

# WVU HPC SUMMER INSTITUTE

Introduction to WVU's Shared  
Research Facilities HPC Systems



# SPRUCE KNOB ARCHITECTURE

- 79 Compute Nodes (6 more on order)
- 4 Management Nodes
- 9 GPUs (8 more on order)
- Interconnect FDR Infiniband
- Storage 400TB RAW GPFS Storage



# SPRUCE COMPUTE HARDWARE

- 51 Medium Memory Nodes
- 3 Large Memory Nodes
- 19 SMP Nodes
- 7 GPU Nodes with total 9 GPUs



# MEDIUM MEMORY NODES

- HP sl230
- Dual Intel 2.6 Ghz Xeon E5-2650 V2 Processors (Ivy Bridge)
- 64 GB 1866 MHz Memory
- 500 GB Internal Storage



# LARGE MEMORY NODES

- HP DL 360p G8
- Dual Intel 2.6 Ghz Xeon E5-2650 V2 Processors (Ivy Bridge)
- 512 GB 1866 MHz Memory
- 1TB Internal Storage



# SMP NODES

- HP DL560 G8
- Quad Intel 2.2 Ghz Xeon E5-4620 Processors (Sandy Bridge)
- 64 GB 1333 MHz Memory
- 1TB Internal Storage



# GPU NODES

- NVIDIA K20M
- 2496 Cuda Cores
- 5 GB of Memory





# INTERCONNECT

- Mellanox SX6512 Switch
- 216 port
- FDR (56 Gb/s) Speed
- All Fibre Connections





# STORAGE

- DDN GRIDScaler System
- 400 TB Raw Storage
- Expandable from 2 PB to 8 PB
- GPFS Parallel Filesystem
- Direct Infiniband Connection



# MOUNTAINEER VS SPRUCE KNOB

## Mountaineer

- 32 Compute Nodes
- 384 Cores Intel Xeon Westmere 2.6 GHz
- 48 GB Memory per Node (1.5 TB Total)
- 10 Gb Ethernet Interconnect

## Spruce Knob

- 79 Compute Nodes (6 more on order)
- 1,568 Cores Intel Xeon Sandy Bridge/Ivy Bridge
- 64-512 GB Memory Per Node (6.5 TB Total)
- FDR Infiniband Interconnect
- 9 GPUs (8 more on order)



# HPC COMMUNITY RESOURCES

## Key Points

- Open to all higher education academic institutions throughout State of West Virginia
- Made possible by the National Science Foundation EPSCoR Research Infrastructure Improvement Cooperative Agreement #1003907, the state of West Virginia (WVEPSCoR via the Higher Education Policy Commission) and WVU.



# HPC COMMUNITY RESOURCES: HARDWARE

## Mountaineer

- 32 Compute Nodes
- 384 Total Cores

## Spruce Knob

- 21 Medium Memory Nodes
- 1 Large Memory Node
- 1 256GB Node
- 1 SMP Node
- 1 GPU Node
- 416 Cores



# HPC COMMUNITY RESOURCES: QUEUES

## Mountaineer

Queue Name	Walltime Limit
Debug	5 Minutes
Hour	1 Hour
Batch	2 Hours
Day	1 Day
Week	1 Week
Long	2 Weeks

## Spruce Knob

- | Queue Name     | Walltime Limit |
|----------------|----------------|
| Debug          | 1 Hour         |
| Comm_mmem_day  | 1 Day          |
| Comm_mmem_week | 1 Week         |
| Comm_smp       | 1 Week         |
| Comm_large_mem | 1 Week         |
| Comm_256g_mem  | 1 Week         |
| Comm_gpu       | 1 Week         |



# HPC SOFTWARE

- Intel Studio XE 2013 (Fortran, C, MPI, etc)
- Matlab
- Module avail command



# GETTING ACCESS

- <https://helpdesk.hpc.wvu.edu>
- Select “Open A New Ticket”
- Select New User Account Request





# QUESTIONS?

- Main Contact: <https://helpdesk.hpc.wvu.edu> or [helpdesk@hpc.wvu.edu](mailto:helpdesk@hpc.wvu.edu)
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