Using the Cloud to Enable WWW access to HPC Clusters

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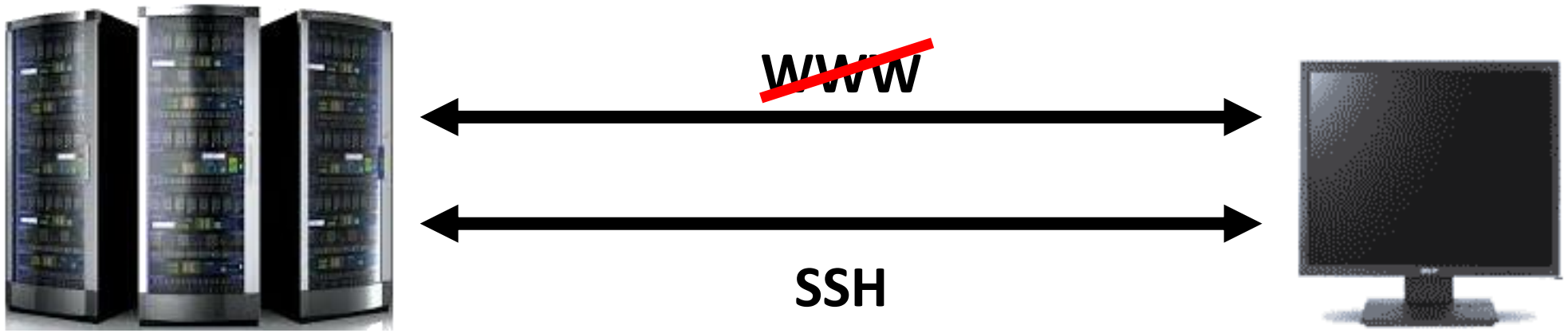
SHARCNET

18-01-31

Cluster



SSH facilitates secure connections over unsecured networks using client-server architecture. The most familiar application for SSH is for remote login. However, any network service can be secured with SSH. This includes, remote command execution and file system access.

Cluster & Cloud

Cluster

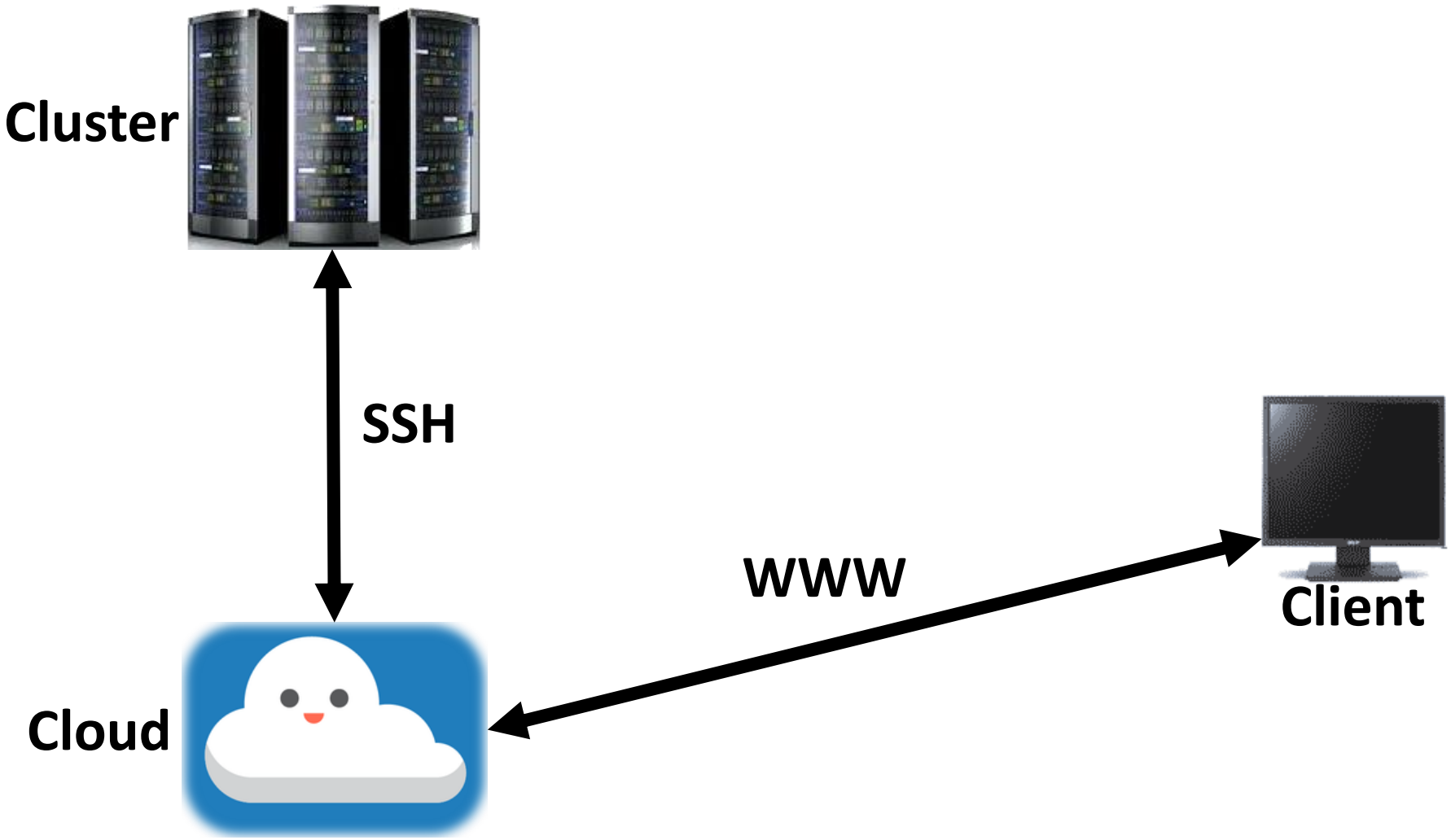
SSH

Client

WWW

Cloud

WWW & Cluster & Cloud



LAMP Stack

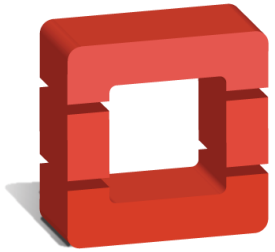
Linux - Operating System

Apache - Web Server

MySQL - Database

PHP - Server Side Scripting

Technologies



openstack™
CLOUD SOFTWARE

SSHFS
SSH Filesystem

APACHE (httpd)

- 2nd most popular open source http (web) server.
- Install: apt install apache2
- Restart: service apache2 [start|stop|restart]
- Add/remove: module: a2enmod, a2dismod

https://news.netcraft.com/archives/2017/01/12/january-2017-web-server-survey.html

MySQL (MariaDB)

- 2nd most popular open source sql server.
- Install: apt install mysql-server
- Restart: service mysqld [start|stop|restart]
- Secure install: mysql_secure_installation

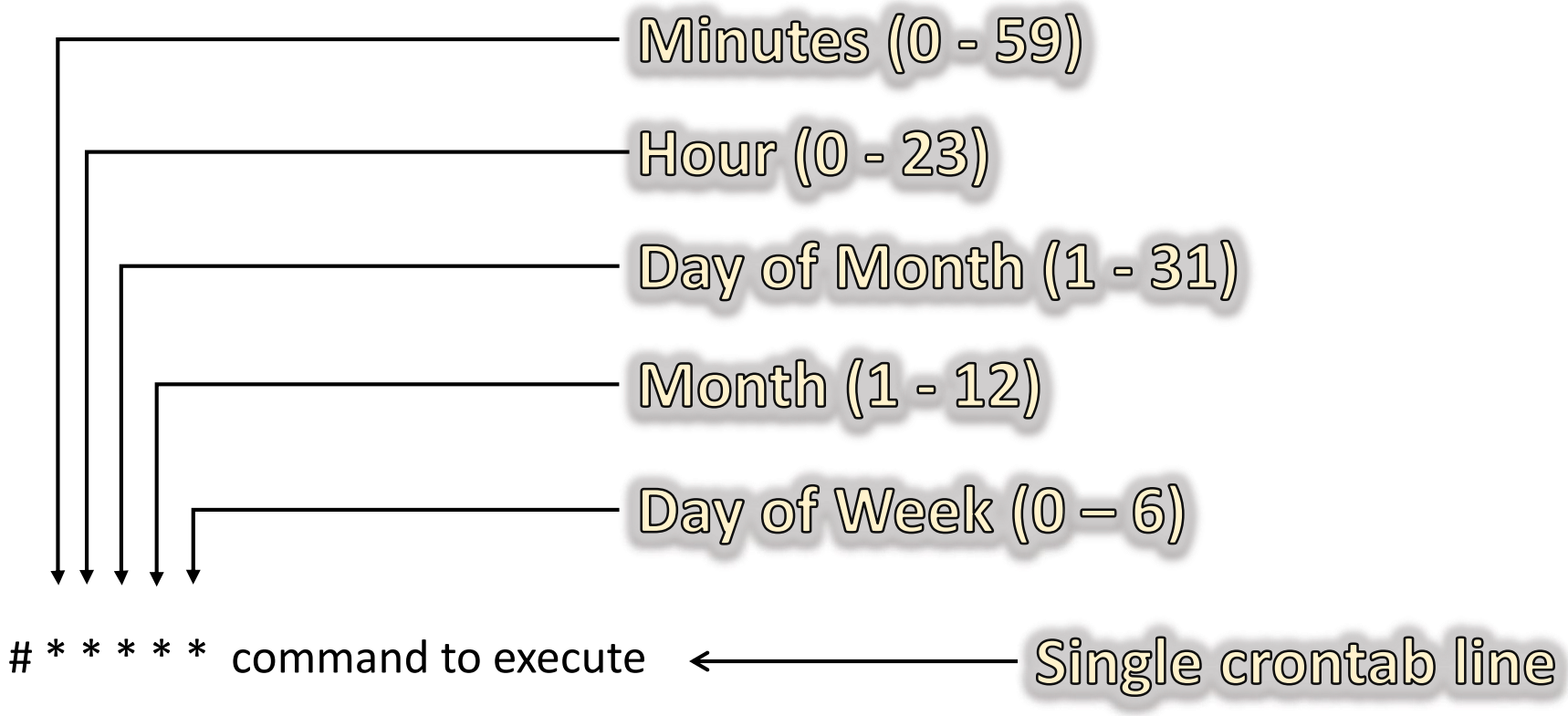
https://news.netcraft.com/archives/2017/01/12/january-2017-web-server-survey.html

CRON Jobs

You can schedule system events, at regular intervals, by using the ***'crontab'*** .

- **cron** is a time-based job scheduler included with Linux.
- We use it to improve security by automating updates
- cron is controlled by a cron table, known as **crontab**.
- crontabs are located in the "/var/spool/cron/crontabs" directory
- Use the command "crontab -e" to create/edit a crontab.

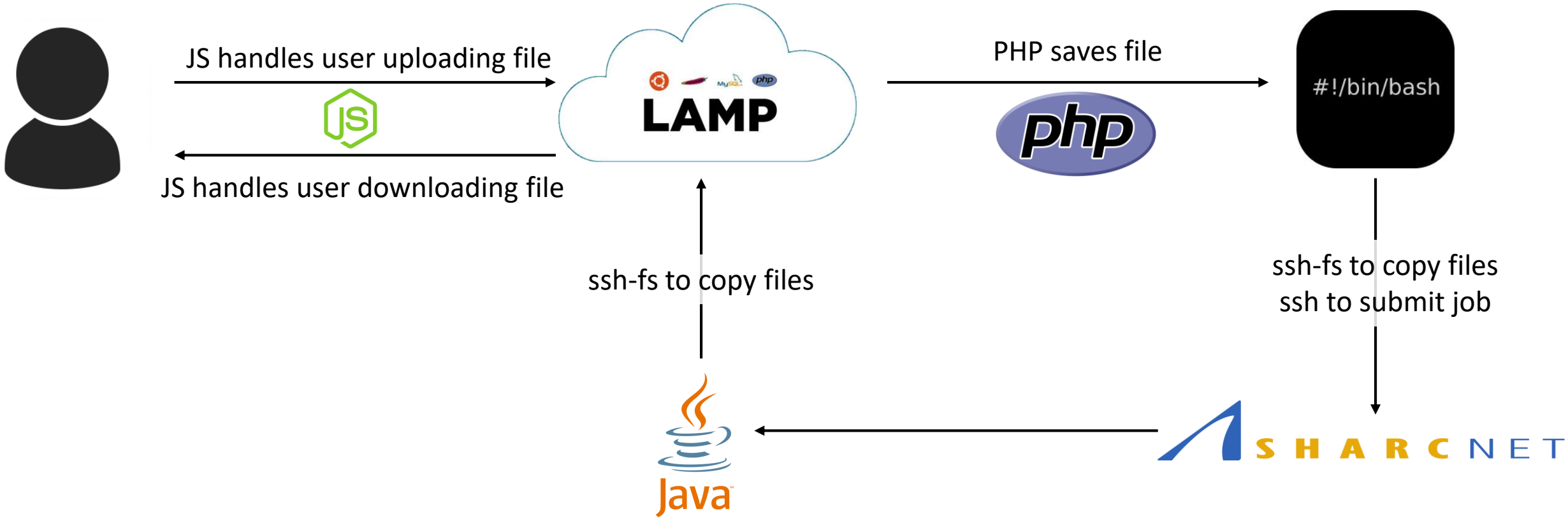
CRONTAB


Minutes (0 - 59)
Hour (0 - 23)
Day of Month (1 - 31)
Month (1 - 12)
Day of Week (0 – 6)
* * * * * command to execute
Single crontab line

SSH

- Vanilla - $ ssh username@server.ca
- Command - $ ssh username@server.ca executable arg1 ... argn
- Other user - $ sudo –u username1 ssh usrname2@server.ca
- Mount - $ sshfs user@server:remote/dir /local/directory
- Unmount - $ fusermount -u /local/directory
- Remote Copy - $ scp user@server1:dir user@server2dir

Toolchain


JS handles user uploading file
JS handles user downloading file
LAMP
PHP saves file
php
#!/bin/bash
ssh-fs to copy files
ssh-fs to copy files
ssh to submit job
Java
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