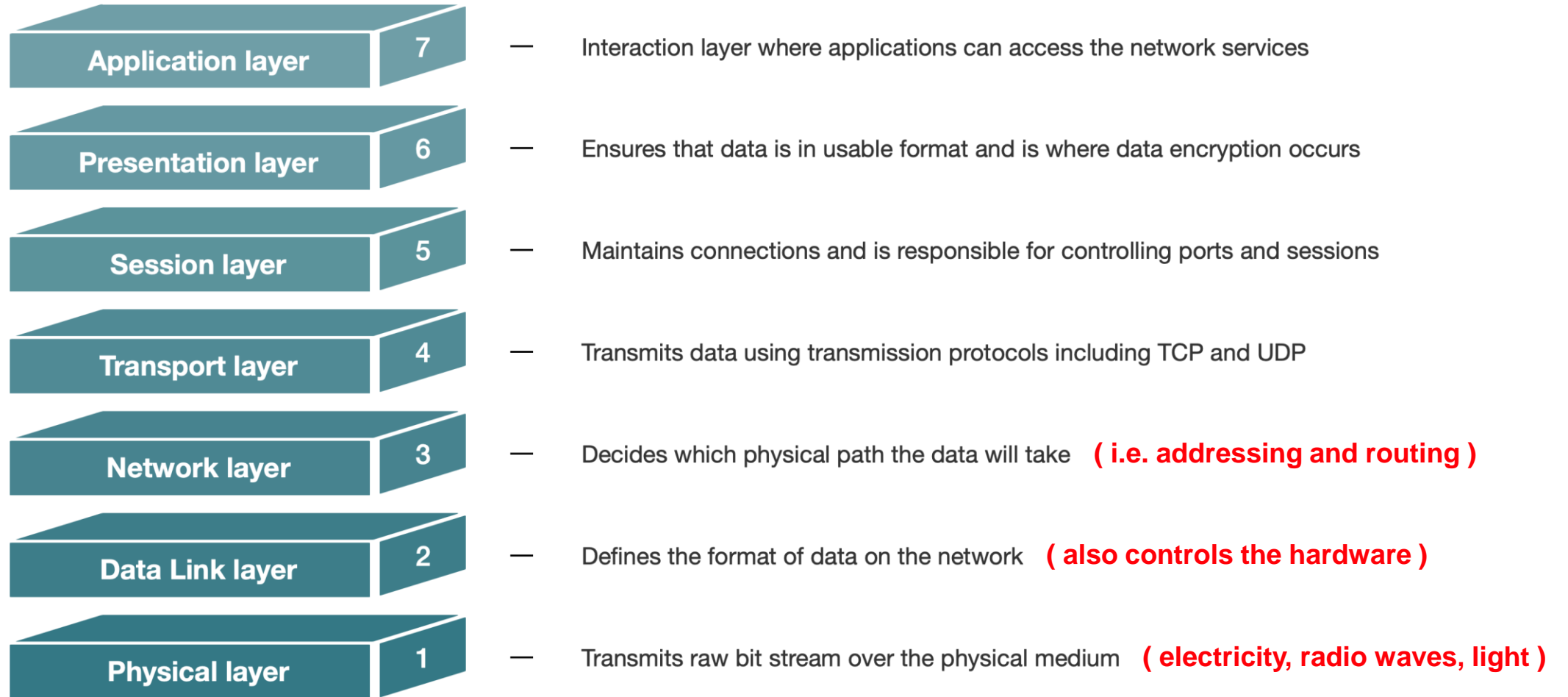




# TCP/IP v ISO/OSI

Seminar preparation

## OSI model



## OSI vs TCP/IP

### OSI model

Application	7
Presentation	6
Session	5
Transport	4
Network	3
Data Link	2
Physical	1

Data

Segment (TCP)  
Datagram (UDP)

Packet

Frame

Bit

### TCP/IP model

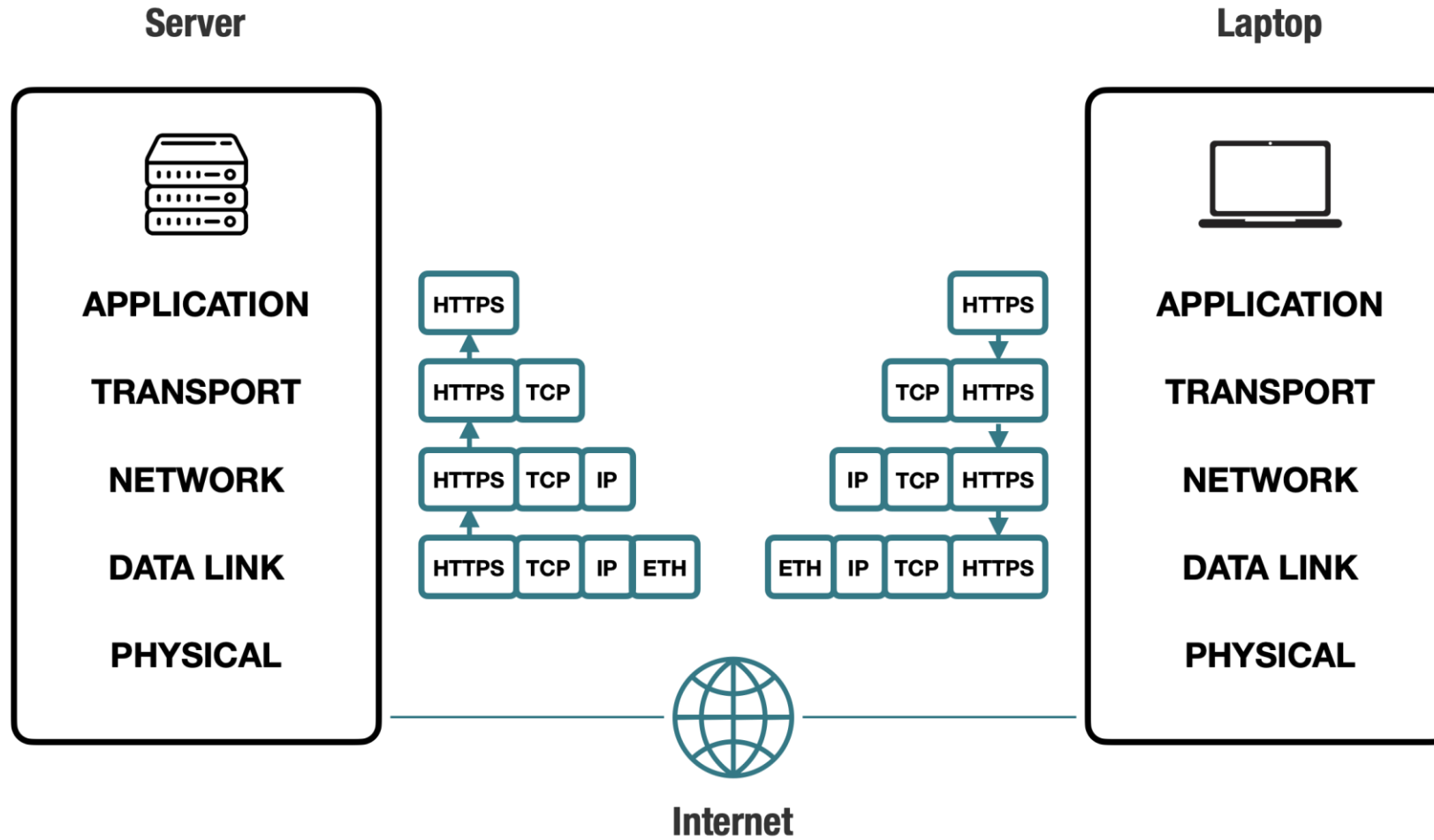
Application	4
Transport	3
Internet	2
Network Interface	1



## OSI vs TCP/IP (cont.)

OSI	TCP/IP
Developed by the International Organization of Standardization (ISO)	Developed by the United States Department of Defence for use across the ARPANet
Conceptual model that defines network communication	Practical implementation based on the principles of the OSI model
Clear distinction between services, protocols, and interfaces	No clear distinction between services, protocols, and interfaces
Model developed first	Protocols developed first
Created <i>after</i> the advent of Internet	Created <i>before</i> the advent of Internet
Expensive	Free with most OSs
Not widely adopted	De-facto networking standard

## Transmission layers \*



\* Source: Digital Ecosystem Infrastructure, Kelley School of Business at Indiana University

## Discussion points

Why has the Internet protocol suite won over the OSI model and become the standard for networking?

- OSI protocol suite was seen by many as too complicated and difficult to implement in full due to its impact on existing network protocols across every layer of the stack. These changes were resisted by many vendors as well as the actual end users
- OSI protocols included too many optional features, which made interoperability of vendor solutions difficult
- ISO's slow and complex standardization process could not keep up with rapid technological advances
- Overall, TCP/IP offered a more p r a g m a t i c approach to computer networking from day one; it was designed, implemented and refined in the context of real network environments



## References

Dennis, A., Prabhakar, B. & Gregory, T. (N.D.) *Digital Ecosystem Infrastructure* [Course]. MicroMasters Program in Information Systems November 2020. Kelley School of Business at Indiana University (via edX).

Russell, A. (2006) 'Rough Consensus and Running Code' and the Internet-OSI Standards War. *IEEE Annals of the History of Computing* 28(3): 48-61.

Tanenbaum, A. (2010) *Computer Networks*. 5th ed. Prentice Hall.



# Scan Results



## Results

- We received various hops (11, 12, 14 and 12) - but this will vary depending on the network the machine is on and the path it must take to reach the website.
- The longest hop was different for each of us (6, 3, 8), but was indicated to have received a timeout response. The average duration would be 5 seconds, as this is the default timeout value.
- ns2.a2hosting.com, ns3.a2hosting.com, ns4.a2hosting.com, ns1.a2hosting.com
- We recieved the registrar details as the contact, as seen below:

<b>Contact</b>	<b>Name</b>	<b>E-mail</b>
Administrative	Managing Director	md@nominet.org.uk
Technical	Technical Director	td@nominet.org.uk

- The websites MX record is “MX preference = 0, mail exchanger = mail.staffmatters.co.uk”
- The website is hosted by A2 hosting located in Michigan, USA. They potentially have servers in Amsterdam from our investigation. The website IP is 68.66.247.187.
- Tools used – Traceroute, Nslookup, Whois, MTR, DIG, and DB-IP

## Discussion points

- Did you have any issues or challenges with the scans?
  - In general we didn't have any large challenges
  - Not everyone was able to find the contact details from a whois search
  - We each received different hops, and our longest hop was at different points
  - One member received two timeouts
- How did you overcome them?
  - By researching the tools to understand what has happened (Timeouts using traceroute)
  - Trying different tools dependant on operating system
  - Understanding correct command tool controls to find correct information (Nslookup, -type=ns)
- How will they affect your final report?
  - We will include certain points within our assumptions
  - Include information we have learnt from the scans within our justifications of why certain tools are used
  - Will give us an initial understanding as to why certain information is not always detected dependant on location (i.e contact details)