OTA Updates in AGL Using OSTree

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Introduction

Project Goals

OSTree overview

Situation - Anton & Leon’s progress

Plans
Goal: OTA Updates for

Development
From bitbake to the device

Production
From 10 demo units to series ...eventually

AGL Demo Platform
Pre-loaded R-PI
What do you know about OSTree

Heard of it?

Arthur’s OTA presentation yesterday?
Disclaimer

I didn’t write OSTree
How OSTree works 1/2

Git, but for a rootfs

- Not actually git: file metadata contains UIDs etc

One physical filesystem shared between multiple rootfs's

Uses hardlink trees to share identical files between chroots

/etc and /var are magical
Files shared using hard links:

/ostree/repo/4b/cdef...
/b2/...

/ostree/deploy/osname/v1/etc/...
/usr/bin/bash
...

/ostree/deploy/osname/v2/etc/...
/usr/bin/bash

bash
OSTree Boot Process

1. Decide which deploy to boot
2. Mount /ostree/deploy/os/vXYZ as /
3. Keep / available as /sysroot
Update Process

Fetch objects into /ostree/repo
(c.f. ‘git fetch’)

Checkout hard link tree
(c.f. ‘git checkout’)

Notify bootloader

Reboot
AGL OTA Integration Tasks

Build OSTree tools in AGL - (done)

Separation of RO and RW parts of filesystem - (in progress)

Bootloader / initramfs integration (chroot to /ostree/os/v3) - (code review)

Building two images: - (in progress)

- Rootfs -> check in ostree repo
- ‘Factory image’ -> Written to SD card

Transferring the update to the client (planning)
Building OSTree tools in AGL

Done:

meta-agl-extra/meta-sota
Separation of RO and RW parts of filesystem

Rules:
/var is persisted, initially empty
/etc is 3-way merged
Everything else blown away

image_types_ostree.bbclass (meta-agl-extra)
Move /home under /var
Bootloader / Initramfs Integration

Initial target: U-Boot + Qemu

Next target: U-Boot + Porter

Implementation: WIP
Building two images in bitbake

**image_types Ostree.bbclass** *(meta-agl-extra)*
Runs ‘ostree commit’, rather than generating a .hddimg or .iso

**image_types_ota.bbclass** *(meta-agl-extra)*
Creates an image to write to disk
Transporting the Updates

Which devices get an update?
ATS’ SOTA Server (Open source, developed for GENIVI)

Moving the bits
Plan to add OSTree support to SOTA Server

Uploading from development/CI
New tool in planning: bitbake my-cool-image && push-to-ota-server my-cool-image
Summary

Aim to OTA-enable AGL by default

Development underway now
Questions? Potential user?
phil@advancedtelematic.com or automotive-discussions
I’d love to hear from you.