

# CCNA 1 v3.1 Module 11 TCP/IP Transport and Application Layers

# **Objectives**

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Upon completion of this module, the student will be able to perform tasks related to the following:

11.1 TCP/IP Transport Layer

11.2 The Application Layer

# **Transport Layer**

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### Reliable transport can accomplish the following:

- Ensure that segments delivered will be acknowledged to the sender
- · Provide for retransmission of any segments that are not acknowledged
- · Put segments back into their correct sequence at the destination
- Provide congestion avoidance and control

# **Transport Layer Analogies**

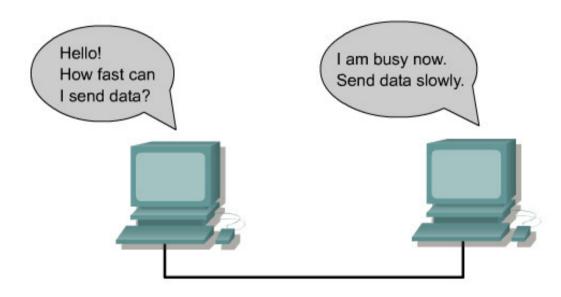
1.....Cisco.com

Spanish (primary language) English (one year of study)

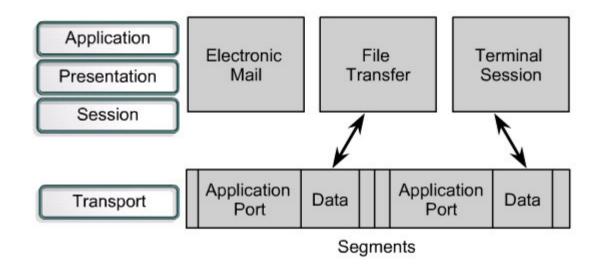
> Slower language comprehension speed

English (only language)

# **Flow Control**

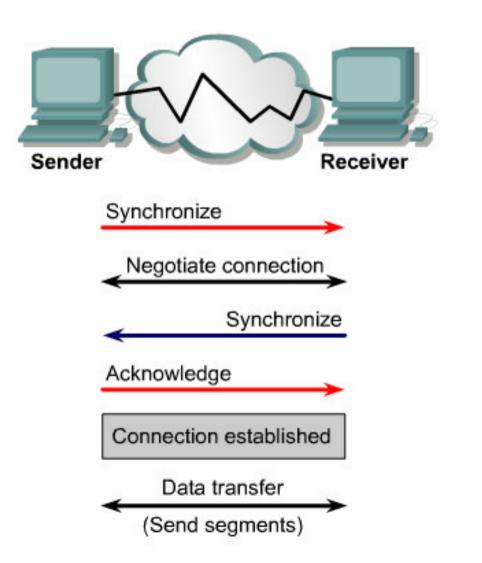


### **Multiplexing of Upper-Layer Conversations**



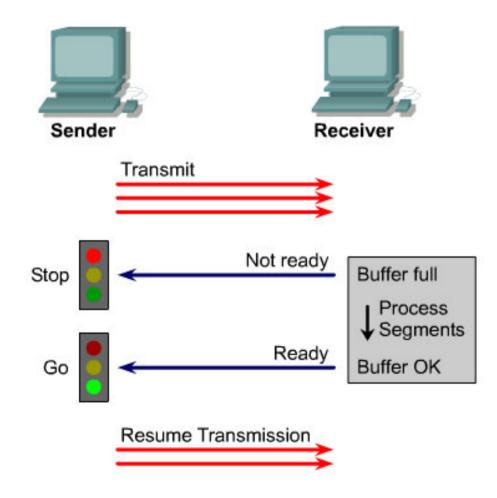
# Establishing a Connection with a Peer System

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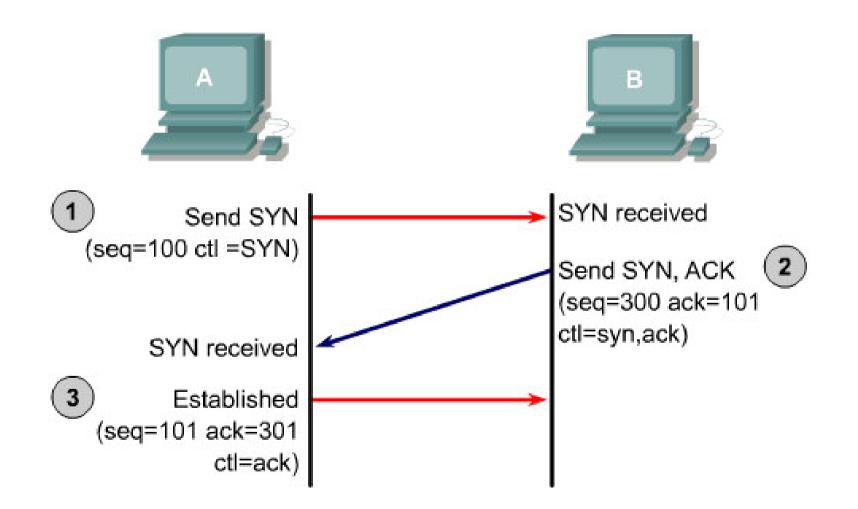


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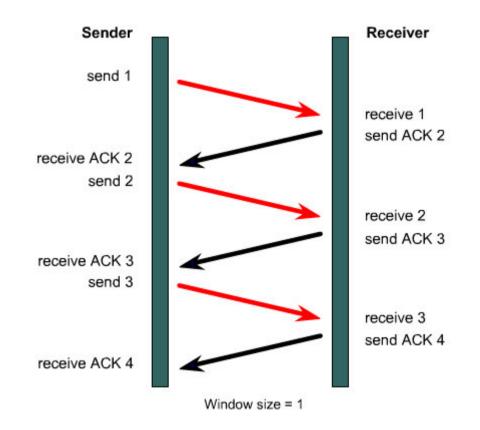
# **Session Maintenance and Termination**



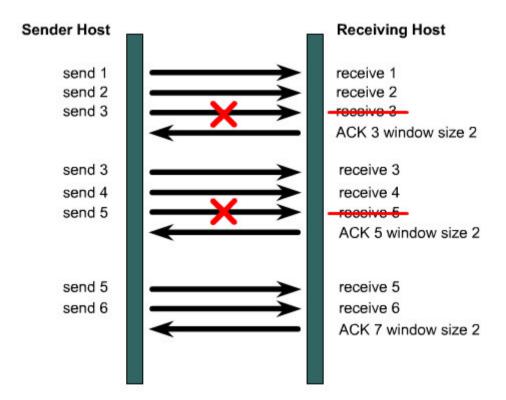
# **Three-Way Handshake**



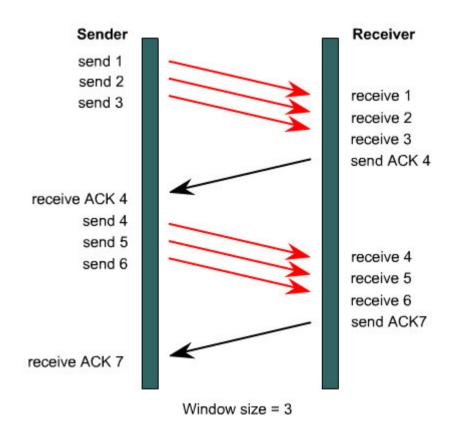
### **TCP Basic Window**



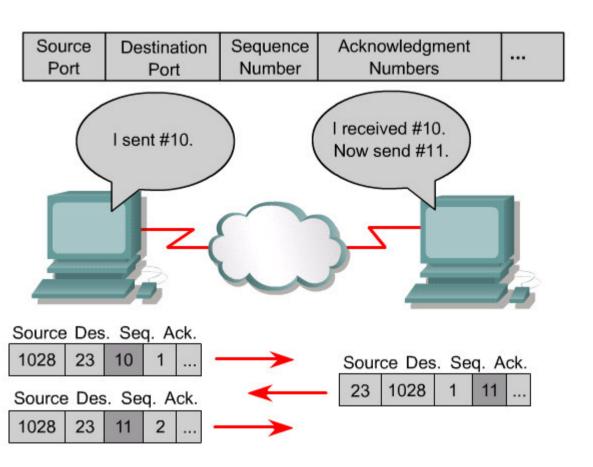
# **TCP Sliding Window**



# **TCP Sliding Window**



# **TCP Sequence and Acknowledgement**



# **TCP Segment Format**

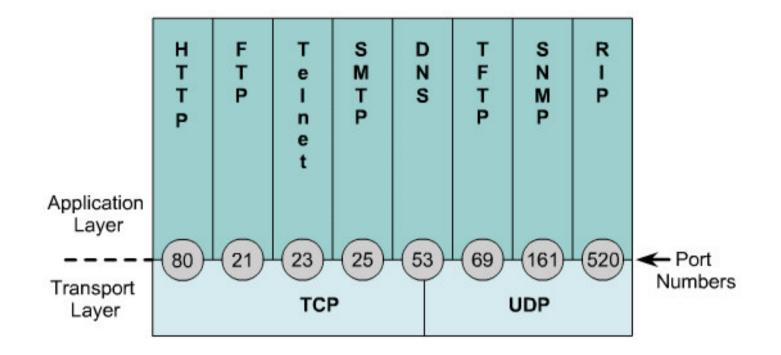
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Bit 0	Bit 15 Bit 16		Bit 16	Bit 31
Source Port (16)		Destination Port (16)		
Sequence Number	(32)			
Acknowlegement N	lumber (32)			2
Header Length (4)	Reserved (6)	Code Bits (6)	Window (16)	By
Checksum (16)		Urgent (16)		
Options (0 or 32 if any)				
Data (varies)				

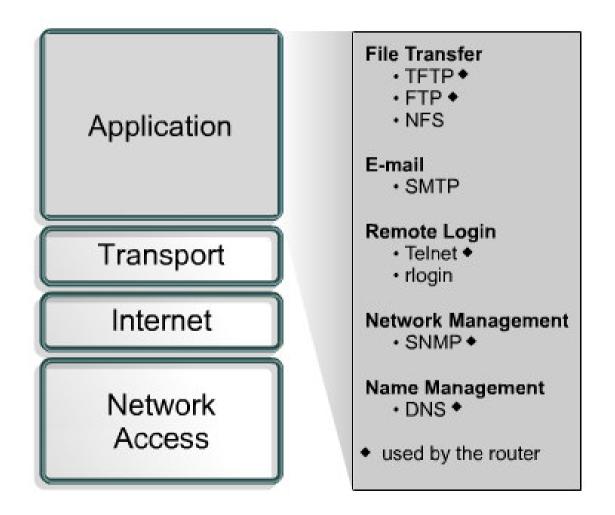
# **UDP Segment Format**

Bit 0	Bit 15 Bit 16	Bit 31	í
Source Port (16)	Destination Port (16)		. ↑
Length (16)	Checksum (16)		8 Bytes
Data (if any)			

### **TCP and UDP Port Numbers**



# **Application Layer**



# **Application Layer**

	Vide Generic Domains	
сом -	This domain is intended for commercial entities, that is companies. This domain has grown very large and there is concern about the administrative load and system performance if the current growth pattern is continued. Consideration is being given to subdividing the COM domain and allowing future commercial registrations in subdomains.	
EDU -	This domain was originally intended for all educational institutions. Many universities, colleges, schools, educational services organizations, and educational consortia have registered here. More recently, a decision has been made to limit further registration to four year colleges and universities. Schools and two year colleges will be registered in the country domains (see U.S. Domain, especially K-12 and CC, below).	
NET -	<ul> <li>This domain is intended to hold only the computers of network providers, that the NIC and NOC computers, the administrative computers, and the network node computers. The customers of the network provider would have domain names of their own (not in the NET Top Level Domain [TLD]).</li> </ul>	
ORG -	This domain is intended as the miscellaneous TLD for organizations that do not fit anywhere else. Some non-government organization may fit here.	
INT -	This domain is intended for organizations established by international treaties, or	

# **FTP Application**

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- 🗆 X FTP95 LE -Local System-Remote System C:\Program Files 👅 w. Jat 12.0 Name Name CingDi ChgDir 1 MkDi MkDir VS FTP Pr କ୍କ 1816) 1811 conplete. 986-194 connect ve Mew YIEW. 1816) 1841 error.vav Exec Exec 1816) 1811 FTP95PR0. Henam flenatio 1816) 1914 FTPPR03214 Delete Delete 1816) 1911 ftpproex. 1816) 1914 Refred nsftp.cnt Refresh in in i Dirinfo Dilnio 4 4 Þ. Þ C ASCIL Auto Binary
 Binary
 **.** WINSOCK DLL: WinSock 2.0 φ. WS\_FTP95LE 4.60 98 03.17. Copyright @ 1992-1998 lpswitch, Inc. Cancel Logwind Help About Options | Exit Connect

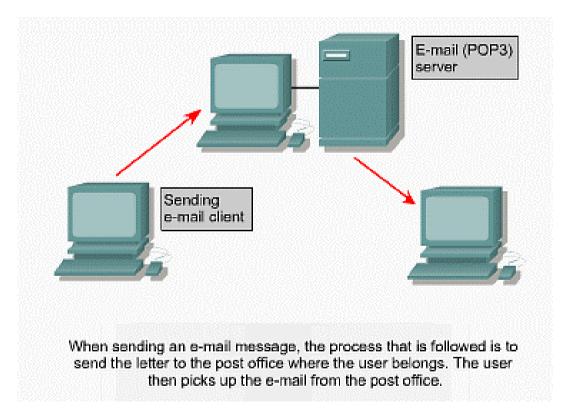
# URL

#### 

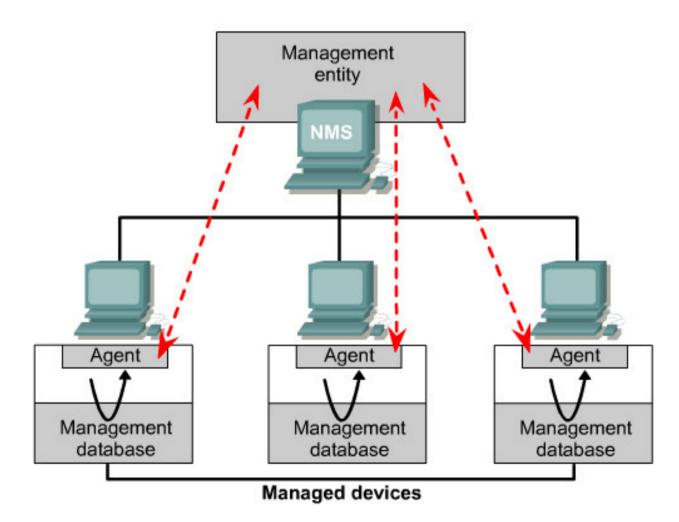
http://	www.	cisco.com	/edu/
Identifies to the browser what protocol should be used.	Identifies the hostname or name of a specific machine.	Represents the domain entity of the website.	Identifies the folder where the Web page is located on the server. Also, since no name is specified, the browser will load the default page identified by the server.

This figure identifies the parts of a standard Uniform Resource Locator (URL) address.

### **E-mail Message Path**



## SNMP



# Telnet

#### 

📑 Telnet - (N	one)		- IX
<u>Connect</u> <u>E</u> dit	<u>T</u> erminal <u>H</u> elp		
	Connect	×	
	<u>H</u> ost Name: <mark>cis</mark>	co.com 👻	
	Port: tel	net 🔹	
	TermType: vt1	• 00	
	Connect	Cancel	

### Summary

