

NetCDF on HPC

What is NetCDF?

The Network Common Data Form, or netCDF, is an interface to a library of data access functions for storing and retrieving data in the form of arrays. An array is an n-dimensional (where n is 0, 1, 2, ...) rectangular structure containing items which all have the same data type (e.g., 8-bit character, 32-bit integer). A scalar (simple single value) is a 0-dimensional array.

NetCDF is an abstraction that supports a view of data as a collection of self-describing, portable objects that can be accessed through a simple interface. Array values may be accessed directly, without knowing details of how the data are stored. Auxiliary information about the data, such as what units are used, may be stored with the data. Generic utilities and application programs can access netCDF datasets and transform, combine, analyze, or display specified fields of the data. The development of such applications has led to improved accessibility of data and improved re-usability of software for array-oriented data management, analysis, and display.

API are available in C, C++, Fortran, Python etc.

Links:

[Official Website](#)

[Manual](#)

Versions Available:

The following versions are available on the cluster:

- netcdf/gcc/3.6.3
- netcdf/gcc/4.6.1
- netcdf/gcc/4.6.2
- netcdf/gcc/4.7.3-mpich
- netcdf/gcc/shared
- netcdf/intel/1.9.0

- netcdf/intel/4.6.1
- netcdf/intel/4.6.2
- netcdf/intel/4.7.3-mpich
- netcdf/intel/shared

How to load NetCDF?

To load NetCDF, use the following commands:

```
#Load the NETCDF module  
module load netcdf/gcc/4.6.2
```

To verify if the module and dependencies are loaded correctly, use the following command.

```
#Show all the modules loaded  
module list
```

This should list all the NetCDF dependencies that are loaded – only NetCDF since it is independent software.

How to use NetCDF?

Two binary programs are included in netCDF software.

- ncdump
- ncgen

Use the man command to see the usage of these two binary executables.

```
# see manual entry  
man ncgen
```

To demonstrate the usage of this library, download the following C codes,

```
# Download sample codes
wget
https://www.unidata.ucar.edu/software/netcdf/examples/programs/simple_
xy_wr.c
```

[Click here](#) go to the source of the file and for additional tutorials.

Load the module, and compile the C code using following commands,

```
# compile the program linking against netcdf library
gcc simple_xy_wr.c -lnetcdf && ./a.out
```

This should create simple_xy.nc file which contains the data. To see the data visually, use the ncdump command line tool,

```
# see the data in text format
ncdump simple_xy.nc
```

This is just a simple demonstration. To learn more about the library, go to the official website.

Where to find help?

If you are confused or need help at any point, please contact OIT at the following address.

<https://ua-app01.ua.edu/researchComputingPortal/public/oitHelp>

