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| --- | --- |
| PROJECT: | Development Note for MakeJessie |
| SUBJECT: | FusionOS Build Process |
| UPDATED: | 8/20/2018 4:37:00 PM |

This document follows my development efforts on streamlining the FusionOS Build process and enabling us to add other features and defaults to the Base OS Build. It is heavily based on work done by Justin Mathews, which is based on the Pi-Gen GitHub repository.

To understand Justin’s process and the changes necessary to build the FusionOS, a clone of Fusion-Pi-Gen named MakeJessie was made and enhanced with eye-catching status and progress messages, additional information in error messages, and other simple changes to enhance the nearly 10,000 lines of output that the current process generates. The version name was changed from MRI\_Jessie to JWA\_Jessie, and the final build stage (Stage 4) was modified to remove the sub-stage that adds the FusionServer to the OS Build. Also, a method was found where preceding steps could be skipped and the process continued using the output from these stages as a time savings. This method required the addition of a command-line argument to the main build.sh script (renamed to makejessie.sh) with the date signature of the version you wish to amend.

It is at this point in the process that this document was created to serve as a record and a guide for the on-going development work.

Important Development Directories:

The process of understanding the original build process and the changes made in support of Fusion requires keeping a few different versions of the original and modified project directories. If only for my own sanity, they are as follows:

* **MakeJessie** – This is the working copy for understanding the Pi-Gen Build Process through the first four stages and exporting the image.
* **RPi\_pi-gen** – This is the local copy of the publically available Pi-Gen project, cloned from the official project GitHub repository at the September 5th, 2017 revision:

Revision: 496e41575eeb9fa13f394ffb407b7bc1d00b21c2

Author: Serge Schneider <serge@raspberrypi.org>

Date: 9/5/2017 9:34:19 AM

Message: *Revert "stage2: install fdisk"*

*This reverts commit e7e04fcde3ec4cd3b7d79a6c33fd68ee9be7ebfb.*

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*Modified: stage2/01-sys-tweaks/00-packages*

* **Fusion-pi-gen** – This is Justin’s final FusionOS build project, and includes **Stage 4.04-fusion-install**. (Stage5 has been removed.) This directory was cloned from the original repository at the latest level:

Revision: 8eb5e953bd2f1ba36131de0e533ce7ec92788f2a

Author: root <jmomathews@gmail.com>

Date: 7/27/2018 4:34:51 PM

Message: *My last act as president :) fix burn script to allow up to 4 sd cards at the same time*

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*Modified: burnImage.sh*

* **MakeFusion** – This will be the version of MakeJessie that incorporates the FusionOS. It currently does not exist [yet]

History and Origins:

This project began on or about September 5th, 2017 when the existing Pi-Gen GitHub Repository was cloned as Fusion-Pi-Gen and the added to by Justin. Apart from changes made by Justin, the repository has never been synced to the current Pi\_Gen branches; it remains based on the September 2017 revision. The following table shows a comparison between the September 2017 Pi-Gen Clone and the currently modified version of MakeJessie.

| ***FILE*** | ***PATH*** | ***PI-GEN DATE*** | ***STATUS*** | ***MAKEJESSIE DATE*** |
| --- | --- | --- | --- | --- |
| 0­sources.diff | export­image\01­set­sources\00­patches | 08/08/18 10:03:56a | Text files are different | \*08/09/18 04:05:09p |
| 01­run.sh | export­image\02­network | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| 00­run.sh | export­image\03­set­partuuid | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| 01­run.sh | export­image\04­finalise | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| prerun.sh | export­image | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| os.json | export­noobs\00­release\files | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| release\_notes.txt | export­noobs\00­release\files | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| prerun.sh | export­noobs | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| common | scripts | 08/08/18 04:38:08p | Text files are different | \*08/16/18 04:09:59p |
| dependencies\_check | scripts | 08/08/18 04:38:08p | Text files are different | \*08/16/18 04:19:08p |
| raspi.list | stage0\00­configure­apt\files | 08/08/18 10:03:56a | Text files are different | \*08/09/18 04:05:09p |
| sources.list | stage0\00­configure­apt\files | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| 00­run.sh | stage0\00­configure­apt | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| prerun.sh | stage0 | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| series | stage1\02­net­tweaks\00­patches | 08/08/18 10:03:56a | Text files are different | \*08/09/18 04:05:09p |
| 00­run.sh | stage1\02­net­tweaks | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| series | stage2\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are different | \*08/09/18 04:05:09p |
| 00­packages | stage2\01­sys­tweaks | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| 01­run.sh | stage2\01­sys­tweaks | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| wait.conf | stage2\02­net­tweaks\files | 08/08/18 10:03:56a | Text files are different | \*08/09/18 04:05:09p |
| 00­packages | stage2\02­net­tweaks | 08/08/18 10:03:56a | Text files are different | \*08/09/18 04:05:09p |
| 00­packages | stage3\00­install­packages | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| 00­packages | stage4\00­install­packages | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| .gitignore |  | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| build­docker.sh |  | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| depends |  | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| Dockerfile |  | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| README.md |  | 08/08/18 04:38:08p | Text files are different | \*08/09/18 04:05:09p |
| A.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| B.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| C.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| D.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| E.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| F.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| G.png | export­noobs\00­release\files\marketing\slides\_vga | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| OS.png | export­noobs\00­release\files | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| raspberrypi.gpg | stage0\files | 08/08/18 10:03:56a | Binary files are identical | \*08/09/18 04:05:09p |
| policy­rc.d | export­image\00­allow­rerun\files | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | export­image\00­allow­rerun | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| series | export­image\01­set­sources\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 01­run.sh | export­image\01­set­sources | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| resolv.conf | export­image\02­network\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| LICENSE.oracle | export­image\04­finalise\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| partition\_setup.sh | export­noobs\00­release\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| partitions.json | export­noobs\00­release\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | export­noobs\00­release | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| remove­comments.sed | scripts | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 51cache | stage0\00­configure­apt\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| raspberrypi.gpg.key | stage0\00­configure­apt\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­debconf | stage0\01­locale | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­packages | stage0\01­locale | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 01­packages | stage0\02­firmware | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| cmdline.txt | stage1\00­boot­files\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| config.txt | stage1\00­boot­files\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | stage1\00­boot­files | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 01­bashrc.diff | stage1\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| series | stage1\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| fstab | stage1\01­sys­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| noclear.conf | stage1\01­sys­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| policy­rc.d | stage1\01­sys­tweaks\files | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | stage1\01­sys­tweaks | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 01­hosts.diff | stage1\02­net­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| hostname | stage1\02­net­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| interfaces | stage1\02­net­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| ipv6.conf | stage1\02­net­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­packages | stage1\03­install­packages | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| prerun.sh | stage1 | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | stage2\00­copies­and­fills | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 01­packages | stage2\00­copies­and­fills | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 02­run.sh | stage2\00­copies­and­fills | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 01­useradd.diff | stage2\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 02­swap.diff | stage2\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 04­inputrc.diff | stage2\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 05­path.diff | stage2\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 06­rc\_local.diff | stage2\01­sys­tweaks\00­patches | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 07­resize­init.diff | stage2\01­sys­tweaks\00­patches | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 50raspi | stage2\01­sys­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| console­setup | stage2\01­sys­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| resize2fs\_once | stage2\01­sys­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| ttyoutput.conf | stage2\01­sys­tweaks\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­debconf | stage2\01­sys­tweaks | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­packages­nr | stage2\01­sys­tweaks | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| wpa\_supplicant.conf | stage2\02­net­tweaks\files | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 01­run.sh | stage2\02­net­tweaks | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| prerun.sh | stage2 | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 00­debconf | stage3\00­install­packages | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­packages­nr | stage3\00­install­packages | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 01­run.sh | stage3\00­install­packages | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | stage3\01­tweaks | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| prerun.sh | stage3 | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 00­debconf | stage4\00­install­packages | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­packages­nr | stage4\00­install­packages | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 01­packages | stage4\00­install­packages | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | stage4\01­console­autologin | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| .gitignore | stage4\02­extras\files | 08/08/18 10:03:56a | Text files are identical | \*08/09/18 04:05:09p |
| 00­run.sh | stage4\02­extras | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| EXPORT\_IMAGE | stage4 | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| prerun.sh | stage4 | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| .dockerignore |  | 08/08/18 04:38:08p | Text files are identical | \*08/09/18 04:05:09p |
| 02­persistant­net.diff | stage1\02­net­tweaks\00­patches |  | MakeJessie only | \*08/09/18 04:05:09p |
| apply\_noobs\_os\_config | stage2\01­sys­tweaks\files |  | MakeJessie only | \*08/09/18 04:05:09p |
| regenerate\_ssh\_host\_keys.service | stage2\01­sys­tweaks\files |  | MakeJessie only | \*08/09/18 04:05:09p |
| \_EXPORT\_IMAGE | stage2 |  | MakeJessie only | \*08/09/18 04:05:09p |
| \_EXPORT\_NOOBS | stage2 |  | MakeJessie only | \*08/09/18 04:05:09p |
| \_EXPORT\_NOOBS | stage4 |  | MakeJessie only | \*08/16/18 04:14:57p |
| burnImage.sh |  |  | MakeJessie only | \*08/09/18 04:05:09p |
| config |  |  | MakeJessie only | \*08/16/18 04:13:41p |
| Development Notes.docx |  |  | MakeJessie only | \*08/17/18 01:27:40p |
| License.md |  |  | MakeJessie only | \*08/09/18 04:05:09p |
| makejessie.sh |  |  | MakeJessie only | \*08/16/18 05:01:54p |
| pre­build.sh |  |  | MakeJessie only | \*08/09/18 04:05:09p |
| check\_deps.sh | scripts | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| release.sh | scripts | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| rc.local | stage2\01­sys­tweaks\files | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| EXPORT\_IMAGE | stage2 | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| EXPORT\_NOOBS | stage2 | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| 00­debconf | stage5\00­install­mathematica | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| 00­packages | stage5\00­install­mathematica | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| EXPORT\_IMAGE | stage5 | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| EXPORT\_NOOBS | stage5 | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| prerun.sh | stage5 | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| build.sh |  | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| docker­compose.yml |  | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| LICENSE |  | \* 08/08/18 10:03:56a | Pi-Gen only |  |
| README.md.pdf |  | \* 08/08/18 10:23:55a | Pi-Gen only |  |
| RPi­Distro\_pi­gen\_ Tool used to create the raspberrypi.org Raspbian.... |  | \* 08/08/18 10:21:58a | Pi-Gen only |  |
| RPi­Distro\_pi­gen\_ Tool used to create the raspberrypi.org Raspbian.pdf |  | \* 08/08/18 10:15:49a | Pi-Gen only |  |
| RPi­gen pre­mods.zip |  | \* 08/08/18 04:26:58p | Pi-Gen only |  |
| stage5 |  | \* 08/08/18 04:38:08p | Pi-Gen only |  |
| 00­install­mathematica | stage5 | \* 08/08/18 10:03:56a | Pi-Gen only |  |

Understanding the changes from the Original Repo

To better understand what changes were required between the Sept 2017 repo and the current working copy of MakeJessie, the differences are highlighted in this section. Some changes are identified in the table while others are provided individually below:

| ***FILE*** | ***PATH*** | ***MAKEJESSIE MODIFICATIONS*** |
| --- | --- | --- |
| 0­sources.diff | export­image\01­set­sources\00­patches | Changed ‘stretch’ to ‘jessie’ to insure we pull from the proper OS Base |
| 01­run.sh | export­image\02­network | ‘#!/bin/bash –e’ changed to ‘#/bin/bash –e’ |
| 00­run.sh | export­image\03­set­partuuid | (below) |
| 01­run.sh | export­image\04­finalise | (below) |
| prerun.sh | export­image | (below) |
| os.json | export­noobs\00­release\files | changed ‘stretch’ to ‘jessie’ |
| release\_notes.txt | export­noobs\00­release\files | (below) |
| prerun.sh | export­noobs | (below) |
| common | scripts | Added some progress annotation and useful error message. |
| dependencies\_check | scripts | Spelling correction: Required |
| raspi.list | stage0\00­configure­apt\files | changed ‘stretch’ to ‘jessie’ |
| sources.list | stage0\00­configure­apt\files | changed ‘stretch’ to ‘jessie’ |
| 00­run.sh | stage0\00­configure­apt | (below) |
| prerun.sh | stage0 | changed ‘stretch’ to ‘jessie’ |
| series | stage1\02­net­tweaks\00­patches | (below) |
| 00­run.sh | stage1\02­net­tweaks | (below) |
| series | stage2\01­sys­tweaks\00­patches | (below) |
| 00­packages | stage2\01­sys­tweaks | (below and in diff-tables spreadsheet) |
| 01­run.sh | stage2\01­sys­tweaks | (below) |
| wait.conf | stage2\02­net­tweaks\files | WAS: ExecStart=/usr/lib/dhcpcd5/dhcpcd -q –w IS: ExecStart=/sbin/dhcpcd -q -w |
| 00­packages | stage2\02­net­tweaks | (below) |
| 00­packages | stage3\00­install­packages | (below) |
| 00­packages | stage4\00­install­packages | (below) |
| .gitignore |  | (below) |
| build­docker.sh |  | SKIPPED |
| depends |  | (below) |
| Dockerfile |  | SKIPPED |
| README.md |  | SKIPPED |

|  |  |
| --- | --- |
| ***file:*** | **export­image/03­set­partuuid/00-run.sh** |
| ***was:*** | IMGID="$(dd if=${IMG\_FILE} skip=440 bs=1 count=4 2>/dev/null | xxd -e | cut -f 2 -d' ')" |
| ***is:*** | IMGID="$(fdisk -l ${IMG\_FILE} | sed -n 's/Disk identifier: 0x\([^ ]\*\)/\1/p')" |

|  |  |
| --- | --- |
| ***file:*** | **export-image/04-finalise/01-run.sh** |
| ***was:*** | INFO\_FILE="${STAGE\_WORK\_DIR}/${IMG\_DATE}-${IMG\_NAME}${IMG\_SUFFIX}.info" |
| ***is:*** | <deleted> |

|  |  |
| --- | --- |
| ***file:*** | **export-image/prerun.sh** |
| ***was:*** | ROOT\_FEATURES="^huge\_file"  for FEATURE in metadata\_csum 64bit; do  if grep -q "$FEATURE" /etc/mke2fs.conf; then  ROOT\_FEATURES="^$FEATURE,$ROOT\_FEATURES"  fi  done  mkdosfs -n boot -F 32 -v $BOOT\_DEV > /dev/null  mkfs.ext4 -O $ROOT\_FEATURES $ROOT\_DEV > /dev/null |
| ***is:*** | mkfs.ext4 -O ^metadata\_csum,^huge\_file $ROOT\_DEV > /dev/null |

|  |  |
| --- | --- |
| ***file:*** | **export-noobs/00-release/files/release\_notes.txt** |
| ***was:*** | UNRELEASED:  \* Disable predictable network interface names for Ethernet devices  \* Bug fix for keyboard settings dialog in Raspberry Pi Configuration  \* Bug fix for crash on some videos and animations in Chromium  \* Bug fix for taskbar crash when running RealVNC server  \* Bug fix for reloading projects with extensions in Scratch 2  \* Bug fix for MAC address problem in Bluetooth  \* Simple mode and new icons in Thonny  \* New Japanese translations in Raspberry Pi Configuration  \* Install fonts-droid-fallback for international fonts  2017-08-16:  \* Based on Raspbian Stretch (Debian version 9)  \* Version 60 of Chromium browser included  \* Version 3.0.1 of Sonic Pi included  \* Version 6.1.1 of RealVNC included  \* Version 0.17.4 of NodeRED included  \* Bluetooth audio routed via ALSA rather than Pulseaudio  \* SenseHAT extension added to Scratch 2  \* Various desktop applications modified to prompt for sudo password if needed  \* lxinput control options for mouse speed simplified  \* lxpanel plugins moved into separate packages  \* Wireless firmware for Pi 3 and Pi 0W modified to address Broadpwn exploit  \* Latest kernel and firmware  \* Various small tweaks, bug fixes and theme modifications  2017-07-05:  \* New kernel and firmware  \* Filesystem created without the metadata\_csum feature |
| ***is:*** | UNRELEASED: |

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| --- | --- |
| ***file:*** | **export-noobs/prerun.sh** |
| ***was:*** | ln -sv "/lib/systemd/system/apply\_noobs\_os\_config.service" "$ROOTFS\_DIR/etc/systemd/system/multi-user.target.wants/apply\_noobs\_os\_config.service"  bsdtar --numeric-owner --format gnutar --use-compress-program pxz -C ${STAGE\_WORK\_DIR}/rootfs/boot -cpf ${NOOBS\_DIR}/boot.tar.xz .  umount ${STAGE\_WORK\_DIR}/rootfs/boot  bsdtar --numeric-owner --format gnutar --use-compress-program pxz -C ${STAGE\_WORK\_DIR}/rootfs --one-file-system -cpf ${NOOBS\_DIR}/root.tar.xz . |
| ***is:*** | bsdtar --format gnutar --use-compress-program pxz -C ${STAGE\_WORK\_DIR}/rootfs/boot -cpf ${NOOBS\_DIR}/boot.tar.xz .  umount ${STAGE\_WORK\_DIR}/rootfs/boot  bsdtar --format gnutar --use-compress-program pxz -C ${STAGE\_WORK\_DIR}/rootfs --one-file-system -cpf ${NOOBS\_DIR}/root.tar.xz . |

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| --- | --- | --- |
| ***file:*** | **stage0/00-configure-apt/00-run.sh** | |
|  | ***was:*** | ***is:*** |
|  | on\_chroot << EOF  apt-get update  apt-get dist-upgrade –y  EOF | on\_chroot << EOF  apt-get update -y  apt-get dist-upgrade -y  apt-get install --fix-broken -y  apt-get update --fix-missing -y  EOF |

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| --- | --- | --- |
| ***file:*** | **stage1/02-net-tweaks/00-patches/series** | |
|  | ***was:*** | ***is:*** |
|  | 01-hosts.diff | 01-hosts.diff  02-persistant-net.diff |

|  |  |
| --- | --- |
| ***file:*** | **stage1/02-net-tweaks/00-run.sh** |
| ***was:*** | install -m 644 files/ipv6.conf ${ROOTFS\_DIR}/etc/modprobe.d/ipv6.conf  install -m 644 files/hostname ${ROOTFS\_DIR}/etc/hostname  ln -sf /dev/null ${ROOTFS\_DIR}/etc/systemd/network/99-default.link |
| ***is:*** | install -m 644 files/ipv6.conf ${ROOTFS\_DIR}/etc/modprobe.d/ipv6.conf  install -m 644 files/interfaces ${ROOTFS\_DIR}/etc/network/interfaces  install -m 644 files/hostname ${ROOTFS\_DIR}/etc/hostname  on\_chroot << EOF  dpkg-divert --add --local /lib/udev/rules.d/75-persistent-net-generator.rules  EOF |

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| --- | --- | --- |
| ***file:*** | **stage2/01-sys-tweaks/00-patches/series** | |
|  | ***was:*** | ***is:*** |
|  | 01-useradd.diff  02-swap.diff  04-inputrc.diff  05-path.diff  07-resize-init.diff | 01-useradd.diff  02-swap.diff  04-inputrc.diff  05-path.diff  06-rc\_local.diff  07-resize-init.diff |

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| --- | --- |
| ***file:*** | **stage2/01-sys-tweaks/00-packages** |
| ***was:*** | ssh less fbset sudo psmisc strace ed ncdu crda  console-setup keyboard-configuration debconf-utils parted unzip  build-essential manpages-dev python bash-completion gdb pkg-config  python-rpi.gpio v4l-utils  avahi-daemon  lua5.1  luajit  hardlink ca-certificates curl  fake-hwclock nfs-common usbutils  libraspberrypi-dev libraspberrypi-doc libfreetype6-dev  dosfstools  dphys-swapfile  raspberrypi-sys-mods  pi-bluetooth  apt-listchanges  usb-modeswitch  apt-transport-https  libpam-chksshpwd  rpi-update  libmtp-runtime  rsync  htop |
| ***is:*** | ssh less fbset sudo psmisc strace **module-init-tools** ed ncdu crda  console-setup keyboard-configuration debconf-utils parted unzip  build-essential manpages-dev python bash-completion gdb pkg-config  python-rpi.gpio v4l-utils  avahi-daemon  lua5.1  luajit  hardlink ca-certificates curl  fake-hwclock **ntp** nfs-common usbutils  libraspberrypi-dev libraspberrypi-doc libfreetype6-dev  dosfstools  dphys-swapfile  raspberrypi-sys-mods  pi-bluetooth  apt-listchanges  usb-modeswitch  apt-transport-https  libpam-chksshpwd  rpi-update |

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| --- | --- |
| ***file:*** | **stage2/01-sys-tweaks/01-run.sh** |
| ***was:*** | #!/bin/bash -e  install -m 755 files/resize2fs\_once ${ROOTFS\_DIR}/etc/init.d/  install -d ${ROOTFS\_DIR}/etc/systemd/system/rc-local.service.d  install -m 644 files/ttyoutput.conf ${ROOTFS\_DIR}/etc/systemd/system/rc-local.service.d/  install -m 644 files/50raspi ${ROOTFS\_DIR}/etc/apt/apt.conf.d/  install -m 644 files/console-setup ${ROOTFS\_DIR}/etc/default/  install -m 755 files/rc.local ${ROOTFS\_DIR}/etc/  on\_chroot << EOF  systemctl disable hwclock.sh  systemctl disable nfs-common  systemctl disable rpcbind  systemctl disable ssh  systemctl enable regenerate\_ssh\_host\_keys  systemctl enable resize2fs\_once  EOF  on\_chroot << \EOF  for GRP in input spi i2c gpio; do  groupadd -f -r $GRP  done  for GRP in adm dialout cdrom audio users sudo video games plugdev input gpio spi i2c netdev; do  adduser pi $GRP  done  EOF  on\_chroot << EOF  etupcon --force --save-only -v  EOF  on\_chroot << EOF  usermod --pass='\*' root  EOF  rm -f ${ROOTFS\_DIR}/etc/ssh/ssh\_host\_\*\_key\* |
| ***is:*** | #!/bin/bash -e  install -m 644 files/regenerate\_ssh\_host\_keys.service ${ROOTFS\_DIR}/lib/systemd/system/  install -m 755 files/apply\_noobs\_os\_config ${ROOTFS\_DIR}/etc/init.d/  install -m 755 files/resize2fs\_once ${ROOTFS\_DIR}/etc/init.d/  install -d ${ROOTFS\_DIR}/etc/systemd/system/rc-local.service.d  install -m 644 files/ttyoutput.conf ${ROOTFS\_DIR}/etc/systemd/system/rc-local.service.d/  install -m 644 files/50raspi ${ROOTFS\_DIR}/etc/apt/apt.conf.d/  install -m 644 files/console-setup ${ROOTFS\_DIR}/etc/default/  on\_chroot << EOF  systemctl disable hwclock.sh  systemctl disable nfs-common  systemctl disable rpcbind  systemctl disable ssh  systemctl enable regenerate\_ssh\_host\_keys  systemctl enable apply\_noobs\_os\_config  systemctl enable resize2fs\_once  EOF  on\_chroot << \EOF  for GRP in input spi i2c gpio; do  groupadd -f -r $GRP  done  for GRP in adm dialout cdrom audio users sudo video games plugdev input gpio spi i2c netdev; do  adduser pi $GRP  done  EOF  on\_chroot << EOF  setupcon --force --save-only -v  EOF  on\_chroot << EOF  usermod --pass='\*' root  EOF  rm -f ${ROOTFS\_DIR}/etc/ssh/ssh\_host\_\*\_key\* |

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| --- | --- | --- |
| ***file:*** | **stage2/02-net-tweaks/00-packages** | |
|  | ***was:*** | ***is:*** |
|  | wpasupplicant  wireless-tools  firmware-atheros  firmware-brcm80211  firmware-libertas  firmware-misc-nonfree  firmware-realtek  raspberrypi-net-mods  dhcpcd5  net-tools | wpasupplicant  wireless-tools  firmware-atheros  firmware-brcm80211  firmware-libertas  **firmware-ralink**  firmware-realtek  raspberrypi-net-mods  dhcpcd5 |

|  |  |  |
| --- | --- | --- |
| ***file:*** | **stage3/00-install-packages/00-packages** | |
|  | ***was:*** | ***is:*** |
|  | gstreamer1.0-x  gstreamer1.0-omx  gstreamer1.0-plugins-base  gstreamer1.0-plugins-good  gstreamer1.0-plugins-bad  gstreamer1.0-alsa  gstreamer1.0-libav  xpdf  gtk2-engines  alsa-utils  desktop-base  git  omxplayer  raspberrypi-artwork  policykit-1  gvfs  rfkill  chromium-browser  rpi-chromium-mods  gldriver-test  fonts-droid-fallback | gstreamer1.0-x  gstreamer1.0-omx  gstreamer1.0-plugins-base  gstreamer1.0-plugins-good  gstreamer1.0-plugins-bad  gstreamer1.0-alsa  gstreamer1.0-libav  xpdf  gtk2-engines  alsa-utils  desktop-base  git  omxplayer  raspberrypi-artwork  policykit-1  gvfs  rfkill  chromium-browser  rpi-chromium-mods |

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| --- | --- | --- | --- | --- |
| ***file:*** | **stage4/00-install-packages/00-packages** | | | |
|  | ***was*** | ***is*** | ***was*** | ***is*** |
|  | alacarte  bluej  claws-mail  debian-reference-en  dillo  fonts-liberation2  geany  greenfoot  idle  idle3  java-common  libgl1-mesa-dri  libgles1-mesa  libgles2-mesa  libreoffice-sdbc-hsqldb  minecraft-pi  nodered  nuscratch  oracle-java8-jdk  piclone  pigpio  pprompt  pypy  python  python3  python3-flask  python3-gpiozero  python3-numpy  python3-pgzero  python3-picamera  python3-picraft  python3-pigpio | alacarte  bluej  claws-mail  debian-reference-en  dillo  geany  greenfoot  idle  idle3  java-common  libgl1-mesa-dri  libgles1-mesa  libgles2-mesa  libreoffice-sdbc-hsqldb  minecraft-pi  nodered  nuscratch  oracle-java8-jdk  **penguinspuzzle**  piclone  pigpio  pprompt  **pulseaudio-module-bluetooth**  pypy  python  python3  **python3-codebug-i2c-tether**  **python3-codebug-tether**  python3-flask  python3-gpiozero  python3-numpy  python3-pgzero  python3-picamera  python3-picraft  **python3-pifacecommon**  **python3-pifacedigitalio**  **python3-pifacedigital-**  **scratch-handler**  python3-pigpio | python3-pip  python3-pygame  python3-rpi.gpio  python3-sense-emu  python3-serial  python3-smbus  python3-spidev  python3-thonny  python3-tk  python3-twython  python-flask  python-gpiozero  python-minecraftpi  python-picamera  python-picraft  python-pigpio  python-pip  python-pygame  python-sense-emu  python-sense-emu-doc  python-serial  python-smbus  python-spidev  python-tk  python-twython  raspberrypi-net-mods  raspberrypi-ui-mods  raspi-gpio  rc-gui  scratch  scratch2  sense-emu-tools  sense-hat  smartsim  sonic-pi  tree  wiringpi  x2x  xcompmgr | python3-pip  python3-pygame  python3-rpi.gpio  python3-sense-emu  python3-serial  python3-smbus  python3-spidev  python3-thonny  python3-tk  python3-twython  python-flask  python-gpiozero  python-minecraftpi  python-picamera  python-picraft  **python-pifacecommon**  **python-pifacedigitalio**  python-pigpio  python-pip  python-pygame  python-sense-emu  python-sense-emu-doc  python-serial  python-smbus  python-spidev  python-tk  python-twython  raspberrypi-net-mods  raspberrypi-ui-mods  raspi-gpio  rc-gui  scratch  scratch2  sense-emu-tools  sense-hat  smartsim  sonic-pi  tree  wiringpi  x2x  xcompmgr |

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| --- | --- | --- |
| ***file:*** | **.gitignore** | |
|  | ***was:*** | ***is:*** |
|  | deploy/\*  work/\*  config  postrun.sh  SKIP  .pc  \*-pc  apt-cacher-ng/ | deploy/\*  work/\*  postrun.sh  SKIP  .pc  \*-pc |

|  |  |  |
| --- | --- | --- |
| ***file:*** | **depends** | |
|  | ***was:*** | ***is:*** |
|  | quilt  parted  realpath  qemu-arm-static:qemu-user-static  debootstrap  zerofree  pxz zip  mkdosfs:dosfstools  capsh:libcap2-bin  bsdtar  grep  rsync  xz:xz-utils  curl  xxd | quilt  parted  realpath  qemu-arm-static:qemu-user-static  debootstrap  zerofree  pxz zip  mkdosfs:dosfstools  capsh:libcap2-bin  bsdtar  grep  rsync |

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Activities:

[20-Aug-2018]

***Initial build of Jessie for Fusion without Fusion Server***

1. Created new MakeJessie folder on Build system using commit f370875b.
2. Modified makejessie.sh to put the execution bit check in a different script.
3. Ran and captured output of makejessie.sh through stages 0, 1, 2, 3,4, and exportimage. (Note: In the interest of speed, commented out the command to compress the image file into the .zip file.)
4. Output of process is in Walkthru-Complete.docx file.
5. SD Card created from image file works properly on the Pi, (but lacks the Fusion Interface Board support).
6. Committed changed and pushed to branch (MyMakeJessie) on GitHub:

Revision: 726cb88d055b3f2c5520a4bcabe75e35b51e6750

Author: joe anello <joe.a@modernroboticsinc.com>

Date: 8/20/2018 3:40:42 PM

Message: *Complete build successful, saving changes.*

*(Floyd says, "Oh boy, are we gonna try something dangerous now?")*

*----*

Added: 2018-0820 MakeJessie Output.txt

Modified: Development Notes.docx

Deleted: Stage4 Walkthru.docx

Modified: Tables of Diffs.xlsx

Added: Walkthru - Complete.docx

Modified: makejessie.sh

***Comparing files: MakeJessie & fusion-pi-gen***

These files are different between the two projects:

|  |  |
| --- | --- |
| fusion-pi-gen\export-image\04-finalise\01-run.sh | MakeJessie has creation of zip file commented out |
| fusion-pi-gen\scripts\common | MakeJessie has additional diagnostic output |
| fusion-pi-gen\scripts\dependencies\_check | MakeJessie has spelling corrections |
| fusion-pi-gen\stage4\\_EXPORT\_NOOBS | MakeJessie uses the name **JWA Jessie** |
| fusion-pi-gen\config | MakeJessie uses the name **JWA\_Jessie** |
| fusion-pi-gen\depends | MakeJessie has proper line endings on all lines |

These files are only in :fusion-pi-gen:

|  |  |
| --- | --- |
| fusion-pi-gen\build.sh | MakeJessie has updated script makejessie.sh |
| fusion-pi-gen\scripts\check\_deps.sh | file is empty |
| fusion-pi-gen\scripts\release.sh | file is empty |
| fusion-pi-gen\stage4\04-fusion-install | These are the files that add the FusionOS to the previously created JessieOS Image |
| fusion-pi-gen\stage4\04-fusion-install\00-packages |
| fusion-pi-gen\stage4\04-fusion-install\01-run.sh |
| fusion-pi-gen\stage4\04-fusion-install\distroInstall.sh |
| fusion-pi-gen\stage4\04-fusion-install\dnsmasq |

Project Tasks and Action Items:

Discussions:

Project Tasks and Action Items: