



Network Overview

Jirasak Sittigorn

Internetworking Standards & Technologies

Department of Computer Engineering, Faculty of Engineering
King Mongkut's Institute of Technology Ladkrabang

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Mind Wide Open™

Course Materials

- CCNA Routing and Switching
by Cisco Network Academy
 - Introduction to Networks
 - Routing and Switching Essentials
 - Scaling Networks
 - Connecting Networks
- <https://www.netacad.com/>
- CCNA : Cisco Certified Network Associate



Network Overview

Network devices

Network diagrams

Network connection

Network protocol

Introduction to Networks

Components of a Network

Types of Networks

Network Layers

Accessing Local Resources

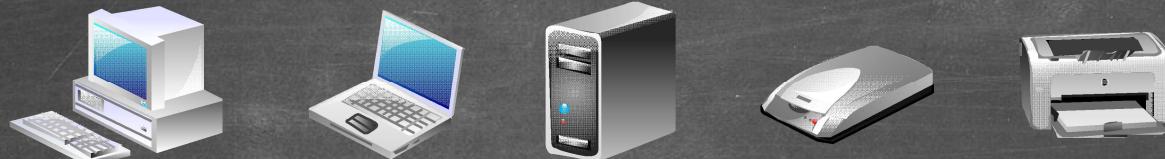
Intermediary network devices

Network Media

Network devices

ແມ່ນຮູບໂຄງລ໻້າຈີ່ເປັນ 3 ຊຸດ

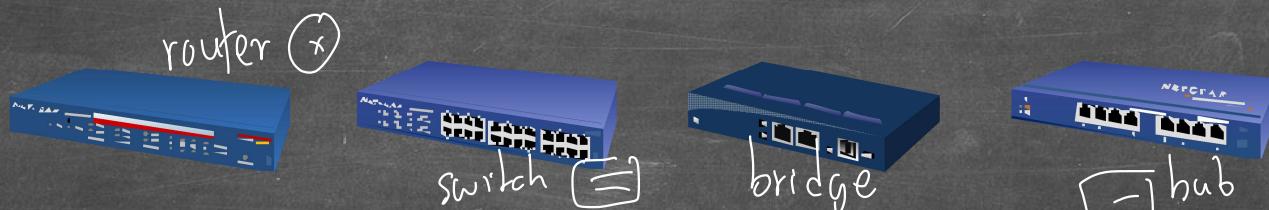
- What are network devices?



ເປັນດອນທີ່ໃຫ້ປົກກົດເຊີ້ນ

ໃຊ້ສົກກົດໄຟລົມປົກ
network ອັນໄລ໌

- How are different of devices?

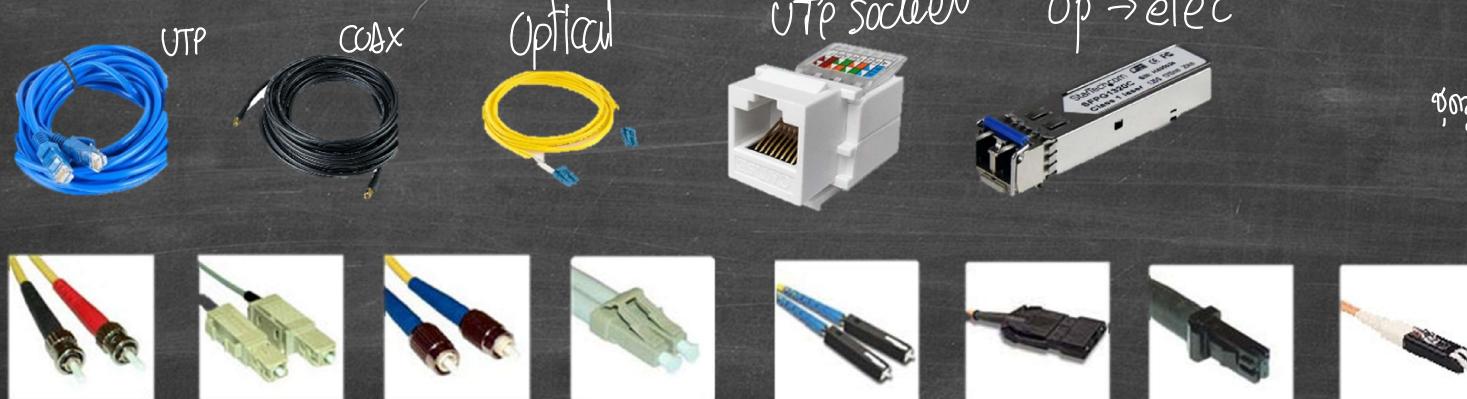


router

ວິທີກົດທີ່ອະນຸຍາຍກລາວ
network

ດັບເລື່ອມຕົ້ນກິນ 2 cm
ຕັ້ງໃຫຍ່ເພີ້ນ 1 ຕົວ

- How to connect devices?



ຍັງມີຫົກກິດ

ອຸດຳປະກາດທີ່ໃຫ້ໃນການເຫຼືອງຕົວ

Network diagrams

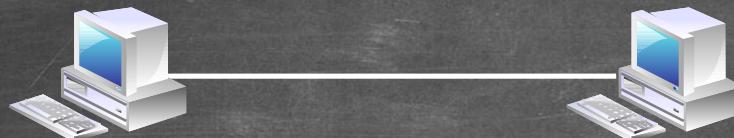
- What is network diagram?
- What is the network topology?
- How are different of network diagram and network topology?
 - ↳ ອັນດາວົງຕົວທີ່ມີບົງລົງ
 - ↳ ສູ່ລະບຸ ມີເພື່ອມີຕົວລະປົງລົງ
ex bus, ring, star
- Can you expand type of network diagram? ພະຍາຍາ topology

(ໄດ້ສົ່ງຫຼື ໂດຍ)



Network connection

- Two computer?

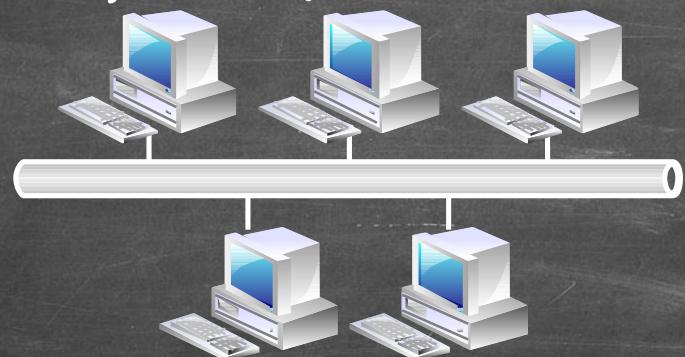


The diagram shows a T-RG circuit. On the left, there is a vertical stack of three components labeled T, R, and G from top to bottom. A horizontal line enters from the left, passes through the T component, then splits into two parallel lines that pass through the R and G components respectively. These two lines then converge back into a single horizontal line that exits to the right. A red line is drawn from the exit point of the G component, loops around, and enters the T component from the right side.

• ከዚህ በኋላ ስለመስጠት ከተሰጠው የሚከተሉት ደንብ በመሆኑ የሚከተሉት ደንብ በመሆኑ

Wireless network
(
serial
ip network

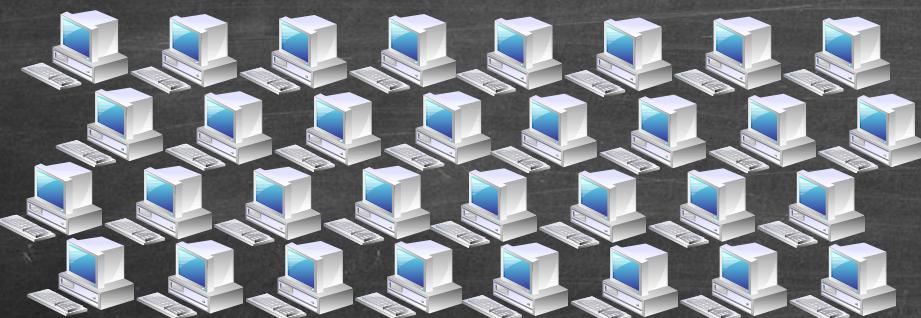
- Many computer?



- A connect to B

— A connects to B and
C connects to D

- A lot of computers?



— A connect to C and
B connect to C

Network protocol → ក្រោមពេល

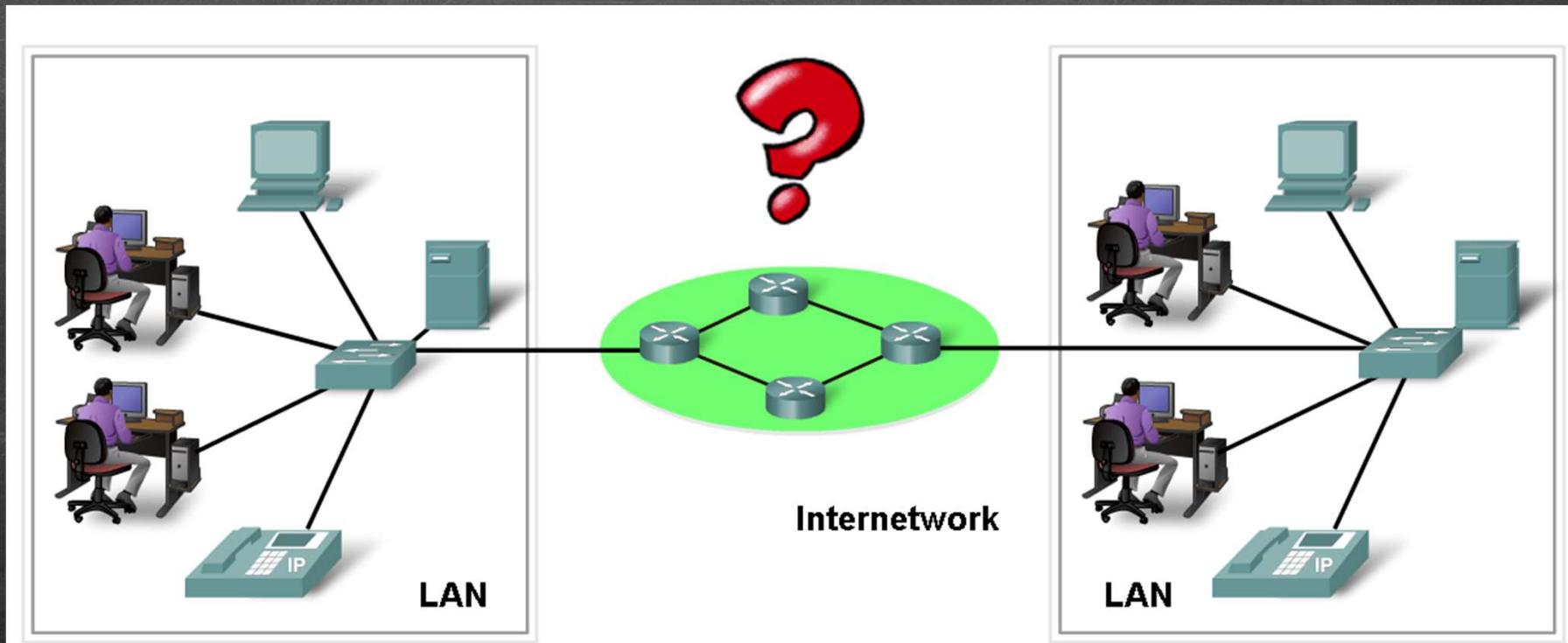
- What is protocol?
- What are network protocols?
- Why are network protocols important?
 - ↳ ផ្តល់ព័ត៌មាន
- What are network address?
- Why are network address important?
 - ↳ គឺជាអនុវត្តន៍បានចាប់បើក
 - ↳ v4, v6
 - ↳ mac, ip, port
 - ↳ no communication
 - ↳ ដឹងឈើមីរីអនុវត្តន៍

Components of a Network

- Network components

- Hardware

- Software → ჩეკინგ და მოწყვეტილებები რუტერი → გამს რუტინგ



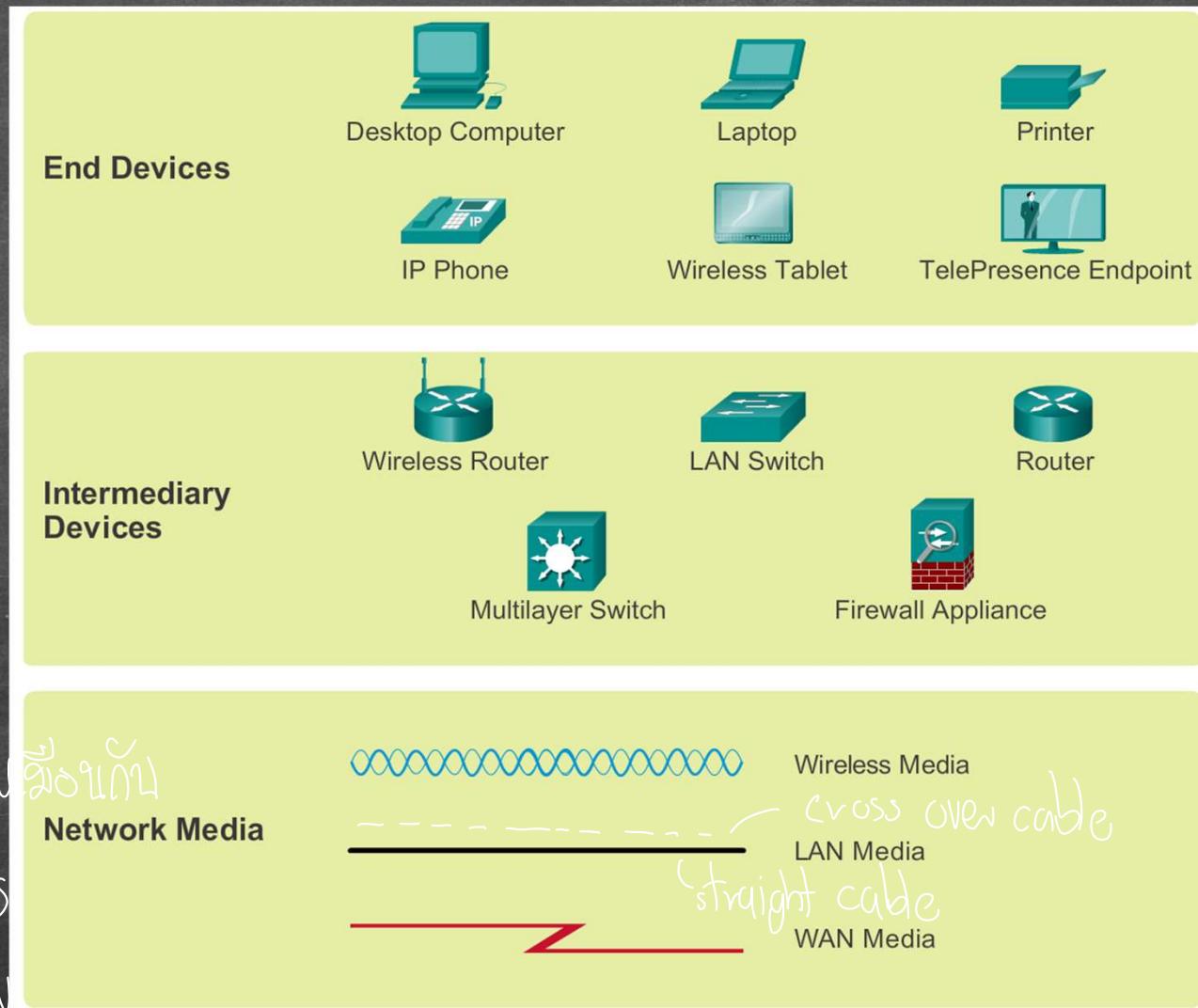
Components of a Network

៣ គម្រោង ॥ បែនការណ៍

- End Devices ទៅលើ network
- Intermediary network devices ចូលរួមទៅសម្រាប់
 - Network Access Devices
 - Internetworking Devices
 - Security Devices
- Network Media
 - Copper
 - Fiber Optic
 - Wireless

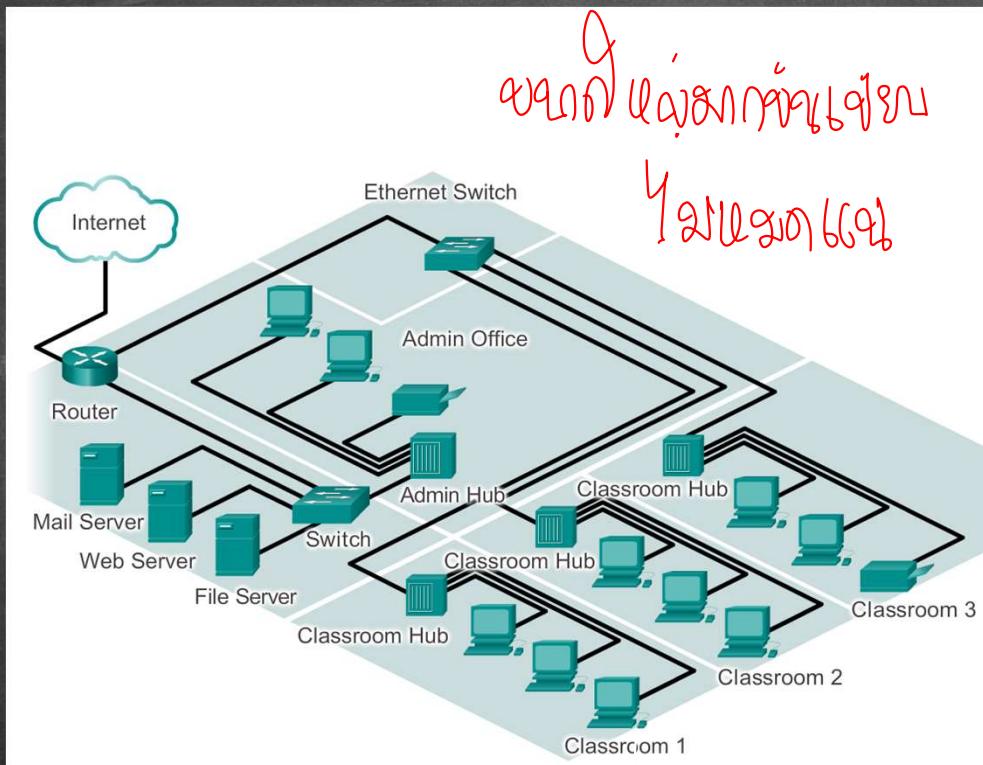
Components of a Network

- Network Representations



Components of a Network

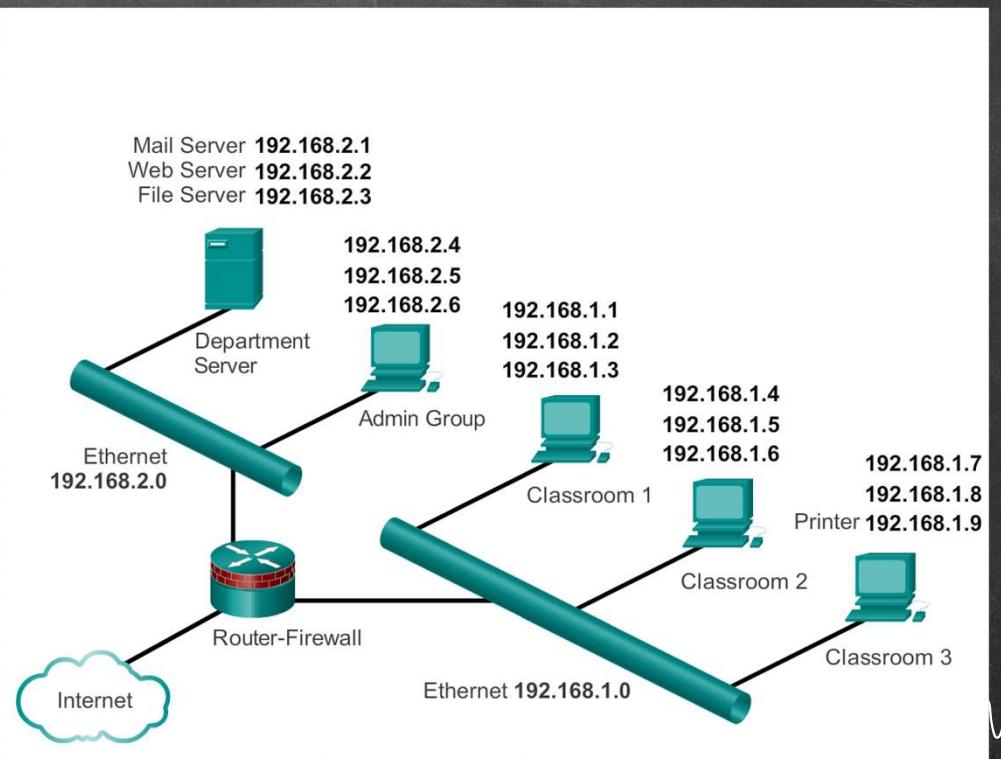
- Topology Diagrams → ឧបសម្រាកសិទ្ធិអនុវត្តផ្លូវ នៃពាណិជ្ជកម្ម



physical diagram
ស្ថាបន្ទាត់នៃពាណិជ្ជកម្ម
ដៃនៅខ្លួន

Internetworking Standards and Technologies, Jirasak Sittigorn, Computer Engineering, KMUTT

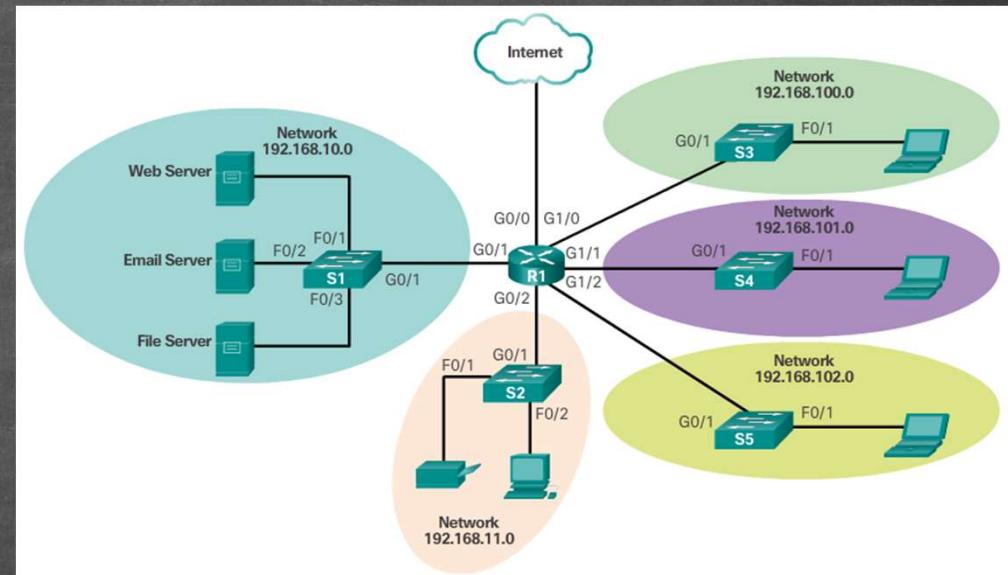
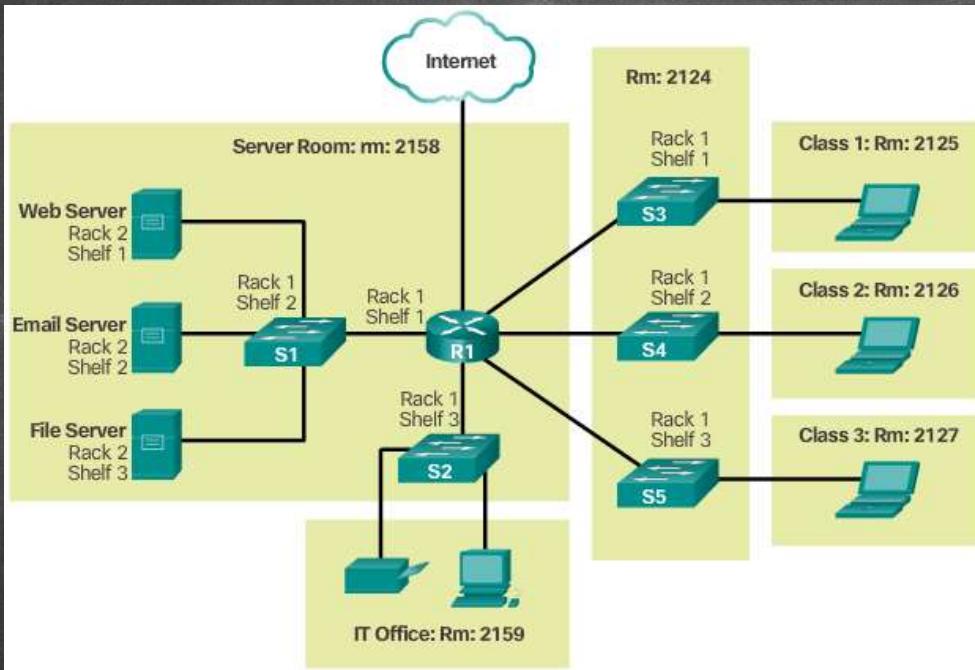
which one is network diagram



logical diagram → សិទ្ធិអនុវត្តផ្លូវ

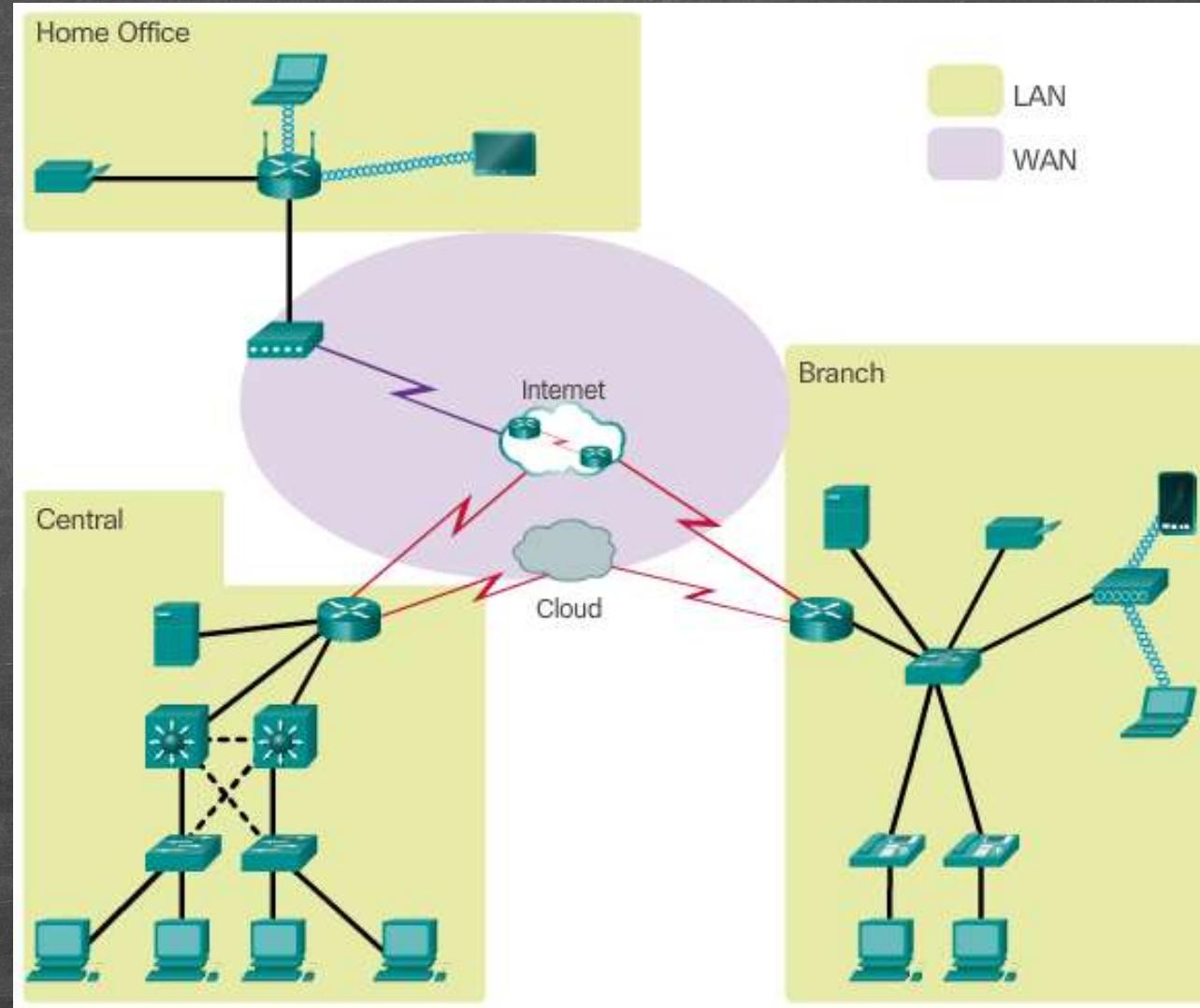
Components of a Network

- Topology Diagrams



Types of Networks

જિરસક



Types of Networks

- **Networks Sizes** (ເຕີມຂອງພາບນັກ)

 - **Small Home Networks** : connect a few computers to each other and the Internet ອານຸມົດທຳກິດ
 - **Small Office/Home Office** : enables computer within a home or remote office to connect to a corporate network ລົມເລີຍໃຈກ່ອນຈະໃຈໃນ small home ໄພນີ້ → ກົດ config ຂຶ້ວງກູດດີ
 - **Medium to Large Networks** : many locations with hundreds or thousands of interconnected computers ໃສັງເກີດ
 - **World Wide Networks** : connects hundreds of millions of computers world-wide - such as the Internet

Types of Networks

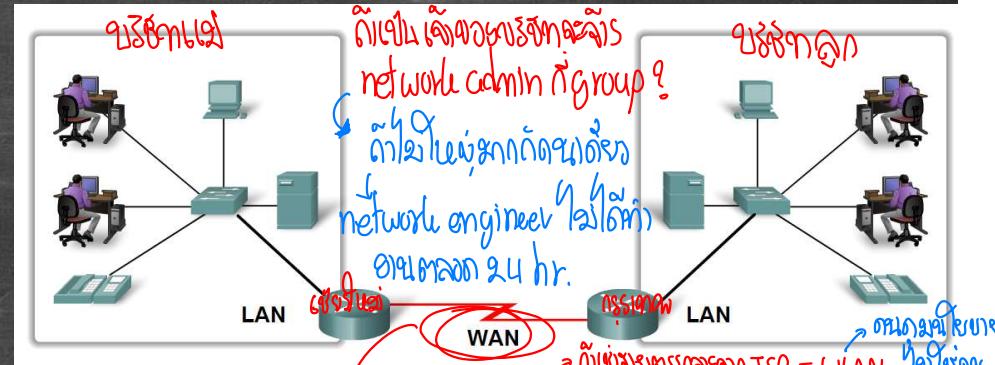
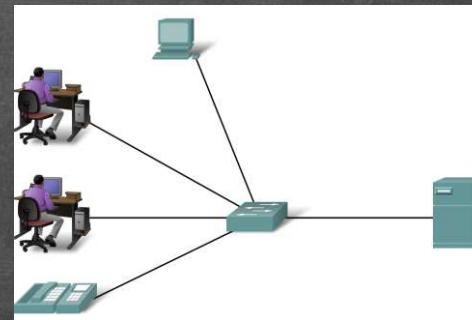
- The two most common types of network infrastructures are:

- Local Area Network (LAN) : A network serving a home, building or campus is considered a Local Area Network (LAN)
- Wide Area Network (WAN) : LANs separated by geographic distance are connected by a network known as a Wide Area Network (WAN) → ឧបនគរណ៍

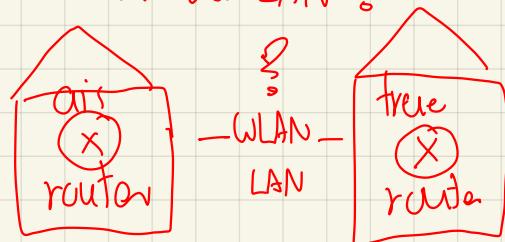
- Other types of networks include:

- Metropolitan Area Network (MAN)
- Wireless LAN (WLAN)
- Storage Area Network (SAN)
- Personal Area Network (PAN)

ឧបនគរណ៍



වෙත ඇති විටුවේදී විවෘත කළ විටුවේදී විවෘත කළ විටුවේදී



ලංඡන් සියලුම නිරික්ෂණ ප්‍රාග්ධනය

LAN is usually administered by a single organization. The administrative control that governs the security and access control policies are enforced on network level.

=
PC තුළු 12 න් විනෝදා ගැනීමෙන් LAN → authen නිවාස ප්‍රාග්ධනය
විවෘත සියලුම ප්‍රාග්ධනයෙහි WLAN → authen නිවාස (විවෘත) → auth control නිවාස group

WLAN is → Individual organizations usually lease connections through a telecommunication service provider network

Reliable Network

ex ផ្លូវ router network ដើម្បីការ
ការស្នើសុំការងារ

ការងារទាំងអស់នេះត្រូវបានរៀបចំ

ការងារ service ដែលស្នើសុំការងារ

ឯកសារ (cam, phone)

Quality of Service (QoS)

Reliable Networks

Scalability

Security

ការងារនេះត្រូវបានរៀបចំ

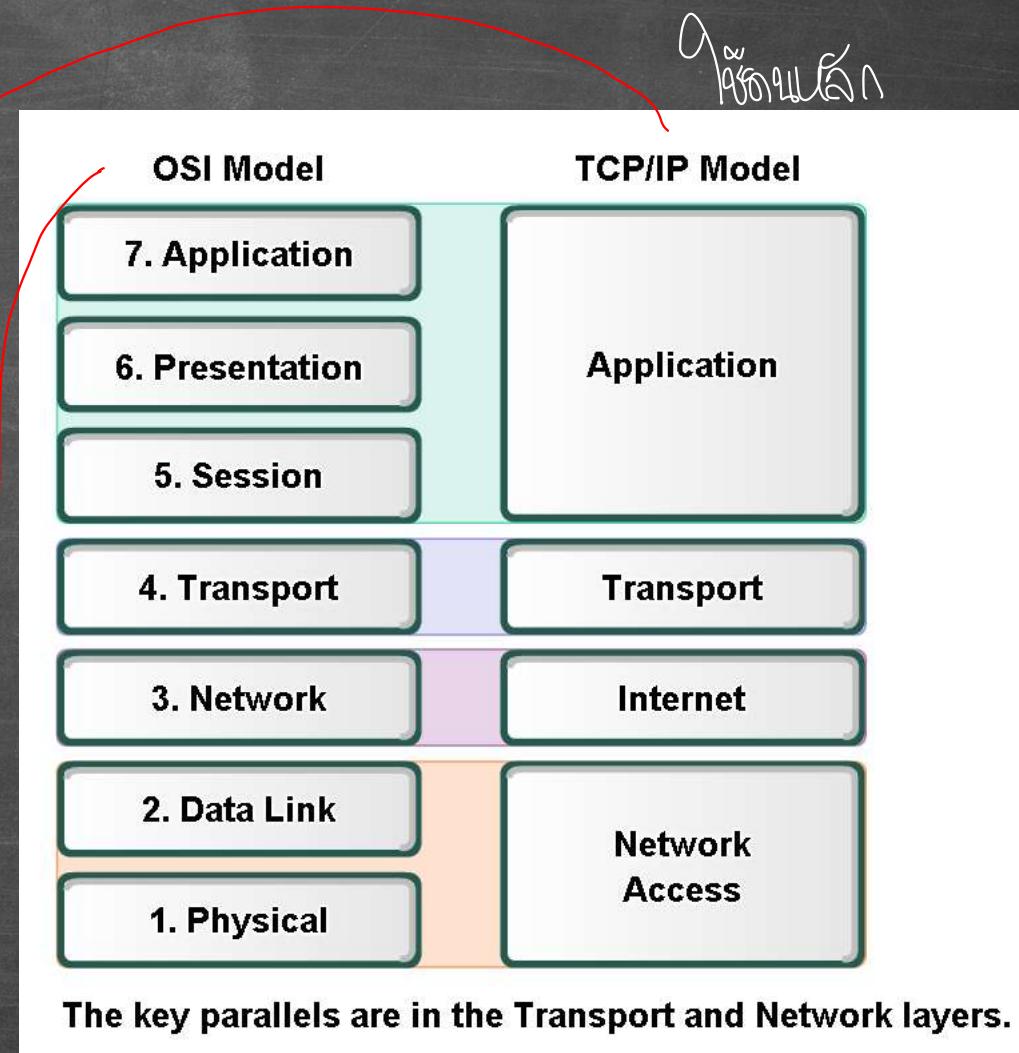
ឯកសារ network ដើម្បី
ធ្វើឱ្យមានការងារក្នុង
សាខាដែលមានការងារ

ការងារលាស់

ex. ការស្នើសុំការងារក្នុង
ក្រុងក្រុងក្រុងក្រុង

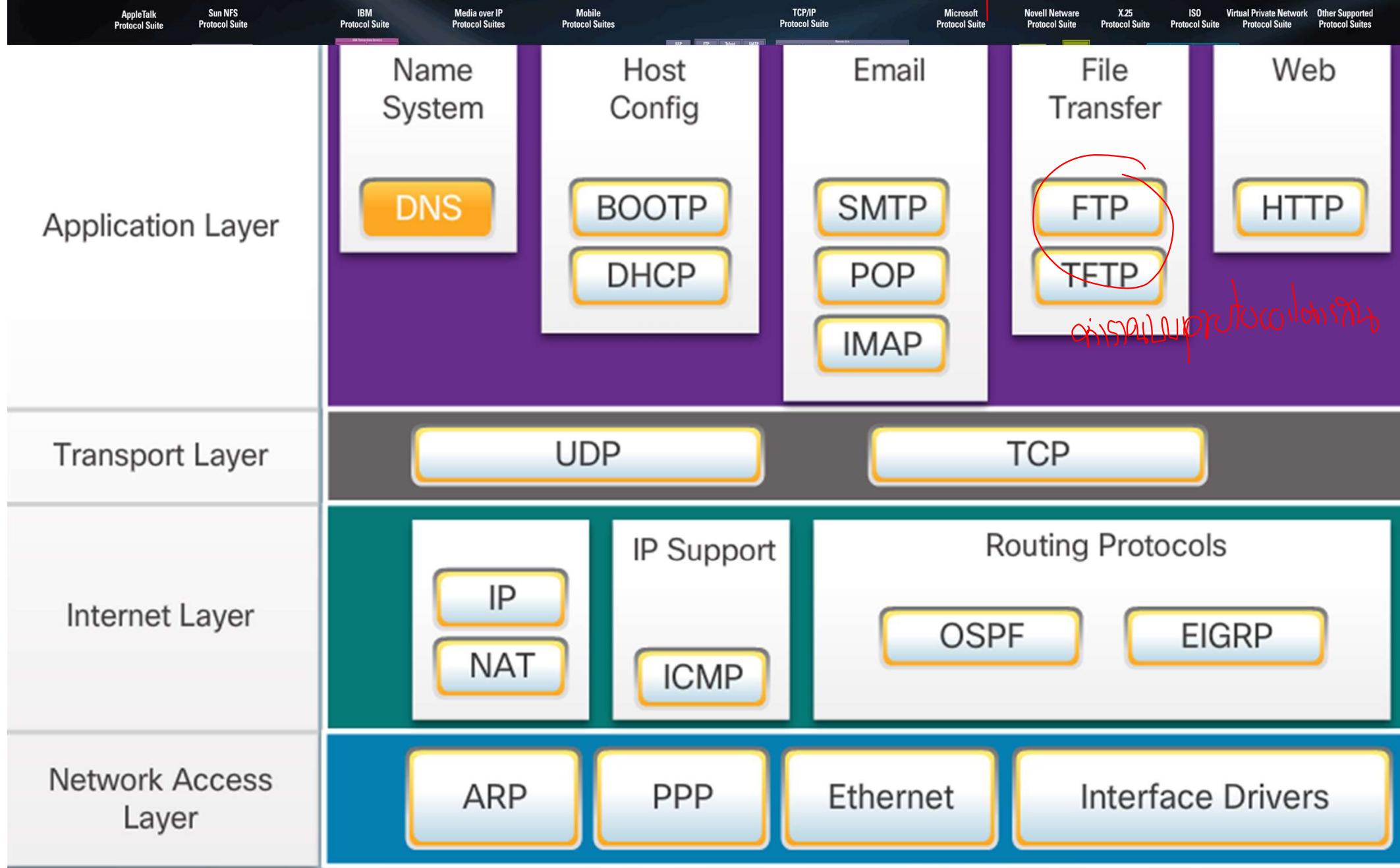
Layers with TCP/IP and OSI Model

- Explain protocol and reference models
 - A protocol model
 - provides a model that closely matches the structure of a particular protocol suite.
 - A reference model
 - provides a common reference for maintaining consistency within all types of network protocols and services.



NETWORK COMMUNICATION PROTOCOLS

protocol onion



When a single hour of network downtime can cost millions

... downtime is not an option

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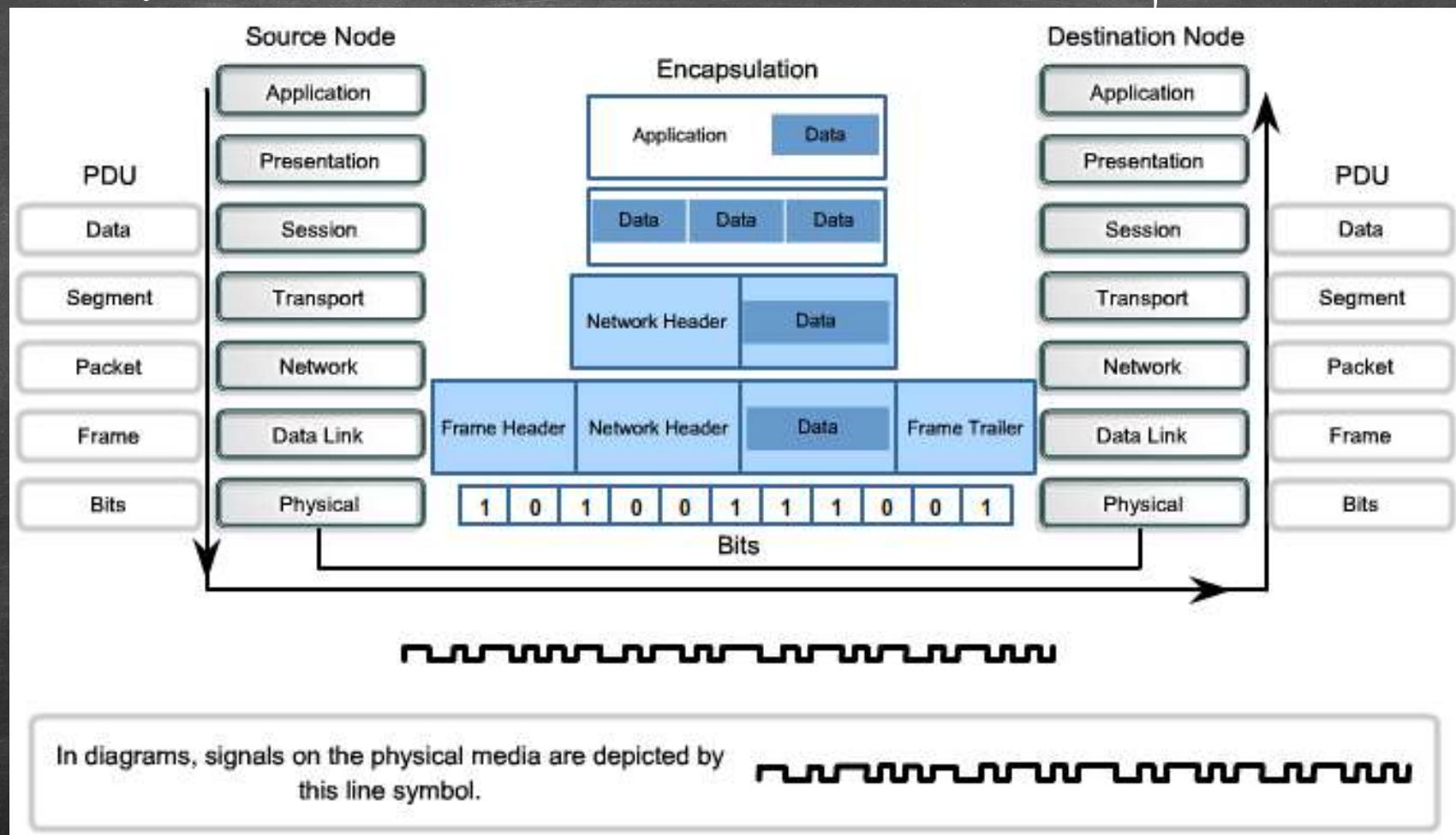
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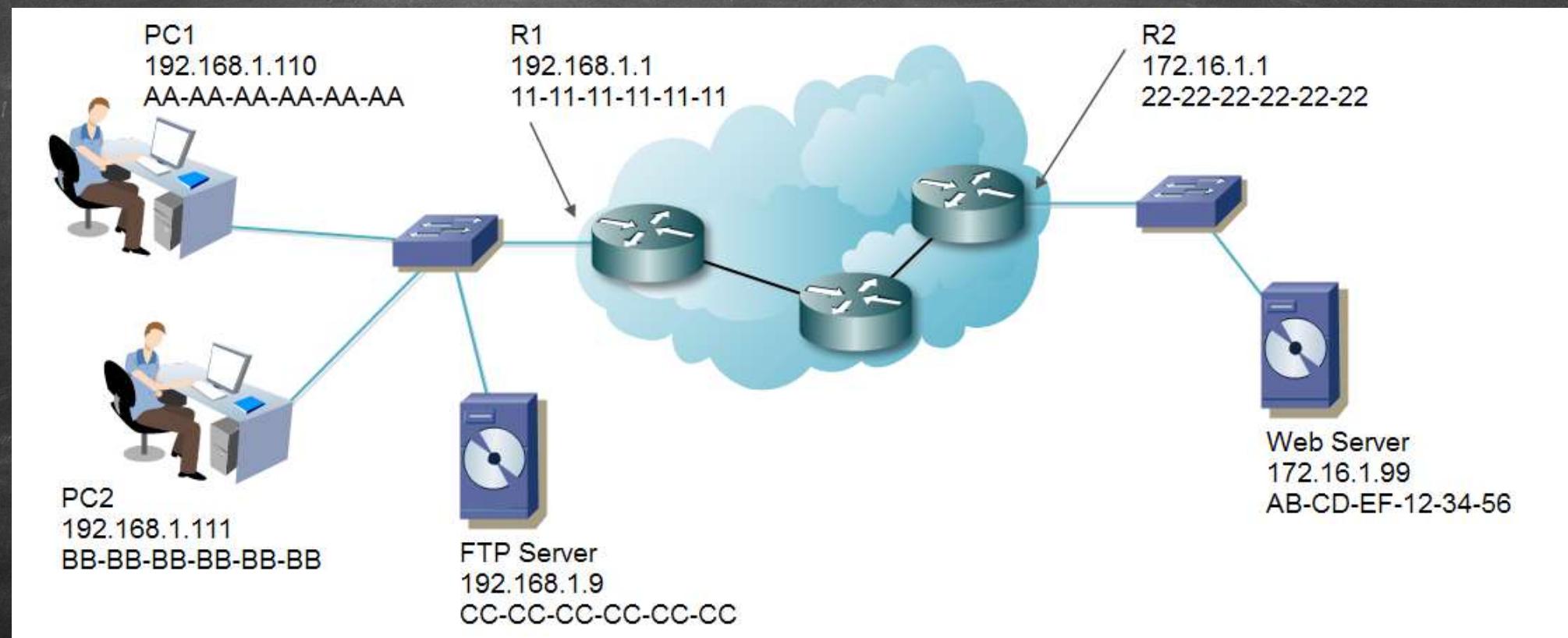
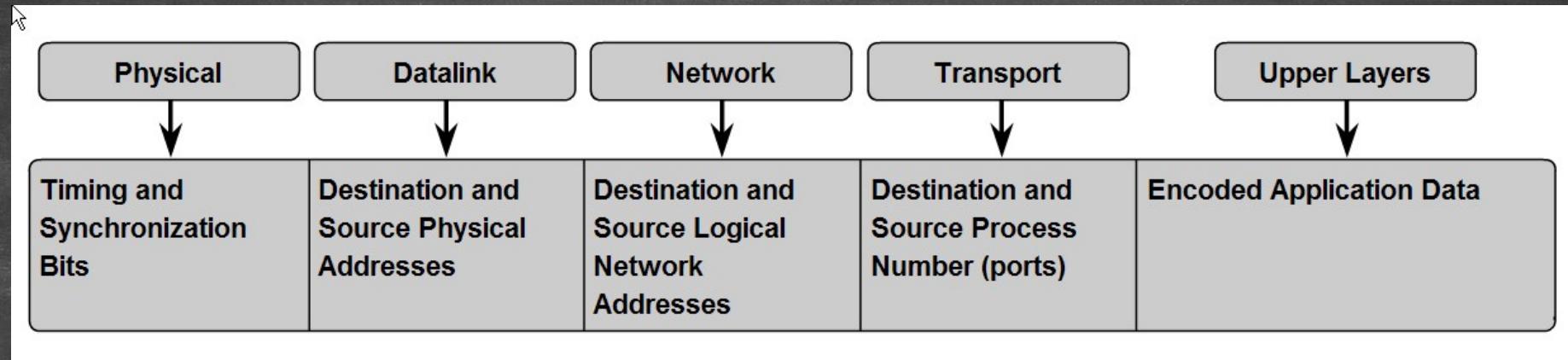
Layers with TCP/IP and OSI Model

- Explain protocol data units (PDU) and encapsulation

msgigl top-down , button-up



Accessing Local Resources



Accessing Local Resources

- PC1 => FTP Server

Accessing Local Resources

- PC1 => Web Server

Accessing Local Resources

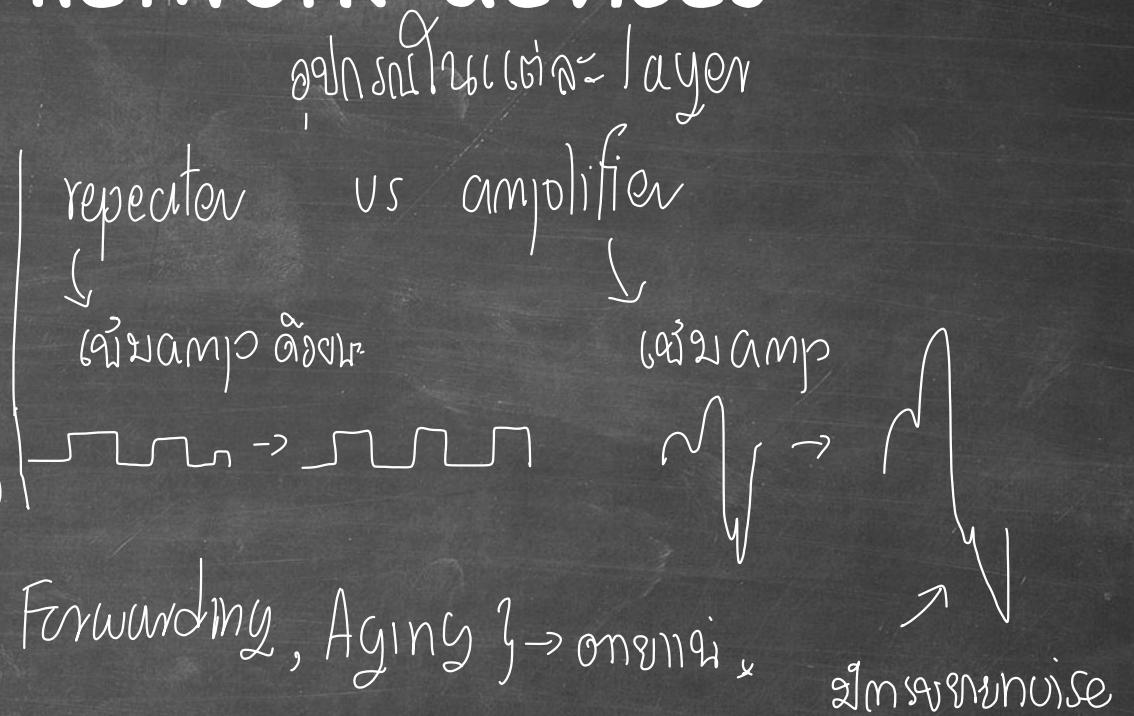
- PC1 => Web Server
- PC1 => FTP Server
- PC2 => FTP Server

မြန်မာစာမျက်နှာ

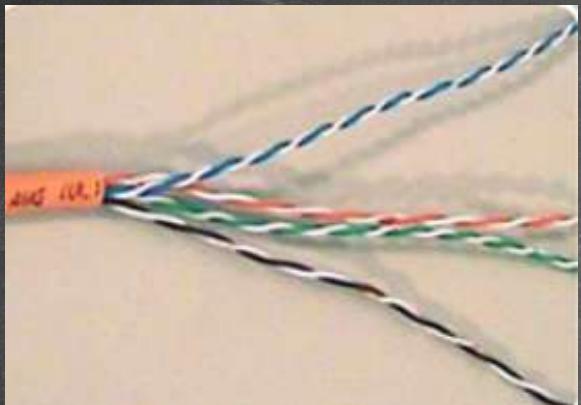
own encryp

Intermediary network devices

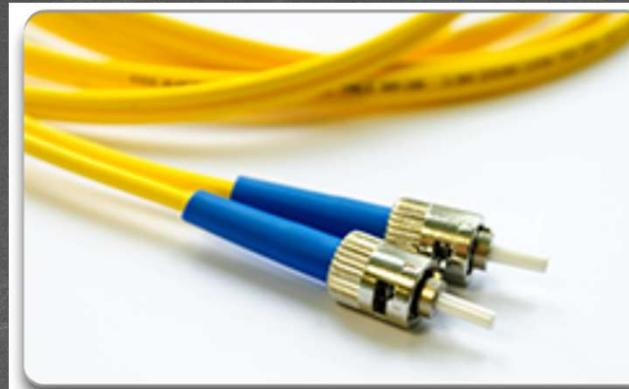
- Layer 1 • Hub, Repeaters
 (ក្រុមហ៊ុន សម្រាប់បង្កើតបណ្តុះបណ្តាល
 រីអិន collision → និរនតនិភ័យ protocol)
- layer 2 • Switches, Bridges
 (learning, Flooding, Filtering, Forwarding, Aging } → និរនតនិភ័យ, ខ្សោយលទ្ធផល)
- layer 3 • Routers



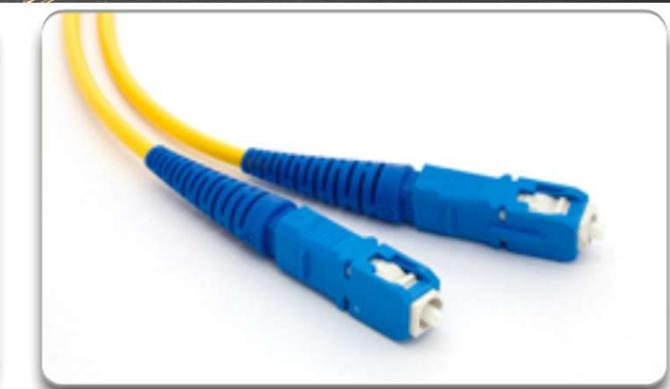
Network Media



Unshielded Twisted Pair (UTP) cable



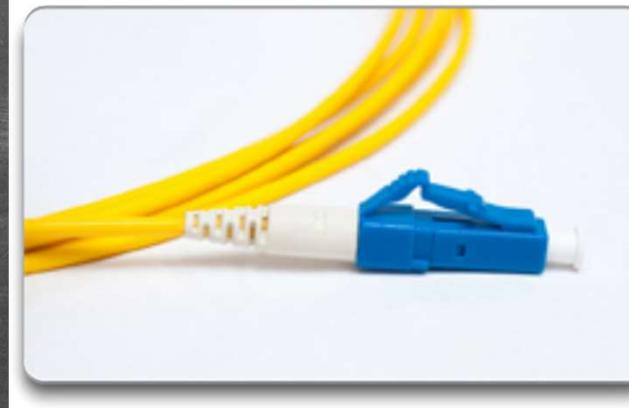
ST Connectors



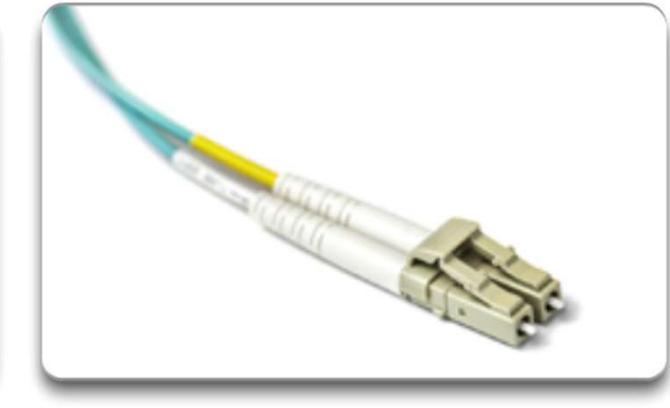
SC Connectors



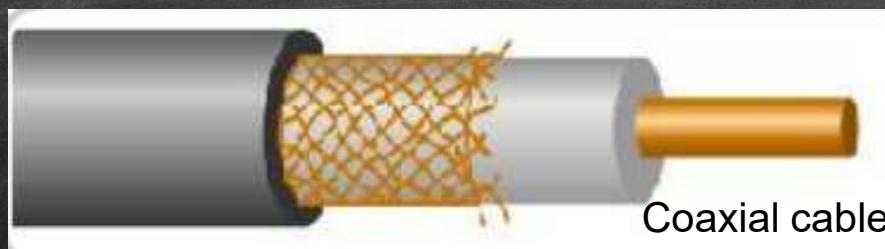
Shielded Twisted Pair (STP) cable



LC Connector



Duplex Multimode LC Connectors

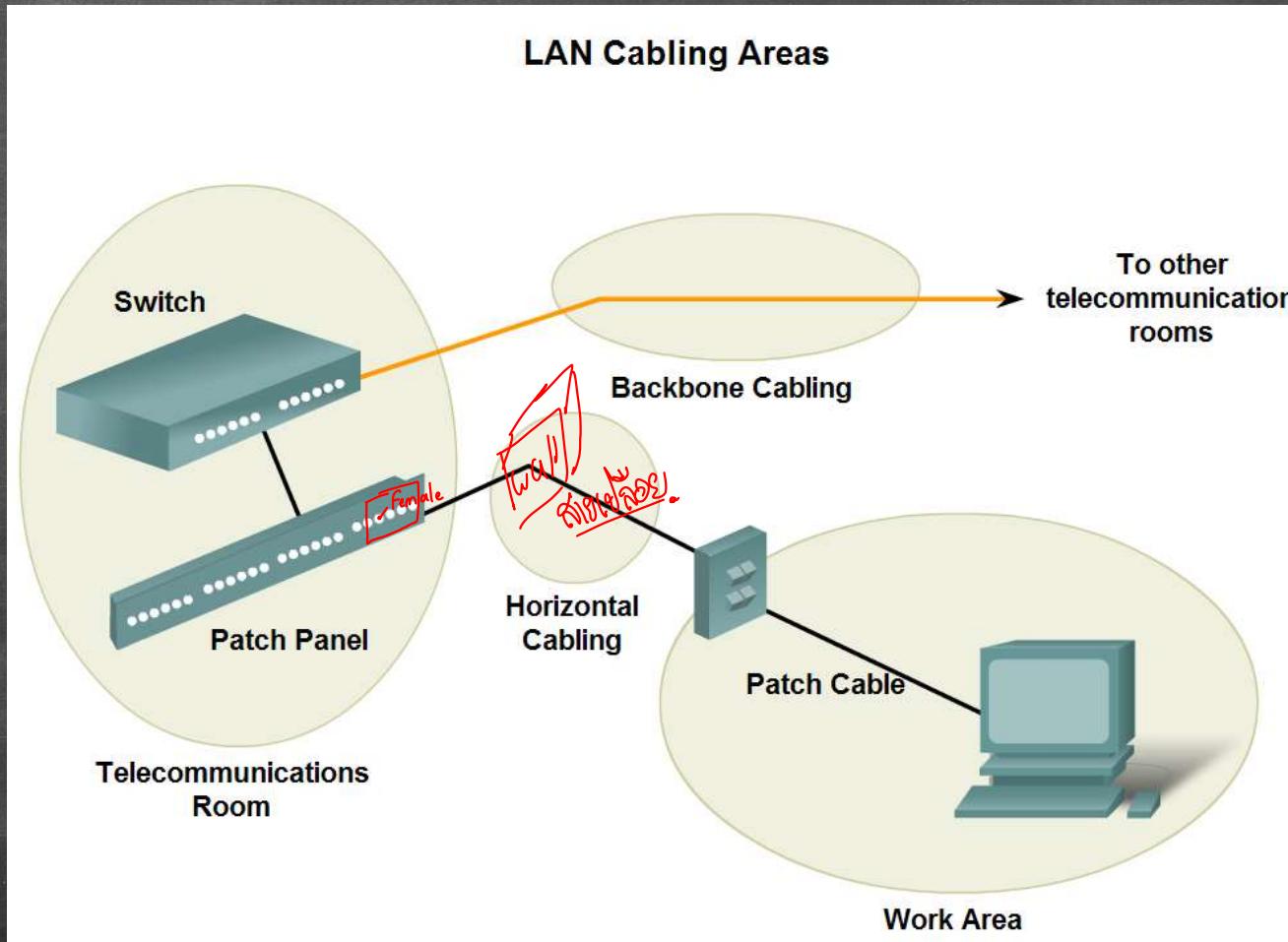


Coaxial cable



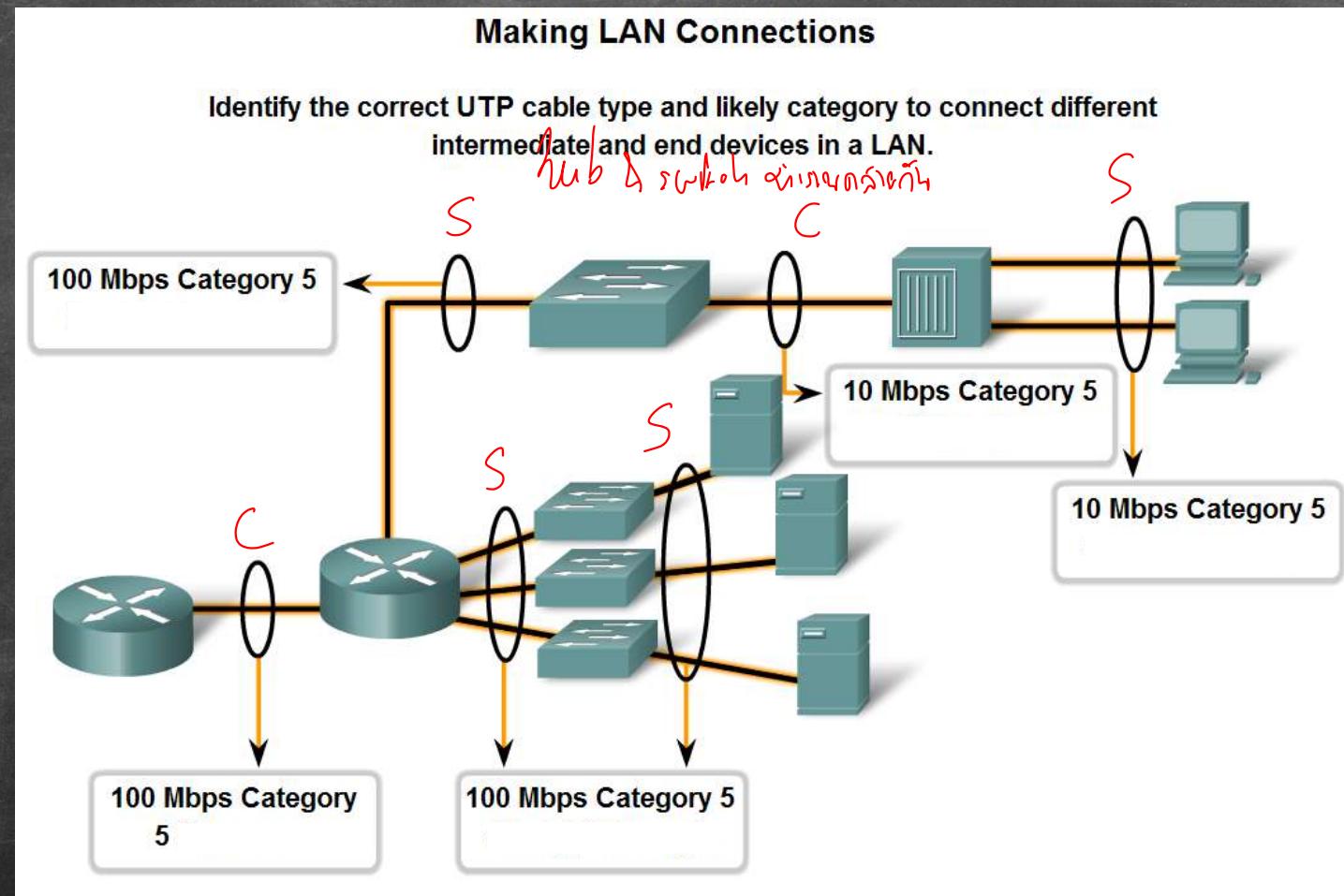
Types of Connections in a LAN

- Given a specific network connection, identify the type of cable required to make the connection



Types of Connections in a LAN

- Identify the correct cable to use in connecting intermediate and end devices in a LAN.



ສາມາລັບຕົ້ນຢືນ UTP ທີ່ໄດ້ປັດ

↳ ຂົງກ

↳ straight through (ຄະໂນສ)

↳ ອຸປົງກຮູມອາຍຸລະຫວັງ

↳ cross-over cable (ສະຫວັກ)

↳ ອຸປົງກຮູມອາຍຸລະຫວັງ

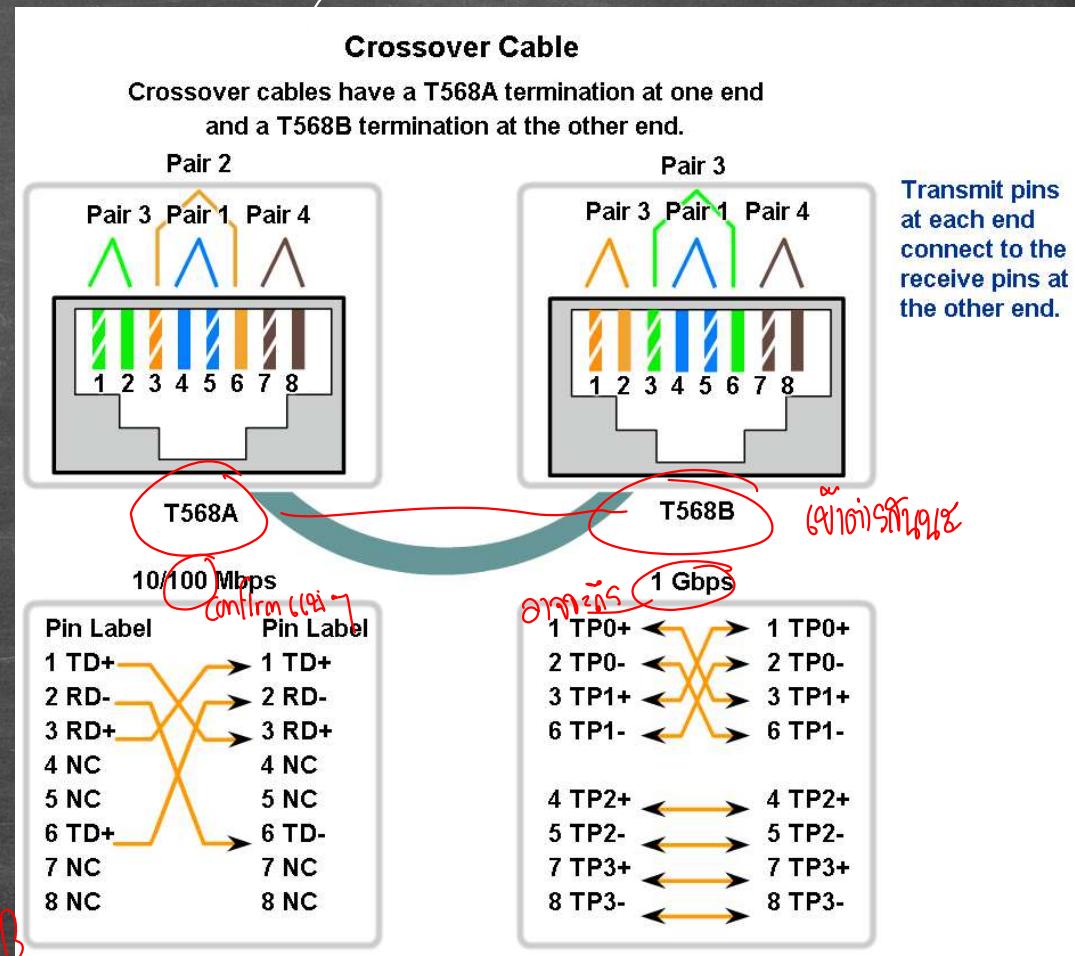
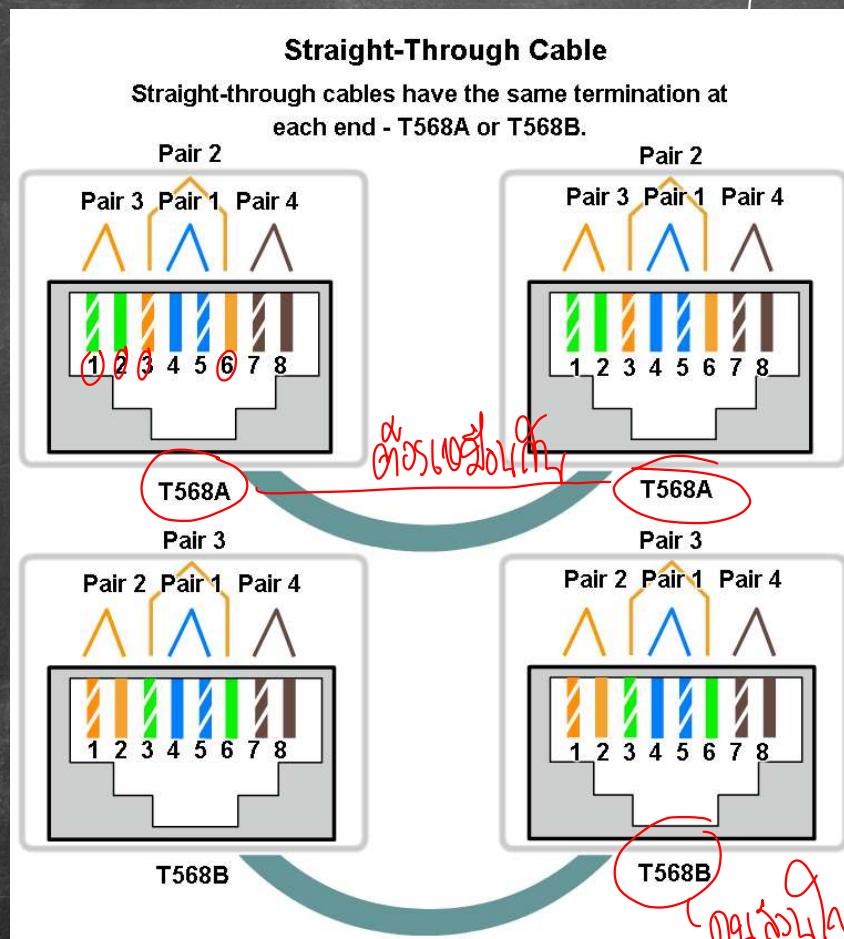
↳ switch ↔ hub
computer ↔ router

↗
ອັນດິໂຕ

Types of Connections in a LAN

ເຄີຍມາດີເລືອກຫຼາຍ A ດ້ວຍພົນໄວ

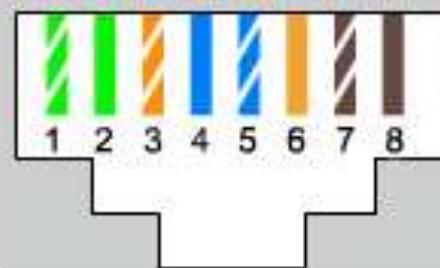
- Identify the pinout of the straight-through and cross-over cables



RJ-45 T568A & T568B Termination

Pair 2

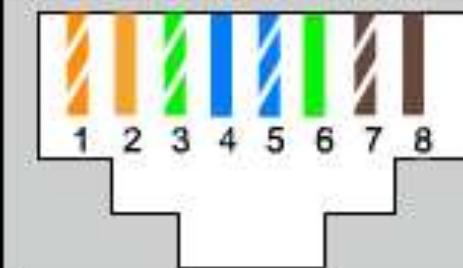
Pair 3 Pair 1 Pair 4



T568A

Pair 3

Pair 2 Pair 1 Pair 4



T568B

๖๔๙๗๘/๑๖๕/๔/๒๐๗๖/๐๕๙๖



T568A
(Top View)



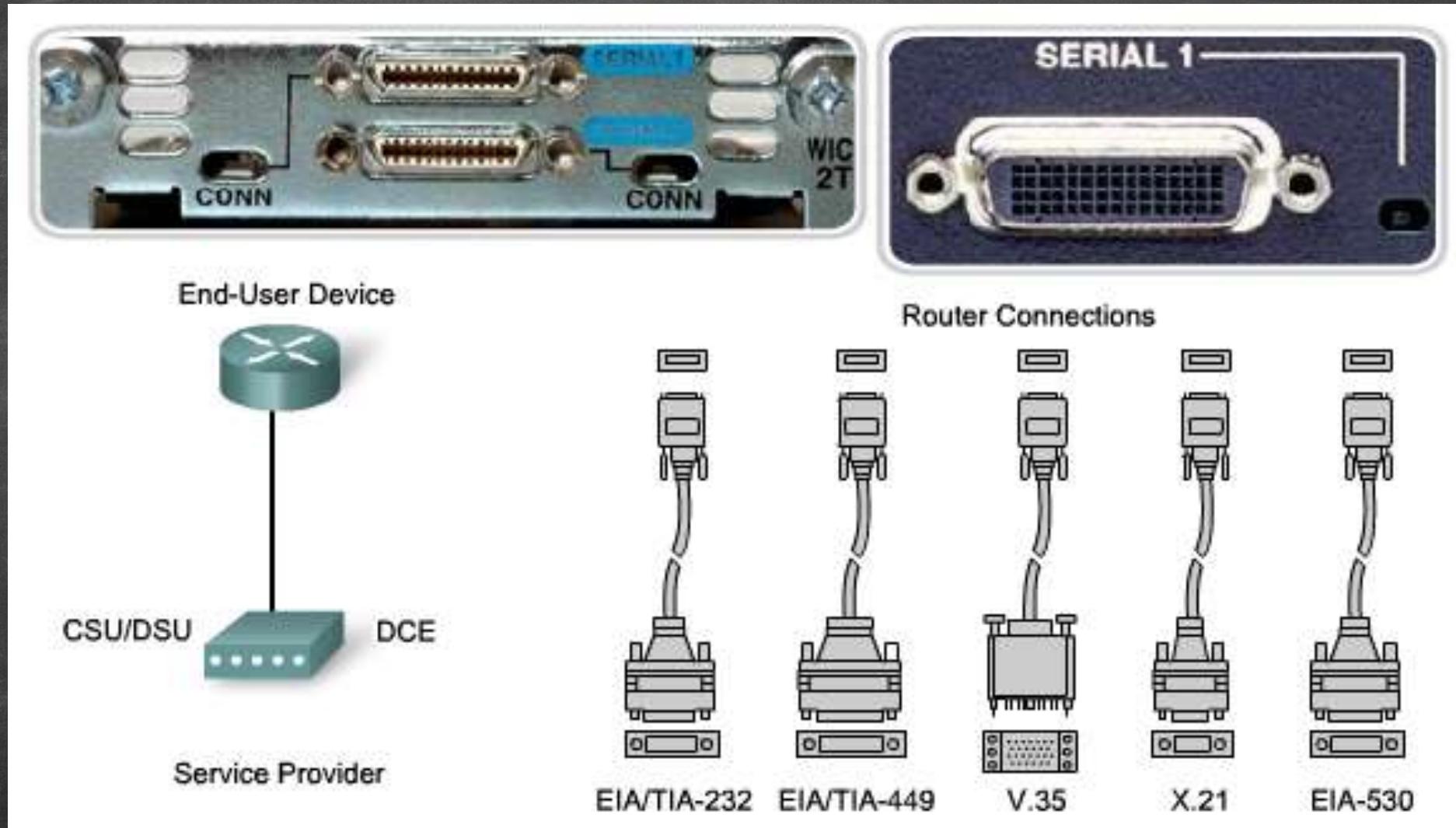
T568B
(Top View)

Types of Connections in a LAN

- Recognize that a different class of cables is used to connect WANs, and that the cables, standards and ports are different than those in use by LANs.

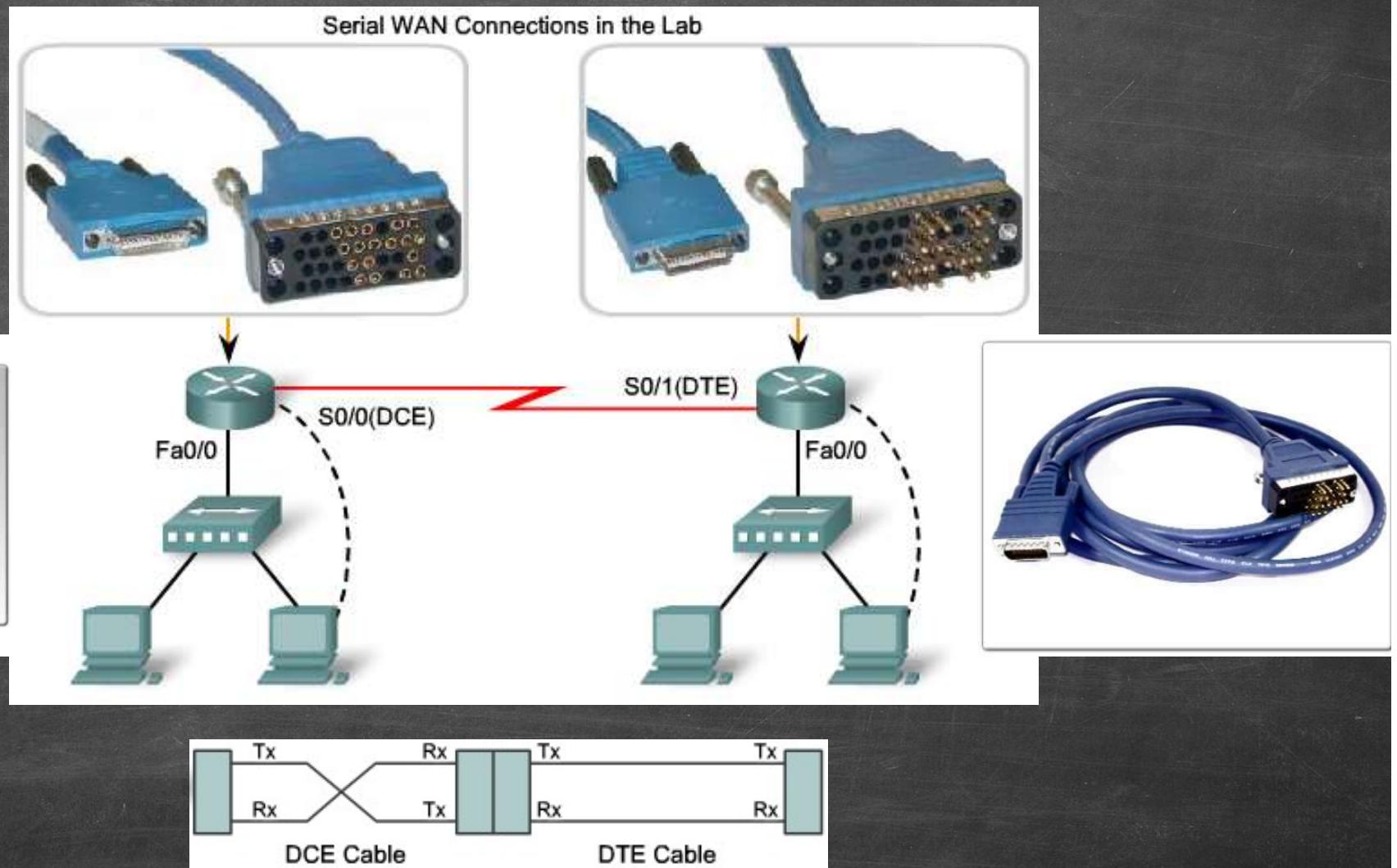
Types of WAN Connections				
Cisco HDLC	PPP	Frame Relay	DSL Modem	Cable Modem
EIA/TIA-232 EIA/TIA-449 X.21V.24 V.35 High Speed Serial Interface (HSSI)	RJ-11 Note: Works over telephone line		F Note: Works over Cable TV line	
				
Router: Male Smart Serial		Network: Male Winchester Block Type		

Types of Connections in a LAN



Types of Connections in a LAN

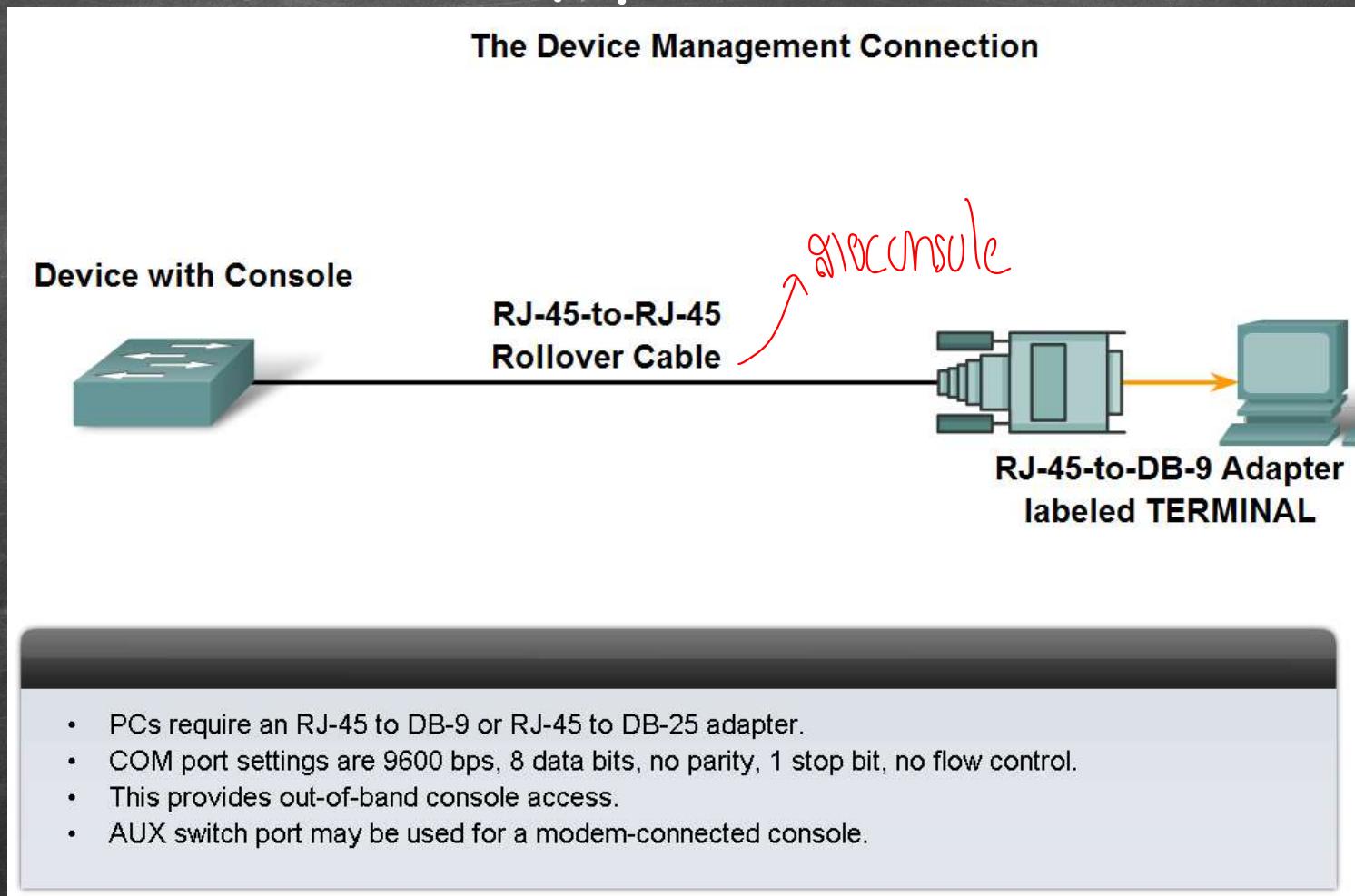
- Making WAN Connections



Types of Connections in a LAN

management

- Define the role of device management connections when using Cisco equipment.



Questions and Answers

