

# **BeagleBone Black Allstar Version 1.2.1**

## **October 20, 2014**

### **Version 1.2.1 has many changes**

### **Please read this document before proceeding**

Version 1.2.1 represents a significant update to the BBB Allstar code. This update is recommended for all users. It has significant improvements in the operation of the USB, bug fixes, and additional scripts and applications.

See the `/etc/bbb_allstar_version` file in the 1.2.1 version for a list of all code revisions to date.

#### **Here is a more detailed description of the version 1.2.1 changes and updates.**

The kernel has been updated from 3.8.13-24 to 3.16.3-1. There were significant updates especially in the USB area. This now allows complete hot-plugging of USB devices. You can pull the USB to DMK connection and put it back in and have complete recovery. You can even add a hub in a running system. To achieve this in Allstar (`simpleusb.c`) required a one line patch. There was a bug in the `simpleusb` code that even existed on the Acid release for the PC. If you use `simpleusb` on the PC version a howto on the BBB web page describes how to patch the Acid PC release to fix this. Late Acid releases (9-2014) have this patched.

This version will greatly improve the stability of the USB connections. EMI/RFI, power spikes etc can still knock out the USB but it should recover quickly and gracefully. However severe conditions should be remedied with ferrites and grounding techniques. You don't want excessive interruptions even if it does reset.

**Note that while these improvements have allowed the reduction or elimination of the boot delay that was used in version 1.1 but in a conservative move we have decided to leave the delay in the 1.2.1 version. The delay value can be changed in the `allstar.env` file located in `/usr/local/etc`. This is a one time delay at boot. Users can experiment with shorter delays if they desire. We are hoping to eliminate this delay in the next version but other than the fact that it bugs us it is not a big deal as it only happens once at boot.**

Coincidentally the need for this delay on the BBB has pointed out a deficiency in the overall code including the underlying asterisk code which involves timing issues. This rarely showed up on a PC install but could certainly still cause problems. Many changes

have already been made in the 1.2.1 code to correct this but it is a big task and more work has to be done in this area. While big improvements have already been made once complete we are confident that Allstar will generally be a more stable product.

**This version also adds many packages including:**

python 3.4, tcpdump, zip/unzip, traceroute, php-gd, gpsd, Adafruit\_BBIO python modules, python2-pip, python2-setuputils, python 2.7.8, dtc-overlay, devmem, ssh\_pass, svn, git, bash-completion, gdb, netcat and others.

**Many packages were updated.**

**Scripts added:**

Weather alerts and forecasts, Google text to speech, say24time, sayip, saypublicip, Power-button-press, halt, reboot, speaktext, change\_vol, pcsensor, watchdog

See “BBB Scripts info” in the how-to section on the web page for detailed information on the scripts included in this release.

**Backup and Restore**

Starting with version 1.2.1 you will have many backup options.

Five scripts were added to make it easier to upgrade the system. These scripts only work in version 1.2 or greater.

The backup.sh script copies all files in /etc/asterisk and /var/spool/cron and tar's them. The tar file is stored in /node\_backup. The tar file can then be transferred by using scp or winscp to another computer for safe keeping.

The usb-backup.sh script copies the tar'ed file to a USB stick inserted into the BBB USB port or to a connected USB hub.

The restore.sh script reads all the files stored in /node\_backup on the system to be updated and the selected file is untar'ed to the respective directories.

usb-restore directly copies the file from a USB stick to the respective directories.

Image-backup.sh now allows full image backups of your SD card to a USB stick. This is a very powerful script allowing you to clone or backup your BBB while it is running without removing the SD card.

See “howto backup your BBB” on the web page for detailed instructions on these scripts.

**NOTE!! Because the location of many files have been changed in the 1.2.1 version do NOT overwrite the 1.2 /etc/asterisk/local directory from an older version. Scripts formerly in this directory have been moved to /usr/local/sbin where they are globally accessible. The /etc/asterisk/local directory is reserved for user software such as scripts that you write. DO NOT use these scripts to backup 1.1 or earlier files. These are intended to be used with version 1.2.1 forward only.**

### **Environment File**

Version 1.2.1 introduces a new environment file located in /usr/local/etc/allstar.env This file is used to set many system parameters such as whether the firewall, VPN, or watchdog timer are enabled. Formerly this was done in /etc/rc.local and involved commenting, uncommenting, or modifying lines. The configuration is now done in this file by simply stating whether a parameter is enabled or disabled. For more information see “How-to Information on the Environment File” on the web page.

### **Initial Configuration**

Because of the many changes in the 1.2 version it is **strongly recommended to NOT** copy configs or directories from older versions into the 1.2.x version!! Please try to start from scratch with this version. Once you have it working properly with your node and radio and you understand the new structure you can carefully customize the configs. Read the “how-to setup the configuration files” on the web page for more information on this. This how-to describes both the automated and manual configuration processes.

Please read the following how-to's that have been added or updated on the web site. These documents will give much more detailed information on some of the new features in the 1.2.1 version. Always refresh your browser when viewing the PDF to ensure that you have the latest version.

- BBB Scripts Info
- BBB Text to Speech How-to
- How-to setup the configuration files
- How-to Information on the Environment File
- How-to Backup your BBB
- How-to Configure Weather Forecasts and Alerts

Starting with version 1.2.1 a script called node-config.sh will guide you through the

configuration process. On the first initial start of the BBB the firsttime script will set your password, system name, and network parameters. It will then ask if you want to configure your node. If you answer [Y]es the system will reboot and on the next login proceed to ask for specifics about your node. Here are some of the things you should have ready **BEFORE** logging on the first time with your new image.

- The password you want to assign for logging into the BBB
- A system name (typically something like your call and node (ex: wa3dsp-27225))
- The IP address you want your BBB to reside at
- The netmask – typically 255.255.255.0
- The gateway address – typically your router's IP address
- Your assigned node number and node password (6 digit number from allstarlink.org)
- The password you want to assign for iax-rpt – could be the same as the login password
- The port if other than the normal 4569
- Whether you want to setup a simplex or repeater node

### **Wireless operation**

We now have a working wireless Allstar BBB system. We still strongly suggest using a wired connection whenever possible but in cases where you cannot, like in portable operation or where it is difficult to get to a wired connection, the wireless works fine. We also highly recommend that you use an ASUS N10 wireless FOB. It works and works well and the how-to, found on the web page, is written around this FOB. Chris, W0ANM has spent a lot of time refining this and all of the software and drivers are already installed. If you use any other FOB you are basically on your own. Others will probably work but why fool around when this one works so well. It costs about \$17 at Amazon and other retailers. See the wireless how-to on the web page for installation details.

### **Use of USB hubs**

Of course if you use wireless or a USB memory stick you will need to use a USB hub. The 1.2.1 software definitely handles hubs better. There are hundreds if not thousands of hubs out there and we can only tell you what worked for us. I have been using a Belkin F4U040 four port powered hub but I never power it. I have had a URI, N10 wireless, and a USB stick all plugged in at one time and I was able to use all of them without a problem. I bought the Belkin at Best Buy. Of course there are others that will work but please make sure your problem is not the hub before you condemn the BBB or other hardware. The wireless how-to has more info on hubs.

### **Final Comments**

I would like to thank Dave, KB3FXC and Chris, W0ANM for their support and vast contributions to this project.

Dave has spent hours fixing problems in app\_rpt and in the Asterisk code which have gone unseen until now. This has made BBB Allstar a much more stable system with many more features.

Chris is my script writer! He has contributed extensively to the efficiency and capability of the system with the backup and restore, environment, wireless, and weather scripts.

I would also like to thank the beta testers that have helped us along the way.

Have fun with the new version and as always we welcome your comments and suggestions. Please use the arm-allstar mail-list as much as possible for BBB Allstar related subjects.

73 Doug, WA3DSP