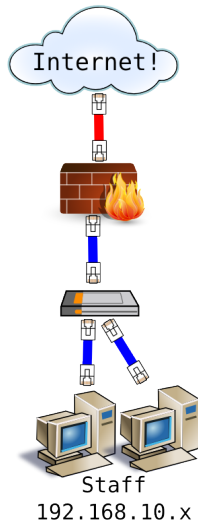# VLANs in 15 Minutes

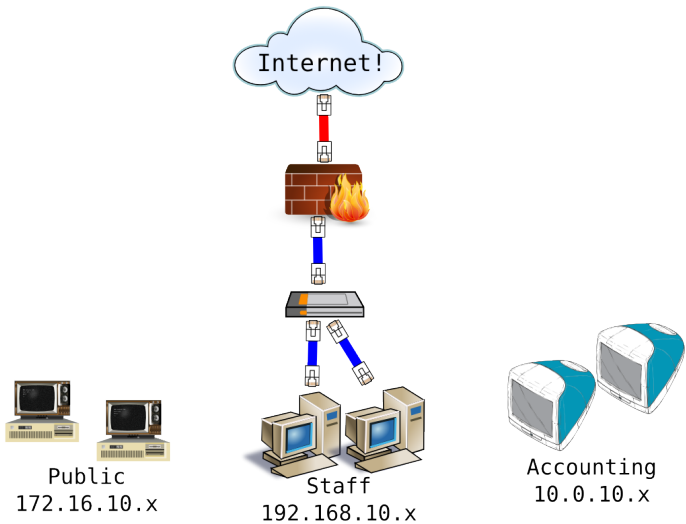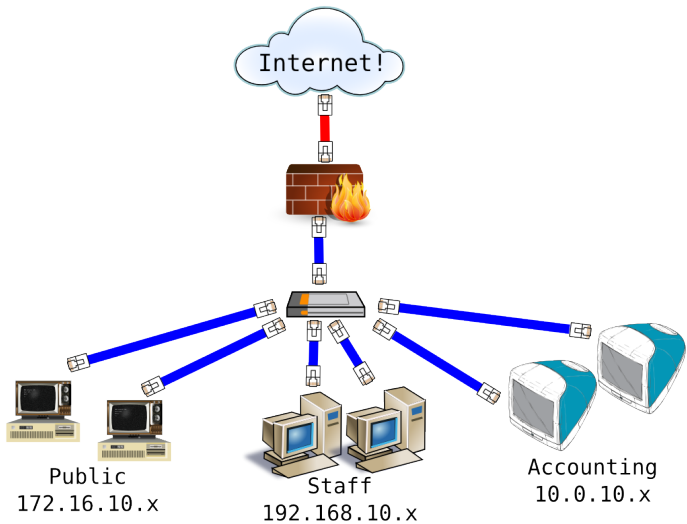## Now With Less Copyright Infringement!

Paul "Failure" Nijjar

Kitchener-Waterloo Linux User Group

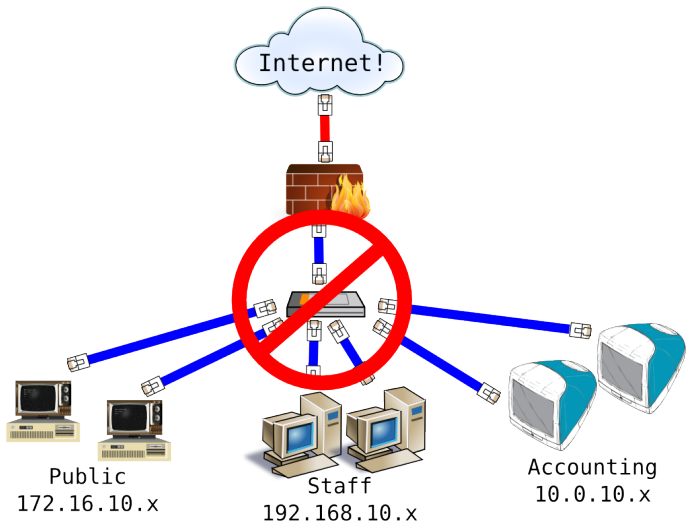August 8, 2016

Scenario One

Internet!

Staff
192.168.10.x

Internet!

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

???

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x
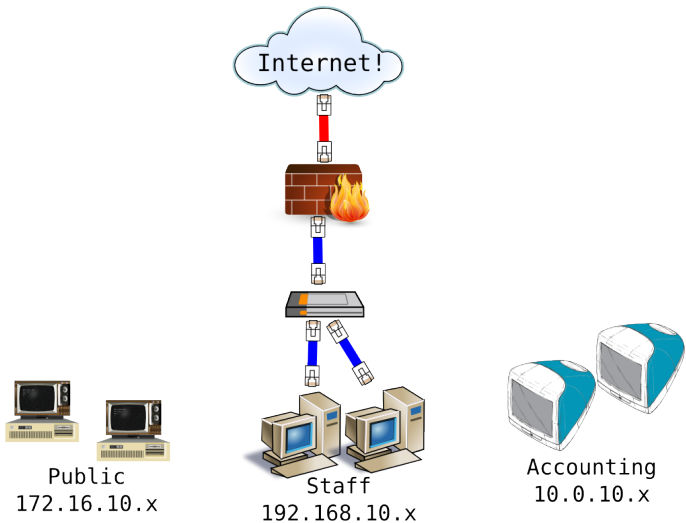
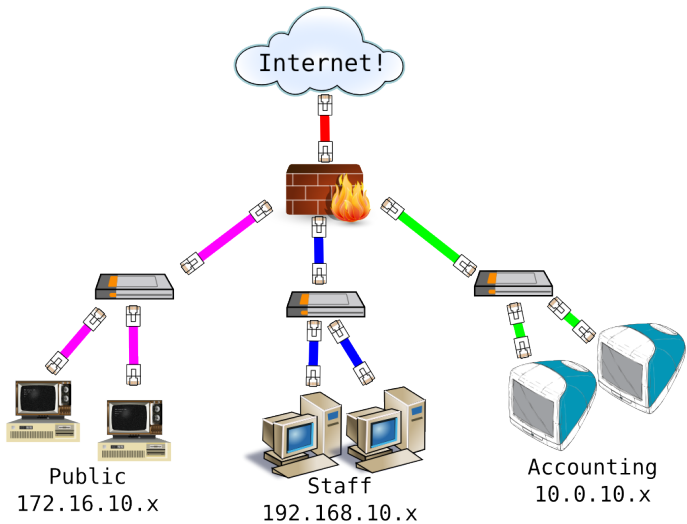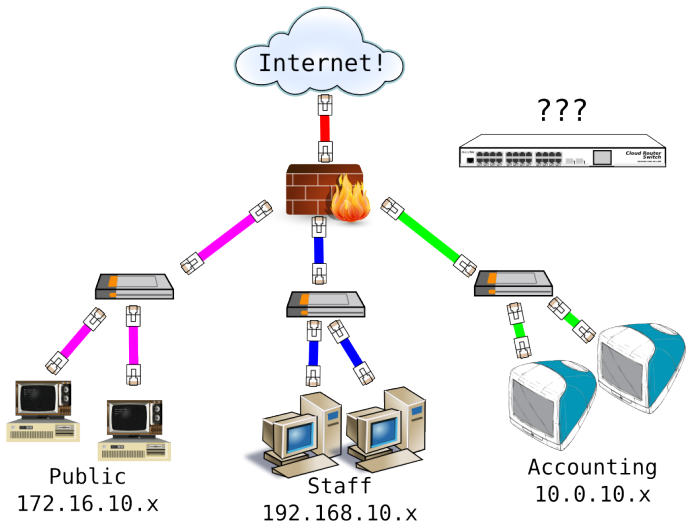# What can allow us to use our fancy managed switch?

Scenario Two

Long
Building
Wiring

Staff
192.168.10.x

Long
Building
Wiring

Public
172.16.10.x

Staff
192.168.10.x

What will save us from our bad planning?

VLANs!

About VLANs

VLANs are used to *isolate networks*:

- Port assignments on network switches
- Tagged packets on a cable

VLAN tags are numbers (usually 1-4096, but not always).

Terminology

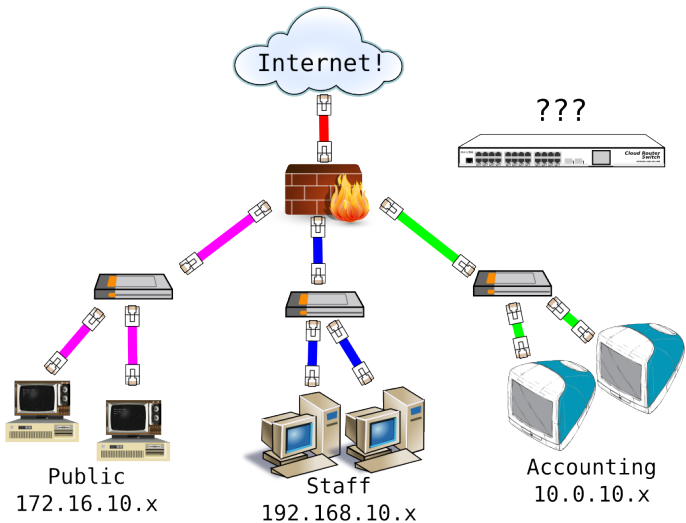Layer 2: deals with MAC addresses. VLANs and network switches work on this level.

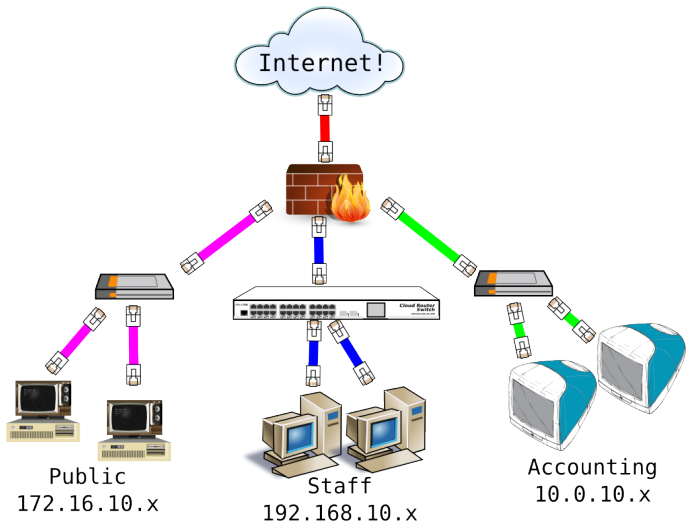Layer 3: deals with IP addresses. Firewalls/routers work on this level.

Trunk: Port/cable that carries tagged packets (usually multiple VLANs).

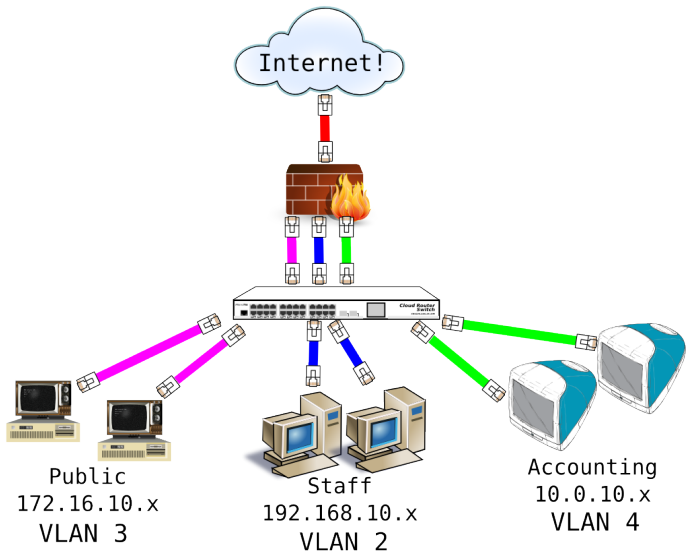# Using VLANs

1. Set up VLAN IDs on switch
2. Assign switch ports to VLANs
3. Set up trunk ports (if necessary)

Back to Scenario One

Internet!

???

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

Public
172.16.10.x

Staff
192.168.10.x

Accounting
10.0.10.x

Internet!

Public
172.16.10.x
VLAN 3

Staff
192.168.10.x
VLAN 2

Accounting
10.0.10.x
VLAN 4

Internet!

Public
172.16.10.x
VLAN 3

Staff
192.168.10.x
VLAN 2

Accounting
10.0.10.x
VLAN 4
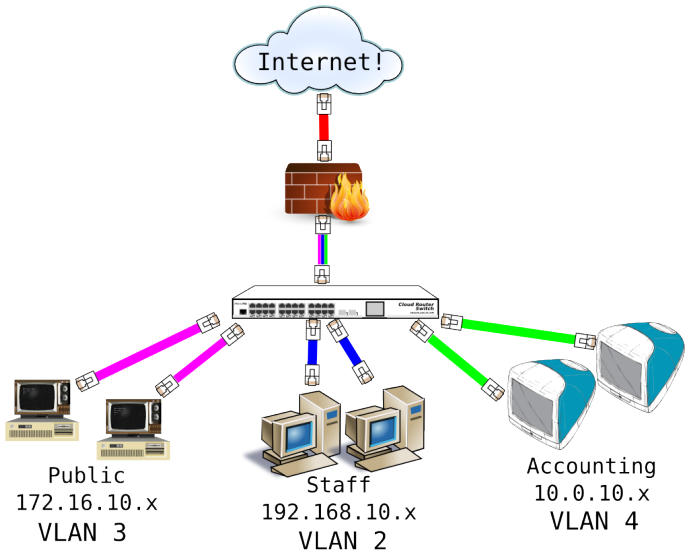
Back to Scenario Two

Long
Building
Wiring

Public
172.16.10.x

Staff
192.168.10.x

Long
Building
Wiring

Public
172.16.10.x

Staff
192.168.10.x

Long
Building
Wiring

Public
172.16.10.x

Staff
192.168.10.x

Gotchas!

If you are using trunk ports, both the source and destination have to use matching VLAN IDs!

Gotchas!

You should not take in packets on a port assigned to one VLAN and output it to a port assigned to a different one!

That is the router/firewall's job!

Gotchas!

Be careful when passing tagged
(trunked) packets through
VLAN-unaware equipment!

Gotchas!

If a switch port is passing both tagged and untagged traffic, you are probably doing something wrong!

Thank you Openclipart!

openclipart.org/detail/...

- 46759/ethernet-plug-network-straight -connector-rj45-lan
- 214487/routerboard-crs226-mikrotik
- 17666/net-wan-cloud
- 129061/switch
- 228634/ibm-pc-at
- 235226/old-tv-2-bbc
- 1591/original-imac
- 17668/net-computer

Thank you You!

For your attention and interest.

Comments? Questions?