Guide to Install and Configure DATE, version 20-2 step by step, to work with the UDP protocol for the NEXT EXPERIMENT

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DATE installation and configuration

In order to get the release of DATE that you want to use and all the dependencies visit the webpage of the ALICE DAQ team: http://ph-dep-aid.web.cern.ch/ph-dep-aid/

The system runs on the 64 bits based Scientific Linux 5. It is preferable to install the CERN version of the OS: SLC5, in order to avoid problems and missing dependencies.

0.- Configuration of the BIOS

Before installing the operating system check that the BIOS settings are correct. Specially the hard drive configuration.

If you have SATA disks check that the hard drive is set up to be SATA compatible.

0.- Installation of Linux and it's dependencies

After installing Linux make sure that the needed dependencies are also installed. In particular check for gcc, emacs and xinetd.
If they are not present in the OS use the yum application to install them

    yum install xinetd
    yum install gcc   (This will also install the kernel dependencies)
    yum install emacs

1.- Installation of DATE and its dependencies

If you want to install the last version, go to http://ph-dep-aid.web.cern.ch/ph-dep-aid/, check the quick guide and download the yum.repo for the production version of DATE and follow the instructions.

    yum install date

If you want to install a new machine in a setup that it's already running get the rpm from the webpage and stick to your DATE version.

1.- Last dependencies

The package mysql-server is not included in the release. It has to be installed only in the machine where the database is installed.

```
yum install mysql-server
```

2.- Physic memory and rorc drivers installation

This physic memory uses the space not used by the OS to handle DATE and all the data acquisition.

To create the RPM for your OS version type:

```
cd /date
export DATE_ROOT=`pwd`
export DATE_MYSQL=TRUE
unset DATE_SITE
unset ROOTSYS
. ./setup.sh
rm -rf RPMS
gmake rpm DRIVERS_ONLY=1
```

To install these rpm

```
cd /date/RPMS
rpm -ivhf *
```

IMPORTANT! Check that the rpm version matches your Linux Kernel version

3.- Modify the file /etc/grub.conf

Modify the file /etc/grub.conf to leave free space for the physmem limiting the size of the OS:

```
$ title Scientific Linux CERN SLC (2.6.9-89.0.29.EL.cernsmp)
$ root (hd0,0)
$ kernel /vmlinuz-2.6.9-89.0.29.EL.cernsmp ro root=LABEL=/ rhgb quiet mem=1412M
```

The memory option is vital and and must be inserted at the end of the kernel description. This feature is reported after the physmem installation.

After changes are saved in /etc/grub.conf it is necessary to reboot the machine

To check the installation
```
$ /date/physmem/Linux/physmemTest
```

Check that there is enough free space for the physmem1 device.

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2.- DATE configuration

This series of steps should all be completed and this order to avoid problems with the configuration. Some of them will be made as ROOT user, others as local user. It's important to take care because the user defines some parameters that can give us some problems in the future if are not correctly set.

As ROOT user

1.- Create MySQL user accounts in the database machine(needed only once after MySQL server install)

        unset DATE_SITE
        . /date/setup.sh
        newMysql.sh

As DATEUSER

1.- Create DATE_SITE in the first machine of the setup

        Answer yes at the question "Do you want to create a minimal configuration?". This will create a simple standalone setup consisting of one LDC and one GDC on the same node.

        newDateSite.sh

2.- If there is already the database and the dateSite in one of the machines just copy the datesite from this machine

        as root user

        cd /
        rsync -a dateuser@machine:/dateSite .

As ROOT user
This step is vital

1.- Configure the services (to be run on all DATE hosts as root)
        export DATE_SITE=/dateSite
        source /date/setup.sh
        dateLocalConfig -s

3.- Things to do after installation

Check that you did dateLocalConfig -s on all the machines

Test the ports of the monitoring and runControl services to check if they are open

> telnet host port#   (example: telnet ldc 6003)

Disable YUM autoupdate and iptables in all the machines

YUM autoupdate can automatically modify the version of one of the packages DATE uses so the system could be unstable or stop to work. To avoid this it's important to disable the autoupdates of the system.

As ROOT user

> chkconfig --level 0123456 yum off
> chkconfig --level 0123456 iptables off
> /etc/init.d/iptables stop

Configure the shared memory

> emacs /etc/sysctl.conf

Add at the end of the file

> # For DATE
> kernel.shmmax=751000000
> kernel.shmall=751000000
> net.core.rmem_max = 16777216
> net.core.wmem_max = 16777216
> kernel.sem = 250 32000 32 250

You can change the parameters with the values you prefer (this were optimized for ALICE environment).

REBOOT the machine to save the changes.

Configure the LDC and GDC memory banks of data base

Enter in the data base:
> editDb

Get the size of the physmem according to the size available in your computer. Follow the example of the picture 1.
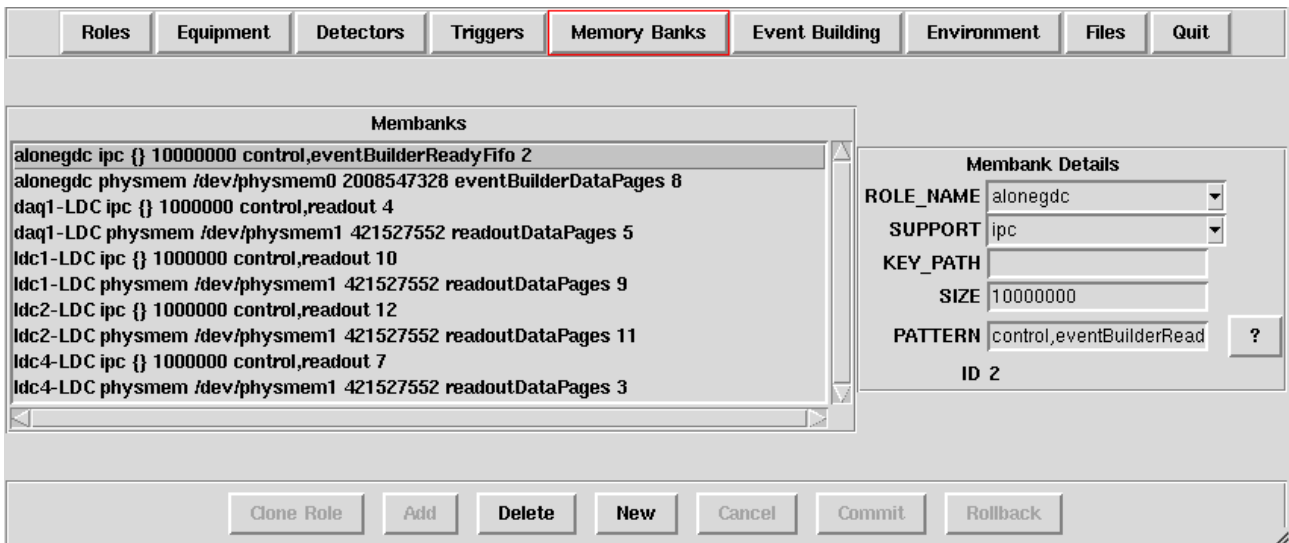
Picture1: How to configure the memory banks

Configure the network to be kept after boot

It's important to keep the network configuration after boot. To do so modify the file /etc/sysconfig/network-scripts/ifcfg-eth# according to your configuration.

As example :

DEVICE=eth1
BOOTPROTO=static   **IMPORTANT. Check it's static, not dhcp!**
BROADCAST=10.0.0.255
HWADDR=00:25:90:15:AB:2B
IPADDR=10.0.3.3
NETMASK=255.255.255.0
NETWORK=10.0.3.0
ONBOOT=yes
MTU=9000   **Define 9000 to use Jumbo packages**