

Fun4example - a tutorial for dummies - Richard Seto 7/20/2004
Please steal and update as you wish.

STARTERS; some reference books
A couple of books which are invaluable
Running Linux and Practical C++ Both published by OReilly
A link to some of the books is here
<http://www.hk8.org/old%5Fweb/>

If you are part of some consortium (is BNL??- the UC is as well as many other universities) you can go to
<http://safari.oreilly.com/> and look at Practical C++, as well as lots of other books.

Stuff I assume you know-
a little of root, c++, linux, how to log into rcf, the phenix way of doing things.

SETTING UP AFS ON MY LAPTOP

I was working on my laptop so I wanted afs. This means that I can work locally on my laptop as if (almost) I was directly on one of the rcas machines. My mode is to do program development locally and submit batch jobs at rcf -

You can get afs from www.openafs.org. You will need the following (for Linux):
(I recommend the rpm's)

```
openafs-1.2.11
openafs-client-1.2.11
openafs-kernel-1.2.11
```

There are also instructions under Documentation. You want to start with "Adding Additional Client Machines".

I used the rpm's. Its pretty painless - to do it, log in as root
\$rpm -i xxxxx.rpm
do this for all 3 rpm's

You should also set your home cell in /usr/vice/etc/ThisCell.
(which is rhic.bnl.gov)

Edit /etc/pam.d/login and possibly others (this is the only one i did) there to get an AFS token on login.
Put the line:

```
auth sufficient /lib/security/pam_afs.so try_first_pass ignore_root
before the one for pwdb.
```

This thing will start up AFS each time you boot which may be a pain.
All the init files are in /etc/rc.d
make /etc/rc.d/init.d/afs a dummy file and move afs somewhere else.
The when you boot afs will not come up. then run the command
afs start to start it, using the real afs file wherever you put it.

OK, now log off from root.

Once afs is started
/afs/rhic/phenix should be there.

NOW GET THE PHENIX SOFTWARE GOING

Note: There is a funny thing in some paths - @sys - this is used by AFS to set the system type.

At the moment, it sets offline_main to a wrong machine type...
to check this say
\$fs sysname
turns out it was wrong. log in as root and set it correctly
\$fs sysname i386_redhat80

first
\$setenv CVSROOT /afs/rhic/phenix/PHENIX_CVS

at some point - to log into afs
\$klog

bring over phenix_setup.csh and source it.

Then cvs co stuff, and compile. It should work.
You may have to define stuff like root etc.
root and other programs will work from afs, but are slow to start. I installed them on my machine

NOW ON TO FUN4Example
I assume you have gotten the right compilers etc.

Find a place to work

\$cvs co offline/analysis/Fun4example

go down to the Fun2example directory

\$mkdir work
\$cd work
\$../autogen.sh -prefix=
\$make

Ddl/Event
Online_distribution/Event
Offline/framework/Phwrappers -done
packages
Cvs co offline/framework/phool
Preco

Nm - dependencies of objects
Ldd - dependencies of libraries

Dear Martin and others,

Thanks to Martin for the tip about the ROOTSYS. That fixed the libRDBC problem.

When we moved from RH7.3.1 to FermiLinux, I had bring over a gcc3.2 version of ROOT. So I chose the RH9.0/3.10v02 binaries.

Now after I reset the ROOTSYS to the RH8.0 version at RCF, and also make sure that I have /afs/rhic/oodb/pro/lib visible, then I get this strange error

dlopen error:

```
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib/libEmcDynamic.so.0:
```

```
undefined symbol: _ZNK7TObject7DoErrorEiPKcS1_Pc Load Error: Failed to load Dynamic link library
```

```
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib/libfun4allfuncs.so
```

The "TObject" part makes me think that I have a ROOT libraries versioning problem still, but I am not sure about that.

```
echo $ROOTSYS
```

```
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/root
```

```
echo $LD_LIBRARY_PATH
```

```
./opt/phenix/lib:/usr/local/lib:/usr/lib:
```

```
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib:
```

```
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/root/lib:
```

```
/afs/rhic.bnl.gov/oodb/v_7.1/linux86gcc3/lib:/afs/rhic/app/insure-6.1-gcc-3.2/lib.linux2:
```

```
/home/maguire/cern/2003/pro/lib
```

Right now the internet connection to RCF has just failed, second time in less than one hour. That would defeat the purpose of trying to use the /afs/rhic area

```
(/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/root/bin/root:
```

```
Connection timed out.)
```

but connection failures to RCF have been rare until this past week-end.

The purpose of this exercise is to demonstrate that the PHOOL libraries built at RCF are usable at remote sites over the AFS connection. If connectivity speed were to be a problem, one could make duplicate copies of the library set locally, but I am trying to avoid having to do that.

I can also try the same exercise on the rplay18 (Scientific Linux) .

Regards,
Charlie

Hi Charlie,

the problem seems to be that you are using a home-built root distro (/home/maguire/ROOT3.10v02Linux/root/lib in your LD path) that doesn't support RDBC.

The generic way to find out is to

```
> ldd
```

```
> /afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib/libfun
> 4allfuncs.so
<lots of output>
```

I did

```
> ldd
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib/libfun4a
llfuncs.so | grep RDBC
>      libRDBC-1.0.so.2 =>
> /afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/root/lib/l
> ibRDBC-1.0.so.2 (0x51cd9000)
>
```

So you see it's a root library. Maybe you can try not to pre-set your ROOTSYS variable so you get the proper afs-based one.

And yes, the symlink in /opt is the standard way to adapt a system to the afs distro.

Cheers,
Martin

Charlie Maguire wrote:
> Dear Andrey and others,
>

Dear Andrey and others,

Thanks to Andrey for the suggestion. I did the softlink such that /opt/phenix is

```
phenix -> /afs/rhic/i386_redhat80/opt/phenix/
```

This then enabled the gmake command to work, i.e. resolved the /opt/phenix/lib/libodbc++.la file.

Now when I run the analysis module itself I get the following error

```
dlopen error: libRDBC-1.0.so.2: cannot open shared object file: No such file
or directory Load Error: Failed to load Dynamic link library
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib/libfun4a
llfuncs.so
```

So Fun4All needs libRDBC-1.0.so.2, which could be a relational database library (PostgreSQL??). How do I pick up this one?

Anyone else in PHENIX-land who has succeeded in using the rebuild libraries at RCF on their local workstations across the AFS?

Regards,

Charlie

PS: My local LD_LIBRARY_PATH is

```
/home/maguire/cvs/install/lib/../../opt/phenix/lib:/usr/local/lib:/usr/lib
:
/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib:
/home/maguire/ROOT3.10v02Linux/root/lib:/afs/rhic/oodb/pro/lib:
/afs/rhic/app/insure-6.1-gcc-3.2/lib.linux2:/home/maguire/cern/2003/pro/
lib
```

where the /home locations are local.

Andrey Y. Shevel wrote:

>Hi Charlie,

>

>I believe that the problem could be solved by a range of ways (of
>course depend on what you are planning to do). But probably simplest
>way it to mirror /afs/rhic/i386_redhat80/opt/ to your local directory
>tree and create soft link (if it is required) on every local machines
>(if you use cluster) to the location

>

>/opt -> .../opt/...

>

>Of course you need to convert files of type *.la (localize them).

>

>Andrey.

>

>

>

>On Wed, 21 Jul 2004, Charlie Maguire wrote:

>

>

>

>>Date: Wed, 21 Jul 2004 11:08:02 -0500

>>From: Charlie Maguire <charles.f.maguire@vanderbilt.edu>

>>Reply-To: phenix-off-1@bnl.gov

>>To: Phenix-off-1 <phenix-off-1@bnl.gov>

>>Subject: Trying to use PHENIX libraries with local gmake

>>

>>Dear all,

>>

>>Starting to test the use of the daily rebuild libraries at a remote site.

>>

>>When I try to make a simple analysis package, similar to the modules
>>which will be used in the "analysis train" model for Run4 physics
>>output, I run into the follow error from the make procedure:

>>

>>-L/home/maguire/cvs/install/lib

>>-L/afs/rhic.bnl.gov/phenix/PHENIX_LIB/sys/i386_redhat80/new.4/lib

>>-lfrog -lfun4allfuncs mkdir .libs

>>grep: /opt/phenix/lib/libodbc++.la: No such file or directory

>>/bin/sed: can't read /opt/phenix/lib/libodbc++.la: No such file or

>>directory

>>

>>I am interpreting this as meaning we have a hardwired /opt/phenix/lib

>>location somewhere? At RCF this is resolved as
>>/afs/rhic.bnl.gov/i386_redhat80/opt/phenix/lib
>>for an RH8.0 platform. I can see this AFS area from my local machine,
>>but locally the /opt area is not defined.

>>

>>How can I work around this?

>>

>>By the way, is libodbc an Objectivity database item? That itself
>>would be a killer locally.

>>

>>Regards,

>>Charlie

>>

>>

>>

>>

>

>

>Andrey Y. Shevel

>

You do know about "c++filt", right? You just feed it a mangled C++ symbol and it ... demangles it. That's often a help when you're trying to figure out where your problem is:

```
% c++filt _ZNK7TObject7DoErrorEiPKcS1_Pc TObject::DoError(int, char const*,  
char const*, char*) const
```

Hi Charlie,

I guess I add my 2c of advice since we all seem to be in front of some terminal at this hour:

The libtool error you got was almost certain from mixing builds from various platforms (which might account for the TObject error as well).

Whenever you change platforms (or root versions) you need to rm -rf your build and install areas and you have to rerun autogen.sh to get the correct script into your source directory.

Chris