Non-RealTime RIC in O-RAN Software Community
OSC Non-RealTime RIC project (NONRTRIC)

Update to O-RAN Alliance WG2

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Status & Plans

OSC: NONRTRIC project status – at a glance
(Jan 2020)

- Early NONRTRIC functionality added to OSC "Amber" Release (29 Nov)
- NONRTRIC/SMO currently leverages ONAP, starting with ONAP "El Alto" then "Frankfurt" for integration and testing
- Implementation currently based on "pre-spec A1-*like"* interface spec, moving towards WG2 A1 spec.
- Initial version of NONRTRIC A1 Controller/Mediator available – based on ONAP CCSDK/SDNC
- Ongoing integration tasks with "RIC Dashboard" and near-RT-RIC "A1 Mediator" projects

NONRTRIC artefacts in OSC Release A ("Amber")
(Dec 2019)

Achieved 'stretch' goals to have some initial non-RealTime RIC functionality for Release "Amber":

- Initial A1 Adapter/Controller
  - OSGI bundle to integrate with ONAP CCSDK/SDNC
  - Implements a subset of the A1 Policy LCM functions based on a "pre-spec" version of A1 protocol
  - Prototype RESTCONF-based NBI for A1 mediation interface to allow messages to be sent up/down A1 interface
- Dashboard extension to manage Policy Types and Policy Instances
  - Based on existing OSC near-RT-RIC "RIC Dashboard"
- Near-RTRIC A1 simulator/test-stub
  - Implements server-end of A1 (Policy) interface – beyond existing OSC near-RTRIC implementation
- All necessary CI/CD integration for LF OSC

Ongoing NONRTRIC tasks for
"Amber+" maintenance release (Feb 2020) & "Bronze" (Jun 2020)

Design & Development (1/2):

- Continue A1 Adapter/Controller implementation – 2 versions available – ONAP & OSC
  - Ongoing discussion about ONAP/OSC alignment of A1 adapter
- Implement A1 Policy Management Service ("Policy Agent") – north of A1 adapter.
- Select & implement WG2 A1 interface features.
  - Ongoing discussions/planning about A1 interface extensions for "Policy Type" & "Policy Status"
- Dashboard integration with near-RT-RIC dashboard project
- Extend near-RT-RIC A1 Simulator / Test-stub

>>> contd.

Ongoing NONRTRIC tasks for OSC Maintenance Release "Amber+" (Feb 2020) & "Bronze" (Jun 2020)

Design & Development (2/2):

- R-APPs / usecases / e2e integration tasks (detailed design ongoing)
  - Health Check: https://wiki.o-ran-sc.org/download/attachments/3604609/RSAC_Bronze_HealthCheck_UseCase.docx?api=v2
    1. "Hello World!" R-APP
    2. OTF Test framework workflow
  - ML-based Traffic Steering: https://wiki.o-ran-sc.org/download/attachments/3604609/RSAC_Bronze_Use%20Case-Traffic%20Steering%20QoE.doc?api=v2
    - Major issues with limited functionality in ONAP to achieve SMO & R-APP requirements!
    - Very reduced scope for Bronze release
  - Significant work required to support even rudimentary O1 observability for these use cases … !
    - More study & roadmap (re-)prioritisation is needed
- R-APP platform design/architecture

Ongoing NONRTRIC tasks for OSC Maintenance Release "Amber+" (Feb 2020) & "Bronze" (Jun 2020)

Scoping and alignment:

- Continue SMO functional scope discussions with OSC OAM project
  - Align with ongoing architecture discussions in WG1 and WG2&WG6
- Continue defining scope and responsibility of R-APP platform
- ONAP Alignment:
  - Need to formally align with O-RAN initiatives in ONAP (Frankfurt & Guilin), e.g. SDNC/SDN-R sub-project, O1 mediation, Frankfurt 5G usecase: Mobility Standard Harmonization with ONAP, Frankfurt Release Requirement REQ-38 5G / ORAN & 3GPP Standards Harmonization, ONAP A1 Adaptor
  - Need to formally align processes for ONAP Frankfurt upstreaming
  - Need to formally align ONAP platform development, OSC platform extensions, and OSC non-code deliverables for application assembly
- Support A1 evolution

Ongoing NONRTRIC tasks for OSC Maintenance Release "Amber+" (Feb 2020) & "Bronze" (Jun 2020)

Infrastructure/Procedural:

- OSC Release B Requirements/Epics
- Improve documentation/user-guides
- Repo re-allignment
- Release preparation tasks: documentation, automated integration testing, CSIT, assembly & packaging, demo preparation, etc.

Future plans for NONRTRIC
(Beyond Release B!)

- Help establish architecture for overall OSC SMO implementation – ONAP & NONRTRIC functions
- Enhanced A1 message mediation function in/above NONRTRIC A1 controller function
- Continue/Drive ONAP platform extensions for SMO/OAM/NONRTRIC functions and usecases
- Help establish procedures/examples/toolchains for end-to-end usecases
  - (NONRTRIC, OAM functions, near-RT RIC, xNF, ONAP platform ….)
- ONAP platform requirements, development & upstreaming to provide more complete support for NONRTRIC/SMO functionality
- R-APP application platform in ONAP
- Assist with O1 -> DCAE -> ConfigDB correlation for dynamic UEID -> near-RTRIC tracking
- Establish/Prototype a mechanism for R-APP <-> xAPP coordination aligned with A1 specification
- Interoperate with ML/AI platform(s) to provide initial support ML/AI model management
- Investigate mechanisms for (re-)training/(re-)deployment/inference/assessment of ML/AI functions in NONRTRIC, near-RTRIC, O-CU, O-DU/O-RU, etc.. (A1 & O1)
- Define/Prototype an initial approach for domain-specific intent -> A1 policy mapping
- Define approaches/support for observability of policy-affected indicators for intent satisfaction evaluation

… More to follow

O-RAN Software Community "B" Release Revised - Sprint Calendar 2020

Milestone markers: Kick off Review M0 · Planning Review M1 · Functionality Freeze M2 · API Freeze M3 · Code Freeze M4 · Integration Review RC0 · Sign Off Review RC1 · Release 11/13

Mile Stones	M0:05/20				M1:06/17			M2:07/08				M3:08/12							M4:09/30				RC0:10/21		RC1: 11/04	Release C:11/13
(Week)	Week 2	Week 2	Week 2	Week 2	Week 2	Week 2	Week 2	Week 2	Week 2	Week 3	Week 3	Week 3	Week 3	Week 3	Week 3	Week 3	Week 3	Week 3	Week 4	Week 4	Week 4	Week 4	Week 4	Week 4	Week 4	Week 4
Mon	2-Dec	9-Dec	16-Dec	6-Jan	13-Jan	20-Jan	27-Jan	3-Feb	10-Feb	17-Feb	24-Feb	3-Mar	10-Mar	17-Mar	24-Mar	31-Mar	7-Apr	14-Apr	21-Apr	28-Apr	5-May	12-May	19-May	26-May	2-Jun	9-Jun
Fri	7-Dec	14-Dec	21-Dec	11-Jan	18-Jan	25-Jan	1-Feb	8-Feb	15-Feb	22-Feb	1-Mar	8-Mar	15-Mar	22-Mar	29-Mar	5-Apr	12-Apr	19-Apr	26-Apr	3-May	10-May	17-May	24-May	31-May	7-Jun	14-Jun

Task Description

- Sprint Planning and Design
- Dev Sprint 1
- Dev Sprint 2 - Sprint 1 Demo
- Dev Sprint 3 - Sprint 2 demo
- Dev Sprint 4 - Sprint 3 Demo
- ETE -1, 2, 3 - Sprint 4 Demo
- ETE -4
- "B" Release

Sub-tasks:
- Epics Identified
- User Stories/Tasks Identified & Review
- Map Epics and ...
- Sub Task Identified ...
- Sprint Grooming
- Test Planning & Preparation of Test Cases
- IST Sprint-1
- IST Sprint-2
- IST Sprint-3
- IST Sprint-4
- Release Preparation

- Maintanance Release
- Preliminary Documentation
- Finalize Documentation

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- WG Input
- WG Review
- WG Review
- O-RAN Demo
- Documentation Review
- O-RAN Hand Off

O-RAN WG2 Alignment

- WG2 - A1 spec
    - Liaising with near-RealTime RIC project to align toward Release 1.X spec
    - Providing feedback on improving implementability of spec
    - Providing feedback on possible improvements/simplifications to spec
    - Aiming for complete alignment – but some pragmatic compromises might be required …

- Non-RealTime RIC function
    - Aligned with WG2's objectives/ambitions for Non-RealTime RIC Function
    - Still at a very early stage ….
        - Started with A1 mediation/controller function and A1 policy management service
        - Additional functionality at discussion/architecture/design stage

- Interaction with other functions
    - Close working relationship with other OSC projects to ensure alignment/feedback/requirements
    - Close observation of activities in other WGs

- Use-cases
    - Requirements from OSC usecases are influencing/guiding development roadmap
    - Other usecases to be confirmed – will be driven by requirements, resources, supporting functions

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