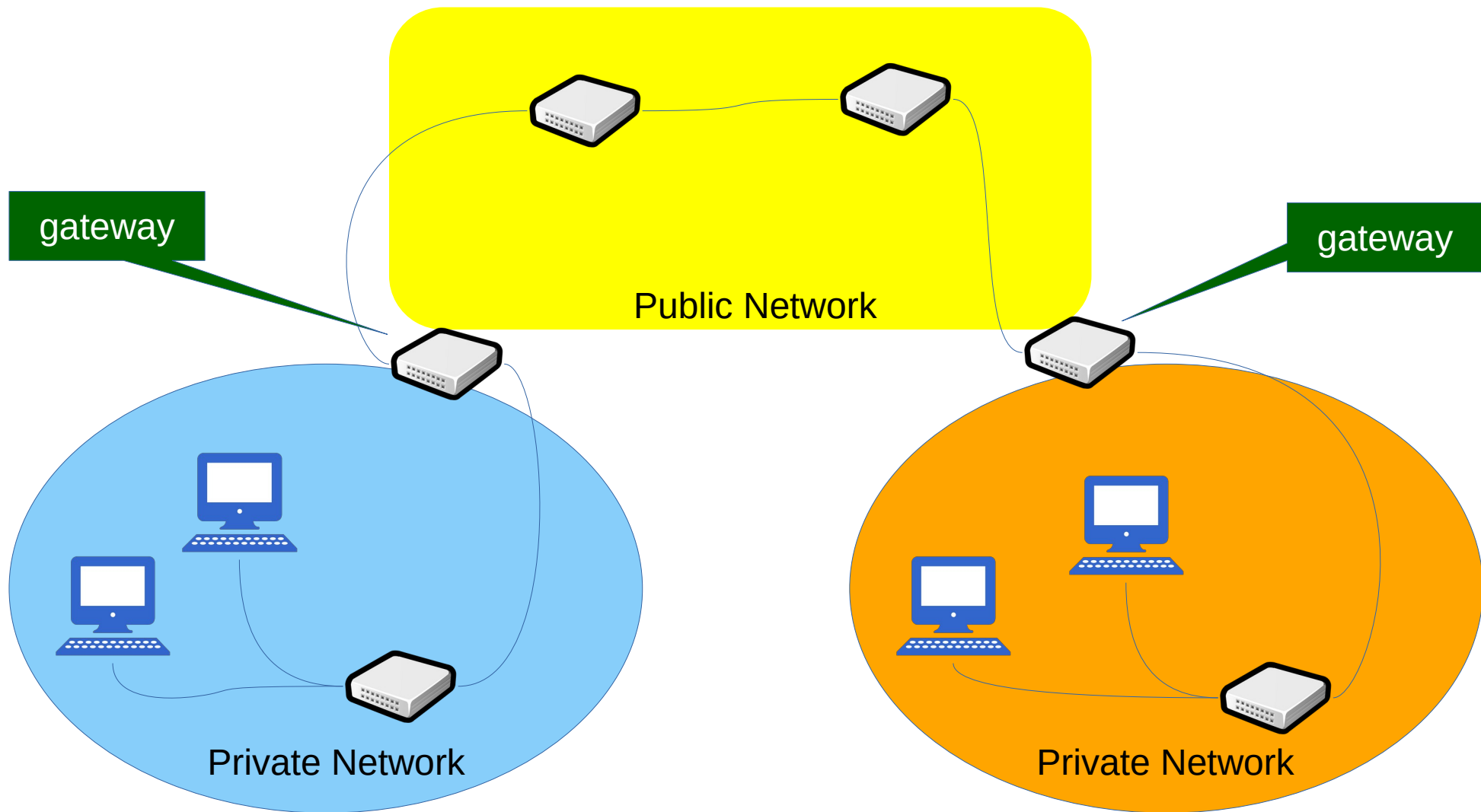
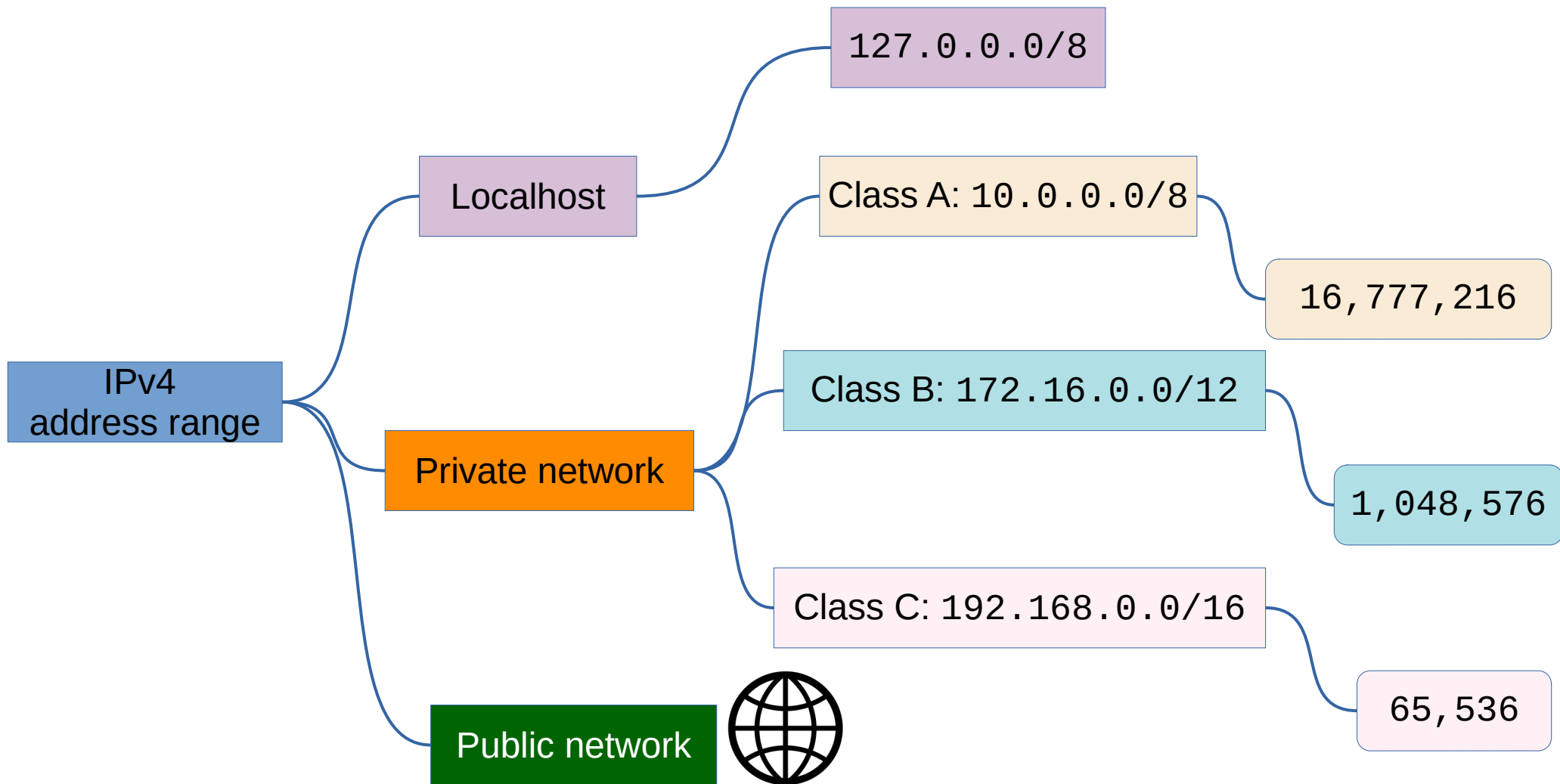
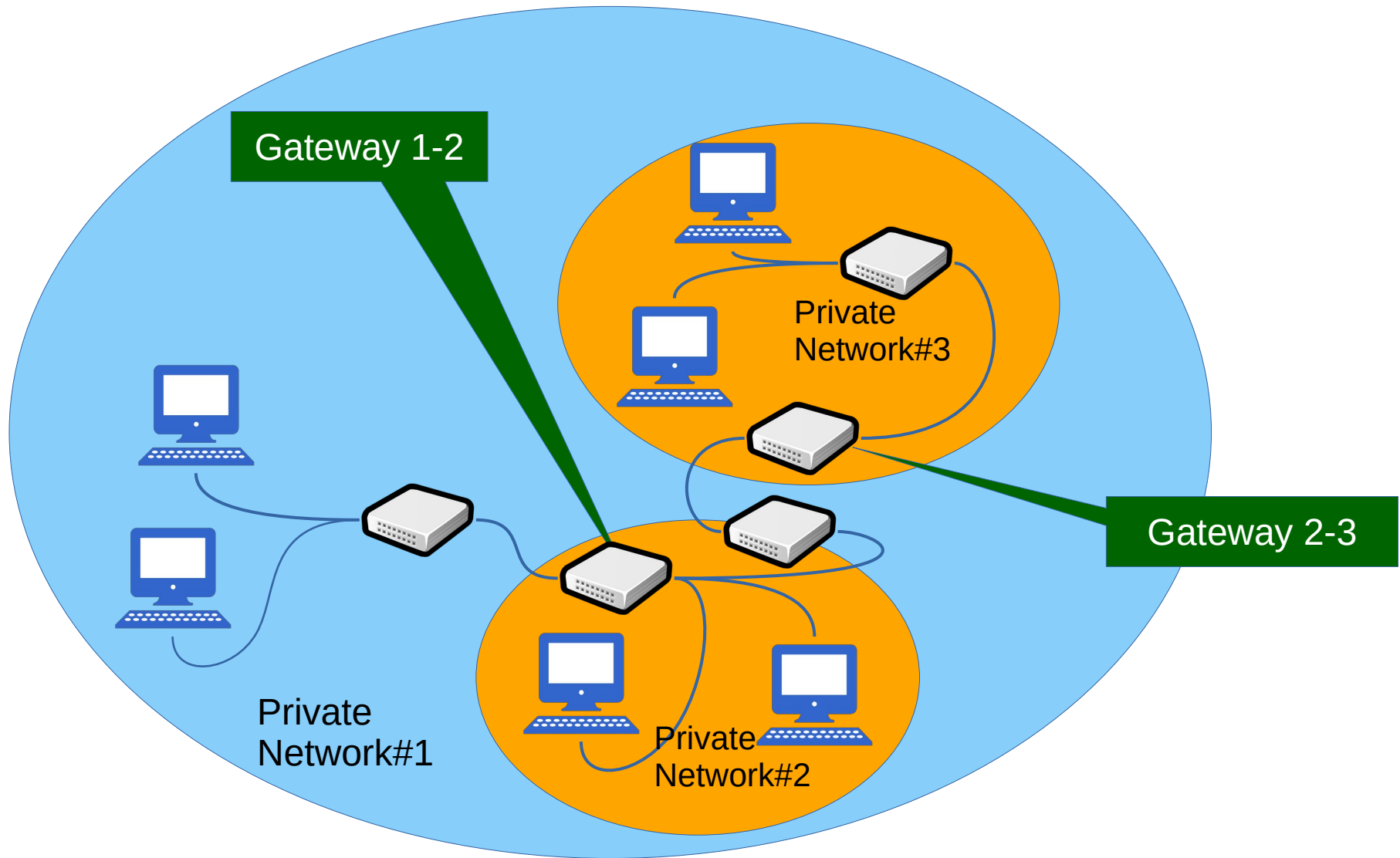


Network & ssh

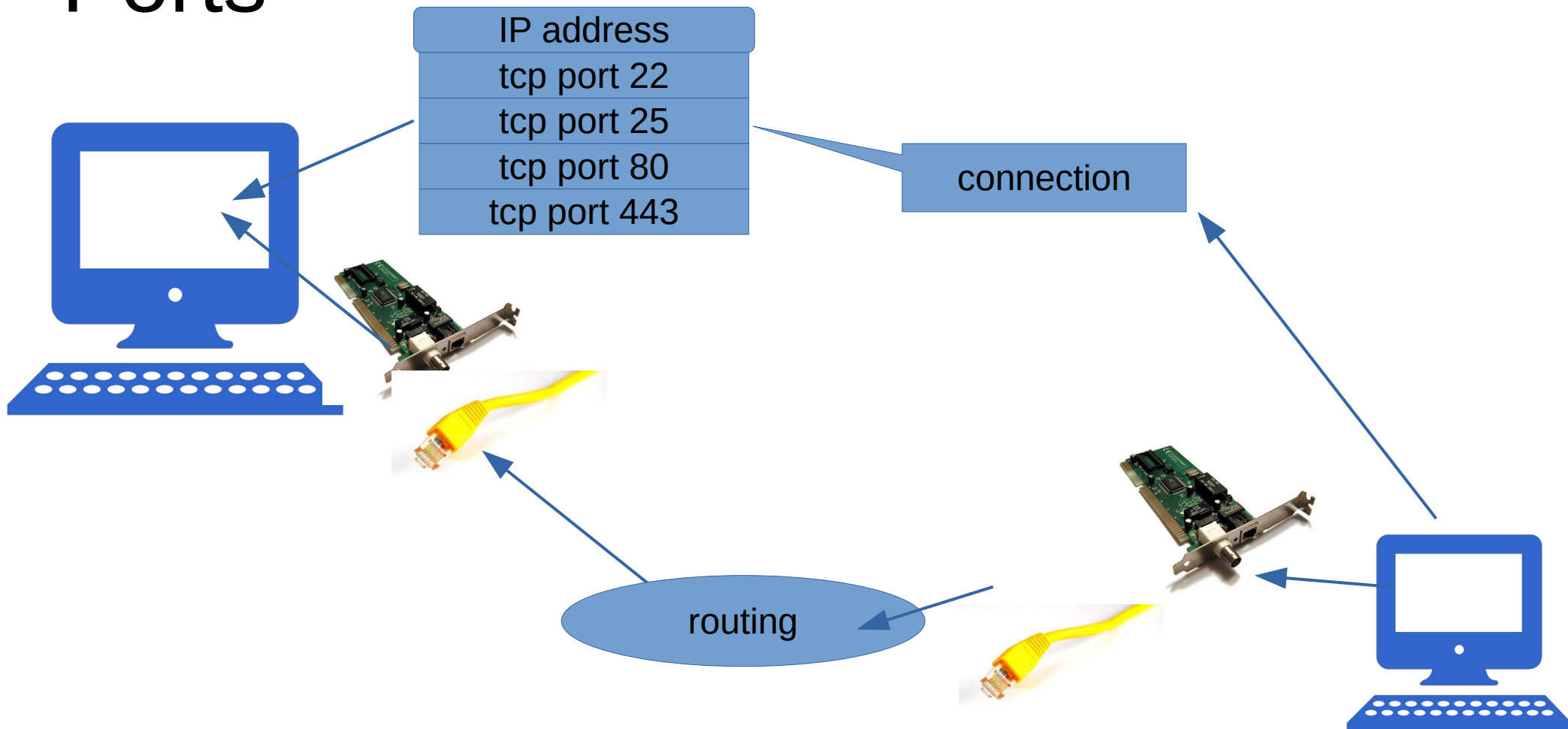
Accessing remote machines on command line







Ports



Ways to gain remote access

- VPN access
- ssh tunneling
- Remote desktop : x2go, rdp, pcoip,
- Desktop over browser: Apache Guacamole
- Commercial, over internet : Teamviewer, AnyDesk, Zoho assist, ...

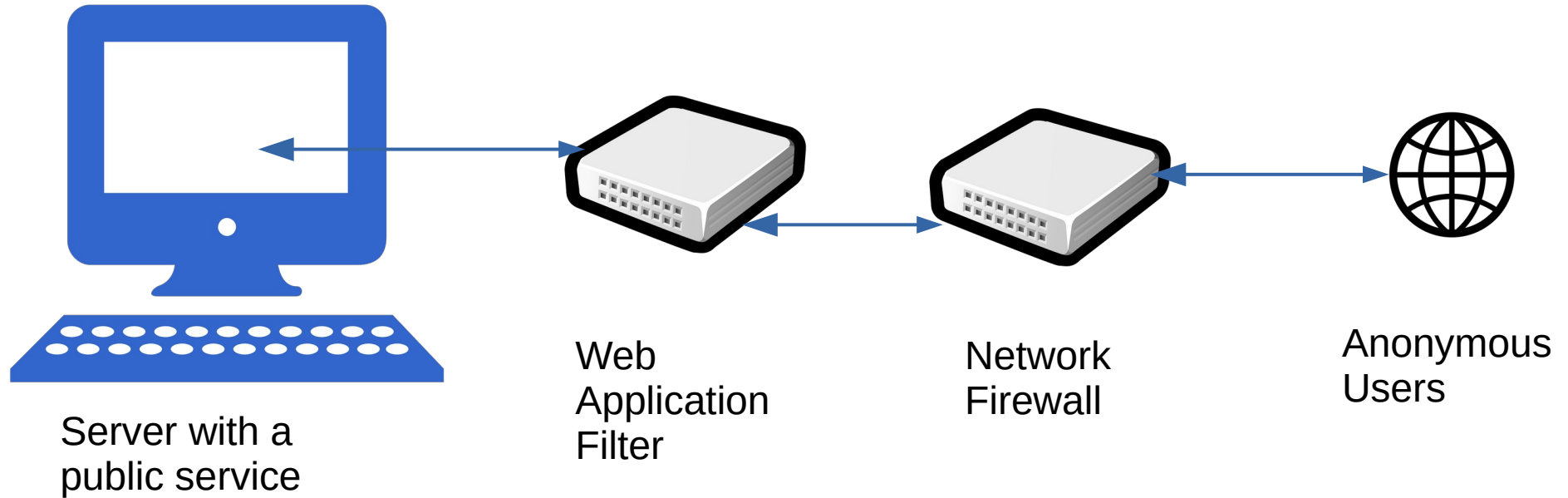
Some important ports

21	ftp	File transfer
22	ssh	Secure Shell
25	smtp	Simple Mail Transfer Protocol
80	http	Hypertext Transfer Protocol
443	https	Secure Hypertext Transfer Protocol
631	cups	Common Unix Printing System
3306	mysql	MySQL database

Firewall

- Ports open on my machine
- Ports needed to be accessed on remote machine
- Network routing over the port
- Firewall controls at each hop

Protecting a server



SELinux

- Security Enhanced Linux mode available on Ubuntu too, apart from server grade flavors like CentOS, Fedora, RHEL, SuSE Linux etc.,
- Additional layer of access control on files to services
- Role Based Access Control
- Process sandboxing, least privilege access for subjects
- Check using `ls -lZ` and `ps -eZ`

SELinux

- RBAC items: user (unconfined_u), role (object_r), type (user_home_t), level (s0)
- Modes: disabled, enforcing, permissive
- Tools: semanage, restorecon

SELinux is recommended for all publicly visible servers

Network tools

ping	To see if the remote machine is up
traceroute	Diagnostics the hop timings to the remote machine
nslookup	Ask for conversion of IP address to name
dig	DNS lookup utility
netstat	Print network connections
mxtoolbox.com	For help with accessibility from public network
whois lookup	Who owns which domain name
nmap	(careful !) Network port scanner
wireshark	(careful !) Network protocol analyzer

High Performance Computing

- Look at `www.top500.org` for statistics
- Accessing a remote HPC machine is usually over SSH
- Long duration **jobs** are **submitted** to a job scheduler for execution
- Raw data if large needs to be processed remotely before being transferred to your machine (**network charges?** **bandwidth?**)
- Comfort with command line is a must