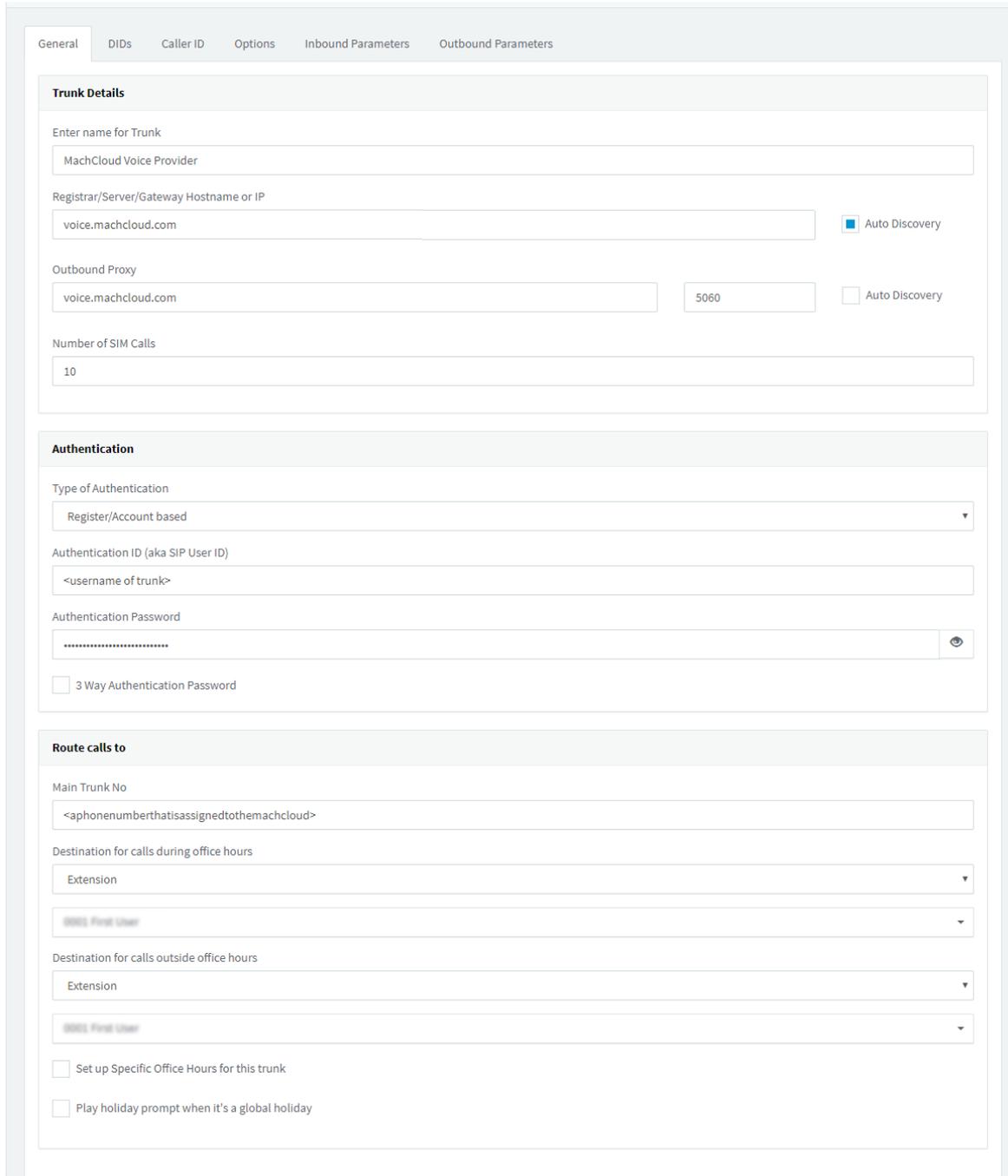
Enter a known trunk phone number to use as default main phone number.

Click on OK to continue.

3. Continue the trunk setup by fill out the other fields of the SIP trunk.

Check the following tabs and make changes where it is needed.

### General

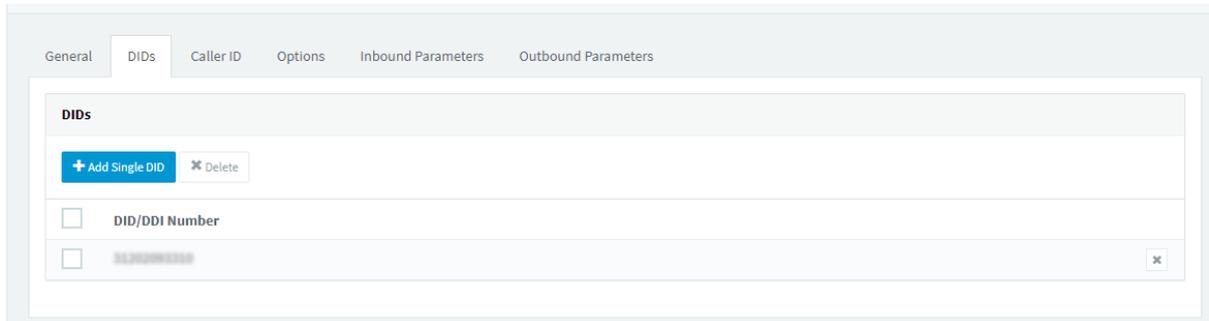


The screenshot shows the 'General' configuration tab for a SIP trunk. It is divided into three main sections:

- Trunk Details:** Includes fields for 'Enter name for Trunk' (MachCloud Voice Provider), 'Registrar/Server/Gateway Hostname or IP' (voice.machcloud.com) with an 'Auto Discovery' checkbox, 'Outbound Proxy' (voice.machcloud.com) with a port field (5060) and an 'Auto Discovery' checkbox, and 'Number of SIM Calls' (10).
- Authentication:** Includes a dropdown for 'Type of Authentication' (Register/Account based), 'Authentication ID (aka SIP User ID)' (<username of trunk>), 'Authentication Password' (masked with dots), and a checkbox for '3 Way Authentication Password'.
- Route calls to:** Includes 'Main Trunk No' (<aphonenumberthatissignedtothemachcloud>), dropdowns for 'Destination for calls during office hours' and 'Destination for calls outside office hours' (both set to 'Extension'), and checkboxes for 'Set up Specific Office Hours for this trunk' and 'Play holiday prompt when it's a global holiday'.

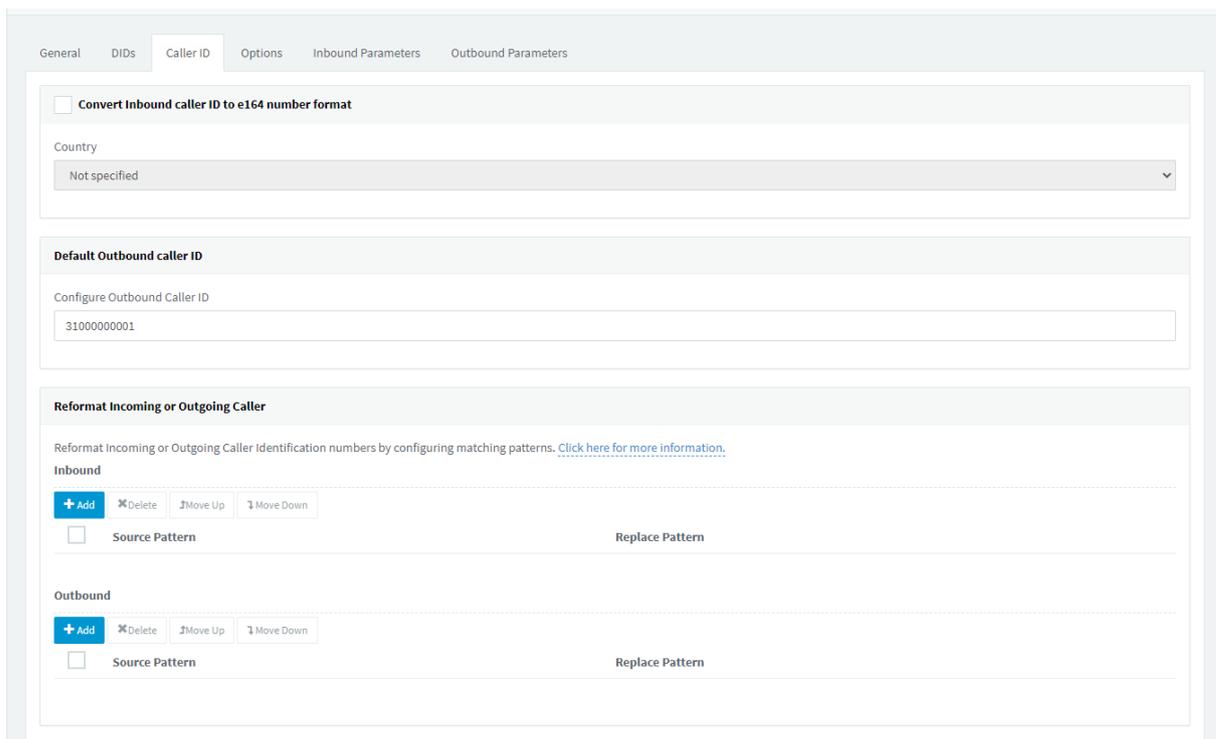
- The 'Number of SIM Calls' is variable. The default value is 10 but MachCloud don't have a limit in allowed simultaneous calls. Increase this value if needed.
- Replace the Authentication ID/User ID with the available SIP trunk username and enter the associated sip trunk user password.
- Enter an assigned phone number to handle as main phone number. This number should be E.164 formatted (without leading 00 or + sign). Example 310000000001
- Select an appropriated call destination to route inbound calls to.

## DIDs



- Enter phone number(s) that are available on the MachCloud SIP trunk

## Caller ID



- Configure a default outbound caller id is preferred to do.

## Options

General
DIDs
Caller ID
Options
Inbound Parameters
Outbound Parameters

**Call options**

Allow inbound calls

Allow outbound calls

Disallow video calls

**Advanced**

PBX Delivers Audio

Supports Re-Invite

Support Replaces

Put Public IP in SIP VIA Header

Alternative Proxy

Re-Register Timeout

Select which IP to use in 'Contact' (SIP) and 'Connection'(SDP) fields

Use Default Settings
▼

Transport Protocol

UDP
▼

IP Mode

IPV4
▼

**Codec Priority**

+ Add codecs
↑ Move Up
↓ Move Down

G.711 A-law	✕
G.711 U-law	✕
G729	✕

- Transport Protocol can be set to 'UDP' or keep it on Any.
- Set the IP Mode to IPV4 is preferred.
- Codec Priority can be set to: G.711 A-law, G.711 U-law, G729

## Inbound Parameters

General DIDs Caller ID Options **Inbound Parameters** Outbound Parameters

**Caller Number/Name Field Mapping:**

Review the SIP header of the INVITE and specify where the following values should be present within the INVITE:

"CallerNum" caller's number (default: From->user)	From : User Part
"CallerName" caller's name (default: From->display name)	From : User Part
"CalledNum" number that has been dialed (default: To->user)	To : User Part

**Call Source Identification**

Configure this option only when the SIP Trunk is IP based (peering), or does not support automatic inbound call detection. If you have multiple trunks from the same vendor or issues with incoming calls, you might need to toggle this option (on/off) and see what configuration works best for this SIP Trunk

Request Line URI : User Part
"EnforcedOriginatorCallerID" To be used when you want to send Anonymous via PAI

Use both "Call Source Identification" rules and "Caller Number/Name -> CalledNum" field mappings (Note: Disables catch all routing capability)

- Call source identification is disabled.

## Outbound Parameters

General DIDs Caller ID Options Inbound Parameters **Outbound Parameters**

**Outbound Parameters**

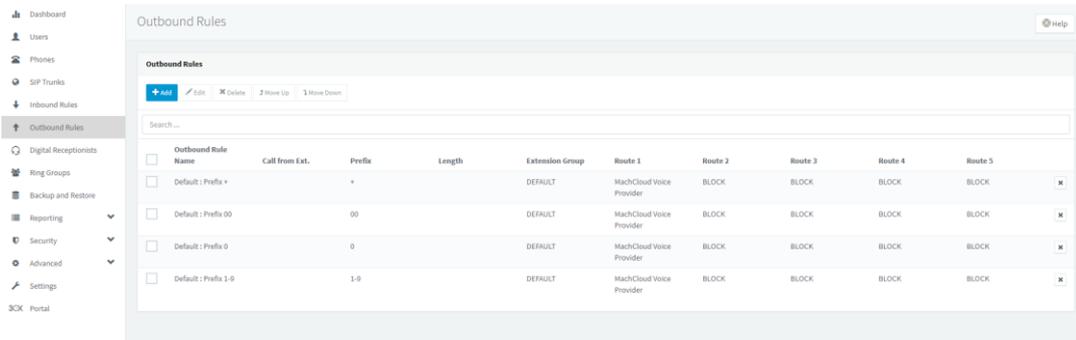
Assign SIP header fields to 3CX Call Variables. Requires advanced SIP knowledge. Misconfiguration will cause your PBX to malfunction

SIP Field	Variable	Custom Value
Request Line URI : User Part	"CalledNum" number that has been dialed (defa	
Request Line URI : Host Part	"GWHostPort" gateway/provider host/port	
Contact : User Part	"AuthID" authentication	
Contact : Host Part	"ContactUri" usually, content of Contact field	
To : Display Name	"CalledName" name that has been dialed (defau	
To : User Part	"CalledNum" number that has been dialed (defa	
To : Host Part	"GWHostPort" gateway/provider host/port	
From : Display Name	"OriginatorCallerID" Original Caller number will I	
From : User Part	"OriginatorCallerID" Original Caller number will I	
From : Host Part	"GWHostPort" gateway/provider host/port	
User Agent : Text String	Leave default value	
Remote Party ID - Called Party : Display Name	Leave default value	
Remote Party ID - Called Party : User Part	Leave default value	
Remote Party ID - Called Party : Host Part	Leave default value	
Remote Party ID - Calling Party : Display Name	Leave default value	
Remote Party ID - Calling Party : User Part	Leave default value	
Remote Party ID - Calling Party : Host Part	Leave default value	
P-Asserted Identity : Display Name	Leave default value	
P-Asserted Identity : User Part	Leave default value	
P-Asserted Identity : Host Part	Leave default value	
P-Preferred Identity : Display Name	Leave default value	
P-Preferred Identity : User Part	Leave default value	
P-Preferred Identity : Host Part	Leave default value	
P-Called-Party-ID : Display Name	Leave default value	
P-Called-Party-ID : User Part	Leave default value	
P-Called-Party-ID : Host Part	Leave default value	

- Contact : User Part → "AuthID"authentication
- From : Display Name → "OriginatorCallerID" Original Caller number will be sent
- From : User Part → "OriginatorCallerID" Original Caller number will be sent
- Remote Party ID - Calling Party : Display Name → Leave default value
- Remote Party ID - Calling Party : User Part → Leave default value
- Remote Party ID - Calling Party : Host Part → Leave default value

Click on OK to save the settings for the trunk.

4. Add outbound rules to route calls to the MachCloud SIP Trunk.



Click on '+ Add' button and create four outbound rules. Use the table below.

<b>Rule name</b>	<b>Calls to numbers starting with prefix</b>	<b>Calls from extension group(s)</b>	<b>Route (trunk name)</b>	<b>Strip digits</b>	<b>Prepend</b>
Default : Prefix +	+	DEFAULT	'MachCloud Voice Provider'		
Default : Prefix 00	00	DEFAULT	'MachCloud Voice Provider'	2	+
Default : Prefix 0	0	DEFAULT	'MachCloud Voice Provider'	1	+31 (Change if your country calling code is different)
Default : Prefix 1-9	1-9	DEFAULT	'MachCloud Voice Provider'	0	+

Note that the order of the rules is imported.

Example of how an outbound rule is filled into the form.

Default : Prefix 0

**General**

Rule Name

**Apply this rule to these calls**

Calls to numbers starting with prefix

Calls from extension(s)

Calls to Numbers with a length of

Calls from extension group(s)

DEFAULT
✕

**Make outbound calls on**

Configure up to 5 backup routes for outgoing calls. Each route can be configured differently

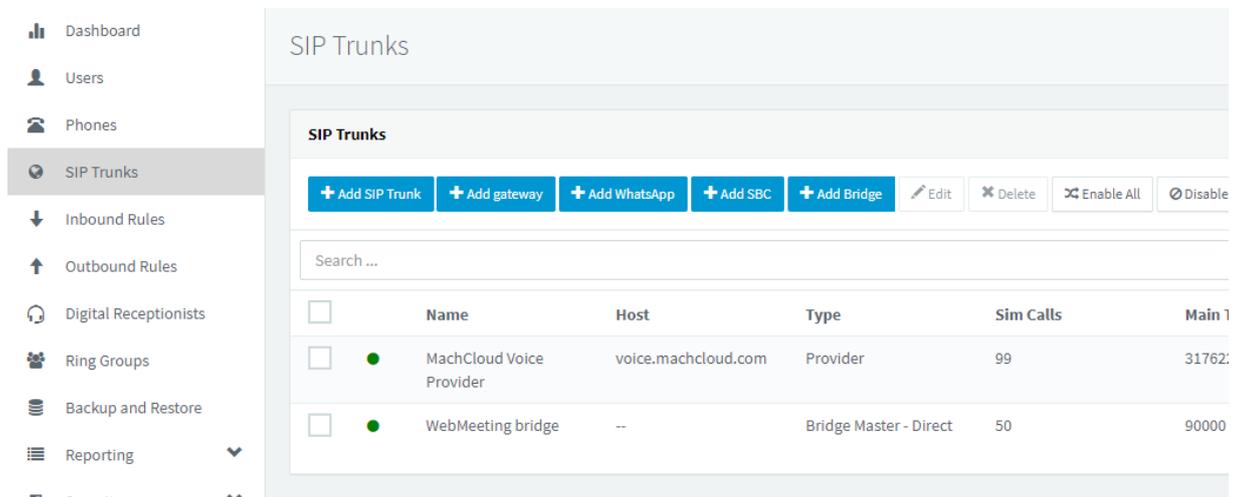
	Route	Strip Digits	Prepend	Outbound Caller ID
	1	MachCloud Voice Prov	1	+31
	2	BLOCK CALLS	0	

If +31 is not the country calling code then change this into the correct code.

By default the extension group(s) needs to be set to DEFAULT.

Click on OK to save the outbound rule.

5. Check if the trunk is operational. This should be indicated by a green ● symbol.



The screenshot displays the 'SIP Trunks' management page. On the left is a navigation sidebar with options: Dashboard, Users, Phones, SIP Trunks (selected), Inbound Rules, Outbound Rules, Digital Receptionists, Ring Groups, Backup and Restore, and Reporting. The main content area is titled 'SIP Trunks' and includes a toolbar with buttons for '+ Add SIP Trunk', '+ Add gateway', '+ Add WhatsApp', '+ Add SBC', '+ Add Bridge', 'Edit', 'Delete', 'Enable All', and 'Disable'. Below the toolbar is a search bar and a table with the following data:

<input type="checkbox"/>	Name	Host	Type	Sim Calls	Main 1
<input type="checkbox"/>	MachCloud Voice Provider	voice.machcloud.com	Provider	99	31762
<input type="checkbox"/>	WebMeeting bridge	--	Bridge Master - Direct	50	90000

## Trouble shooting steps

### Trunk will not become operational

- This could help to restart the whole 3CX PBX the make sure that changes are applied.

### Inbound calls will be ended after 30 seconds.

- Check the value of 'DEFAULT\_CONFIGURED\_PUBLIC\_IP' in 'Settings/Network'. Adjust the value if it is not right.

### Can't make outbound calls

- Make sure that the trunk is online. On the SIP Trunks section this should be indicated by a green symbol. If it is red, please check the config of the trunk. Make sure that the username and password are correct.