7. SIP Carrier Options

Part 3

Several VoIP SIP Carriers have been reviewed. The following represent two that might have good values to the casual user. Many others exist with costs.

7.1 ipcomms.net

Offers the following:

> Free incoming calls
> Free 50 minutes outgoing (uncertain if this per month or one time)
> 1 cent per minute additional cost
> $25/mo
> 2 channels

7.2 CallCentric.com

Offers the following:

> Free incoming calls
> Free outgoing calls to those also on CallCentric (IP Freedom)
> Other plans available
> $7/mo normal – 500 minutes – 911 service
> http://www.callcentric.com/products/ for options.
>> *IP Freedom:*
>> Unlimited in-network calling to Callcentric customers and other VoIP networks. IP Freedom plan allows you to call friends, family or any other CallCentric member worldwide for FREE all the time with no commitments. (Additional options available.)
>> Unfortunately at this time CallCentric does not support IPv6.

7.3 Asterisk to Carrier Configuration

The first configuration is for CallCentric because it offers the IP Freedom plan. If another service is desired appropriate investigation is required.

7.3.1 CallCentric Configuration [1]

There should be no problems with the version of Asterisk that was installed onto the Raspberry but to confirm issue the following commands:

> **# asterisk –r**

---

1   https://www.callcentric.com/support/device/asterisk/1_8

> core show version

You should get something like the following response:

Asterisk 11.13.1~dfsg-2+b1 built by buildd @ bm-wb-03 on a armv7l running Linux on 2015-01-08 19:21:28 UTC

Before making the connection to CallCentric make sure that the router firewall has the appropriate ports (5060, 10000:20000) open and that for IPv4 that port forwarding has been configured to the Asterisk server.

The following configuration should work but things change so verification is required.

It is necessary to have a ***noip.com*** domain name as that will be necessary for Callcentric to connect to your system.

> noip.com domain name: _____

Read each step in its entirety before making the changes.

Before any changes are made to any of the files one should register with CallCentric as the user. An ID, your phone number, and you will create a password for your registrationle. Note these values down:

> Callcentric-ID:　　　　_____
>
> Callcentric-PW:　　　　_____

7.3.1.1　Setup Trunk and Global Options

Using Leafpad (or your favorite editor), open the ***sip.conf*** file.

Note that the default context is ***public***. Within the extensions.conf file the only entry for it is ***include => demo***.

To the ***sip.conf*** file make the following changes:

> [**general**]　section
>
> Note that an attempt is made to make changes to the *general* section sequentially (I hope I succeed).
>
> 1. Comment out the original context=public line. Do this so that you have a reference of what was done.
>   Note that the original public section included the line:
>   > **include => demo**
>
>   This will be taken care of later.
> 2. Create a new context line
>   > **context=from-callcentric**
>
>   Add a comment to track what you did (remember to start the comment with a ";".
>   > *This will specify that incoming calls from CallCentric are handled by the appropriate section in the* ***extensions.conf*** *file.*
> 3. I have found that there is other users attempting to register on my system that are not wanted. To minimize this the next configuration is ***;allowguest=no***, note that it has a semicolon in front of it.

Remove the semicolon to insure that it is active.

> *This insures that only authorized users are allowed to connect to your system.*

4. It was previously set up to allow both IPv4 and IPv6, validate that the entry for the **udpbindaddr** is set to:

> **udpbindaddr=::**

This configuration follows the **bindaddr** section.

5. Make sure that the line **srvlookup=yes** exists. By default it should be already set.

> *This insures that DNS is used to look up domain names, namely CallCentric for this case.*

6. Validate that the line **dtmfmode = rfc2833** is not commented out. By default it has a semicolon in front of it, so delete the semicolon. Might be good idea to add a comment to say what you did.

> *This will specify that the dtmf tones are used for dialing to CallCentric.*

7. At this time CallCentric does not support video calls. Make sure that the line **;videosupport=yes** is still commented out.

8. There should be a line that is commented out with the line:

> ;session-timers=originate

Add the line below it:

> **session-timers=refuse**
>
> *This insures that end to end keep=alive timers are set appropriately.*
> *This configuration is also optional, calls work without modification.*

9. There should be a line that is commented out with the line:

> ;register => 1234:password@mysipprovider.com

Add the line below it:

> **register => YourNumber:YourPassword@callentric.com**

where:

> YourNumber is the telephone number assigned to you by CallCentric.
> YourPassword is the password you generated on CallCentric.
> *This provides for the registration of your system with CallCentric using*
> *the telephone number assigned to you and the password that you created when setting up your account. Registration occurs on a periodic basis to insure that CallCentric knows how to find your system.*

10. There is a block of code that is commented out for "**localnet**" as examples that specify your local IPv4 local network. Search for the line **localnet**.

Add the following line:

localnet=NetworkAddress/SubnetMask

For example:

localnet=192.168.1.0/255.255.255.0

This limits local connections from phones when behind a IPv4 NAT.

11. Find the section that specifies the external (WAN) IPv4 address for one's network, search for the line

externaddr

There are two methods of specifying the address, one if a static IP address is assigned and another if a dynamic address is assigned.

If a static IP address is assigned (such as for a business) then use the ***externaddr*** section and make an entry with your WAN IP address, as:

externaddr = 70.101.102.103

If you have your own domain name then you can use that instead.

When assigned a dynamic IP address then you will require a *dynamic domain name*. For this discussion it is assumed that you have obtained a dynamic domain name from **no-ip**.

Add the following line below the ***exxternhost*** area:

externhost=YourNoIPDomainName

For example:

externhost=raspberry.hopto.org

At the end of the ***sip.conf*** file add the following:

[callcentric]
type=peer
context=from-callcentric
host=callcentric.com
fromdomain=callcentric.com
defaultuser=YourNumber
fromuser=YourNumber
secret=YourPassword
insecure=port,invite
disallow_methods=UPDATE
directmedia=no
videosupport=no
disallow=all
allow=ulaw

The above specifies data required when establishing an outgoing call to CallCentric.

This completes the configuration of the ***sip.conf*** file. Save the changes and exit.

When we originally set up extensions they were set up in the following fashion:

```
[314]
type = friend
context = internal
secret = 314
host = dynamic
description = Laptop SF
```

The CallCentric documentation specifies a different context but since ours is unique we will keep it, but changes to the **extensions.conf** still need to be made.
Before closing the file make sure you save your changes.

Open the **extensions.conf** file with your preferred editor.
At the end of the file you previously created the [internal] section.

1. Make sure that first line is:
   include => demo
2. At the end of the [internal] section, add the following:
   ; to callcentric
   exten => _1777XXXXXXX,1,Dial(SIP/${EXTEN}@callcentric)
   This specifies that when you dial any number starting with 1-777 and seven additional digits will be sent to CallCentric. At this time we are setting up calls only to other CallCentric users because we have only a free service. Also note that when dialing to CallCentric the leading "1" digit must be dialed.

3. At the end of the file add the following:
   [from-callcentric]
   exten => s,1,Dial(SIP/YourExtension)

7.3.1.2   Configuring Inbound Call Handling

Using Leafpad open the **extensions.conf** file.
A section is required to specify incoming calls from CallCentric. Add the following above the [internal] section at the end of the file.
  [from-callcentric]
  exten => s,1,Dial(SIP/314)
With this format all incoming calls will go to the same extension.
Once the changes have been made, save and exit the editor.
Again open the Asterisk console (asterisk –r) and issue the reload command:
  > core reload

7.3.1.3   Connect to your Asterisk PBX and verify connections

Open an Asterisk console (asterisk –r).
At the prompt issue the command to display the registry:

> **sip show registry**

You should have a display similar to the following:

```
Host                     Username      Refresh State
callcentric.com:5060     1777MYCCID    17      Registered
```

Next verify that the phone is registered with the following:

> **sip show peers**

You should have a display similar to the following:

```
Name/username  Host           Dyn  Forcerport  Comedia  ACL  Port  Status
  Description
314/314        192.168.0.68  D    Auto (No)   No           2051  Unmonitored
  snom_phone
```

Each extension must show its Host address and Port to be valid
Everything should be configured. Exit from the Asterisk console (exit) and make test calls.

7.3.1.4   It Should Be Working

Calls to a CallCentric test number may be now made, the number being
1-777-123-4567.
If calling a landline or mobile phone one can dial those numbers but if using the IP
Freedom plan there will be an additional cost per minute charge. International calls may
also be made at the published rates (011 + country code + area code + number. Calls to
other users on CallCentric are at no cost when using the IP Freedom plan.
Please note that Callcentric is not responsible for preventing unwanted physical or
remote access your IP PBX. If your IP PBX is compromised then you will be responsible
for any damage caused.
Please be sure to read this guide regarding **securing your IP PBX solution**.