Seminar 2 Preparation: TCP/IP vs OSI

Course: MSc Computer Science

Module: Network and Information Security Management

Assignment: N/A

Date: Saturday 4th September 2021

Student ID: 126853

TCP/IP vs ISO/OSI 7 Layer Model:

Question:

Would the Internet we have today be much better if it was based on the ISO/ OSI 7-layer model rather than TCP/IP?

Response:

To begin with, both the TCP/IP and OSI models were a solution to the problem surrounding the interoperability of different types of computer networks (Maathuis & Smit, 2003).

The OSI model was published by the International Standards Organisation (ISO) in 1984, as standard ISO 7498 (International Standards Organisation, n.d.). This model was an agreed international standard due to many interested parties putting forward ideas (Russell, 2013).

Overall, the OSI model was considered a theoretical model, whereby the documentation and functionalities of each specific element are completed and adopted first, followed by the implementation (AfterAcademy, 2020). The adoption of this model was stemmed by the complexity and bureaucracy surrounding updated standards, which would have prevented the growth of the Internet as we know it today.

On the other hand, TCP/IP is considered a practical, open-source model – whereby protocols are implemented first, followed by documentation (AfterAcademy, 2020).

The open-source nature of this model will inherently bring cost-savings to manufacturers, as they will not need to purchase copies of the OSI standards from the ISO. In addition, due to the autonomy provided with the TCP/IP model, it is significantly quicker to propose and implement changes.

I have included a diagram below which shows the comparisons between the OSI & TCP/IP models, highlighting where certain functionality will reside.

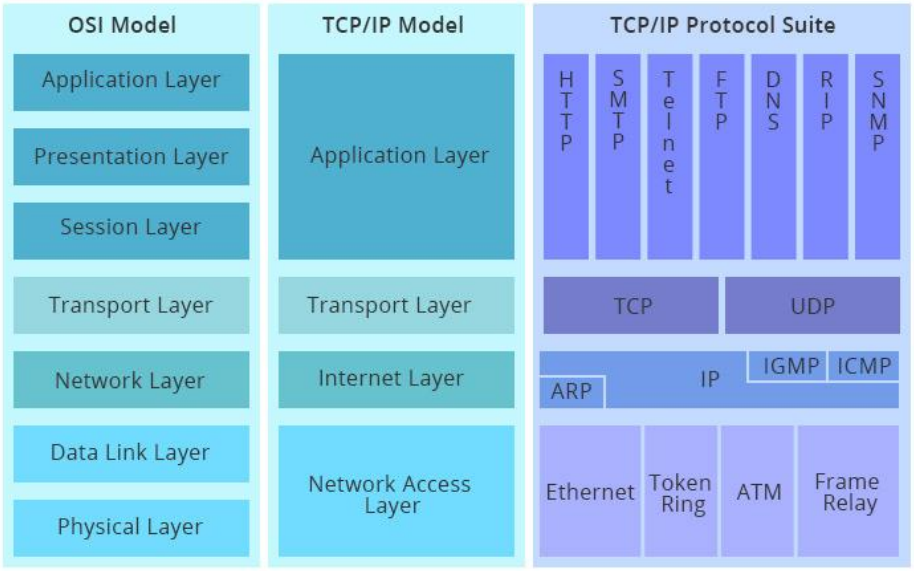

Figure 1: Relationship of layers between TCP/IP and OSI models. (Sheldon, 2017)

References:

Maathuis, L. Smit, W. (2003) *The Battle Between Standards: TCP/IP vs OSI Victory Through Path Dependency Or By Quality?*. Available from: https://core.ac.uk/download/pdf/11458358.pdf [Accessed 30th October 2021].

AfterAcademy. (2020) Which model is better, OSI or TCP/IP?. Available from: https://afteracademy.com/blog/which-model-is-better-osi-or-tcpip [Accessed 30th October 2021].

ISO. (1984) ISO 7498:1984. Available from: https://www.iso.org/standard/14252.html [Accessed 30th October 2021].

Russell, A. (2013) OSI: The Internet That Wasn't. Available from: https://web.archive.org/web/20150209222010/https://spectrum.ieee.org/computing/networks/osi-the-internet-that-wasnt [Accessed 30th October 2021].

Sheldon. (2017) TCP/IP vs. OSI: What's the Difference Between the Two Models?. Available from: https://community.fs.com/blog/tcpip-vs-osi-whats-the-difference-between-the-two-models.html [Accessed 30th October 2021].