

Basic Research Computing – Login Pool -subMIT

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Computing Workshop - subMIT

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Overview

- I. What is subMIT ?
- II. Gaining access
- III. Using subMIT and getting help
- IV. Upcoming Development
- V. Questions

I. What is subMIT ?

a login pool of roughly identical servers

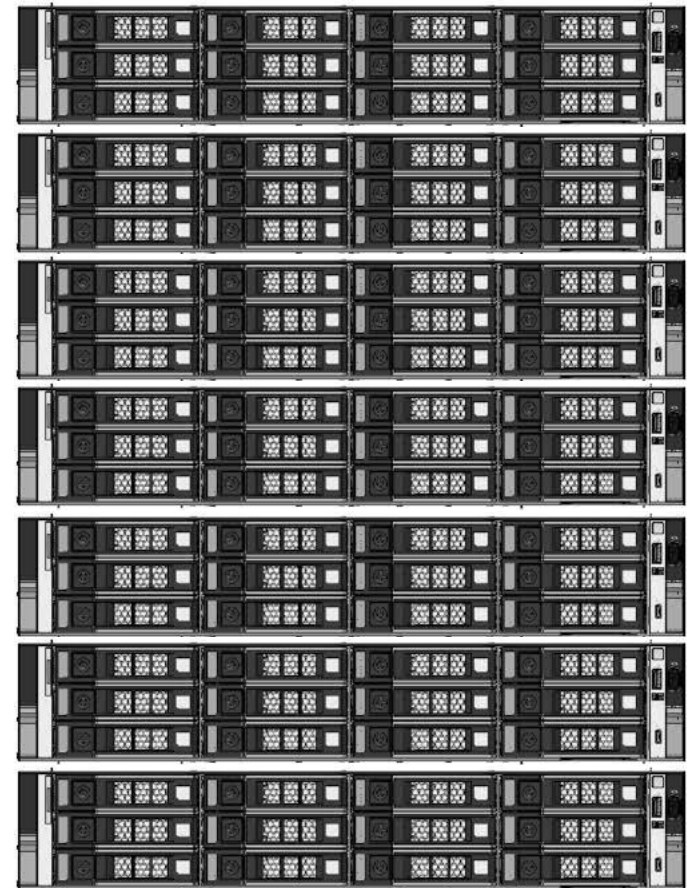
- ssh to submit.mit.edu and one of the servers in the pool answers
- like LXPLUS at CERN

a work place for developing and testing jobs

- before submitting them to larger compute clusters or grids

a small cluster for batch compute locally

- slurm
- shared home and work directories



I. What is subMIT ?

Hardware:

The login pool is composed of Dell servers



Dell PowerEdge

e.g.

Dell PowerEdge R750

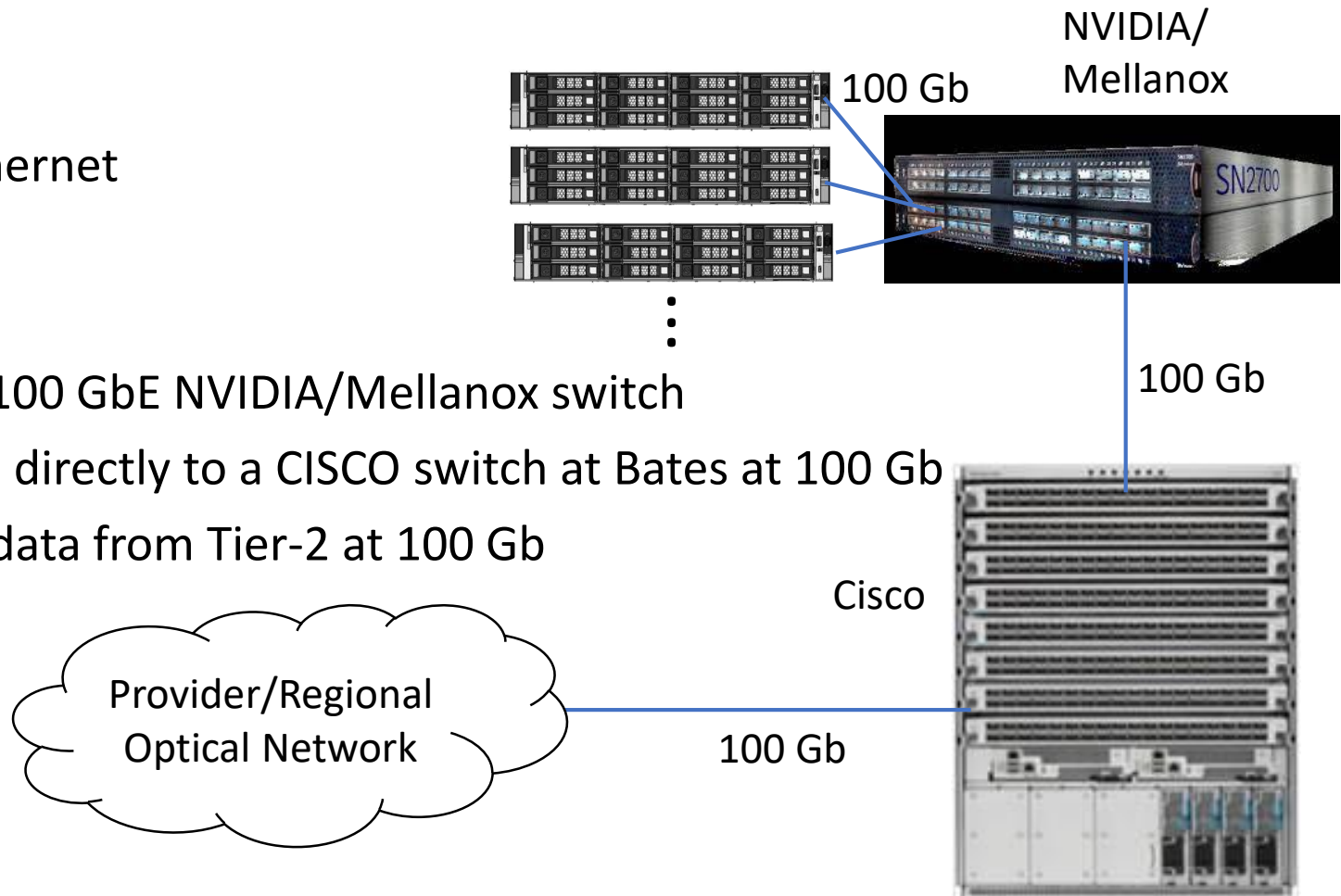
- 128 Gb ram
- 64 cores (hyperthreading)
- 100 Gb/s ethernet network cards
- running CentOS 7 OS

I. What is subMIT ?

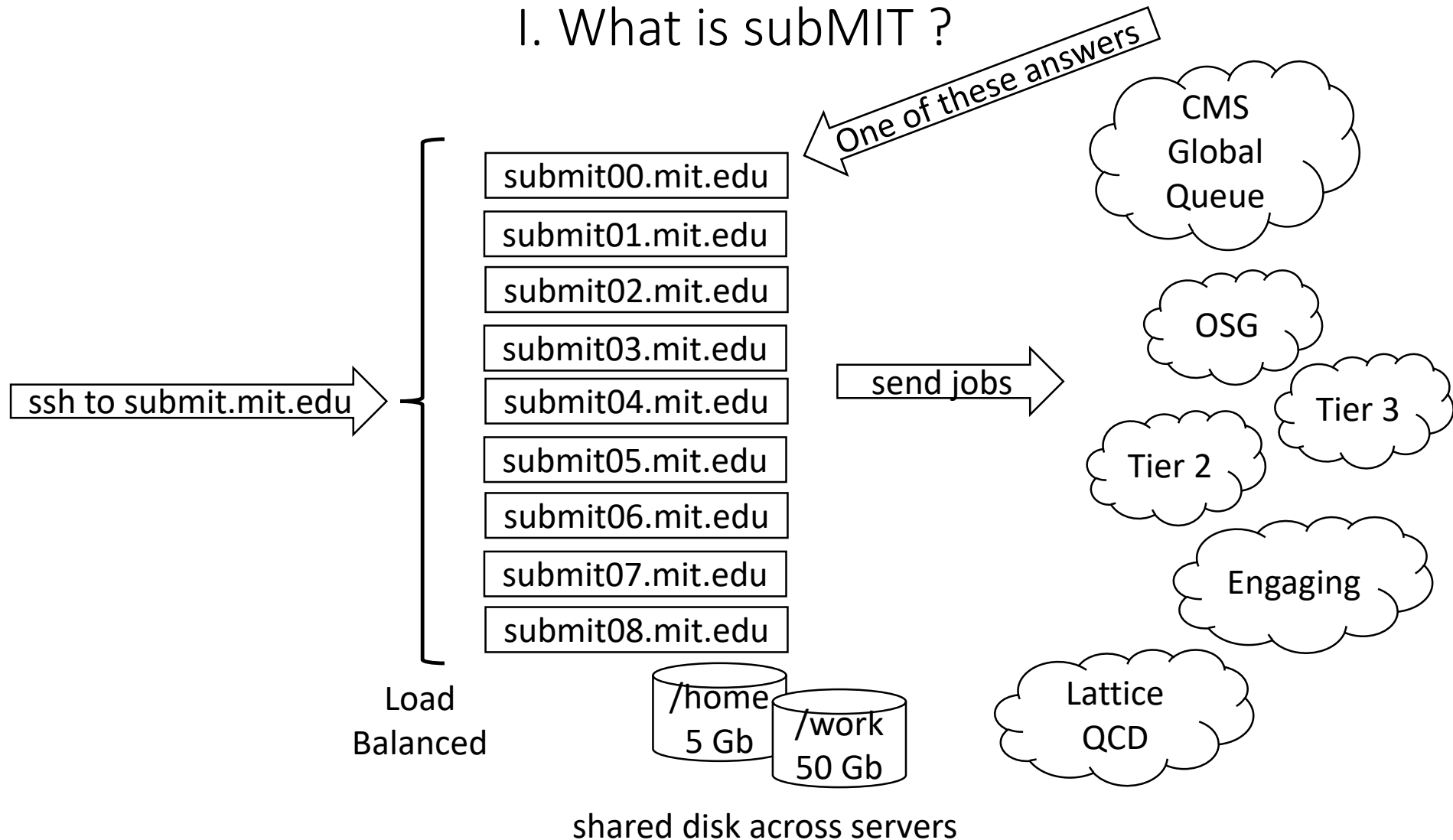
Network:

100 Gb Ethernet

- 32 port, 100 GbE NVIDIA/Mellanox switch
- Connects directly to a CISCO switch at Bates at 100 Gb
- Can pull data from Tier-2 at 100 Gb



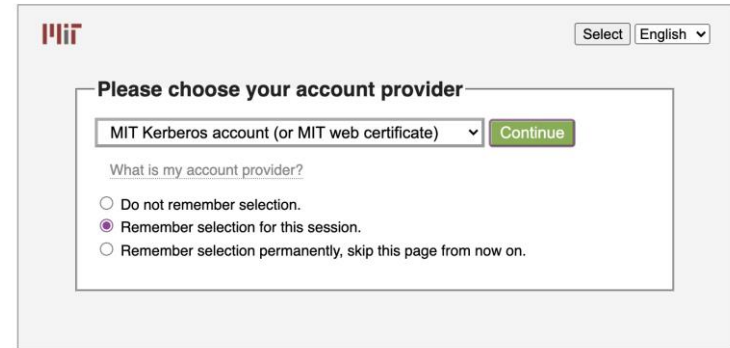
I. What is subMIT ?



II. Gaining access

Account Provisioning

Faculty, Researchers, UROP students,
Junior Lab students, people who need
JupyterHub, others ...



The image shows a web interface for MIT account provisioning. At the top left is the MIT logo, and at the top right are 'Select' and 'English' buttons. The main heading is 'Please choose your account provider'. Below this is a dropdown menu with 'MIT Kerberos account (or MIT web certificate)' selected, and a green 'Continue' button. Below the dropdown is a section titled 'What is my account provider?' with three radio button options: 'Do not remember selection.', 'Remember selection for this session.' (which is selected), and 'Remember selection permanently, skip this page from now on.'

- Go to the “subMIT Portal” (<https://submit-portal.mit.edu>)
- Uses MIT Touchstone authentication
 - MIT Touchstone provides the user account information needed to create the submit account (user does not need to provide this)
 - ssh access into subMIT servers is passwordless and only works for ssh key access
- Portal provides for users to upload their ssh keys

II. Gaining access

You will need:

Submit Portal	Account Status	SSH Keys	Cluster Status	News
Account Status				
Provisioned Status: provisioned				
Username: pra				
User ID: 73815				
Home Directory: /home/submit/pra				

- Need MIT Kerberos id
(can be regular MIT account or an MIT sponsored guest account)
- Need to be in an access control list (a Moira list)
 - send email to: submit-help@mit.edu

Then you can set up ssh access on the subMIT portal

III. Using submit

Software and tools available natively on servers in the login pool

- Software expected on a Linux server is available. e.g. python, c++, Java, etc.
- Including tools such as: XRootd, gfal, etc.

Software collections via CernVM File System (CVMFS) are available

- Lots of software and different versions of the same software

Containers are available

- submit uses Singularity containers

III. Using subMIT

You can submit jobs to CMS Tier2 and/or Tier3

- Which we will hear about from Max

You can submit jobs to other clusters like CTP's Lattice QCD cluster, or the Kavli cluster, or OSG

- Which we will hear about from Andrew, Paul, and Qier.

You can submit jobs via slurm or use Jupyterhub

- Which we will hear about from Chad and Luca

III. Getting Help

subMIT Users Guide

- <http://submit04.mit.edu/submit-users-guide/index.html>

Email

- Send an email to: submit-help@mit.edu

IV. Upcoming Development

GPU's

- We are adding GPU equipped machines to submit and making them available
- 8 GPUs total now. Not fully commissioned yet (maybe 1-2 more weeks)
- Will have a separate login pool called submit-gpu
- Will be providing a small set of machines for batch

Fast Disk

- Disk server equipped with fast nvme disks has arrived
- Want to understand how best to deploy this (caching)

Servers for Junior Lab

- Adding 1-2 additional servers for Junior Lab

IV. Upcoming Development

Your Hardware ?

- If you want to add more disk or a server we have ports available on the 100 Gb switch which could be used to integrate this with the other hardware.

Additional Software ?

- If you need additional software
send an email to: submit-help@mit.edu

Your Hardware ?

- If you want to add more disk or a server we have ports available on the 100 Gb switch which could be used to integrate this with the other hardware.

Thank You