

QGIS Application - Bug report #21507

Linker failure with undefined reference to `nc_inq_varids`

2019-03-07 05:25 AM - marisn -

Status: Open	
Priority: Normal	
Assignee: Peter Petrik	
Category: Build/Install	
Affected QGIS version: 3.6.0	Regression?: No
Operating System: GNU/Linux	Easy fix?: No
Pull Request or Patch supplied: No	Resolution:
Crashes QGIS or corrupts data: No	Copied to github as #: 29324

Description

sci-libs/netcdf-4.6.1-r1
sci-libs/gdal-2.3.1
origin/release-3_6 aff4f23559bc24a6979d35d02b11995a2d4f6bac

```
make[2]: Entering directory '/run/media//soft/qgis_trunk/build'
[ 69%] Linking CXX shared module ../../output/lib/qgis/plugins/libmdalprovider.so
cd /run/media//soft/qgis_trunk/build/src/providers/mdal && /usr/bin/cmake -E cmake_link_script
CMakeFiles/mdalprovider.dir/link.txt --verbose=1
/usr/bin/c++ -fPIC -Wall -Wextra -Wno-long-long -Wformat-security -Wno-strict-aliasing -O2 -g -DNDEBUG -Wl,--no-undefined
-shared -o ../../output/lib/qgis/plugins/libmdalprovider.so CMakeFiles/mdalprovider.dir/qgsmdalprovider.cpp.o
CMakeFiles/mdalprovider.dir/qgsmdaldataitems.cpp.o CMakeFiles/mdalprovider.dir/qgsmdalsourceselect.cpp.o
CMakeFiles/mdalprovider.dir/moc_qgsmdalprovider.cpp.o CMakeFiles/mdalprovider.dir/moc_qgsmdaldataitems.cpp.o
CMakeFiles/mdalprovider.dir/moc_qgsmdalsourceselect.cpp.o CMakeFiles/mdalprovider.dir/../../../../external/mdal/mdal.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/mdal_utils.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/mdal_data_model.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/mdal_memory_data_model.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/mdal_driver_manager.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_driver.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_2dm.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_ascii_dat.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_binary_dat.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_hdf5.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_xmdf.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_hec2d.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_flo2d.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_gdal.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_gdal_grib.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_cf.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_3di.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_netcdf.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_sww.cpp.o
CMakeFiles/mdalprovider.dir/../../../../external/mdal/frmts/mdal_gdal_netcdf.cpp.o -L/run/media//soft/qgis_trunk/build/src/core
-L/run/media//soft/qgis_trunk/build/src/gui
-Wl,-rpath,/run/media//soft/qgis_trunk/build/src/core:/run/media//soft/qgis_trunk/build/src/gui:/run/media//soft/qgis_trunk/build/output/lib: ../../
ut/lib: ../../output/lib/libqgis_gui.so.3.6.0 -lhdf5 -lsz -lz -ldl -lm -lgdal -lnetcdf ../../output/lib/libqgis_core.so.3.6.0
/usr/lib64/libQt5Xml.so.5.11.3 /usr/lib64/libQt5Svg.so.5.11.3 /usr/lib64/libQt5WebKitWidgets.so.5.212.0
/usr/lib64/libQt5PrintSupport.so.5.11.3 /usr/lib64/libQt5WebKit.so.5.212.0 /usr/lib64/libQt5Sql.so.5.11.3
/usr/lib64/libQt5Concurrent.so.5.11.3 -lqca-qt5 -lqt5keychain -lproj -lgeos_c -lspatialindex -lexpat -lsqlite3 -lspatialite -lzip
/usr/lib64/libQt5Positioning.so.5.11.3 ../../output/lib/libqgis_native.so.3.6.0 /usr/lib64/libQt5DBus.so.5.11.3
```

```
/usr/lib64/libQt5UiTools.a -lqwt6-qt5 -lqscintilla2_qt5 /usr/lib64/libQt5QuickWidgets.so.5.11.3 /usr/lib64/libQt5Widgets.so.5.11.3
/usr/lib64/libQt5Quick.so.5.11.3 /usr/lib64/libQt5Gui.so.5.11.3 /usr/lib64/libQt5Qml.so.5.11.3 /usr/lib64/libQt5Network.so.5.11.3
/usr/lib64/libQt5Core.so.5.11.3 -lgdal
CMakeFiles/mdalprovider.dir/__/__/external/mdal/frmts/mdal_netcdf.cpp.o: In function
`NetCDFFile::readArrNames[abi:cxx11]() const':
/run/media/soft/qgis_trunk/external/mdal/frmts/mdal_netcdf.cpp:90: undefined reference to `nc_inq_varids'
/run/media/soft/qgis_trunk/external/mdal/frmts/mdal_netcdf.cpp:96: undefined reference to `nc_inq_varids'
collect2: error: ld returned 1 exit status
make[2]: *** [src/providers/mdal/CMakeFiles/mdalprovider.dir/build.make:510: output/lib/qgis/plugins/libmdalprovider.so] Error 1
```

History

#1 - 2019-03-07 09:23 AM - Peter Petrik

can you please paste me output from the cmake configure command to see if you correctly found netcdf library in cmake?

#2 - 2019-03-07 06:47 PM - Giovanni Manghi

- Status changed from Open to Feedback

#3 - 2019-03-08 08:48 AM - marisn -

I rm'ed by build directory and started from scratch – still the same. I also ran "make check" on my netcdf install and all tests passed successfully. You have to be more precise on commands I should run. Here's an output of some of them:

```
grep -r -i netcdf CMakeFiles/*
CMakeFiles/Makefile.cmake: "../external/mdal/cmake/FindNetCDF.cmake"
```

```
grep -i netcdf CMakeCache.txt
NETCDF_INCLUDE_DIR:PATH=/usr/include
NETCDF_LIBRARY:FILEPATH=/usr/lib64/libnetcdf.so
mdalprovider_LIB_DEPENDS:STATIC=general;qgis_core;general;qgis_gui;general;/usr/lib64/libhdf5.so;general;/usr/lib64/libsz.so;general;/usr/lib64/libz.so;general;/usr/lib64/libz.so;general;/usr/lib64/libdl.so;general;/usr/lib64/libm.so;general;/usr/lib/libgdal.so;general;/usr/lib64/libnetcdf.so;
pkgcfg_lib_PC_NETCDF_netcdf:FILEPATH=/usr/lib/libnetcdf.so
//Details about finding NetCDF
FIND_PACKAGE_MESSAGE_DETAILS_NetCDF:INTERNAL=[/usr/lib64/libnetcdf.so][usr/include][v()]
PC_NETCDF_CFLAGS:INTERNAL=
PC_NETCDF_CFLAGS_I:INTERNAL=
PC_NETCDF_CFLAGS_OTHER:INTERNAL=
PC_NETCDF_FOUND:INTERNAL=1
PC_NETCDF_INCLUDEDIR:INTERNAL=/usr/include
PC_NETCDF_INCLUDE_DIRS:INTERNAL=
PC_NETCDF_LDFLAGS:INTERNAL=-lnetcdf
PC_NETCDF_LDFLAGS_OTHER:INTERNAL=
PC_NETCDF_LIBDIR:INTERNAL=/usr/lib64
PC_NETCDF_LIBRARIES:INTERNAL=netcdf
PC_NETCDF_LIBRARY_DIRS:INTERNAL=
PC_NETCDF_LIBS:INTERNAL=
PC_NETCDF_LIBS_L:INTERNAL=
PC_NETCDF_LIBS_OTHER:INTERNAL=
```

```

PC_NETCDF_LIBS_PATHS:INTERNAL=
PC_NETCDF_PREFIX:INTERNAL=/usr
PC_NETCDF_STATIC_CFLAGS:INTERNAL=
PC_NETCDF_STATIC_CFLAGS_I:INTERNAL=
PC_NETCDF_STATIC_CFLAGS_OTHER:INTERNAL=
PC_NETCDF_STATIC_INCLUDE_DIRS:INTERNAL=
PC_NETCDF_STATIC_LDFLAGS:INTERNAL=-lnetcdf
PC_NETCDF_STATIC_LDFLAGS_OTHER:INTERNAL=
PC_NETCDF_STATIC_LIBDIR:INTERNAL=
PC_NETCDF_STATIC_LIBRARIES:INTERNAL=netcdf
PC_NETCDF_STATIC_LIBRARY_DIRS:INTERNAL=
PC_NETCDF_STATIC_LIBS:INTERNAL=
PC_NETCDF_STATIC_LIBS_L:INTERNAL=
PC_NETCDF_STATIC_LIBS_OTHER:INTERNAL=
PC_NETCDF_STATIC_LIBS_PATHS:INTERNAL=
PC_NETCDF_VERSION:INTERNAL=4.6.1
PC_NETCDF_netcdf_INCLUDEDIR:INTERNAL=
PC_NETCDF_netcdf_LIBDIR:INTERNAL=
PC_NETCDF_netcdf_PREFIX:INTERNAL=
PC_NETCDF_netcdf_VERSION:INTERNAL=
__pkg_config_arguments_PC_NETCDF:INTERNAL=QUIET;netcdf
__pkg_config_checked_PC_NETCDF:INTERNAL=1

```

```

readelf -Ws /usr/lib64/libnetcdf.so.13.1.1 | grep nc_inq
 108: 000000000001ee30 104 FUNC GLOBAL DEFAULT 11 nc_inq_attid
 227: 0000000000026180 150 FUNC GLOBAL DEFAULT 11 nc_inq_var_filter
 297: 000000000001eb40 95 FUNC GLOBAL DEFAULT 11 nc_inq_ndims
 300: 0000000000025d30 170 FUNC GLOBAL DEFAULT 11 nc_inq_var
 357: 000000000001ec00 103 FUNC GLOBAL DEFAULT 11 nc_inq_dimname
 363: 000000000001ea70 104 FUNC GLOBAL DEFAULT 11 nc_inq_dim
 414: 0000000000025cd0 96 FUNC GLOBAL DEFAULT 11 nc_inq_varid
 521: 000000000001e030 90 FUNC GLOBAL DEFAULT 11 nc_inq_nvars
 556: 000000000001edb0 114 FUNC GLOBAL DEFAULT 11 nc_inq_att
 575: 0000000000025e40 26 FUNC GLOBAL DEFAULT 11 nc_inq_vardimid
 596: 0000000000025fc0 143 FUNC GLOBAL DEFAULT 11 nc_inq_var_chunking
 750: 000000000001ef10 95 FUNC GLOBAL DEFAULT 11 nc_inq_natts
 782: 000000000001dac0 158 FUNC GLOBAL DEFAULT 11 nc_inq_path
 810: 0000000000025e20 26 FUNC GLOBAL DEFAULT 11 nc_inq_varndims
 854: 0000000000026220 300 FUNC GLOBAL DEFAULT 11 nc_inq_var_szip
 917: 000000000001efe0 106 FUNC GLOBAL DEFAULT 11 nc_inq_attlen
 955: 0000000000026170 6 FUNC GLOBAL DEFAULT 11 nc_inq_unlimdims
1002: 000000000001dfb0 113 FUNC GLOBAL DEFAULT 11 nc_inq
1101: 000000000001e090 188 FUNC GLOBAL DEFAULT 11 nc_inq_type
1120: 000000000001fe70 8 FUNC GLOBAL DEFAULT 11 nc_inq_libvers
1133: 000000000001ec70 103 FUNC GLOBAL DEFAULT 11 nc_inq_dimlen
1144: 000000000001def0 83 FUNC GLOBAL DEFAULT 11 nc_inq_format
1145: 0000000000025e00 27 FUNC GLOBAL DEFAULT 11 nc_inq_vartype
1158: 00000000000260e0 136 FUNC GLOBAL DEFAULT 11 nc_inq_var_endian
1163: 000000000001eba0 86 FUNC GLOBAL DEFAULT 11 nc_inq_unlimdim
1200: 000000000001ef70 107 FUNC GLOBAL DEFAULT 11 nc_inq_atttype
1266: 0000000000025e60 40 FUNC GLOBAL DEFAULT 11 nc_inq_varnatts

```

```
1279: 0000000000025e90 150 FUNC GLOBAL DEFAULT 11 nc_inq_var_deflate
1291: 0000000000025de0 24 FUNC GLOBAL DEFAULT 11 nc_inq_varname
1322: 000000000001ea10 96 FUNC GLOBAL DEFAULT 11 nc_inq_dimid
1339: 0000000000026050 143 FUNC GLOBAL DEFAULT 11 nc_inq_var_fill
1349: 000000000001df50 93 FUNC GLOBAL DEFAULT 11 nc_inq_format_extended
1352: 000000000001eea0 104 FUNC GLOBAL DEFAULT 11 nc_inq_attname
1355: 000000000001b670 583 FUNC GLOBAL DEFAULT 11 nc_inq_rec
1356: 000000000001de30 83 FUNC GLOBAL DEFAULT 11 nc_inq_base_pe
1371: 0000000000025f30 136 FUNC GLOBAL DEFAULT 11 nc_inq_var_fletcher32
```

#4 - 2019-03-11 05:37 PM - marisn -

- Status changed from Feedback to Open

I managed to find the cause of this issue – nc_inq_varids is available only if netcdf is compiled with netcdf-4 support. nc_inq_varids are part of netcdf-4 API and thus not available if netcdf-4 is not enabled (in my case on Gentoo it can be enabled via HDF5 use flag).

Here's a bug report for netcdf: <https://github.com/Unidata/netcdf-c/issues/851>

QGIS cmake magick must be updated to check for presence of netcdf-4 API instead of a plain netcdf.

#5 - 2019-03-12 03:11 PM - Peter Petrik

nice catch. it should be fixed here: <https://github.com/lutraconsulting/MDAL/blob/master/cmake/FindNetCDF.cmake>

as a sidenote, it seems that QGIS from OSGeo4W 3.4.3 has the symbols, but from 3.4.4 it does not. @Jurgen do you know if anything changed in the netcdf build between those versions?