

Sn0wF0x Doks

The OSI [OPEN SYSTEMS INTERCONNECTION MODEL]-Model

When we Talk about networks, the OSI-Model is the Absolute first to Think about. This Model is used to Dictate how Devices will send, receive and Interpret Data. One, if not the Most Important Aspect of the OSI Model is that devices can Communicate with other Devices as long as they follow the Model. To achieve this, the OSI-Model has 7 Different Layers [1-7] and with each new layer, data goes to a process called encapsulation

Layer Name		Encapsulation = Adding New Data to a packet
7	Application	Decapsulation = Remove Data from Packet
6	Presentation	
5	Session	Right Now we have The Following 7 Layers
4	Transport	
3	Network	<==
2	Data Link	
1	Physical	

There is also another Model called the IP Model, but I will do this in another Document.

So, Let's go to Look at the Layer, One By One, starting with Layer 7

Layer 7 – Application

„....because the application layer is the layer in which protocols and rules are in place to determine how the user should interact with data sent or received.“ ~ TryHackMe

I couldnt find any better Sentence for this

Almost every „Application“ you use today with an Network Access uses This layer.

Layer 6 – Presentation

This Layer is quite important... There will be tons of Cases where Developer of Software will Write code with more or less complex encryptions, so if we get strange stuff from Layer 7 we stll need to let the rest of the model understand about how it was supposed to be used. This Layer will Translate Data from/to Layer 7 no matter what comes in.

Layer 5 - Session

So now we have Strange Data from Layer 7, that got translated in Layer 6 and now we want the Data to be send to another Computer in the Network.. thats where Layer 5 Comes into Place. Layer 5 Will beginn to create a Connection to The Other computer the Package wants to go. When The Two found each other, a Session is Created for the Time they do. If they loose track, so does their Session do.

As soon as The two Computer are Ready, the Data will be divided into smaller chunks of data (packets) and be send one after another.

Layer 4 - Transport

When a Connection between Two Computers has been established, Data will be send. This can happen with Two Different Protocolls. These Two Are:

==> TCP Protocol [Transmission Control Protocoll]

==> UDP Protocoll [User Datagram Protocoll]

TCP is designed for Precision. It wants the Package to Be delivered and even uses Error-Checking to make sure it will. Thats Quite Handy on One Side, but also Quite Problematic on the Other Side. TCP has the Disadvantage that it needs a Stable Connection To work, which can be a huge Bottleneck if one of the both is slower. TCP is used for Downloading Files, Emails, file Sharing etc.

UDP is the Exact Opposite of this. UDP Want Quantity over Quality. That Aspect makes it quite faster but also way more Error problematic. UDP has no intention in caring of data is received and when one of the computers is slow, it will be a huge problem for the users.

Layer 3 - Network

This is one of the Most Important Parts of the Model, because it Contains Routing. Routing is the way for a data package to go to reach its destination. Everything in this Layer is Working via IPv4 Adresses. We have Two Factors to determine the best route. These Two are;

OSPF (Open Shortest Path First) and RIP (Routing Information Protocoll)

Or in Other Words, The Route to take will be found by the following Questions:

1. What Path is the Shortest? (Short in terms of Devices being in it. Less Devices == Shortest)
2. Which Path is the Most reliable? (Is the Part a Problem in term of lost Packets?)
3. Which Path is the Fastest?

Layer 2 - Data-Link

At this Layer, The Mac of the Receiving Computer will be Added to the Package.

Layer 1 - Physical

This is basically the Physical Component of the Hardware used in the Network

Credits:

I Hope this might Help Someone on their Journey through Infosec :)

If so, feel free to contact me on Twitter : <https://twitter.com/MarcusChachuls1>

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