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)

In your publications and presentations that use results obtained on this system, please include the following statement: "This work utilizes resources supported by the National Science Foundation’s Major Research Instrumentation program, grant #1725729, as well as the University of Illinois at Urbana-Champaign".

Hardware-Accelerated Learning (HAL) cluster

Contact us

Request access to this system: Application

Contact ISL staff: Email Address

Visit: NCSA, room 3050E
<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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| - 16 IBM AC922 nodes  
  - IBM 8335-GTH AC922 server  
  - 2x 20-core IBM POWER9 CPU @ 2.4 GHz  
  - 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  
  - 2 DDN GS400NVE Flash Arrays  
  - 244 TB usable, NVME SSD-based storage  
  - Spectrum Scale File System | - RHEL 7.6  
- CUDA 10.1.105  
  - cuDNN 7.5.0  
- NCCL 2.4.2  
- IBM XLC and IBM XLFORTRAN 16.1.1  
- Advance toolchain for Linux on Power 12.0  
- PGI Community Edition 19.4  
- PowerAI 1.6.0  
- SLURM |
| - User group Slack space: [https://join.slack.com/t/halillinoisncsa](https://join.slack.com/t/halillinoisncsa)  
- Real-time system status: [https://hal-monitor.ncsa.illinois.edu:3000/](https://hal-monitor.ncsa.illinois.edu:3000/)  
- HAL OnDemand portal: [https://hal.ncsa.illinois.edu:888/](https://hal.ncsa.illinois.edu:888/)  
- Quick start guide: (for complete details see [Documentation](#) section on the left) | - Job management with SLURM  
- Modules management  
- Getting started with WMLCE (former IBM PowerAI)  
- Using Jupyter Notebook on HAL  
- Working with containers  
- Installing python packages  
- Getting started with HAL OnDemand |
| 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: [https://join.slack.com/t/halillinoisncsa](https://join.slack.com/t/halillinoisncsa)  
Real-time system status: [https://hal-monitor.ncsa.illinois.edu:3000/](https://hal-monitor.ncsa.illinois.edu:3000/)  
HAL OnDemand portal: [https://hal.ncsa.illinois.edu:888/](https://hal.ncsa.illinois.edu:888/) |  
To connect to the cluster:  
```
ssh <username>@hal.ncsa.illinois.edu
```
To submit interactive job:  
```
swrun -p gpux1
```
To submit a batch job:  
```
swbatch run_script.swb
```
Job Queue time limits:  
- "debug" queue: 4 hours  
- "gpux<n>" and "cpun<n>" queues: 24 hours  
To load IBM Watson Machine Learning Community Edition (former IBM PowerAI) module:  
```
module load wmlce
```
To see CLI scheduler status:  
```
swqueue
```