SAN19 LEDGE RP
BOOTSTRAP

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Intro: EDGE devices

“Devices”

“Gateway router”

THE EDGE

“Cloud”
Intro: EDGE hot topics

- Offload computing from end devices to EDGE node before deploy to cloud
- Provide high security level for EDGE gateways
- Secure software/firmware updates
- Fast boot
- etc
RP Intro

Linaro LEDGE reference platform flavours:

- OpenEmbedded
- Debian
- Fedora IoT
OpenEmbedded (LEDGE OE) RP features

- SELinux
- Ostree
- UEFI
- Mainline kernel
- Cloud-init
- fTPM (for ST board)
OpenEmbedded (LEDGE OE) RP

- Build fully from source code.
  https://github.com/Linaro/ledge-oe-manifest

DISTRO=rpb MACHINE=qemu-arm64 source ./setup-environment
bitbake ledge-iot
runqemu ledge-qemux86-64 nographic qemuparams="-m 4096"

- Support of STM32MP157c-dk2, Synquacer, TI AM572X, QEMU (arm, arm64, x86-64).
  http://snapshots.linaro.org/components/ledge/oe/
  (need linaro login for download)
LEDGE OE: daily CI

Cl status page:
https://ci.linaro.org/job/ledge-oe/

1. Source code checkout
2. Build machine specific images and deploy to
   http://snapshots.linaro.org/components/ledge/oe/<machine>/<build-id>/
3. Run LAVA job to boot images on real and qemu device. Results are linked to status page.
LEDGE OE: LAVA configs

http://git-us.linaro.org/ci/job/configs.git

ledge-oe.yaml - main build.
ledge-oe-premerge-ci.yaml - test github Pull Request before it was merged.
Trigger-daily.yaml - trigger daily builds and LAVA runs.
LEDGE: debian RP: builds

- Generic debian arm v7 and arm v8 based on Debian Buster

```
http://git.linaro.org/ci/job/configs.git
ledge-arm64-debian.yaml - build scenarios for arm64
ledge-armhf-debian.yaml - build scenarios for arm v7
Snapshots:
http://snapshots.linaro.org/components/ledge/debian/<arch>/<build-id>/
* For debian we build only rootfs now.
```

Build status and LAVA run:
```
https://ci.linaro.org/job/ledge-arm64-debian/
https://ci.linaro.org/job/ledge-armhf-debian/
```
LEDGE: debian RP

Debian FAI (Fully Automatic Installation) with LEDGE template:
https://git.linaro.org/ci/fai.git

`fai-diskimage -v --cspace $(pwd) \`
`--hostname linaro-{$rootfs} \`
`-S {$rootfs_sz} \`
`--class $(echo SAVECACHE,${OS_FLAVOUR},DEBIAN,LINARO,LEDGE,{$rootfs} \`
"$BUILDDIR"/work.raw`
LEDGE Fedora IoT

- Full support of Redhat fedora IoT image features with LAVA run on virtual and real devices;

  http://git.linaro.org/ci/job/configs.git

  ledge-fedora-iot.yaml - scripts to deploy fedora images and run LAVA.

Snapshots:
http://snapshots.linaro.org/components/ledge/fedora-cloud/latest/

Status page:
https://ci.linaro.org/job/ledge-cloud-image-fedora/
LEDGE Fedora IoT: qemu

```
virt-install --name image --disk pool=default,size=8,format=raw --network network=default, --os-variant fedora22 --ram 4096 --arch aarch64 \ 
--location https://dl.fedoraproject.org/pub/alt/iot/30/IoT/aarch64/os/,kernel=images/pxeboot/vmlinux,initrd=images/pxeboot/initrd.img \ 
--initrd-inject=f30-iot.ks --extra-args 'ks=https://.../f30-iot-aarch64.ks \ earlycon=pl011,0x3f201000 console=ttyAMA0' \ 
--boot loader=AAVMF_CODE.fd,loader_ro=yes,loader_type=pflash,nvram_template=AAVMF_VARS.fd,loader_secure=no --noreboot
```

Run logs are here: https://ci.linaro.org/job/ledge-cloud-image-fedora/
LEDGE Fedora IoT: aarch64 Synquacer box

Linaro LAVA test framework:
   method: **grub**
   commands:
   - insmod efnet
   - net_ls_addr
   - linux (tftp,SERVER_IP)/KERNEL ks=http://.../f30-iot-aarch64-synquacer.ks
   - initrd (tftp,SERVER_IP)/RAMDISK
   - clear
   - boot

Example install: [https://ledge.validation.linaro.org/scheduler/job/29932](https://ledge.validation.linaro.org/scheduler/job/29932)
We are working on: Secure boot

- f(TPM) support
- UEFI edk2/tianocore and U-Boot
- IMA/EVM integrity and apps signing
- Kernel modules signing
- SELinux
We are working on:

- Align OpenEmbedded and Debian package list with Fedora IoT
- Enhance build and validation system on supported devices (LAVA)
- OP-TEE (Virtualization support in secure mode, PKCS#11, fTPM)
- QEMU SBSA (EDK2, ARM-TF)
- OTA updates
- Application isolations (container, hypervisor)
- TSN
- And other topics...

Mailing list: team-ledge@linaro.org
Questions?
Thank you

Join Linaro to accelerate deployment of your Arm-based solutions through collaboration

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