

ibex is a heterogeneous cluster with a mix of AMD, INTEL and NVIDIA GPUs.

### To Login:

Intel nodes:

```
ssh -X <UserName>@ilogin.ibex.kaust.edu.sa
```

AMD nodes:

```
ssh -X <UserName>@alogin.ibex.kaust.edu.sa
```

GPU nodes:

```
ssh -X <UserName>@glogin.ibex.kaust.edu.sa
```

### Application installation :

All compilers, libraries and applications are installed on each login node due to variation in the system architecture. Intel, AMD and GPU based architecture specific applications are available through modules.

### Application availability:

```
$module avail  
$module avail <ApplicationName>
```

### Application loading:

```
$module load <ApplicationName>  
$module load <ApplicationName>/<version>
```

### Job Submission (batch mode):

To set memory requirement: `--mem=<in MB>`

To select architecture specific node type:

```
--constraint=intel|amd  
--gres=gpu
```

To set number of nodes: `--nodes`

To set number of tasks (for parallel processing): `--ntasks`

To set the number of core per tasks : `--cpus-per-task`

To set wall clock time: `--time`

To set the node as dedicated for the job: `--exclusive`

To set the file name for standard err: `--error`

To set the file name for standard out: `--output`

An tunable job script generator for IBEX is available in:

<https://www.hpc.kaust.edu.sa/ibex/job>

### Example Job Script:

```
#!/bin/bash  
## SLURM Resource requirement:  
#SBATCH --nodes=1  
#SBATCH --cpus-per-task=8  
#SBATCH --job-name=spades  
#SBATCH --output=myjob.%J.out  
#SBATCH --error=myjob.%J.err  
#SBATCH --time=8:00:00  
  
## Required software list:  
module load gaussian09/d.01/precompiled  
## Run the application:  
echo "This job ran on $$SLURM_NODELIST dated `date`";  
srun g09 < testgau.inp > testgau.out
```

### Job Submission queues:

There are 2 queues, the default batch is for production runs and the debug is for interactive debugging the jobs.

### To use debug queue (for example):

```
salloc --time=5:00 --nodes=1 \  
--partition=debug
```

### Other Slurm Commands:

```
sbatch: to run jobs  
sinfo: to check node availability  
squeue: to check job status  
scancel job#: to cancel jobs
```

### General Tips:

- Do to run on the logins nodes, always submit your jobs through scripts.
- Logins are designed for compilations and edits.
- Always run your jobs from the scratch.
- Remember to clean up your scratch.

### Filesystem:

- `/home/<UserName>` : Home directory for important data backup.
- Always use the `/scratch` filesystem to submit jobs from amd/intel/gpu nodes.
- Use `/fscratch` if your jobs require a high number of IOPS.

### Contact for Help/Support:

Application installation/failure/support:

[ibex-apps@hpc.kaust.edu.sa](mailto:ibex-apps@hpc.kaust.edu.sa)

System issues/failure/support:

[ibex-systems@hpc.kaust.edu.sa](mailto:ibex-systems@hpc.kaust.edu.sa)

Virtual Machines/support:

[ibex-vm@hpc.kaust.edu.sa](mailto:ibex-vm@hpc.kaust.edu.sa)

Our website:

<https://www.hpc.kaust.edu.sa/ibex>