1. DNS uses UDP instead of TCP. If a DNS packet is lost, there is no automatic recovery. Does this cause a problem, and if so, how is it solved?

The Domain Name System (or DNS) returns a devices IP address when a hostname is looked up (Costa, 2008). When DNS packets are lost, applications cannot create a connection with the host. For example, if a browser is trying to establish a connection to UoPeople.org and looses a DNS packet, the browser will eventually time-out and state it could not find the domain (Barker, 2014).

Although there is not automatic way to recover from a DNS packet loss, there are effective work-arounds (Barker, 2014):

* Having multiple DNS servers to help resolve the address would prevent any one DNS server failing from affecting the outcome.
* Don’t use DNS at all for critical applications. That is, use the fixed IP addresses instead of the hostnames.

2. Suppose that someone sets up a vacation reply and sends a message before logging out. Unfortunately, the recipient has also set up a vacation reply message. What will happen in this case? Will the canned replies keep on going back and forth until someone returns?

Programs that automatically respond to Email with vacation notification or out of office message, could cause an infinite loop in the situation described above. However, RFC 3834 (Moore, 2004) has established guidelines that prevent this loop from happening. One recommendation in RFC 3834 is that automatic responses should not be used to respond to any emails that have an Auto-Submitted header field. Therefore, any message that was auto-generated will not be responded to. Similar recommendations in the RFC further reduce the likelihood that automated messages will cause an infinite loop or could facilitate a Denial of Service attack.

3. When web pages are sent out, the are prefixed with MIME headers. why?

When servers begin a web transmission, MIME headers are inserted. These headers are used by the clients to determine the right application to recreate the data (Microsoft, 2009). Also, if the client does not have the appropriate application to resolve the data, then the MIME header can serve as a message to alert a user of the reason why their data was not resolved correctly.

4. Does VoIP has same problems with the firewall that streaming audio has

Firewalls have to process large numbers of packets from different sources, which can cause congestion (Stolarz, 2004). Congestion at a firewall can result in delayed packets and/or dropped packets. In the cases of VoIP and streaming audio, this can degrade the audio quality of the media.

According to Stolarz (2004), tne approach that companies have used to reduce the likelihood of congestion at the firewall is to simply turn off all UDP traffic such that streaming audio and VoIP are not supported. In response, streaming vendors have made streaming over TCP possible. Corporations have further restricted TCP as well and have even begun restricting data transfer to only HTTP traffic. Of course, ingenuity perseveres as packets are now being tunneled over HTTP connections!!! Totally inefficient, but it gets the media through the locked down firewalls.

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