

Internet Addressing

Internet Addressing

- Use addressing systems to assign a unique identifier to each computer in the network.
- Uses IP (internet protocol) addresses unique identifiers.
- Used a 32-bit address pattern (IP version 4 or IPv4)
 - Uniquely identifies all of the internet components until we ran out of unique identifiers.
- Today we use 128-bit address (IP version 6 or IPv6) in addition to legacy IPv4 addresses.
- Are traditionally written in dotted decimal notation, with the bytes of the address separated by periods.
- An alternative system accesses machines using mnemonic names (wgu.edu)

IPv4 address in dotted-decimal notation

172 . 16 . 254 . 1

↓ ↓ ↓ ↓

10101100.00010000.11111110.00000001

8 bits 32 bits (4 bytes)

Top Level Domains

- Top-Level domains include:
 - Com - Commercial Institutions
 - Gov – Government Agencies
 - Org – Nonprofit Organization
 - TV – television stations

Internet Key Words

- **DNS (domain name system):** DNS is a hierarchical and decentralized system that translates human-readable domain names into numerical IP (internet protocol) addresses—which computers use to identify one another on a network.
- **Domain names:** These are the familiar, easy-to-read names that are used to navigate the internet, such as "www.google.com." These names are easier for humans to remember than IP addresses.
- **Hierarchy:** The DNS system is organized hierarchically. At the top of the hierarchy are the root DNS servers, which direct requests to the appropriate top-level domain (TLD) servers. TLDs include extensions like ".com," ".org," ".net," and country-code TLDs, such as ".uk" and ".de."
- **DNS resolution:** This is the process of translating a domain name into an IP address.
- **ICANN (Internet Corporation for Assigned Names and Numbers):** a nonprofit organization that coordinates the internet's operations, awards blocks of consecutively numbered IP addresses to ISPs. ISPs then assign a unique IP address to each machine within their region of authority.

Acronyms

- DARPA (Defense Advanced Research Projects Agency)
- Internet service providers (ISPs)
- IP (internet protocol)
- ICANN (Internet Corporation for Assigned Names and Numbers)
- Top-Level Domain (TLD)