

Skeleton programming environments

Muesli (2)

Patrizio Dazzi

ISTI - CNR

Pisa Research Campus

mail: patrizio.dazzi@isti.cnr.it



*Master Degree (Laurea Magistrale) in
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Outline

- **Compiling and Running sample applications on Muesli**
- **Demo on my machine**
- **Installing Muesli and MPI**



Compiling a Muesli Application

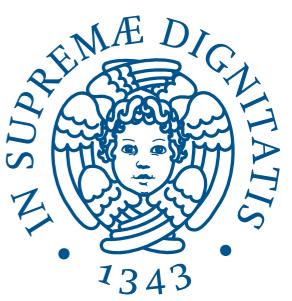
- **mpicxx** is the mpi compiler for C++ application
- you also can use g++ setting the proper folders for:
 - *include* (-I)
 - *libraries* (-L)
- With current version of compilers you have to set:
 - **-fpermissive**
 - Compiler needs to know where to find Muesli code

```
mpicxx -I <Muesli.h folder> application.cpp
```



Running a Muesli Application

- On a single machine
 - Start the MPI daemon with `mpd&`
 - `mpiexec -n <number of processes> <application>`
- On a cluster of machines
 - define a machinefile in home directory
 - start the MPI daemons using `mpiboot -n <number of machines>`
 - `mpiexec -n <number of processes> <application>`



Demo

- I'll show now how these things actually work on my machine



Framework installation

- Installing Muesli is mainly matter of installing G++ and MPI
- Muesli is made of a few header files to include in the skeleton application
- Muesli works as it is on Linux but need adaptations for running either on
 - *other Unix OS*
 - *Windows*



Guidelines for installing on Linux

Ubuntu 8.04 (1)

- Guidelines for a single machine, on clusters you
 - *need to configure NFS*
 - *can refer to:* <https://wiki.ubuntu.com/MpichCluster>
- User and FileSystem
 - *create /mirror folder*
sudo mkdir /mirror
 - *create a user, e.g. mpiuser, with its home folder inside that folder*
sudo adduser --home /mirror/mpiuser mpiuser
 - *change the owner of /mirror*
sudo chown mpiuser /mirror



Guidelines for installing on Linux

Ubuntu 8.04 (2)

- Configure ssh

- *install openssh-server*

```
sudo apt-get install openssh-server
```

- Login with mpiuser

- *enabling passphrase free connections*

```
ssh-keygen -tdsa
```

- *adding the public key to the authorized keys*

```
cd .ssh/
```

```
cat id_dsa.pub >> authorized_keys
```

- *test passphrase free connection*

```
ssh <yourhostname>
```



Guidelines for installing on Linux

Ubuntu 8.04 (3)

- **Installing Compiler and MPI (Issue commands as sudoer)**

- *install gcc*

```
sudo apt-get install build-essential
```

- *download mpich source code from*

<http://www.mcs.anl.gov/research/projects/mpich2>

- *move downloaded tar.gz in /mirror*

- *untar it in /mirror*

```
tar -xvf <mpich tar.gz>
```

- *change the owner of downloaded tar.gz to mpiuser*

```
sudo chown mpiuser <mpich folder>
```



Guidelines for installing on Linux

Ubuntu 8.04 (3)

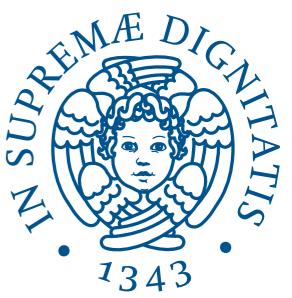
- **Compile and Install mpich (Issue commands as sudoer)**
 - *compile mpich*
`./configure --prefix = /mirror/mpich2
make
sudo make install`
- **Configure the user environment (Issue commands as mpiuser)**
 - `export PATH=/mirror/mpich2/bin:$PATH
export PATH
LD_LIBRARY_PATH=/mirror/mpich2/lib:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH`



Guidelines for installing on Linux

Ubuntu 8.04 (4)

- **Configure the global environment (Issue commands as sudoer)**
 - add to the *PATH* defined in `/etc/environment`
`/mirror/mpich2/bin`
- **Create the machine file `mpd.hosts` in the mpiuser home directory**
 - add to `mpd.hosts` the machine hostname
- **Change `.mpd.conf` file in the mpiuser home directory**
 - add a line with
`secretword=spm`
 - change file modes with
`chmod 600 .mpd.conf`



Guidelines for installing on Linux

Ubuntu 8.04 (5)

- **Test the MPI configuration**

- **mpd&**
- **mpdtrace**
- **mpdallexit**



Questions ?

