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Routers

All of these networks rely on Network Access Point (NAPs), backbones and **routers** to talk to each other. What is incredible about this process is that a message can leave one computer and travel halfway across the world through several different networks and arrive at another computer in a fraction of a second! The routers determine where to send information from one computer to another. Routers are specialized computers that send your messages and those of every other Internet user speeding to their destinations along thousands of pathways. A router has two separate, but related, jobs:

- It ensures that information doesn't go where it's not needed. This is crucial for keeping large volumes of data from clogging the connections of "innocent bystanders."
- It makes sure that information does make it to the intended destination.

In performing these two jobs, a router is extremely useful in dealing with two separate computer networks. It joins the two networks, passing information from one to the other. It also protects the networks from one another, preventing the traffic on one from unnecessarily spilling over to the other. Regardless of how many networks are attached, the basic operation and function of the router remains the same. Since the Internet is one huge network made up of tens of thousands of smaller networks, its use of routers is an absolute necessity

1.4 Common Internet Protocols

The internet protocols are derived from the **TCP/IP** (Transmission Control Protocol/ Internet Protocol) suite of protocols which is the set of protocols used to communicate across the internet. It is also widely used on many organizational networks due to its flexibility and wide array of functionality provided. Microsoft who had originally developed their own set of protocols now is more widely using TCP/IP, at first for transport and now to support other services. For the purpose of this unit we will discuss the most common and important protocols.

ARP - Address Resolution Protocol enables the packaging of IP data into ethernet packages. It is the system and messaging protocol that is used to find the ethernet (hardware) address from a specific IP number. Without this protocol, the ethernet package could not be generated from the IP package, because the ethernet address could not be determined.

RARP - Reverse address resolution protocol is used to allow a computer without a local permanent data storage media to determine its IP address from its ethernet address.

- The rules for displaying certain kinds of information
- The effect of different scenarios on the display

The website wireframe connects the underlying conceptual structure, or information architecture, to the surface, or visual design of the website. Wireframes help establish functionality, and the relationships between different screen templates of a website. An iterative process, creating wireframes is an effective way to make rapid prototypes of pages, while measuring the practicality of a design concept. Wireframing typically begins between —high-level structural work—like flowcharts or site maps—and screen designs. Within the process of building a website, wireframing is where thinking becomes tangible.

Uses of wireframes

Developers use wireframes to get a more tangible grasp of the site’s functionality, while designers use them to push the user interface (UI) process. User experience designers and information architects use wireframes to show navigation paths between pages. Business stakeholders use wireframes to ensure that requirements and objectives are met through the design.

Working with wireframes may be a collaborative effort since it bridges the information architecture to the visual design. Due to overlaps in these professional roles, conflicts may occur, making wireframing a controversial part of the design process. Since wireframes signify a -bare bones aesthetic, it is difficult for designers to assess how closely the wireframe needs to depict actual screen layouts. Another difficulty with wireframes is that they don’t effectively display interactive details. Modern UI design incorporates various devices such as expanding panels, hover effects, and carousels that pose a challenge for 2-D diagrams. Wireframes may have multiple levels of detail and can be broken up into two categories in terms of fidelity, or how closely they resemble the end product.

- Low-fidelity Resembling a rough sketch or a quick mock-up, low-fidelity wireframes have less detail and are quick to produce. These wireframes help a project team collaborate more effectively since they are more abstract, using rectangles and labeling to represent content.
- High-fidelity High-fidelity wireframes are often used for documenting because they incorporate a level of detail that more closely matches the design of the actual webpage, thus taking longer to create.

Elements of wireframes

different browsers, different computer screen shapes, and different screen ratios set on standard monitors.

- Cannot explicitly declare new scope independently of position - Scoping rules for properties such as z-index look for the closest parent element with a position:absolute or position:relative attribute. This odd coupling has undesired effects such as it is impossible to avoid declaring a new scope when one is forced to adjust an element's position, preventing one from using the desired scope of a parent element.
- Pseudo-class dynamic behavior not controllable - CSS implements pseudo-classes that allow a degree of user feedback by conditional application of alternate styles. One CSS pseudo-class, ":hover", is dynamic (equivalent of javascript "onmouseover") and has potential for abuse (e.g., implementing cursor-proximity popups), but CSS has no ability for a client to disable it (no "disable"-like property) or limit its effects (no "nochange"-like values for each property).

Advantages of CSS

- Flexibility - By combining CSS with the functionality of a Content Management System, a considerable amount of flexibility can be programmed into content submission forms. This allows a contributor, who may not be familiar or able to understand or edit CSS or HTML code to select the layout of an article or other page they are submitting on-the-fly, in the same form. When working with large-scale, complex sites, with many contributors such as news and informational sites, this advantage weighs heavily on the feasibility and maintenance of the project.
- Accessibility - Without CSS, web designers must typically lay out their pages with techniques that hinder accessibility for vision-impaired users, like HTML tables
- Separation of content from presentation - CSS facilitates publication of content in multiple presentation formats based on nominal parameters. Nominal parameters include explicit user preferences, different web browsers, the type of device being used to view the content (a desktop computer or mobile Internet device), the geographic location of the user and many other variables.
- Site-wide consistency - When CSS is used effectively, in terms of inheritance and "cascading," a global style sheet can be used to affect and style elements site-wide. If the situation arises that the styling of the elements should need to be changed or adjusted, these changes can be made by editing rules in the global style sheet. Before CSS, this sort of maintenance was more difficult, expensive and time-consuming.
- Bandwidth - A stylesheet, whether internal to the source document or separate, will specify the style once for a range of HTML elements selected by class, type or relationship to others.