

RD51 E-School

How to install, configure and run DATE software

Session: Readout form FPGA to Online

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1. Introduction

This document is conceived as a short user guide to learn how to install, configure and run the DATE data acquisition software developed by the ALICE Collaboration. The guide has been written in a step by step approach. The guide is conceived for non-expert users that have a basic knowledge of the Linux environment and bash commands.

2. Install DATE step by step

This chapter guides the user in the installation process of DATE (ver.7.51) on a 64-bit system running the CERN SLC6_x64 OS.

1. Open a shell and login as *root* user
2. Create a *date.repo* file under */etc/yum.repos.d/* directory
3. Paste the following lines in the file:

```
[main]
[alice-daq]
name=ALICE DAQ software and dependencies - SLC6/64
baseurl=https://yum:daqsoftrpm@alice-daq-yum.web.cern.ch/alice-daq-yum/slc6_64/
enabled=1
t=1
gpgcheck=0
```

4. To install DATE packages: `yum install date`
5. To install mysql packages for DATE run: `yum install MySQL-server`
6. To start the mysql server daemon run: `/etc/init.d/mysql start`
7. Login as *daq* user
8. The following set of commands to create the DATE mysql static database
 - a. `unset DATE_SITE`
 - b. `./date/setup.sh`
 - c. `newMysql.sh`
Use default values during configuration (answer nothing, typing ENTER)
9. To create the DATE configuration files in the `$DATE_SITE` directory run: `newDateSite.sh`
Use default values during pre-configuration (answer nothing, typing ENTER)
Afterwards, for questions:
"Do you want to create a minimal configuration, i.e. 1 detector + 1LDC + 1 GDC(y/n)
[n] ?" Answer "y"
For rest parameters use the default values (answer nothing, type ENTER)
10. Login as *root* (command: `$ su`)
 - a. `export DATE_SITE=/dateSite`

- b. `./date/setup.sh`
- c. `dateLocalConfig -s`

11. At every machine boot run (as root user) the following commands:

- a. `/date/runControl/start_dim.sh &`
- b. `export DATE_SITE=/dateSite`
- c. `./date/setup.sh`
- d. `/date/infoLogger/infoLoggerServer.sh start`

12. Run the DATE run control using the following commands (as daq user):

- a. `export DATE_SITE=/dateSite`
- b. `./date/setup.sh`
- c. `infoBrowser`
- d. `/date/runControl/DAQCONTROL.sh`

3. Configure the SRS equipment step by step

To configure the SRS (FEC and SRU) equipment in the DATE database do the following steps (as daq user):

1. Get to step 12 of the previous chapter 2
2. The SRS requires a dedicated configuration which is not distributed with the DATE installation. The virtual machine prepared for the purpose of the workshop contains a dedicated file (`/home/daq/DATE_INSTALL/equipmentRorcDataUDP.sql`) which should be added to the DATE database:

```
mysql -u daq -p DATE_CONFIG < /home/daq/DATE_INSTALL/equipmentRorcDataUDP.sql
(The daq password to access the database is: daq)
```

3. Run: `editDb`
4. Click on Equipment tab
5. Click on NEW button
6. Add the equipment named `RorcTriggerUDP` and click CREATE button, give a name to the equipment and click ADD
7. Mark and activate the created equipment (active check button).
8. Click on NEW button
9. Add the equipment named `RorcDataUDP` and click CREATE button,
 - a. give a name to the equipment
 - b. set the `EqId` parameter to `0`
 - c. set the `ipHost` parameter to `10.0.0.3`
 - d. set the `ipBoard` parameter to `10.0.0.2`
 - e. click ADD
10. Mark and activate the created equipment (active check button).
11. Click COMMIT
12. Click on MEMORY BANKS tab
13. Click NEW
14. On left menu select:
 - a. `ROLE_NAME=aloneldc`
 - b. `SUPPORT=ipc` (works only with newest versions of DATE, `physmem` is required for older versions)
 - c. `SIZE=100000000`
 - d. `PATTER=readoutDataPages`
15. Click ADD
16. Click COMMIT

To configure the SRS (FEC and SRU) equipment in the DATE run control do the following steps:

1. Go to DATE run control interface
2. Lock DATE run control (padlock icon next to ALICE logo).
3. Under the *Disconnected Configuration* menu click DEFINE
4. Select the DETECTOR named DAQ_TEST
5. Deselect any GDC and in the same sub-window choose *Static GDC selection based on GDC names*
6. Click OK in *DAQ configuration* window
7. Apply parameters
8. If needed save this configuration as default by clicking again DEFINE and then SAVE.
9. Move the DATE FSM to the next step by clicking the right arrow next to the label *Disconnected Configuration*
10. On the *Run Connected Parameters* menu click DEFINE
11. Select *Common Parameters*
 1. Set *Collider Mode=0*
 2. Set *Common Data Header Present=0*
12. Click APPLY TO CURRENT VALUES
13. Select *LDC*
 1. Set *startOfData/endOfData event enabled=0*
14. Click APPLY TAGGED VALUES to selected items
15. Click OK in *RunParameters* window
16. Apply parameters.
17. If needed save this configuration as default by clicking again DEFINE and then SAVE.
18. Move the DATE FSM to the next step by clicking the right arrow next to the label *Connected Run Parameters*
19. You are ready to run the SRS system with DATE!

Exercise 1:

Configure DATE to readout the SRS FEC Demonstrator.

1. Set output filename to `/tmp/<myfilename>` such that each run will have a different run number.
2. Set the output file size to 1GB
3. Set the trigger frequency to ~100Hz using the pulse generator.

TIP*: Firewall on? Traffic on port used by the SRS will be stopped by Linux firewall if a proper rule is not set. Stop firewall executing: `/etc/init.d/iptables stop`

Exercise 2:

Scale the DATE configuration to 3 LDC and 1 GDC, for each LDC emulate one equipment using the “rand trigger” and the “random data generator” equipment.

*TIP: The paged data “paged data flag” option must be ‘0’ for all LDCs if you use the random data generator. Set form Run Control Connected Run Parameters -> Define -> LDC ...

Exercise 3:

Check the DATE logs related to last 10min of operation using infoBrowser.