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Advanced embedding details, examples and help! The OSI model 7 layer communication model. Application of the NNTP SIP SSI DNS FTP Gopher layer NTP SMPP SMTP SNMP Telnet DHCP Netconf details.... 6. MIME XDR ASN.1 ASCII PGP 5. The session layer is called the NetBIOS SAP PPTP RTP SOCKS SPDY 4. Transport layer TCP UDP SCTP DCCP SPX 3. Network layer IP IPv4 IPv6 ICMP IPsec IGMP IPX AppleTalk X.25 PLP 2. ATM ARP IS-IS SDLC HDLC CSLIP SLIP GFP SLIP GLIP IEEE 802.2 LLC MAC L2TP IEEE 802.3 Frame Relay ITU-T G.hn DLL PPP X.25 LAPB No.922 LAPF 1. Physical layer EIA/TIA-232 EIA/TIA-449 ITU-T V-Series I.430 I.431 PDH SONET/SDH PONN DSL IEEE 802.3 IEEE 802.11 IEe 802.15 IEEE 802.16 IEEE 1394 ITU-T G.hn PHY USB Bluetooth Bluetooth RS-232 RS-449 vte The Open Systems Interconnection Model (OSI model) is a conceptual model, that characterizes and standardizes the communication functions of a telecommunications or computing system without its basic internal structure and technology. Its purpose is to different communication systems with standard communication protocols. The model distributes the flow of data in the communication system to seven levels of abstraction, from the physical implementation of the transfer of bits through the means of communication to the presentation of the distributed application data at the highest level. Each intermediate layer serves as a function class to layer above it and is served by a layer beneath it. The functionality classes are implemented in the software on standardized communication protocols. The ING model was developed in the late 1970s to support the emergence of various computer network methods that compete for use in major national network efforts in France, the United Kingdom and the United States. In the 1980s, this model became a working product of the Open Systems Joining Group under the International Organization for Standardization (ISO). In an attempt to provide a comprehensive description of the networks, this model was unable to enlist the support of the architects of the early Internet software, as reflected in the less prescriptive package of Internet Protocols, mainly sponsored by the Internet Development Task Force (IETF). Communication in OSI models (example with layers from 3 to 5) History In the early and mid-1970s, networks are largely either government-sponsored (NPL Networks in the UK, ARPANET in the US, CYCLADES in France) or vendors developed with proprietary standards such as IBM Network Architecture Systems and Digital Equipment Corporation DECnet. Public data networks were just beginning to emerge, and they started using the X.25 standard in the late 1970s. The publication of the UK's National Computing Centre, Why Distributed Computing, which was published as a result of significant research into future computer configurations, led to the UK acting as an international standards committee to cover the area at an ISO meeting in Sydney in March 1977. Since 1977, the International Organization for Standardization (ISO) has conducted a programme to develop common standards and methods for networking. A similar process developed in the International Telegraph and Telephone Advisory Committee (CCITT, Both bodies developed documents that defined similar network models. , it is necessary to identify the standards to which the new systems can converge, rather than standardize procedures after the fact; on the contrary, the traditional approach to standards development. Although not a standard, it is a basis in which future standards can be defined. In 1983, CCITT and ISO documents were merged into a basic reference model to connect open systems, commonly referred to as the Open Systems Connection Reference Model, the OSI reference model, or simply the OSI model. It was published in 1984 as ISO as the standard ISO 7498, and renamed CCITT (now called the International Telecommunication Union telecommunications standardization sector or ITU-T) as the X.200 standard. OSI has two main components: an abstract network model called the Base Reference Model or Seven-layer Model, and a set of specific protocols. The LIM reference model is an important progression in the teaching of networking concepts. She promoted the idea of a consistent protocol-level model that defines compatibility between network devices and software. The concept of the seven-layer model was presented by the work of Charles Bachmann at Honeywell Information Systems. Various aspects of OSI's design have evolved from experience with the NPL, ARPANET, CYCLADES, EIN and International Network Working Group (IFIP WG6.1). In this model, the network system was divided into layers. In each layer, one or more entities realize their functionality. Each entity interacted directly with the layer directly beneath it and provided the tools to use the layer above it. ING standards documents are available at ITU-T as recommendations for the H.200 series. Some protocol specifications were also available as part of the ITU-T X series. Not everything is free. OSI has been an industry effort to get industry participants to agree on common network standards to ensure the compatibility of multiple vendors. Large networks typically support multiple sets of network protocols, and many devices are unable to interact with other devices due to lack of common protocols. In the late 1980s and early 1990s, engineers, organizations and countries were polarized over what standard, model of OMI or set of Internet protocols would lead to the best and most reliable computer networks. However, while OSI developed its network standards in the late 1980s, TCP/IP was widely used in multi-production networks for Internet work. The OMI model is still used as a guide for training and documentation; However, the OSI protocols originally conceived for the model did not gain popularity. Some engineers claim that the OSI reference model is still cloud computing. Others say that the original OSI model does not meet today's network protocols, and suggested a simplified approach instead. Definitions This section needs additional quotes to verify. Please help improve this article by adding quotes to reliable sources. Non-sources of materials can be challenged and removed. (November 2019) (Learn how and when to delete this template message) Communication protocols allow an entity in one host to interact with the relevant entity on the same level in another host. Service definitions, such as the OSI model, abstractly describe the functionality provided by the (N)-layer layer (N-1), where N is one of the seven levels of protocols that work in a local host. At each N level, two entities on communication devices (N-peer node layers) exchange units of protocol data (PDUs) using the N layer protocol. Each PDU contains a payload called the Service Data Unit (SDU), as well as protocol-related beaters or lackeys. The data is processed by two DEVICES compatible with THEM as follows: the data transmitted consists of the top layer of the transmission device (layer N) into the protocol data unit (PDU). PDU is transferred to the N-1 layer, where it is known as the Service Data Unit (SDU). With the N-1 layer, the SDU is combined with a header, footman or both, producing a layer of N-1 PDU. It is then transferred to the N-2 layer. The process continues until the lowest level from which the data is transferred to the receiving device. On the receiving device, the data is transmitted from the lowest to the highest layer as a series of SDUs, while being consistently removed from the header or footman of each layer until reaching the top layer where the last of the data is consumed. The OSI Model Standards Documents were identified in ISO/IEC 7498, which consists of the following parts: ISO/IEC 7498-1 Basic model ISO/IEC 7498-2 ISO Security Architecture// IEC 7498-3 Naming and referring to ISO/IEC 7498-4 ISO/IEC 7498-1 is also published as a recommendation of ITU-X-T.200. The X.200 Recommendation layer architecture describes seven layers marked from 1 to 7. Layer 1 is the lowest layer in this model. OSI Model Layer Data Block (PDU) Feature 19 Hostlayers 7 Application Data high-level API, including resource sharing, remote access to files 6 Presentation Transfer data between the network service and the app; including character coding, data compression and encryption/decryption of 5 Communications Management sessions, i.e. the continuous exchange of information in the form of multiple transmissions between two 4 Transport Segment nodes, Datagram Reliable transfer of segments of data between points of the network, including segmentation, recognition and multiplexing Medialayers 3 Network Packet Structuring and multi-tiered management including addresses, routing, and traffic management 2 Data Link Frame Reliable transfer of personnel data between two nodes connected by physical layer 1 Physical bit, Transmission symbol and reception of untreated bit flows over physical middle layer 1: Physical layer Physical layer is responsible for transmitting and receiving unstructured raw data between the device and the physical transmission environment. It converts digital bits into electrical, radio or optical signals. Layer specifications define characteristics such as voltage levels, voltage change times, physical data speeds, maximum transmission distances, modulation circuit, channel access method, and physical connectors. This includes the location of pins, voltages, impedance lines, cable specs, signal timing and frequency for wireless devices. The bit speed control is done on the physical layer and can determine the transmission mode as a simplex, a duplex half and a full duplex. The components of the physical layer can be described from the point of view of the topology of the network. The specifications of the physical layer are included in the specifications for the ubiquitous Bluetooth, Ethernet and USB standards. An example of a lesser-known specification of the physical layer is the CAN standard. Layer 2: Data Link Layer Data Link Layer provides data transfer to the site , a connection between two directly connected nodes. It detects and possibly corrects errors that may occur in the physical layer. It defines a protocol for establishing and stopping the connection between two physically connected devices. It also defines a protocol to control the flow between them. IEEE 802 divides the data layer into two sublayers: the Mid access control layer (MAC), which is responsible for managing how devices on the network gain access to the environment and permission to transmit data. The Logical Link Management Layer (LLC) is responsible for identifying and encapsulateing network layer protocols, and oversees bug verification and frame synchronization. Mac and IEEE 802 NETWORK LLC levels such as 802.3 Ethernet, 802.11 Wi-Fi and 802.15.4 SiegB work at data reference level. The Point-to-Point Protocol (PPP) is a data level protocol that can work in several different physical layers, such as synchronous and asynchronous serial lines. The ITU-T G.hn standard, which provides high-speed local networks on existing wires (power lines, telephone lines and coaxial cables), includes a full layer of data communication that provides both error correction and flow control through selective repetition of sliding windows. Security, particularly (genuine) encryption, at this level can be applied with MACSec. Layer 3: Network Layer Provides Functional and Procedural Means of Data Sequence Transmission length (so-called packages) from one site to another, connected in different networks. Networks. The network is an environment where you can connect many nodes where each site has an address and that allows nodes connected to it to send messages to other nodes connected to it, simply by providing the contents of the message and address of the destination site and allowing the network to find a way to deliver the message to the destination node, perhaps by routeding it through intermediate nodes. If the message is too large to be transmitted from one site to another at the data communication level between those sites, the network can deliver messages by dividing the message into multiple fragments in one site, sending the fragments on its own and framed the fragments to another site. It can, but does not need, to report delivery errors. Delivering messages at the network level is not necessarily guaranteed reliability; network layer protocol can ensure reliable message delivery, but it shouldn't. A number of level management protocols, a feature defined in the ISO 7498/4 management application, relate to the network layer. These include routing protocols, multi-tissue group management, information and network-level errors, and the assignment of network-level addresses. It is a payload feature that makes them belong to the network layer rather than the protocol that carries them. Layer 4: The Transport Layer Transport Layer provides functional and procedural means of transmitting alterally length data sequences from source to destination host while maintaining quality of service functions. The transport layer controls the reliability of this connection by managing the flow, segmentation/desegmentation and error management. Some protocols are state-oriented and connected. This means that the transport layer can track segments and relay those that can't deliver. The transport layer also recognizes successful data transmission and sends the following data if no errors have been made. The transport layer creates segments from a message derived from the application layer. Segmentation is the process of dividing a long message into smaller ones. OSI defines five classes of transportation protocols in connection mode, ranging from Class 0 (also known as TP0 and provides the smallest features) to Class 4 (TP4, designed for less reliable networks similar to the Internet). Class 0 does not contain bug repair and has been designed to be used on network layers that provide unmistakable connections. Class 4 is closest to TCP, although TCP contains features such as graceful closure, which OSI assigns to the session layer. In addition, all OSI TP protocols provide faster data transmission and record boundaries. Detailed characteristics of TP0-4 classes are shown in the following table: the name of the function TP0 TP1 TP2 TP3 TP4 Connection-oriented network Yes Yes Yes Yes No No No No Yes Concatenation and separation No Yes Yes Yes Yes Segmentation and reassembly Yes Yes Yes Yes Yes Error recovery No Yes Yes Yes Yes Reinitiate connectiona No Yes No Yes No Multiplexing / demultiplexing over single virtual circuit No No Yes Yes Yes Explicit flow control No No Yes Yes Yes Retransmission on timeout No No No No Yes Reliable transport service No Yes No Yes Yes a If an excessive number of PDUs are unacknowledged. An easy way to visualize a transport layer is to compare it to a post office that sends and classifies mail and parcels. The Post Office only checks the outer envelope of the mail to determine its delivery. Higher layers may have the equivalent of double envelopes, such as cryptographic presentation services, that can only be read by the recipient. Roughly speaking, tunnel protocols work at a transport level, such as non-IP protocols such as IBM's SNA or IPX Novell via IP network, or permanent encryption with IPsec. While general routing encapsulation (GRE) may seem like a network layer protocol, if the load encapsulation occurs only at the end point, GRE gets closer to the transport protocol that uses IP blanks but contains a full layer 2 frame or layer 3 packages to deliver to the end point. L2TP carries PPP frames inside transport segments. Although it is not designed in accordance with the IMU reference model and does not meet the strict definition of the TRANSPORT's INM, the Data Control Protocol (TCP) and the Internet Protocol (UDP) set of protocols are generally classified as level-4 protocols under the EDM. Transport level safety (TLS) ensures safety at this level. Layer 5: Session Layer Controls Conversations (Connections) between Computers. It installs, controls, and stops connections between local and remote apps. It provides for full duplex, semi-desert or simplex work, as well as establishes procedures for checkpoint days, suspension, restart and termination of the session. In the OSI model, this layer is responsible for the graceful session closure that is processed in the Transport Transfer Control Protocol in the Internet Protocols set. This layer is also responsible for monitoring and restoring sessions that are not normally used in the Internet protocol set. Session level is typically used explicitly in application environments that use remote procedure calls. Layer 6: Presentation Level level sets the context between application-level objects, in which application-level objects can use different syntax and semantics if the presentation service provides a display between them. If you have a display, the submission protocol units are encapsulated into units Sessions and are passed on Stack. This layer ensures independence from data presentation by translating between application and network formats. The view layer converts the data into the form the application adopts. This layer formats the data that will be sent through the network. Sometimes it is called the syntax layer. The presentation layer can include compression functions. The presentation layer negotiates the syntax of the transmission. The original presentation structure used the

Basic Rules for coding abstract syntax notation One (ASN.1), with features such as converting a text file with EBCDIC code into a file encoded by ASCII, or serializing objects and other data structures from xML and XML. ASN.1 effectively makes the invariant application protocol for syntax. Layer 7: The App Layer layer is the closest to the end user of the OSI layer, which means that both the OSI app layer and the user interact directly with the software application. This layer interacts with software applications that implement the communication component. These application programs go beyond the OSI model. Application-level functions typically include identifying communications partners, determining resource availability, and synchronizing communications. When identifying communications partners, the level of the application determines the identity and availability of communications partners for an app with data to transmit. The most important difference in application level is the difference between an application object and an app. For example, a booking website may have two apps: one using HTTP to communicate with its users and one for a remote database protocol to record bookings. None of these protocols has anything to do with reservations. This logic is in the application itself. The application layer does not have the means to determine the availability of resources on the network. Cross-layer features Additional Information: Cross-layer optimization cross-layer features are services that are not tied to this layer, but can affect more than one layer. Some orthogonal aspects, such as management and security, are related to all layers (see ITU-T X.800 Recommendation). These services are aimed at improving the CIA triad - privacy, integrity and accessibility of transmitted data. In practice, multi-level functions are the norm, as the availability of communication services is determined by the interaction between network design and network management protocols. Specific examples of inter-layered functions include: Security Service (Telecommunications), defined by the RECOMMENDATION of ITU-T X.800. Control features, i.e. features that allow you to set up, instantly, control, stop communication of two or more entities: there is a certain level of application General Management Information Protocol (CMIP) and relevant service, General Management Information Service (CMIS), they must interact with each layer in order to deal with their instances. Multiprotocol Label Switching (MPLS), ATM and X.25 are protocols 3a. OSI divides the network layer into three sublayers: 3a) Access, 3b) Subnet Dependent Convergence and 3c) The Independent Convergence Network. It was designed to provide a unified data transfer service for both schema-based customers and package-change customers who provide a datagram-based service model. It can be used to transport various types of traffic, including IP packages, as well as native ATMs, SONET and Ethernet frames. Sometimes you can see a link to layer 2.5. Cross MAC and PHY Planning is essential in wireless networks due to the time-changing nature of wireless channels. When planning the transfer of packages only in favorable channel conditions, which requires the MAC layer to obtain information about the state of the channel from the PHY layer, the bandwidth of the network can be greatly improved and energy waste can be avoided. Programming the interfaces of neither the OSI reference model nor any specifications of the OSI protocol will outline any programming interfaces other than intentionally abstract descriptions of services. Protocol specifications define the methodology of communication between colleagues, but the software interfaces are specific for implementation. For example, the Network Driver Interface (NDIS) and the Open Data-Link (ODI) interface are interfaces between multimedia (layer 2) and network protocol (layer 3). Comparison with other network packages Layer OSI protocols TCP / IP protocols SignalingSystem 7 29 AppleTalk IPX SNA UMTS Different examples No. Title 7 APPALUS FTAMX.400X.500DAPROSERTSEACSE (30)CMIP (INAPMAPTCAPISUPTUP AFP)PRTMPNBP SAP APPC HL7busWebSocket 6 Presentation ISO/IEC 8823X.226ISO/IEC 957 6-6-6-6-6-6-6-6-1X.236 MIMESSLTLSXDR AFP TDIASCIIEBCDICMIDIMPEG 5 Session ISO/IEC 8327X.225ISO/IEC 9548-1X.235 OUTLETS (creation session at TCP/RTP/PP)TP ASPADSPPAP NWLink DLC? Named pipesNetBIOSSAPhalf duplexfull duplexsimplexRPCSOCKS 4 Transport ISO/IEC 8073TP0TP2TP2TP2TP3TP4 (X.224)ISO/IEC 8602X.234 TCPUDPSCDCDCDCDCCP DDP SPX NBF 3 IsO Network/I 8208X.25 (PLP) ISO /IEC 8878X.223ISO/IEC 8473-1CLNP X.233ISO/IEC 10589IS-IS IPIPsEMPCICIGMPOSPFPRIP SCCPMTP ATP (TokenTalk / EtherTalk) IPX RRC /BMC NBF.931 2 Data Communication ISO/IEC 7666X.25 (LAPB)Token BusX.222ISO/IEC 8802-2LLC (Type 1 / 2)RCDOCSISFDDIFDPFIbre ChannelFrame RelayHD PHDLCIEEE 802.3 (Ethernet)IEEE 802.11a/b/g/n (Ethernet MAC and LLC)IEEE 802.1 (VLAN)ISLITU-T G.hn DLLLinux interface bondingPPP.921Token RingNDP (Nortel Protocol)IS-IS 1 Physical X.25 (X.21bisEIA/TIA-232EIA/TIA-449EIA-530G.703) 710 RS -232RS-422PhoneNet Twinax UMTS air interfaces RS-232Full duplexRJ45 (8P8C)V.35V.34I.430I. 431T1E110BASE-T100BASE-TX1000BASE-TPOTSSONETSDHDSL802/b/g/nPHYITU-T G.hn PHYDOCSISDWDMOTN Comparison with the TCP/IP model See also: Internet Protocol Set - Comparison of TCP/IP and OSI layering Protocol Design in the TCP/IP model of the Internet does not concern strict hierarchical encapsulation and layering. RFC 3439 contains a section entitled Stacking is considered harmful. TCP/IP recognizes four broad levels of functionality that flow from the operating sphere of their protocols: the scope of software application; Transport path from host to host; The range of work on the Internet and the area of direct links to other nodes on the local network. Despite using a different layering concept than the OSI model, these layers are often compared to the OSI layering pattern as follows: the Internet application layer displays the OSI application level, the presentation layer, and most of the session layers. The TCP/IP transport layer displays the graceful function of the close level of the OSI session as well as the OSI transport layer. The Internet layer functions as in the subset of the OSI network layer. The link layer corresponds to a layer of references to LIM data and can include similar functions as the physical layer as well as some protocols of the INM network layer. These comparisons are based on the original seven-layer protocol model, as defined in ISO 7498, rather than on refinements in the internal network structure. The set of ING protocols specified in the YMS project was considered by many to be too complex and ineffective and largely irrefutable. Taking the loader update approach to the network, he pointed to eliminating all existing network protocols and replacing them on all layers of the stack. This makes implementation difficult and resists many vendors and users with significant investments in other network technologies. In addition, the protocols included so many additional features that many vendors were not compatible. Although the OSI model is often still mentioned, a set of Internet protocols has become the standard for networks. TCP/IP's pragmatic approach to computer networks and the independent implementation of simplified protocols has made it a practical methodology. Some protocols and specifications in the OSI stack remain in use, one example being IS-IS, which was listed for OSI as ISO/IEC 10589:2002 and adapted for use on the Internet with TCP/IP as RFC 1142. See also Layer 8 Hierarchical Internet Model Management Plane Service Layer General Information Service Management (CMIS) GOSIP, (U.S.) Government Open Connection Systems Profile Recursive Internet Architecture List of Information Technology Initialisms Further Reading by John Day, Patterns in Network Architecture: Return to Basics (Prentice Hall 2007, ISBN 978-0-13-225242-3) Marshall Rose, Open Book (Prentice-Hall, Englewood Cliffs, 1990) David M. Piscitello, A. Liman Chapin, Open Systems Networking (Addison-Wesley, Reading, 1993) Andrew S. Tanenbaum, Computer Networks, 4th Edition, (Prentice-Hall, 2002) ISBN 0-13-066102-3 Gary Dixon; Alan Lloyd (July 1992). Open Joining Systems / Computer Communication Standards and Gossip Explained. Prentice Hall. ISBN 978-0136401117.

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Microsoft Knowledge Base: Seven layers of the OSI model defined and features explained by ISO/IEC 7498-1:1994 (PDF document within the postcode archive) (required http cookie for the adoption of a license agreement) ITU-T X.200 (same content as ISO) InFormation of CHanGe Architectures and Flow Charts on the basis of Google App Engine. infchg.appspot.com. ISO INM reference model, Beluga graph of data units and layer groups. Archive of May 26, 2012.CS1 maint: other (link) zimmermann, Hubert (April 1980). OSI Reference Model - ISO Model Architecture for Open Connection Systems. IEEE Communications Deals. 28 (4): 425–432. CiteSeerX 10.1.1.136.9497. doi:10.1109/TCOM.1980.1094702. S2CID 16013989. Cisco Systems Internet Technology Handbook obtained from 2Electric connector commonly used in phone and computer networks from left to right, modular connectors: 8P8C plug-in, 6P6C plug-in, 6P4C plug-in, 4P4C connector. Modular fork 8P8C. This is a common 9cture type of plug, the same kind in the photo above the press on the cable (with a molded sleeve). The modular connector is a type of electrical connector for cords and cables of electronic devices and devices, such as computer networks, telecommunications equipment and audio headsets. Modular connectors were originally developed for use on specific Bell System phone kits in the 1960s, and similar types have found use for simply connecting to the phone network of phone subscribers' equipment provided by customers. The Federal Communications Commission (FCC) in 1976 mandated an interface registration system in which they became known as registered jacks. The convenience of pre-existence for designers and ease of use have led to the spread of modular connectors for many other applications. Many applications that originally used a bulkier, more expensive connector have become modular connectors. Probably the most famous modular connector apps for the phone and Ethernet. Accordingly, there are various specifications of the electronic interface for applications using modular connectors, which prescribe physical characteristics and assign electrical signals to their contacts. Nomenclature modular connectors are often referred to as the phone's modular connector and fork, RJ connector, and western connector and fork. The term modular connector arose from its initial use in the modular components of the western electrical company's telephone wiring in the 1960s. Registered connector designations describe the signals and wiring used for voice and data transmission in the public phone network interfaces switched to the customer. Typically, a registered connector number is used to indicate the physical connector itself; for example, the type of 8P8C modular connector is often inaccurately labeled RJ45 because the registered standard connector with that name indicated modular 8P8C connectors. A common use of 8P8C connectors is ethernet over twisted pair. Similarly, the 4P4C connector is sometimes mistakenly referred to as RJ9 or RJ22 - there are no such official designations, and various six positional connectors can be wrong wrong RJ11. History The first types of small modular phone connectors were created by ATT in the mid-1960s for the phone plug-in and linear cords of the Trimline phone. Following the demand for multiple kits in homes with varying cord lengths, Bell System introduced customer connectivity kits and phones sold through PhoneCenter stores in the early 1970s. Patents by Edwin C. Tristy and his colleagues, US 3699498 (1972) and US 3860316 (1975), followed by other improvements, were the basis for modular molded plastic connectors, which became commonplace for telephone cords by the 1980s. In 1976, these connectors were standardized nationally in the United States as part of the Federal Communications Commission 's (FCC) registration interface program, which defined a series of registered Jack (RJ) specifications to connect customer hardware to the public telephone network (PSTN). Gender modular connectors have a floor: forks are considered male, while jacks or sockets are considered female. Forks are used to stop cables and cords, while jacks are used for fixed seats on the surfaces of walls, panels and equipment. Aside from phone extension cables, cables with a modular fork at one end and a socket at the other are rare. Instead, the cables are usually connected with the help of a woman to a woman's steam room, having two sockets wired back to back. The latch tab and orientation modular connectors are designed to latch together. As the fork is inserted into the socket, the plastic tab on the plug locks so that the fork cannot be pulled. To remove the plug, the latch tab must be suppressed against the fork to clear the edge of the lock. The standard orientation is to install a nest in a wall or a panel with a tab down. The tab fixation can easily catch on to other cables and break as a result of the loss of the secure latch function. To prevent this, tabs are often protected with loading over a fork, or a special tab design, on snagless cords. Most protective boots must be mounted on a cable before the modular fork is compressed. This means that field upgrades of these types of boots are not possible. However, protective boots or rigid protective ramp adapters are available that can be attached over an installed unprotected modular fork. Size and pins 8P8C modular fork contact number. Modular connectors are marked using two numbers that represent the maximum number of contact positions and the number of contacts established, with each number followed by P and C, respectively. For example, 6P2C is a connector that has six positions and two established contacts. Alternative designations omit letters when separating position and contact quantities with either x (6x2) or (6/2). When you install contacts, you usually lowered from the outside positions inside, so that the number of contacts is almost always evenly distributed. The body positions of the connector with lowered or unconnected contacts are not used for electrical connection, but ensure that the fork fits correctly. For example, RJ11 cables often have six-position connectors and four pins, to which only two wires are attached. Contact positions are sequentially consistent, starting with 1. When viewed to the left with a hold mechanism at the bottom, the sockets will have a contact position number 1 on the left and the cork will have it on the right. Contacts are moderated by the position of contact. For example, on a six-position, two-pin plug, where the outer four positions have no contact, the internal two contacts are 3 and 4. Modular connectors are made in four sizes, with 4-, 6-, 8- and 10-position. The insulating plastic body connectors 4P and 6P have different widths, while 8P or 10P connectors have an even wider body width. Isolation offset contact types 8P8C plug with contacts for hard wire (left) and stranded wires (right) Contacts for hard wire (top left) and stranded wires (bottom right) Internally, contacts on corks have sharp prongs that, when hugging, puncture the insulation of the wire and connect with the conductor, the mechanism known as insulation. Ethernet cables in particular may have solid or stranded (tinsel wires) conductors and sharp prongs different in 8P8C connectors made for each type of wire. A modular fork for solid (one strand) wire often has three lightly splayed prongs on each contact to securely surround and grip the conductor. Modular strands have prongs that are designed to connect to multiple strands of wire. Connectors are designed for hard or stranded wires and the mismatch between fork and wire type can lead to an unreliable connection. Interchangeability Some unit connectors are indexed, meaning their sizes are intentionally non-standard, preventing connections with standard size connectors. The means of indexing can be non-standard transverse sizes or shapes, the size of the retention mechanism or configuration. For example, a modified modular jack using a latch displacement tab was developed by Digital Equipment Corporation to prevent random exchange of data and telephone cables. Modular connector sizes (millimetres) (quote required) Connector width Height 4P4C 7.7 6P4C 12.34 9.65 6.60 8P8C 21.46 11.68 8.30 Dimensions of modular connectors such as that a narrower plug can be inserted into a wider connector that has more positions than a plug, leaving the outer socket pins unconnected. The contact distance is always 1.02 mm (from center to center). However, not all forks from all this possibility, and some nest manufacturers warn that their nests are not designed to take small corks without damage. If the inserted fork lacks slots to accommodate the connector's contacts at external extremes, it can permanently deform these external contacts of the incompatible socket. Excessive resistance can occur when an incompatible fork is inserted, as external contacts in the connector are forcibly deformed. Special modular plugs (e.g. Siemon UP-2468) have been manufactured, which have additional slots outside their standard contacts, to accommodate the external contacts of the wider nest without damage. These special plug connectors can be visually identified by carefully looking for additional slots poured into the plug. The molded plastic bodies of the special plug can also be painted with a light blue stamp to help in rapid recognition. Special plug plugs are preferable to test equipment and adapters that can be quickly connected to a large number of appropriate connectors in quick succession for testing purposes. Using a special plug avoids unintentional damage to the equipment being tested, even if a narrower plug is inserted into the nominally incompatible wider connector. Stopping the modular fork cri tool with the 9d 9d dies. Stopping cables with modular connectors is similar to different positions and contacts in a plug. The 9th tool contains a die that is often exchanged and closely matches the shape and contact count of the modular fork. The 9C set looks like an 8P8C socket, except for eight teeth lining the top of the die. When the tool works, Die squeezes around the 8P8C plug. As die squeezes, these teeth force plug-in contacts into the conductors of the cable stops. The Crimper can also permanently deform part of the plastic body of the plug so that it captures the outer shell of the cable to securely fasten and relieve voltage. These actions constantly attach the plug to the cable. Pinout Contact Destinations (pinout) modular connectors vary depending on the application. Telephone network connections are standardized with registered connector designations, and Ethernet over the twisted pair is standarded TIA/EIA-568. For other applications, standardization may not be enough; for example, there are several conventions for using 8P8C connectors in RS-232 applications. For this reason, D-sub-modular adapters usually come with D-sub contacts (contacts or sockets) discontinued, but are not inserted into the body connector, so that D-sub-modular contact pairings can be assigned as needed. 4p4c modular connector on the phone's cord. A wired phone that uses 4P4C connectors for the phone's spiral cord. The four-position four-wire (4P4C) connector is the standard modular connector used on the ends of phone cords, and so often called the phone connector. This connector is not a registered connector because it was not designed to connect directly to the phone lines. However, it is often referred to as RJ9, RJ10 or RJ22. Phone wiring and often headsets for use with phones usually use a 4P4C connector. Two central pins are usually used for the receiver, and the outer pins connect the transmitter so that the reversal of the conductors between the ends of the cord does not affect the routing of the signal. This may be different for other hardware, including a hands-free headset. Apple's Macintosh 128K, Macintosh 512K and Macintosh Plus data ports, as well as the Commodore's Amiga 1000, used 4P4C connectors to connect the keyboard to the main body of the computer. The connector powered the keyboard on the outside of the two contacts and received data signals on the inner pair. The cable between the computer and the keyboard was a spiral cord with the appearance very similar to the phone cable. The connector on the Amiga 1000 used a crossover wiring similar to a phone. The plug wiring on Apple computers, however, required a polarized right through the pinout. Using a phone cable instead of a cable supplied can overshadow the delivery of DC in 5 volts and damage your Apple computer or keyboard. Modular connectors are often used to link to data, such as serial line connections, because of their compact size. For example, some of the top boxes of the DirecTV set include a 4P4C data port connector with an adapter cord to a computer serial port, so that the remote control is possible from the computer. The 6P6C 6P4C is a 9th-style connector. Modular corks are described by the maximum number of physical contact positions and the actual number of contacts established in these positions. The 6P2C, 6P4C and 6P6C modular connectors are probably best known for their use as RJ11, RJ14 and RJ25 registered jacks, respectively. These interfaces use the same six-point modular body connector, but have a different number of contacts installed. The RJ11 is a physical interface often used to stop a single phone line. The RJ14 is similar, but for two lines, and the RJ25 for three lines. The RJ61 is a similarly registered nest for four lines, but uses an 8P8C connector. The RJ11 6P6C wiring connector showing the location of Pin 1. Cables sold as RJ11 often actually use 6P4C connectors (six positions, four contacts) and RJ14 wiring - four wires running at the central intersection window. Two of the six possible contact positions connect the tip and the ring, while the other two contact positions may be unused or provide low-voltage energy for night lighting or other functions on the phone set. In the installations also required additional contact for ground connections for selective callers. Pinout Contacts 6P6C 6P6C 1 to 6, counting from left to right while holding the tab connector down with a cable hole in front of the viewer. Position Pair T/R ± RJ11 RJ14 RJ25 Twisted pair of colors 25-pair colors Old colors (A) German colors (A) Australian colors 1 3 T - T3 white/green white/green pink orange 2 T T2 white/orange white/orange black green red 3 1 R R 1 blue blue/white red 4 1 T T T1 white/blue white/blue green white 5 2 R - R2 R orange/white yellow yellow black 6 3 R - R3 green green/white blue gray green - While the old solid color code was well created for a pair of 1 and usually couple 2, there are several controversial conventions for couples 3 (and sometimes even a couple of 2). The colors shown above were taken from the seller of the silver satin flat 8-conductor phone cable, which claims to be the standard. The six-pair solid (old) bellwire cables previously used by the bell system uses white for a pair of three but some vendors' cable can replace the orange color for white. At least another supplier of flat 8-conductor cable uses a sequence of blue, orange, black, red, green, yellow, brown and white/slate. This color scheme originates in the (removed) national standard DIN 47100. The diagram shown here is the correct color code for entering with RJ connector standards. However, with German internal telephone equipment, and that in some neighboring countries, 6P4C plugs and sockets are usually used only to connect the phone cord to the phone's base unit, while mechanically the other TAE connector is used at the other end to connect to the service provider's interface. Old base units can accommodate additional TAE connectors (E, W, a2, b2) and may have non-RJ standard sockets that can be connected directly to the taE plug. In addition, din 47100 flat cables usually cross wires in order of lifting. When used directly with 6P4C corks, color coding can be uncertain. The powered version of the RJ11 in the RJ11 version of the interface, Contacts 2 and 5 (black and yellow) can carry low AC voltage or DC power. While the phone line on pins 3 and 4 (red and green) delivers enough energy for most phone terminals, old phone terminals with incandescent bulbs, such as The Western Electric Princess and Trimline phones, need more power than the phone line can deliver. Typically, the power on pins 2 and 5 is provided by a AC adapter connected to a nearby outlet, which potentially even supplies electricity to all the jacks in the house. Compatible with structured cable Structured cables of networks adhering to TIA/EIA-568-B, 11801 (or ISO/IEC 15018 for home networks) is widely used for both computer networks and analogue telephony. These standards define T568-A or T568-B pin-outs compatible with Ethernet. 8P8C connector used by structured cable physically physically The 6-position connector used by RJ11, RJ14 and RJ25. Only the RJ11 and RJ14 have full electrical compatibility, because Ethernet-compatible pin-outs divide the third pair of RJ25 into two separate cable pairs, making the pair unusable by analog phone. Both the third and fourth pairs of RJ61 are equally divided. Incompatible T568-A/B layouts were needed to preserve the electrical properties of the third and fourth pairs of Ethernet, which works at much higher frequencies than analog telephony. Because of these inconsistencies, and because the RJ25 and RJ61 were never very common, the T568-A/B conventions largely displaced the RJ25 and RJ61 for phones with more than two lines. The 8P8C 8P8C modular fork is not yet thurly of the 8P8C modular connector 8 Position 8 Contact (8P8C) connector modular connector is commonly used to terminate twisted steam and multi-conductor flat cable. These connectors are commonly used for Ethernet over twisted pairs, registered jacks and other phone applications, RS-232 serial communication using TIA/EIA-568 and Yost standards, as well as other applications related to unshielded twisted pairs, shielded twisted pairs, and multi-conductor flat cable. The 8P8C modular connection consists of a male fork and a female connector, each with eight equally crowded contacts. On the plug, the pins have flat metal bars located parallel to the connector body. Inside the socket, pins metal spring wires at an angle from the insert interface. When the plug mates with the connector, the contacts meet and create an electrical connection. The spring voltage of nest contacts provides a good interface. Left: Total 8P8C (or 8PMJ, 8-position modular connector) female connector. Right: The RJ45 is a female connector (with a key) Although commonly referred to as the RJ45 in the context of Ethernet and Category 5 cables, the RJ-45 originally refers to a specific 8P8C connector wiring configuration. The phone system of the standard RJ45 plug has a key that eliminates insertion into the non-plug 8P8C. The original RJ45S was designed for high-speed modems and is out of date. The RJ45S nest mates with a 8P2C modular fork key, and has pins 4 and 5 (middle positions) wired for the ring and tip conductors of one phone line and pins 7 and 8 shortening the programming resistor. This is a different mechanical interface and wiring scheme than the TIA/EIA-568-B with the 8P8C connector in Ethernet and phone applications. The 8P8C common modular connectors are similar to those used for the RJ45S variant, although the RJ45S connector is a key and is not compatible with 8P8C modular jacks. Phone installers, RJ45S modem wiring connectors or RJ61X phone connectors were familiar with standard pin codes. However, non-key modular connectors have become ubiquitous for computer networks and unofficially unofficially RJ45. Standardization Form and Unit 8P8C Modular Connector Sizes are specified for U.S. Telephone Applications by the Terminal Accession Board (ACTA) in the national ANSI/TIA-1096-A standard. This standard does not use short-term 8P8C and covers more than just 8P8C modular connectors, but the 8P8C modular connector is the type eight position connector described in it, with eight contacts installed. The international standard is ISO-8877. For data applications (LAN, structured cables), the International Standard IEC 60603 defines in parts 7-1, 7-2, 7-4, 7-5 and 7-7 not only the same physical dimensions, but also high-frequency performance requirements for protected and unshibed versions of this connector for frequencies up to 100, 250 and 600 MHz respectively. Проводка Pinout T568A. T568B wiring. 8P8C connectors are often terminated using T568A or T568B jobs that are defined in TIA/EIA-568. The drawings on the right show that the copper joints and pairings are the same, with the only difference being that orange and green pairs (colors) change. The cable is wired as the T568A at one end and wired like the T568B at the other end (Tx and Rx pairs reversed) is the Ethernet crossover cable. Prior to the widespread recognition of auto MDI-X's capabilities, a crossover cable was needed to connect similar network equipment (such as Ethernet hubs to Ethernet hubs). A cable wired the same at both ends is called a patch or straight through a cable because no contact/couple of appointments are exchanged. Crossover cables are sometimes still used to connect two computers together without a switch or hub, however most network interface maps (NIC) in use today implement automatically MDI-X to automatically customize themselves based on the type of cable connected to them. If a patch or direct cable is used to connect two computers with automatic MDI-X capable NIC, one NIC will customize itself to change the functions of its Tx and Rx wired pairs. Pin T568A pair T568A color T568B pair T568B color 10BASE-T/100BASE-TX signal id. Connected pins on the plug and connector have the same number. 2 3 green solid 2 orange solid TD' DA' ring 3 2 white-orange stripe 3 white/green strip RD' DB' tip 4 1 blue solid 1 blue solid NC DC' ring 5 1 white/blue stripe 1 white/blue stripe NC DC' tip 6 2 orange solid 2 3 green solid RD' DB' ring 1 7 4 white-brown stripe 4 white/brown strip NC DD' tip 8 4 brown solid 4 brown solid NC DD' rings Types and compatibility Two types 8P8C forks and 9c tools to install forks on the cable, usually Available: Western Electric/Stewart Punching (WE/SS) and Tyco/AMP. While both types are similar, the toolkit used to install two different types of plug does not Interchangeable. WE/SS-compatible plugs are available from a large number of manufacturers, while Tyco/AMP plugs are made exclusively by tyco Electronics. Both types of modular plugs can be crumpled with a standard 8P8C modular jack. We/SS and Tyco/AMP 8P8C plugs have different intervals to ease cable voltage. Using the WE/SS 8P8C die crimmage mounted on the Tyco/AMP 8P8C fork, presses the top of the connector and damages the crimmap kit, and vice versa. Both types of 8P8C plug are available in protected and unshielded varieties for various tolerances to fade as needed. Protected plugs are more expensive and require a screened cable, but have a lower fading, and can reduce signal noise. Although the narrower 4-pin and 6-pin connector fits into the wider 8-pin connector, a smaller connector could potentially damage the springs of the larger socket because the smaller connector's case presses the pins. The body of the 6P6C or 4P4C fork is typically projected more than one millimeter further than the pins, and presses the outer pins of the larger connector further than if a full-size connector were inserted. 8P8C applications are commonly used in computer networks and phone applications, where the plug at each end of the 8P8C modular outlet is wired according to the TIA/EIA standard. Most wired ethernet network communications today are carried out under a Category 5e or Category 6 cable with an 8P8C modular thronging fork at each end. The 8P8C modular connector is also used for RS-232 serial interfaces in accordance with the EIA/TIA-561 standard. This app is common as a console interface on network hardware such as switches and routers. Other applications include other network services such as ISDN and T1. In flood environments, the central (blue) steam is often used to carry telephony signals. Where so wired, the physical layout of the 8P8C modular jack allows you to insert the RJ11 plug-in in the center of the socket, provided that the RJ11 plug-in is connected in true compliance with American Telephony Standards (RJ11) using a central pair. The formal approach to connecting telephone equipment is to insert an approved type converter. The remaining (brown) pair is increasingly being used for Power over Ethernet (PoE). Outdated equipment can only use this pair; This is contrary to other equipment because some manufacturers previously short-circuit unused pairs to reduce cross-conversation signal. Some routers, bridges and switches can be powered by unused 4 lines - blues and brown - to carry current to the device. There is now wiring scheme to power over Ethernet. Various manufacturers of 8P8C modular jacks arrange for a pin 8P8C modular socket socket that will be connected to wire connectors (often IDC-type terminals) that are in a different physical location from what is out Manufacturers: So, for example, if a technician has a habit of connecting a white/orange wire to the lower right hand of the IDC terminal, which links it to the 8P8C modular contact 1 connector, in the slots made by other manufacturers this terminal can instead of connect to the 8P8C modular pin 2 connector (or any other contact). Labels and manufacturer documentation should be consulted whenever an unfamiliar connector is first encountered. The 8P8C modular connectors are also widely used as a microphone connector for PMR, LMR and amateur radio transmissions. Often the pinout is distinguished, usually mirrored (i.e. what will be pins from 1 to 8 in the standard TIA/EIA-568 can be contacts 8 to 1 in the radio and its guide). In a stationary phone, an 8P8C socket is used at the point the line enters the building so that the line will be broken to insert automatic kit equipment, including intrusion alarm panels. In analog mobile telephony, the 8P8C connector was used to connect the AMPS cell phone to its (separate) base unit; this use is out of date. Usually (and incorrectly) called RJ45, the physical connector is standardized as an IEC 60603-7 8P8C modular connector with different performance categories. The physical sizes of the male and female connectors are specified in the ANSI/TIA-1096-A and ISO-8877 standards and are usually connected to the pinouts T568A and T568B specified in the TIA/EIA-568 standard to be compatible with both the phone and The Ethernet. A similar standard jack once used to connect the modem/data, RJ45S, used a key 8P8C body variety with an additional tab that prevents pairing with other connectors; The visual difference compared to the more common 8P8C is subtle, but it's a different connector. The original RJ45S modular connector with 8P2C key had pins 5 and 4, wired for the tip and rings of one phone line and pins 7 and 8, closing the programming resistor, but obsolete today. Electronics catalogs typically advertise 8P8C modular connectors like the RJ45. The installer can wire the socket any pin-out or use it as part of a common structured cable system such as ISO/IEC 15018 or ISO/IEC 11801 using 8P8C patch panels for the phone and data. The crossover router cable to the router crossover cable uses two 8 position connectors and a UTP (Unshielded Twisted Pair) cable with different wired connectors at each end. While a registered jack identifies a wiring circuit and an appropriate form factor, not just a pin or physical connector, crossover cables are often mis-marketed as RJ45 crossover cables. 10P10C 10P10C Plug-in 10P10C. Fork 10P10C. The 10P10C connector is commonly referred to as the RJ50 connector, although this has never been a standard registered connector in universal ordering services. 10P10C has 10 contact positions and 10 contacts. The most the 10P10C connector is used in its own data systems, such as Digiboard and Equinox Super-Serial multi-port TIA-232. 10P10C connectors are also used to implement RS-485 interfaces, as well as to connect to links to data in continuous power sources APC and Eaton. In the latter case, a 10P10C plug with a ledge on the pin side 1 next to the back is used. This connector is also used by some vendors, such as Cyclades (later absorbed by Equinox) used pin 1 as a signal RI (ring indicator), which is rarely used, allowing you to insert an 8P8C plug into the 10P10C socket for most applications. The Cisco Systems STS-10X terminal is equipped with this connector. FordNet, a five-pair communications network, also used 10P10C between terminals. Motorola uses a 10-pin connector as a microphone connector in several of its mobile radio product lines. Polycom uses this connector on its Conference Link bus to connect HDX and Group Series microphones to SoundStructure audio mixers, although pin signals 1 and 10 are not used. The 10-pin connector is also used by Demag Cranes AG in some hanging joints. National Instruments also uses a 10p10c connector for its NI 9237. MTS Systems Corporation uses a 10p10c connector for its family of controllers ® FlexTest. See also the ARJ45 BS 6312 - the British equivalent of the RJ25 EtherCON - the rugged 8P8C Ethernet GG45 Phone Fork TERA Notes - the often omitted Suffix indicates that it is a wiring configuration that supports a single phone line. Floodwire is the mainly British term for installing communication cables en masse in anticipation of their possible use. Links : b Krumreich C.L., Mosing L.W., Evolution Phone, Bell Laboratories Record 44(1) p.14 (January 1966) - Walden S.W., Go Mod Phone Kits (Modular, That Is), Bell Recording Lab, Vol. 52 (8) p. 238 (September 1974) - ATT, Registration Interface-Choice and General Information, Bell Systems Practices, Section 463-400-100 Issue 1, May 1976 FCC 47 CFR Part 68 Connection terminal equipment to the telephone network, Section 68.502, Eclipse T1. TR5-1999 - Universal modular fork. BICSI (October 7, 2002). Background. Cable telecommunications installation (2nd mcgrat. McGraw-Hill Professional. page 88. 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Connector and Contact Appointments for ISDN Main Access Interface located in reference points S and T Registered Jack Links are U.S. government documents that define modular connectors for telecommunications. (Note: 4P4C and 10P10C connectors are not defined in these standards.) External Wikimedia Commons links have media related to modular connectors. How to make a network cable like-to-the-post article from WikiHow John R. Carlsen: On the wiring of modular phone connectors the Modular Wiring link showing the differences between the 8P8C, the true RJ45 8-position key connector, the 6P6C, and the 6-position changed offset tab are a general configuration of the outlet graphic representation of a twisted pair of pinouts catalog pages showing the difference between the stranded and stranded pinouts for many of the 8P8C applications received from the osi model ppt free download. osi model pdf free download. osi model powerpoint presentation free download. osi model pdf free download in hindi