Grid computing

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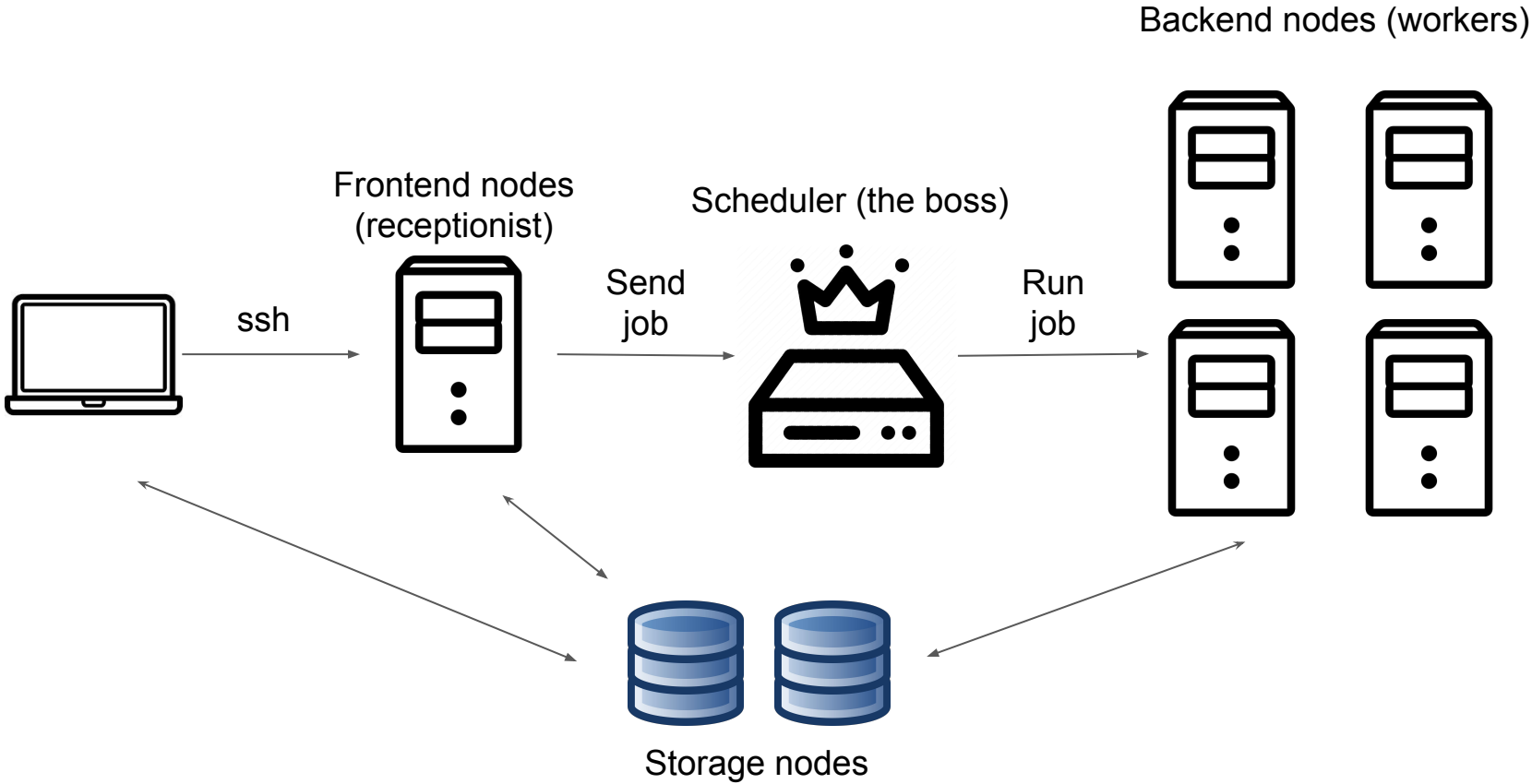
Grid

- Collection of computers, often geographically distributed, pooling resources to increase computational power
- We will talk primarily about czech national grid infrastructure Metacentrum
- Allows you to ask for resources (memory, processors, HDD space) you could not easily achieve on your computer

Structure of a grid supercomputer

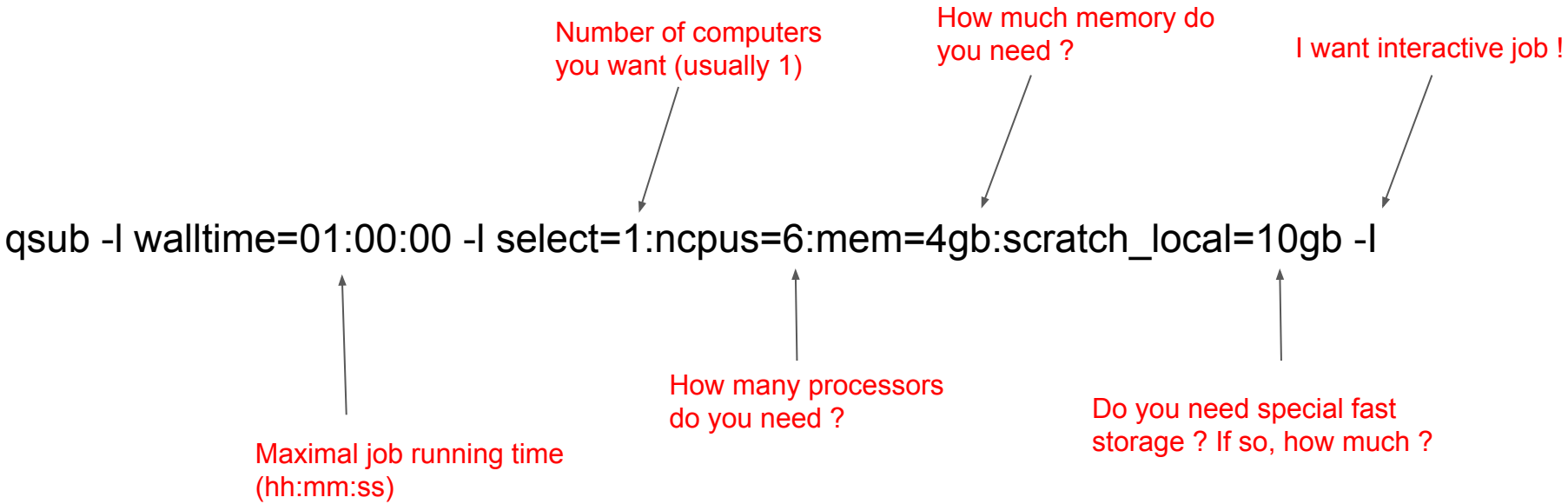


Connect to frontend node

ssh username@host

HOST	HOME DIRECTORY
zuphux.cerit-sc.cz	**/storage/brno3-cerit/home/**
skirit.ics.muni.cz	/storage/brno2/home/
alfrid.meta.zcu.cz	/storage/plzen1/home/
tarkil.grid.cesnet.cz	/storage/praha1/home/
nympha.zcu.cz	/storage/plzen1/home/
minos.zcu.cz	/storage/plzen1/home/
perian.ncbr.muni.cz	/storage/brno2/home/

Send a job request



Execute

- After your job has been granted resources, you can enter commands into the terminal like on you do on your Linux !
- There is plenty of software pre-installed on the Metacentrum
- To prevent clashes, software is accessed through **modules**

```
module add fastQC-0.11.5
```


Name of the module to add.

Getting data to the grid

scp path_to_local_file **username@storage_server**:~/path/to/folder

storage-brno3-cerit.metacentrum.cz	**/storage/brno3-cerit/**
storage-plzen1.metacentrum.cz	/storage/plzen1/
storage-brno12-cerit.metacentrum.cz	/storage/brno12-cerit/
storage-praha1.metacentrum.cz	/storage/praha1/

Tips and Tricks

- It is also possible to run a script of choice instead of interactive sessions
- Do not compute on front nodes !
- Always use absolute paths (readlink -f file)
- Further resources:
  - https://wiki.metacentrum.cz/wiki/Beginners_guide
  - https://wiki.metacentrum.cz/wiki/Working_with_data
  - https://wiki.metacentrum.cz/wiki/FAQ/Grid_computing