

Establishment of High Performance Computing Facility Centre for Building Excellence in Research and Development in Agriculture

HPC CLUSTER

Master Node (01):

CPU: 2 x Intel Xeon-Gold 6238 (2.1GHz/22-core/140W) Processor.
Motherboard: Intel C621
Memory: 288GB DDR4@2933MHz, 24 DIMM slots.
HDD: 2 x 480GB SSD

Compute Node(04):

CPU: 2 x Intel Xeon-Gold 6238 (2.1GHz/22-core/140W) Processor.
Motherboard: Intel C621
Memory: 288Gb DDR4 @ 2933MHz, 16 DIMM slots.
HDD: 1 x 2TB SATA

GPU Node(01):

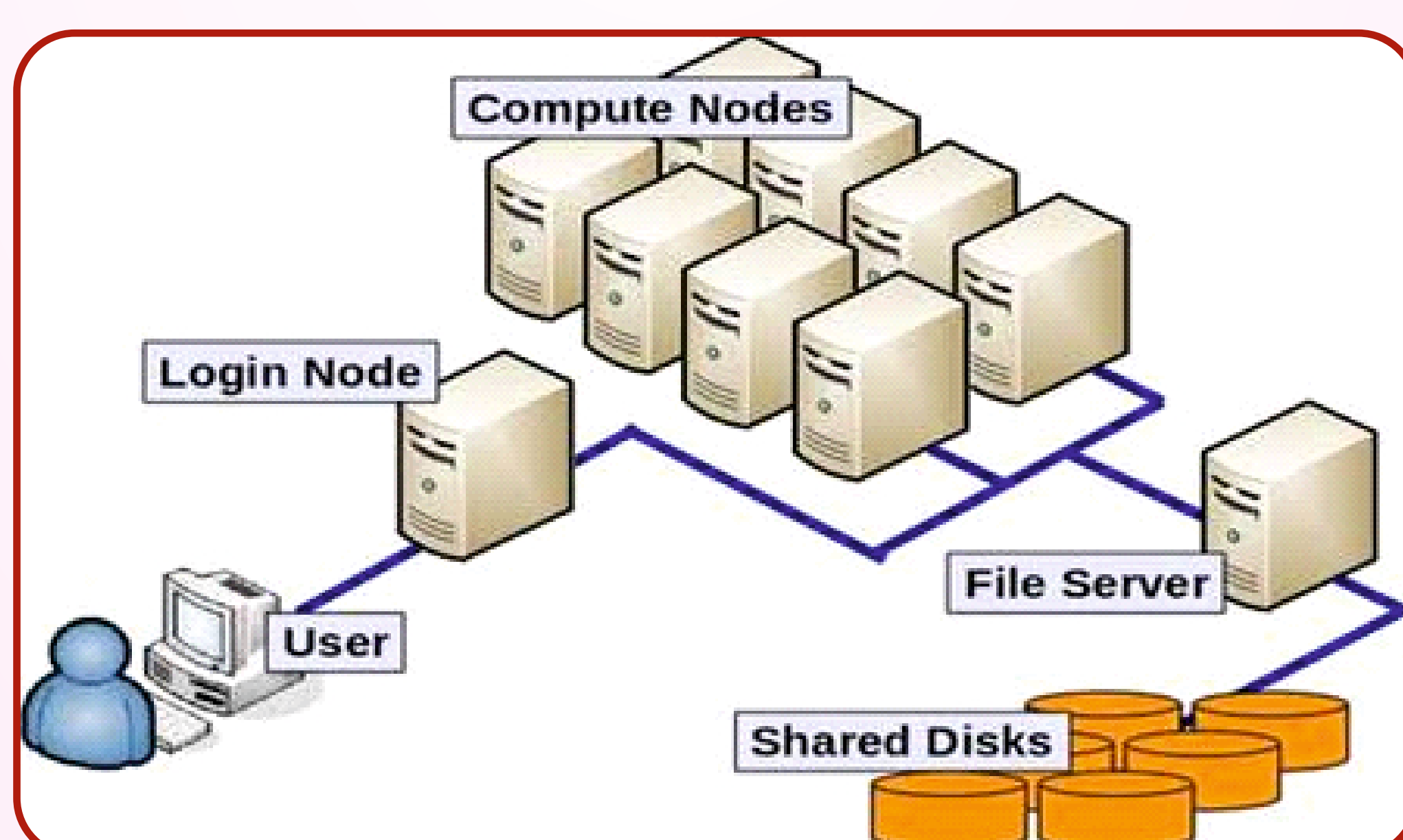
CPU: 2 x Intel Xeon-Gold 6238 (2.1GHz/22-core/140W) Processor.
Motherboard: Intel C621
Memory: 288GB DDR4 @ 2933MHz, 24 DIMM slots.
HDD: 1 x 2TB SATA

GPU: Each of the nodes should be configured with 2 x NVIDIA T4 16GB GPUs.

Storage Node(01): 100 TB PFS storage with 4GB/sec.

ABOUT THE CENTRE

High Performance Computing (HPC) Centre forms a key part of the infrastructure backbone enabling scientific discovery, driving innovation and ensuring the competitive over any cutting edge technology used in societal development. The HPC infrastructure is a platform for various application scaling environments such as maintaining comprehensive process and product profile digital database, use of image processing technology for crop disease identification, development of Omics platform for the analysis of genomics, transcriptomics and proteomics data for pattern discovery and predicting crop simulation models for enhancement of production and productivity in agricultural and its allied sectors.



AIM

To establish High Performance Computing Facility Centre (HPCFC) at Odisha University of Agriculture and Technology, Bhubaneswar to cater the computational need for carrying out the cutting edge research in agriculture and allied sectors as well as strengthen the service deliver mechanism so as to ensure quick accessibility of services provided by the university at the field level for better farm productivity.

OBJECTIVES

Process and product profile digital database

The online portal offers a platform to disseminate knowledge and experience between farmers and researchers and store the information on agriculture and allied sectors of the state of Odisha. This compiled and well analyzed information on these sectors are important for production, processing, supply and distribution of products for the benefit of the producer.

Crop disease identification portal

Diseases can be identified by the experts but it needs continuous monitoring. Digital Image Processing (DIP) can be used in the agricultural applications to detect diseased leaves, stems and furits to determine affected area by the disease.

Crop disease identification steps involve Image Acquisition, Image Processing, Image Segmentation, Feature Extraction, Statistical Analysis and Classification.

Omics data analysis platform

Omics-based research and application development provide crucial resources to promote research in model and applied plant and animal species. To facilitate Omics based research in the agricultural and allied sector, high performance computing clusters are required for performing the parallel computing in order to generate patterns in data for carrying out cutting edge research to enhance farm production.

Crop simulation model server

Crop Simulation Model helps to estimate crop yield as a function of weather conditions, soil conditions, and choice of crop management practices. Various simulation models viz. Statistical models, Mechanistic models and Functional models are used to predict the various crops model to estimate the yield ahead of planning and will be a decision support tool for the planner, policy maker as well as farmers.

TARGET BENEFICIARIES

Farmers, students, researchers, scientists and extension officers will get access to valuable solution guides and technical support to stay ahead of the science and technology. It also provides advance user support and training to support the increasingly diverse research computing needs in campus. These needs include support for big data analysis, data transfer, image processing, crop simulation model prediction, virtual machines and protected environments for data mining and analysis.

OUTCOME

- The HPC Facility Centre for carrying out high end computation and big data analysis in agriculture and allied Sciences.
- The comprehensive database will provide a unique solution for agricultural and allied disciplines including: animal and veterinary sciences; aquaculture and fisheries; farming and farming systems; food and human nutrition; forestry and plant sciences.
- Crop Disease Identification tool will provide digital based image processing techniques to identify various crop diseases so that a farmer at remote village can send the images and get the solution quickly.

TOTAL OUTLAY

Rs.432.850 Lakhs



Funded by

RKVY, Dept. of Ag & FE, Govt. of Odisha

CONTACT US

High Performance Computing Facility Centre

Department of Bioinformatics
Odisha University of Agriculture and Technology
Bhubaneswar-751003, Odisha, India
Tel: +91-6742565760
Email id: hodbioinfocpgs@ouat.nic.in

Odisha University of Agriculture and Technology, Bhubaneswar