Nano cluster

System Description

Host name: nano.ncsa.illinois.edu

Hardware

- SuperMicro SYS-4028GR-TR
  - X10DRG-O+ CPU motherboard
  - 128 GB DDR4 (8x 16 GB Micron 2133 MHz 36ASF2G72PZ-2G1A2)
  - 8 PCI-E 3.0 ports, switched
- Mellanox MT27500 Family [ConnectX-3] QDR IB
- 1x 256 GB Samsung SSD 850

Software

- CentOS 7
- CUDA 9.2/10.0
- PGI 16.10
- Intel ICC 16
- gcc 4.8
- gcc 5.3 via 'scl enable devtoolset-4 bash'

To request access please fill out this form.

Instructions for running Jupyter Notebooks on compute nodes

Usage notes:

- nano (141.142.204.5) is the head node of the cluster, it should not be used for any computations!
- to get access to a particular node for interactive use, use qsub, e.g.,
  - to get one GPU and one CPU core on node 7 for 1 hour for interactive use:
    `qsub -l nodes=nano7:ppn=1:gp=1, walltime=3600`
  - to get entire node 1 for 1 hour for exclusive interactive use:
    `qsub -l nodes=nano1:ppn=12, walltime=3600`
- better yet, do not allocate nodes for interactive use, instead just submit batch jobs, see for example 'Job Scripts' section at [https://kb.iu.edu/v/avmy](https://kb.iu.edu/v/avmy) for details. This is a much better way to share computing resources.
- interactive jobs are limited to 12 hours maximum walltime per job.
- batch jobs are limited to 96 hours
- submit request to staff for longer batch jobs (up to 240 hours)
- to see what's running on the cluster, just run `qstat`
- this is a shared resource, please keep in mind that other users are using it as well; do not take over the system beyond what you really need.
- home directory is cross-mounted and accessible from all nodes
- Current System Status: [https://nano.ncsa.illinois.edu:3000/d/3QVrDIFmz/nano-status](https://nano.ncsa.illinois.edu:3000/d/3QVrDIFmz/nano-status)

DL frameworks

- TensorFlow 1.10

Node configuration (see login message for the exact configuration):

<table>
<thead>
<tr>
<th>nano1</th>
<th>nano2</th>
<th>nano3</th>
<th>nano4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x Intel Xeon CPU E5-2620 v3 @ 2.40 GHz</td>
<td>2x Intel Xeon CPU E5-2680 v4 @ 2.40 GHz</td>
<td>2x Intel Xeon CPU E5-2680 v4 @ 2.40 GHz</td>
<td>2x Intel Xeon CPU E5-2620 v3 @ 2.40 GHz</td>
</tr>
<tr>
<td>2x NVIDIA V100 GPUs</td>
<td>2x NVIDIA V100 GPUs</td>
<td>2x NVIDIA V100 GPUs</td>
<td>2x NVIDIA V100 GPUs</td>
</tr>
<tr>
<td>5120 cores</td>
<td>5120 cores</td>
<td>5120 cores</td>
<td>5120 cores</td>
</tr>
<tr>
<td>16 GB HBM2</td>
<td>16 GB HBM2</td>
<td>16 GB HBM2</td>
<td>16 GB HBM2</td>
</tr>
<tr>
<td>CUDA 9.2</td>
<td>CUDA 9.2</td>
<td>CUDA 9.2</td>
<td>CUDA 9.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>nano5</th>
<th>nano6</th>
<th>nano7</th>
<th>nano8</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x Intel Xeon CPU E5-2620 v3 @ 2.40 GHz</td>
<td>2x Intel Xeon CPU E5-2620 v3 @ 2.40 GHz</td>
<td>2x Intel Xeon CPU E5-2620 v3 @ 2.40 GHz</td>
<td>2x Intel Xeon CPU E5-2620 v3 @ 2.40 GHz</td>
</tr>
<tr>
<td>2x NVIDIA P100 GPUs</td>
<td>2x NVIDIA P100 GPUs</td>
<td>2x NVIDIA P100 GPUs</td>
<td>2x NVIDIA P100 GPUs</td>
</tr>
<tr>
<td>3584 cores</td>
<td>3584 cores</td>
<td>3584 cores</td>
<td>3584 cores</td>
</tr>
<tr>
<td>16 GB HBM2</td>
<td>16 GB HBM2</td>
<td>16 GB HBM2</td>
<td>16 GB HBM2</td>
</tr>
<tr>
<td>CUDA 9.2</td>
<td>CUDA 9.2</td>
<td>CUDA 9.2</td>
<td>CUDA 9.2</td>
</tr>
</tbody>
</table>

(use this node for all non-GPU jobs)