

Unit 1—The Internet

Chapter 2: Representing and Transmitting Information

Study Guide

Big Questions

- Who and what is “in charge” of the Internet and how it functions?
- How is information transmitted from one computer to the other when they are not directly connected?
- How can the Internet keep growing? How does it work?

Enduring Understandings

- 2.1 A variety of abstractions built upon binary sequences can be used to represent all digital data.
- 6.1 The Internet is a network of autonomous systems.
- 6.2 Characteristics of the Internet influence the system built on it.
- 7.3 Computing has a global affect – both beneficial and harmful – on people and society

1. Take a few minutes to go through Unit 1 Stage 8-13 and read the student lesson plans focusing on the important concepts presented in the Background and Vocabulary. Feel free to write yourself some notes, definitions, ideas, etc. in the space below. Be sure to watch every video provided in each unit. Also, be sure to review the reflections from throughout the unit.

Vocab:

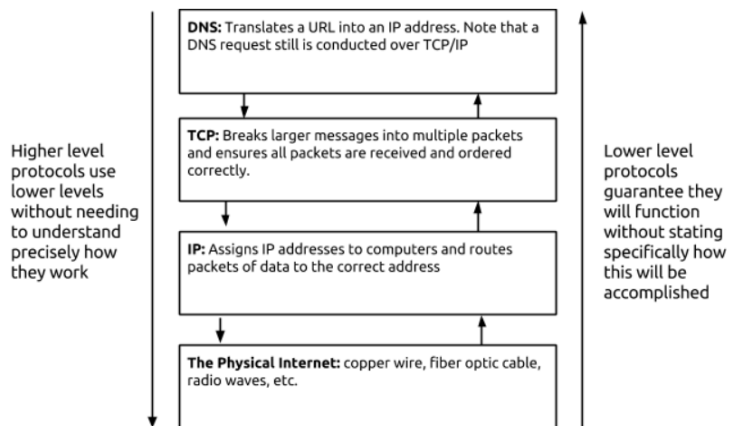
Abstraction	IETF (Internet Engineering Task
ASCII	Force)
Bandwidth	IP Address (Internet Protocol
Binary Message	Address)
Binary Question	Latency
Bit	Packets
Bitrate	Protocol
BGP (Border Gateway Patrol)	Prototype
Client	Request for Comments (RFC)
Data	Routers
DNS (Domain Name System)	Server
DNS Spoofing	TCP (Transmission Control
DDOS Attack	Protocol)
HTTP (HyperText Transfer Protocol)	W3C (World Wide Web
	Consortium)

2. Be prepared to write a short sentence about the following topics:
 - a. The Internet is for Everyone
 - b. The Need for Addressing
 - c. Routers and Redundancy
 - d. Packets and Making a reliable Internet
 - e. Minimum Spanning Tree, Nearest Neighbor, Cheapest Link and Brute Force Algorithms
 - f. The Need for DNS
 - g. HTTP and Abstraction on the Internet

3. Given the following log, be able to explain the details.

IP Address	Time	URL
1.1.1.1	11:05:23.22	example.com
1.5.1.8	11:05:29.71	news.com
1.1.5.1	11:06:13.48	sports.com
1.5.1.8	11:08:09.95	example.com

4. Given the diagram of Internet Protocols and Abstraction, be able to fill in this table and be able to explain how the protocols on the internet make use of abstraction.



5. List an example of a domain name and its relative subdomain.

6. Are TCP/IP packets ever dropped? Explain packet routing...

7. Explain how routers work and the entire routing process.

8. What is the reason that we are moving to IPv6?

9. What is a plain text file? Can you make a plain text file (similar to a NotePad, WordPad or Text File) in Excel?

10. What type of Cisco Certifications are available? How do you get them? What do you learn? What job/salary can you get?

11. Given the following mapping example, what is the cheapest (lowest count) route to get from point A to point B.

