linux kernal

LITEON build note

linux kernal

Redhat 8.7 (trial license)

uname -a
linux localhost.localdomain 4.18.0-425.3.1.el8.x86_64 #1 SMP Fri Sep 30 11:45:06 EDT 2022
x86_64 x86_64 x86_64 GNU/Linux

cpu information

cat /proc/cpuinfo
11th Gen Intel® Core™ i7-11700 @ 2.50GHz, 16 cores

nic cards

lspci
03:00.0 Ethernet controller: Intel Corporation Ethernet Controller X710 for 10GbE SFP+ (rev 02)
03:00.1 Ethernet controller: Intel Corporation Ethernet Controller X710 for 10GbE SFP+ (rev 02)

Tutorial(reference only)

https://gitlab.eurecom.fr/oai/openairinterface5g/-/blob/use_msgq/doc/ORAN_FHI7.2_Tutorial.md#1
1-dpdkdata-plane-development-kit
(https://gitlab.eurecom.fr/oai/openairinterface5g/-/blob/use_msgq/doc/ORAN_FHI7.2_Tutorial.md#11-dpdkdata-plane-
development-kit)

Install Record

sudo yum update

Istall meson

sudo yum install python3-pip
sudo pip3 install meson==0.58.2

Download ninja

wget https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/ninja-build-1.8.2-
1.el8.x86_64.rpm (https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/ninja-build-1.8.2-1.el8.x86_64.rpm)
sudo yum localinstall ninja-build-1.8.2-1.el8.x86_64.rpm

Install gcc make

sudo yum install gcc gcc-c++ kernel-devel make

Install DPDK20.05

wget http://fast.dpdk.org/rel/dpdk-20.05.tar.xz (http://fast.dpdk.org/rel/dpdk-20.05.tar.xz)

tar xvf dpdk-20.05.tar.xz

cd dpdk-20.05

meson build

cd build

sudo ninja

sudo ninja install

sudo dnf install numactl

sudo dnf install numactl-devel

cd …

make install T=x86_64-native-linuxapp-gcc

grub

sudo vi /etc/default/grub

[liteon@localhost ~]$ cat /etc/default/grub

GRUB_TIMEOUT=5

GRUB_DISTRIBUTOR="$(sed's, release. *,g'$ /etc/system-release)"

GRUB_DEFAULT=saved

GRUB_DISABLE_SUBMENU=true

GRUB_TERMINAL_OUTPUT="console"

GRUB_CMDLINE_LINUX="crashkernel=auto resume=/dev/mapper/rhel-swap rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap rhgb quiet igb.max_vfs=2 intel_iommu=on iommu=pt intel_pstate=disable
nosoftlockup tsc=nowatchdog mitigations=off cgroup_memory=1 cgroup_enable=memory mce=off
idle=poll hugepagesz=1G hugepages=40 hugepagesz=2M hugepages=0 default_hugepagesz=1G
selinux=0 enforcing=0 nmi_watchdog=0 softlockup_panic=0 audit=0 skew_tick=1
isolcpus=managed_irq,domain,0-2,8-15 nohz_full=0-2,8-15 rcu_nocbs=0-2,8-15 rcu_nocb_poll"

GRUB_DISABLE_RECOVERY="true"

GRUB_ENABLE_BLSCFG=true

grub2-mkconfig -o /boot/grub2/grub.cfg

reboot

Install phy

---

git clone https://gerrit.o-ran-sc.org/r/o-du/phy.git (https://gerrit.o-ran-sc.org/r/o-du/phy.git)

cd phy

git checkout oran_release_bronze_v1.1

#Download openairinterface and checkout use_msgq branch

cp ~/openairinterface5g/cmake_targets/tools/oran_fhi_integration_patches/oran-fhi-* .

git apply oran-fhi-1-compile-libxran-using-gcc-and-disable-avx512.patch

git apply oran-fhi-2-return-correct-slot_id.patch

git apply oran-fhi-3-disable-pkt-validate-at-process_mbuf.patch

git apply oran-fhi-4-process_all_rx_ring.patch

git apply oran-fhi-5-remove-not-used-dependencies.patch

cd fhi_lib/

export XRAN_LIB_DIR=~/phy/fhi_lib/lib/build

export XRAN_DIR=~/phy/fhi_lib

export RTE_SDK=~/dpdk-20.05

export RTE_TARGET=x86_64-native-linuxapp-gcc

export RTE_INCLUDE=RTE_SDK/{RTE_TARGET}/include

./build.sh

Install openairinterface

---

git clone https://gitlab.eurecom.fr/oai/openairinterface5g.git

(https://gitlab.eurecom.fr/oai/openairinterface5g.git)

cd ~/openairinterface5g/

git checkout use_msgq

cd ~/openairinterface5g/cmake_targets/

vim build_helper

[liteon@localhost openairinterface5g]$ git diff cmake_targets/tools/build_helper

diff --git a/cmake_targets/tools/build_helper b/cmake_targets/tools/build_helper

index 5af626b182…11b7bcbbf8 100755

— a/cmake_targets/tools/build_helper

+++ b/cmake_targets/tools/build_helper

```
@@ -119,7 +119,7 @@ check_supported_distribution() {
"rhel8.4") return 0 ;;
"rhel8.5") return 0 ;;
"rhel8.6") return 0 ;;
- "rhel8.7") return 0 ;;
+ "rhel8.8") return 0 ;;
"rhel9.0") return 0 ;;
"rhel9.1") return 0 ;;
"rhel9.2") return 0 ;;
./build_oai --gNB --ninja -t oran_fhlib_5g -I
```

install lack lib from build rpm…

```
wget  https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/guile-
sudo yum localinstall guile-devel-2.0.14-7.el8.x86_64.rpm
dnf --enablerepo=powertools install guile-devel
sudo yum localinstall guile-devel-2.0.14-7.el8.x86_64.rpm
yum install libconfig-devel
sudo yum install libconfig-devel
sudo yum install guile
sudo yum localinstall guile-devel-2.0.14-7.el8.x86_64.rpm
sudo yum -y groupinstall "Development Tools"
sudo yum localinstall guile-devel-2.0.14-7.el8.x86_64.rpm
wget https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/gc-deve
sudo yum localinstall gc-devel-7.6.4-3.el8.x86_64.rpm
sudo yum localinstall guile-devel-2.0.14-7.el8.x86_64.rpm
wget https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/libconf
sudo yum localinstall libconfig-devel-1.5-9.el8.x86_64.rpm
wget https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/lapack-
sudo yum localinstall lapack-devel-3.8.0-8.el8.x86_64.rpm
wget https://vault.centos.org/centos/8/BaseOS/x86_64/os/Packages/pkgconf-pkg
sudo yum localinstall pkgconf-pkg-config-1.4.2-1.el8.x86_64.rpm
sudo yum localinstall lapack-devel-3.8.0-8.el8.x86_64.rpm
sudo yum localinstall pkgconf-pkg-config-1.4.2-1.el8.x86_64.rpm
wget  https://vault.centos.org/centos/8/PowerTools/x86_64/os/Packages/blas-d
sudo yum localinstall blas-devel-3.8.0-8.el8.x86_64.rpm
sudo yum localinstall lapack-devel-3.8.0-8.el8.x86_64.rpm
sudo yum install python27
sudo alternatives --set python /usr/bin/python2.7
```

./build_oai --gNB --ninja -t oran_fhlib_5g -I
(if oran_fhlib_5g build fail, add -fPIC to CFLAGS in all makefiles in dpdk, then build dpdk again)

run

liunxptp

git clone http://git.code.sf.net/p/linuxptp/code (http://git.code.sf.net/p/linuxptp/code) linuxptp
git checkout v2.0
cd ~/linuxptp/
make install
sudo make install
sudo ./ptp4l -i enp3s0f0 -m -H -2 -s -f configs/default-1.cfg (rms < 100 represent sync)(enp3s0f0
should be replaced with the name of the 10G port NIC with grandmaster sync)
sudo ./phc2sys -w -m -s enp3s0f0 -R 8 -f configs/default-1.cfg (offset < 100 represent sync)
(If there is no default-1.cfg, change the domainNumber in default.cfg to 24 and
dataset_comparison to G.8275.x)

run bind dpdk

sudo su
sudo echo "2" > /sys/class/net/enp3s0f0/device/sriov_numvfs
sudo ip link set enp3s0f0 vf 0 mac 00:11:22:33:44:66 vlan 564 spoofchk off
sudo ip link set enp3s0f0 vf 1 mac 00:11:22:33:44:66 vlan 564 spoofchk off
modprobe vfio_pci
exit

sudo python3 /usr/local/bin/dpdk-devbind.py --bind vfio-pci 03:02.0
sudo python3 /usr/local/bin/dpdk-devbind.py --bind vfio-pci 03:02.1

sctp

https://sysadmin.lk/setup-sctp-in-red-hat-centos-linux-8/ (https://sysadmin.lk/setup-sctp-in-red-hat-centos-linux-8/)

modprobe sctp

run oai

```
cd ~/openairinterface5g/cmake_targets/ran_build/build/
sudo ./nr-softmodem -O …/…/…/targets/PROJECTS/GENERIC-NR-
5GC/CONF/oran.fh.band78.fr1.273PRB.conf --sa --reorder-thread-disable
```