Lab - Research Networking Standards (Instructor Version)

Instructor Note: Red font color or gray highlights indicate text that appears in the instructor copy only.

Objectives

- **Research Networking Standards Organizations**
- **Reflect on Internet and Computer Networking Experiences**

Background / Scenario

Using web search engines like Google, research the non-profit organizations that are responsible for establishing international standards for the internet and the development of internet technologies.

Required Resources

Device with internet access

Instructions

Step 1: Research Networking Standards Organizations

In this step, you will identify some of the major standards organizations and important characteristics, such as the number of years in existence, the size of their membership, the important historical figures, some of the responsibilities and duties, organizational oversight role, and the location of the organization's headquarters.

Use a web browser or websites for various organizations to research information about the following organizations and the people who have been instrumental in maintaining them.

You can find answers to the questions below by searching the following organizational acronyms and terms: ISO, ITU, ICANN, IANA, IEEE, EIA, TIA, ISOC, IAB, IETF, W3C, RFC, and Wi-Fi Alliance.

1. Who is Jonathan B. Postel and what is he known for? (Search hint: Jon Postel)

Jonathan Postel was an American computer scientist who made significant contributions to the development of the internet standards, to the creation of Internet Assigned Numbers Authority (IANA) and as the RFC Editor.

2. Which two related organizations are responsible for managing the top-level domain name space and the root Domain Name System (DNS) name servers on the internet? (Search hint: ICANN, IANA)

International Corporation for Assigned Names and Numbers (ICANN) and Internet Assigned Numbers Authority (IANA)

3. Vinton Cerf has been called one of main fathers of the internet. What internet organizations did he chair or help found? What internet technologies did he help to develop? (Search hint: Vint Cerf, IAB, ISOC, ICANN)

Vinton Cerf co-founded Internet Society (ISOC) with Bob Kahn in 1992, helped with the creation of ICANN, and served as the chair of Internet Architecture Board (IAB) from 1989 – 1991.

4. What organization is responsible for publishing Request for Comments (RFC)? (Search hint: IETF)

Internet Engineering Task Force (IETF)

5. What do RFC 349 and RFC 1700 have in common? (Search hint: Request for Comments, Google – RFC 349, RFC 1700)

Port Numbers. The current list can be found at http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xml

6. What RFC number is the ARPAWOCKY? What is it? (Search hint: Request for Comments, Google – ARPAWOCKY)

RFC 527. The first humorous RFC which then led to IETF launching April fool's day RFC in 1989.

7. Who founded the World Wide Web Consortium (W3C)? (Search hint: W3C)

Founded by Tim Berners-Lee at MIT

8. Name 10 World Wide Web (WWW) standards that the W3C develops and maintains? (Search hint: W3C)

Some samples: Common Gateway Interface (CGI), Document Object Model (DOM), HyperText Markup Language (HTML), Extensible Markup Language (XML)

9. Where is the Institute of Electrical and Electronics Engineers (IEEE) headquarters located and what is the significance of its logo? (Search hint: IEEE)

Institute of Electrical and Electronics Engineers (IEEE) is headquartered in New York City, New York, United States. The IEEE logo is a diamond-shaped design which illustrates the right hand grip rule embedded in Benjamin Franklin's kite.

10. What is the IEEE standard for the Wi-Fi Protected Access 2 (WPA2) security protocol? (Search hint: WPA2)

WPA2 is based on IEEE 802.11i standard. It is commonly used on Wi-Fi wireless network.

11. Is the Wi-Fi Alliance a non-profit standards organization? What is their goal? (Search hint: WiFi Alliance)

Yes, Wi-Fi Alliance is a non-profit trade association, and its goals are to ensure interoperability and backward compatibility and provide innovation support.

12. Who is Hamadoun Touré? (Search hint: ITU)

Hamadoun Touré of Mali is the Secretary General of the International Telecommunication Union (ITU).

13. What is the International Telecommunication Union (ITU) and where is it headquartered? (Search hint: ITU)

ITU is an agency of the United Nations dedicated to the information and communication technologies. ITU's headquarters are located in Geneva, Switzerland.

14. Name the three ITU sectors. (Search hint: ITU)

The three ITU sectors are: Radio communication, Standardization and Development.

15. What does the RS in RS-232 stand for and which organization introduced it? (Search hint: EIA)

RS stands for Recommended Standard. RS-232 was introduced by the Radio Section of Electronic Industries Alliance (EIA).

16. What is SpaceWire? (Search hint: Spacewire, IEEE)

SpaceWire is a standard for high-speed links and networks for use onboard spacecraft.

17. What is the mission of the ISOC and where are its headquarters located? (Search hint: ISOC)

The Internet Society (ISOC) headquarters are located in Reston, Virginia and Geneva, Switzerland. Its mission is "to assure the open development, evolution and use of the internet for the benefit of all people throughout the world".

18. What organizations does the IAB oversee? (Search hint: IAB)

IAB oversees Internet Engineering Task Force (IETF) and Internet Research Task Force (IRTF).

19. What organization oversees the IAB? (Search hint: IAB, ISOC)

ISOC oversees IAB.

20. When was the ISO founded and where are its headquarters located? (Search hint: ISO)

International Organization for Standardization (ISO) was founded in 1947 and its headquarters are located in Geneva, Switzerland.

Step 2: Reflect on Internet and Computer Networking Experiences

Take a moment to think about the internet today in relation to the organizations and technologies you have just researched. Then answer the following questions.

1. How do the internet standards allow for greater commerce? What potential problems could we have if we did not have the IEEE?

Each company would development its own protocols and products which may not work with equipment from other companies.

2. What potential problems could we have if we did not have the W3C?

We would not have a "common" language on the internet to display information and communicate with each other.

3. What can we learn from the example of the Wi-Fi Alliance with regard to the necessity of networking standards?

If equipment manufacturers follow the same standards/rules, it allows for interoperability and backward compatibility. This encourages competition, allows for consumer choices and encourages the manufacturers to create better products.