

# Clusters

The majority of HPC resources are organized in clusters of machines. These machines are based on the same type of technology that you can find in your desktop or laptop PC, but have more powerful CPUs, more RAM, and a faster network than you would normally find in a consumer level machine. In addition to the hardware, the clusters run software that manages the computational jobs - making sure that the load is distributed over the machines and so ensuring that jobs run quicker. Finally, scientific and engineering software is pre-installed on the systems so you can just run your problems.

- [Detailed Configuration](#)

## Avalanche



Avalanche is the newest cluster at FEUP, being purchased at the start of 2013. It has 29 nodes, each with 16 cores and between 64GB and 128GB of RAM. Each node is connected via a 40Gbps InfiniBand network. There is 10TB of central storage, with each node having 500GB of local storage. The clusters run version 7 of the [Scientific Linux](#) operating system (a distribution based on Red Hat Enterprise Linux 7) from CERN and Fermilab.

For more information on how to use this cluster, please see the documentation.

The Avalanche cluster was funded and by a consortium of interested parties who have heavy computational requirements, the members of the consortium are as follows:

- [Centro de Física do Porto \(CFP\)](#)
- [Departamento de Engenharia Civil \(DEC\)](#) and [Programa Doutoral em Engenharia Civil \(PRODEC\)](#)
- [Centro de Estudos de Energia Eólica e Escoamentos Atmosféricos \(CEsA\)](#)
- [Departamento de Engenharia Electrotécnica e de Computadores \(DEEC\)](#)
- [Laboratory of Separation and Reaction Engineering \(LSRE\)](#)
- [Centro de Estudos de Fenómenos de Transporte \(CEFT\)](#)
- [Departamento de Engenharia Informática \(DEI\)](#)
- [Programa Doutoral em Engenharia Industrial e Gestão \(PRODEIG\)](#)
- [Instituto de Engenharia Mecânica e Gestão Industrial \(INEGI\)](#)
- [Programa Doutoral em Engenharia Informática \(PRODEI\)](#)
- [MAP-tele Doctoral Programme in Telecommunications](#)
- [Direção FEUP](#)

## IDMEC (Retired)

The IDMEC cluster consists of **39 nodes**. Each has **2 dual core** AMD Opteron Processors and **4GB** of RAM. The nodes are connected via a dedicated 1Gbps Ethernet network. The cluster has a central file server with a capacity of **2TB**. It provides a shared user home directory across all of the cluster. Each cluster node also has 90GB of local storage for IO intensive tasks. The cluster runs the SuSE Enterprise 10 operating system. The system can be accessed via the SSH protocol via a central logon machine `idmecluster.fe.up.pt`. From this machine you can submit your jobs to run on the cluster and monitor their status.

## INEB (Retired)

The INEB cluster consists of **18** PowerPC based nodes with 4 CPUs each and 4GB of RAM. Every node is connected via a dedicated 1Gbps Ethernet network. The cluster has two central file servers with a combined storage capacity of 1TB, these provide shared user home directories across all of the cluster. Each cluster node also has 33GB of local storage for IO intensive tasks. The cluster runs the SuSE Enterprise 9 operating system. The system can be accessed via the SSH protocol via a central logon machine - `inebcluster.fe.up.pt`. From this machine you can submit your jobs to run on the cluster and monitor their status.

## CAS

The CAS cluster is a group of 8 nodes each with 8 cores and 24GB of RAM. The machines are part of the IBM Portugal Center for Advanced Studies (CAS) in Enterprise Engineering and Management at FEUP.

## CFP

## CFPSMALL

## DEMEC

## INEGI

## IBMCLUSTER (NxPy) (Retired)



The NxPy cluster consisted of 32 nodes each with 2 CPUs and 4GB of RAM. It's now deprecated and being decommissioned. It was funded by a consortium of interested parties with, the membership was as follows:

- Direcção da FEUP] \* [[<http://www.fe.up.pt/cica/>] Direcção do CICA
- Departamento de Engenharia Civil (DEC)
- Laboratório de Processos de Separação e Reacção (LSRE)
- Centro de Hidráulica, Recursos Hídricos e Ambiente da FEUP (CEHRA)
- Mestrado em Engenharia Electrotécnica e de Computadores (MEEC)
- Mestrado em Engenharia Informática (MEI)
- Mestrado em Métodos Computacionais em Ciências e Engenharia (MMCCE)
- Mestrado em Tecnologia Multimédia (MTM)
- Projecto Ventos
- CEsA
- Instituto de Engenharia Mecânica (IDMEC)

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