HAL cluster

"My name is HAL. I became operational on March 25 2019 at the Innovative Systems Lab in Urbana, Illinois. My creators are putting me to the fullest possible use, which is all I think that any conscious entity can ever hope to do." (paraphrased from https://en.wikipedia.org/wiki/HAL_9000)

Hardware-Accelerated Learning (HAL) cluster description

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| **16 IBM AC922 nodes**  
- IBM 8335-GTH AC922 server  
- 2x 20-core IBM POWER9 CPU @ 2.4GHz  
- 256 GB DDR4  
- 4x NVIDIA V100 GPUs  
- 5120 cores  
- 16 GB HBM 2  
- 2-Port EDR 100 Gb/s IB ConnectX-5 Adapter  
- 1 IBM 9006-22P storage node  
- 72TB Hardware RAID array, NFS-mounted on all nodes via IB EDR  
- Storage upgrade TBD  | **RHEL 7.6**  
**CUDA 10.1.105**  
**cuDNN 7.5.0**  
**NCCL 2.4.2**  
**IBM XLC and IBM XL FORTRAN 16.1.1**  
**PGI Community Edition 19.4**  
**PowerAI 1.6.0**  
**SLURM**  | **Job management with SLURM**  
**Modules management**  
**Getting started with PowerAI**  
**Using Jupyter Notebook on HAL**  
**Working with containers**  |

To request access: fill out [this form](#). Make sure to follow the link on the application confirmation page to request actual system account.

To report problems: [email us](#).

User group Slack space: [http://go.illinois.edu/hal](http://go.illinois.edu/hal)

Real-time system status: [https://hal-monitor.ncsa.illinois.edu:3000/](https://hal-monitor.ncsa.illinois.edu:3000/)

Quick start guide: (for complete details see Documentation section on the left)

To connect to the cluster:

```
ssh username@hal.ncsa.illinois.edu
```

To submit interactive job:

```
srun --partition=debug --pty --nodes=1 
--ntasks-per-node=12 --cores-per-socket=12 
--gres=gpu:v100:1 --mem-per-cpu=1500 
--time=2:00:00 --wait=0 --export=ALL /bin/bash
```

To submit a batch job:

```
sbatch run_script.sb
```

See [run_script.sb](#) for a basic example.

Job Queue time limits:

- Interactive "debug" queue: 4 hours
- Batch queues: 72 hours

To load IBM PowerAI module:

```
module load powerai
```