How to setup an IRLP Bridge
on the hamvoip RPi2-3 Allstar System

IRLP (Internet Radio Linking Project) is an amateur radio VOIP linking protocol which like Allstar allows the connection of radios via VOIP over the Internet. However IRLP has many limitations compared to Allstar. Like Allstar it has a dedicated following but users of Allstar and IRLP have no capability to talk to each other unless they are connected through a bridge. The code to create the Allstar/IRLP bridge was taken out of Allstar in about 2010 but many servers still exist running on ancient PC's with outdated OS's.

Bringing the bridge capability back to Allstar on the small board computers will allow many of the existing IRLP-Allstar bridge operators to toss out those old PC's and run much more efficiently. It will also give them the capability to use the latest hamvoip Allstar with online updates, many enhancements and bug fixes.

There are several requirements and responsibilities to run an IRLP-Allstar bridge that you must understand.

First you must have a registered IRLP node. This typically requires the purchase of hardware from the IRLP group although there may be exceptions to this. When you setup the hamvoip IRLP-Allstar bridge you will copy the needed information from your existing IRLP node or gateway to your hamvoip Allstar server.

Second and more importantly you have to understand the distinct differences between IRLP and Allstar.

Allstar is a totally free system and with few exceptions you can do what you want on Allstar. We police our own system and in most cases as long as you are within FCC rules you can experiment away.

On the other hand IRLP is administered by one or a group of individuals. Unlike Allstar there is no access to much of the code and enhancements seldom happen. There is little room for experimentation. IRLP also only allows connections to one other node at a time but it does offer what are called reflectors. These are special nodes run by an administrator where multiple nodes can connect. You could think of this kind of like a hub in Allstar although like everything else in Allstar a hub would probably be far less formally defined or run.

Often these IRLP reflectors are run in a very formal way and if you talk too long, have audio that is not up to standards, or maybe you are just not liked you can be banned from a reflector.

I point this out because anyone that runs an IRLP-Allstar bridge has to be especially careful how they connect into the IRLP system. Connecting to individual IRLP nodes is generally frond on. The gateway would typically be used to connect to reflectors. NEVER connect Allstar nodes to a reflector without the reflector administrators permission to do so.

You have been warned and it is your responsibility to accept any rules that IRLP sets forth. Not doing so could ban you from IRLP. Anything outside of the Allstar network is beyond our control so if you are banned from a reflector or IRLP in general you will have to resolve that yourself.

OK with that out of the way here is how to setup an IRLP-Allstar bridge. It is really quite easy.

Installing the Software

First of all make sure you are running the hamvoip.org V1.5 image with the latest updates. The ADMIN menu item 1 can be selected to perform an update. This ensures that the latest IRLP support code is present. The IRLP install package is a separate download. To download and install the IRLP package do the following:

pacman -Sy hamvoip-irlp-support

Once installed all the required directories and code should be present. Here is a typical IRLP directory structure. The directory is /home/irlp and on your Allstar server when you install IRLP there will be a directory called irlp under the home directory.

Typical /home/irlp Directory

```
lrwxrwxrwx  1 root    root           20 Mar 25 13:34 astrun -> /var/log/irlp/astrun/
drwxr-xr-x   4 repeater repeater 168K Mar 23 14:53 audio/
-rwxr-xr-x    1 repeater repeater   400 Jul 31  2016 .bash_profile*
drwxrwxr-x   2 repeater repeater  4.0K Mar 25 13:51 bin/
drwxrwsr-x   2 repeater repeater  4.0K Mar 25 14:06 custom/
lrwxrwxrwx  1 root    root           19 Mar 25 13:37 local -> /var/log/irlp/local/
lrwxrwxrwx  1 root    root           17 Mar 25 13:34 log -> /var/log/irlp/log/
drwxr-xr-x   5 repeater repeater  4.0K Oct  5  2016 noupdate/
drwxr-x---    2 repeater repeater  4.0K Mar 25 15:09 .pgp/
-rw-r--r--       1 repeater repeater 333K Mar 21 21:53 pubring.pgp
lrwxrwxrwx  1 root    root           17 Mar 25 13:37 run -> /var/log/irlp/run/
drwxrwsr-x   3 repeater repeater  4.0K Mar 25 14:02 scripts/
drwxrwxr-x  4 repeater repeater  4.0K Apr  3  2011 update-files/
```

Loading the IRLP Module

Make sure the IRLP module is set to load in /etc/asterisk/modules.conf. This item will not be initially listed in the modules file and it is not necessary that it be there. Its absence means it will load but you can add the line to your modules file commented out and in the event you do not want to load it in the future you can remove the comment. It is necessary to reboot or restart Asterisk to load the module.

noload=chan_irlp.so

should be commented out with a semicolon at the beginning of the line.

;noload=chan_irlp.so

Installing your Credentials and node information

Your IRLP keys need to be installed in the **/home/irlp/.pgp** directory.

Your node and callsign must be installed in the **/home/irlp/custom/environment** file

export CALLSIGN=YourCallsign ; (must be lowercase)

export STATIONID=stnXXXX ; (where XXXX is your IRLP node number)

Setup the configuration file

Create **/etc/asterisk/irlp.conf** file and add the following stanza configured with your information.

Where XXXX= IRLP node number and YYYYY= Allstar node number

```
[general]
;
call=YourCallsign  ; (must be lower case)
node=stnXXXX     ; (where XXXX is your IRLP node number)
astnode=YYYYY  ; (where YYYYY is your local AllStar node number to attach to)
audioport=2074
localispeakerport=2174
context=radio-secure
rtcptimeout=10
radmode=no
expmode=no
```

rpt.conf Settings

These parameters go in the Allstar node section defined in the config file. IRLP users should add them with comments somewhere within the node definitions for the 'astnode' number defined above.

The values shown are the default values and should be correct for most systems. Gains can be adjusted to suit your needs. Gain values are in dB and can be adjusted in .01 increments. If any or all of these values are left out of the rpt.conf file they will assume the default values shown below.

```
irxgain=-6      ; IRLP receive gain adjustment
itxgain=4       ; IRLP transmit gain adjustment
irlpann=0       ; Default: 1 = Play irlp connect and disconnect announcements
                ;          0 = Disable irlp connect and disconnect announcements
```

Port Forwarding

Unlike Allstar IRLP **requires port forwarding to work**. The following ports should be forwarded to your Allstar servers IP address.

TCP port 15425, as well as UDP ports 2074 through 2093 (inclusive) are forwarded to your IRLP computer's local network IP address.

Enabling IRLP at boot

The following text must be placed at the end of the /usr/local/etc/allstar.env file.

defines if IRLP is enabled. You must have IRLP installed!
See the IRLP howto at the hamvoip.org website
default="disabled"
export IRLP="enabled"

If the IRLP variable is set to disabled or this define is not present IRLP will not be started.

IRLP Commands

The IRLP driver uses the same connect and disconnect commands as the Allstar system, *3 and *1. The difference is all IRLP nodes have a preceding 8.

For example:

   To connect to IRLP node number 1234, you would dial *381234
   To disconnect from node number 1234, you would dial *181234

Supermon

Supermon 6.0+ fully supports IRLP. Commands can be entered like Allstar or Echolink and the IRLP log button gives detailed information about the IRLP circuit. Enter node number with the preceding 8 in Supermon so node 1234 would be 81234.

Logs and other non-volatile repetitive IRLP information is stored in the /var/log/irlp directory. This is in ramdisk storage. It is the users responsibility to not let files grow beyond the capacity of the alloted RAM size especially on systems that are rarely rebooted. A cron run script could be used to keep these files from growing too large by keeping the last 500 or 1000 lines at selected intervals.

NOTE – This is the initial howto for the beta distribution. Although we believe the information to be correct in this howto some things may change! Please use the arm-allstar-irlp forum and NOT the arm-allstar forum for issues regarding IRLP.