Some Very Under Done Instructions for HPC2010 Extension: Sandy Bridge Cluster

The 96 node sandy bridge cluster is integrated with HPC2010. In terms of CPU frequency, this cluster is slower than the older cluster but per node there are 16 cores in a total of 2 cpus i.e. 8 cores per cpu. We only have a minimal configuration. Please read the instructions for using this cluster carefully and in case of problems meet hpcsupport in room 212 CC. Some instructions follow:

1. Login to hpc2010.hpc.iitk.ac.in as usual
    ```
    ssh -X hpc2010.hpc.iitk.ac.in
    ```

2. Use the sandy bridge queue meant for compilation and editing
    ```
    qsub -X -I -q workqsb
    ```

    It takes some time for this command to complete. So please be patient. It opens an x-session on a node that has been specifically reserved for this purpose. Note that the sandy bridge cluster does not allow batch jobs for testing. So do not submit any parallel jobs on workqsb.

3. Once you have compiled your job submit to either the mediumsb or smallsb. The submission script changes as below:
    ```
    #!/bin/bash
    #PBS -N Hello_World
    #PBS -q smallsb
    #PBS -l nodes=<num_nodes>:ppn=16
    #PBS -j oe
    export I_MPI_FABRICS=shm:tmi
    export I_MPI_DEVICE=rdma:OpenIB-cma
    cd $PBS_O_WORKDIR
    mpirun -machinefile $PBS_NODEFILE -np <num_nodes*16> <program>
    ```

    Here: notice <num_nodes> is the same as for 368 nodes Nehlam, however ppn has become 16. This means you have 16 cores per node and a 8 core per cpu machine. So it is better to have cores required in multiples of 16. The queue name can be smallsb or mediumsb. Rest of the script remains the same. Of course the I_MPI… directives are valid for intel compiler.

4. Though you see no differences in the PATH settings which remain as for the old cluster, internally the compiler has been installed for this architecture. Therefore u se the workqsb for **recompiling your code before submitting it to this cluster.**

5. There are three queues on the new sandy bridge cluster

	Min cores	Max cores	Wall time	Max nodes	Total nodes
workqsb	1	1	24 hrs / 2hr cpu time	1	2
smallsb	2	32	5 days	2	47
mediumsb	32	96	4 days	6	47