***Fusion Update Sequence – Side-by-Side tracking of activity with console output and Update Script commands***

Preparation:

* Fusion (with new, freshly programmed SDcard with v1.0.0 image) has Console (ie: Kybd, Mouse, Display) connected
* Unit allowed to boot, resize, and reboot.
* Open FusionOS and create Admin account.
* Logout of Admin account
* Open Terminal on Console, switch to superuser, and enable ssh root login. Stop server using forever stopall.
* Close terminal. Use SSH client on networked computer to connect to Fusion (shown below as Console Output).
* Using SSH Session, restart the FusionServer using forever server.js from /usr/Fusion/FusionServer/Build

| ***Activity*** | ***Console Output*** | ***Update.sh*** |
| --- | --- | --- |
| Login to console as root. Start the Fusion Server. | login as: root  root@192.168.91.139's password:  The programs included with the Debian GNU/Linux system are free software;  the exact distribution terms for each program are described in the  individual files in /usr/share/doc/\*/copyright.  Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  permitted by applicable law.  SSH is enabled and the default password for the 'pi' user has not been changed.  This is a security risk - please login as the 'pi' user and type 'passwd' to set a new password.  root@raspberrypi:~# cd /usr/Fusion/  root@raspberrypi:/usr/Fusion# cd FusionServer/  root@raspberrypi:/usr/Fusion/FusionServer# cd Build/  root@raspberrypi:/usr/Fusion/FusionServer/Build# forever server.js  warn: --minUptime not set. Defaulting to: 1000ms  warn: --spinSleepTime not set. Your script will exit if it does not stay up for at least 1000ms  Running in "dev" mode  The magic happens on port 8080 |  |
| Fusion Server outputs pacing message. Except for where this is meaningful, it has been excluded from the remaining output. | -----------------------------------------------------  fusion\_battery\_level : -1  fusion\_internet\_access : true  fusion\_current\_version : v1.0.0  fusion\_update\_available : false  fusion\_gamepad\_available : false  fusion\_diagnostics\_running : null  fusion\_wifi\_access : {}  fusion\_storage\_type : local  fusion\_program\_running : null  ----------------------------------------------------- |  |
| Open Browser and point to fusion. | Client connected...  GET /api/cookie 401 67.639 ms - 20  Hello from client |  |
| Login to admin user account | POST /api/users/login 200 608.886 ms - 323  GET /api/cookie 304 17.038 ms - - |  |
| Switch to “Settings” | GET /api/admin/wirelessSettings 200 62.696 ms - 49  GET /api/admin/wirelessConnections 500 85.440 ms - 28  GET /api/users 200 91.822 ms - 281 |  |
| Change to Software ‘tab’. | GET /api/fusion/update 200 20.844 ms - 15  % Total % Received % Xferd Average Speed  Time Time Time Current  Dload Upload Total Spent Left Speed  0 0 0 0 0 0 0 0 --:--:-- --:--:-- --:--:-- 0  100 6876 100 6876 0 0 2  0854 0 --:--:-- --:--:-- --:--:-- 20899 |  |
| Select Update to launch update.sh script which checks the local OS to make sure it is Raspian Jessie. | PRETTY\_NAME="Raspbian GNU/Linux 8 (jessie)"  VERSION="8 (jessie)" | sudo cat /etc/os-release | grep "jessie" |
| update.sh updates system files | Get:1 http://mirrordirector.raspbian.org jessie InRelease [14.9 kB]  Get:2 http://archive.raspberrypi.org jessie InRelease [22.9 kB]  Get:3 http://archive.raspberrypi.org jessie/main armhf Packages [171 kB]  Get:4 http://mirrordirector.raspbian.org jessie/main armhf Packages [9,538 kB]  Hit http://archive.raspberrypi.org jessie/ui armhf Packages  Get:5 http://mirrordirector.raspbian.org jessie/contrib armhf Packages [43.3 kB]  Get:6 http://mirrordirector.raspbian.org jessie/non-free armhf Packages [84.2 kB]  Ign http://archive.raspberrypi.org jessie/main Translation-en\_GB  Ign http://archive.raspberrypi.org jessie/main Translation-en  Get:7 http://mirrordirector.raspbian.org jessie/rpi armhf Packages [1,356 B]  Ign http://archive.raspberrypi.org jessie/ui Translation-en\_GB  Ign http://archive.raspberrypi.org jessie/ui Translation-en  Ign http://mirrordirector.raspbian.org jessie/contrib Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/contrib Translation-en  Ign http://mirrordirector.raspbian.org jessie/main Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/main Translation-en  Ign http://mirrordirector.raspbian.org jessie/non-free Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/non-free Translation-en  Ign http://mirrordirector.raspbian.org jessie/rpi Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/rpi Translation-en  Fetched 9,876 kB in 12s (762 kB/s)  Reading package lists... | sudo apt-get update -y |
| (preserve the user “filesystem”) | cp: cannot stat ‘/usr/Fusion/FusionServer/app/filesystem’ : No such file or directory | sudo cp -R $MAIN\_DIR/FusionServer/app/filesystem /root |
| git the updated repo | Already on 'master'  Your branch is behind 'origin/master' by 9 commits, and can be fast-forwarded.  (use "git pull" to update your local branch)  Updating 2cffc7a..6a2367b  Fast-forward  .gitattributes | Bin 68 -> 143 bytes  .gitignore | Bin 152 -> 142 bytes  .../Build/app/controllers/FileUploadController.js | Bin 1822 -> 2559 bytes  FusionServer/Build/app/fusionProgram.js | Bin 12700 -> 12935 bytes  FusionServer/Build/app/models/user.js | Bin 3020 -> 3020 bytes  :  : *<output truncated>*  :  logging/dataLogger.py | Bin 0 -> 1018 bytes  logging/res/style.css | Bin 0 -> 14959 bytes  logging/runRemi.sh | Bin 0 -> 329 bytes  logging/src.so | Bin 0 -> 2850508 bytes  update.sh | Bin 5579 -> 6876 bytes  2159 files changed, 3 insertions(+)  create mode 100644 FusionServer/Build/app/routes/files.js  create mode 100644 FusionServer/Build/app/routes/utils.js  create mode 100644 FusionServer/Build/node\_modules/archiver-utils/LICENSE  create mode 100644 FusionServer/Build/node\_modules/archiver-utils/README.md  :  : *<output truncated>*  :  create mode 100644 logging/dataLogger.py  create mode 100644 logging/res/style.css  create mode 100755 logging/runRemi.sh  create mode 100755 logging/src.so | sudo git checkout master  sudo git pull |
|  | UART already enabled | # Set boot to enable uart  if grep -q "#enable\_uart=1" /boot/config.txt  then  sudo sed -i "/#enable\_uart=1/c\enable\_uart=1" /boot/config.txt  echo "UART now enabled"  elif grep -q "enable\_uart=1" /boot/config.txt  then  echo "UART already enabled"  else  sudo echo | sudo tee -a /boot/config.txt  sudo echo "enable\_uart=1" | sudo tee -a /boot/config.txt  echo "UART now enabled"  fi |
|  | I2C already enabled | # Set boot to enable i2c  if grep -q "#dtparam=i2c\_arm=on" /boot/config.txt  then  sudo sed -i "/#dtparam=i2c\_arm=on/c\dtparam=i2c\_arm=on" /boot/config.txt  echo "I2C now enabled"  elif grep -q "dtparam=i2c\_arm=on" /boot/config.txt  then  echo "I2C already enabled"  else  sudo echo | sudo tee -a /boot/config.txt  sudo echo "dtparam=i2c\_arm=on" | sudo tee -a /boot/config.txt  echo "I2C now enabled"  fi |
|  | Warnings already disabled | # Set boot to avoid warnings  if grep -q "#avoid\_warnings=1" /boot/config.txt  then  sudo sed -i "/#avoid\_warnings=1/c\avoid\_warnings=1" /boot/config.txt  echo "Warnings now disabled"  elif grep -q "avoid\_warnings=1" /boot/config.txt  then  echo "Warnings already disabled"  else  sudo echo | sudo tee -a /boot/config.txt  sudo echo "avoid\_warnings=1" | sudo tee -a /boot/config.txt  echo "Warnings now disabled"  fi |
|  | i2c-dev already enabled | # Update module file with kernel for i2c-dev  if grep -q "#i2c-dev" /etc/modules  then  sudo sed -i "/#i2c-dev/c\i2c-dev" /etc/modules  echo "i2c-dev now enabled"  elif grep -q "i2c-dev" /etc/modules  then  echo "i2c-dev already enabled"  else  sudo echo | sudo tee -a /etc/modules  sudo echo "i2c-dev" | sudo tee -a /etc/modules  echo "i2c-dev added and enabled"  fi |
|  | i2c-bcm2708 already enabled | # Update module file with kernel for i2c-bcm2708  if grep -q "#i2c-bcm2708" /etc/modules  then  sudo sed -i "/#i2c-bcm2708/c\i2c-bcm2708" /etc/modules  echo "i2c-bcm2708 now enabled"  elif grep -q "i2c-bcm2708" /etc/modules  then  echo "i2c-bcm2708 already enabled"  else  sudo echo | sudo tee -a /etc/modules  sudo echo "i2c-bcm2708" | sudo tee -a /etc/modules  echo "i2c-bcm2708 added and enabled"  fi |
|  | Reading package lists...  Building dependency tree...  Reading state information...  python-dev is already the newest version.  0 upgraded, 0 newly installed, 0 to remove and 140 not upgraded. | sudo apt-get install python-dev |
|  | Hit http://mirrordirector.raspbian.org jessie InRelease  Hit http://archive.raspberrypi.org jessie InRelease  Hit http://mirrordirector.raspbian.org jessie/main armhf Packages  Hit http://archive.raspberrypi.org jessie/main armhf Packages  Hit http://mirrordirector.raspbian.org jessie/contrib armhf Packages  Hit http://archive.raspberrypi.org jessie/ui armhf Packages  Hit http://mirrordirector.raspbian.org jessie/non-free armhf Packages  Hit http://mirrordirector.raspbian.org jessie/rpi armhf Packages  Ign http://archive.raspberrypi.org jessie/main Translation-en\_GB  Ign http://archive.raspberrypi.org jessie/main Translation-en  Ign http://archive.raspberrypi.org jessie/ui Translation-en\_GB  Ign http://archive.raspberrypi.org jessie/ui Translation-en  Ign http://mirrordirector.raspbian.org jessie/contrib Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/contrib Translation-en  Ign http://mirrordirector.raspbian.org jessie/main Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/main Translation-en  Ign http://mirrordirector.raspbian.org jessie/non-free Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/non-free Translation-en  Ign http://mirrordirector.raspbian.org jessie/rpi Translation-en\_GB  Ign http://mirrordirector.raspbian.org jessie/rpi Translation-en | sudo apt-get update |
| fusion pacing message  ***>>> note the version change <<<*** | -----------------------------------------------------  fusion\_battery\_level : -1  fusion\_internet\_access : true  **fusion\_current\_version : v1.0.5a**  fusion\_update\_available : true  fusion\_gamepad\_available : false  fusion\_diagnostics\_running : null  fusion\_wifi\_access : {}  fusion\_storage\_type : local  fusion\_program\_running : null  ----------------------------------------------------- |  |
| Update continues but the Server Stops | Reading package lists...  -----------------------------------------------------  fusion\_battery\_level : -1  fusion\_internet\_access : true  fusion\_current\_version : v1.0.5a  fusion\_update\_available : false  fusion\_gamepad\_available : false  fusion\_diagnostics\_running : null  fusion\_wifi\_access : {}  fusion\_storage\_type : local  fusion\_program\_running : null  -----------------------------------------------------  **Client disconnected**  -----------------------------------------------------  fusion\_battery\_level : -1  fusion\_internet\_access : true  fusion\_current\_version : v1.0.5a  fusion\_update\_available : false  fusion\_gamepad\_available : false  fusion\_diagnostics\_running : null  fusion\_wifi\_access : {}  fusion\_storage\_type : local  fusion\_program\_running : null  -----------------------------------------------------  Building dependency tree...  Reading state information...  0 upgraded, 0 newly installed, 0 to remove and 140 not upgraded. | sudo apt-get install --fix-missing |
| update continues,  the fusion server is still pacing...  And then, while this is still installing and updating, the **Fusion Server comes back online** again...  BUT THE UPDATE IS NOT COMPLETE! | Reading package lists...  Building dependency tree...  Reading state information...  libjpeg8-dev is already the newest version.  libv4l-dev is already the newest version.  The following extra packages will be installed:  imagemagick-6.q16  Suggested packages:  imagemagick-doc autotrace enscript ffmpeg gimp gnuplot grads graphviz hp2xx  html2ps libwmf-bin mplayer povray radiance sane-utils texlive-base-bin  transfig ufraw-batch  The following packages will be upgraded:  imagemagick imagemagick-6.q16  2 upgraded, 0 newly installed, 0 to remove and 138 not upgraded.  Need to get 674 kB of archives.  After this operation, 2,048 B of additional disk space will be used.  Get:1 http://mirrordirector.raspbian.org/raspbian/ jessie/main imagemagick armhf 8:6.8.9.9-5+deb8u14 [160 kB]  Get:2 http://mirrordirector.raspbian.org/raspbian/ jessie/main imagemagick-6.q16 armhf 8:6.8.9.9-5+deb8u14 [514 kB]  Reading changelogs...  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  Fetched 674 kB in 0s (757 kB/s)  (Reading database ...5% ... 100% 114211 files and directories currently installed.)  Preparing to unpack .../imagemagick\_8%3a6.8.9.9-5+deb8u14\_armhf.deb ...  Unpacking imagemagick (8:6.8.9.9-5+deb8u14) over (8:6.8.9.9-5+deb8u11) ...  Preparing to unpack .../imagemagick-6.q16\_8%3a6.8.9.9-5+deb8u14\_armhf.deb ...  Unpacking imagemagick-6.q16 (8:6.8.9.9-5+deb8u14) over (8:6.8.9.9-5+deb8u11) ...  Processing triggers for gnome-menus (3.13.3-6) ...  Processing triggers for desktop-file-utils (0.22-1) ...  Processing triggers for mime-support (3.58) ...  Processing triggers for man-db (2.7.5-1~bpo8+1) ...  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  **Client connected...**  **Hello from client**  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  *>>> CONTINUED <<<* | sudo apt-get install libjpeg8-dev imagemagick libv4l-dev -y |
|  | *>>> CONTINUED <<<*  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  Processing triggers for hicolor-icon-theme (0.13-1) ...  Setting up imagemagick-6.q16 (8:6.8.9.9-5+deb8u14) ...  Setting up imagemagick (8:6.8.9.9-5+deb8u14) ...  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  ----------------------------------------------------- | *<<< CONTINUED >>>*  sudo apt-get install libjpeg8-dev imagemagick libv4l-dev -y |
|  | ln: failed to create symbolic link ‘/usr/include/linux/videodev.h’  : File exists | sudo ln -s /usr/include/linux/videodev2.h /usr/include/linux/videodev.h |
|  | Uninstalling Fusion:  Successfully uninstalled Fusion  Cannot uninstall requirement remi, not installed  Storing debug log for failure in /root/.pip/pip.log  Cannot uninstall requirement pylibftdi, not installed  Storing debug log for failure in /root/.pip/pip.log  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  ----------------------------------------------------- | sudo pip uninstall Fusion -y  sudo pip uninstall remi -y  sudo pip uninstall pylibftdi -y |
|  | Unpacking ./lib/Fusion-2.0.3.tar.gz  Running setup.py (path:/tmp/pip-uTKaed-build/setup.py) egg\_info for package from file:///usr/Fusion/lib/Fusion-2.0.3.tar.gz  Unpacking ./lib/pylibftdi-0.17.0.tar.gz  Running setup.py (path:/tmp/pip-PjruBV-build/setup.py) egg\_info for package from file:///usr/Fusion/lib/pylibftdi-0.17.0.tar.gz  warning: no files found matching '\*.txt' under directory 'pylibftdi'  Unpacking ./lib/remi-1.1.tar.gz  Running setup.py (path:/tmp/pip-\_zZlDe-build/setup.py) egg\_info for package from file:///usr/Fusion/lib/remi-1.1.tar.gz  Installing collected packages: Fusion, pylibftdi, remi  Running setup.py install for Fusion  Running setup.py install for pylibftdi  warning: no files found matching '\*.txt' under directory 'pylibftdi'  Running setup.py install for remi  Successfully installed Fusion pylibftdi remi  Cleaning up... | sudo pip install $MAIN\_DIR/lib/\*.tar.gz |
|  | Selecting previously unselected package libftdi1:armhf.  (Reading database ... 114211 files and directories currently installed.)  Preparing to unpack .../lib/libftdi1\_0.20-2\_armhf.deb ...  Unpacking libftdi1:armhf (0.20-2) ...  Selecting previously unselected package libftdi-dev.  Preparing to unpack .../libftdi-dev\_0.20-2\_armhf.deb ...  Unpacking libftdi-dev (0.20-2) ...  Selecting previously unselected package libusb-dev.  Preparing to unpack .../libusb-dev\_2%3a0.1.12-25\_armhf.deb ...  Unpacking libusb-dev (2:0.1.12-25) ...  Setting up libftdi1:armhf (0.20-2) ...  Setting up libusb-dev (2:0.1.12-25) ...  Setting up libftdi-dev (0.20-2) ...  Processing triggers for man-db (2.7.5-1~bpo8+1) ...  Processing triggers for libc-bin (2.19-18+deb8u10) ... | sudo dpkg -i $MAIN\_DIR/lib/\*.deb |
|  | Reading package lists...  Building dependency tree...  Reading state information...  The following packages will be upgraded:  hostapd  1 upgraded, 0 newly installed, 0 to remove and 137 not upgraded.  Need to get 460 kB of archives.  After this operation, 80.9 kB of additional disk space will be used.  Get:1 http://mirrordirector.raspbian.org/raspbian/ jessie/main hostapd armhf 1:2.3-1+deb8u6 [460 kB]  Reading changelogs...  Fetched 460 kB in 0s (735 kB/s)  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  (Reading database ...5% ... 100% 114395 files and directories currently installed.)  Preparing to unpack .../hostapd\_1%3a2.3-1+deb8u6\_armhf.deb ...  Unpacking hostapd (1:2.3-1+deb8u6) over (1:2.3-1+deb8u5) ...  Processing triggers for systemd (215-17+deb8u7) ...  Processing triggers for man-db (2.7.5-1~bpo8+1) ...  Setting up hostapd (1:2.3-1+deb8u6) ... | sudo apt-get install hostapd -y |
|  | Reading package lists...  Building dependency tree...  Reading state information...  The following extra packages will be installed:  dnsmasq-base  The following packages will be upgraded:  dnsmasq dnsmasq-base  -----------------------------------------------------  fusion\_battery\_level : -1  :  fusion\_program\_running : null  -----------------------------------------------------  2 upgraded, 0 newly installed, 0 to remove and 135 not upgraded.  Need to get 391 kB of archives.  After this operation, 176 kB of additional disk space will be used.  Get:1 http://mirrordirector.raspbian.org/raspbian/ jessie/main dnsmasq-base armhf 2.72-3+deb8u4 [375 kB]  Get:2 http://mirrordirector.raspbian.org/raspbian/ jessie/main dnsmasq all 2.72-3+deb8u4 [15.8 kB]  Reading changelogs...  Fetched 391 kB in 0s (594 kB/s)  (Reading database ... 5% ... 100% 114395 files and directories currently installed.)  Preparing to unpack .../dnsmasq-base\_2.72-3+deb8u4\_armhf.deb ...  Unpacking dnsmasq-base (2.72-3+deb8u4) over (2.72-3+deb8u2) ...  Preparing to unpack .../dnsmasq\_2.72-3+deb8u4\_all.deb ...  Unpacking dnsmasq (2.72-3+deb8u4) over (2.72-3+deb8u2) ...  Processing triggers for dbus (1.8.22-0+deb8u1) ...  Processing triggers for man-db (2.7.5-1~bpo8+1) ...  Processing triggers for systemd (215-17+deb8u7) ...  Setting up dnsmasq-base (2.72-3+deb8u4) ...  Setting up dnsmasq (2.72-3+deb8u4) ...  Installing new version of config file /etc/init.d/dnsmasq ...  Processing triggers for systemd (215-17+deb8u7) ... | sudo apt-get install dnsmasq -y |
| Restore user filesystem | cp: cannot stat ‘/root/filesystem’ : No such file or directory  rm: cannot remove ‘/root/filesystem’ : No such file or directory  rm: cannot remove ‘/usr/Fusion/FusionServer/app’ : No such file or directory | sudo cp -R /root/filesystem $MAIN\_DIR/FusionServer/Build/app  sudo rm -r /root/filesystem  sudo rm -r /usr/Fusion/FusionServer/app |
| finish and reboot | Update completed successfully!  ((( System Reboots ))) | echo "Update completed successfully!"  sudo reboot  exit 0 |