

# OpenSees Parallel Applications in Windows

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# Requirements

- Multi-core Windows Machine or Cluster of windows machines.
- MPICH2 binary downloaded, installed and running (<http://www.mcs.anl.gov/research/projects/mpich2>)
- OpenSeesSP and OpenSeesMP downloaded (<http://opensees.berkeley.edu/OpenSees/parallel/parallel.php>)

# MPICH2

- MPICH2 is a free widely portable implementation of the MPI 2 standard.
- The home page of MPICH2 is located at:  
<http://www.mcs.anl.gov/research/projects/mpich2>
- A binary installation of the current version is available from the download page.
- The installation may require that the windows SDK already be installed on your machine. (If someone who does not have the SDK installed could let me know)
- Documentation is available on it's usage.

# MPICH2 Installation

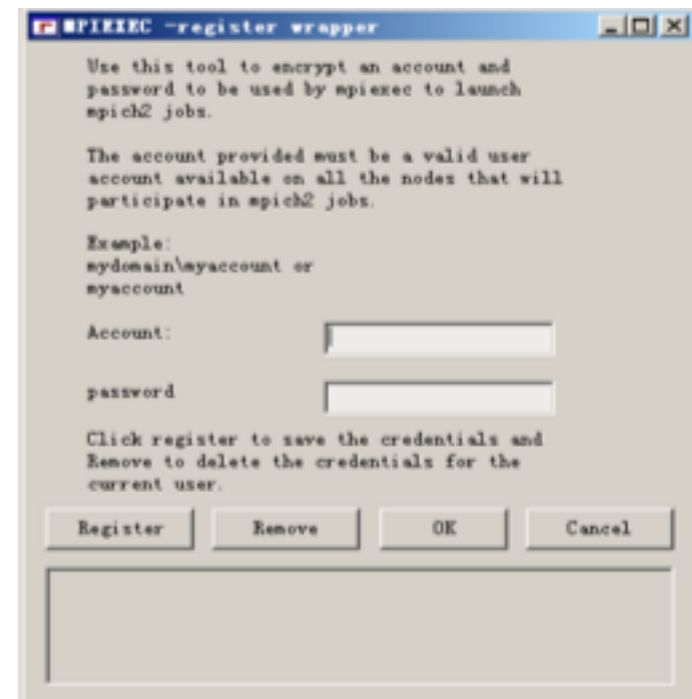
- You must be an administrator to install it.
- Click on the .msi to install. The only thing to note when running the installer is that the passphrase must be the same on all systems.
- When installing on multiple machines MPICH2 must be installed on every machine.
- On every machine a common User account must exist or be created that **HAS THE SAME PASSWORD**. The User account must also be an administrative one.

# MPICH2 Installation on Vista

- When installing MPICH2 the UAC mode needs to be disabled. This will allow the installer you install the spmd service.
- These are the steps:
  1. Click **Start**, and then click **Control Panel**
  2. In **Control Panel**, click **User Accounts**
  3. In **User Accounts** window, click **User Accounts**
  4. If UAC is currently configured, the **User Account Control** message appears. Click **Continue**
  5. Clear the box **Use User Account (UAC) to help protect your computer**
  6. Click **OK**
  7. Click **Restart Now** to apply the changes.
- **WARNING:** Turning off UAC reduces the security of your computer. You can turn UAC on again after the install by repeating above steps and filling in the UAC box in 5 above.

# MPICH2 Configuration

- On every machine a common User account must exist or be created that HAS THE SAME PASSWORD. The User account must also be an administrative one.
- Using this account, on every machine wmpiregister must be run. Provide the common username (remove domain\name if it comes up) and user password for the user account.
- After entering user data, select register.



# MPICH2 Problems When Running

- Get used to SPMD.
  1. `spmd -uninstall`
  2. `spmd -install -phrase **##%$@!`
  3. `spmd -stop`
  4. `spmd -start`
  5. `smpd -d` (start in debug mode)
- `mpiexec -register`
- On Vista don't forget to turn off the UAC.

# Setting Up Path Variable

- It's a good idea to set the Path variable to see the c:\Program Files\MPICH2\bin directory.
- These are the steps:
  1. Click **Start**, and then click **Control Panel**
  2. In **Control Panel**, click **System**
  3. In **System** window, click **Advanced**
  4. Click **Environment Variables**.
  5. Depending on if you just want it for current User (**User Variables for you**) or all Users (**System Variables**) , click the appropriate Path variable to highlight it.
  6. Click **Edit**.
  7. Enter **;**C:\Program Files\MPICH2\bin at end
  8. Click **OK**
  9. Click **OK**
  10. Test by entering **echo %PATH%** in a **Command Prompt (DOS)** window.

*You can also do this with OpenSees if you keep OpenSees in a default location.*



# Usage

```
mpiexec -channel auto -np numProcs? OpenSeesApp? tclScript?
```

```
mpiexec -machinefile file? -np numProcs? OpenSeesApp? tclScript?
```

# Running on a Cluster!

- If running on a local cluster of machines in your office, remember that the File system is probably local to each machine. This means:
  1. The executable must be in the same location on each machine. We suggest `/Users/bin`
  2. The input files must also be located on any machine running an interpreter.
  3. You cannot use a file to store shared variables.