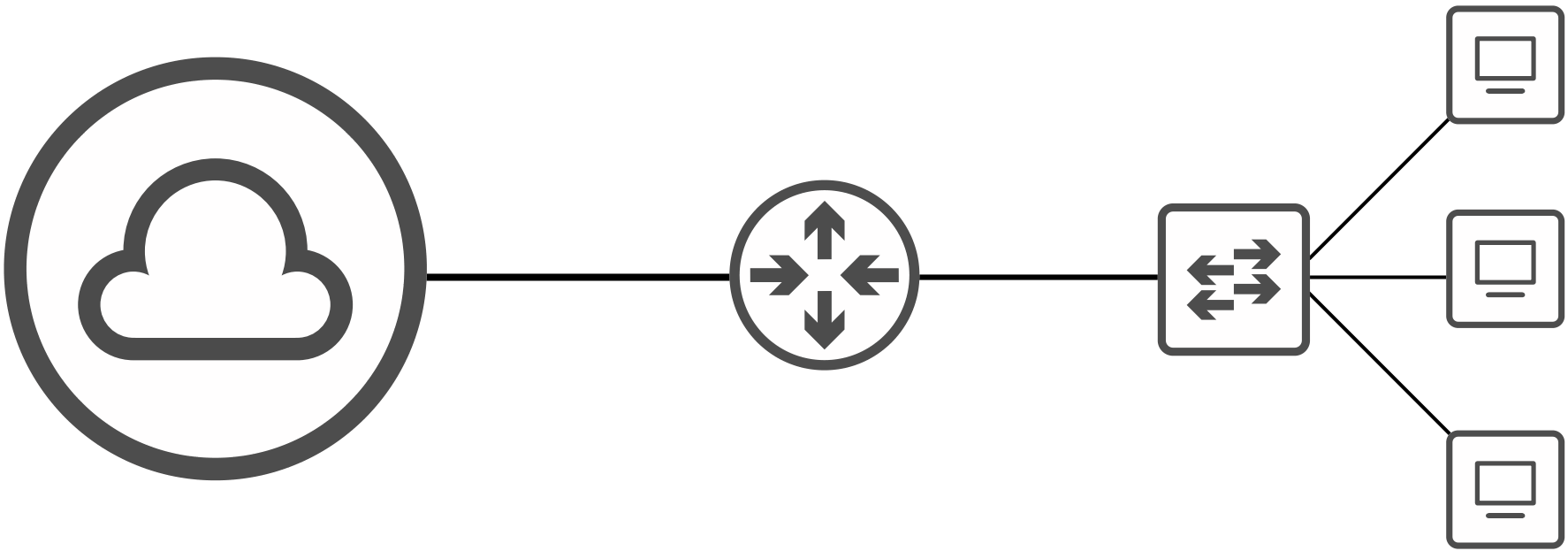
Jeremy's IT Lab

CCNA 200-301 Part 1

Network Devices



Who is this course for?

This course is for anyone...

- who wants to pass the CCNA 200-301 exam (from February 24, 2020)
- who wants to learn about computer networking

All you need to get started is a basic familiarity with computers.

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What is a network?

WIKIPEDIA
The Free Encyclopedia

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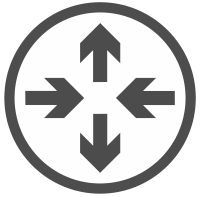
Computer network

From Wikipedia, the free encyclopedia

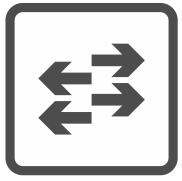
"Datacom" redirects here. For other uses, see Datacom (disambiguation).

A **computer network** is a digital telecommunications network which allows nodes to share resources. In computer networks, computing devices exchange data with each other using connections (data links) between nodes. These data links are established over cable media such as wires or optic cables, or wireless media such as Wi-Fi.

"A computer network is a digital telecommunications network which allows nodes to share resources."



router



switch

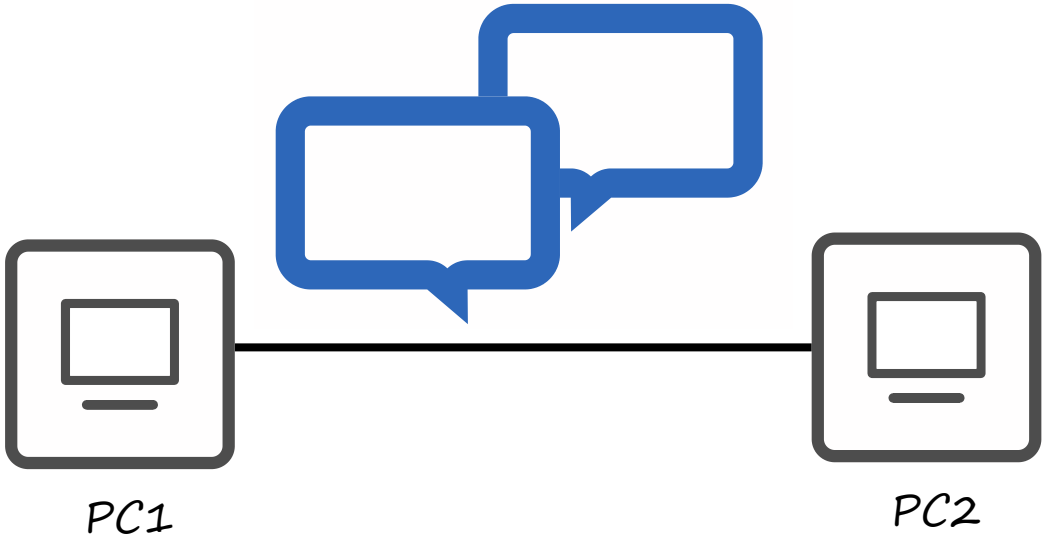
firewall

server

end hosts
endpoints

client

Building a network



"A computer network is a digital telecommunications network which allows nodes to share resources."

Clients

Clients

A client is a **device that accesses a service made available by a server.**

So... what's a server?

Servers

Servers

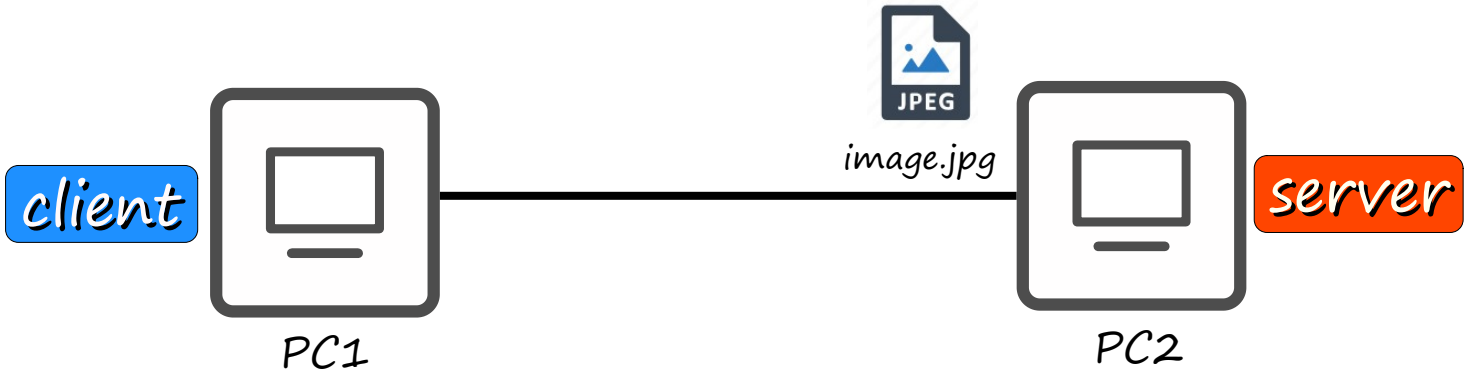
A client is ...

a device that accesses a service made available by a server.

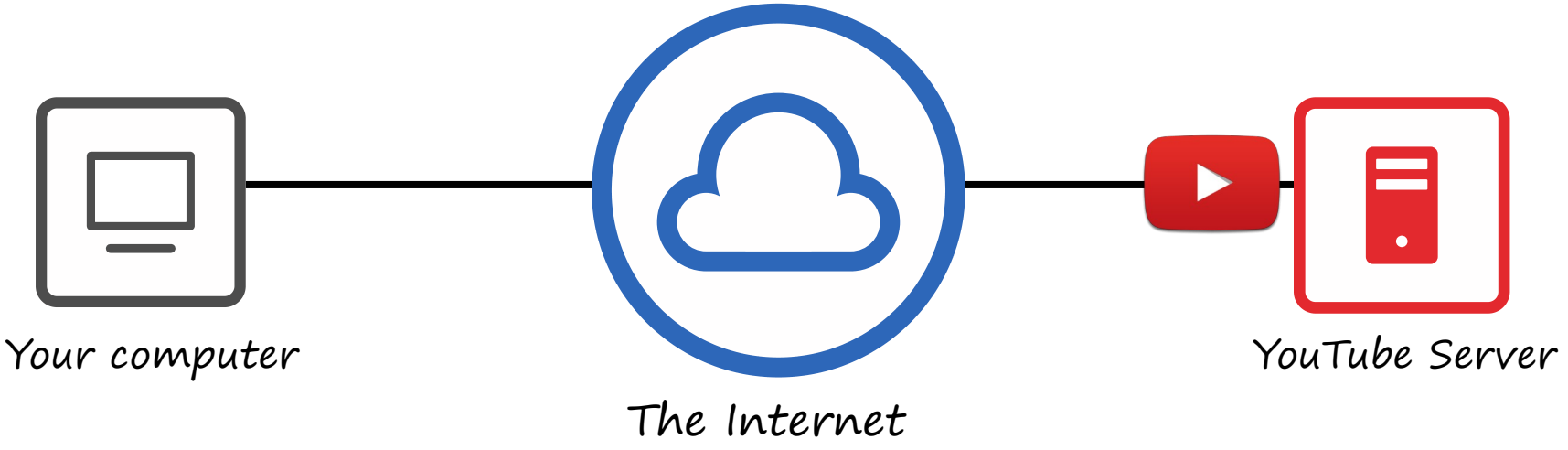
A server is ...

a device that provides functions or services for clients.

Servers and Clients



Servers and Clients



Servers and Clients

Servers and Clients

A client is ...

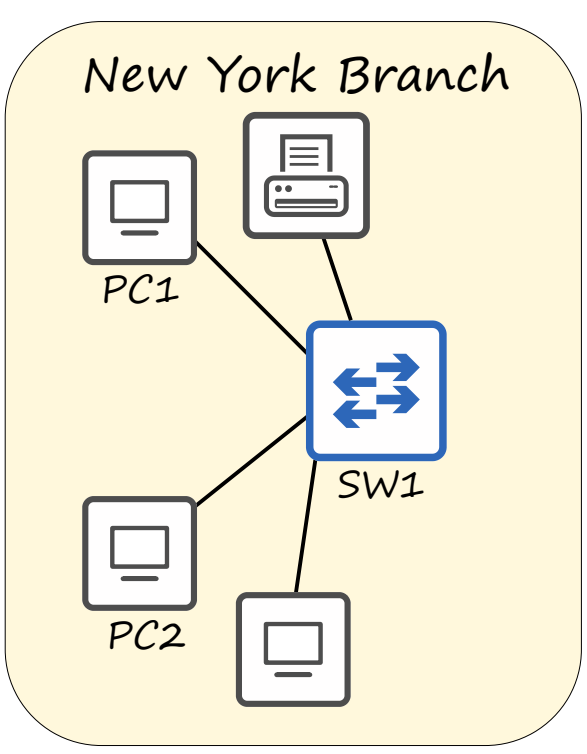
a device that accesses a service made available by a server.

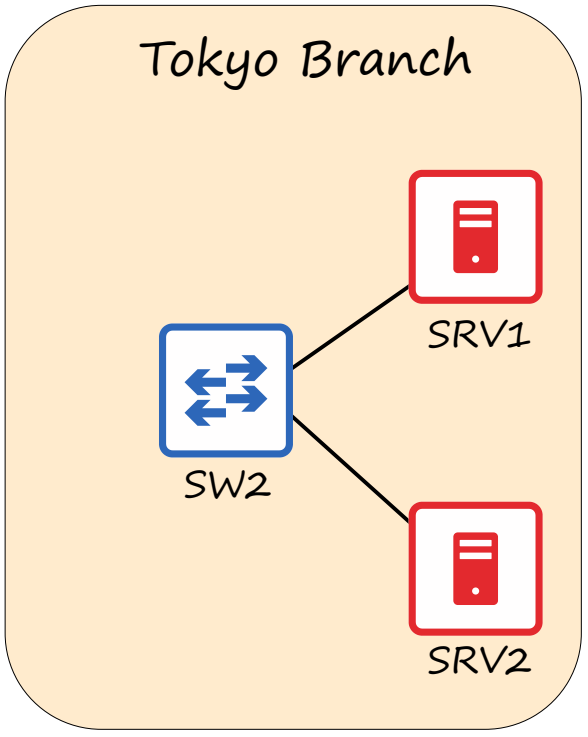
A server is ...

a device that provides functions or services for clients.

The same device can be a client in some situations, and a server in other situations.

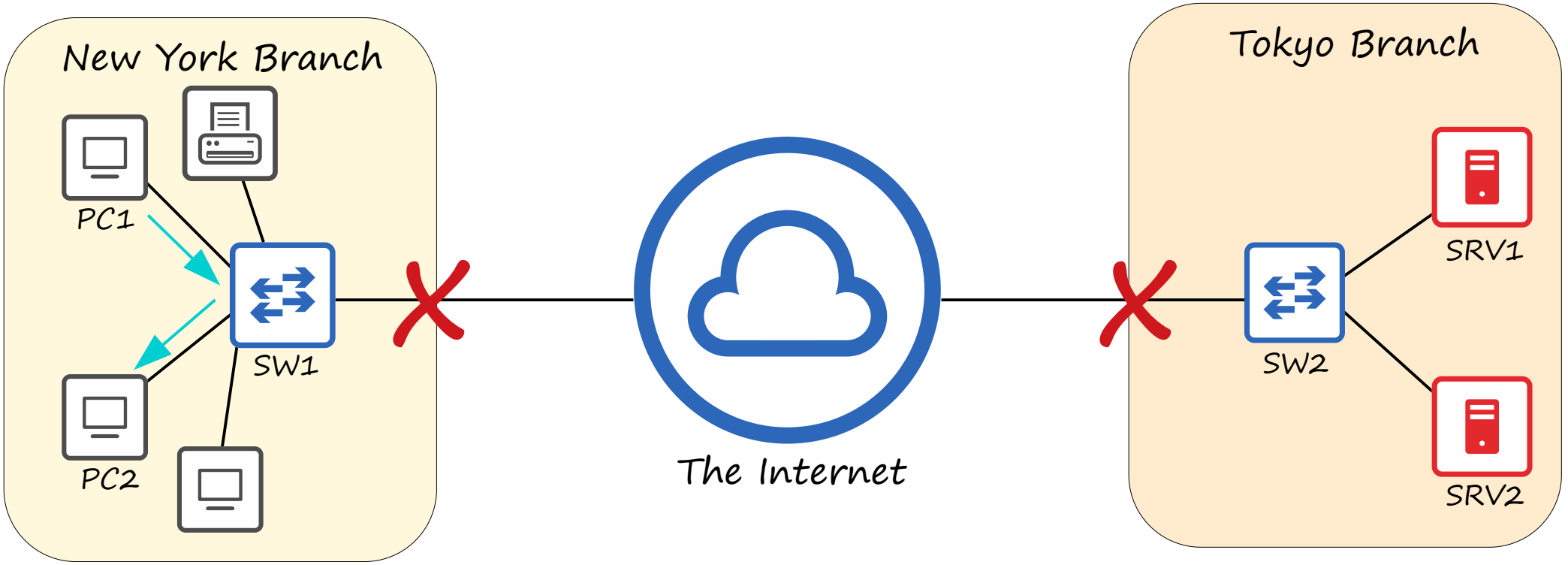
Switches





LAN (Local Area Network)

Switches


New York Branch
PC1
SW1
PC2
The Internet
Tokyo Branch
SW2
SRV1
SRV2

Switches

Catalyst 9200

Catalyst 3650

Switches...

- have many network interfaces/ports for end hosts to connect to (usually 24+).
- provide connectivity to hosts within the same LAN (Local Area Network).
- do not provide connectivity between LANs/over the Internet.

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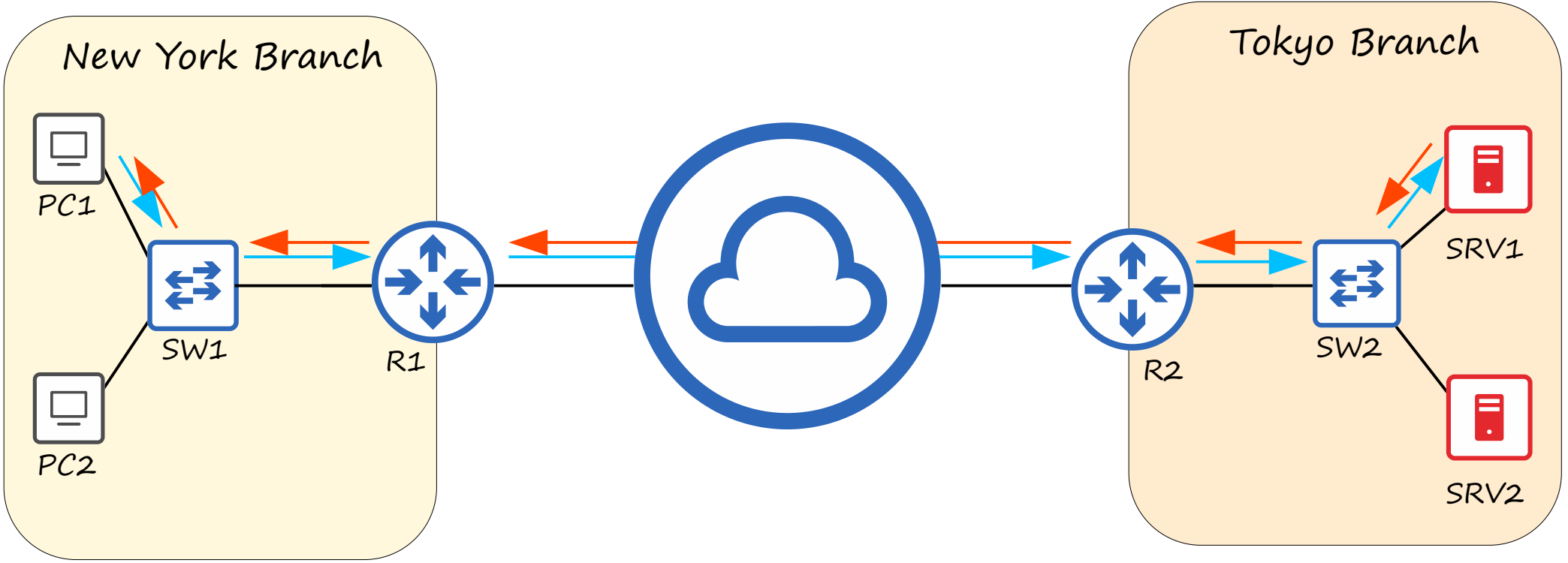
Routers



Routers

ISR 1000

ISR 900

ISR 4000

Routers...

- have fewer network interfaces than switches..
- are used to provide connectivity **between** LANs.
- are therefore used to send data over the Internet.

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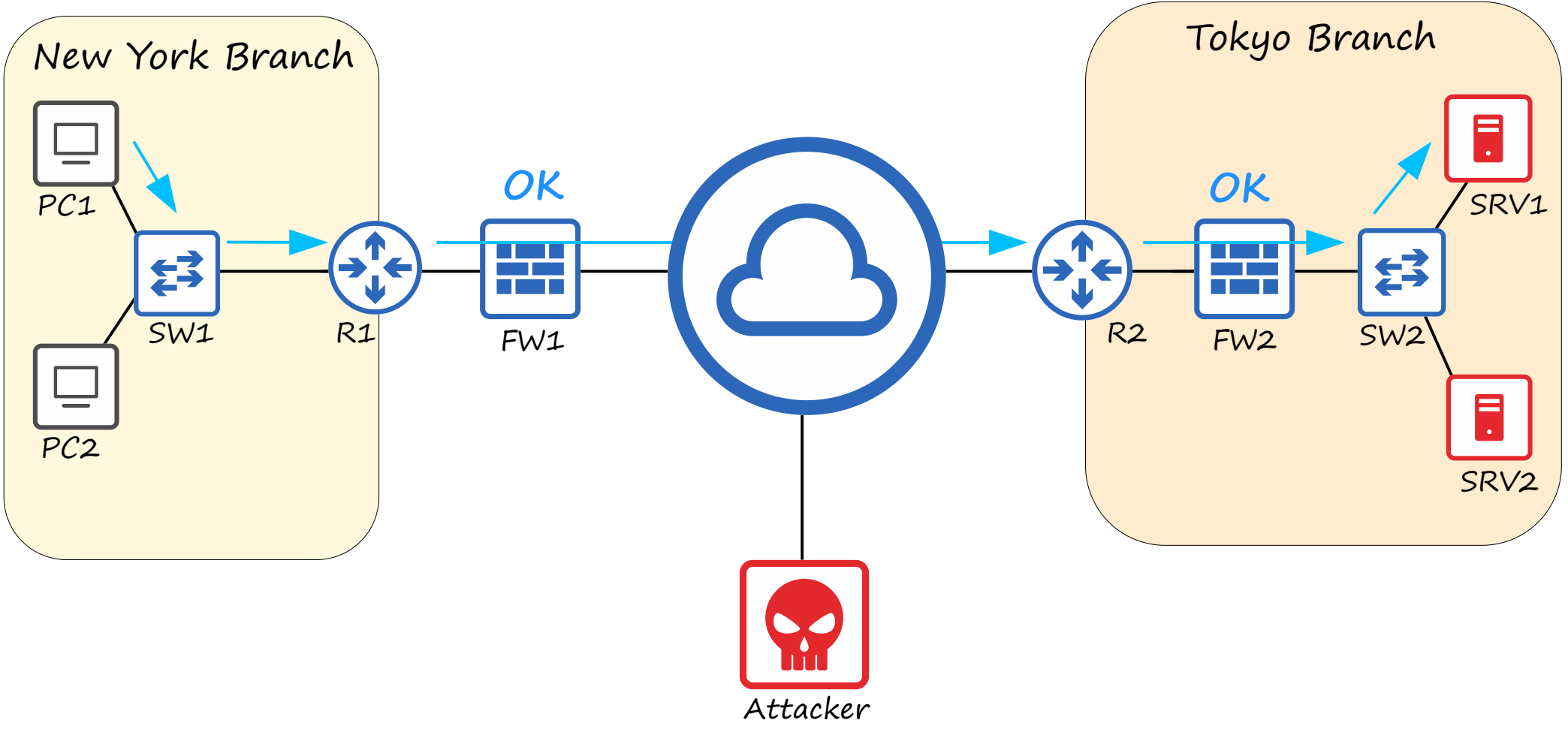
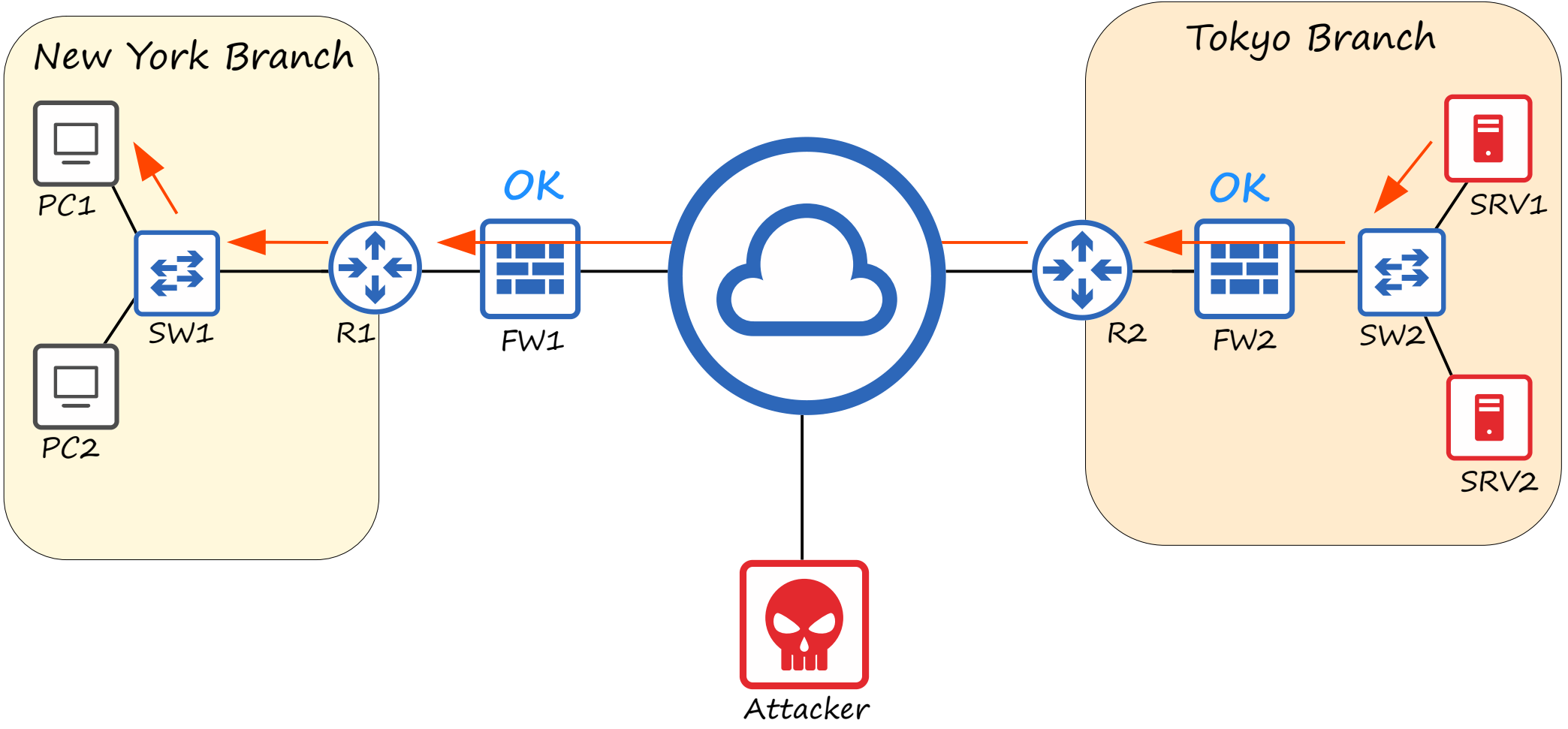
Firewalls



Firewalls


New York Branch
PC1
PC2
SW1
R1
OK
FW1
Attacker
Tokyo Branch
SRV1
SRV2
SW2
OK
FW2
R2

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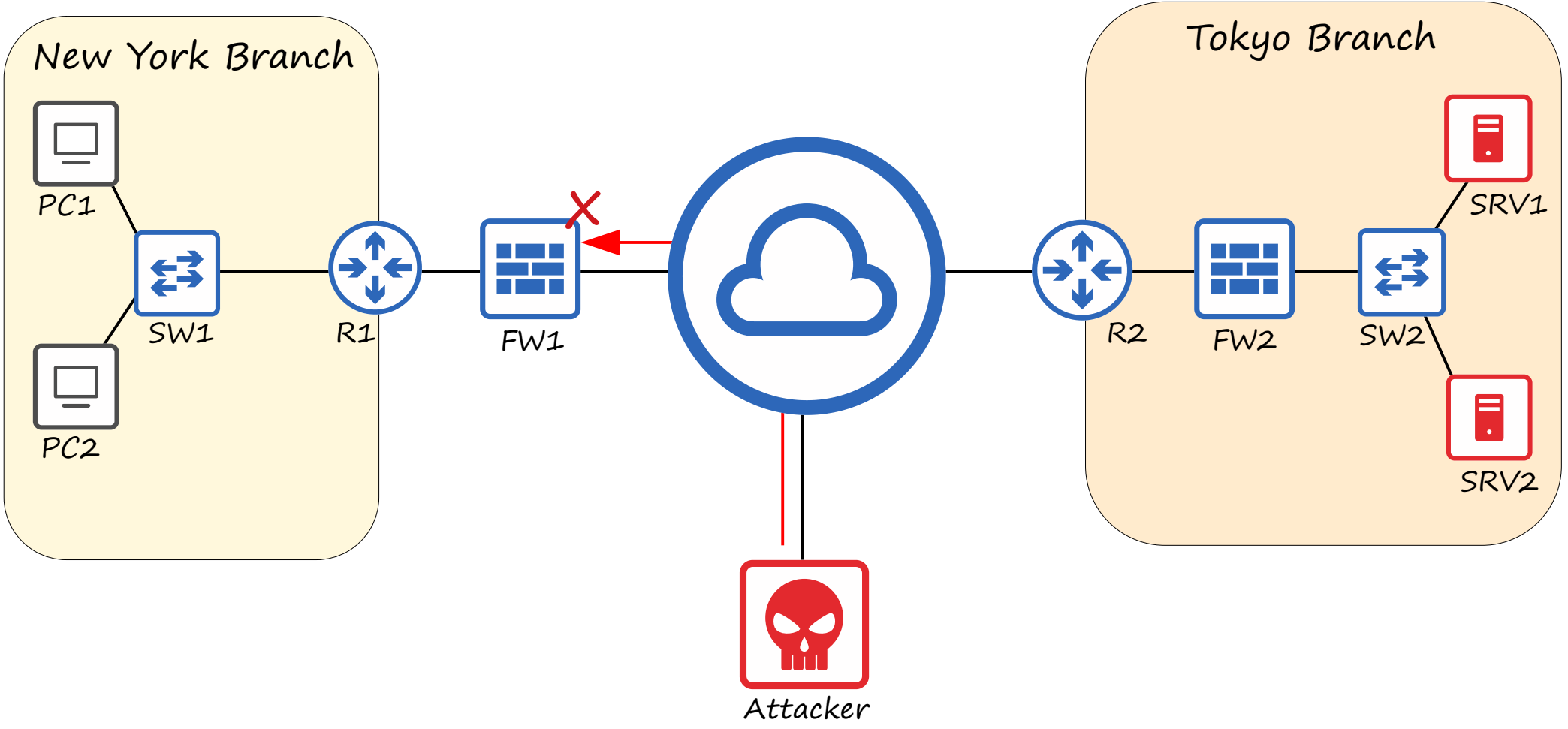
Firewalls



Firewalls

ASA5500-X

Firepower 2100

Firewalls...

- monitor and control network traffic based on configured rules.
- can be placed 'inside' the network, or 'outside the network'.
- are known as 'Next-Generation Firewalls' when they include more modern and advanced filtering capabilities.

...What about the firewall on your computer?

Firewalls

Network firewalls...

are hardware devices that filter traffic between networks.

Host-based firewalls...

are software applications that filter traffic entering and exiting a host machine, like a PC.

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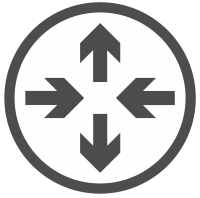
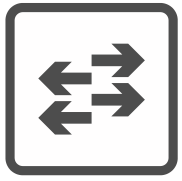


router



switch

firewall

server

end hosts
endpoints

client

Supplementary Materials

- End-of-video quizzes
- Review flash cards (using the 'Anki' software)
- Packet Tracer practice labs

Quiz Question 1

Your company wants to purchase some network hardware to which they can plug the 30 PCs in your department. Which type of network device is appropriate?

a) A router

b) A firewall

c) A switch

d) A server

Quiz Question 1

~~a~~) A router

ISR 900

A router, like this Cisco ISR 900 series router, is designed for forwarding traffic between networks, not for connecting lots of end hosts like PCs to.

A router will not typically have 30 network interfaces to connect hosts to.

Quiz Question 1

~~A~~) A firewall

ASA 5500-X

A firewall, like this Cisco ASA 5500-X series firewall, is designed to filter traffic as it enters and exits the local network. It is not designed to connect directly to end hosts, and typically will not have enough network interfaces for 30 hosts.

Quiz Question 1

~~A~~) A server

A server is an end host itself, not a networking device to which you will connect other end hosts.

Quiz Question 1

★c) A switch

Catalyst 9200

A switch, like this Cisco Catalyst 9200 series switch, is designed to connect many end hosts in the same LAN together. They include many network interfaces to connect hosts to.

Quiz Question 2

You received a video file from your friend's Apple iPhone using AirDrop. What was his iPhone functioning as in that transaction?

a) A server

b) A client

c) A local area network

Quiz Question 2

~~A~~) A client

In this case your iPhone, not your friend's iPhone, is functioning as a client.

A client accesses a service, it does not provide a service.

Quiz Question 2

~~A~~) A local area network

An end host like an iPhone does not function as a local area network (LAN) by itself. It can, however, be a part of a local area network.

Quiz Question 2

★a) A server

A server is a device that provides functions or service for clients.
In this case, your friend's phone provided the file to your iPhone.

Quiz Question 3

What is your computer or smartphone functioning as while you watch this video?

a) A server

b) An end host

c) A client

Quiz Question 3

a) A server

Your device is receiving a service, not providing one, so it is not functioning as a server.

Quiz Question 3

X) An end host

Although your device is an end host, that does not describe its function. Both servers and clients are end hosts in a network.

Quiz Question 3

★c) A client

Your device is receiving a service from YouTube's servers. Therefore, it is functioning as a client.

Quiz Question 4

Your company wants to purchase some network hardware to connect its separate networks together. What kind of network device is appropriate?

a) A firewall

b) A host

c) A LAN

d) A router

Quiz Question 4

a) A firewall

Although a firewall can connect multiple networks together, its real purpose is to monitor and control traffic as it enters and exits the network.

Quiz Question 4

A) A host

The term 'host' can refer to any type of network node.

Quiz Question 4

~~A)~~ A LAN

LAN stands for Local Area Network. A LAN is not a network device itself.

Quiz Question 4

★d) A router

A router is a device that is designed to connect and forward network traffic between multiple networks.

Quiz Question 5

Your company wants to upgrade its old network firewall that has been in use for several years to one that provides more advanced functions. What kind of firewall should they purchase?

a) A host-based firewall

b) A next-level firewall

c) A next-generation firewall

d) A top-layer firewall

Quiz Question 5

~~a~~) A host-based firewall

A host-based firewall is a piece of software that runs on an end host, like the firewall on your computer. It is not a network firewall.

Quiz Question 5

~~b~~) A next-level firewall, ~~c~~) a top-layer firewall

These are not actual types of firewalls.

Quiz Question 5

★c) A next-generation firewall

A next-generation firewall combines traditional firewall features with more advanced filtering functionalities.