

IPAZIA HPC

Why is HPC necessary?

*"More innovation in less time,
with predictable costs and clear governance."*

- 1 Products and processes are increasingly complex:** more simulations, fewer physical prototypes and more digital tests are needed.
- 3 Time-to-market is reduced:** timeliness of decisions and reduction of costs and project times are necessary.

- 2 AI and data have entered industrial processes:** increased computing power and storage availability are required.
- 4 Standard Cloud limitations:** limits on compute resources and non-shared storage.

Why HPC Cluster IPAZIA

- 1** An advanced, reliable platform and **easily accessible** for **running demanding workloads**.
- 2** It is organized according to an architecture that separates access functions from computing functions, ensuring **security, stability and high performance**.
- 3** "**Fair use**" and "**linearized over time**" policy.
- 4** Provides **shared storage**, allowing access to files from all compute nodes.
- 5** **Budget predictability:** by knowing weights and multipliers, you can estimate the cost of processes earlier and better manage your budget.

Use Cases

PREDICTIVE MAINTENANCE

Large-scale IoT time-series analysis for failure prediction, based on advanced models and high-performance computing

CFD - Computational Fluid Dynamics

High-fidelity numerical simulation of aerodynamic flows and fluid dynamics, made possible by massive supercomputing

INDUSTRIAL DIGITAL TWINS

Development of digital twins of plants and production processes, with real-time simulations supported by HPC infrastructures

LLM – Large Language Models

Training and fine-tuning of language models on proprietary business data

COMPUTER VISION

Advanced image and video analysis for quality control, object detection and recognition, with intensive computational loads

WEATHER FORECAST

Advanced image and video analysis for quality control, object detection and recognition, with intensive computational loads

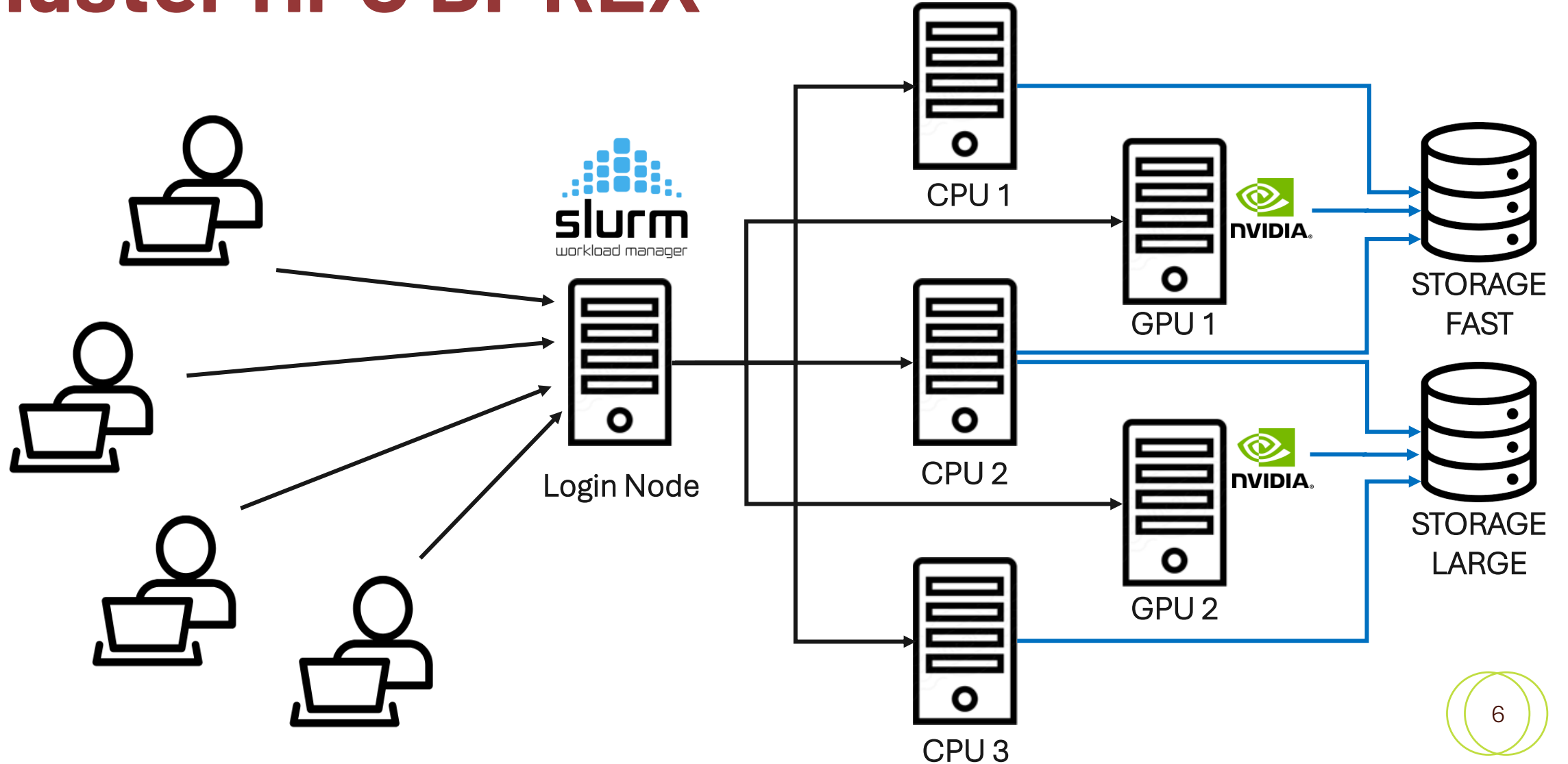
Cloud limits

- Limited number of cores – up to 288
- Limited number of GPUs – up to 8
- Non-shared storage
- No workload management system
- "Hidden" costs
- Unclear data governance, especially on multi-cloud environments

HPC IPAZIA

- High number of **scalable cores** across multiple nodes
- Wide availability of **interconnected GPUs**
- High-performance **shared storage**
- Advanced Workload Management System - **Workload Manager**
- **Transparent and predictable costs**
- Comprehensive data governance and data control

Cluster HPC BI-REX



Technical specifications

Compute nodes comprise both high-performance CPU nodes and GPU nodes. The GPU cards available in the IPAZIA cluster are NVIDIA L40, H100, and H200.

NVIDIA L40	NVIDIA H100	NVIDIA H200
AI inference, computer vision and graphics workloads	High-performance training of advanced models Deep Learning	LLMs training, distributed computing and dataset processing large

Cluster storage is centralized and can be accessed uniformly from both the login node and the compute nodes. Users have visibility and access only to the files they are responsible for.

Privacy & Compliance



- **Data resident in Italy (BI-REX):** clear perimeter, easier governance and audit; less risk/complexity related to extra-EU transfers.
- **Global cloud:** potential extra-EU transfers → the need for Standard Contractual Clauses (SCCs) and additional checks → increased complexity and compliance risk.
- **Segmentation by users/projects:** logical separation of data and permissions (least privilege principle).
- **Centralized traceability:** consistent logs/audit trails in a single perimeter (support for accountability and audits).

Operational safety and AI



- **Controlled access (e.g. credentials/personal keys) + monitoring:** reduces attack surfaces and facilitates incident response.
- **Computer governed by policy (scheduler/quota):** controlled use, abuse prevention, greater operational predictability.
- **Alignment with NIS2 practices:** measures such as access control, logging/monitoring, backups are part of the required cybersecurity approach.
- **AI workloads in the traceable perimeter:** the infrastructure helps on control and audit; the user remains responsible for the compliance of their use (e.g. transparency obligations on AI-gen content).

Key Points

1 Affordability combined with flexibility and scalability.

4 **Cost certainty:** there are no hidden costs of the large Cloud Providers. The package includes storage and traffic.

2 Availability of parallel computing resources → significant reduction in project time.

5 **No Vendor Lock-in**
Use of open standards: what is developed by one company can be easily ported to another cluster or to the company's own servers.

3 Support and training by personnel involved in projects on use cases similar to those proposed.

IPAZIA offer features

- **Turnkey Offer:** all in One model;
- **Simplicity of the Offer:** you fill in an Offer Form by selecting the services of interest;
- **OpEx Model:**
 - **No initial investment required of companies:** companies do not have to invest hundreds of thousands of euros for hardware;
 - **Pay-per-use:** this is a package offer, the expense is predictable and scalable. Enterprises pay only for the resources they use, avoiding depreciation costs for CPUs and GPUs that would go unused most of the time.
- **Transparency of the offer;**
- **Fast Service Activation and Reduced Time-to-Market;**
- **Flexibility and Scalability of the Service:** possibility to manage work peaks (Fair Use policy and possibility of agreeing on intensive windows);
- **Direct access service,** without the need to participate in European or National Tenders/Tenders.

Consumption accounting + Standard package

Resource	Hourly consumption
CPU	1 core-hour equivalent
GPU NVIDIA L40	4 core-hour Equivalent
GPU NVIDIA H100	32 core-hour equivalent
GPU NVIDIA H200	36 core-hour equivalent

STANDARD PACKAGE OF SERVICES:

- **Up to 3 user accounts** for each package purchased;
- Valid for **12 months** from the date of activation;
- **Shared storage;**
- **Unlimited** incoming/outgoing **data traffic;**
- **Basic technical support** via e-mail (hpc@bi-rex.it), with next business day pick-up;
- **System maintenance:** OS, drives, Slurm scheduler, basic libraries.

Compute packages and services

Bronze Pack

Equivalent Core-hour

10.000

Price

5.000 €

Included services

Standard Package

Silver Package

Equivalent Core-hour

25.000

Price

10.000 €

Included services

Standard Package

Gold Pack

Equivalent Core-hour

100.000

Prezzo

40.000 €

Included services

Standard package + 40
hours of advanced support

! Packages are not automatically renewed.

• Upon expiry:

- The remaining credit expires;
- Associated accounts are deactivated and removed unless renewed.

Optional services

Advanced Support – 5,000 €

40-hour pay-as-you-go package that includes the following services:

- Software Installation
- Specialist configurations
- Performance tuning
- Optimized builds
- HPC consulting

HPC training – 2,500 €

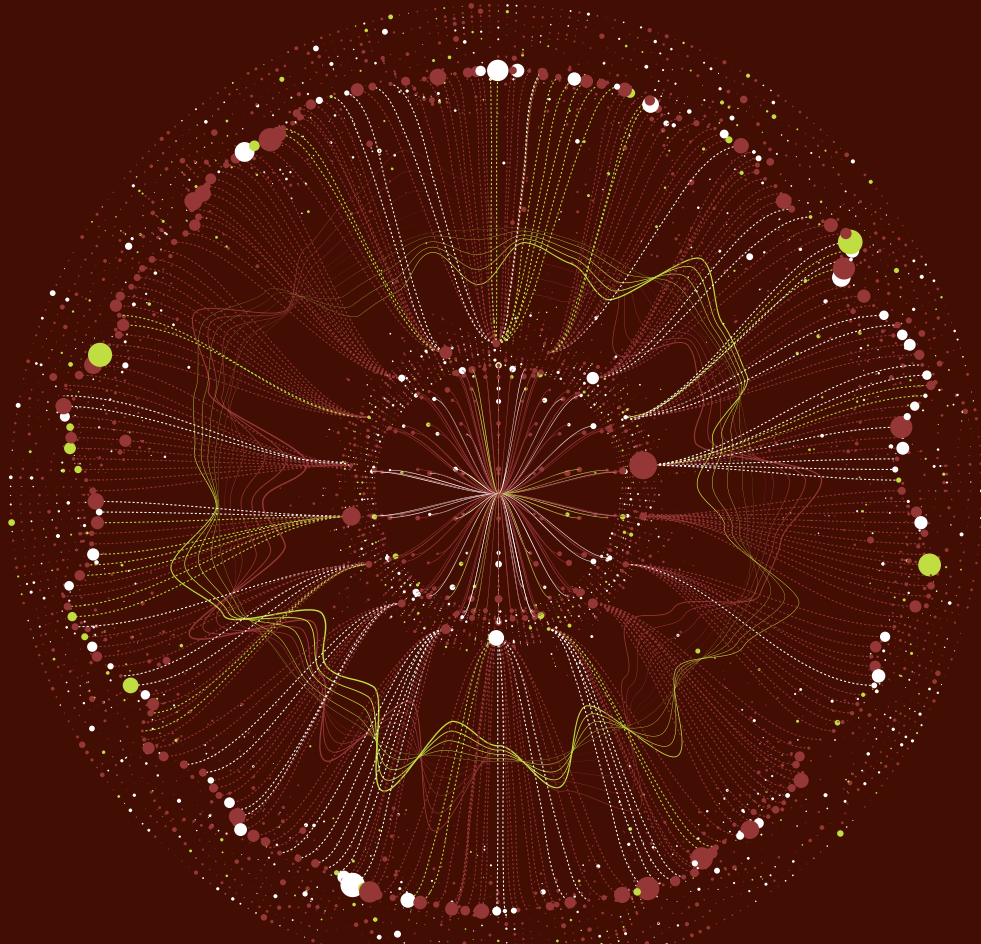
2-day Training module covering the following topics:

- Introduction to the HPC environment
- Job and queue management Slurm
- fundamentals of parallelism and MPI libraries
- practical exercises on the IPAZIA cluster

Policy Fair Use

- The use of hours must be planned in such a way as to distribute the average consumption evenly;
- If, on the other hand, the user tries to use a significant part of his calculation budget in a very short time, the additional jobs could be penalized in terms of priority, to ensure equal access to all users;
- If necessary, intensive use windows can be agreed in advance via the support service.

See here [terms and conditions of the service](#)



For further details you can consult the page dedicated to the service:
[IPAZIA HPC Documentation](#)

Business Contact: business@bi-rEX.it

CONTACTS

