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)

System Description

Host name: hal.ncsa.illinois.edu

Hardware
- 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 IB ConnectX-5 Adapter

Software
- RHEL 7.6
- CUDA 10.1.105
  - cuDNN 7.5.0
- NCCL 2.4.2
- IBM XLC 16.1.1
- IBM XLFORTRAN 16.1.1
- Advance toolchain for Linux on Power 12.0
- PowerAI 1.6.0
- SLURM

Documentation
- 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.

To report problems: email us.

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

To connect to the cluster:

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

To submit interactive job:

```bash
srun --partition=debug --pty --nodes=1 --ntasks-per-node=8 --gres=gpu:v100:1 --t 01:30:00 --wait=0 --export=ALL /bin/bash
```

To submit a batch job:

```bash
sbatch run_script.sb
```

See run_script.sb for a basic example.

Job Queue time limits:
- Interactive queue: 12 hours
- Batch queue: 72 hours

To load IBM PowerAI module:

```bash
module load ibm/powerai
```

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