

# RTI DDS Setup

RTI DDS is used for real-time communication between programs and devices. It implements a publish-subscribe pattern and serialization/deserialization for the messages. It is mandatory.

If you use on of the eProsima branches, take a look at [eProsima Setup](#).

## Downloads

Download and extract the following files:

```
wget https://s3.amazonaws.com/RTI/Bundles/6.0.0/Evaluation/rti_connext_dds_secure-6.0.0-eval-x64Linux4gcc7.3.0.tar.gz
wget https://s3.amazonaws.com/RTI/Community/ports/toolchains/raspbian-toolchain-gcc-4.7.2-linux64.tar.gz
wget https://community.rti.com/static/downloads/connext-dds/6.0.0/rti_connext_dds-6.0.0-core-target-armv6vfphLinux3.xgcc4.7.2.rtipkg
tar xvzf raspbian-toolchain-gcc-4.7.2-linux64.tar.gz
tar xvzf rti_connext_dds_secure-6.0.0-eval-x64Linux4gcc7.3.0.tar.gz
```

A backup of these files can be found in `sciebo/CPM/Project/Lab/08_Other/RtiConnextBackup`.

The Raspbian toolchain and the ARMv6 libraries may be skipped, if compilation for the lab vehicle Raspberry controller is not required.

## Installation

Run the RTI installer

```
sudo ./rti_connext_dds-6.0.0-eval-x64Linux4gcc7.3.0.run
```

and select `/opt/rti_connext_dds-6.0.0` as the installation directory.

Copy the Raspberry toolchain to `/opt`:

```
sudo cp -R raspbian-toolchain-gcc-4.7.2-linux64 /opt
```

Get a copy of the RTI license and move it to `/opt/rti_connext_dds-6.0.0/rti_license.dat`.

## Environment Setup

Register the RTI libraries with the dynamic linker. Edit with `sudo nano /etc/ld.so.conf` and insert:

```
/opt/rti_connext_dds-6.0.0/lib/x64Linux4gcc7.3.0
```

The run `sudo ldconfig`.

Select a unique DDS domain! To avoid interference from other users in the same network, you need to set a DDS domain ID that is different from everyone in the network. The domain ID is assumed to be in the environment variable `DDS_DOMAIN`. Currently occupied IDs are:

| ID      | purpose     |
|---------|-------------|
| 21      | main server |
| 60 - 66 | Lab PCs     |
|         |             |

Edit the global profile with the code below while inserting your own unique ID instaed of the "<>", for example using `sudo nano /etc/profile` and insert:

```
export DDS_DOMAIN=<YOUR UNIQUE DOMAIN ID>
export PATH=$PATH:/opt/rti_connext_dds-6.0.0/bin
export PATH=$PATH:/opt/raspbian-toolchain-gcc-4.7.2-linux64/bin
export NDDSHOME=/opt/rti_connext_dds-6.0.0
export RASPBIAN_TOOLCHAIN=/opt/raspbian-toolchain-gcc-4.7.2-linux64
export RTI_LICENSE_FILE=/opt/rti_connext_dds-6.0.0/rti_license.dat
```

Reboot to apply the changes made to the environment variables.

## Install RTI ARM libraries

```
sudo /opt/rti_connext_dds-6.0.0/bin/rtipkginstall rti\_connext\_dds-6.0.0-core-target-armv6vfpLinux3.xgcc4.7.2.rtipkg
```