

DO software & RedHat 6.1

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Requirements

Compilation process

Performance

Graphics

Problem(s)

Requirements

At least 2 Gb of free disk space. More is needed if you want to build with debugging information and/or keep several build trees.

A fast system. Using a 2CPU/PIII-550 and 512 Mb of RAM it takes about 1.5 hour to build everthing.

KAI C++ 3.3g or 3.4 compiler and glibc 2.1 system.

XFree-86 v4 server from www.xfree86.org or
Accelerated-X server from www.xig.com with 3D-OpenGL, Motif/Lesstif.

Set of suplimentary libraries: cernlib, histo, root compiled on RedHat 6.x

There are two different debuggers exist totalview version 4 and gdb adopted for KAI C++ version 4.16 (there are few graphics extensions for gdb exist, like ddd).

Compilation process

For RedHat 6.x system(s) based on new glibc standard only two version of KAI C++ can be used: 3.3g or 3.4.

There is no problems to compile D0 software from scratch using either statically or dynamically options of compiler.

Supplementary libraries should be compatible and compiled using egcs/gcc on RedHat 6.x. In order to compile and run D0 software you need to have own version of cernlib, root, histo compatible with RedHat 6.x (new glibc).

You can build your favorite executable statically on one platform (RedHat 5.1 using KAI C++ 3.3f) and run it on another (RedHat 6.x) due to native ELF format of OS(es).

Size of statically linked executable is compatible with dynamically linked one: (112Mb and 109Mb, respectively).

Performance

System 1: Linux/RedHat 6.1, 2CPU/PIII-550 Mhz, 512 RAM, LDV SCSI3 disks.
System 2: central cluster d0mino.

Test1: reconstruction of 1GeV single muon event.

System 1/event

User CPU: 15.220 sec
System CPU: 0.24 sec
Real Time: 0:15.89 (sec)
Size (static): 111Mb

System 2/event

User CPU: 29.347 (sec)
System CPU: 0.933 (sec)
Real Time: 0:34.67 (sec)
Size (dynamic): 139 Mb.

Test2: reconstruction of Zmumu with 2mb event.

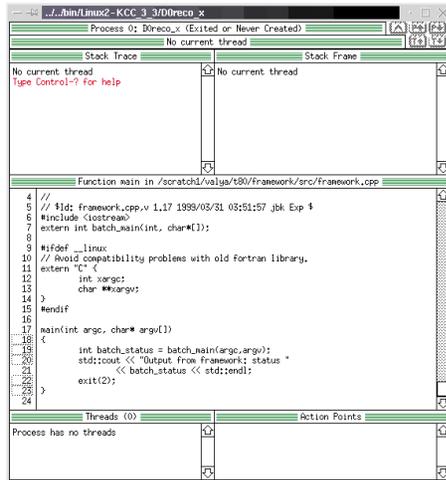
System 1/event

User CPU: 88.440 sec
System CPU: 0.64 sec
Real Time: 1:30.69 (sec)
Size (static): 111Mb

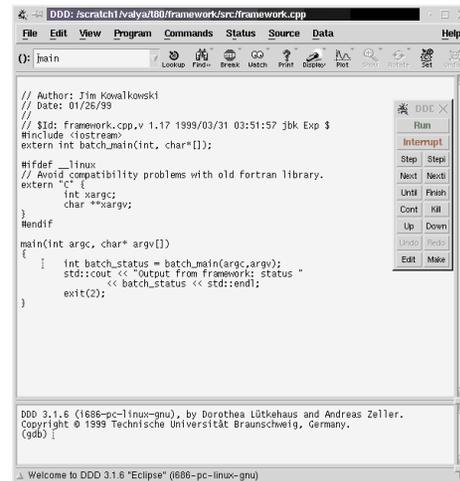
System 2/event

User CPU: 183.263 (sec)
System CPU: 1.033 (sec)
Real Time: 3:05.48 (sec)
Size (dynamic): 139 Mb.

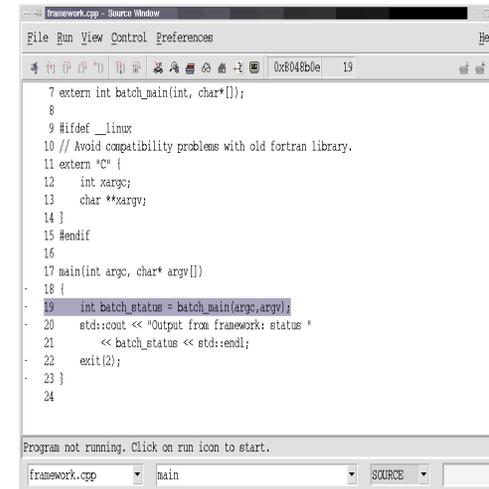
Debuggers



totalview
www.etnus.com



DDD debugger based on gdb
www.gnu.org/software/ddd



tkgdb based on gdb
www.redhat.com

*You need gdb version 4.16 adopted for KAI C++,
can be downloaded from ftp.kai.com*

- ✘ There are two different debuggers under Linux: totalview and gdb family (with a few graphical extensions). Also there is a KAI C++ debugger based on Java (exist for 3.4 and not tested).
- ✘ They have different design and features
- ✘ There are few graphical IDE (C/C++ Integrated Development Environment) interfaces (a la Visual C++ under Windows), like KDevelop, Cygnus IDE, etc.

Graphics under Linux/RedHat 6.x

XFree-86 server version 4.

Free implementation of Mesa/OpenGL support, hardware acceleration for 3dfx, Alliance, ATI, C&T, IBM, Intelm Matrox, NCR, NeoMagic, Nvidia, N9, S3 and Trident graphics cards.

For 3dfx provides DRI (Direct Rendering Interface).

Individual drivers for graphics card.

2D/3D hardware acceleration of OpenGL applications is available only for 16 bpp mode.

Accelerated-X server version 5.02

Commercial server with 3D software and hardware support of OpenGL.

They announced a new drivers for a wide range of the cards, see www.xig.com, and provide DEMO version(s) of their drivers for free download

Price:\$99 for X-server

\$149 2D/3D supplement to X-server

\$149 X/Motif

\$29 driver

\$249 3D Accelerated-X

There is another X-server from Metrolink www.metrolink.com but it is not tested



Event display cannot be compiled on RedHat 6.x system(s) due to uncompatibilities of existing OpenInventor libraries, but you can compile it on RedHat 5.x system and run on RedHat6.x.

What do you need to run event display ?

In order to have a full advantages of hardware acceleration required by OpebGL applications you need properly setup your XFree86 configuration file /etc/X11/XF86Config

```
Section "Modules"
```

```
....
```

```
Load      "dri"
```

```
Load      "glx"
```

```
Load      "GLcore"
```

```
EndSection
```

```
Section "DRI"
```

```
Mode 0666
```

```
EndSection
```

You should run your X-server in 16 bpp mode:

```
# startx -- -depth 16
```

and/or specify in you XF86Config

```
Section "Screen"
```

```
....
```

```
DefaultDepth 16
```

```
....
```

```
EndSection
```

XFree86 distribution provides only libGL.{a,so,so.1.2} libraries, but event display requires as well libGLU.{a,so} libraries which can be found from www.mesa3d.org

TAR file(s) of XFfree86 can be found at: www.xfree86.org

RPM(s) can be found on: <http://rpmfind.net/linux/RPM>

Conclusions

- ✓ There is no serious problems to compile D0 software under RedHat 6.x system(s).
- ✓ Your Linux system can be faster then d0mino.
- ✓ There are two different debuggers exist for Linux: totalview & gdb family.
- ✓ New release of XFree86 X-server allows you to run event display as fast as on some SGI machines, but it still need to be compiled on old RedHat 5.x system.