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237 lines (178 sloc) 11.6 KB

Deploying an Issabel Server to AWS and using it with the Agent Assist Demo

Now that we have deployed our Amazon Chime Transcription and Agent Assist solutions, we will proceed to deploy a Unified Communications System to the cloud to test our solution.

Keep in mind that the following guide's intention is to provide a testing environment and this isn't by any means a recommended production environment as the resources are estimated for low load, and, the architecture is not designed to accommodate production workloads. Always when designing your architecture refer to the [Well Architected Framework](#).

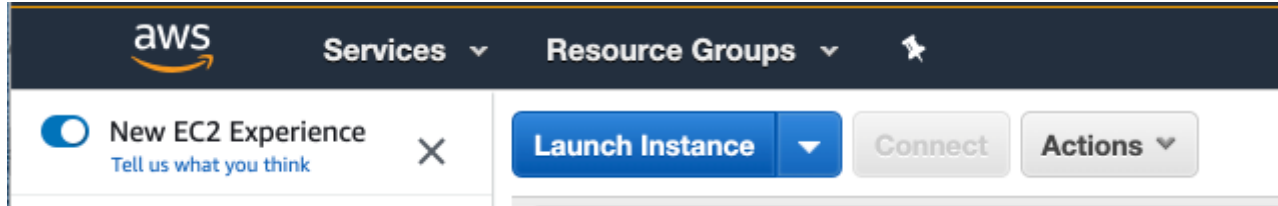
Issabel is an open source Unified Communications system based on Asterisk. You can find more information on <https://issabel.org>

For this portion of the process we are going to deploy an EC2 instance with a Centos 7 AMI, execute the Issabel netinstall script, provision an Amazon Chime phone number and create a SIP trunk between Amazon Chime and our Issabel System.

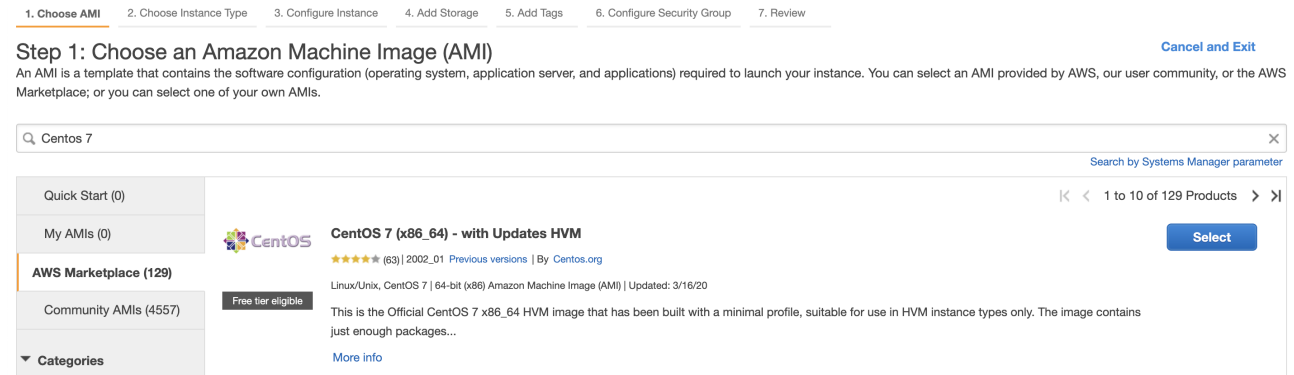
Deploying the EC2 Instance

We are going to deploy an EC2 instance with a Centos 7 AMI.

Click on "Launch Instance":



Search for the Official Centos 7 AMI on the AWS Marketplace, which is [Free Tier](#) Eligible:



In my case I will run a t2.micro instance, which for testing on 2 SIP channels (the incoming call and a SIP extension that will simulate the agent) should be enough.

<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only
-------------------------------------	-----------------	--------------------------------	---	---	----------

Follow the standard procedure to launch the instance.

Keep in mind that for the CentOS ami the default username is "centos".

Once our instance is ready we will need to prepare our security group to open Port 22 and 443 for Issabel setup and the required ports for the Amazon Chime SIP Trunk.

You can find Amazon Chime's full list of ports requirements [here](#).

Since I'm running on the us-east-1 region, I will be using the following settings:

A	Source	Port
SSH	Your IP	TCP/22
---	---	---
HTTPS	Your IP	TCP/443
Test Softphone	Your IP	ALL UDP

A	Source	Port
Amazon Chime / Signaling	3.80.16.0/23	UDP/5060
		TCP/5060
		TCP/5061
Amazon Chime / Media	3.80.16.0/23	UDP/5000:65000
	52.55.62.128/25	UDP/1024:65535
	52.55.63.0/25	UDP/1024:65535
	34.212.95.128/25	UDP/1024:65535
	34.223.21.0/25	UDP/1024:65535

It is strongly discouraged to open your security group to any IP address, keep in mind to keep open only the necessary ports.

This is what your inbound rules for your Issabel instance should look like:

Inbound rules				
Type	Protocol	Port range	Source	Description - optional
Custom UDP	UDP	1024 - 65535	52.55.62.128/25	Amazon Chime Voice Connector Media
Custom UDP	UDP	1024 - 65535	52.55.63.0/25	Amazon Chime Voice Connector Media
Custom UDP	UDP	1024 - 65535	34.212.95.128/25	Amazon Chime Voice Connector Media
Custom UDP	UDP	1024 - 65535	34.223.21.0/25	Amazon Chime Voice Connector Media
SSH	TCP	22		Issabel SSH
Custom UDP	UDP	5060	3.80.16.0/23	Amazon Chime Voice Connector Signaling
Custom TCP	TCP	5061	3.80.16.0/23	Amazon Chime Voice Connector Signaling
Custom UDP	UDP	5000 - 65000	3.80.16.0/23	Amazon Chime Voice Connector Media
All UDP	UDP	0 - 65535		Test Softphone
HTTPS	TCP	443		Issabel Web Interface
Custom TCP	TCP	5060	3.80.16.0/23	Amazon Chime Voice Connector Signaling

Now that we have our instance ready and that we have configured our security group, we will ssh into, remember the default username for the Official Centos 7 is "centos" .

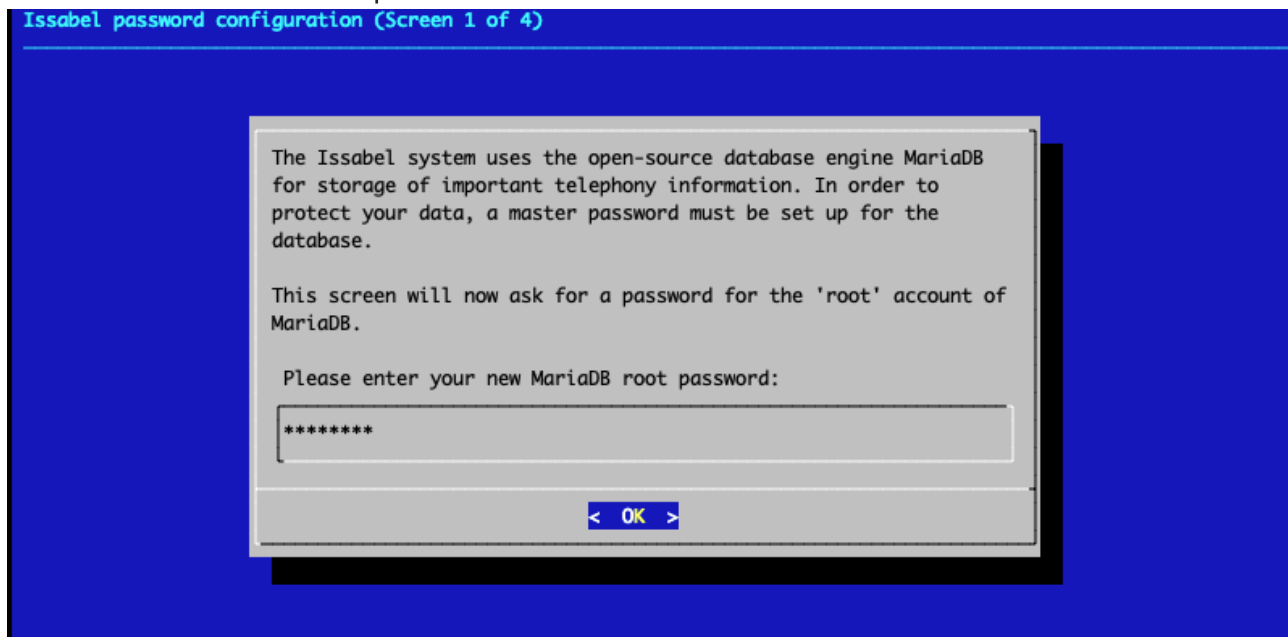
Once we logged into our instance, we will update the OS and execute the [Issabel](#) netinstall script.

```
sudo yum update -y sudo yum install wget -y
```

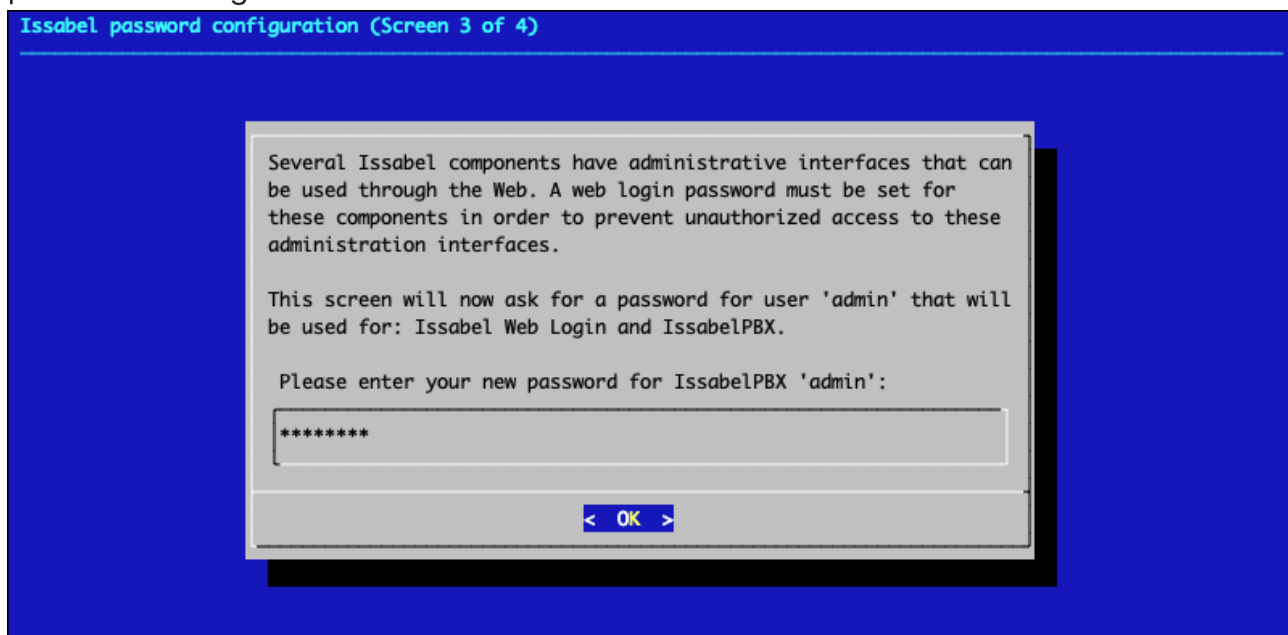
Once we have our tools ready we will elevate ourselves as the root user and execute the netinstall script:

```
sudo su wget -O - [**_http://repo.issabel.org/issabel4-netinstall.sh_**]  
(http://repo.issabel.org/issabel4-netinstall.sh) | bash  
[root@ip-172-31-44-52 centos]# wget -O - http://repo.issabel.org/issabel4-netinstall.sh | bash  
--2020-08-14 18:56:32-- http://repo.issabel.org/issabel4-netinstall.sh  
Resolving repo.issabel.org (repo.issabel.org)... 144.217.169.163  
Connecting to repo.issabel.org (repo.issabel.org)|144.217.169.163|:80... connected.
```

Follow the installation steps.



Once the installation process finishes you will be able to login into your Issabel, the default username is "admin" and you have already set up the password during the installation:



We will now go back to AWS console to setup the Amazon Chime Voice connector and the details for the SIP Trunk.

Ordering a Phone Number for the Chime Voice Connector

On the left menu, we will click on Phone Number Management, then on Orders and finally on the Provision Phone Numbers button:

A login form on a dark purple background. It features three input fields: a username field with a person icon, a password field with a key icon, and a submit button with a right-pointing arrow icon. Below the form, it states "Issabel is licensed under GPL. 2006 - 2020."

We will choose "Voice Connector".

[Home](#) > [Calling](#) > [Phone number management](#)

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Phone number management

[Inventory](#)

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[Learn how to port existing numbers](#)

Order ID

Order date

Status

No data available for display yet

Now its time to choose which phone number we would like to provision, you can either

select by State and Location or you can enter a prefix, in my case I'd like a number on the Dallas Region. Select the number you'd like to provision and click provision.

Provision phone numbers



Step 1: Select a Business Calling or Voice Connector product type for your phone numbers. The product type assigned to a phone number affects your billing. Business Calling does not support toll free phone numbers. If you have a default calling name set, it is assigned to newly provisioned phone numbers. [Learn more](#)

- ☐ Business Calling
- ☒ Voice Connector

Cancel

Next

You order will get into the processing stage.

Provision phone numbers

Step 2: Search by country and location to display available phone numbers. [Learn more about](#) [Learn more](#)

Country	United States +1	Area	Location	Texas	Dallas		
<input type="checkbox"/>	Phone number						
<input type="checkbox"/>	+1469						
<input type="checkbox"/>	+1469						
<input type="checkbox"/>	+1469						
<input type="checkbox"/>	+1469						

After a couple minutes, the order status will change from Processing to Successful

Phone number management


Inventory	Deletion queue	Pending	Orders
Provision phone numbers		Learn how to port existing numbers	
Order ID	Order date	Status	Order type
3d7b48b7-85d4-42df-95fb-8a4e77938b83	Aug 14, 2020 at 2:50 PM	Processing	New
< Previous Next >			

Creating a Chime Voice Connector

On AWS' console we will search and click on Chime. Once on the Amazon Chime interface click on Voice Connectors and then on the Create Voice Connector button

Inventory	Deletion queue	Pending	Orders
Provision phone numbers		Learn how to port existing numbers	? ↺
Order ID	Order date	Status	Order type
3d7b48b7-85d4-42df-95fb-8a4e77938b83	Aug 14, 2020 at 2:50 PM	Successful	New
< Previous Next >			

For our next step we need to define a name for the Voice Connector, the AWS Region and if it will be encrypted. For our test we are going to Disable encryption, but it is highly encouraged that you enable encryption for production workloads.



Home > Calling > Voice connectors

Amazon Chime

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Voice connectors

Create new voice connector

Voice connector name	AWS region
----------------------	------------

After you enter the required information click on the "Create" button.

We will be taken back to the Voice Connectors list, we will click on the voice connector we recently created.

Create new voice connector

Create an Amazon Chime Voice Connector to make phone calls using your existing SIP infrastructure. .

Voice connector name

AgentAssistDemo

AWS region

US East (N. Virginia)

Encryption

Enabled (Recommended)

Disabled

Cancel

Create

Click on Phone Numbers

Voice connectors

Create new voice connector

Voice connector name	AWS region
AgentAssistDemo	US East (N. Virginia)

Click on Assign from Inventory

Assign from inventory





Select the On the inventory list, select the number we just ordered and click on Assign from inventory.

Assign phone numbers to AgentAssistDemo



Select an available phone number to assign to this Voice Connector. Use the search bar to filter results.

☒ **Phone numbers**

☒ +1469

1 phone number selected

Cancel

Assign from inventory

Setting up the Amazon Chime Connector for call Termination

Now that we have our Amazon Chime Connector configured, and that we have a phone number assigned to it, we can setup the call termination and origination.

For the origination piece we will click on the Termination Tab, and click enable:

AgentAssistDemo

General

Termination

Origination

Emergency Calling

Streaming

Phone numbers

Logging

Enable Termination settings to control outbound calling from your SIP infrastructure. [Learn more.](#)

Termination status

☒ Enabled

☐ Disabled

We will take notes of the Outbound host name, we will need it for setting up our SIP trunk.

Under the Allowed hosts list, we will add the public IP of our Issabel server and click "Add".

New allowed list



Enter the IP addresses of allowed hosts. The minimum allowed network mask is /27 (32 IP addresses).

CIDR Notation

 /

Cancel

Add

For the calling plan we are going to select United States of America:

Calling plan*

Allow outbound calls to selected countries.

Countries

Select a country

United States of America

Next, we are going to create a set of credentials, under the Credentials section, click on New: Enter the username and password you will use to set up your trunk, and click Save:

New credentials



These credentials will be required for outbound calls as soon as you save them.

Username

ex: John Doe

Password

ex: Password

Cancel

Save

Take note of the following fields:

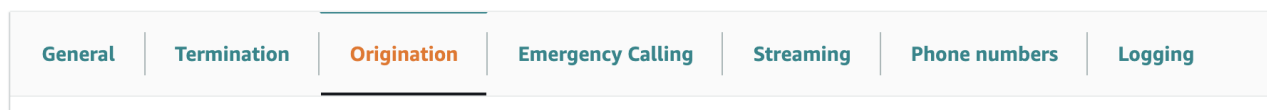
- Outbound hostname
- Username and Password

Finally at the end of the form, click on Save.

Setting up the Amazon Chime Connector for call Origination

We will click on Origination at the upper tab of our Amazon Chime Voice Connector configuration screen.

AgentAssistDemo



Under Inbound routes click on "New":

For host enter your Issabel's server public IP, for protocol we will choose UDP on Port 5060, finally for weight and priority we will enter 1. Once the information is entered, click on "Add".

New inbound route



Enter the host details for routing inbound calls. Calls are routed to hosts in priority order, with 1 as the highest priority. If hosts are equal in priority, calls are distributed among them based on their relative weight. Encryption-enabled Voice Connectors use TLS (TCP) for all calls.

Host

ex: myhost.com

Port

5060

Protocol

UDP

Priority

1

Weight

1

Cancel

Add

Click on Save.

Enabling sending Kinesis Video Streams

The Amazon Chime Connector has the ability to send Kinesis Video Streams with the call audio, this will be the source of the audio used for our demo.

In order to enable them we need to select Streaming on the top tab, and select Start under Details:

AgentAssistDemo

General

Termination

Origination

Emergency Calling

Streaming

Phone numbers

Logging

Kinesis Video Streams is an AWS service that stores, encrypts and indexes audio data in streams. Your Kinesis Video Streams data is protected at rest using the default service encryption.

Details

Disclaimer: You and your end users understand that recording Amazon Chime Voice Connector calls with this feature maybe be subject to laws or regulations regarding the recording of telephone calls and other electronic communications, and that it is your and your end users' responsibility to comply with all applicable laws regarding the recording, including properly notifying all participants in a recorded session or to a recorded communication that the session or communication is being recorded and obtain their consent.

Sending to Kinesis Video Streams

☒ Start

Creates a Kinesis Video Stream for each concurrent call, with the following prefix: ChimeVoiceConnector-

☐ Stop

Also under Streaming notification, select EventBridge:

Streaming notification

Send streaming events notifications for your Amazon Chime Voice Connector calls to the targets you select. Amazon SNS resources and Amazon SQS resources with encryption are automatically created in your AWS account.

Select streaming notification target

▼

EventBridge

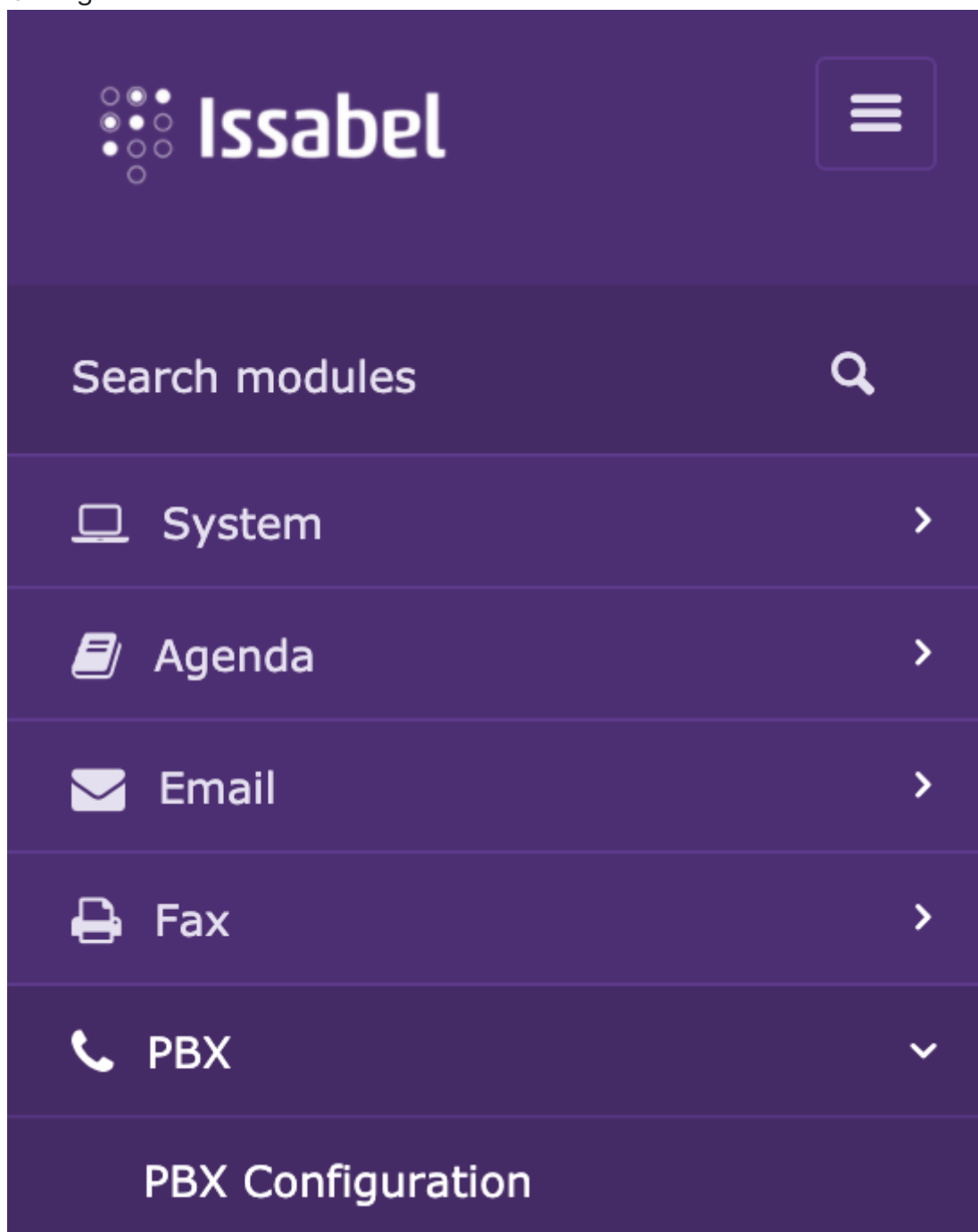
×

Click on the Save Button.

Setting up the Amazon Chime Voice Connector SIP Trunk on Issabel

Let's login into our Issabel server, by entering on our web https:// followed by your Issabel server's public IP. You may get an alert that the certificate is not valid, this is normal as the certificate on the server is self signed. For a production workload your are highly encouraged to use valid certificates, for this task you may want to check [AWS Certificate Manager](#).

Once you have logged into your Issabel server, on the left menu, click on PBX, PBX Configuration:



On the new

menu that will be displayed inside the frame, click on Trunks

[Home](#) [PBX](#) / **PBX Configuration**

Basic

Class of Service

Extensions

Feature Codes

Outbound Routes

Trunks

Inbound Call Control

Announcements

Blacklist

Call Flow Control

Call Recording

Add an Extension

Please select your Device below then click Submit

- Device







Device

Generic SIP Device

Submit

Click on Add Sip Trunk

Add a Trunk

-  Add SIP Trunk
-  Add DAHDI Trunk
-  Add IAX2 Trunk
-  Add ENUM Trunk
-  Add DUNDi Trunk
-  Add Custom Trunk

The trunk name can be anything, in our case AmazonChimeVoiceConnector.

For the Outbound CallerID we can use the format "Name"<+10000000000>, where 0000000000 is the number you just provisioned on the Amazon Chime side. Under trunk name for outgoing settings I called it "ChimeOut", also, here is where we are going to use the fields took notes from the termination portion of the Amazon Chime Voice Connector setup. This is what it looks like:

Trunk Name: ChimeOut

```
host=CHIME-OUTBOUND-HOSTNAME
username=USERNAME
secret=PASSWORD
type=peer
qualify=yes
```

Trunk Name [?]:

ChimeOut

PEER Details [?]:

```
host=[REDACTED].voiceconnector.chi
me.aws
username=[REDACTED]
secret=[REDACTED]
type=peer
qualify=yes
```

As for the Incoming settings, I named my trunk ChimeIn, and these are the contents:
User Context: ChimeIn

```
context=from-trunk
type=friend
insecure=invite
```

Click on Submit Changes on the bottom.

When the form reloads, you will see a pink ribbon with the message "Apply changes", in order to apply the changes it has to be clicked. We can check the current status of our newly created trunk by clicking under PBX, Tools, Asterisk-Cli and executing the following command:

```
sip show peers 
```

Creating SIP extension for testing

We are going to click on PBX, PBX configuration, Extensions. On the Add an Extension screen, click on the Generic SIP device and click on the "Submit" button. For user extension I'm using the number 100, for Display Name I'm entering Test Extension. Make user that under device options you set the nat option to Yes: Click on Submit and then on Apply changes.

Setting up an inbound route

Final step on the setup flow is to setup an inbound route that will route our incoming calls to the extension we just had setup.

In order to create an Inbound route, click on PBX, PBX Configuration, and in the internal menu click on Inbound routes: Because we will only be getting calls for this demo, I will only fill the Description and will set up the destination as Extensions -> <100> Test. Click on Submit and apply changes.

Creating an outbound route

We may also want to test our demo by dialing out, so we are going to create an outbound route.

Click on PBX, PBX Configuration and click on Outbound Routes: I will call my route ChimeVoiceConnector. For the Dial pattern I will add + as the prepend prefix and 1XXXXXXXXXX as pattern for calls in the US. This way I can dial the numbers without needing to add the +1 expected by Amazon Chime.

On the Trunk Sequence for Matched Routes, select the AmazonChimeVoiceConnector trunk. Afterwards click on Submit changes and Apply changes.

Setting up the external IP of our Issabel Server

Click on PBX, Asterisk Sip Settings: Under NAT settings click on the "Auto Configure" button. Click on submit and then on Apply Changes.

Setting up a Softphone

For this stage you can use any IP Phone or softphone. In my case I will use Linphone an open source VOIP project.

After downloading and installing it I will set it up using my Issabel server's IP as SIP domain, my extension number (100) as the username and the password I chose.

In my case the configuration screen will look similar to this:

