

O-RAN Near-Real-time RIC



```
ric_dbaas | 1:M 26 Aug 2025 10:52:05.001 * Background saving
started by pid 19
ric_dbaas | 19:C 26 Aug 2025 10:52:05.003 * DB saved on disk
ric_dbaas | 19:C 26 Aug 2025 10:52:05.003 * RDB: 0 MB of memo
ry used by copy-on-write
ric_dbaas | 1:M 26 Aug 2025 10:52:05.101 * Background saving
terminated with success
ric_dbaas | 1:M 26 Aug 2025 10:57:06.012 * 100 changes in 300
seconds. Saving...
ric_dbaas | 1:M 26 Aug 2025 10:57:06.012 * Background saving
started by pid 20
ric_dbaas | 20:C 26 Aug 2025 10:57:06.018 * DB saved on disk
ric_dbaas | 20:C 26 Aug 2025 10:57:06.018 * RDB: 0 MB of memo
ry used by copy-on-write
ric_rtmgr_sim | 2025/08/26 10:57:06 POST /ric/v1/handles/xapp-sub
scription-handle body: {"address":"10.0.2.20","port":4560,"subscriptio
n_id":1} elapsed: 7.417µs
ric_dbaas | 1:M 26 Aug 2025 10:57:06.112 * Background saving
terminated with success
█
```

5G RAN



```
open5gs_5gc | 08/26 12:54:42.557: [smf] INFO: [Added] Number of SMF-Se
ssions is now 1 (../src/smf/context.c:3068)
open5gs_5gc | 08/26 12:54:42.560: [smf] INFO: UE SUPI[imsi-00101012345
6780] DNN[srsapn] IPv4[10.45.1.2] IPv6[] (../src/smf/npcf-handler.c:539
)
open5gs_5gc | 08/26 12:54:42.561: [upf] INFO: [Added] Number of UPF-Se
ssions is now 1 (../src/upf/context.c:208)
open5gs_5gc | 08/26 12:54:42.561: [gtp] INFO: gtp_connect() [127.0.0.4
]:2152 (../lib/gtp/path.c:60)
open5gs_5gc | 08/26 12:54:42.561: [upf] INFO: UE F-SEID[UP:0xe5 CP:0x
e3e] APN[srsapn] PDN-Type[1] IPv4[10.45.1.2] IPv6[] (../src/upf/context
.c:485)
open5gs_5gc | 08/26 12:54:42.561: [upf] INFO: UE F-SEID[UP:0xe5 CP:0x
e3e] APN[srsapn] PDN-Type[1] IPv4[10.45.1.2] IPv6[] (../src/upf/context
.c:485)
open5gs_5gc | 08/26 12:54:42.561: [gtp] INFO: gtp_connect() [10.53.1.2
]:2152 (../lib/gtp/path.c:60)
open5gs_5gc | 08/26 12:54:42.599: [gtp] INFO: gtp_connect() [10.53.1.1
]:2152 (../lib/gtp/path.c:60)
open5gs_5gc | 08/26 12:54:42.600: [amf] INFO: [imsi-001010123456780:1:
11][0:0:NULL] /nsmf-pdusession/v1/sm-contexts/{smContextRef}/modify (..
/src/amf/nsmf-handler.c:837)
open5gs_5gc | 08/26 12:54:42.723: [gmm] INFO: [imsi-001010123456780] N
o GUTI allocated (../src/amf/gmm-sm.c:1443)
█
```

gNB (combined CU & DU)



```
[100%] Built target gnb_base
Consolidate compiler generated dependencies of target gnb
[100%] Linking CXX executable gnb
[100%] Built target gnb
florianfrank@user-OptiPlex-5000:~/Documents/ciphercell/srsRAN_test_envi
ronment/srsRAN_Project/build$ sudo ./apps/gnb/gnb -c ../../oran-sc-ric/
e2-agents/srsRAN/gnb_zmq.yaml

--== srsRAN gNB (commit d90cd4e26d) ==--

srsLog error - Unable to create log file "/tmp/gnb.log": Permission den
ied
Lower PHY in executor blocking mode.
Available radio types: zmq.
Cell pci=1, bw=10 MHz, 1T1R, dl_arfcn=368500 (n3), dl_freq=1842.5 MHz,
dl_ssb_arfcn=368410, ul_freq=1747.5 MHz

N2: Connection to AMF on 10.53.1.2:38412 completed
E2AP: Connection to Near-RT-RIC on 10.0.2.10:36421 completed
E2AP: Connection to Near-RT-RIC on 10.0.2.10:36421 completed
E2AP: Connection to Near-RT-RIC on 10.0.2.10:36421 completed
==== gNB started ====
```

User Equipment (srsUE)



```
rx_port=tcp://127.0.0.1:2000,base_srate=11.52e6
Supported RF device list: zmq file
CHx base_srate=11.52e6
Current sample rate is 1.92 MHz with a base rate of 11.52 MHz (x6 decimatio
n)
CH0 rx_port=tcp://127.0.0.1:2000
CH0 tx_port=tcp://127.0.0.1:2001
Current sample rate is 11.52 MHz with a base rate of 11.52 MHz (x1 decimati
on)
Current sample rate is 11.52 MHz with a base rate of 11.52 MHz (x1 decimati
on)
Waiting PHY to initialize ... done!
Attaching UE...
Random Access Transmission: prach_occasion=0, preamble_index=0, ra-rnti=0x3
9, tti=1934
Random Access Complete. c-rnti=0x4601, ta=0
RRC Connected
PDU Session Establishment successful. IP: 10.45.1.2
RRC NR reconfiguration successful.
█
```

Sample xApp



```
-ColletStartTime: 2025-08-26 10:58:23
-Measurements Data:
--UE_id: 0
---granulPeriod: 1000
---Metric: DRB.RlcSduTransmittedVolumeDL, Value: 0.6 [MB]

Control Logic:
Tx Data Stats:
UE ID: 0, Max PRB Ratio: n/a, TXed Data [MB]: 8.8
-----

Data Monitoring:
E2SM_KPM RIC Indication Content:
-ColletStartTime: 2025-08-26 10:58:24
-Measurements Data:
--UE_id: 0
---granulPeriod: 1000
---Metric: DRB.RlcSduTransmittedVolumeDL, Value: 0.7 [MB]

Control Logic:
Tx Data Stats:
UE ID: 0, Max PRB Ratio: n/a, TXed Data [MB]: 9.5
-----
█
```

sudo ip netns exec ue1 ping



to generate traffic

```
60016 bytes from 10.45.1.1: icmp_seq=63 ttl=64 time=75.6 ms
60016 bytes from 10.45.1.1: icmp_seq=64 ttl=64 time=77.7 ms
60016 bytes from 10.45.1.1: icmp_seq=65 ttl=64 time=80.7 ms
60016 bytes from 10.45.1.1: icmp_seq=66 ttl=64 time=81.6 ms
60016 bytes from 10.45.1.1: icmp_seq=67 ttl=64 time=64.4 ms
60016 bytes from 10.45.1.1: icmp_seq=68 ttl=64 time=65.7 ms
60016 bytes from 10.45.1.1: icmp_seq=69 ttl=64 time=67.7 ms
60016 bytes from 10.45.1.1: icmp_seq=70 ttl=64 time=70.7 ms
60016 bytes from 10.45.1.1: icmp_seq=71 ttl=64 time=71.5 ms
60016 bytes from 10.45.1.1: icmp_seq=72 ttl=64 time=73.6 ms
60016 bytes from 10.45.1.1: icmp_seq=73 ttl=64 time=75.7 ms
60016 bytes from 10.45.1.1: icmp_seq=74 ttl=64 time=77.5 ms
60016 bytes from 10.45.1.1: icmp_seq=75 ttl=64 time=80.7 ms
60016 bytes from 10.45.1.1: icmp_seq=76 ttl=64 time=81.5 ms
60016 bytes from 10.45.1.1: icmp_seq=77 ttl=64 time=63.1 ms
60016 bytes from 10.45.1.1: icmp_seq=78 ttl=64 time=66.7 ms
60016 bytes from 10.45.1.1: icmp_seq=79 ttl=64 time=68.7 ms
60016 bytes from 10.45.1.1: icmp_seq=80 ttl=64 time=70.7 ms
60016 bytes from 10.45.1.1: icmp_seq=81 ttl=64 time=71.7 ms
60016 bytes from 10.45.1.1: icmp_seq=82 ttl=64 time=73.6 ms
60016 bytes from 10.45.1.1: icmp_seq=83 ttl=64 time=76.7 ms
█
```