The Future of Next-Gen Networks

Why 5G’s success depends on disaggregation and OpenRAN

Neeraj Patel
VP & GM Software & Services
ONF Connect Sep 11, 2019
And the *Transformation* is about to begin…

**SDPON**
Wireline disaggregation gains momentum as PON becomes the workhorse for 5G transport

**5G Access**
Builds on our wireless DNA as we pivot from stacks to more end-to-end enabling product solution

**Disaggregation Ecosystem**
Acute need from global CSPs for aggregator of the disaggregation ecosystem
Open Virtualized RAN Architecture for 4G and 5G Networks

- **EPC**
- **5G Core**

- **Centralized vBBU**
  - Control Unit (CU)

- **MEC Applications or RIC (Optional)**

- **4G Small Cells**
- **4G+NR Capable**
- **5G NR**

- **Distributed Remote Radio Unit (RRU) – Data Unit (DU)**

---

- **Back-haul/Midhaul**
- **Front-haul**

- **Virtualized mobile core for 4G and 5G Networks with end to end Network Slicing**

- **Programmable RAN** Control plane using open reference architectures

- **Centralization and Virtualization of RAN** eNodeB functions + Mobile Edge Apps

- **Unbundled RAN (CU/ DU)** using standard APIs

- **Modular** RRU software functions supporting multiple RAT co-existence
Radisys Telecom Industry Expertise

Our Telecom Expertise

- xRAN API (RAN) Development
- Joint Solution with Intel®
- ORAN defined APIs
- WG Participation
- Design and Specification contribution

- Contributing Member
- FAPI eNB MAC – PHY Interface
- Small Forum API Development
- nFAPI development
- 5G FAPI / nFAPI development

- Observer Member
- CBRS eNB, EPC Solutions
- On.Go Test Platform for CBSD(A/B)

- Lead TIP Type 1 Solution Integrator
- Contribution of LTE and EPC to TIP
- Development for Open Cellular
- Solution Integrator for Open-RAN
- Solution Integrator for Virtual RAN Fronthaul
- TIP Demo integrator for TIP Summit & MWC

- Board Member
- CORD (SEBA/MCORD/MEC) Contribution
- Exemplar Framework and Solution Integration
Radisys & ORAN Alliance

Radisys actively participating in:

- **WG3 (Contributor)**
  - Near-Real-time RIC and E2 Interface
- **WG4**
  - Open Fronthaul Interface
- **WG5 (Contributor)**
  - Open F1/W1/E1/X2/Xn Interfaces
- **WG6**
  - Cloudification and Orchestration + OSFG
- **WG7 (Contributor-SW)**
  - White-box Hardware (demo at MWC-S)
- **WG8 (Vendor Co-Chair with Intel)**
  - Stack Reference Design
- **TIFG (Contributor)**
  - Conformance & Interoperability Testing
  - Harmonization across different WGs and end-to-end system test
- **OSFG (TOC, Contributor)**
  - Seed code contribution for O-DU (available on Wiki)
Radisys is a pioneer in enabling open RAN solutions for OEMs and Carriers alike

As part of this activity, Radisys has embraced the TIP (Telecom Infrastructure Project) initiatives to create a truly open and disaggregated RAN ecosystem

- **OpenRAN 5G NR**: Whitebox 5G NR access point which is disaggregated and that is easy to configure and deploy
- **OpenRAN 4G**: Fully programmable RAN solutions based on General Purpose Processing Platforms (GPPP) and disaggregated software
- **Virtual RAN**: Virtualization of the RAN for non-ideal backhaul (non CPRI)
- **Unbundled Access**: Disaggregation of RAN solutions allowing multi vendor interoperable software
- **Open Cellular**: Open sourced by Facebook to create end to end cellular solutions for rural areas
Converged Multi-Access and Core (COMAC)

- Converged User Plane
  - coDBA

- OMEC leveraged
  - Multiple Open Source EPC

- O-RAN Controller
  - RIC (Near RT and Non RT)

- Common SDN Infrastructure

- Common data model
  - Netconf / Yang
Most of the applications are VM-centric.
- With the evolution of lightweight and Telco-grade infrastructure, containers-based approaches are more preferred for real-time and high-traffic applications.
- In coming few years, Network Infrastructure will be a container framework.
• CSPs want a product level solution but with principles of disaggregation
  • Multi vendor | CUPS | hardware – software disaggregation

• Open Source is not just open source software
  • Open Architectures | Open APIs | Open Interfaces | Open Hardware

• Radisys can provide sandbox for
  • Architecture considerations
    • Split options, integrated vs. split, RIC and its placement
  • PNF vs. VNF vs. CNF
  • Performance dimensioning
  • Deployment scenarios
  • Use Cases
  • Conformance & Interoperability
Radisys in the Open RAN reality

Radisys will aggregate this disaggregation from the multi vendor ecosystem

Life Cycle Management: Tested | Validated | Documented | Supported
Thank You

neeraj.patel@radisys.com