

dRAX™ Open Interface RAN Intelligence

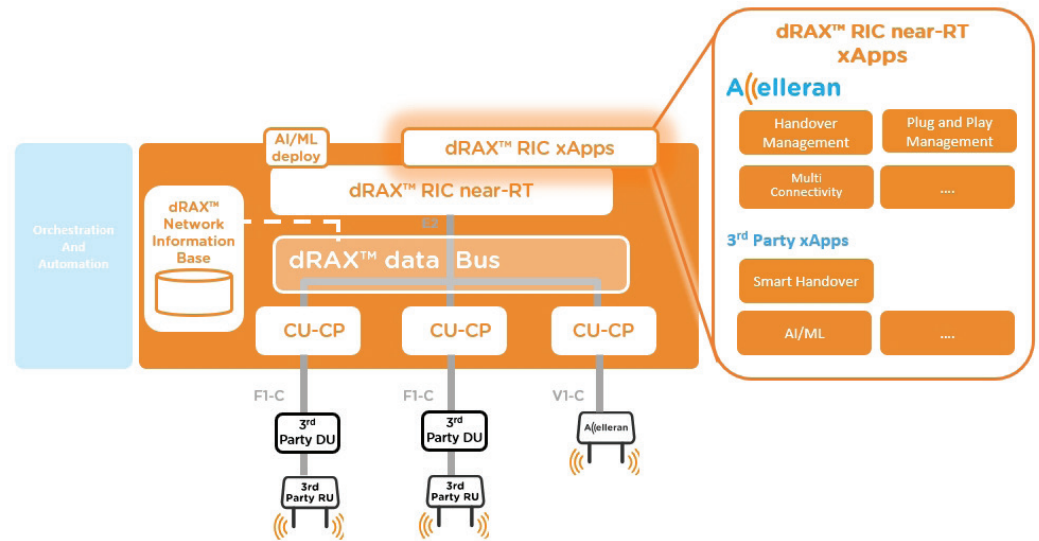
dRAX™ Case Studies ONF M-CORD

M-CORD from ONF uses dRAX™ components in their Telco Edge Cloud reference implementation. dRAX™ Control Plane is used as virtualised control plane together with E1000 radio units. dRAX™ is deployed as a set of Docker containers within the CORD service mesh interworking with the rest of the CORD infrastructure.



5G CITY

5G City is an H2020 R&D programme with support from the European Union to provide a Cloud and Distributed Radio Platform for 5G Neutral Hosts (such as municipalities) to deploy virtual networks supporting multi-tenancy through dynamic end-to-end slice management and virtualisation. The cities of Barcelona, Bristol and Lucca are hosting real-world trials of the technology which uses dRAX™ to implement the RAN component.



PRODUCT DESCRIPTION

Accelleran dRAX™ delivers a true multi-vendor, disaggregated and virtualised RAN Intelligent Control Plane as per ORAN.

Key features of dRAX™ are:

- **Cloud Native**

All dRAX™ components are lightweight containers communicating over a common messaging bus.

- **ORAN Compliance**



Accelleran is a proud and active member of the ORAN Alliance. We support this overdue initiative and dRAX™ architecture is compliant with the ORAN approach.

- **Containers (Kubernetes)/VM(OpenStack)**

dRAX™ containers/VMs are managed and orchestrated through Kubernetes/Openstack respectively.

- **Control User Plane Separation (CUPS)**

dRAX™ was conceived and designed to be cloud native. The dRAX™ control plane is field proven in our range of embedded small cells and fully interoperable with our own User Plane implementations or other vendors iNIC implementation.

- **User Plane Location Independence**

Control and User Plane location are independent and flexible. User Plane processing can be independently assigned per UE and per Service Bearer, opening

up huge flexibility for intelligent resource assignment and efficient MEC access.

- **4G LTE and 5G**

The development of 5G NR opens exciting opportunities for the future, but we also believe that 4G LTE has a lot more to offer. That's why dRAX™ also support LTE technology to enable the benefits of Cloud Native vRAN in networks of today as well as tomorrow.

- **Open Integration**

Thanks to the dRAX™ open API's and convergence libraries, any radio head or small cell platform can be integrated into a dRAX™ network.

- **Scalable**

dRAX™ can be implemented on a single microserver for the smallest edge cloud. At the other end of the scale, clusters of hundreds of cells can be supported with either native user plane processing on x86 or user plane offload to GPU or dedicated iNIC.

- **Mission Critical Reliability**



All dRAX™ code is written to Accelleran's unique set of SW development standards such as MISRA which are based on established practices from safety critical industries.

The first Pré-ORAN intelligent RAN Controller

ABOUT ACCELLERAN

The Accelleran team has been a recognized leader in the small cell industry for more than ten years. With an average experience of 20+ years each, the team offers unrivalled expertise across the full range of skillsets required for success in the challenging RAN solution market.

We insist on SW development standards and practices to deliver a carrier and mission critical grade quality disaggregated RAN component using standardized interfaces. Your carrier-grade brain of the RAN subsystem.

Accelleran Carrier and Mission-Critical grade architecture-agnostic small cell RAN-vRAN software solutions were selected as winner of the Small Cell Forum Award 2018 in the category "Outstanding innovation in small cell technology or architecture"

FURTHER INFORMATION

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Benefits

• Total Cost of Ownership

dRAX™ allows you to dynamically allocate computing resources at the right places in your network. You scale on commodity hardware and you leverage optimized silicon solutions. Even whitebox hardware becomes reality in the RAN. And from your centralized intelligent controller you will drive these commodity DU and RRU's and optimize spectral efficiency in hyper-dense networks. Finally, you will unleash innovation at all levels of the disaggregated RAN components.

• Disruptive Business Models

See the RAN as a logical capacity pool. Capacity becomes OPEX and you use it as a service.

• User Experience

For each application type, you will be able to adapt, migrate and relocate network components at the optimal place for enhanced user experience. Even more importantly, the unlocked data in this open architecture will easily be leveraged by both real-time as non real-time A.I. and Machine Learning algorithms, bringing user experience and network efficiency to a next level.

dRAX™ Technical Specification

Flexible LTE FDD, LTE TDD and 5G-NR vRAN	
Transceiver Specification	Band Support
<ul style="list-style-type: none"> MIMO, BS Class, Tx Power and number of transceivers as per managed RU capabilities 	<ul style="list-style-type: none"> All LTE FDD/TDD and 5G-NR bands a per RU capabilities
Network Interfaces	
Layer 1 & 2	Layer 3 and OAM
<ul style="list-style-type: none"> Split 2 <ul style="list-style-type: none"> Pre-ORAN Proprietary V1-C (GTP-U) Pre-ORAN Proprietary V1-C/V1-U ORAN/3GPP F1-C/F1-U Split 6: Small Cell Forum nFAPI Split 7: Dependent on RRU capabilities 	<ul style="list-style-type: none"> Control Plane: S1-MME (LTE or NSA 5G-NR) User Plane: S1-U (LTE or NSA 5G-NR) ORAN A1, 3GPP E1 (CUPS) and internal 3GPP E2 Type 1 OAM (TR-069/TR-196), Type 2 OAM (SNMP), OAM Webserver or CLI, SAS (CBRS) Alternative OAM interface possible (XML, Netconf, Proprietary)
Key Features	
<ul style="list-style-type: none"> 3GPP compliant Cloud Native Service Components ORAN Architecture Compliant Service Orchestration CUPS 	<ul style="list-style-type: none"> User Plane distribution 4G and 5G ready Highly Scalable Mission Critical Reliability
Virtualisation	
<ul style="list-style-type: none"> VM: Openstack (RedHat and ADVA) Containers: RedHat OpenShift, Kubernetes 	

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