Getting started on subMIT: Available Resources
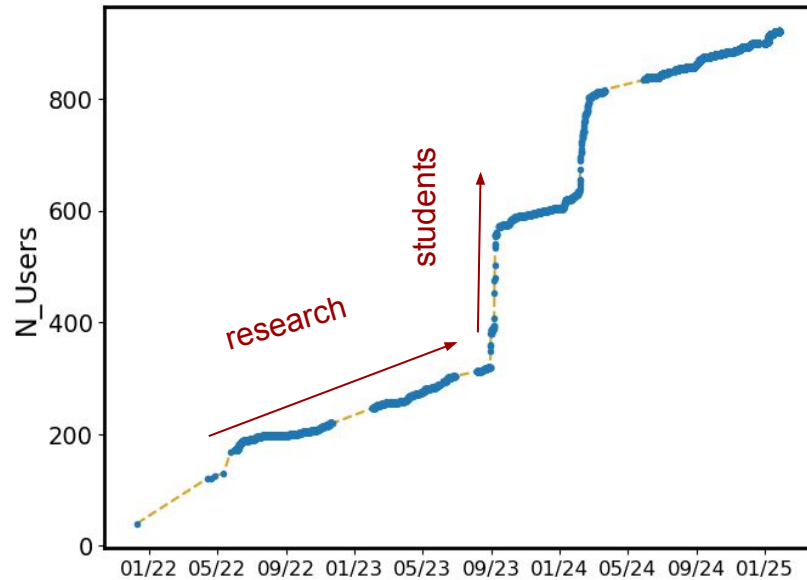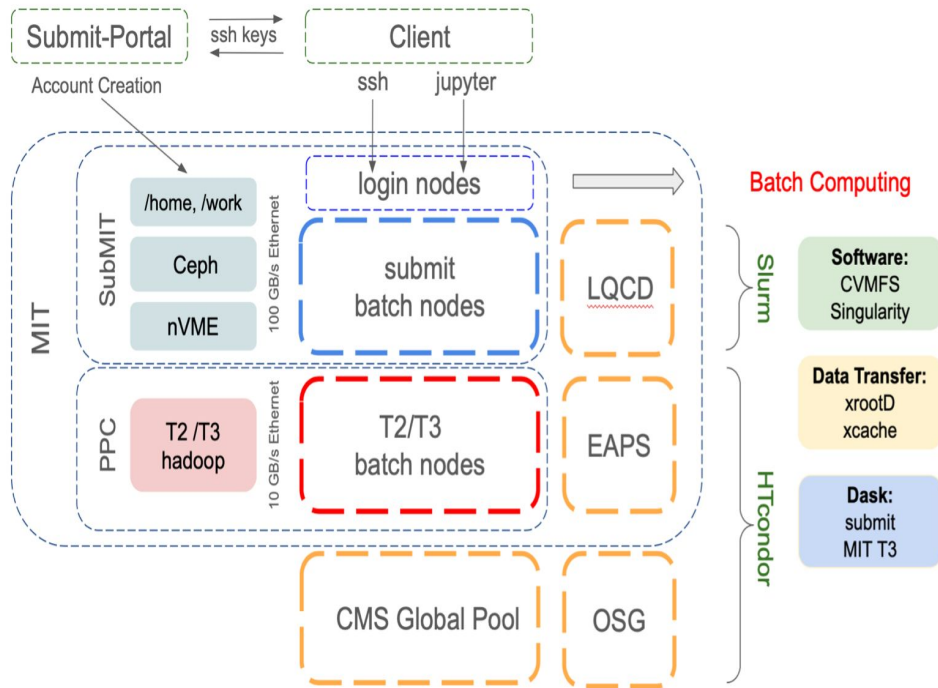
Mariarosaria D'Alfonso

Workshop on Basic computing Services

Jan. 30, 2025

subMIT: A MIT Physics Department Analysis Facility

very flexible system, users utilize the sw/hw according to their requirements

subMIT from the user point of view

Provide flexibility and scalability, allowing your research group to profit from computational resources without the burden of maintaining your own facilities.

Compute

Login nodes

Specialized resources:
→ two machines with 384 cores
→ 30 nvidia cards (8 A30, 20 1080s)

Scale out resources:

1. submit cores O(2.5k) via **slurm** workload manager

2. Open Science Grid (OSG) Global Pool via **HTCondor** Software Suite

3. CMS MIT-Tier2 and CMS-Global Pool **HTCondor** Software Suite

Data Storage and Access

| /home | 5GB User's home with backed-up storage notebooks and local code developments |

| /work | 50GB for software installations |

| Ceph | 1TB per user and groups space to store larger datasets |

| /scratch | NVMe disk with fast access (for short term storage) |

local data with fast network – 100 GB/s

data transfers between local systems and remote locations

with XRootD and Xcache

globus endpoint soon will be enabled

SW options

What comes pre-installed:
     linux alma9, python, C++, Java, Matlab

Users bring additional software:
1. package & environment managers i.e. conda & containers (docker/podman, singularity/appteneir)
   → Environment Management, Reproducibility, Portability
   more in Marianne and Luca's tutorials this afternoon

2. CernVM File System (CVMFS)
   i.e. ROOT, GEANT4, Singularity

Documentation: Users Guide, GitHub Examples

It includes a main section designed to help users get started, detailing all available resources (storage, software, batch systems, etc.) and providing several examples of workflows and tutorials to facilitate onboarding.

User Guide
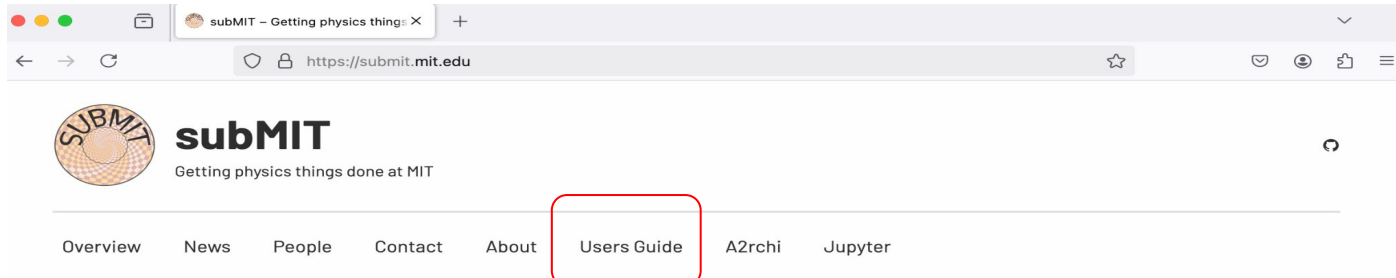
subMIT v1 documentation » User's Guide - subMIT   next

User's Guide - subMIT

Contents:

- User's guide – subMIT login pool
- Getting started
- Access to subMIT
- Best practices
- Available software
- Batch computing
- User quota and storage at submit
- Monitoring at submit
- GPU resources
- Data backup
- Conda and its benefits beyond python
- Acknowledging subMIT

Back to the main subMIT webpage.

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Tutorials and Examples

Tutorials:

- Tutorial 0: Introduction to the UNIX terminal
- Tutorial 1: Common software packages (python, Julia, MATLAB)
- Tutorial 2: Batch Job (HTCondor and Slurm)
- Tutorial 3: Containers (Podman and Singularity)
- Tutorial 4: Source Control (Git/Github) with Visual Studio Code (VSCode)
- Tutorial 5: Debugging Fortran code with Visual Studio Code (VSCode)
- Tutorial 6: Introduction to Pytorch Lightning
- Tutorial 7: Introduction to Snakemake

Examples of scripts can be found on our submit-examples GitHub repository.

Search tool and tags

- Search Page

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Tutorial

- Getting started
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More this afternoon

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GitHub Examples

Chat bot

Experimental large language model application under development for interactive user support and to augment support ticket handling