Welcome to the G release page for the O-RAN Software community.

**The G release has been released**

- Non-Real-time RIC (NONRTRIC)
- Near-Real-time RIC X-APPs (RICCAPP)
- Near-Real-time RAN Intelligent Controller Platform (E2 Interface) (RICPLT)
- Operation and Maintenance (OAM)
- O-RAN Central Unit (OCU)
- O-DU High
- O-DU Low
- Simulators (SIM)
- Service Management and Orchestration Layer (SMO)
- Infrastructure (INF)
- Integration and Test (INT)
- AIML Framework (AIMLFW)

### Non-Real-time RIC (NONRTRIC)

**Primary Goals:**

- The primary goal of Non-RT RIC is to support intelligent RAN optimization by providing policy-based guidance, ML model management and enrichment information to the near-RT RIC function so that the RAN can optimize, e.g., RRM under certain conditions.
- It can also perform intelligent radio resource management function in non-real-time interval (i.e., greater than 1 second).
- Non-RT RIC can use data analytics and AI/ML training/inference to determine the RAN optimization actions for which it can leverage SMO services such as data collection and provisioning services of the O-RAN nodes.
- Non-RT-RIC will define and coordinate rApps (Non-RT-RIC applications) to perform Non-RT-RIC tasks.
- Non-RT-RIC will host the A1 interface (between NONRTRIC & near-RT RICs)
- Non-RT-RIC will also host the new R1 interface (between rApps and SMO/NONRTRIC services)

### G Release - Highlights:

**Count of Epics** (20 issues), **User Stories, Tasks, and Issues:** (455 issues)

- R1 Service Exposure & Management
  - Continued work of Service execution platform extensions (K8s, Istio, Keycloak, OPA, Gateway) to enable and enforce service isolation & exposure
  - Released first version of 3GPP CAPIF-aligned Service Registration & Discovery service
  - Demonstration: "Enforcing Service Exposure for rApps"
- R1 Data Management & Exposure
  - Aligned with emerging proposals for R1-DME where possible
  - R1 DME Data Catalog support in NONRTRIC ICS
  - R1 Data delivery & filtering (kafka & REST)
  - Demonstration: "PM Collection & Delivery to rApps"
- rApp Manager
  - Built on ONAP “Automation Composition” model & platform to implement rApp use cases
  - Demonstrate controlled on-boarding & LCM rApps with & without μService
  - Overlap with Service Exposure work to examine role of an rApp Manager to support controlled exposure & LCM of μService and non-μService parts of an rApp
  - Partly demonstrated: "Deploying & Running NONRTRIC platform and rApps"
  - A1 Spec evolution
  - Southbound: A1 Interface
  - Northbound: R1-A1(P) & R1-DME Interfaces
- Sample use cases (rApps)
  - Requirements Drivers for rApp/R1 development
  - High degree of cross-project integration activity
  - Partly demonstrated: "Deploying & Running NONRTRIC platform and rApps"
- Testing, Maintenance & Housekeeping
  - Function Test & Integration Test environment,
  - Support integration, deployment & configuration of SMO/Non-RT-RIC related functions & usecases in OSC Integration env.
  - Partly demonstrated: "Deploying & Running NONRTRIC platform and rApps"
- Project coordination, Documentation, Delivery, Reporting, Cross-project alignment, Community demos, O-RAN Standardization support, etc.

**PTL:** John Keeney
Near-Real-time RIC X-APPs (RICAPP)

**Primary Goals:** Expand the community working on open source xApps for O-RAN SC.

Enhance the set of open source xApps in support of the RSAC use cases (traffic steering, network slicing) as well new use cases.

Update and enhance existing xApps
G release plan (<date>):

- New HW Rust xApp to support RUST framework not ready for G-release -- Johannes Becker
- HW (python) - RIC Subscription using python xApp framework
- RC xApp - GRPC interface support on RC xApp
- Bouncer xApp - RIC Benchmarking new features addition
- KPIMON-GO xApp – Version 2.0
- AD & QP xApp – InfluxDB database integration to fetch data.

PTL: SUNIL SINGH

<table>
<thead>
<tr>
<th>Jira: Count of Epics, User Stories, Tasks, and Issues:</th>
<th>165 issues</th>
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Completed Epics:

- **RICAPP-204** - Anomaly Detection xApp (G-Release)
- **RICAPP-207** OP xApp (G-Release)
- **RICAPP-201** - KPIMON xApp (G Release)
- **RICAPP-200** - RC xApp (G Release)
- **RICAPP-202** - upgrading protofile and modified NodebHandler to build CELL-RAN map (cell_map)
G release highlights/accomplishments (16-Dec-2022):

AD xApp :-
• Removal of pushing data into influxdb when xApp starts.
  1. Either UE's KPIs should be continuously stored into influxDB from KPIMON OR
  2. We will need to run script manually to populate influxDB from .csv separately
• changes in AD xApp to read live data from influxDB for inference
• Addition of Python script to read static data and keep pushing into RICPLT InfluxDB
• Addition of exception module to handle errors and exceptions
• Addition of configuration module to update
  – InfluxDB configuration (near RT RIC instance or external)
  – KPIs
• parameter tuning and functionality addition for improvements

QP xApp :-
• Removal of pushing data into influxdb when xApp starts.
  1. Either UE's KPIs should be continuously stored into influxDB from KPIMON OR
  2. We will need to run script manually to populate influxDB from .csv separately
• changes in QP xApp to read live data from influxDB for inference
• Addition of Python script to read static data from .csv and keep pushing into RICPLT InfluxDB
• Addition of exception module to handle errors and exceptions
• Addition of configuration module to update
  – InfluxDB configuration (near RT RIC instance or external)
  – KPIs
• Model validation, parameter tuning and functionality addition for improvements

Gerrit Reviews

KPIMON-GO xApp :-
• E2SM KPM version upgraded to 2.0
• Added a feature to build a RAN cell map.

RC xApp:
• Upgrading the RC service model to 1.0.3.

Bugs fixes:
• The E2SM RC control request structure was not properly set. (Ran parameter id 3 is missing in final Rc control structure)
• values in control request header and control request message are incorrectly set.

TS xApp:
• upgraded proto file in order to match with the proto file of latest RC xApp.
• modified - NodebHandler to build CELL-RAN map (cell_map) properly.

G release source code, container images and deployment instructions

The list of container images for the G release (link)

Code Coverage Reports : Latest reports can be found at the following Link: Projects - O-RAN Software Community (sonarcloud.io).

Near-Real-time RAN Intelligent Controller Platform (E2 Interface) (RICPLT)
Original primary goals:

- E2T improvements: Support in simulator in internal E2mgr model source code for E2 Reset procedure (from E2 node to RIC (RIC-386)) - full E2 reset procedure from RAN only in RIC-946 in H release; Correct handling of E2 node reconnects and multiple E2 Setups (RIC-932). Support split architecture (CU/DU) in E2T/E2M (RIC-933), test cases of remaining interface types in config update (RIC-911), MDC dynamic log level change in E2T and E2M (RIC-814, RIC-813), check existence of SCTP stack during startup (RIC-931)
- A1: finalize re-implementation of A1 in golang (from python) (RIC-849, RIC-914)
- Support for E2 subscriptions via REST from the xapp framework for c++ (RIC-641)
- Remove support for RMR in E2 subscription interface and only continue with E2 REST subscription interface towards xApps (RIC-375)
- We will do this only as first step in the next release because the last missing xapp-framework changes were done very late in the G release (xapp-frame-cpp) supports REST (RIC-641, RIC-705). Go and python already support E2 REST subscriptions
- Subscription delete callback to xApps and subscription cleanup after xApp removal (RIC-928, RIC-929)
- Support for DMS via REST in addition to command line tool DMSCLI (RIC-714)
- First version of the xApp framework for Rust (RIC-924)
- Missing test cases for xapp-frame-py (RIC-917)
- xapp-frame go support readiness and liveness state with appmgr/rtmgr (RIC-930)
- First version of a RIC CLI (RIC-445)
- Application cleanup (RIC-918)
- E2 check, validate and define how various overload and disconnect case are handled (RIC-704)
- Enhancements in A1 mediator testing and in E2 subscription testing via nanobot (RIC-878, RIC-860)
- Update of influxDB from 1.82.2, incl. adaptations in stslgo module (RIC-919)
- Take go version 1.18 into use in base image (RIC-937)
- bug fixes: RIC-945 e2term crashes occasionally when gNB is disconnected, RIC-944 PlmnId to mnc conversion wrong, RIC-943 alarm-go mm routing table init failure, RIC-936 reference to gcr -> ghcr, RIC-935 kube-flannel changed namespace, RIC-934 Upgrade sdlgo Golang version to fix CVE-2022-32189 vulnerability
- RIC-920 fix translation of 21/22/23 bit gnb ids to hex in E2T, RIC-939 race condition and out of bounds check in RMR

Achieved G release highlights = high-level release notes (2022-12-14) below (note that the release image list is here: link)

- We finalized work on a new functionally-equivalent A1 mediator implementation in Golang that now replaces the previous python based implementation. The optional usage of stslgo (shared timeseries layer) and InfluxDB got a major version upgrade (1.82.2). A new REST interface for the DMS (deployment management service) provides similar functionality as the existing DMS command line tool, but via a REST interface.
- We implemented the first version of the xApp framework in Rust.
- We implemented support for E2 subscriptions via REST in the xapp framework for C++. This allows us to deprecated the old RMR based interface early in the next release.

- bug fixes: RIC-945 e2term crashes occasionally when gNB is disconnected, RIC-944 PlmnId to mnc conversion wrong, RIC-943 alarm-go mm routing table init failure, RIC-936 reference to gcr -> ghcr, RIC-935 kube-flannel changed namespace, RIC-934 Upgrade sdlgo Golang version to fix CVE-2022-32189 vulnerability, RIC-920 fix translation of 21/22/23 bit gnb ids to hex in E2T, RIC-939 race condition and out of bounds check in RMR
- security-related bug fixes: RIC-942

For the G release of the near-RT RIC we do only limited integration testing: only the use cases: deploy RIC, deploy xApp, make E2 connection, get list of A1 policies has been tested.

Filled in end-of-release checklist: Release criteria checklist

PTL: Thoralf Czichy

Status 2022-12-14: From the 28 epics planned (link) we implemented 10 (link). 18 items have been moved out of the G release, e.g. because of implementation delays (link). Incomplete items: 0 (link). Additionally we fixed 7 bugs and small implementation tasks (link)

G release source code, container images and deployment instructions

The list of container images for the G release (link). A demo video for the F release still applies to the G release (but with updated references). It shows

- how to deploy the near-RT RIC platform,
- compile connect the E2 (e2 node) simulator from the OSC simulator project and
- compile the hw-go xapp from the xapp project and use the dms_cli to deploy it.

Code coverage: Code coverage reports (current coverage and list of components that need to set up Jenkins job for auto-generation of the reports as part of CI)

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## Operation and Maintenance (OAM)

### Primary Goals:

**G release Feature Scope:**

- support of O-RAN WG10 VES message bodies
- update of OAM-Controller to ODL version Sulfur
  - Note: team decided to go with Java11 - Java 17 would be possible but is pushed out to next release.
- update to keycloak version 18
- even more secure keycloak configuration
- there is a request for a “bare-metal” deployment which is not in scope of O-RAN, but still useful - also for development and module test
- support of AI/ML based on RSAC and other input.
- support of Tacker team

Please see also project wiki for further details: G-Release

**Sprint Demos:**

- Sprint #1 (at ht-cloud)
- Sprint #2 (at ht-cloud)

**PTL:** Martin Skorupski

**G release highlights/accomplishments (<date>):**

**G release source code, container images and deployment instructions (and status)**

Jira: Count of Epics (15 issues), User Stories, Tasks, and Issues: 166 issues

Source Code:

- OAM master
- OAM Controller features master
- ONAP VES Collector master

Integration:

- helm charts

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**O-RAN Central Unit (OCU)**

**Primary Goals:**

- In the absence of O-CU, Radisys commercial CU image to be used for E2E testing

**G release Feature Scope:**

**G Release Feature Scope:**

- Radisys Commercial CU is being used as a test fixture for E2E testing
- This is containerized CU image with following
  - Release version 2.5.3
  - NG interface with SOCKET mode and veth type
  - F1 interface with SOCKET mode and veth type
  - E2 interface support
  - Software Crypto

**PTL:**

**G release source code, container images and deployment instructions (and status)**

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**O-DU High**
# Primary Goals:

**O-DU New Feature Development**

1. Implementation of Discontinuous Reception (DRX)
2. Aligning all modules and interfaces to the latest specification
3. Mobility mode Support (Inter-CU handover)

**Feature verification**

1. Closed-Loop Automation
2. 16QAM and 64 QAM (Spillover from D release)

**End to End Integration support**

1. TDD/Mu1/100MHz
2. FDD/Mu0/20MHz *(Spillover from D/E release)*

**G release Feature Scope:**

- DRX support
- Mobility (Inter-CU handover) support
- Code clean-up and coverage
- Latest specification support for all modules and interfaces (AAD WG8)
- End to end integration support

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**PTL:** Ankit Barve

**Status on 15 Dec 2022**

**Implementation of Discontinuous Reception (DRX)**

**Status:** Completed

[https://jira.o-ran-sc.org/browse/ODUHIGH-462](https://jira.o-ran-sc.org/browse/ODUHIGH-462)

**Alignment to latest ORAN WG8 AAD specification**

**Status:** Completed

[https://jira.o-ran-sc.org/browse/ODUHIGH-464](https://jira.o-ran-sc.org/browse/ODUHIGH-464)

**Testing of odu-high along with intel 11 in different labs**

**Status:** Completed till Broadcast message till odu-low *(To be continued in next release)*

[https://jira.o-ran-sc.org/browse/ODUHIGH-475](https://jira.o-ran-sc.org/browse/ODUHIGH-475)

**Code clean up**

**Status:** Completed

[https://jira.o-ran-sc.org/browse/ODUHIGH-461](https://jira.o-ran-sc.org/browse/ODUHIGH-461)
### G release highlights/accomplishments (15 Dec 2022):

- Added support for Discontinuous Reception
- Aligning to the latest AAD WG8 specification for existing messages (above 80% complaint)
- End-to-end integration support
  - WLS memory management update aligned with latest odu-low (FlexRAN 21.11 intel L1)
  - Upgrade to the latest FAPI Interface and vendor-specific messages
  - OTA setup for both TDD and FDD
  - Successfully tested broadcast message reception at L1
- Code cleanup
  - At the beginning of the ODU-High project, Radisys pushed seed code with many files and functions which could have been used later for enhancing features
  - This activity targets deleting unused files and functions without any feature impact
  - In the future, if any functionality from deleted code is needed then the previous release code base could be used to retrieve it

### G release source code, container images, and deployment instructions (and status)

**source code:** [https://gerrit.o-ran-sc.org/r/gitweb?p=o-du%2Fl2.git;a=shortlog;h=refs%2Fheads%2Fg-release](https://gerrit.o-ran-sc.org/r/gitweb?p=o-du%2Fl2.git;a=shortlog;h=refs%2Fheads%2Fg-release)


**Document:** [https://docs.o-ran-sc.org/en/latest/projects.html#o-ran-distributed-unit-low-layers-odulow](https://docs.o-ran-sc.org/en/latest/projects.html#o-ran-distributed-unit-low-layers-odulow)

**Code coverage:** To be planned as UT framework is not available to provide code coverage.

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### O-DU Low

**Primary Goals:**

Implementation of the O-DU Low Physical Layer functions for a 5G Open Access Radio Network allowing the flexibility of a software implementation coupled with the ability of incorporating hardware accelerators on a selective basis and meets the O-RAN architecture goals of scalability, mix and match multi-vendor modules that are interoperable and that can be upgraded as the standards evolve by software updates.

The O-DU Low physical layer functions follow the 3GPP TS 38 series recommendations for 5G and the 3GPP TS 36 series recommendations for LTE with the 3GPP 7.2 functional split between O-DU Low and O-RU. In 3GPP terms the O-DU Low is referred to HIGH-PHY in the functional split for 5G.

Implementation of the Open Front Haul interface to the O-RU per O-RAN WG4 CUS specifications.

Integration of this component with multi-vendor implementations of O-DU High and O-RU modules for end to end interoperability and compatibility verification.

### G release Feature Scope:

The O-DU Low G release is the same as the F Release that added support for Massive MIMO, URLLC and it is based on the commercial FlexRan 21.11 release.

The O-DU Low G and F Release code is an Intel contribution in collaboration with Tieto Poland for the source code releases in the O-RAN gerrit and for the binary blobs contributed via GitHub.

For the documentation preparation of the F and G release Intel worked with collaboration from Fransiscus Bimo and Professor Ray-Guang Cheng from National Taiwan University of Science and Technology (NTUST).

The G and F release are being used for end to end testing and it is based on the E maintenance release that was used for the 2021 November US O-RAN Plugfest and tested in conjunction with 2 stack partners and 2 different Test equipment vendors. The Front Haul Interface was also tested for compliance using Keysight’s Front Haul Test equipment.

Container images and deployment instructions are to be provided later

**PTL:** Luis Farias, Alternate: @Chenxi Yue

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### G release highlights/accomplishments (15 Dec 2022):

The G/F Release has been integrated at NTUST and LTTS with the ODU-High and other O-RAN components with O-RU emulators and Commercial Radio Units. For more details of the current status see the ODU-High End to End Integration support status

### G release source code, container images, and deployment instructions (and status)

**source code:** [https://gerrit.o-ran-sc.org/r/gitweb?p=o-du%2Fphy.git;a=summary](https://gerrit.o-ran-sc.org/r/gitweb?p=o-du%2Fphy.git;a=summary)


**Document:** [https://docs.o-ran-sc.org/en/latest/projects.html#o-ran-distributed-unit-low-layers-odulow](https://docs.o-ran-sc.org/en/latest/projects.html#o-ran-distributed-unit-low-layers-odulow)

**Code coverage:** To be planned as UT framework is not available to provide code coverage.

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Simulators (SIM)
Primary Goals:
- Keep alignment with latest O-RAN specifications (O1, E2)

G Feature Scope / Achievements:
- Keep alignment of the O1 Simulator with latest YANG models
- E2 Simulator improvements (especially to the deployment/build procedures)
- NS3-E2 Simulator integration in Gerrit

Sprint Demos:
- Sprint #2 (at ht-cloud)

PTL: Alex Stancu

Jira: Count of Epics, User Stories, Tasks, and Issues: 5 issues

G release highlights/accomplishments (15 Dec 2022):
- Kept alignment of the O1 Simulator with the latest YANG models
- Implemented stdDefined vesPnfRegistration in the O1 Simulator

Service Management and Orchestration Layer (SMO)

Primary Goals:
The SMO acts as an uber identity that oversees the different aspects of the O-RAN deployment. Starting with how solutions are deployed, to how they interact with each other, to how they are managed.

G release Feature Scope:
The focus for the G release in SMO is interoperability. Every sub-project within SMO has at least one item that focuses on interoperating with one other entity outside of SMO. For example,
- On the O1 interface, the focus is on trying to bring-up O-DU using NETCONF and YANG models defined for O-DU.
- On the O1/VES interface, it is ability to generate network slicing PM events in the O-DU, and the ability to receive them in SMO dashboard, and store them in InfluxDB.
- On the O2 interface, it will be the ability to instantiate an instance of a Network Function (NF) like the O-DU in the O-Cloud.

Separate from this, each sub-project within SMO has other features/capabilities it will address as part of the G-release. For details please refer to the minutes of the SMO meeting here.

PTL: Mahesh Jethanandani

G release highlights/accomplishments (December 12, 2022):
- In the G release, the O1 interface has support for configuration of Network Functions (NF) over NETCONF using YANG models.
- The O1/VES interface demonstrated interoperability between SMO and O-DU NF. Network slicing PM events generated by O-DU were captured by the O1/VES collector and displayed on the Grafana dashboard.
- The O2 interface demonstrated TST010 API Conformance, along with aligning with O2 DMS ETSI NFV Profile

G release source code, container images and deployment instructions (and status)

G release source code for SMO can be found in the following repositories
- O1 repository
- O1/VES repository
- O2 repository
- For the O2 Interface OpenStack Tacker project (External repository)
  - Source code: https://openstack.org/openstack/tacker
  - Code coverage: Coverage report (Latest OpenStack verification results)

The container images for SMO can be found on the Nexus server, where applicable.
The container images for OpenStack Tacker can be found in OpenStack Kolla repository.
- https://quay.io/repository/openstack.kolla/tacker-server
- https://quay.io/repository/openstack.kolla/tacker-conductor

The OpenStack Tacker container can be started with the steps in the following documentation.
- https://docs.openstack.org/tacker/latest/install/kolla.html
- https://docs.openstack.org/kolla-ansible/latest/user/quickstart.html

The installation instructions for SMO can be found in the documentation page here.
The status of the SMO project is tracked using Jira items. For the latest status refer to the items below.

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<td>SMO-91</td>
<td>Add fault-id and affected-objects to the faults page</td>
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<td>Sep 08, 2022</td>
<td>Dec 07, 2022</td>
<td>bhanu</td>
<td>chandra</td>
<td>bhanu</td>
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<td>SMO-88</td>
<td>Refresh SDNR image to the latest on SMO O1 project</td>
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<td>SMO-80</td>
<td>Integration with other SMO components for automated App instantiation</td>
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<td>Sep 25, 2022</td>
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<td>SMO-71</td>
<td>Documentation for smo-ves project</td>
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<td>Jun 30, 2022</td>
<td>Aug 23, 2022</td>
<td>santanu de</td>
<td>Mahesh Jethanandani</td>
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<td>SMO-10</td>
<td>Convert NETCONF notifications into VES events</td>
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<td>SMO-3</td>
<td>Create sample configuration for FH interface YANG model</td>
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19 issues

**Infrastructure (INF)**

**Primary Goals:**
- Implement the O-Cloud reference design, provide the real time performance to allow the O-DU and other components running on top of it.
- Provide interaction capabilities with other components.

**G release Feature Scope:**
- Extend MultiOS support: add Debian as the base OS
- Enable the multiple deployment scenarios for Debian based image:
  - AIO-SX, AIO-DX, AIO-DX + workers, standard, Distributed Cloud
- Align INF O2 implementation to the latest O2 spec.

PTL: Jackie Huang
G release highlights/accomplishments (06 Jan 2023):

- Extend MultiOS support: add Debian as the base OS
- Enable the multiple deployment scenarios for Debian-based image
- Update to align with stx 7.0 for CentOS based image
- Align INF O2 implementation to the O-RAN Spec in July 2022
- Integrate O2 app into CentOS and Debian based image
- Support INF O2 integration with SMO(tacker)
- Deployed INF over multiple O-RAN SC Open Labs

Jira: Status of Epics, User Stories, Tasks, and Issues:
Update at 13 Dec 2022

**EPICS:**

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<td>INF-291</td>
<td>[MultiOS][Doc] documentation updates for G release</td>
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<td>[MultiOS][Debian] INF Enable the multiple deployment scenarios for Debian</td>
<td>Aug 19, 2022</td>
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<td>INF-281</td>
<td>[MultiOS][Debian] INF add support for Debian as the base OS</td>
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<td>INF-229</td>
<td>[MultiOS][CentOS] INF fully align with StarlingX 6.0 to support the VM/Openstack platform</td>
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5 issues

- Stories:

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<tr>
<td>INF-388</td>
<td>[O2] Investigate the ORAN-O2 IMS service DC deployment Corner Case</td>
<td>Dec 09, 2022</td>
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<td>INF-367</td>
<td>[O2] Disable debug mode for production deployment of o2service</td>
<td>Nov 18, 2022</td>
<td>May 23, 2023</td>
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<td>INF-358</td>
<td>[O2] Refactor accelerator resource to expose more details</td>
<td>Nov 14, 2022</td>
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<td>INF-349</td>
<td>[O2] Refactor alarmSubscription to support duplication check</td>
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<td>INF-338</td>
<td>[O2]</td>
<td>Validate inventory changes notification data comply to spec</td>
<td>Nov 08, 2022</td>
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Showing 30 out of 32 issues

- Tasks:
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<td>INF-374</td>
<td>[O2] figure out the what the memory change raise the update at change in Stix</td>
<td>✔️</td>
<td>Nov 22, 2022</td>
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<td>[O2] Refactor alarm watcher to retrieve alarms for each subcloud</td>
<td>✔️</td>
<td>Nov 14, 2022</td>
<td>Nov 17, 2022</td>
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<td>[O2] Refactor name of resource pool to region id</td>
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<td>INF-336</td>
<td>[O2] add support to download all images from private registry</td>
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<td>[O2] The memory resource update frequency is too quick when watching it</td>
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<td>[o2] DMS profile base on the configurations</td>
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<td>[O2] rename to be consistent with the ones in app-oran-o2 in StarlingX</td>
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<td>[MultiOS][Doc] release-notes.rst updates for G release</td>
<td>✔️</td>
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<td>[MultiOS][Doc] installation.rst updates for G release</td>
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<td>[MultiOS][Doc] developer-guide.rst updates for G release</td>
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<td>[MultiOS][Doc] overview.rst updates for G release</td>
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Showing 20 out of 25 issues

- **Bugs:**

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<td>INF-393</td>
<td>[O2] &quot;serviceUri&quot; in the DMS list query and detail query have different response</td>
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<td>INF-380</td>
<td>(O2) Some alarm not reported notified to SMO.</td>
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<td>INF-379</td>
<td>(O2) Kill O2 service watcher /pubsub container will cause notification flooding.</td>
<td>Jon Zhang, David Liu</td>
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<td>INF-378</td>
<td>(O2) Inventory Subscription filter not take effect as expected</td>
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<td>INF-377</td>
<td>(O2) Inventory Subscription show filter not expected.</td>
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<td>INF-375</td>
<td>(O2) failed to query resourceType with selector</td>
<td>Jon Zhang, Bin Yang</td>
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<td>INF-373</td>
<td>(O2) The watcher watched the resource change lost some attribute update</td>
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<td>INF-372</td>
<td>(O2) alarmNotification post data does not comply with spec</td>
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<td>INF-371</td>
<td>(O2) inventoryChange notification post data does not comply to spec</td>
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<td>INF-366</td>
<td>(O2) logging level provisioning by env var LOGGING_CONFIG_LEVEL is not working</td>
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<td>INF-365</td>
<td>(O2) attribute based filter does not support value with space inside</td>
<td>Bin Yang, Bin Yang</td>
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<td>INF-364</td>
<td>(O2) alarmEventRecord does not comply with spec</td>
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<td>(O2) Handle resource request with resourcePoolId not correct.</td>
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<td>INF-362</td>
<td>(MultiOS)[Yocto][Build] distributedcloud and fm-mgr do_fetch failed</td>
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<td>INF-361</td>
<td>(O2) Duplicated subscription items created.</td>
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<td>INF-360</td>
<td>(O2) Pubsub container could not resolve 'postgres' db host to IP address after restart</td>
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<td>INF-357</td>
<td>(MultiOS)[jib] upload-inf.sh: iftools install failed</td>
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<td>INF-356</td>
<td>(O2) DC client query subcloud returns 'auth token is invalid'</td>
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<td>INF-355</td>
<td>(O2) Authentication failure should return 401 with ProblemDetails</td>
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<td>(O2) Repeat delete same subscription should return 404 instead of 200.</td>
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<td>INF-353</td>
<td>(O2) Fail to check duplication during creating Inventory change subscription</td>
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<td>INF-351</td>
<td>(O2) Ocloud serviceUri is wrong about protocol</td>
<td>Jon Zhang, Bin Yang</td>
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<td>INF-345</td>
<td>(MultiOS)[Yocto][Build] python-oslo.messaging do_install failed</td>
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<td>(O2) resourceType fields issues on alarmDictionarySchemaVersion and alarmDefinition</td>
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<td>INF-343</td>
<td>(O2) Ocloud serviceUri should be apiRoot only</td>
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<td>(O2) ResourcePools list does not match the DC status</td>
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Test status:

Code coverage:

- INF platform
  - Code coverage report: o-ran-pi-rtp - (sonarcloud.io)
- O2
  - Total coverage: 54%.
  - Detail report: cov-report_20220609.txt

Release Note:

- Release notes — pli-rtp g-release documentation (o-ran-sc.org)

G release source code, images and deployment instructions

- Each repository has a branch named "g-release" that can be accessed using git:
  - For pti/rtp repo: git clone --branch g-release gitweb https://gerrit.o-ran-sc.org/r/pti/rtp
  - For pti/o2 repo: git clone --branch g-release gitweb https://gerrit.o-ran-sc.org/r/pti/o2
- Images for INF project:
  - ISO image for INF:
    - Yocto Based image: inf-image-yocto-aio-x86_64.iso
    - CentOS based image: inf-image-centos-all-x86_64.iso
    - Debian Based image: inf-image-debian-all-x86_64.iso
  - Container image for o2:
    - nexus3.o-ran-sc.org:10002/o-ran-sc/p2i-o2mdms:2.0.0
    - nexus3.o-ran-sc.org:10004/o-ran-sc/p2i-o2mdms:2.0.0
- Deployment instructions:
  - INF: INF Installation Guide
  - O2: O-RAN O2 Application

Integration and Test (INT)

Primary Goals: To support OSC project CI pipeline. To test and validate the components and use cases

G Feature Scope / Achievements:

- To set up test automation with the XTesting framework that can run at release time to verify features and integration (an XTesting work flow demo can be found here)
- Work with OSC open labs (US east coast, US west coast, Asia Pacific) to facilitate community testing. Latest status on the 3 labs are available here
- Explore the POWDER testbed for OSC integration test needs: a POWDER account was created that serves as an umbrella project for the OSC community. Multiple profiles were added for automated RIC platform deployment and automated testing.

PTL: James Li

G release highlights/accomplishments (December 14, 2022):

Established and demonstrated a XTesting workflow in RIC platform deployment and can further run test cases against the deployed software module(s). Existing Robot test cases can be re-used in the XTesting framework with minimal work.

Created multiple POWDER profiles for automated RIC platform deployment and XTesting setup.

G release source code, container images and deployment instructions

gerrit (look for the latest changes for G release from the following repositories):

https://gerrit.o-ran-sc.org/r/it/dep
https://gerrit.o-ran-sc.org/r/it/dev
https://gerrit.o-ran-sc.org/r/it/test

AIML Framework (AIMLFW)

Primary Goals:

- Stand alone installation (separated from existing platform deployment) and initial AIML workflow modules
**Feature Scope / Achievements:**

- Stand alone installation with Kubeflow as a Training host backend and Kserve as an Inference host backend
- Initial Training Job Management (Data extraction / feature management)
- Sample ML pipeline and ML xApp: QoE Prediction model using LSTM with data from ricapp/qp

**G release highlights/accomplishments (15 Dec 2022):**

- Stand alone installation of AIMLFW with Kubeflow as part of Training host and Kserve as part of Inference host
- Initial Training job Management with initial Data extraction / feature management
- Sample ML pipeline and ML xApp using AIMLFW: QoE Prediction model using LSTM with data from ric-app/qp repository

**G release source code, container images and deployment instructions**

Source code: Gerrit links to the repositories are mentioned below

Container images are described here:

- Training manager component: nexus3.o-ran-sc.org:10002/o-ran-sc/aiml-fw-awmf-tm-docker
- Data extraction component: nexus3.o-ran-sc.org:10002/o-ran-sc/aiml-fw-athp-data-extraction-docker
- Kubeflow adapter component: nexus3.o-ran-sc.org:10002/o-ran-sc/aiml-fw-athp-tps-kubeflow-adapter-docker
- AIMLFW dashboard component: nexus3.o-ran-sc.org:10002/o-ran-sc/portal-aiml-dashboard-docker
- AIMLFW notebook component: nexus3.o-ran-sc.org:10002/o-ran-sc/portal-aiml-notebook-docker

**Installation Instructions:**


**Installation demos:**

- Installation of AIMLFW: https://wiki.o-ran-sc.org/download/attachments/63143945/oran%20sc%20install_low_res_with_audio_small.mp4
- AIMLFW Training flow: https://wiki.o-ran-sc.org/download/attachments/63143945/AIMLFW_demo_for_training.mp4
- Assist and ML xApp demo: https://wiki.o-ran-sc.org/download/attachments/63143945/qp-aimlfw-demo.mp4

**Code coverage:**

- https://sonarcloud.io/project/overview?id=o-ran-sc_aiml-fw-atmp-tps-kubeflow-adapter
- https://sonarcloud.io/project/overview?id=o-ran-sc_aiml-fw-atmp-sdk-feature-store
- https://sonarcloud.io/project/overview?id=o-ran-sc_aiml-fw-atmp-sdk-model-storage
- https://sonarcloud.io/project/overview?id=o-ran-sc_aiml-fw-atmp-data-extraction
- https://sonarcloud.io/project/overview?id=o-ran-sc_aiml-fw-awmf-tm

**Wiki:**

https://wiki.o-ran-sc.org/display/AIMLFW

**Tasks / Backlog:**

https://jira.o-ran-sc.org/projects/AIMLFW/issues

**Gerrit / Code:**

- aiml-fw/awmf/tm: Training Manager : Training job and model management
- aiml-fw/atmp/tps/kubeflow-adapter: Adapter for Kubeflow
- aiml-fw/atmp/sdk/model-storage: Sdk for accessing Model storage
- aiml-fw/atmp/sdk/feature-store: Sdk for accessing Feature store
- aiml-fw/atmp/data-extraction: Retrieving features for training from Data lake
- aiml-fw/aimlfw-dep: Deployment scripts aiml workflow
- portal/aiml-dashboard: GUI for AIML Workflow
- ric-app/go-aimlfw: Sample ML Assist xApp for QoE prediction
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<tr>
<th>Key</th>
<th>Summary</th>
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<th>Created</th>
<th>Updated</th>
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Showing 20 out of 22 issues