

Acceleran

RAN Intelligent Controller



The O-RAN Journey

To harness the full power of 5G, operators worldwide are turning to the Open RAN Alliance's vision. Backed by industry leaders such as Accelleran and supported by governments and academia, this alliance is pioneering the separation of RAN's control and user plane functions. This distinction not only offers enhanced scalability and adaptability but also enables **operators to tailor their networks to specific needs, reduce costs, and fully leverage 5G's capabilities.**

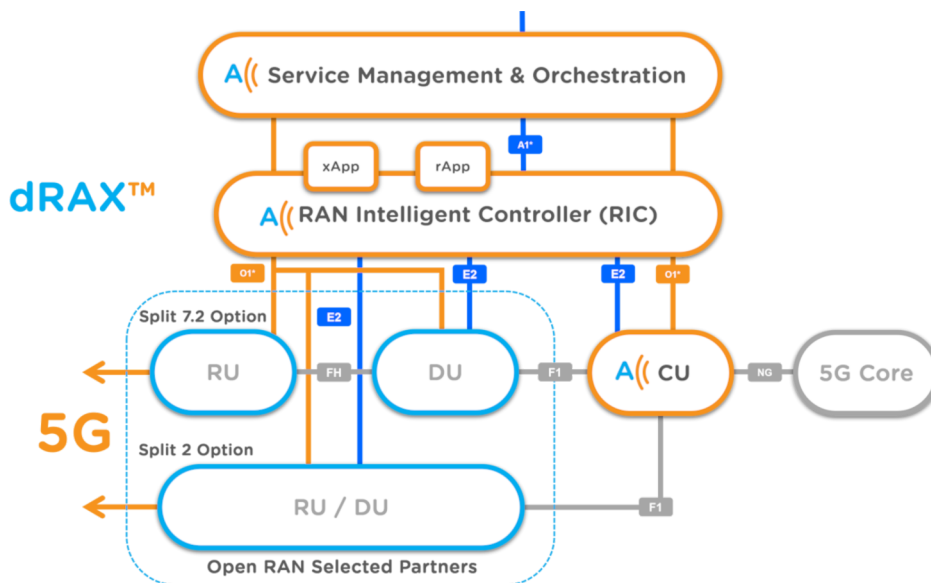
OpenRAN fosters interoperability among various RAN components—RU, DU, CU—from different vendors, creating an innovative and synergistic vendor ecosystem. The "Open" in OpenRAN emphasises transparent RAN operations, granting insights into its functionalities, data, and statistics that were restricted in legacy systems. This openness paves the way for the creation and integration of x/rApps for advanced automation and optimisation fully tapping into 5G's potential.

Central to this evolution is **the RAN Intelligent Controller (RIC)**. This datasheet delves deep into Accelleran's RIC, highlighting real-world use cases that infuse intelligence into the RAN.

Accelleran's dRAX Solution:

Before delving into the RIC in detail, it's important to first have an overview of Accelleran's overall dRAX solution. Accelleran's dRAX is a cloud-native, O-RAN aligned product that includes:

- **Control User Plane Separation (CUPS) CU**
- **Distributed near-RealTime/non-RealTime RIC**
- **xApp/rApp SDK**
- **RAN-focused SMO/Dashboard**



dRAX presents an open software framework specially designed for the control plane functions of 5G RAN, ensuring adherence to Open RAN architectural norms. Its cloud-native framework, built on containerised microservices, guarantees efficient communication through an asynchronous messaging system.

Key RAN components, such as CU-CP, CU-UP, nRT-RIC/nonRT-RIC, SMO, and the xApp/rApp SDK, are segmented into individual service entities for meticulous management.

A testament to its versatility, dRAX smoothly interfaces with diverse OpenRAN ecosystem DUs/RUs, endorsing both the Split 7.2 (decoupled DU and RU) and Split 2 (integrated DU/RU) configurations.

O-RAN Architecture explained

Interfaces:

E2 Interface: This is the interface between the RAN Intelligent Controller (RIC) and the radio units (or nodes). The E2 interface allows for real-time control and optimisation of the RAN. Through this interface, the RIC can use real-time information from the network to make decisions and then instruct the radio units on how to act accordingly.

O1 Interface: This interface connects the various components of the O-RAN network to the non-real-time RIC and the Service Management & Orchestration (SMO). The O1 interface allows for the management and orchestration of the network resources, configuration, fault management, and performance monitoring.

A1 Interface: This is the interface between the RIC (both non-real-time and near-real-time) and the Service Management & Orchestration (SMO) layer. It is used for policy control, wherein the SMO provides policy guidelines to the RIC about how the RAN should behave under certain conditions.

Y1 Interface: The Y1 interface is used for exposing RAN analytics information.



Check out our article:
What is Open RAN?
A simplified guide

Find out more

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nRT and non-RT RIC Explained

	Near-RealTime (nRT) RIC	Non-RealTime (non-RT) RIC
Primary Function	Focuses on real-time, event-driven policies and decisions.	Manages broader, non-time-sensitive RAN strategies
Reaction Time	Rapid response; caters to instantaneous network events and dynamics. (Down to 10ms)	Slower, strategic response; designed for long-term network planning and optimisation. (>1s)
Interaction Level	Engages more directly with the RAN components, especially with the baseband unit	Interacts at a higher, more strategic layer, typically with service management.
Application Types	xApps tailored for real-time analytics, optimisation, and adaptive responses.	rApps focused on network slicing, long-term optimisation, and high-level management.
Integration Complexity	Higher due to the need for real-time data processing and instantaneous decision-making.	Typically less complex as it deals with broader, less time-sensitive data and strategies.

Accelleran: dRAX RAN Intelligent Controller (RIC)

Accelleran’s dRAX RIC is aligned with the Open RAN Alliance’s vision, driving innovation. With its commitment to openness, the RIC platform allows third-party developers to seamlessly bring their xApps/rApps into the RAN via a robust SDK. Examples of these xApps/rApps are on the last page of this datasheet.

Where RAN Meets AI

RIC Launched in 2019

Multiple customer references and 3rd party developers

Vendor-independent Cloud Native distributed RIC

Open and O-RAN aligned platform

x/rApps development platform : Own and 3rd party xApps

Bridging the non-ORAN and ORAN world with a unified xApp/rApp developer experience

The Near Real-Time/Non Real-Time RIC (nRT/non-RT-RIC) is designed to champion xApps/rApps as microservices, harmonising them with the overarching dRAX ecosystem.

RIC – Platform

- Cloud Native architecture
- ORAN Compliance: E2, O1*, A1*
- Integration of RAN elements through non ORAN interfaces
- Service Discovery and Orchestration
- Centralised data-bus for data observability
- API-Driven xApps/rApps Configuration and Policy Management
- Integration with external Non-RT-RIC/SMO components via Streams, Rest, and Netconf

RIC – xApps/rApps

- xApp/rApp development Framework
- Databus message reference
- Integration of external data sources
- Real-time commands to direct RAN behaviour
- Inter xApps/rApps communication

Unlocking Network Potential with AI/ML Integration

Within the OpenRAN ecosystem, the AI/ML workflow stands as a robust framework driving network optimisation and elevating the user experience. With the integration of AI/ML, the network not only becomes more efficient but also adapts in real-time to changing user demands and network conditions.

The rApps within the non-real-time RIC take charge of data acquisition through the OpenRAN O1 interface, shaping and training the machine learning model. This model is seamlessly shared with the xApp via the OpenRAN A1 interface, allowing the xApp to leverage real-time data through the OpenRAN E2 interface for informed decision-making.

AI/ML-informed decisions are pivotal in finetuning network functionalities, ushering in an era of smarter, highly responsive network infrastructure.

Why Choose dRAX RIC?

Fast Service Implementation: Via containerisation and microservices, the Accelleran RIC ensures speedy deployment of new services and updates. This allows network operators to quickly adapt to shifting market dynamics and user requirements.

Embrace Distributed Efficiency: Our cloud-native RIC, built on Kubernetes, adopts a distributed model. This design propels time-sensitive services nearer to the RAN, ensuring optimal network speed and performance.

Live Analytics: Dive into in-depth network performance insights with the real-time analytics and reporting our RIC provides. Make data-driven decisions and address potential issues, ensuring a top-tier user experience.

AI-Driven Capabilities: Harness the benefits of artificial intelligence for tasks like network optimisation, predictive upkeep, and detecting anomalies, thus amplifying overall network insight.

Unrivaled Adaptability: With capabilities for both near real-time and non-real-time RIC functions, our solution is poised to meet the evolving demands of your network – today and in the future.

Economical Advantages: Our RIC optimises resource allocation, diminishes energy use, and fosters efficient network management, leading to cost reductions without sacrificing service quality.

Efficient xApp & rApp Creation: Leverage the Accelleran xApp SDK with our RIC for crafting tailored xApps that resonate with your network’s distinct needs. This enhanced development process propels innovation and offers swift solutions to network challenges.

Accelleran dRAX xApp SDK: Unleash the Power of Customisation

Accelleran's dRAX xApp Software Development Kit (SDK) has been developed specifically for creating bespoke x/rApps for the dRAX RIC platform. Our comprehensive toolkit opens doors to introduce new functionalities, services, and optimisations. With an xApp, or "extended application", operators can seamlessly embed fresh capabilities into their network, harnessing the full potential of OpenRAN's transformative architecture.

Accelleran's dRAX xApp SDK comes with comprehensive documentation and support to jumpstart your development journey. **Discover how the dRAX xApp SDK can empower your network with unparalleled customisation and flexibility.**

Contact us today to learn more about this toolkit and start building the future of OpenRAN.

x/rApps: Real World Use Case Transforming Network Capabilities

Below is a selection of x/rApps developed by Accelleran and third parties and deployed on our RIC:

- Network Optimisation:** Fine-tunes resource allocation in real time, optimising network performance during peak usage.
- Advanced Analytics:** Utilises data analytics to offer valuable insights into network trends, facilitating proactive decision-making.
- Service Orchestration:** Facilitates the introduction of new services and features into the network, enabling service orchestration and delivery.
- Network Slicing:** Automates the network slicing process and optimises the allocation of network resources for distinct applications, services, and users. It aids operators in delivering bespoke network services, enhancing network efficiency, and trimming operating costs.
- Network Capacity Planning:** Streamlines the network capacity planning process and perfects the allocation of network resources. It scrutinises network traffic patterns, anticipates future demand, and optimises the network's resource capacity.
- Network Monitoring:** Automates the network monitoring process, offering real-time insights into OpenRAN network performance. It identifies network anomalies, highlights performance bottlenecks, and alerts network operators in real time.
- Self-Organising Networks:** Enables the network to self-organise and self-optimize, diminishing the necessity for manual intervention. It automates the configuration and management of network elements, enhancing network performance.



Accelleran alongside other industry leaders is a key player in the TIP-led Accelerating RAN Intelligence in 5G (ARI-5G) consortium.

Telecom Infra Project (TIP) leads this consortium with financial support from the UK government, aiming to promote Open RAN deployment as part of the Future RAN (FRANC) competition.

The ARI-5G consortium is actively implementing, testing and displaying Accelleran's O-RAN Aligned RIC platform equipped with x/rApps developed on our SDK.

xApp Highlight: Energy Saving: The potential of our Energy Saving xApp is a testament to the innovative capabilities of the dRAX xApp SDK. This xApp harnesses the collective power of three distinct xApps, all created via our SDK and orchestrated on the RAN Intelligent Controller. In a simulated environment, this combined system showcased a remarkable capability of achieving energy savings for the network.

The results underscore the significant energy efficiencies that can be unlocked in real-world scenarios. **Not only does this xApp pave the way for considerable operational savings, but it also champions an eco-friendly approach essential for sustainable telecom operations in the 21st century.**

Other Accelleran or 3rd-party xApps/rApps include:
Anomaly detection • Traffic Steering Automated PCI allocation • ANR and CCO
More apps are being continually developed. Get in Touch to learn more.

- Why choose Accelleran RIC?**
- ✔ Non/Near Realtime RIC capabilities
 - ✔ Rich variety of x/rApps & Developer Ecosystem
 - ✔ Proven real-world deployments
 - ✔ xApp/rApp SDK & Rich Developer Experience



Book a meeting or get in touch today

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