High Performance Computing

Welcome the Smithsonian Institution High Performance Computing Wiki.

This Wiki holds information for the use of HPC resources at the Smithsonian.

Central to the SI HPC resources is the Smithsonian Institution High Performance Cluster (SI/HPC), named Hydra.

- High performance computing is administered by the Office of Research Computing within OCIO.
- The OCIO Herndon Data Center in Herndon, VA houses the high performance computing cluster, Hydra.
- The documentation is organized as follows:
  - Overview;
  - Citing/Acknowledging Hydra;
  - What's New;
  - Policies;
  - Moodle Training;
  - Quick Start guide;
  - Reference pages;
  - FAQs;
  - Cluster Upgrades
- The complete documentation can be downloaded as a PDF document (182 pages).

What's New

- **May 9, 2022**
  - The latest versions of the NVIDIA and Intel compilers (22.1, 22.2, 22.3 & 2022.1, 2022.2 respectively) have been installed,
  - The latest version of IDL (8.2.2) and MATLAB runtime (R2022a) have been installed,
  - The required modules are available, the default version have not yet been changed,
  - The examples have yet to be expanded to the new versions (the required changes should be obvious).
  - We plan to change the default versions some time in early June.

- **January 6 2022**
  - Since we have increased the cluster capacity, the maximum number of CPUs (slots) a user can use concurrently has been increased from 640 to 840.

- **December 17 2021**
  - Eight new compute nodes have been added to Hydra, bringing the totals to 5,408 CPUs for 98 nodes, and 42TB of memory.
  - We have noticed a read performance problem on the GPFS and are working with the vendor to resolve it as soon as possible.

- **December 2, 2021**
  - Look of the status pages has been update, and URL can now take up to 3 arguments.
  - New hardware (8 servers and 56 GPFS disks) has been delivered and will be deployed soon.

- **November 29, 2021**
  - The default version for 7 modules has been updated as announced in the Nov 22 update (see below.)

- **November 22, 2021**
  - The documentation has been updated and reorganized to reflect the most recent changes.
  - New versions of the compilers and several tools have been installed,
  - default versions will get shortly updated, details are here.
  - All public disks (/pool and /scratch only) are scrubbed once a week, on Sunday.
  - Reasonable requests to restore scrubbed files must be sent no later than the following Friday, by 5pm.

- If you have any questions or encounter any problems, email:

<table>
<thead>
<tr>
<th>Email</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:SI-HPC-Admin@si.edu">SI-HPC-Admin@si.edu</a></td>
<td>for sys-admin related issues,</td>
</tr>
<tr>
<td><a href="mailto:SI-HPC@si.edu">SI-HPC@si.edu</a></td>
<td>for non-SAO users who need help,</td>
</tr>
<tr>
<td><a href="mailto:hpc@cfa.harvard.edu">hpc@cfa.harvard.edu</a></td>
<td>for SAO users who need help.</td>
</tr>
</tbody>
</table>

- Past news with more details can be found at the What's New page.

Quick Links

- Cluster Status Page at SAO
- Cluster Status Page at OCIO*
- QSub Generator *

*: these pages are only accessible from trusted machines: within SI or SAO networks, or using VPN.

Reminder

- References to Hydra (publications, proposals, etc.) should mention the cluster as:
or as an acknowledgment:

'[Some of] [The] computations in this paper were conducted on the Smithsonian High Performance Cluster (SI/HPC), Smithsonian Institution. [https://doi.org/10.25572/SIHPC]'}