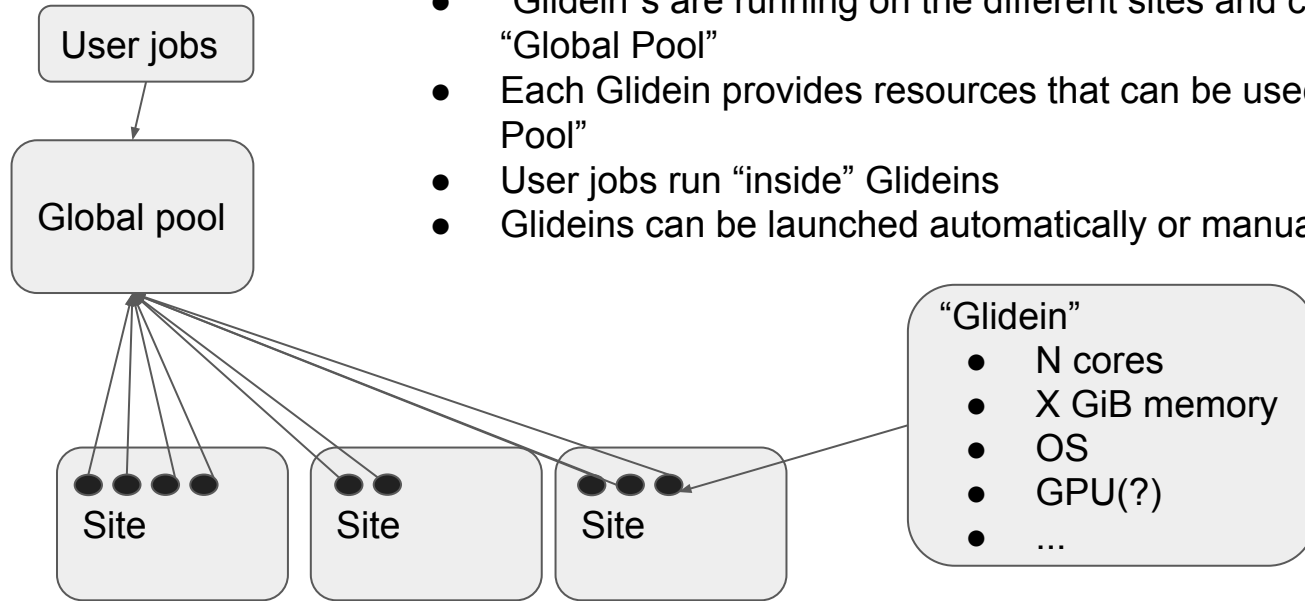


CMS workflows on JSC

Reminder: Global Pool (simplified)







- User jobs go to the “Global Pool”
- “Glidein”s are running on the different sites and connect to the “Global Pool”
- Each Glidein provides resources that can be used by the “Global Pool”
- User jobs run “inside” Glideins
- Glideins can be launched automatically or manually

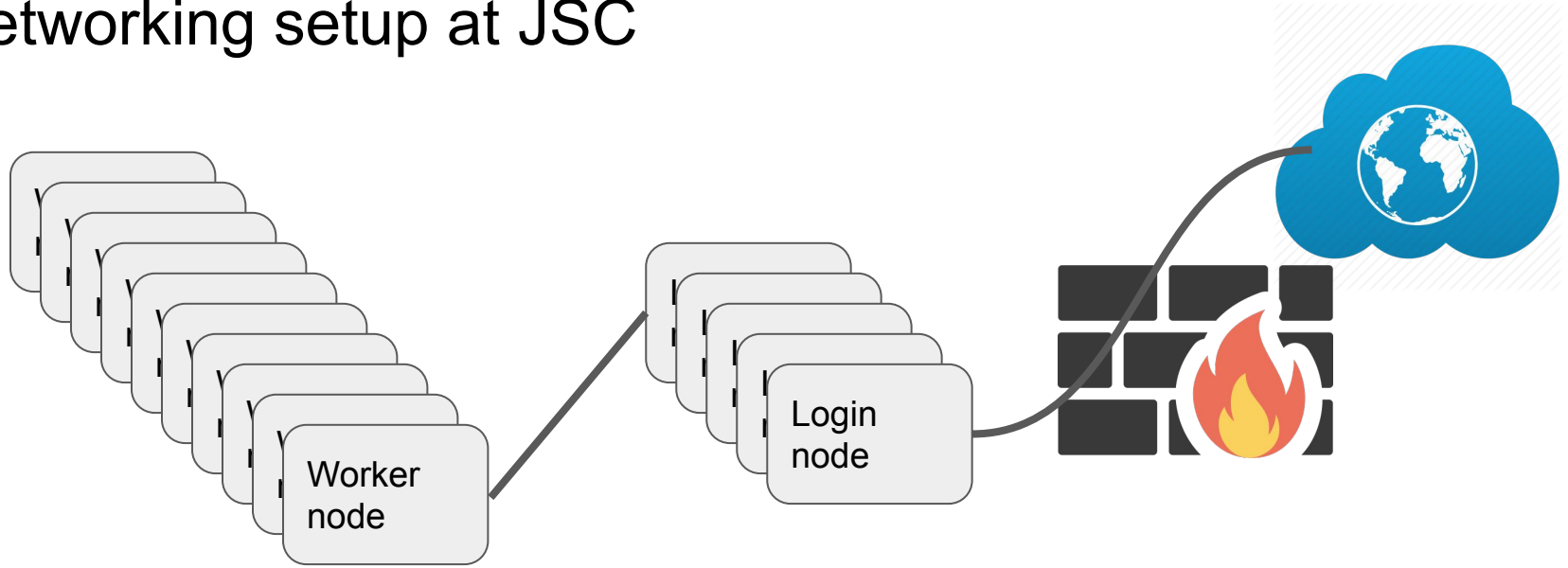
Reminder: CMS requirements

- Hard- and software environment can run CMS software
- Glideins can be launched on the resource
- Glideins are able to report back to the Global Pool
- Access to CMS software and conditions data
- (Potentially) access to CMS input data
- A way to store the produced outputs

Situation at JSC

- Access to cvmfs to get CMS software 
 - Via cvmfsexec + bind-mounting
- Access to conditions database 
 - [Frontier](#) distributed db caching system
- Possibility to run singularity images 
 - Running singularity images is possible
 - Not possible to run unpacked images from /cvmfs/unpacked.cern.ch
 - Not possible to run nested containers (in contact with sysadmins to allow this)
- Authentication with grid resources via grid certificates 
- Communication with Global Pool

Networking setup at JSC

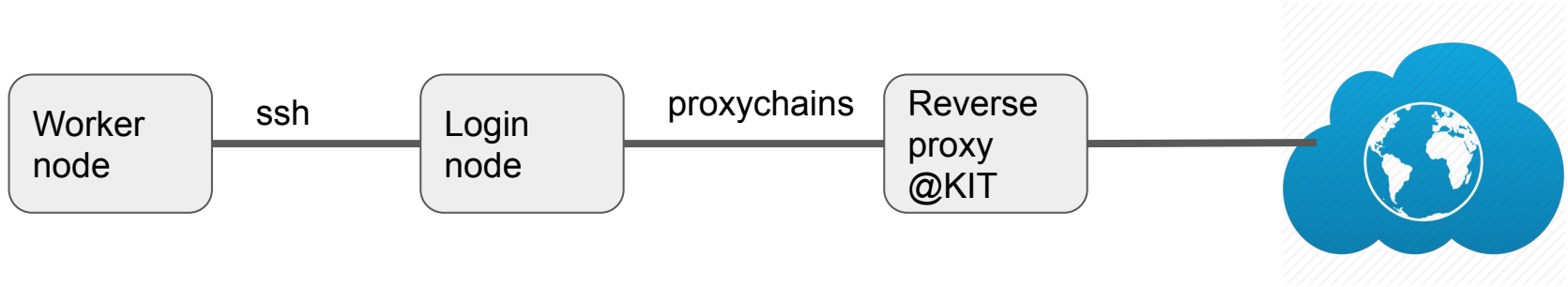


- Worker nodes can only connect to Login nodes
- Login nodes have outbound connections
 - But only on ports 80 (http) and 443 (https)
 - We need other ports as well

Proxychains

- [proxychains](#) is a tool that redirects connections through one (or many) intermediate proxies
 - Most famously used for anonymising internet usage
- Can be configured to route all or only certain traffic
- Can be used via “pre-loading”
 - Inject changed versions of networking functions that will then be used for all networking

Current proxy setup



- ssh tunnel from worker to login node
- Use proxychains to route all traffic from login node to a reverse proxy @KIT via port 80
- Reverse proxy @KIT has less strict firewall and all our traffic goes through that

Putting everything into a batch job

- Setup ssh tunnel
- Mount cvmfs repositories
- Launch singularity container and bind-mount cvmfs repositories to /cvmfs

“Setup” on worker node

- Enter the now running container

- Pre-load proxychains library
- Launch glidein
- Enjoy

Work that is done inside the container that is launched in the setup

Summary & Outlook

- We are now able to manually launch glideins on JSC that connect to the Global Pool
 - Using quite convoluted proxy setup
- Check that we can get workloads to these glideins
- Talk to sysadmins of JSC again to see if some of the current restrictions can be lifted