# Parallel-NetCDF: A High Performance API for NetCDF File Access

## Overview

Parallel-NetCDF is a library providing high-performance I/O while still maintaining file-format compatibility with Unidata's NetCDF.

NetCDF gives scientific programmers a space-efficient and portable means for storing data. However, it does so in a serial manner, making it difficult to achieve high I/O performance. By making some small changes to the API specified by NetCDF, we can use MPI-IO and its collective operations.

## Download

Our latest release is 1.0.1. This release has much better support for cross-compilation, builds more easily on BGL, and introduces the nonblocking I/O API.

- bzip2ed tarball: (3.3 MB) parallel-netcdf-1.0.1.tar.bz2
- gzipped tarball: (13 MB) parallel-netcdf-1.0.1.tar.gz

**Test Releases**: We have a lot of new work we want to see more widely tested. Please report any issues you find to the parallel-netcdf mailing list.

- bzip2ded tarball: (3.3 MB) parallel-netcdf-1.0.2pre2.tar.bz2
- gzipped tarball: (13 MB) parallel-netcdf-1.0.2pre1.tar.gz

## Subversion Access

The Parallel-NetCDF project is now using Subversion for source-code management. With the change we can also provide read-only access to anyone interested.

```
svn co https://svn.mcs.anl.gov/repos/parallel-netcdf/trunk parallel-netcdf
```

The SSL fingerprint should be df:f5:37:b1:69:11:e0:63:d3:99:a8:e4:de:50:11:01:f5:73:dc:0a

## Documentation

- Our Parallel NetCDF API (postscript, 158k) document describes the API we are using. We have tweaked the programming interface to be more friendly to parallel i/o while maintaining file format compatibility with the serial version of NetCDF.
- Our ( SC2003 Paper about Parallel-NetCDF (PDF, 97k) discusses our library and presents some performance results.
- Jianwei Li's presentation (PDF, 167k) from the SC2003 conference.

# A note about Large File Support

As of parallel-netcdf-0.9.2, we ship with support for "CDF-2" formated data. With this format, even 32 bit platforms can create netcdf datasets greater than 2GB in size. See the file README.large_files in the source tree for more information.

The maintainers of the serial NetCDF library added support for the CDF-2 format in netcdf-3.6.0. The support was based largely on this patch from Greg Sjaardema.

# Supporting Software

Parallel-NetCDF makes use of several other technologies.

- ROMIO, an implementation of MPI-IO, provides optimized collective and noncontiguous operations. It also provides an abstract interface for a large number of parallel file systems.
- One of those file systems ROMIO supports is PVFS, a high performance parallel filesystem for linux clusters.

# Mailing List

We discuss the design and use of the Parallel-NetCDF library on the `parallel-netcdf@mcs.anl.gov` mailing list. Anyone interested in developing or using parallel-netcdf is encouraged to join. Send mail to `majordomo@mcs.anl.gov` with the body `subscribe parallel-netcdf`.

You can broswe old mailing list messages at the parallel-netcdf mailing list archives

# In the news

- Forrest Hoffman wrote an article about parallel netcdf in the July 2004 issue of Linux Magazine.
- The HDF group at NCSA ported a serial NetCDF code to one using Parallel-NetCDF. They posted a writeup a wrieup of their efforts . It's a little old but does provide some additional information to suppliment `doc/porting_notes.txt`

# Project Members

- Bill Gropp, Rob Latham, Rob Ross, Rajeev Thakur (Argonne National Lab)
- Alok Choudhary, Wei-keng Liao (Northwestern University)
- Jianwei Li (NWU, since graduated)

**The Lowdown on Rehabilitation**

Drug addiction is one of the prominent iconic symbols and a pressing predicament that perpetually induces grave problems on the 21st century society. It is true that despite numerous efforts by the government and various independent social institutions, apparent and significant drug abuse-related problems continue to linger on within the crevices of modern society. One potent and already feasible solution to this on-going problem is placing drug-dependent individuals on a rehab program. However, it must be stressed that complete rehabilitation that aims

to rid an individual from any signs of drug craving is extremely a complex process.

Take a Rail: Fast Facts on Heroin

A plethora of various illegal substances have been bombarding society for the past decade. However, the most common or typically used illegal drug substance which is the culprit behind most drug addiction cases comes in the form of heroin.

Also known in the streets and dark alleys as Crank, Smack, Junk, and H, heroin is made from morphine, which is an innate substance in the seedpod of the Asian poppy plant. This drug typically appears as a brown or white powder which can be intravenously injected, snorted, or smoked. Major known health risks include heart infections, HIV/AIDS from needle-sharing, hepatitis, miscarriages for pregnant women, and even death from overdose. Constant intake of Heroin can also lead to tolerance. This simply means that heroin users, in due time, will require increasing dosage of this drug to achieve its intended effect on the body. This, in turn, will lead to serious dependence which ultimately leads to an insatiable addiction.

The Essentials of Drug Rehab

The first and also the very crucial factor of making a drug rehabilitation successful is the individual's firm commitment and strict compliance with the rehab's pre-designed program. This individual's sincere "will" to submit himself/herself to the program is only a quarter of the essential necessities in successfully overcoming addiction. In addition to this firm will and determination, an adequate dose of medical or in some cases psychological treatment, must be administered to compliment the individual's endeavor to successfully kick drugs out of his/her system. Lastly, each individual has his or her own respective reasons for resorting to drug abuse; however, no matter what the reason may be, it has been pointed out that family and friends or any from of confidant plays a very crucial role in aiding this individual to succeed in his/her drug rehab endeavors.

Sources: http://www.nlm.nih.gov/medlineplus/heroin.html
http://ezinearticles.com/?Drug-and-Alcohol-Rehab&id=231119
http://www.nida.nih.gov/ResearchReports/Heroin/Heroin.html