

# Release B - Build/Run

This page describes how to get the release B version of Non-RT RIC up and running locally with two separate Near-RT RIC simulator docker containers providing OSC\_2.1.0 version of A1 interface.

All four components of the Non-RT RIC (from three different repos) run inside docker containers and communicate via a docker network. Details of the architecture can be found from [Release B](#) page.

- [Project Requirements](#)
- [Build Code](#)
  - [Build nonrttric containers](#)
    - [Configure policy-agent](#)
    - [update policy-agent/Dockerfile:](#)
    - [ADD /config/application\\_configuration.json /opt/app/policy-agent/data/application\\_configuration.json\\_example](#)
    - [ADD /config/application\\_configuration.json /opt/app/policy-agent/data/application\\_configuration.json](#)
    - [Build the code and create docker images](#)
  - [Build near-rt-ric-simulator container](#)
    - [Create docker image](#)
  - [Build NONRTRIC / A1 Policy control panel container](#)
    - [Verify controlpanel configuration](#)
    - [Build the code and create docker image](#)
- [Run A1 Controller Docker Container](#)
  - [Open Daylight GUI](#)
- [Run Near-RT RIC A1 Simulator Docker Containers](#)
- [Run Policy-agent Docker Container](#)
  - [policy-agent Swagger API](#)
- [Run Non-RT RIC Control Panel Docker Container](#)
  - [Open NONRTRIC / A1 Policy Control Panel UI](#)

## Project Requirements

- Java 11 (make sure that JAVA\_HOME environment variable points to correct Java version)
- Maven 3.6
- Docker and docker-compose (latest)

## Build Code

### Build nonrttric containers

- Download the nonrttric repo (defaults to master branch):

```
git clone "https://gerrit.o-ran-sc.org/r/nonrttric"
```

### Configure policy-agent

To support local test with two separate Near-RT RIC simulator instances:

- create a new **nonrttric/policy-agent/config/application\_configuration.json** with the configuration below
- The controller hostname and port values come from and must match those defined in nonrttric/sdnc-a1-controller/oam/installation/src/main/yaml/docker-compose.yml
- any defined ric names must match the given docker container names in near-RT RIC simulator startup - port is always the simulator's internal 8085

#### application\_configuration.yaml

```
{
  "config": {
    "//description": "Application configuration",
    "controller": [
      {
        "name": "controller1",
        "baseUrl": "http://a1-controller-container:8181",
        "userName": "admin",
        "password": "Kp8bJ4SXszM0WXlhak3eHlcse2gAw84vaoGGmJvUy2U"
      }
    ],
    "ric": [
      {
        "name": "ric1",
        "baseUrl": "http://ric1:8085/",
        "controller": "controller1",
        "managedElementIds": [
          "kista_1",
          "kista_2"
        ]
      },
      {
        "name": "ric2",
        "baseUrl": "http://ric2:8085/",
        "controller": "controller1",
        "managedElementIds": [
          "kista_3",
          "kista_4"
        ]
      }
    ]
  }
}
```

#### update policy-agent/Dockerfile:

**ADD /config/application\_configuration.json /opt/app/policy-agent/data/application\_configuration.json\_example**

to

**ADD /config/application\_configuration.json /opt/app/policy-agent/data/application\_configuration.json**

#### Build the code and create docker images

To build docker images of sdnc-a1-controller and policy-agent:

```
cd nonrtric
mvn clean install -Dmaven.test.skip=true
```

#### Build near-rt-ric-simulator container

Download the near-rt-ric-simulator repo (defaults to master branch):

```
git clone "https://gerrit.o-ran-sc.org/r/sim/a1-interface"
```

#### Create docker image

To create docker image near-rt-ric-simulator (note that the given image name must match the name given in docker startup later):

```
cd a1-interface/near-rt-ric-simulator
docker build -t near-rt-ric-simulator:latest .
```

## Build NONRTRIC / A1 Policy control panel container

Download the nonrtric repo (defaults to master branch):

```
git clone "https://gerrit.o-ran-sc.org/r/portal/nonrtric-controlpanel"
```

### Verify controlpanel configuration

⚠ Note that **nonrtric-controlpanel/webapp-backend/src/main/resources/application.properties** default property value **policycontroller.url.prefix = http://policy-agent-container:8081** assumes that policy agent is started with name policy-agent-container and exposes port 8081 (as is done below)!

### Build the code and create docker image

```
cd nonrtric-controlpanel
mvn clean install -Dmaven.test.skip=true
```

## Run A1 Controller Docker Container

- A1 Controller must be started first to set up docker network
- Change directory:  
`cd nonrtric/sdnc-a1-controller/oam/installation/src/main/yaml`
- Run docker container using the command below  
`docker-compose up a1-controller`
  - the container is ready once message "Healthcheck Passed in XX seconds." appears
  - note that certificate-related errors "cp: can't stat '/opt/opendaylight/current/certs/\*': No such file or directory" and "Error: File not found in path entered" can be ignored
- The Karaf logs of A1 controller can be followed e.g. by using command  
`docker exec a1-controller-container sh -c "tail -f /opt/opendaylight/data/log/karaf.log"`

## Open Daylight GUI

- For troubleshooting/verification purposes the Open Daylight GUI can be accessed by pointing web-browser to this URL:  
<http://localhost:8282/apidoc/explorer/index.html>  
Username/password: admin/Kp8bJ4SXszM0WXlhak3eHlcse2gAw84vaoGGmJvUy2U

## Run Near-RT RIC A1 Simulator Docker Containers

- Start docker containers for each ric defined in **nonrtric/policy-agent/config/application\_configuration.json** in previous steps (in this example for ric1 and ric2) and providing A1 interface version OSC\_2.1.0 with the following commands::  

```
docker run -p 8085:8085 -p 8185:8185 -e A1_VERSION=OSC_2.1.0 -e ALLOW_HTTP=true --network=nonrtric-docker-net --name=ric1 near-rt-ric-simulator:latest
docker run -p 8086:8085 -p 8185:8185 -e A1_VERSION=OSC_2.1.0 -e ALLOW_HTTP=true --network=nonrtric-docker-net --name=ric2 near-rt-ric-simulator:latest
```
- Change directory:  
`cd a1-interface/near-rt-ric-simulator/test/OSC_2.1.0/jsonfiles`
- Put an example policy\_type into the started near-rt-ric-simulator instances by running these curl commands (in this example to ric1 exposed to port 8085 and ric2 exposed to port 8086):  

```
curl -X PUT -v "http://localhost:8085/a1-p/policytypes/123" -H "accept: application/json" \
-H "Content-Type: application/json" --data-binary @pt1.json
curl -X PUT -v "http://localhost:8086/a1-p/policytypes/123" -H "accept: application/json" \
-H "Content-Type: application/json" --data-binary @pt1.json
```

## Run Policy-agent Docker Container

- Run docker container using this command once A1 Controller and simulators have been fully started:  
`docker run -p 8081:8081 --network=nonrtric-docker-net --name=policy-agent-container o-ran-sc/nonrtric-policy-agent:2.0.0-SNAPSHOT`
- Once policy-agent is up and running, it establishes connections to all configured Near-RT RICs
- (Note: In Bronze Maintenance version it will be possible to point docker to use a different configuration file than the version included inside the container - e.g. to add additional near-RT-RICs)
- If policy-agent-container is configured to log at DEBUG level, the following logs should appear to log to show that connection to the configured RICs has been established successfully via A1 Controller.

### SDNC A1 Client

```
$ docker logs policy-agent-container | grep "protocol version"
2020-04-17 11:10:11.357 DEBUG 1 --- [or-http-epoll-1] o.o.policyagent.clients.A1ClientFactory : Established
protocol version:SDNC_OSC_OSC_V1 for Ric: ric1
2020-04-17 11:10:11.387 DEBUG 1 --- [or-http-epoll-1] o.o.policyagent.clients.A1ClientFactory : Established
protocol version:SDNC_OSC_OSC_V1 for Ric: ric2
```

## policy-agent Swagger API

For troubleshooting/verification purposes you can view/access the policy-agent swagger API from url: <http://localhost:8081/swagger-ui.html>

## Run Non-RT RIC Control Panel Docker Container

Run docker container using this command:

```
docker run -p 8080:8080 --network=nonrtric-docker-net o-ran-sc/nonrtric-controlpanel:2.0.0-SNAPSHOT
```

## Open NONRTRIC / A1 Policy Control Panel UI

Dashboard UI can be accessed by pointing the web-browser to this URL:

<http://localhost:8080/>