超级计算与大数据计算介绍
Introduction to Supercomputing and Big Data Computing

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Day 1

09:00 - 09:50	Introduction to Supercomputing and Data-intensive Computing
10:00 - 10:50	Hands-on: Accessing WHU Cluster Computing Environment
11:00 - 12:00	Resource Management and Job Submission
14:00 - 14:50	Hands-on: Cluster Computing 101
15:00 - 15:50	Embarrassingly Parallel Computing
16:00 - 17:00	Hands-on: Tools for Embarrassingly Parallel Computing

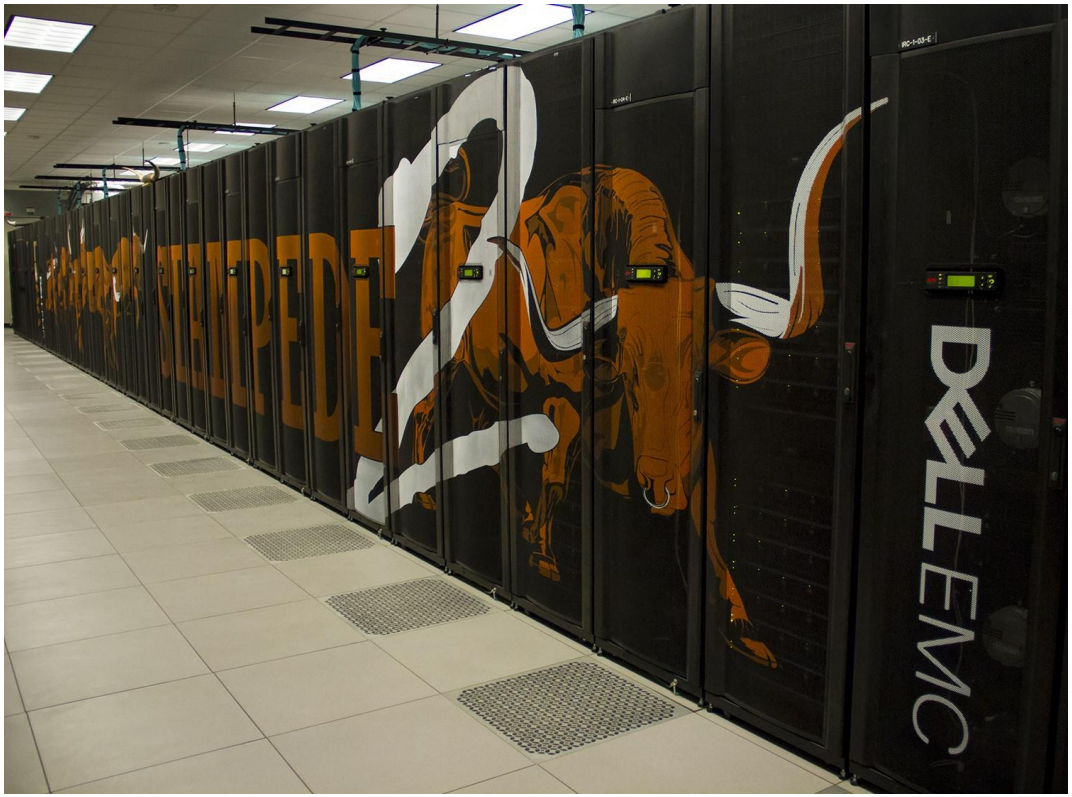
Supercomputing

Presentation Resources

- Top500
  - 2018.06: https://www.top500.org/static/media/uploads/top500_ppt_201806.pdf
  - 2017.11: https://www.top500.org/static/media/uploads/presentations/top500_ppt_201711.pdf
- Academic Computing
  - NCSA Blue Waters: https://bluewaters.ncsa.illinois.edu/liferay-content/document-library/Documentation%20Documents/Webinars/new%20user%20webinar%202015%20February%2011/BW_webinar_2015feb11_System_Overview.pdf
  - TACC Wrangler: http://storageconference.us/2015/Presentations/Jordan.pdf
  - SDSC Comet: http://www.sdsc.edu/events/training/intro_to_comet_workshop_2018/Introduction_to_Comet_Webinar_2018.pdf
- XSEDE
  - XSEDE overview: https://www.slideshare.net/jtownsil/overview-of-xsede-and-introduction-to-xsede-20-and-beyond

TACC Stampede2

- https://portal.tacc.utexas.edu/user-guides/stampede2



4,200 KNL compute nodes

Model:	Intel Xeon Phi 7250 ("Knights Landing")
Total cores per KNL node:	68 cores on a single socket
Hardware threads per core:	4
Hardware threads per node:	68 x 4 = 272
Clock rate:	1.4GHz
RAM:	96GB DDR4 plus 16GB high-speed MCDRAM. Configurable in two important ways; see "Programming and Performance: KNL" for more info.
Cache:	32KB L1 data cache per core; 1MB L2 per two-core tile. In default config, MCDRAM operates as 16GB direct-mapped L3.
Local storage:	All but 504 KNL nodes have a 107GB /tmp partition on a 200GB Solid State Drive (SSD). The 504 KNLs originally installed as the Stampede1 KNL sub-system each have a 32GB /tmp partition on 112GB SSDs. The latter nodes currently make up the development, long and flat-quadrant queues. Size of /tmp partitions as of 24 Apr 2018.

1,736 SKX compute nodes

Model:	Intel Xeon Platinum 8160 ("Skylake")
Total cores per SKX node:	48 cores on two sockets (24 cores/socket)
Hardware threads per core:	2
Hardware threads per node:	48 x 2 = 96
Clock rate:	2.1GHz nominal (1.4-3.7GHz depending on instruction set and number of active cores)
RAM:	192GB (2.67GHz)
Cache:	32KB L1 data cache per core; 1MB L2 per core; 33MB L3 per socket. Each socket can cache up to 57MB (sum of L2 and L3 capacity).
Local storage:	144GB /tmp partition on a 200GB SSD. Size of /tmp partition as of 14 Nov 2017.

Data-intensive (Big Data) Computing

Presentation Resources

- The Argonne Training Program on Extreme-Scale Computing (ATPESC) - 2017
  - http://extremecomputingtraining.anl.gov/archive/atpesc-2017/
- Mark Asch and Terry Moore (ed.). 2018. Pathways to Convergence: Towards a Shaping Strategy for a Future Software and Data Ecosystem for Scientific Inquiry. Big Data and Extreme-scale Computing (BDEC) project report. Tech Report No. ICL-UT-17-08.
  - https://exdci.eu/sites/default/files/public/files/170704_exdci_bdva_common_session_pathways_to_convergence_mark_asch.pdf

Thanks!

Q&A