Test Case Review

Contents

Apertis has a slowly growing number of test cases that have been written over the years that the Apertis project has been running. Effort has been made to automate many of these tests, however many still remain as manually run testing scenarios.

Due to limited testing bandwidth, many of these manual tests are not frequently performed. Additionally there may be automated tests that are being run that, due to changes in the focus and direction of the Apertis project since it's inception, are no longer particularly useful. When performed, such tests, both manual and automated, are consuming valuable resources that could be better utilised elsewhere.

A review of the test cases has been carried out to identify tests that may now be redundant and should therefore be removed. The following table shows the analysis performed for this review along with any suggestions for change:

Test case	Manual/Auto	RBEI Estimated effort (min)	Status	Using
ade-commands	automated		Critical	
apertis-update-manager-api	manual	10	Low	
apertis-update-manager-automount	manual	10	Medium	Yes
apertis-update-manager-diskfull	manual	10	Low	
apertis-update-manager-ota-api	manual	10	Medium	
apertis-update-manager-ota-auto	manual	10	Medium	
apertis-update-manager-ota-diskfull	manual	10	Medium	
apertis-update-manager-ota-rollback	manual	10	Medium	
apertis-update-manager-ota-signed	manual	10	Medium	
apertis-update-manager-powercut	manual	10	Low	
apertis-update-manager-rollback	manual	12	Low	
apertis-update-manager-usb-unplug	manual	12	Medium	
apertis-update-manager	manual	10	Low	
apparmor-basic-profiles	automated		Critical	
apparmor-bluez-avrcp-volume	manual	05	Medium	
apparmor-bluez-setup	manual	05	High	
apparmor-bluez	manual	05	High	
apparmor-chaiwala-system	automated		High	
apparmor-dbus	automated		Critical	
apparmor-functional-demo	automated		Medium	Yes
apparmor-geoclue	automated		Medium	Yes
apparmor-gstreamer1-0	automated		Medium	
apparmor-ofono	manual	08	Medium	
apparmor-pulseaudio	automated		Medium	
apparmor-session-lockdown-no-deny	automated		Medium	Yes
apparmor-tumbler	automated		Medium	

Test case	Manual/Auto	RBEI Estimated effort (min)	Status	Using
apparmor-utils	automated		Medium	Yes
apparmor	automated		Critical	
aum-api	automated		Critical	
aum-offline-upgrade-collection_id	automated		Critical	
aum-offline-upgrade-signed	automated		Critical	
aum-offline-upgrade	automated		Critical	
aum-ota-api	automated		Critical	
aum-ota-auto	automated		Critical	
aum-ota-out-of-space	automated		Critical	
aum-ota-rollback-blacklist	automated		Critical	
aum-ota-signed	automated		Critical	
aum-out-of-space	automated		Critical	
aum-power-cut	automated		Critical	
aum-rollback-blacklist	automated		Critical	
bluez-avrcp-volume	manual	08	Medium	
bluez-hfp	manual	08	Medium	
bluez-phone	manual	08	Critical	
bluez-setup	manual	08	Critical	
boot-no-crashes	automated		High	
boot-performance	automated		High	
canterbury	automated		Critical	
cgroups-resource-control	automated		Medium	
connman-new-supplicant	automated		Medium	
connman-pan-network-access	manual	08	Medium	Yes
connman-pan-tethering	manual	08	Critical	Yes
connman-services	manual	05	Medium	
connman-usb-tethering	manual	08	Critical	Yes
connman	automated		Medium	
dbus-dos-reply-time	automated		High	
dbus-installed-tests	automated		High	Yes
didcot	automated		Medium	Yes
disk-rootfs-fsck	automated		High	
eclipse-plugins-install-target	manual	10	Medium	
eclipse-plugins-remote-debugging	manual	10	Medium	
eclipse-sysroot-management	manual	10	Medium	Yes
evolution-sync-bluetooth	manual	05	Medium	Yes
frome	automated		Low	Yes
gettext-i18n	automated		Medium	
glib-gio-fs	automated		Medium	
grilo	automated		Medium	Yes
gstreamer1-0-decode	automated		High	
gupnp-services	automated		Medium	
hmi-audio-detail-view	manual		Medium	
hmi-audio-play-pause	manual		High	

Test case	Manual/Auto	RBEI Estimated effort (min)	Status	Using
hmi-video-load	manual		High	
hmi-video-play-pause	manual		High	
image-bootable	manual	02	Critical	
image-gui-start	manual	02	Critical	
iptables-basic	automated		Critical	
iptables-nmap	automated	02	High	
newport	automated		Medium	Yes
nfsroot-simple-boot	automated		High	
ofono-sms-receive	manual	05	Medium	
ofono-sms-send	manual	05	Medium	
ostree-collection-id	automated		Critical	
polkit-parsing	automated		High	Yes
rfkill-toggle	manual	02	Medium	
rhosydd	automated		Medium	Yes
ribchester	automated		Critical	Yes
sanity-check-manual	manual	02	Critical	
sanity-check	automated		Critical	
sdk-ade-remote-debugging	manual	08	High	
sdk-code-analysis-tools-gcov	automated		Medium	Yes
sdk-code-analysis-tools-splint	automated		Medium	Yes
sdk-cross-compilation	automated		Medium	
sdk-dbus-tools-bustle	manual	02	Medium	Yes
sdk-dbus-tools-d-feet	manual	02	Medium	Yes
sdk-debos-image-building	automated		Critical	
sdk-debug-tools-gdb	automated		Medium	Yes
sdk-debug-tools-strace	automated		Medium	Yes
sdk-debug-tools-valgrind	automated		Medium	Yes
sdk-flatpak-build-helloworld-app	manual	20	Medium	Yes
sdk-flatpak-demo	automated		Medium	Yes
sdk-flatpak-helloworld-app	manual	10	Medium	
sdk-ide-build-run-program	manual	02	Medium	
sdk-performance-tools-gprof	automated		Medium	Yes
sdk-performance-tools-sysprof	automated		Medium	Yes
sdk-persistent-disk-etc	manual	15	Critical	
sdk-persistent-disk-home-user	manual	15	Critical	
sdk-persistent-disk-sysroot	manual	15	Critical	
sdk-vb-fullscreen	manual	05	Critical	
secure-boot-imx6	manual	20	Medium	
tiny-container-system-aa-enforcement	automated		Medium	
tiny-container-system-basic	automated		Medium	
tiny-container-system-connectivity-profile	automated		Medium	
tiny-container-user-device-sharing	automated		Medium	
tiny-container-user-folder-sharing	automated		Medium	
tiny-container-user-seccomp	automated		Medium	

Test case	Manual/Auto	RBEI Estimated effort (min)	Status	Using
traprain	automated		Medium	Yes
tumbler-thumbnailing	automated		Medium	
video-animation-on-boot	manual	03	High	
webkit2gtk-ac-3d-rendering	manual	05	Low	
webkit2gtk-ac-animations	manual	05	Medium	
webkit2gtk-ac-scrolling	manual	05	Medium	
webkit2gtk-drag-and-drop	manual	05	Low	
webkit2gtk-event-handling-redesign	manual	05	Medium	
webkit2gtk-gstreamer1.0	manual	05	Medium	
webkit2gtk-mt-touch-events	manual	05	Low	
x-hw-accelerated	manual	05	Medium	Yes

16 General status of the test framework

17 Whilst reviewing the test cases a number of additional A number of additional
18 points have been noted that are mostly out of scope for this review, though may
19 be worth considering for future work:

20 • **A lot of the tests seem to have needless levels of abstraction:** A
21 number of strategies have been employed over successive attempts to au-
22 tomate more of the test cases. In order to avoid extra overhead, generally
23 infrastructure used to perform the previously automated tests has been
24 kept and driven from the latest mechanism. In parallel to this, work has
25 been done to provide a testing framework that makes steps carried out by
26 the tests better visibly documented (leading to the test descriptions on
27 qa.apertis.org[5]. Due to may of these tests calling previous mechanisms,
28 these tests are not as transparent as they could be and the (in some cases,
29 multiple) layers of abstraction make them harder to read and maintain.
30 It is suggested that efforts are taken to remove these layers of abstraction
31 where possible.

32 • **It should be possible to merge some of the AppArmor tests with**
33 **their non-AppArmor counterparts:** Quite a few of the AppArmor
34 tests run up the same image and perform the same steps as the non-
35 AppArmor test for the same functionality, only differing in what they
36 look at to deem the test a success or failure. This adds overhead as
37 the infrastructure is setting up and performing the tests twice. This can
38 be reduced by checking for both the outcome of the test steps and the
39 AppArmor status in a single test run without loss of testing coverage.

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[1]https://phabricator.apertis.org/T7325
[2]https://phabricator.apertis.org/T7325
[3]https://phabricator.apertis.org/T7325
[4]https://phabricator.apertis.org/T7325
[5]https://qa.apertis.org

- **Most tests should not be installing packages via `apt`:** A considerable number of the tests are installing packages via `apt` to for use in the testing. These additions are fundamentally changing the image under test and may affect the results. We have had a [mechanism to combat this](#)[6] for a while which needs to be universally rolled out.
- **We should update tests using `git clone` to use `wget`:** Rather than requiring git to be install on the test image, we have recently been downloading archives of the test harnesses with are provided by GitLab. This only requires the ability to download a resource via HTTP, which can be reasonably assumed to be possible in all the images rather than the ability to perform a git clone. Tests should be updated to use this mechanism to avoid the need for git.
- **Merge some tests together:** In some places we seem to have multiple tests, each testing a facet of a larger set of functionality. Whilst not viable or advisable for all the tests, merging some may be viable which would reduce the overhead of setting up the environment individually each time.

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[6]https://www.apertis.org/qa/immutablerootfstests/