

Akraino and O-RAN WG6 Collaboration

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LF Akraino Technical Steering Committee

Contributors:

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Executive Summary

- › O-RAN WG6 publishes cloud specifications for O-RAN use cases
 - › Cloud solutions require development of a full software stack, testing, CI/CD and associated continued support
 - › Cloud solutions need a way to demonstrate conformance to specifications
- › LF Akraino delivers proven & tested edge stacks for specific use cases
 - › Established processes, tools and labs necessary to develop and validate Edge stacks (Blueprints)
 - › Supports multiple Blueprints for the same use case to allow architectural freedom and innovation
 - › Delivered multiple Blueprints supporting various RAN use cases that wish to integrate with O-RAN/O-RAN SC (e.g., Radio Edge Cloud including O-RAN SC Near-RT RIC software, Network Cloud w/ SR-IOV or OVS-DPDK, Integrated Cloud Native, Kubernetes Native Infrastructure Provider Access Edge, and more)
- › LF Akraino community proposes following the following to WG6
 - › Work effort within WG6 to convert specifications into a test cases
 - › Work effort (Feature project) within Akraino to automate test cases using existing Akraino automation
 - › Work effort (Blueprints) within Akraino to deliver tested and validated Edge stacks supporting O-RAN specifications
 - › Akraino community will coordinate with other O-RAN & O-RAN SC groups as needed
 - › Akraino community welcomes O-RAN collaboration



Akraino Edge Stack Quick Overview

Akraino Edge Stack is an Linux Foundation open source project that:

- › Delivers fully integrated, community tested, “ready and proven” edge cloud open source software stacks (a.k.a Blueprints) to support a wide variety of edge deployments
- › Addresses the integration of open source projects and performs CI/CD, security reviews and testing upfront in the community
- › Contains the right mix of vendors (Dell, HP, Ericsson, Nokia, RedHat, Wind River, Intel, Arm, ...) and providers (AT&T, China Mobile, Baidu, Tencent, ...) to collaborate and deliver edge cloud blueprints
- › Creates customized blueprints for specific use cases and validates/tests the hardware and software with community automation at the Akraino Community lab and User labs (a.k.a Validation labs)
- › Establishes open processes to evaluate proposals and contributions from everyone based on technical merit and community support
- › Uses upstream projects for majority of the components within each blueprint
- › Delivered 10+ blueprints in Akraino R1 in June, 2019, and 14+ blueprints in Akraino R2 in January 2020, for Telco, IoT, and enterprise use cases. These included the Radio Edge Cloud blueprint supporting the O-RAN SC Near-RT RIC and several additional blueprints targeting RAN use cases.
- › Developing liaison with Telecom Infra Project and intend to liaison with Common NFVI Telco Task Force
- › Additional information: <https://www.lfedge.org/projects/akraino/>

Why should O-RAN use Akraino?

Goal of Liaison:

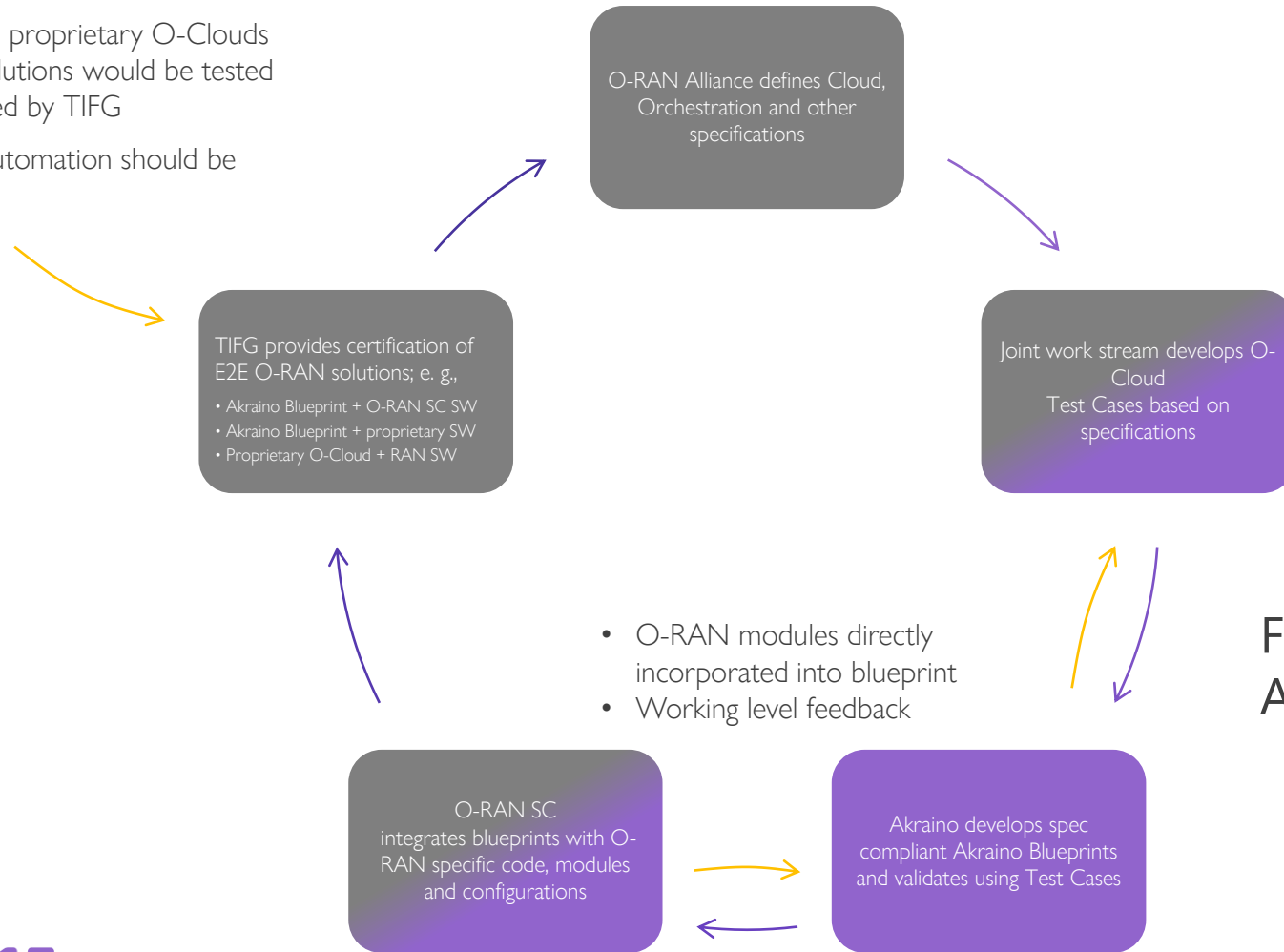
- › Enable efficient development of open source O-Cloud solutions based on O-RAN specifications

Proposal:

- › In O-RAN WG6
 - › Define specific test cases for each O-Cloud requirement that can be used by an automated testing framework to validate conformance with O-RAN O-Cloud specifications
- › In Akraino
 - › Develop blueprints and testing framework, test blueprints using test cases, and publish results
 - › Leverage Akraino community's established CI/CD, lab infrastructure, automated testing, community process and engagement of right industry players to develop blueprints
 - › Avoid duplicate work by companies engaged in both O-RAN and Akraino (e.g. AT&T, Ericsson, Nokia, Intel, Radisys, Qualcomm, Wind River, etc.) to save time and money
 - › Deliver Akraino Blueprints with tested edge cloud/virtualization layer required to support O-RAN use cases and O-RAN SC developed software (e.g. RIC, Near-RT RIC, CU/DU, etc)

Proposed cross-community collaboration

- Closed source and proprietary O-Clouds and/or O-RAN solutions would be tested in an OTIC qualified by TIFG
- Same Test Case automation should be used in OTIC



For open source O-Clouds, Akraino provides:

- > Automation of Test Cases
- > Lab hardware for validation
- > CI/CD environment
- > End to End tested Blueprints

Akraino Community Best Practices

In Scope Activities:

- › Akraino community charter is to develop edge cloud stacks (blueprints) for different use cases.
- › Akraino community requires clear platform requirements, specs and test requirements for each use case (e.g., specifications from O-RAN WG6).
- › Akraino community validates all blueprints in the lab.
- › Blueprints can have their own release schedule but to be part of an Akraino release (every six months) the blueprint needs to pass community testing/gating.
- › Akraino blueprints include the specific software components and hardware platforms that were tested
- › Akraino community supports multiple blueprints for same edge use cases (different architecture/solution)

Out of Scope Activities:

- › Akraino community does not develop applications (e.g., RAN software).
- › Akraino community cannot test all application scenarios (e.g., functionality of RIC or CU/DU) but can test the integration aspects with the cloud
- › Akraino community blueprints cannot use proprietary software as part of community integration (all source needs to be open). Proprietary components can be added on top of community delivered software.
- › Akraino community cannot fork upstream software; instead community establishes liaison with upstream to bridge any gaps

Next steps

- › Request approval from WG6 to create a new work item to define test cases
- › Begin with Chapter 4: O-Cloud Requirements of O-RAN.WG6.CLOUD-REF-B-v01.00 TS
<https://oranalliance.atlassian.net/wiki/download/attachments/114819687/O-RAN.WG6.CLOUD-REF-B-v01.00.pdf?api=v2>
- › Work with SDFG & LF to establish formal liaison between O-RAN and LF Akraino
- › Work with O-RAN SC TOC to determine the best method to integrate Akraino blueprints with O-RAN SC software development and testing processes

Example timeline:

