

Reconstruction chain outside CERN

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Migration steps

- migration from *non-free* PGI Fortran Compiler **pgf77** (version 6.0-4) to *free* Fortran Compiler
- access to **HEPDB** outside CERN
- adaptation to another Linux distributive (Scientific Linux 4, Debian etch)

Linux distributives

- SHIFT libraries:
castor-lib-xxx.i386.rpm and *castor-devel-xxx.i386.rpm*
available from
<http://castor.web.cern.ch/castor/software.htm>
- GNU GCC/G++ Compilers:
gcc version 3.2.3 and g++ version 3.4.6
should be installed locally <http://gcc.gnu.org/install/>

access to NA49 data base

- variable NA49_DBHOST
na49db.cern.ch and *na61db.fb2.fh-frankfurt.de*
- ports 1114 and 6500 should be available
- ssh tunnel
`ssh -N -g -L 6500:na49db.cern.ch:6500
-L 1114:na49.cern.ch:1114 login@lxplus.cern.ch`

Fortran

- Free Fortran Compilers (Gfortran, Intel Fortran, G95):

<http://www.thefreecountry.com/compilers/fortran.shtml>

- the pointers are used with *RECORD* statement, this significantly limits the list of suitable compilers

- Intel Fortran Compiler for Linux:

<http://www.intel.com/cd/software/products/asm-na/eng/340679.htm#Compilers>

Source code

The current version of source code for reconstruction chain can be found at [/afs/cern.ch/na61/Programs/na61lite_v1r01.tgz](https://afs.cern.ch/na61/Programs/na61lite_v1r01.tgz)

- The general structure of directories and *Makefiles* was optimized
- The *common* packages: DSPACK, ODF, HEPDB, SCRIPTS, TRKSTEP, PADTRANS, DAQ, SONY
- The *Clients* used by reconstruction chain:
 - **C** (9): vdrift_corr, edisto, vt_ncalc, res_corr, mtrac, mpat, ftof_client, v0find, xi_find
 - **C++** (1): mtv0
 - **C + C++** (1): dipt
 - **C + Fortran** (3): mini, ppoints, reform
 - **Fortran** (7): patrec, tpc_error, r3d, tpc_flight_time, vtx, dedxna61, v0fit

Conclusions

- using *ifort* allow us to compile the NA61 source code outside lxplus cluster
- after fixing of several bugs the obtained results are found to be in good agreement with official v1r2 release.

Future tasks

- modification of *hepdb.plugin* for local using of NA61 database
- portation Fortran pointers and records to C or C++ standards
- migration from DSPACK to ROOT dst file structure