

UG1.0: Introduction

(updated: July 2023)

CINECA is one of the Large Scale Facilities in Europe. Its hardware resources are the most powerful available in Italy and among the most powerful available in the world.

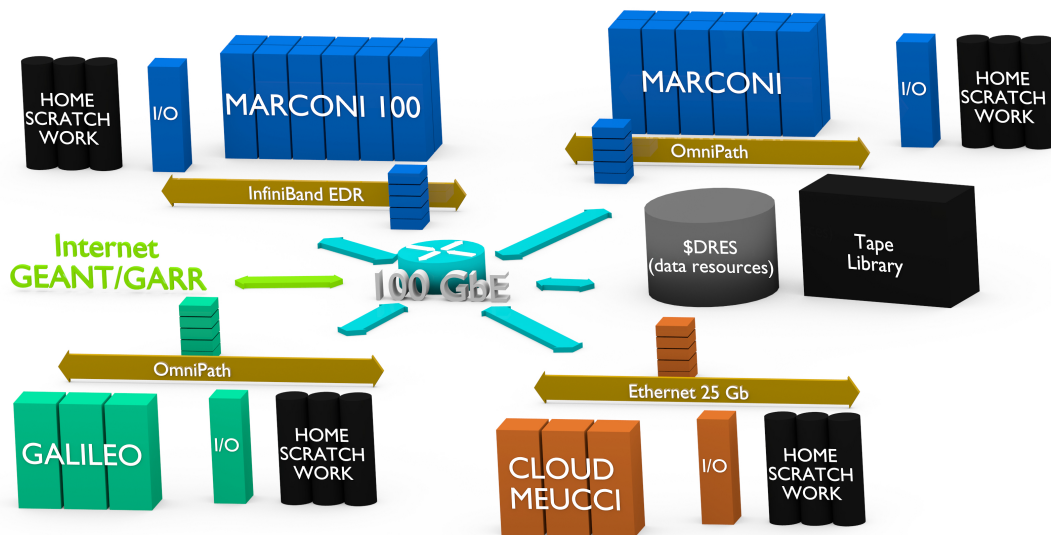
The HPC environment in CINECA is made of *general purpose* computers constantly maintained at the technological leading edge. They are integrated into a common working environment to allow users easy access, everyday working and portability of data and applications among different platforms.

At present, the main HPC system (Tier-0 level) is **LEONARDO** the new pre-exascale Tier-0 EuroHPC supercomputer hosted by CINECA and currently built in the Bologna Technopole, Italy.

Along with MARCONI, a Tier-1 level system, the **GALILEO100** was installed in 2021 with Intel Cascade Lake 8260 nodes.

All the systems share a large storage infrastructure for medium-long term archive (about 20 PB of disk storage and 20 PB on magnetic support).

The CINECA HPC environment is completed and integrated by an **HPC cloud infrastructure**, **ADA CLOUD**, covering both high performance and high flexible computing.



- If you are a researcher from **Academia** or other **non-profit Institutions**, you can obtain a username and password on our HPC systems by applying to our special resource allocation programs. You can use our systems for running applications from our Software Catalog or even your code. Several tools for programmers are available such as compilers, profiling tools and debuggers. Our HPC systems can be reached through *ssh* or specific *portals for remote visualization or data movement applications*.
- If you are a researcher from a **private company**, you can use our HPC systems for special HPC industrial projects developed in collaboration with our specialists. These systems are equipped with top-level programming environments and the application tools required for the project.

In any case, check our ["Getting Started"](#) page for more info.

For more details about the hardware resources available in CINECA, refer to our ["Resource"](#) page.

This guide is (mainly) about the **use of the "HPC Scientific" class of computers**, in particular: LEONARDO, MARCONI, and GALILEO100, as well as ADA HPC cloud. It is organized as follows:

- **General information:** the description of the HPC environment architecture, documentation about tools and procedures that are common to all systems;
- **System specific guides:** a chapter dedicated to each system, describing specific tools and procedures.