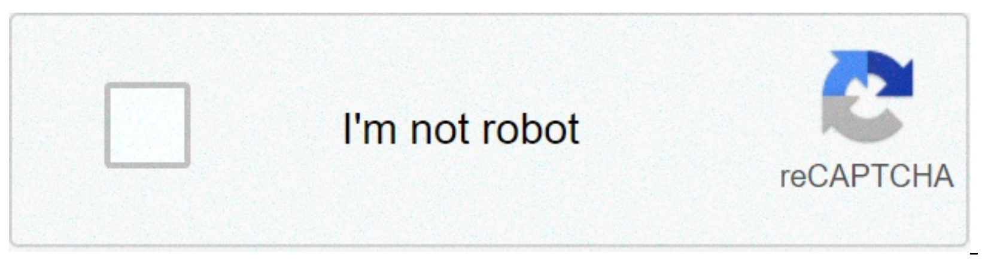
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7 layers of network security

What is 7 layers of network. What are the layers of network security.

The Open Systems Interconnection (OSI) model is a conceptual model to describe the functions of the network system. It was initially developed by the international standardization organization (ISO) in 1984. OSI does not refer directly to any networking system; Instead, it describes network architecture and allows different IT systems from various providers to communicate and exchange data using standard protocols. Using the OSI model, communication between computing systems is carried out through seven layers of abstraction; It is easy to remember the sequence of OSI Model 7 levels using this simple phrase: "All people seem to need data processing." All = Application Level People = Presentation Layer SEMPRE = Layer Seas Session To = Transport Layer Need = Network Layer Data = Data Link Layer Processing = Physical layer Let's take a look at each level more closely. We will start with the first three levels: application, presentation and session, known as software level. So, we will examine the heart of the OSI model, the transport level. Finally, we will discuss the last three layers: network, data and physical connection, called the hardware level. Application level (data) The application level provides an interface between end users and software applications. Receives data from end users and displays the data received for them. This level does not contain end user applications; Instead, it facilitates communication with the lower layers. Some protocols found within this level include HTTP, HTTPS, FTP, TFTP, TELNET, SNMP, DNS, RLogin, SMTP, POP3, IMAP and LDAP. This level facilitates the presentation of data to the upper layer. Mainly, it provides the encryption scheme and encryption / decryption for secure transmission. For example, it translates application format into network format and vice versa. Protocols of this level: JPEG, BMP, GIF, TIF, PNG, MP3, MIDI, ASCII and ANSI, etc. When two computing devices must communicate, you need to create a session, which happens at this level. Some of the functions of this level are the establishment, management (coordination) and session resolution. A good example of how this level function is a phone call in which you first establish the connection, exchange a message and finally finish the session. Some of the protocols of this level are SIP, NFS, SQL, ASP and RDBMS. Transport (transport) This level, often considered the heart of the OSI model, is responsible for controlling the flow of data between two devices. For example, this level determines the amount of data needed to send and the location where it should be sent. This level is also responsible for data flow and error control.For example, the flow control determines the optimal data sending speed to avoid flooding the receiver with data if the connection speed is different between the two communication parts. Similarly, the error control guarantees again retransmerize the data if some some some They were lost on the side of the receiver. The most well-known sample protocol of this level is the TCP protocol, which resides as part of the TCP / IP protocol suite. Some other protocols on this level are TCP, UDP and SPX. Network Layer (Packet) The network level is responsible for data forwarding data and data routing between routers. It facilitates data transfer between two devices that reside in two different networks. For example, if you want to send a message from your computer to New York to a server in San Francisco, there are thousands of routers and Ã ¢ â,¬ "perhaps - millions of routes between these two points. However, the routers of this level They help you do it efficiently by automatically selecting the closest way. The network level is also responsible for translation of logical addresses to physical addresses and is responsible for data fragmentation. Then, interrupts data segments in smaller units Call packages Before sending them to other networks. Data connection layer (frame) This level provides a connection between two devices that reside on the same physical network, for example, between two devices in the same LAN. This level receives packages from the network level e It breaks them in small units called frames. The data connection level also performs the data flow and error control within the intranets. Contains two to the Tri sub-layers: the MAC level (Media Access Control) and the Logic Link Control (LLC) layer. The most normally, the network switches work in this level. Some protocols within this level are PPP, HDLC, ATM, frame relay, slippage and Ethernet. Physical layer (track) This layer exists at the bottom of the OSI level. It represents the physical component of the OSI model, including the type of cable, radio frequencies (when using a wireless connection), the layout of pins and voltages. This level is responsible for the delivery of the raw data from the physical layer of the sending device to the physical layer of the receiving device. Popular devices found in this level include hubs, wiring, repeaters and network modems. Summary Although created years ago, the OSI model is still the main model used to represent the architecture of the network. All professional network certification courses and tests include a section on OSI layers. The OSI reference model is still the main guide used by software developers and hardware sellers to create interoperable programs and devices that facilitate digital communications. There are 40 questions to complete. App 203K views App SecurityAssentialsProtocoli The Open Systems Interconnection (OSI) model describes seven levels that computer systems use to communicate on a network. Was the first standard model for network communications, adopted by all the computer and telecommunications companies in the early 1980s, the modern Internet is not based on OSI, but on the simplest TCP/IP model. However, the 7-layer OSI model is still widely used, as it helps to view and communicate how networks work and helps to isolate and solve problemsproblems. It was introduced in 1983 by representatives of major IT and telecommunications companies and adopted by ISO as an international standard in 1984. OSI Model Explained: OSI Levels 7 We describe the “top down” OSI levels from the application level directly serving the end user, to the physical level. The 7. Application Level The application level is used by end-user software such as web browsers and email clients. It provides protocols that enable software to send and receive information and present meaningful data to users. Examples of application-level protocols are HTTP (Hypertext Transfer Protocol), FTP (FTP), Post Office Protocol (POP), Simple Mail Transfer Protocol (SMTP), and Domain Name System (DNS). 6. Presentation Level The presentation level prepares the data for the application level. It defines how two devices should encode, encrypt, and compress data so that it is received properly from the other side. The presentation layer takes all the data transmitted from the application layer and prepares it for transmission to the session layer. 5. Session Level The session level creates communication channels, called sessions, between devices. It is responsible for logging in, making sure they remain open and functional during data transfer and closing them when communication ends. The session level can also set control points during data transfer. If the session is interrupted, devices can resume data transfer from the last control point. 4. Transport level The transport level takes the data transferred in the session level and splits it into “segments” at the transmission end. It is responsible for reassembling the segments on the receiving side, transforming them into usable data from the session level. The transport layer performs the flow check, sending the data at a speed corresponding to the connection speed of the receiving device, and the error check, checking if the data has been received incorrectly and, if not, requesting it again. 3. Network Layer The network layer has two main functions. One is breaking down the segments into network packets, and reassembling the packets on the receiving side. The other is to route the packets by finding the best path through a physical network. The network layer uses network addresses (typically Internet Protocol addresses) to route packets to a destination node. 2. Data Connection Level The data connection level establishes and terminates a connection between two physically connected nodes on a network. Splits packets into frames and sends them from source to destination. This level consists of two parts... Link Control (LLC), which identifies network protocols, checks errors and synchronize frames, and Media Access Control (Mac) that uses Mac addresses to connect devices and define permissions to transmit and receive data. 1. Physical level The physical level is responsible for the physical cable or wireless connection between network nodes. It it the connector, the electrical cable or the wireless technology that connects the devices, and is responsible for transmitting the raw data, which is simply a series of 0 and 1s, while taking care of bit rate control. Benefits of the OSI Model The OSI model helps IT network users and operators: Determine the hardware and software needed to build their network. Understand and communicate the process followed by components communicating through a network. Perform troubleshooting, identifying which network layer is causing a problem and focusing efforts on that level. The OSI model helps network device manufacturers and network software vendors: Create devices and software that can communicate with the products of any other vendor, enabling open interoperability Define which parts of the network their products should work with. Communicate to users where the network layers their product operates â for example, only on the application layer, or across the stack. The Transfer Control Protocol/Internet Protocol (TCP/IP) is older than the OSI model and was created by the U.S. Department of Defense (DoD). A key difference between the models is that TCP/IP is simpler, grouping different OSI layers into one: OSI layers 5, 6, 7 are combined into a single OSI layer. Application in TCP/IP layers OSI 1, 2 are combined into a TCP/IP network access layer â however TCP/IP does not take responsibility for sequencing and recognizing functions, leaving them to the underlying transport layer. Other important differences: TCP/IP is a functional model designed to solve specific communication problems, and based on specific protocols and standards. OSI is a generic and protocol-independent model designed to describe all forms of network communication. In TCP/IP, most applications use all layers, while in simple OSI applications they don’t use all seven layers. Only layers 1, 2 and 3 are mandatory to allow any communication of data. Imperva Application Security Security Imperva secures your applications across multiple layers of the OSI model, from the network layer, protected by Imperva DDoS mitigation, to the Imperva web application firewall (WAF,), to bot management, and API security technology that safeguards the application layer. To secure applications and networks across the OSI stack, Imperva provides multilayer protection to ensure websites and applications are available, easily accessible and secure. The Imperva application security solution includes: DDoS Protection: Maintain wait times in all situations. Avoid any type of DDoS attack, of any size, from preventing access to your website and network. CDN—enhance website performance and reduce bandwidth costs with a CDN designed for developers. Static assets on the edge, accelerating dynamic APIs and websites. WAF – cloud-based solution allows legitimate traffic and prevents bad traffic, safeguarding applications to the limit. Gateway WAF maintains applications and andinside your secure network. bot protectionâ ¦analyzes the traffic of bots to identify anomalies, identifies the incorrect behavior of bots and validates it through mechanisms of challenge that do not affect the traffic of users. API security protects APIs by ensuring that only the desired traffic can access the API endpoint, as well as detecting and blocking vulnerability exploits. Protection against the acquisition of accounts uses an intent-based detection process to identify and defend against attempts to capture user accounts for malicious purposes. RASP keeps applications safe from within against known and zero-day attacks. Quick and precise protection without signature or learning mode. Analysis of attacks: mitigating and responding to real cybersecurity threats efficiently and accurately thanks to the intelligence that can be used in all levels of defense.

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