

# High Performance Computing at ITU

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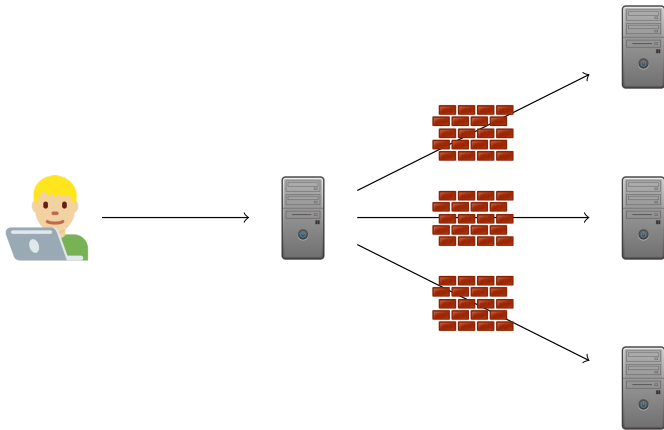
10 machines:

i7-4790 CPU @ 3.60GHz Cores: 8

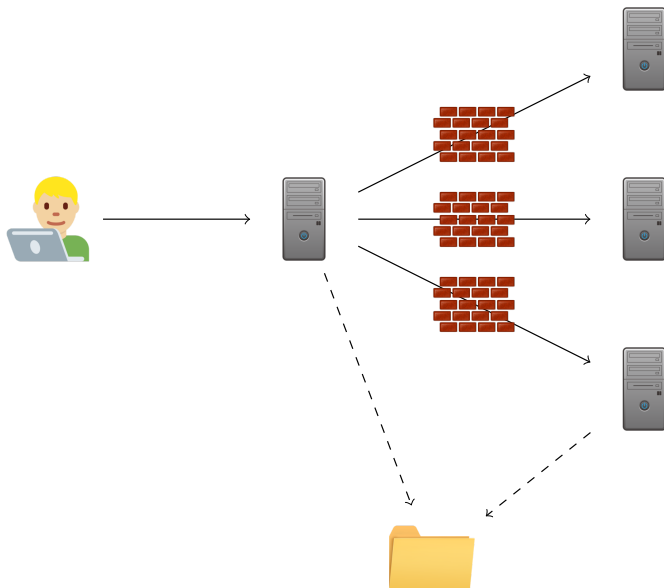
MEM: 32 GiB

GPU: GeForce RTX 2070

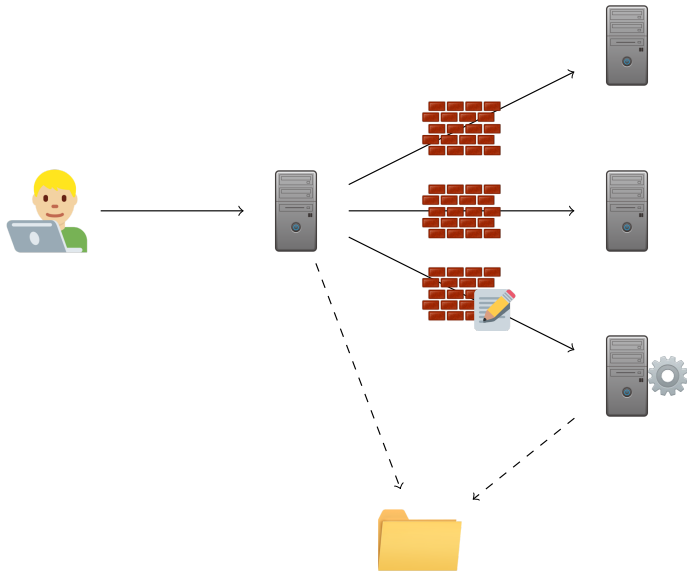
You can not directly access the compute nodes



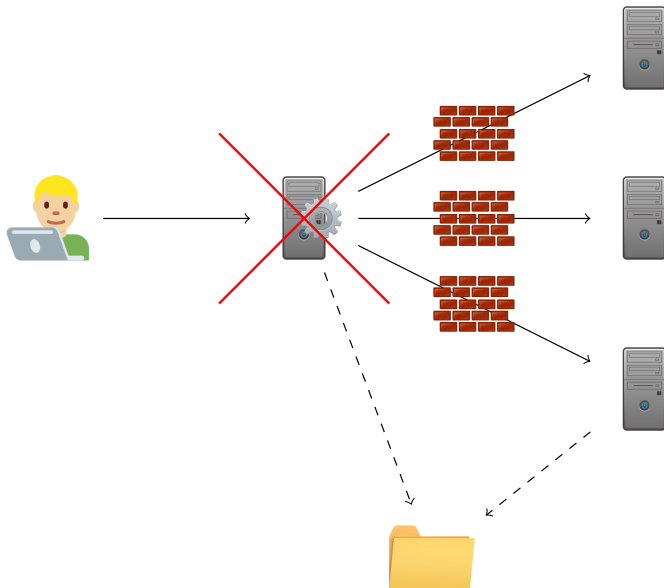
The login node has access to the same data storage as the compute nodes



Submit your jobs to the scheduler, who will distribute it to the compute nodes



Please, do not run heavy jobs on front (the login node)



Access:

```
ssh <username>@hpc.itu.dk
```

To communicate to the scheduler job scripts are used. They contain:

- ▶ Information about what is required
- ▶ Command(s) to run
- ▶ (modules to load)



```
#!/bin/bash
```

```
#SBATCH --job-name=simple      # Job name
#SBATCH --output=simple.out    # Name of output file
#SBATCH --cpus-per-task=1      # Schedule one core
#SBATCH --time=00:01:00        # Run time (hh:mm:ss)
#SBATCH --partition=brown
```

```
# Print out the hostname of the node
hostname
```

To queue a job:

```
[robv@front ~]$ sbatch test.sh  
Submitted batch job 3458  
[robv@front ~]$
```



--gres should be before --partition!

To see all unfinished jobs on the cluster:

```
[robv@front ~]$ squeue
```

JOBID	PARTITION	NAME	USER	ST	TIME	NODES	NODELIST(REASON)
3450	brown	ctrl	djgr	R	22:02:22	8	desktop1
3441	brown	test	robv	R	0:00:10	2	desktop2

To see all unfinished jobs on the cluster:

```
[robov@front ~]$ squeue
```

JOBID	PARTITION	NAME	USER	ST	TIME	NODES	NODELIST(REASON)
3450	brown	ctrl	djgr	R	22:02:22	8	desktop1
3441	brown	test	robov	R	0:00:10	2	desktop2

To see all the jobs that I have queued:

```
[robov@front ~]$ squeue -u robov
```

JOBID	PARTITION	NAME	USER	ST	TIME	NODES	NODELIST(REASON)
3441	brown	test	robov	R	0:00:10	2	desktop2

To cancel a job:

```
[robo@front ~]$ scancel 3441
```

```
[robo@front ~]$
```

To get more information about a job:

```
[robv@front ~]$ scontrol show jobid 3422
  UserId=robv(47396) GroupId=robv(78376) MCS_label=N/A
  Priority=16283 Nice=0 Account=researchers QOS=normal
  JobState=COMPLETED Reason=None Dependency=(null)
  Requeue=1 Restarts=0 BatchFlag=1 Reboot=0 ExitCode=0:0
  RunTime=00:00:30 TimeLimit=00:01:00 TimeMin=N/A
  SubmitTime=2020-01-16T11:40:05 EligibleTime=2020-01-16T11:40:
  AccrueTime=2020-01-16T11:40:05
  StartTime=2020-01-16T11:40:05 EndTime=2020-01-16T11:40:35 Dea
  PreemptTime=None SuspendTime=None SecsPreSuspend=0
  LastSchedEval=2020-01-16T11:40:05
  Partition=brown AllocNode:Sid=front:3057
  ReqNodeList=(null) ExcNodeList=(null)
  NodeList=desktop2
```



NodeList=desktop2  
BatchHost=desktop2  
NumNodes=1 NumCPUs=2 NumTasks=0 CPUs/Task=1 ReqB:S:C:T=0:0:\*:  
TRES=cpu=2,mem=6G,node=1,billing=2  
Socks/Node=\* NtasksPerN:B:S:C=0:0:\*:\* CoreSpec=\*  
MinCPUsNode=1 MinMemoryCPU=3G MinTmpDiskNode=0  
Features=(null) DelayBoot=00:00:00  
OverSubscribe=OK Contiguous=0 Licenses=(null) Network=(null)  
Command=/home/robov/test.sh  
WorkDir=/home/robov  
StdErr=/home/robov/job.3459.out  
StdIn=/dev/null  
StdOut=/home/robov/job.3459.out  
Power=  
TresPerNode=gpu

To transfer files to the hpc storage:

```
rob@home: scp main.cc robv@hpc.itu.dk:
```

```
WARNING: Unauthorized access to this system is forbidden and will  
         prosecuted by law. By accessing this system, you agree  
         actions may be monitored if unauthorized usage is suspected
```

```
robv@hpc.itu.dk's password:
```

```
main.cc                                100% 3384    536.3KB/s   00:00
```

```
rob@home:
```

More info on:

- ▶ `hpc.itu.dk`
- ▶ see also the examples at `/opt/itu/templates/`