



ALBUQUERQUE
High Performance Computing Center



The University of New Mexico

Alliance MPI Workshop

Local Information

AHPCC Research Staff



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 - ◆ <http://alliance.osc.edu/mpi/>
 - ◆ local - <http://www.ahpcc.unm.edu/~acpineda/alliance-mpi/>
- ▶ **Course Chat Site**
 - ◆ <http://webct.ncsa.uiuc.edu:8900>



Guest Accounts

▶ **Desktop and BB**

- ◆ guest accounts: guest01-guest20
- ◆ See Andy Pineda for username and password
- ◆ Accounts are set up with Andy Pineda's user environment - details to follow.

▶ **Roadrunner**

- ◆ Everyone will share one account.
 - ◆ Username: alta
 - ◆ Password: andyisgreat
 - ◆ Uses standard RR user environment.
-
- ◆ Both sets of accounts will go away after the end of the course.



Compiling your code

- ▶ **You invoke your compiler via scripts that tack on the appropriate MPI include and library files:**
 - ◆ `mpif77 -o <progname> <filename>.f`
 - ✓ `mpif77 -c <filename>.f`
 - ✓ `mpif77 -o progname <filename>.o`
 - ◆ `mpif90 -o <progname> <filename>.f90`
 - ◆ `mpicc -o <progname> <filename>.c`
 - ◆ `mpiCC -o <progname> <filename>.cc`
- ▶ **The underlying compiler, NAG, PGI, etc. is determined by how MPIHOME and PATH are set up in your environment.**



Networks and compilers

- ◆ **Two choices of communications networks:**
 - ✓ eth - FastEthernet (~100Mb/sec)
 - ✓ gm - Myrinet (~1.2 Gb/sec)
- ◆ **Many compilers**
 - ✓ NAG F95 - f95
 - ✓ PGI - pgf77, pgcc, pgCC, pgf90
 - ✓ GCC, G77
 - ✓ Absoft
- ◆ **Combination is determined by your environment.**



Setting up your user environment

▶ User environment scripts

✓ AHPCC platforms (here we use ACP's environment)

✱ .prefs.ARCH (ARCH=BB, AZUL, RCDE, etc.)

- set compiler/network options for your platform here

✱ .cshrc

✱ .cshrc.ARCH

✓ Alliance platforms

✱ .cshrc

- set compiler/network options for your platform here.

- set MPIHOME



PBS (Portable Batch Scheduler)

▶ To submit job use

◆ `qsub file.pbs`

✓ `file.pbs` is a shell script that invokes `mpirun`

◆ `qsub -I -l nodes=2`

✓ Interactive session

▶ To check status

◆ `qstat, qstat -an` (see `man qstat` for details)

▶ To cancel job

◆ `qdel job_id`



PBS command file (file.pbs)

- ▶ Just a shell script

```
#PBS -l nodes=4,walltime=12:00:00
```

```
#!/bin/csh
```

```
...
```

```
gmpiconf2 $PBS_NODEFILE
```

```
mpirun -np 8 -arch ch_gm -machinefile $PBS_NODEFILE <executable or  
script>
```

```
...
```

-l is also an option to qsub

Myrinet

gmpiconf - 1 process per node

gmpiconf2 - 2 processes per node



Course Chat site

- ▶ **<http://webct.ncsa.uiuc.edu:8900>**
 - ◆ Select Course Catalog
 - ◆ For the Introduction to MPI course, create an account
 - ✓ **select triangle with key**
 - ◆ Select no that you have not set up my WebCT
 - ◆ Enter information
 - ✓ **Global ID=ahpcc+your initials**
 - ◆ Select go to My WebCT
 - ✓ **Enter Global ID and password**
 - ✓ **Select Introduction to MPI**
 - ✓ **Select Course Tools**
 - ✓ **Select Chat Center**
 - ✓ **Select General Chat for MPI**
 - ✓ **Use Chat Tool to interact with the instructor...**