C.6 Network Devices

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About

Networking Devices, also known as **Network Equipment** or **Computer Networking Devices**, are electronic devices required for communication and interaction between devices on a computer network. In essence, the devices mediate data transmission in networks. An Endpoint is an Network Node and is the last receiver or generator of the network traffic.

Figure 1 is an example of a network that represents many of the components of a network. Many of these devices have their own operating systems tailored specifically to optimize the flow and control of network traffic. In addition to the devices shown in the diagram, there are other network devices such as Network Attached Storage (NAS).

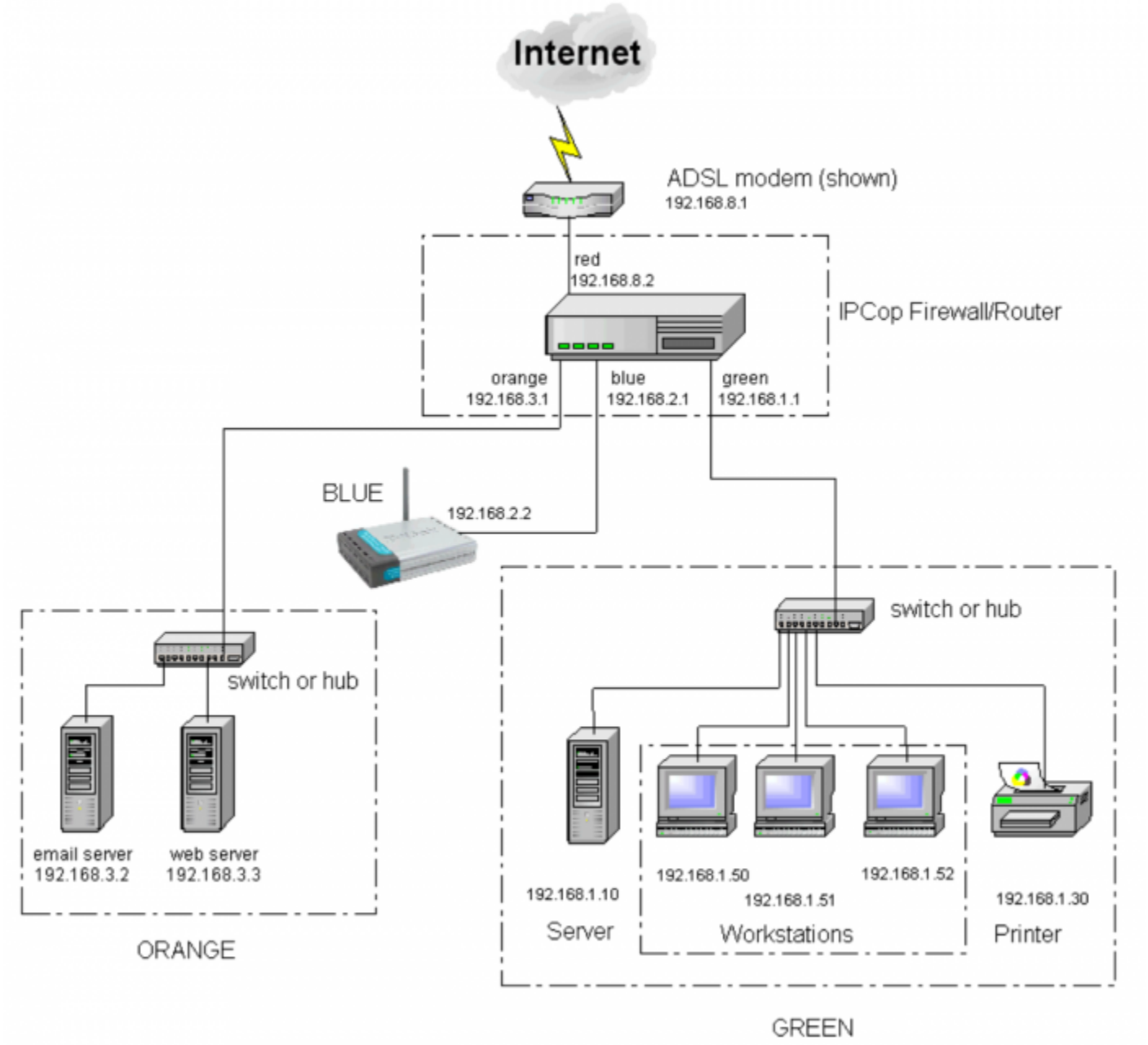


Figure 1: Example of a network Architecture[1)]

Table ##REF:netDevSumary## Provides a summary of the device found in the example network depicted in Figure 1.

<table netDevSumary> <caption>A summary of common devices found in networks.</caption>

Network Component	Description [2)]
Hub	A hub is basically a multiport repeater. A hub connects multiple wires coming from different branches, for example, the connector in star topology which connects different stations. Hubs cannot filter data, so data packets are sent to all connected devices.

Network Component	Description [2]
Switch	A switch is a multiport bridge with a buffer and a design that can boost its efficiency(a large number of ports imply less traffic) and performance. A switch is a data link layer device.
Router	A router is a device like a switch that routes data packets based on their IP addresses. Router is mainly a Network Layer device. Routers normally connect LANs and WANs together and have a dynamically updating routing table based on which they make decisions on routing the data packets. Router divide broadcast domains of hosts connected through it.
Bridge	A bridge operates at data link layer. A bridge is a repeater, with add on the functionality of filtering content by reading the MAC addresses of source and destination. It is also used for interconnecting two LANs working on the same protocol. It has a single input and single output port, thus making it a 2 port device.
Gateway	A gateway, as the name suggests, is a passage to connect two networks together that may work upon different networking models. They basically work as the messenger agents that take data from one system, interpret it, and transfer it to another system. Gateways are also called protocol converters and can operate at any network layer. Gateways are generally more complex than switch or router.
Modem	Transmission mode means transferring of data between two devices. It is also known as communication mode. Buses and networks are designed to allow communication to occur between individual devices that are interconnected. There are three types of transmission mode: • Simplex Mode • Half-Duplex Mode • Full-Duplex Mode
Repeater	A repeater operates at the physical layer. Its job is to regenerate the signal over the same network before the signal becomes too weak or corrupted so as to extend the length to which the signal can be transmitted over the same network.
Network Appliance	A type of computing appliance that aids in the flow of information to other network-connected computing devices. Services that may be provided by a network appliance include firewall functions, caching, authentication, network address translation and IP address management. [3]

DIDO Specifics

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☐ *TBD - to be added/expanded in future revisions of the DIDO RA*

1)

Vorgu Topology, Accessed 10 December 2020, https://wiki.itcollege.ee/index.php?title=File:Vorgu_topoloogia.png&limit=500

2)

FeekForGeeks, Network Devices (Hub, Repeater, Bridge, Switch, Router, Gateways and Brouter), 12 January 2020, Accessed: 10 December 2020;

https://www.geeksforgeeks.org/network-devices-hub-repeater-bridge-switch-router-gateways/
3)

Gartner, Network Appliance, Accessed: 10 December 2020; https://www.gartner.com/en/information-technology/glossary/network-appliance#:~:text=A%20type%20of%20computing%20appliance,translation%20and%20IP%20address%20management.

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