Parallel Sequence Alignment over Windows HPC Server

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Prerequisites:

1. **Windows HPC Server 2008 RTM version.**
2. **MS-MPI,** Installed directly with HPC component
3. **Visual Studio 2008: (For compiling source code in case of different platform)**

Distribution:

1- Pre-compiled binaries

4. **Source code files: Main.cpp, PSA.cpp, PSA.h**

Running the program on Windows Cluster:

Go to the directory containing the executable file **Parallel_Sequence_Alignment.exe** in the bin directory. Assume you have your sequences in two files in row format (each sequence in a single line). The file "input.txt" contains the file path/name of each sequence. Then run the following command line:

```
>job submit /numofnodes:4 /workdir:\\H-Node\Users\Hishama\Desktop\Run\
/stdin:input.txt /stdout:_out.txt /stderr:_err.txt mpiexec –
machinefile hosts.txt –n 4 Parallel_Sequence_Alignment.exe
```

The output matrix will be located in the current path in the head node with name `OutPutPSA.txt.`

Compilation

In order to compile the two files you will need Visual studio 2008 and the MS-MPI library.

1. Open visual studio 2008 -> File -> New ->Project->Visual C++-> Win32 console application->and enter the name of the project **Parallel_Sequence_Alignment**->**ok**
2. 2. New windows will appear click **Next->**choose console application and empty project then click **Finish.**
3. Right Click on the project from **Solution Explorer** then **Add-> Existing Item** and choose the **Main.cpp, PSA.cpp, PSA.h** files.
4. Now We need to include the MPI library. Right click on the project select **properties** then **C\C++** then in **Additional Include Directory** enter the path of **msmpi.h** which is

mainly located in **C:\Program Files\Microsoft HPC Pack 2008 SDK\ include** as shown in figure(1).

5. Choose linker then in **Additional library Directory** enter the path of **msmpi.lib** which is mainly in **C:\Program Files\Microsoft HPC Pack 2008 SDK\lib** as shown in figure(2).
6. Choose **Input** then in **Additional Dependencies** write **msmpi.lib** as shown in figure (3)**.**
7. For large data files you will need to increase the memory choose **System** then modify the value **in Heap Reverse Size, Heap commit Size, Stack Reservesize, Stack commit size according to your need** as shown in figure(4) **.**
8. Now you can compile and run the program.

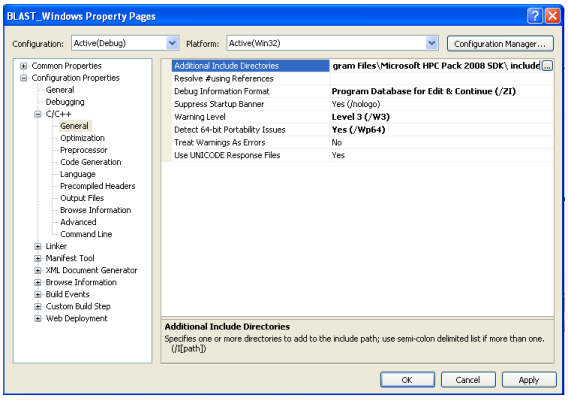

Figure 1 Compilation

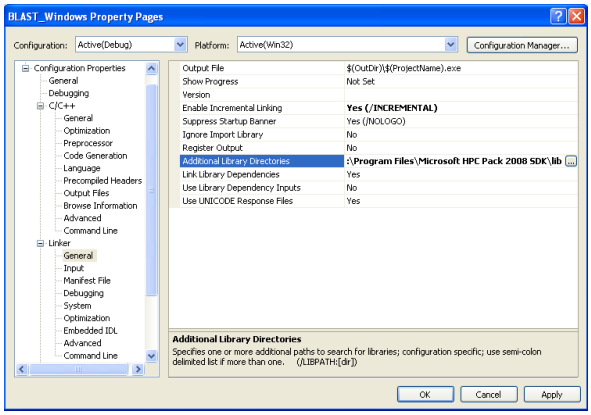

Figure 2 Compilation

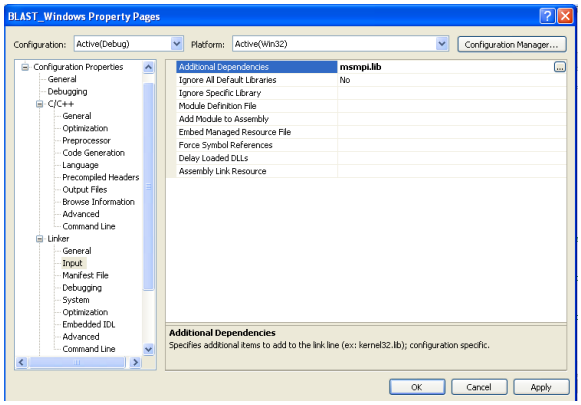

Figure 3 Compilation

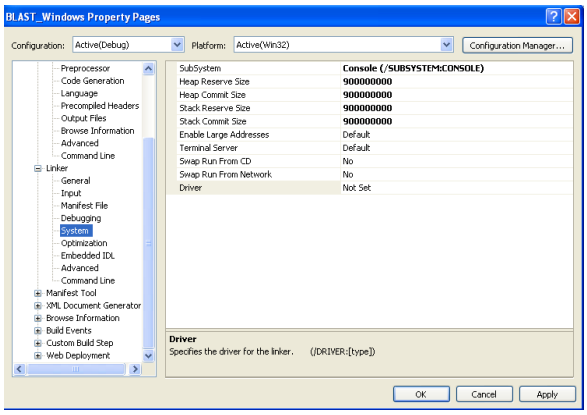

Figure 4 Compilation