

MPICH から mpirun の使い方

最初にする事

- ユーザの登録

```
[root@cluster ]# useradd ユーザの名前
[root@cluster ]# rocks sync users
Enter passphrase for key '/root/.ssh/id_rsa': Enter passphrase for key '/root/.ssh/id_rsa':

make: Entering directory `/var/411'
rm -rf /etc/411.d/*
make
make[1]: Entering directory `/var/411'
/opt/rocks/sbin/411put --comment="#" /etc/auto.home
411 Wrote: /etc/411.d/etc.auto..home
Size: 470/174 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/auto.master
411 Wrote: /etc/411.d/etc.auto..master
Size: 417/134 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/auto.misc
411 Wrote: /etc/411.d/etc.auto..misc
Size: 1098/637 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/auto.net
411 Wrote: /etc/411.d/etc.auto..net
Size: 2103/1382 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/auto.share
411 Wrote: /etc/411.d/etc.auto..share
Size: 437/145 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/passwd
411 Wrote: /etc/411.d/etc.passwd
Size: 3031/2069 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/shadow
411 Wrote: /etc/411.d/etc.shadow
Size: 1949/1265 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/group
411 Wrote: /etc/411.d/etc.group
Size: 1300/785 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/services
411 Wrote: /etc/411.d/etc.services
Size: 28113/20638 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

/opt/rocks/sbin/411put --comment="#" /etc/rpc
411 Wrote: /etc/411.d/etc.rpc
Size: 2492/1665 bytes (encrypted/plain)
Alert: sent on channel 255.255.255.255:8649 with master 10.1.1.1

make[1]: Leaving directory `/var/411'
make: Leaving directory `/var/411'
### compute-0-1(stat: 0, dur(s): 6.8):
Warning: Permanently added 'compute-0-1' (RSA) to the list of known hosts.
Checking for changes to /etc/auto.master ....
Reload map /usr/sbin/automount --timeout=1200 /share file /etc/auto.share
Reload map /usr/sbin/automount --timeout=1200 /home file /etc/auto.home
### compute-0-0(stat: 0, dur(s): 107.74):
Checking for changes to /etc/auto.master ....
Reload map /usr/sbin/automount --timeout=1200 /share file /etc/auto.share
Reload map /usr/sbin/automount --timeout=1200 /home file /etc/auto.home
[root@cluster ]#
```

- ・ 以上のコマンドにより，ユーザのホームディレクトリと NFS が設定される。

```
[root@cluster etc]# less auto.home
install          cluster.local:/export/home/&
condor cluster.local:/export/home/condor
username cluster.local:/export/home/username

[root@cluster etc]# less auto.master
/share /etc/auto.share --timeout=1200
/home /etc/auto.home --timeout=1200
```

MPICH のサンプルプログラム

- ・ まず，サンプルプログラムをコンパイルする。

```
[root@cluster ]# cd /opt/
[root@cluster opt]# cd mpich/
[root@cluster mpich]# ls
gnu
[root@cluster mpich]# cd gnu
[root@cluster gnu]# ls
bin doc etc examples include lib logfiles man sbin share www
[root@cluster gnu]# cd examples/
[root@cluster examples]# ls
cpi.c cpip.c Makefile MPI-2-C++ pi3.f README
cpilog.c hello++.cc Makefile.in mpirun pi3p.f simpleio.c
[root@cluster examples]# ./bin/mpireconfig Makefile
creating Makefile
[root@cluster examples]# make
/opt/mpich/gnu/bin/mpicc -c cpi.c
/opt/mpich/gnu/bin/mpicc -o cpi cpi.o -lm
/opt/mpich/gnu/bin/mpif77 -c pi3.f
/opt/mpich/gnu/bin/mpif77 -o pi3 pi3.o
/opt/mpich/gnu/bin/mpicc -c cpip.c
/opt/mpich/gnu/bin/mpicc -o cpip cpip.o -lm
/opt/mpich/gnu/bin/mpif77 -c pi3p.f
/opt/mpich/gnu/bin/mpif77 -o pi3p pi3p.o
[root@cluster examples]#
```

- ・ サンプルプログラムを使う。

```
[root@cluster examples]# ./bin/mpirun -np 1 cpi
Process 0 on cluster.keiaiemu.net
pi is approximately 3.1416009869231254, Error is 0.0000083333333323
wall clock time = 0.001109
[root@cluster examples]#
```

MPI の入門編

リンク

- ・ MPI の考え方（初歩）
 - ・ <http://geant4.kek.jp/~iwai/wiki/?MPI>
- ・ インストール
 - ・ <http://lab.twcu.ac.jp/ogita/math/mpi1.htm>
 - ・ 簡単に書かれているので，重宝する。
 - ・ <http://www.sfk-nga.co.jp/HPC/document/ex01.html>
- ・ MPICH:PC クラスタ（および Linux）の初心者向きに 8CPU の Opteron で構成したクラスタで基本操作と MPICH の実行方法を解説した動画。

- <http://zoome.jp/hoehoe2nd/diary/2/>