

High Performance Computing (HPC) LAB

The High Performance Computing Facility at University of Kashmir in the Department of physics has been set up with a grant from the University grants Commission, to provide super-computing access to university users across the country, and also to boost the ion-solid, nuclear physics and atomic physics simulation programs at KU. The facility is targeted at computational chemists, physicists and biologists in the university system, working in the areas of materials science, atmospheric physics and molecular physics and chemistry, radiation biology and nuclear physics.

The facility will be operational to users from universities, colleges and institutes across the country from May 2019.

In its first phase, a state-of-the-art data centre with, an SMP system and a distributed memory cluster will be set up. In second phase more nodes will be added. The systems now available to users are

Master/Login Node (using Tyrone DS400TW-14RL)

Processor(s)	2 x Intel® Xeon Gold 5118 processors (12-Core, 2.3GHz, 16.5M Cache)
Chipset	Intel® C621
RAM	128GB (4 x 32GB) DDR4-2400 ECC RDIMM (Max 768GB, 12 DIMMs)
Can be upgraded to 256GB just by adding	4 x 32GB DIMMs in empty slots
RAID	SAS 12Gbps RAID controller with 2GB flash backed cache,
supports Hardware RAID 0, 1, 10, 5 & 6	
SSD/HDD(s)	2 x 240GB, MLC SATA, hot-pluggable SSDs (Max 4 SAS/SATA disks)
ODD	Slim DVDROM Drive (internal)
NIC	2 x Gigabit (1000Base-T) Ethernet ports on-board
2 x 10Gigabit (SFP+) Ethernet ports using AOC	
1 x FDR (56Gbps) InfiniBand port using Mellanox HCA	
Graphics	On-board graphics using A speed AST2500
Management	On-board IPMI 2.0 with dedicated LAN and KVM over LAN support
Supports Remote Graphics Console	
Ports	2 USB, 2+2 Network, 1 x InfiniBand, 1 Management, 1 VGA
Chassis	1U rack-mountable with sliding rails

Compute Node(s) (using DS400TR-14RL)

Processor(s)	2 x Intel® Xeon Silver 4116 processors (12-Core, 2.1GHz, 16.5M Cache)
Chipset	Intel® C621
RAM	128GB DDR4-2400 ECC RDIMM (Max 512GB, 8 DIMMs)
HDD(s)	1 x 1000GB, 7200 RPM, Enterprise SATA, hot-pluggable HDD (Max 4 SATA disks)
NIC	2 x Gigabit(1000Base-T) Ethernet ports on-board
1 x FDR (56Gbps) InfiniBand port using Mellanox HCA	
Graphics	On-board graphics using Aspeed AST2500
Management	On-board IPMI 2.0 with dedicated LAN and KVM over LAN support
Supports Remote Graphics Console	
Ports	2 USB, 2 Network, 1 InfiniBand, 1 Management, 1 VGA
Chassis	1U rack-mountable with sliding rails
P. Supply	2 x 600W, N+1 redundant, hot-plug power supplies (80PLUS Gold)
Warranty	3 years
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Storage

Lustre based PFS

Lustre based PFS with following specifications

Usable Space : >40TB Thruput : >2GB/s (using 1MB block size)

Consisting of following components

I/O Server (with fail-over, using Tyrone DS400TN-28R) Qty: 2

Processor(s)	2 x Intel® Xeon® Silver 4114 processors (10-Core, 2.2GHz, 13.75M Cache)
RAM	64GB DDR4-2400 ECC RDIMM (Max 2TB, 16 DIMM slots)
HDD(s)	2 x 240GB, MLC SATA hot-plug SSDs
ODD	DVDROM drive
NIC	2 x Gigabit(10/100/1000Mbps) Ethernet on-board
Interconnect	1 x FDR (56Gbps) InfiniBand port using

Graphics	Mellanox HCA On-board graphics using Aspeed AST2500
Management	On-board IPMI 2.0 with dedicated LAN and KVM over LAN support
Ports	1 Serial, 4 USB, 2 Network, 1 Management, 1 VGA
Chassis P. Supply	2U rack-mountable with rail-kit 2 x 1000W, 1+1 redundant, hot-plug power supplies (80PLUS Platinum)

Storage Target

HDDs (MDT)	3 x 900GB, 10K RPM, SAS 12Gbps HDDs configured as RAID1 + hot-spare
HDDs (OST)	35 x 2000GB, 7.2K RPM, SAS 12Gbps HDDs configured as 3 x 11-disk
RAIDZ2 volumes (9D + 2P), with 2 hot-spare HDDs	
Other	Dual-Controller, connected to both I/O servers over SAS 12Gbps links, with redundant power supplies, 4U rack-mountable

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