How to use MS-MPI with C/C++ projects on Windows

Preface

This document explains how to quickly set up a C/C++ MPI project using MS-MPI and Visual Studio 2010.

Project preparation

1. Start Visual Studio 2010.
2. Open the New Project wizard: *File -> New -> Project…*
3. Select *Visual C++ -> Win32 -> Win32 Console Application*
   a. Give your project a name and chose an appropriate location to store it
4. Add your existing source files if you have any.
5. Right click on the project in Solution Explorer and select *Properties…*
6. Navigate to *Debugging* and change the *Debugger to launch* field to **MPI Cluster Debugger**, then set those properties as follows:
   a. *Run Environment*: **localhost/4**
7. Navigate to *C/C++ -> General* and set the following properties:
   a. Additional Include Directories: **$(MSMPI_INC)**
8. Navigate to *Linker -> General* and set the following properties:
   a. *Additional Library Directories*: **$(MSMPI_LIB32)**
9. Navigate to *Linker -> Input* and set the following properties:
   a. *Additional Dependencies*: click <Edit…> and put **msmpi.lib** in the empty field

Debugging the project

Start your project with *Debug -> Start Debugging* or simply press F5 (there's really no option to start an MPI program without debugging in VS2010). This will launch your MPI application with 4 processes. Each one will run in its own console window. If you'd like to see the standard output of each process simply put a breakpoint on the return statement of the main program before starting the debug session.

Hint: while the debugging is running open the *Processes* window: *Debug -> Windows -> Processes*. Since the parallel debugger doesn't show process ranks it might be handy to print the rank right after the initialisation of the MPI runtime.

If you'd like to change the number of MPI processes, repeat step **6.a.** from the previous section and change the numeric value after **localhost/**.