ACS 1803-055 Introduction to Information Systems

Week 11: - The Internet and Telecommunications

March 19, 2020

Overview

This synopsis will cover the high level objectives of todays class, e. for you understand what a network is, the devices attached and

Telecommunications is the transmission of data (signals) from one point to another. We call the path or technology the "medium" through which the signal flows.

There are several main types of network topology (architecture), Star, Bus and Mesh. Each has a different structure that offer different benefits, e.g. redundancy, central point (node).

A common term we use in networking is Client Server which is a model by which a peer computer acts a server of data or programs and the other devices (computers) are the clients which use the data/applications on the server.

Within a business, home, office, or factory we have different types of network, yet we may think of them all the same but they have some differences in rage (span) of the network from short distances 10 feet to many mils and cross country borders. It would be useful to review these terms and the characteristics given.

Speed is an important to the use of the network and the types of use that it can be put to, the length of cables or technology like Wifi can also be a limiting factor to the transmission data rate. When we want to send large volumes of data quickly (e.g. backup a database or download GB's of data we want to use the right kind of channel to do so.

Two main categories, Wired, where we use physical cables or Wireless where we use wifi, satellites, cell phone towers etc. With wireless there is no physical connection just a logical network connection. The different types of medium , cable are important generally to distance and data transfer rates.

Review slides 11-20 to understand the different types of networking transmission systems commonly in use, which ones do you recognise or are familiar with?

Slide 22 shows what the internet might look like if we could "light it up", it stretches right across the surface of the planet and into space.

Slide 25, you must get familiar haw we physically connect our computer to the network and the devices used, the modem is one of the most critical devices on a network it is the main connection between our site (your home for example) and the internet. 4 terms on slide 4 are important.

Slide 27, this is really important to tonight's class, TCP/IP, the protocol which allows devices to talk to each other and share information, e.g. how do we get that picture from our mobile phone to facebook? Without TC/IP we could not do this, how does that picture actually get transmitted and appear on Facebook exactly how it looks on my phone? Slide 28 is very important.

To get a picture from your phone to Facebook, the file is broken up into 1's and 0's and transmitted across the network where the receiver recreated the picture by assembling the packets into the right order. This is packet switching, the think is the protocol knows how to break the data up and reassemble when received at the destination. Slide 30 shows at a very high level how the network and protocols are used to transmit data from one site to another.

However, the story does not end there, the disassembled "packets" of data need to be transmitted across the internet in order to reach the destination (Facebook). AS the network is complex set of interconnections packets will be directed to the target site using the IP address of the destination service kind of like an address (hence we call the url the address which is translated into a number address, e.g. 108.255.0.255

Read this and ask question, you must understand packet switching and TCP/IP.

WWW – World Wide Web is fundamentally a global network with devices attached (access points) thought which service provides route our internet traffic through. A URL, uniform resource locator is import as to how we "address" the service, Google, Facebook, Netflix etc. Each name represents a domain (area) and each area has a subset of device attached. Each point on the network has a unique IP address. As it is easier to recall names we use a DNS server to covert the names to numbers which are then used to address the packets.

Slide 39 you must know the important terms involved when using web browsers, web pages and the ability to "link" web pages to each other. The browser is used to convert the description of the web page onto the users screen.

Read slides 40-46 carefully and understand terms related to WWW. Slide 46 describes 4 types of web sites and the functionality they provide. Try to put these types of web page in perspective of sites you use. A news site (CBC BBC, CNN) might be more static content where we consume the data but we don't necessarily interact updating the content ourselves. In some cases there are simple pages where we might submit a review of a product, other cases are interactive application (games, simulators,

knowledge bases with interactive learning components, banking applications etc. which are more complex and require significant programming. This section is worth knowing.

Slide 47 – Cloud computing, you need to understand the term, it refers to using infrastructure on the internet somewhere (we often don't car but in say healthcare we do). We can rent complex equipment to reduce the need for high cost infrastructure and resources within the business. Is it better for the business to focus on what it does and let cloud service providers focus on what they do best (and the grey area between). You should understand the service that can be provided on the cloud and the benefits.

Read up on how we use Google to search a web site, what is the process?

Google for example scans and creates a database of searchable terms, when the user searches a site that database is searched and a list of "hits" are returned. The user than can select which hit they are interest in.

Slide 53, what is a web session? Understand how this works from the moment a user opens a web browser and views the website they are interested in. A description is given, please learn.

The future of the Internet

Worth to read up and understand, the Internet of Things, what is it, sensor technology, wearables, the refrigerator connected to the web, burglar, fire alarms, vehicles, heating systems, NEXT, SIRI, all are adding to the number of devices on the internet which we can use to collect, share and consume data.

Be familiar with the term IoT.