RIC Message Router (RMR)

The RIC Message Router (RMR) is a thin library which allows applications to send messages to other applications. RMR provides insulation from the actual message transport system (e.g. Nanomsg or NNG), as well as providing endpoint selection based on message type. This page serves as an anchor point for RMR related pages.

Announcements

The following are announcements related to RMR during the past 30 days; newest announcements first.

2021 3 May

Version 4.7.4 has been pushed to the release area of the package cloud repository. See the revision history on the RTD site for the changes.

Current Version

Cherry development begins with version 4.7.4 on the master branch; 4.7.4 current in the package cloud staging repo.

Cherry Release: Version 4.4.5 (November 2020)

Bronze Release : version tag 4.0.5 (6 June 2020) -- Code is currently frozen; only bug fixes and documentation updates are being applied.

Release A frozen: 1.11.1 (Amber branch) 6 November 2019

Trial branch (r2-temp): 1.10.2 Fall 2019

For a detailed description of API changes, and their related commits, please consult the CHANGES file at the top level of the RMR repo or on the RMR read the docs page.

Changes to the API will be announced via this wiki page, so it is assumed that anybody interested in being notified about API changes will place a watch on this page.

Supported Transport Mechanisms

A transport mechanism is a "mid-layer" protocol which makes use of TCP/UDP and provides features such as automatic connection reestablishment and connection acceptance. RMR was originally built using the *Nanomsg* transport library, and was extended to use *NNG* (Nanomsg next generation) as NNG provides several enhancements, and Nanomsg has been all but abandoned from a maintenance perspective. While the underlying "wire" protocol of both NNG and Nanomsg are the same, the APIs are different; RMR has supported both mechanisms by supplying two sets of libraries (librmr and librmr_nng). At this point in time, NNG is stable, and as the support for Nanomsg is reduced, thus RMR will **drop support** for Nanomsg. In other words, beginning with version **1.0.45** *(initally announced as happening in 1.0.44, but has been pushed by one)* only librmr_nng will be included. This change should **not** have any impact on applications using RMR as the RMR API is **not** changing. The only change would be that applications using librmr will need to alter their build process to change the underlying RMR library to librmr_nng.

Developer Information

The following links are generally useful for developers writing applications (xAPPs) which make use of RMR.

- Frequently Asked Questions
- User's Guide
- Message Conventions
- Prebuilt Binary Packages
- Building From Source
- Using RMR
- RMR Route Tables (includes information on routing based on MEID)
- Subscription ID
- Manual (man) Pages

External Systems

The following links are likely useful for developers which must communicate with RMR based applications (e.g. route manager applications).

- Route Table Updates

RMR Development

The following pages hold information that should be useful to anybody modifying and/or testing RMR itself.

- Testing and Unit Testing

RMR Packages

Several frameworks (wrappers/bindings) are being developed which provide a more simplistic interface to the xAPP developer. Installation of the framework will likely require that the RMR runtime package be installed. RMR packages (debian and RPM) are currently published on the html site https://packagecloud.io.

The generic URL below can be used to obtain a list of available packages (current version listed at the top of this page).
https://packagecloud.io/app/o-ran-sc/staging/search?q=rmr&filter=all&filter=all&dist=

Links on these pages redirect to a generalised information HTML page; the actual wget command needed to pull the package is on the right side of these pages near the bottom.

As an example, the following can be added to a Docker file to install the RMR runtime package:

docker example

```
# Install RMr (runtime and dev) from debian package cached on packagecloud.io
ARG RMR_VER=3.3.0

RUN wget -nv --content-disposition https://packagecloud.io/o-ran-sc/staging/packages/debian/stretch
/rmr_${RMR_VER}_amd64.deb/download.deb
RUN dpkg -i rmr_${RMR_VER}_amd64.deb
```

Performance

The following pages discuss RMR and NNG performance.

- RMR vs NNG Sending Performance
- RMR Receiver Performance
- gRPC Evaluation

Support Software

When the RMR runtime package is installed, there may be one or more support binaries which are included. These are installed (by default) into /usr/local /bin. The links below describe each.

- RMR Health Check Support Binary

Tutorials

The following are links to short tutorials covering some aspects of RMR usage

- RMR Using Tracing Data
- Route Collector Debugging