College of Computing Technology (CCT)

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Transport Layer Protocol Research

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Introduction

The target of this research is to identify three main protocols that is responsible to transfer data on the internet.

This document will cover a short definition, one example of application and identify which port number each application uses.

At the end of this research, a brief conclusion will describe how important those protocols are to the flux of data on the internet.

Transmission Control Protocol (TCP)

The TCP is a protocol that transmit and manage data between all the computers in the world. This protocol is responsible to send, resave and check if all the data had arrived to the destination. In case of data lost, the protocol will request the source to resend it.

Also, the protocol TCP works together with “IP” address. With “TCP/IP”, one computer is able to send data to another computer in the world that is connected on the internet and using an IP address.

The HTTP (hypertext transfer protocol) is one of the examples of application on the TCP protocol, and is used to transmit data (web pages) from a computer to another.

HTTP uses port number 80 to be identified.

User Datagram Protocol (UDP)

User Datagram Protocol (UDP) is used for the same purpose as the protocol TCP, but the main reason to create the (UDP) was because we have applications that should arrive to the destination faster than if it was sent by (TCP). The (UDP) is faster because it is not complex as the (TCP) is, (UDP) don`t use acknowledge to confirm if a package had arrived or not to the client, so it reduces the possibility of applications.

As an example of application for (UDP) we have the “Real Time Streaming Protocol “, which we use to stream audio/videos from a source on the internet.

The Real time Streaming Protocol uses the port number 554 to identify itself.

Datagram Congestion Control Protocol (DCCP)

The DCCP is a protocol that is created for applications that needs to be streamed as fast as the UDP protocol does and with the same acknowledge of the TCP.

As the TCP creates a big traffic of data duplicating packages, it is not a good option for some applications.

The UDP eliminates the traffic problems but does not control the congestion of the packages and don't request loss packages.

The DCCP was developed to make sure the package will be delivered without duplicate data and on the same time be fast enough to stream e.g. audio, videos or games on real time without loss.

The Real-time Stream Protocol (RTP) media data is one of the application that uses DCCP. The good benefit of use RTP on DCCP is because the protocol gives the possibility to stream the media to a single or multiple IPs addresses with as best quality as possible.

RTP uses port 5004 to identify the application.

Conclusion

All the protocols that control the traffic of data on the internet, have an important task to do. This task is to keep the communication between one computer to another or from one computer to many others.

The point is, each protocol offers different ways to deliver the same data. It is up to the programmer to identify which protocol will work better to the application that will be introduced.

Once the application and protocol had been identified is possible to see which port will be used. That is the way where the internet is organised. And with that is possible to share the World Wide Web efficiently.

References

Computer Hope (2015). TCP/IP. Available at: http://www.computerhope.com/jargon/t/tcpip.htm/ [accessed 31 October 2015].

T, Joe. L, Eloit. M, Allison. K, Markku. O, Kumiko. S, Martin. At al (2015). Service Name and Transport Protocol Port Number Registry. Available at: https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.txt/ [Accessed 31 October 2015].

Wikipedia (2015). Hyper Text Transfer Protocol. Available at: https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol/ [Accessed 31 October 2015].

Techwriters Furure (2008). UDP User Datagram Protocol. Available at: http://ipv6.com/articles/general/User-Datagram-Protocol.htm/ [Accessed 31 October 2015].

User Datagram Protocol UDP (2008). User Datagram Protocol. Available at: http://www.erg.abdn.ac.uk/users/gorry/course/inet-pages/udp.html/ [accessed 31 October 2015].

M, Gautam Raj (2015). Understanding Datagram Congestion Control Protocol: DCCP. Available at: http://www.academia.edu/793166/Understanding_Datagram_Congestion_Control_Protocol_DCCP/ [Accessed 31 October 2015].

Wikipedia (2015). Datagram Congestion Control Protocol. Available at: https://en.wikipedia.org/wiki/Datagram_Congestion_Control_Protocol/ [Accessed 31 October 2015].

Wikipedia (2015). Real-Time Transport Protocol. Available at: https://en.wikipedia.org/wiki/Real-time_Transport_Protocol/ [Accessed 31 October 2015].