Essay Topic 1: HTTP vs HTTPs

How is HTTPs changing our daily online security?

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There are two types of hypertext transfer protocols used today in websites. HTTP and HTTPs. The most glaring difference in the two is that HTTP is not encrypted, while HTTPs is. The fact that HTTP has no encryption leaves the door wide open for third-party individuals with nefarious intent to intercept traffic and access sensitive information.

Not long ago, most websites were running on the HTTP protocol and HTTPs was reserved for areas of sites that were participating in commerce. With the ever-increasing use of the internet and increase of threat-actors on the internet, most sites have decided that it was important for them to make HTTPs their standard.

Making a website HTTPs requires obtaining a secure sockets layer certificate (SSL). Obtaining this certificate "creates a secure encrypted connection between the web server and the web browser."

There are several differences when it comes to the technical side of these two protocols. For instance, HTTP operates on the application layer of the OSI model, while HTTPs operates on the transport layer. A certificate is not required for HTTP, whereas one is necessary for HTTPs to operate. The port number used for communication on HTTP is 80; port number 443 is used for communication with HTTPs. But one of the most important differences in the two protocols is that HTTPs is much less susceptible to "man in the middle", and "eavesdropping" attacks.

HTTPs uses an asymmetric key algorithm where two keys are used, one public and one private. The web browsers, or "clients", are distributed the public keys through certificates and the web server retains the private key, with any data exchange being encrypted between the client and server. This helps to limit the chances that a third party could intercept and read the

information transferred between servers and browsers. With the vast differences in security, one may ask, why would any website still use HTTP?

HTTP is extremely simplistic in comparison the HTTPS. This fact makes HTTP much faster. "It is a stateless protocol and does not recall anything of the preceding web session." Ultimately, web sites would have to determine if the cost and speed of using HTTP is more beneficial for their company, and the trust of individuals browsing their websites, than the security that comes with the encryption HTTPs offers when determining which protocol to use. But the vast number of websites that have switched to HTTPs over a relatively short period of time should be an indication where most websites stand on this topic.

References

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