Non-RealTime RIC (NONRTRIC)

Coordinates

- **PTL**: John Keeney
- **Wiki**: *https://wiki.o-ran-sc.org/display/RICNR*
- **JIRA**: *https://jira.o-ran-sc.org/projects/NONRTRIC/issues*
- **Code / Gerrit**:
  - nonrtric : *https://gerrit.o-ran-sc.org/r/admin/repos/q/filter:nonrtric*
  - portal/nonrtric-controlpanel : *https://gerrit.o-ran-sc.org/r/admin/repos/portal/nonrtric-controlpanel*
  - sim/a1-interface : *https://gerrit.o-ran-sc.org/r/admin/repos/sim/a1-interface*
- **Docs**:
  - nonrtric : *https://docs.o-ran-sc.org/projects/o-ran-sc-nonrtric*
  - portal/nonrtric-controlpanel : *https://docs.o-ran-sc.org/projects/o-ran-sc-portal-nonrtric-controlpanel*
  - sim/a1-interface : *https://docs.o-ran-sc.org/projects/o-ran-sc-sim-a1-interface*
- **Email List:**
  - OSC "discuss" mailing list: *https://lists.o-ran-sc.org/g/discuss*: *discuss@lists.o-ran-sc.org*
  - Please use hashtag ***#nonrtric***
- **Meetings**: *https://wiki.o-ran-sc.org/display/RICNR/Meetings*

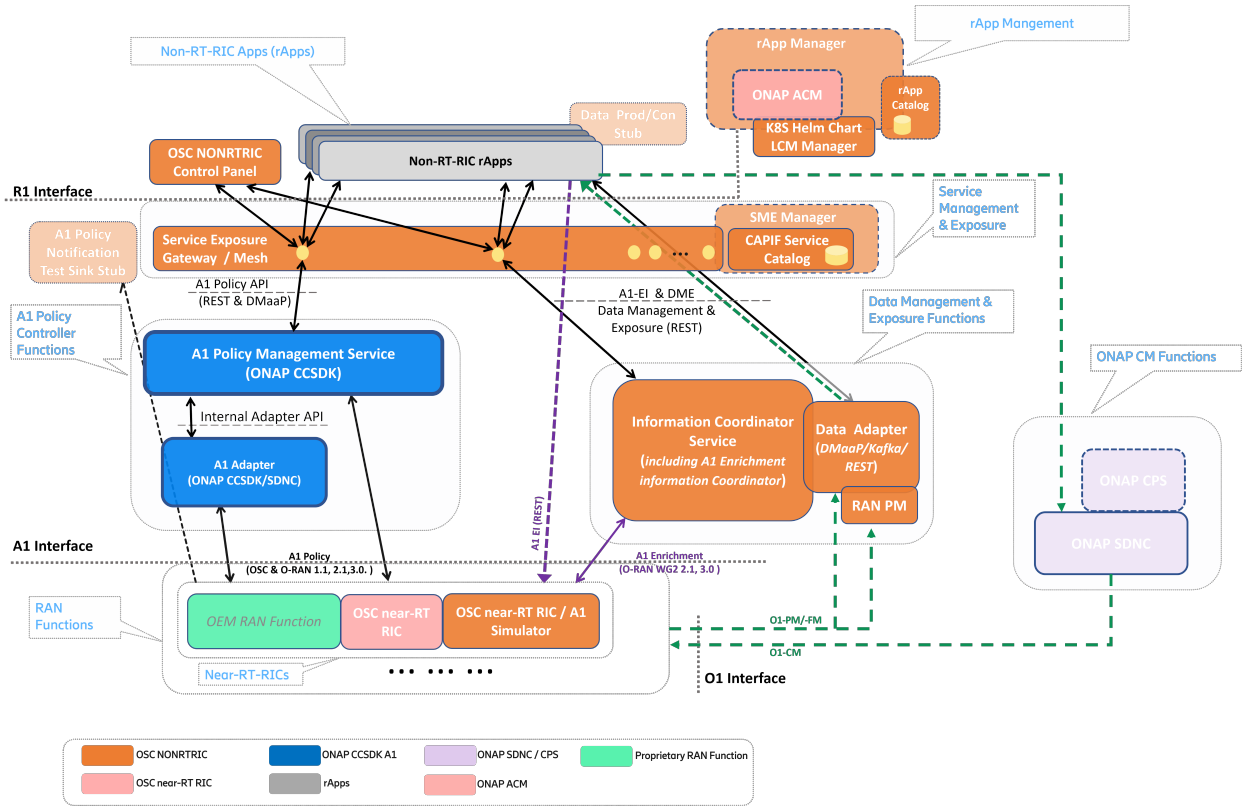
The Non-RealTime RIC (RAN Intelligent Controller) is an Orchestration and Automation function described by the O-RAN Alliance for non-real-time intelligent management of RAN (Radio Access Network) functions. The primary goal of the Non-RealTime RIC is to support non-real-time radio resource management, higher layer procedure optimization, policy optimization in RAN, and providing guidance, parameters, policies and AI/ML models to support the operation of near-RealTime RIC functions in the RAN to achieve higher-level non-real-time objectives. NONRTRIC functions include service and policy management, RAN analytics and model-training for the near-RealTime RICs. The Non-RealTime RIC project provides concepts, specifications, architecture and reference implementations as defined and described by the O-RAN Alliance architecture.

The OSC NONRTRIC implementation will communicate with near-RealTime RIC elements in the RAN via the A1 interface. Using the A1 interface the OSC NONRTRIC will facilitate the provision of A1 Policies; monitor and provide basic feedback on policy state from near-RealTime RICs; provide A1 Enrichment Information as required by near-RealTime RICs; act as a hosting platform for rApps (Non-RealTime RIC applications); host the R1 interface between rApps and the underlying SMO and Non-RT-RIC platforms; and manage the exposure towards rApps of SMO platform functions, Non-RT-RIC platform functions, and the capabilities of other rApps.

The NONRTRIC functions partly leverage and extend some existing infrastructure from ONAP to support non-realtime control of the RAN (Radio Access Network).

All implementations will be demonstrated in open community labs to prove functionalities and to give feedback to the O-RAN working groups.

Functional view of OSC NONRTRIC - Latest available functionality



The figure above shows the latest released functionality for the Non-RealTime RIC functions in OSC (F Release & ONAP Jakarta).

For more information see out **I Release Developers Guide**

Team

- PTL: John Keeney
- Committers: John Keeney, Aravindhan Ayyanathan

JIRA

- https://jira.o-ran-sc.org/projects/NONRTRIC

GERRIT

- nonrtric : *https://gerrit.o-ran-sc.org/r/admin/repos/q/filter:nonrtric* (*15 repos*)
- portal/nonrtric-controlpanel : *https://gerrit.o-ran-sc.org/r/admin/repos/portal/nonrtric-controlpanel*
- sim/a1-interface : *https://gerrit.o-ran-sc.org/r/admin/repos/sim/a1-interface*

Overlap with ONAP / SMO

The early vision for the O-RAN Non-RealTime RIC, and OSC NONRTRIC project, did not significantly differentiate between SMO platform and Non-RT RIC platform functions, where the main SMO requirements could be partly fulfilled by using a combination of OSC OAM, OSC NONRTRIC, and ONAP functions (See OAM Project: SMO - Service Management and Orchestration).

In the NONRTRIC project we will reuse ONAP (and other open-source) functions where needed, and where necessary support changes upstream if needed. We strongly believe that open-source software should be reused where possible and appropriate, the maximize community participation and avoid community fragmentation. For example, we reuse and contribute to the A1 Policy Management functions in ONAP, which emerged from a merging of related activities in both OSC and ONAP. We also reuse numerous other ONAP functions, e.g. SDNC, ACM, Policy Framework, CPS, VES & PM functions, etc..

News

- **14 Dec 2023**
  NONRTRIC functions released in OSC I Release
  See Release I for more information
- **21 Nov 2023**
  I-Release: Demonstration: "OSC NONRTRIC rApp Manager"
  See Video (HD), Slides and summary for more information
- **22 Aug 2023**
  I-Release: Demonstration: "OSC NONRTRIC RAN PM Function - Docker compose & Scripts"
  See Video (HD), and summary for more information
- **11 Aug 2023**
  NONRTRIC functions released in OSC H Maintenance Release
  See Release H for more information
- **16 Jun 2023**
  NONRTRIC functions released in OSC H Release
  See Release H for more information
- **18 May 2023**
  NONRTRIC Status Update to TOC
  See TOC Minutes (2023-05-18) and Slides for more information
- **17 May 2023**
  H-Release: Demonstration: "LCM of ASD-based CNFs using ONAP CNFM function in Standalone mode"
  See Video (HD), Video (SD) and Slides for more information
- **17 May 2023**
  H-Release: Demonstration: "CAPIF for Service Registration & Service Discovery"
  See Video (HD), Video (SD) and Slides for more information
- **13 Feb 2023**
  NONRTRIC functions released in OSC G Maintenance Release
  See Release G for more information
- **15 Dec 2022**
  NONRTRIC functions released in OSC G Release
  See Release G for more information
- **07 Dec 2022**
  G-Release: Demonstration: "Deploying & Running NONRTRIC platform and App"
  See *Demo for more information*
- **20 Oct 2022**
  NONRTRIC Project: Update to O-RAN Face-to-face meeting in Madrid
  Slides: 20221020 ORAN F2F - NONRTRIC Update - John Keeney.pdf
- **19 Oct 2022**
  G-Release: Demonstration: "Enforcing Service Exposure for rApps"
  See *Demo for more information*
- **12 Oct 2022**
  G-Release: Demonstration: "PM Collection & Delivery to rApps"
  See Demo for more information
- **25 Aug 2022**
  NONRTRIC functions released in OSC F Maintenance Release
  See Release F for more information
- **04 Aug 2022**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: OSC-2022.08.04-WG2-I-OSC-NONRTRIC-ShortStatus-JohnKeeney-v01.pdf
- **30 Jun 2022**
  NONRTRIC functions released in OSC F Release
  See Release F for more information
- **15 Dec 2021**
  NONRTRIC functions released in OSC E Release
  See Release E for more information
- **25 Nov 2021**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: OSC-2021.11.25-WG2-I-OSC-NONRTRIC-ShortStatus-JohnKeeney-v01.pdf
- **07 Jul 2021**
  NONRTRIC functions released in OSC D Release
  See Release D for more information
- **13 May 2021**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: OSC-2021.04.29-WG2-I-OSC-NONRTRIC-ShortStatus-JohnKeeney-v01.pdf
- **30 Mar 2021**
  OSC NONRTRIC achieves a "Passing" grade for CII Best Practices Badging Program
  blocked URL
- **04 Feb 2021**
  Demo of OSC NONRTRIC & ONAP A1 functions at LFN Developer & Testing Forum - Feb 2021
  Slides & Video: 2021-02-03 - ONAP: Demo: O-RAN A1 Policy & Non-RealTime-RIC automated test/demo environment
- **21 Jan 2021**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: OSC-2021.01.21-WG2-I-OSC-NONRTRIC-ShortStatus-JohnKeeney-v01.pdf

- **15 Dec 2020**
  NONRTRIC functions released in OSC Cherry Release
  See Release C for more information
- **04 Dec 2020**
  Demo of OSC Cherry Release functionality:
  Slides & Video: 2020-12-04 - OSC NONRTRIC Cherry Demo
- **17 Sep 2020**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: OSC-2020.09.03-WG2-I-OSC-NONRTRIC-Status-JohnKeeney-v01.pdf
- **01 Jul 2020**
  NONRTRIC functions demonstrated in O-RAN Virtual Exhibition
  "Non-RT RIC based Quality of Experience (QoE) modification"
- **01 Jul 2020**
  NONRTRIC functions released in OSC Bronze Release
  See Release B for more information
- **10 Jun 2020**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: OSC-2020.05.28-WG2-I-OSC-NONRTRIC-Status-JohnKeeney-v01.pdf
- **04 Mar 2020**
  Demo & Status after Amber Maintenance Release
  Slides: Amber+ NONRTRIC Function demo
  Demo Recording: it-weekly-20200304-2.mp4
- **03 Feb 2020**
  NONRTRIC functions extended in OSC Amber Maintenance Release
  See Release A 1.1 - Maintenance for more information
- **23 Jan 2020**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: 20200123 OSC NONRTRIC Jan23 WG2 ShortStatus - John Keeney.pdf
- **03 Dec 2019**
  NONRTRIC functions released in OSC Amber Release
  See Release A for more information
- **03 Oct 2019**
  O-RAN Costa Rica F2F meeting: NONRTRIC Status Update
  Slides: 20191003 WG2 ORANSC NONRTRIC Status - John Keeney.pdf
- **22 Aug 2019**
  O-RAN Alliance WG 2 Status update
  WG 2 wiki: Meeting notes
  Slides: 20190822 ORAN WG2 OSC-NONRTRIC Status 20190822.pdf
- **28 Jun 2019**
  First PoC Conducted
  Slides & recording: Link to PoC read-out recording
- **24 Jul 2019**
  Second PoC Conducted
  OOF_PCI_Dublin_POC_Demo_20190724_v_2.0.pptx
- **17 Jul 2019**
  Updated Project Proposal
  RICnon-RT_OSC_project_proposal.pdf

Child Pages

- Project Scopes
- NONRTRIC Development Guide
- Operations and Management
- Meetings
- NONRTRIC: Requirements
- NONRTRIC: Project events
- Benchmark tests
- Function Test

Recent Changes

Meetings
yesterday at 5:00 pm • updated by John Keeney • view change
2024-03-26 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
yesterday at 4:59 pm • created by John Keeney
[WIP] Simple guide how to use ICS - Information coordinator service
yesterday at 10:22 am • updated by Francesco Davide Lapenta • view change
uml.png
Mar 27, 2024 • attached by Francesco Davide Lapenta
demoarch.drawio (2).png
Mar 27, 2024 • attached by Francesco Davide Lapenta
demoarch.drawio.png
Mar 27, 2024 • attached by Francesco Davide Lapenta

Benchmark tests - 20240321
Mar 26, 2024 • commented by MANJULA SATHISH
Release J
Mar 25, 2024 • updated by John Keeney • view change
Release I
Mar 25, 2024 • updated by John Keeney • view change
flow2.drawio.png
Mar 22, 2024 • attached by Francesco Davide Lapenta
Untitled Diagram.drawio (2).png
Mar 21, 2024 • attached by Francesco Davide Lapenta
Benchmark tests - 20240321
Mar 21, 2024 • updated by Rohith Rajneesh • view change
FTC850.tar
Mar 21, 2024 • attached by Rohith Rajneesh
benchmark-20201009.tar
Mar 21, 2024 • attached by Rohith Rajneesh
image-2024-3-21_9-19-15.png
Mar 21, 2024 • attached by Rohith Rajneesh
2024-03-19 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Mar 19, 2024 • updated by John Keeney • view change
ZSungW913CRnFgUO2ppUQhLi8Iig5ZQ2Uu6GZJYOsGmp6Hlnxexjgc0Rlj-VzDamMGa2SABaexc_bTjoq7MCuWdDwzIv_MvmeeHoqMnTsxJD__q1IEPlQ3pVGyG4izkdwh1mnwHZ8Kx0aladitGRdN89BpEDy6OgE.png
Mar 14, 2024 • attached by Francesco Davide Lapenta
[WIP] Simple guide how to use ICS - Information coordinator service
Mar 13, 2024 • updated by John Keeney • view change
2024-03-12 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Mar 12, 2024 • created by John Keeney
Non-RealTime RIC (NONRTRIC)
Mar 11, 2024 • commented by masumeh Tohidi
Untitled Diagram (1).png
Mar 08, 2024 • attached by Francesco Davide Lapenta
2024-03-05 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Mar 05, 2024 • created by John Keeney
2024-02-27 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Feb 27, 2024 • created by John Keeney
Release J: rApp Manager
Feb 23, 2024 • updated by Aravindhan Ayyanathan • view change
image-2024-2-23_15-22-46.png
Feb 23, 2024 • attached by Aravindhan Ayyanathan
2024-02-13 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Feb 13, 2024 • created by John Keeney
2024-02-06 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Feb 06, 2024 • created by John Keeney
Release J: Simple rApp using Hello World Microservice
Feb 02, 2024 • updated by Ambrish Singh • view change
2024-01-30 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Jan 30, 2024 • created by John Keeney
2024-01-23 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Jan 25, 2024 • updated by John Keeney • view change
Release J: rApp Manager
Jan 18, 2024 • created by John Keeney
Release I: rApp Manager
Jan 18, 2024 • updated by John Keeney • view change
2024-01-16 Meeting notes - Joint OAM / NONRTRIC / SIM Community meeting
Jan 16, 2024 • created by John Keeney
Release J: Technical spikes
Jan 15, 2024 • created by John Keeney
Non-RealTime RIC (NONRTRIC)
Jan 11, 2024 • updated by John Keeney • view change
Release H
Jan 11, 2024 • updated by John Keeney • view change
Release H: Technical spikes
Jan 11, 2024 • updated by John Keeney • view change
Release H - Build
Jan 09, 2024 • updated by John Keeney • view change
Release I - Build
Jan 09, 2024 • updated by John Keeney • view change
Release H - Build
Dec 19, 2023 • updated by Denis G Noonan • view change
Release I - Build
Dec 19, 2023 • updated by Denis G Noonan • view change
Testing A1 functions: End to End call (Release I)
Dec 19, 2023 • updated by Rohith Rajneesh • view change
Release I - Run in Kubernetes
Dec 19, 2023 • updated by Rohith Rajneesh • view change
Release I - Run in Docker
Dec 19, 2023 • updated by Ambrish Singh • view change
Testing End to End call in Release I
Dec 18, 2023 • updated by Rohith Rajneesh • view change

Release I - Docker Images
Dec 17, 2023 • updated by John Keeney • view change
Deploy A1 Policy Management Service with Docker
Dec 17, 2023 • updated by John Keeney • view change
Deploy callback_reciever with docker commands
Dec 17, 2023 • updated by John Keeney • view change
Deploy dmaap-mediator & dmaap-mr
Dec 17, 2023 • updated by John Keeney • view change
Deploy DMaaP message router in nonrtric
Dec 17, 2023 • updated by John Keeney • view change