

Lab - Research Networking Standards

# 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?

- Jonathan B. Postel was a computer scientist

- He was known for managing the technical development of the early internet, particularly through the RFC process (defining internet standards) and running IANA (managing internet domain names and numbers).

1. 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?

ICANN (Internet Corporation for Assigned Names and Numbers) and IANA (Internet Assigned Numbers Authority). While ICANN has overall responsibility, they delegate many technical functions to IANA.

1. 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?

- Vinton Cerf helped found and chaired the Internet Society (ISOC). He also served as chairman of the board for ICANN (Internet Corporation for Assigned Names and Numbers).

- As for technologies, he is best known as a co-designer, with Robert Kahn, of the TCP/IP protocols and the architecture of the Internet.

1. What organization is responsible for publishing Request for Comments (RFC)?

The Internet Engineering Task Force (IETF) is primarily responsible for publishing Request for Comments (RFCs).

1. What do RFC 349 and RFC 1700 have in common?

- Both RFC 349 and RFC 1700 have to do with **port numbers** on the internet.

+ **RFC 349** proposes the idea of a "czar" (which Jonathan Postel became) to assign official socket numbers (which we now call port numbers) to standard protocols. 1 It also suggests an initial allocation of these numbers.

**+ RFC 1700** is a later document that builds upon RFC 349 and lists assigned port numbers. It's essentially a registry of these numbers and their associated services.

* In essence, RFC 349 lays out the idea of managing port numbers, and RFC 1700 is an early example of that management in action.

1. What RFC number is the ARPAWOCKY? What is it?

* RFC 527 is the ARPAWOCKY. 1 It's a parody of Lewis Carroll's nonsense poem "Jabberwocky" and is considered the first April Fool's Day RFC, published in June 1973.
* It's a humorous take on the technical language and processes of the early ARPANET (the precursor to the Internet)

1. Who founded the World Wide Web Consortium (W3C)?

The World Wide Web Consortium (W3C) was founded by Tim Berners-Lee in 1994.

1. Name 10 World Wide Web (WWW) standards that the W3C develops and maintains?

10 World Wide Web (WWW) standards that the W3C develops and maintains are HTML, CSS, XML, SVG, MathML, XHTML, WAI-ARIA, WebTRC, WebAssembly, and Web Share API.

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

- The Institute of Electrical and Electronics Engineers (IEEE) has a corporate office in New York City, but most of its business is conducted at its Operations Center in Piscataway, New Jersey.

- The IEEE logo is a diamond-shaped emblem that is registered with the U.S. Patent and Trademark Office. It is a combination of elements from the logos of the two predecessor organizations that merged to form the IEEE: the American Institute of Electrical Engineers (AIEE) and the Institute of Radio Engineers (IRE)

1. What is the IEEE standard for the Wi-Fi Protected Access 2 (WPA2) security protocol?

The IEEE standard for the Wi-Fi Protected Access 2 (WPA2) security protocol is **IEEE 802.11i-2004**.

1. Is the Wi-Fi Alliance a non-profit standards organization? What is their goal?

- Yes, the Wi-Fi Alliance is a non-profit standards organization.

- Their primary goal is to ensure interoperability of Wi-Fi products. In simpler terms, they want to make sure that any Wi-Fi certified device, regardless of the manufacturer, will work seamlessly with any other Wi-Fi certified device.

They achieve this by:

* **Developing standards:** They contribute to the development of Wi-Fi technology standards.
* **Certifying products:** They test and certify products to ensure they meet the standards and can use the Wi-Fi logo. This logo is a mark of quality and interoperability.
* **Promoting Wi-Fi:** They advocate for the use and advancement of Wi-Fi technology.

So, in essence, they play a crucial role in making Wi-Fi the ubiquitous and user-friendly technology we know today.

1. Who is Hamadoun Touré?

Hamadoun Touré is a Malian politician, and telecommunications engineer who served as the Secretary-General of the International Telecommunication Union (ITU) from 2007 to 2014.

1. What is the International Telecommunication Union (ITU) and where is it headquartered?

- The International Telecommunication Union (ITU) is a specialized agency of the United Nations that is responsible for information and communication technologies (ICTs). It is the oldest agency in the UN system, having been founded in 1865.

- The ITU has its headquarters in **Geneva, Switzerland**.

1. Name the three ITU sectors.

The International Telecommunication Union (ITU) is structured into three main sectors, each focusing on a specific area of telecommunications: **Radiocommunication Sector (ITU-R), Telecommunication Standardization Sector (ITU-T, and Telecommunication Development Sector (ITU-D)**

1. What does the RS in RS-232 stand for and which organization introduced it?

* The "RS" in RS-232 stands for **Recommended Standard**.
* It was introduced by the **Electronic Industries Association (EIA)**, which is now part of the Telecommunications Industry Association (TIA).

1. What is SpaceWire?

SpaceWire is a high-speed data communication protocol specifically designed for use in spacecraft. It's like a specialized network system that allows various components within a spacecraft to communicate with each other quickly and reliably

1. What is the mission of the ISOC and where are its headquarters located?

- The Internet Society (ISOC) is a global non-profit organization that works to ensure the open development, evolution, and use of the Internet for the benefit of all people throughout the world.

- ISOC's headquarters are located in **Reston, Virginia, USA**.

1. What organizations does the IAB oversee?

The Internet Architecture Board (IAB) is a group of experts responsible for the technical management of the development of Internet standards. It oversees several task forces and groups that work on specific areas of Internet technology. Here are some of the key organizations and groups that the IAB oversees:

1. What organization oversees the IAB?

The Internet Architecture Board (IAB) is overseen by the **Internet Society (ISOC)**.

1. When was the ISO founded and where are its headquarters located?

* The International Organization for Standardization (ISO) was founded in **1947**.
* Its headquarters are 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?

- Internet standards are like the universal language and rulebook for online commerce. They make sure everyone can understand each other and that things work smoothly, no matter where you are or what device you're using. Here's how they boost commerce:

* **Seamless communication:** Standards ensure that information, like product details or payment instructions, is exchanged accurately and securely between businesses and customers, regardless of their different systems.
* **Interoperability:** Standards allow different systems and devices to work together seamlessly. This means a customer in the US can easily browse and buy from a store in Japan without any technical glitches.
* **Trust and security:** Standards like encryption protocols (SSL/TLS) ensure secure transactions, protecting sensitive information like credit card details and building trust between buyers and sellers.
* **Global reach:** Standards break down geographical barriers, enabling businesses to reach customers worldwide and vice versa. This expands markets and increases competition, benefiting both businesses and consumers.

**Without organizations like the IEEE, we'd face a chaotic online world with many problems:**

* **Incompatibility:** Different companies might use their own technologies, making it difficult for devices and systems to communicate. Imagine a world where your phone couldn't connect to a website because they use different standards!
* **Fragmentation:** The internet could become fragmented, with different "islands" that can't interact with each other. This would severely limit global commerce and communication.
* **Security risks:** Without agreed-upon security standards, online transactions would be much more vulnerable to hacking and fraud, making people hesitant to engage in online commerce.
* **Slower innovation:** Standards encourage innovation by providing a stable foundation for developers to build upon. Without them, companies would spend more time on basic compatibility issues, slowing down the development of new technologies and services.

In essence, internet standards are the invisible backbone of online commerce, ensuring a smooth, secure, and interconnected digital marketplace that benefits businesses and consumers worldwide. Organizations like the IEEE play a crucial role in developing and maintaining these standards, preventing chaos and fostering growth in the digital economy.

Nguồn và nội dung liên quan

1. What potential problems could we have if we did not have the W3C?
2. What can we learn from the example of the Wi-Fi Alliance with regard to the necessity of networking standards?