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What is network in communication

It ensures that everyone is aware of the organization’s objectives, strategies, and changes. Telecommuting: Allowing employees to work from home or other remote locations using network and communication systems. 3/ Vertical Network: The Vertical Network refers to a network structure where communication channels predominantly flow vertically up and down the hierarchical levels of an organization. Some common issues are: Network congestion: Overloading of the network due to high traffic volume, leading to slow performance and dropped packets. Whenever X-Ray, MRI has taken it will be digitized as computer data, and then the hospital computer sends that to Cloud Service. Q4) Which communication network is best? The development of networks and communication protocols has also spawned distributed systems, in which computers linked in a network share data and processing tasks. Message Routing: Messages are routed through the established circuit paths, following the predetermined order of recipients. A company can use MAN to connect the LANs in all its offices throughout a city. (For some of the technical details of error detection and correction, see information theory.) Open systems interconnection (OSI)Established in 1983 by the International Organization for Standardization, the OSI model divides network protocols (standardized procedures for exchanging information) into seven functional “layers.” This communications architecture enables end users employing different operating systems or working in different networks to communicate quickly and correctly.The standardization of protocols is an international effort. Configuration errors: Incorrect configuration of network devices and software can result in connectivity issues and reduced performance. The Internet has transformed how we communicate and access information. An important 21st-century development in operating systems was that they became increasingly machine-independent. Social networking: Connecting people through social media platforms, such as Facebook and Twitter. Protocols have been developed to standardize message formats and exchanges, ensuring systems communicate reliably and efficiently. Importance of a communication network in an organization The importance of a communication network in an organization cannot be overstated. Processes known as terminal handlers were needed, along with mechanisms such as interrupts (to get the attention of the operating system to handle urgent tasks) and buffers (for temporary storage of data during input/output to make the transfer run more smoothly). Network protocols work as a brain of the network and network services provide the task we want to perform using the network. It is used to sharing the resources such as printers and servers among multiple locations. Fixed-size blocks (pages) or variable-size blocks (segments) of the job are read into main memory as needed. A network is a set of devices connected by communication links. Disadvantages: Delayed Communication: Communication may take longer to reach higher levels or receive responses from superiors, as it follows the formal chain of command. Each person connected to such a network both receives information from others and shares his or her own information with others. Uses of LAN A Local Area Network(LAN) has many uses, including: Resource Sharing: A Local Area Network allows devices such as computers, printers, and storage devices, to share resources and access them from any device that is connected to the network. Each path specifies the sequence of individuals or departments through which the message is transmitted. Latency: Delays in data transmission due to long distances or congested network links. Science Mathematics The field of networking and communication includes the analysis, design, implementation, and use of local, wide-area, and mobile networks that link computers together. For example one printer that is connected to the network are shared between multiple users. Q3) What is a communication network and its types? Networks that promote direct interaction between members (e.g., star network) may be favored for fostering collaboration. It also provides a mechanism for evaluating progress and making necessary adjustments. Network Criteria A network must meet the following network criteria: Performance – It is measured by transit time and response time also depends on users, medium, hardware, and software. If there is a need to deviate from the established circuit, it may require additional effort or may not be possible within the network structure. It is used to delivering internet access, VPN (Virtual Private Network) services and other managed network services. It enables the sharing of important messages, instructions, goals, and updates, facilitating effective coordination and decision-making. The results were then transmitted to a printer or a magnetic tape. We must understand how the normal network works so that we can catch any abnormal behavior created by hackers or by any suspected software in the network. The challenge for computer scientists has been to develop protocols (standardized rules for the format and exchange of messages) that allow processes running on host computers to interpret the signals they receive and to engage in meaningful “conversations” in order to accomplish tasks on behalf of users. It enables the sharing of updates, announcements, policies, and procedures across the organization. For example, airline reservations are implemented using a client-server model. This ensures that every individual has the necessary access to information required for optimal performance in their respective roles. Operating systems have evolved in their complexity over time, beginning with the earliest computers in the 1960s. This can result in slower decision-making and response times. 4/ Diagonal Communication: Communication cuts across hierarchical levels and departments, enabling collaboration and information sharing to achieve specific goals or solve problems. Diagram of communication network 5 main types of communication networks What are the 5 types of communication networks? There are different types of communication networks, including the Wheel, Star, Vertical, Circuit, and Chain networks. The operating system thus managed these tasks in such a way that all the jobs were completed without interfering with one another. Examples of Start Network: Department Managers: In an organization, department managers often act as central hubs within a star network. 2/ Coordination and Collaboration: Communication networks facilitate coordination and collaboration among individuals and teams. Team members know who to communicate with, seek guidance from, and receive instructions. Questions such as how much main memory space to allocate to users and which pages or segments should be returned to disk (“swapped out”) to make room for incoming pages or segments must be addressed in order for the system to execute jobs efficiently. This role became more important with the rise of multiprogramming, in which several jobs reside in the computer simultaneously and share resources, for example, by being allocated fixed amounts of CPU time in turn. Communication networks help establish structure and patterns for information flow and collaboration. Unix was developed at Bell Laboratories in the early 1970s and since has spawned many variants, including Linux, Berkeley Unix, GNU, and Apple’s iOS. Lower-Level Employees: These are the individuals positioned at lower levels of the organizational hierarchy, including employees, team members, or workers. For example, a vertical network may align well with a highly formal organization. 2/ Downward Communication: Downward communication flows from upper hierarchies to lower hierarchies. Providing centralized data processing and storage facilities. MAN(Metropolitan Area Network) It is designed to extend over an entire city. Simplicity: The chain network is straightforward, with communication moving in a linear fashion, reducing complexity and potential confusion. The server is a device with installed software that enables the computer to provide the information to end devices on those networks. Collaborative Environment – It provide common environment for all the users where all . Key Components and Structure: Higher-Level Management: This refers to the individuals occupying senior positions in the organizational hierarchy, such as executives, directors, or managers at the top level. Unlike client-server networks, a peer-to-peer network assumes that each computer (user) connected to it can act both as a client and as a server; thus, everyone on the network is a peer. Compatibility issues: Different devices and software platforms may not be compatible with each other, leading to connectivity problems. Disadvantages: Limited Peer-to-Peer Interaction: Direct communication between team members is restricted in a star network, potentially limiting collaboration and problem-solving among team members. Sequential Workflows: Certain workflow processes, such as quality control in manufacturing, follow circuit networks. Because hardware (like routers, switches, and cables) and software (like security and management tools) that is used in network communication are vary expensive. In the Wheel network, communication revolves around a central hub. Data is addressed also so that it can travel from the Cloud data center for Correct Service. It is a collection of private and non-private networks basically we called it Networks of Networks. Quick Decision-making: With a central point of contact, decision-making processes can be streamlined, leading to faster responses and actions. 2/ Star Network: The Star Network refers to a communication network structure where a central individual, typically a manager or supervisor, acts as the hub for information exchange within an organization. The importance of diagonal communication is that It bridges gaps and enhances coordination across the organization. Important information may be diluted or altered, leading to miscommunication or incomplete understanding. In this network, messages are passed sequentially from one individual or department to the next until they reach the intended recipient. Client Computer installs software like a web browser, email, file transfer to show the data obtained from the server. The OSI reference model specifies network protocol standards in seven layers. However, Organizations should consider the nature of their communication needs and the potential trade-offs when implementing a star network structure. Enhanced Productivity: A LAN can improve productivity by allowing multiple users to access and share resources, collaborate on projects, and exchange information more efficiently. Maybe wholly owned and operated by a private company or it may be service provided by a public company (local telephone company). All members of the network communicate with the central hub, while direct communication between members is limited. At the highest level are protocols that support specific applications. The CEO pass on information, receives updates and makes decisions based on inputs from the department heads. Ans: One example of a communication network is the “Wheel Network.” In this network, communication flows through a central individual or hub that acts as the primary point of contact and coordination. Here are some key roles that communication networks fulfill in information exchange: 1/ Sharing Information: Communication networks allow individuals and departments to share relevant information with each other. Data Exchange: A Local Area Network provides a high-speed communication channel for the exchange of data between different devices on the network. The spoke members typically do not communicate directly with each other. Into which categories of network falls is determined by its size, its ownership, the distance it covers, and its physical architecture. In such networks, information spreads from one person to another sequentially, without the involvement of formal channels. This enables efficient decision-making processes aligned with organizational goals. The communication network within an organization plays a crucial role in promoting information sharing, fostering teamwork, sharing organizational goals, and ensuring smooth operations across departments and teams. Each recipient receives the message, processes it, and forwards it to the next recipient in the circuit. Basically for different services on network different servers are present. Risks of Network Computing The security of a computer network is challenged every day by: Equipment malfunctions System failures Computer hackers Virus attacks Note: Equipment failures and system failures may caused natural disasters such as floods, storms, or fires, and electrical disturbances. Spoke Members: The spoke members are the individuals within the network who are connected directly to the central hub. Client-server systems require that individual actions from several clients to the same part of the server’s database be synchronized, so that conflicts are resolved in a reasonable way. Internet Access: A Local Area Network provide internet access to all devices that is connected to the same network. Communication networks in business communication Communication networks in business communication refer to the structures or patterns through which information is exchanged among individuals or departments within a business or organization. This includes software updates, hardware replacements, which can be time-consuming and costly. Key Components and Structure: Sender: The sender is the individual who initiates the cycle of communication by transmitting a message to the first recipient in the chain. Modern large computers interact with hundreds of users simultaneously, giving each one the perception of being the sole user. 2/ Employee Engagement and Morale: Effective communication networks contribute to high employee engagement and morale. Efficient Information Exchange: Communication flows directly between team members and the hub, ensuring that information is passed on accurately and promptly. Performance Issues: Network performance can be affected by high traffic, and slow data transfer speeds. Centralized Management: A LAN allows centralized management of network resources, making it easier to monitor and manage the network. Executive Leadership: In larger organizations, executive leaders can serve as central hubs, sharing important company-wide announcements, communicating strategic objectives, and receiving feedback from department heads. Reliability and availability: Network outages, hardware failures, and other reliability and availability issues can impact the functioning of the network. Online gaming: Enabling multiplayer gaming experiences and connecting players from around the world. Then the search Converted into Electrical Signals and travels through the school wired networks until they reach the place at which the school’s network connects to the Internet Service Provider’s (ISP) network. Another popular type of distributed system is the peer-to-peer network. This alignment promotes consistency and a shared understanding of organizational goals. An example of such an application is the file transfer protocol (FTP), which governs the transfer of files from one host to another. The circuit network operates on the principle of fixed routes and sequential transmission of information. Dependency on the Hub: If the central hub is unavailable or inaccessible, communication within the network may be prevented, causing delays and disruptions. Medium to Large Networks- This type of networks are used by institution or organization or Schools with hundreds to thousand interconnected devices from many locations. Communication networks have varying degrees of flexibility, scalability, and adaptability to different organizational needs. Disadvantages Security Risks: Networks can be effected by cyber-attacks, unauthorized access, and data leakage. A node can be a computer, printer, or any other device capable of sending and receiving data generated by other nodes on the network. A client-server network is a distributed system in which the database resides on one computer (the server) and the users connect to this computer over the network from their own computers (the clients). In this network, all communication channels flow through the central hub, and other members communicate directly with the hub rather than with each other. In this session, it establishes many connections. Student Session Let us see an Example, Archit is a Brilliant student in his class his teacher Given him an assignment that he has to submit till the End of the day. Use in group projects for share data among all the team members. Disadvantages: Single Point of Failure: The wheel network is highly dependent on the central hub, and if the hub is unavailable or ineffective, communication and decision-making can be drastically hampered. Cloud computing: Providing access to shared computing resources and applications over the internet. Advantages and Disadvantages: Advantages: Sequential Transmission: Circuit networks ensure that messages are transmitted in a predetermined sequence, ensuring that each recipient receives the message in a specific order. For example, the wheel network revolves around a central hub, while the chain network follows a sequential path. Through these networks, employees can exchange thoughts, seek clarifications, and coordinate their efforts, fostering a sense of teamwork and synergy within the organization. A communication network refers to an interconnected system that enables the exchange and flow of information among individuals, teams, and departments. Uses of Network and Communication Network and communication systems play a crucial role in many areas of modern life, and they have a wide range of uses, including: Data transmission: The transfer of data, such as files, images, and video, between computers and other devices. WAN(Wide Area Network) Wide Area Network provides long-distance transmission of data over a country, a continent, or even the world wide. Each department passes the message along to the next department until it reaches the final recipient. LAN(Local Area Network) Local Area Network is generally privately owned that links the devices in a single office, building, or campus. You can also define a network as a set of devices (often called nodes) connected by … What is a communication network? Issues of Network and Communication There are several issues that can arise in a network and communication environment, which can negatively impact the performance and reliability of these systems. What is the role of a communication network in information exchange Communication networks play a crucial role in facilitating the exchange of information within organizations. Through addresses, we can easily identify which hosts are connected to the organization or how many distant hosts are connected through the internet. It is used to connect remote offices to the main corporate network. Slow Transmission: Messages in a chain network may take longer to reach the final recipient, especially if there are delays in the communication flow. File Sharing: A Local Area Network enables the sharing of files and documents between multiple devices on the same network. The most common LAN topologies are bus, ring, and star. They allow relevant information to be conveyed to decision-makers, enabling them to gather insights, consider different perspectives, and make informed choices. They communicate with the hub to share information, seek guidance, provide updates, and receive instructions. 3/ Horizontal Communication: Also known as lateral communication, it occurs between peers or colleagues at the same hierarchical level, facilitating collaboration, coordination, and the exchange of information or ideas across different departments or teams. This encrypted data cannot be intercepted and read as it travels across the Internet to the cloud service provider’s data centers. These early operating systems engaged in batch processing; i.e., handling sequences of jobs that are compiled and executed one at a time without intervention by the user. Ans: There are five different communication networks commonly observed in organizations: Wheel, Star, Vertical, Circuit, and Chain networks. The Vertical network follows the formal chain of command, and the Chain network involves sequential message flow. World Wide Networks- It is the largest connected existing network in the world. This feedback loop facilitates individual performance improvement and enables the identification of areas for growth. Security is also a concern so the data is sent in encrypted form. Advantages and Disadvantages: Advantages: Clear Reporting Structure: The star network establishes a clear reporting structure within the organization. “Communication networks are the structures or patterns of connections among individuals or groups that facilitate the exchange of information, ideas, and resources within an organization.” – Dorothy Marcic, Richard L. This can slow down decision-making processes and responsiveness. It is used to delivering broadband services such as internet access, telephony and video conferencing. The presentation layer is concerned with functions that encode data, so that heterogeneous systems may engage in meaningful communication. Surgeon Session Dr.Singhal is a Great Surgeon while during surgery he needs to consult a radiologist for surgery frequently. Q5) What are the three communication networks? Examples of Vertical Networks: Government Bureaucracies: Government organizations and bureaucracies typically operate using a vertical network structure. Factors Influencing the Choice of Network: Several factors influence the choice of a communication network in an organization: 1/ Organizational Structure: The hierarchical structure and reporting relationships within the organization play a role in determining the most suitable network. With early computers, the user typed programs onto punched tape or cards, which were read into the computer, assembled or compiled, and run. Cost: Maintaining a network can be expensive. Ans: A communication network refers to the framework through which information circulates within an organization. Information Filtering: Communication within a vertical network may be subject to filtering or distortion as it passes through multiple levels of hierarchy. Types of Communication Networks in Organizations by different directions Understanding the following communication networks and directions helps organizations establish effective channels for information exchange, collaboration, and decision-making. Network protocols also include flow control, which keeps a data sender from swamping a receiver with messages that it has no time to process or space to store, and error control, which involves transmission error detection and automatic resending of messages to correct such errors. Types of Networks The networks come in different ranges from 2 devices to millions of devices connected on a single network. Typical Sessions In a typical network, a user connects to a network in school or college or an organization tries to connect with the Server that is in that college or organization or somewhere in the world. Operating systems developed for the first personal computers in the 1980s included IBM’s (and later Microsoft’s) DOS, which evolved into various flavors of Windows. Daft A communication network refers to an interconnected system that enables the exchange and flow of information among individuals, teams, and departments. More sophisticated hardware allowed one job to be reading data while another wrote to a printer and still another performed computations. The most common communication direction in organizations are: 1/ Upward Communication: Upward communication flows from lower levels to higher levels of the hierarchy. Advantages and Disadvantages: Advantages: Clear Communication Path: The chain network establishes a clear communication path, ensuring that each individual knows who they receive the message from and who they pass it to. Resource sharing: Sharing resources such as printers, scanners, and storage devices among multiple computers and users. Small Offices/Home Office Network(SOHO)- The small Office/Home Office or SOHO network enables computers within a home office or a remote office to connect to a corporate network or access centralized, shared resources. The Internet itself is a network that makes it feasible for nearly all computers in the world to communicate. This setup includes hardware like computers, routers, switches, and modems, as well as software protocols that manage how data flows between these devices. Some types of networks are as follows: Small Home Networks- It connects a few devices(1-10) connected to each other and the internet. So the Data is submitted to School Network wirelessly. And all the users can able to use that software from that location. Its size is limited to a few kilometres. Data are replicated at “mirror sites,” and replication can improve availability and reliability. Users personal information may be stolen by someone if any protection algorithm is not applied. The central hub holds a position of authority or expertise, serving as a main point for information exchange. They provide a framework for people to share opinions, and important messages with one another. The server may be of single-purpose that provides a piece of single information like web page only and Maybe of multipurpose like providing web page, email, file transfer. An operating system is a specialized collection of software that stands between a computer’s hardware architecture and its applications. Differences: The structure and flow of communication differ among network types. Direct communication between team members is limited, and most communication flows through the hub. Q2) What are the 5 different communication networks? Some common uses of a MAN are: Data and resource sharing among different locations in a city or metropolitan area. These networks determine how communication flows, who interacts with whom, and the channels used for sharing information. During this process, it is likely that two or more client requests want to access the same flight and that there is only one seat left to be assigned. As the basic job of a cybersecurity analyst is to trace the event occur on the network. It performs a number of fundamental activities such as file system management, process scheduling, memory allocation, network interfacing, and resource sharing among the computer’s users. Enabling the transfer of large data files and multimedia content. Related Reading: Difference between a formal and informal organization structure 2/ Collaboration Requirements: The extent of collaboration and teamwork required within the organization influences the choice of network. Some cultures may emphasize centralized communication and decision-making (e.g., wheel network), while others prioritize decentralized and inclusive communication (e.g., horizontal network). Key Components and Structure: Central Hub: The central hub is usually a manager, team leader, or supervisor who holds a position of authority or expertise. Through this way, Dr.Singhal can operate with a Specialist from diverse location and share reports and images of the patient and discuss. Examples of Chain Networks: Rumor Mill: Informal communication networks, often referred to as the “grapevine” or “rumor mill,” can resemble a chain network. Related Reading: What is the grapevine in communication Message Relay: Chain networks can be seen in situations where messages need to be conveyed from one department or team to another within an organization. Team Members: The team members are connected directly to the central hub. Software Sharing – If many users want to use a single paid software then Instead of purchasing and installing that software on each computer , it can be installed on the server. They enable employees to communicate, share ideas, and work together on projects and tasks. IoT (Internet of Things): Connecting and communicating with smart devices and other IoT-enabled products. Overburdened Hub: The central hub may become overwhelmed with information overload, as all communication flows through them. The level of direct interaction between network members varies. Key Components and Structure: Circuit Paths: Circuit networks have predetermined paths or circuits through which information flows. Each individual in the chain network communicates directly with only two other individuals – the one who sent the message and the one to whom the message is passed. Let us see some examples of these Sessions. Frequently Asked Questions Q1) What is an example of a communication network? Efficient Decision-making: When communication flows vertically, it allows superiors to make decisions based on information received from subordinates. Gaming: A Local Area Network allows multiple users to play multiplayer games over the network. 4/ Feedback and Evaluation: Communication networks enable the exchange of feedback, both positive and constructive, among team members and between employees and managers. 5/ Chain Network: The Chain Network refers to a linear communication structure where messages flow sequentially from one individual to the next in a chain-like fashion. (Source) Traditional Corporate Structures: Traditional hierarchical organizations, such as multinational corporations, often adopt a vertical network structure. Example of Government vertical network structure. For example, it provides a mechanism with which to insert checkpoints (saving the current status of a task) into a long file transfer so that, in case of a failure, only the data after the last checkpoint need to be retransmitted. After a tap on the search button, a Radio wave is generated that takes data of Archit’s Search as a string of binary with Address of Device so that information comes back to Device. Communication Channels: The communication channels in a wheel network primarily involve the hub sharing information with the spoke members and receiving inputs or feedback from them. At the bottom of the protocol lies the physical layer, containing rules for the transport of bits across a physical link. Each client wants to access this data for the purpose of booking a flight, obtaining a seat assignment, and paying for the flight. Comparison of communication network In comparing different communication networks, there are both similarities and differences to consider. However, it may not be ideal when the central hub’s absence can significantly disrupt communication. Reliability – reliability is measured by the frequency of failure. They communicate with the hub to exchange information and may have limited direct communication with other spoke members. Whenever we search for something on a Web Browser at that time web browser acts as Web Client and tries to connect with Web Server or when we use the email service Email Client tries to connect to the Email Server. Hosts are the endpoints or Nodes of a network. Let’s explore five common types of communication networks: 1/ Wheel Network: The Wheel Network is a communication network characterized by a central individual or hub that acts as the primary point of contact for all other members within the network. It is designed to allow resources to be shared between personal computers or workstations. Ans: The three communication networks are the Wheel, Vertical, and Chain networks. With the help of these addresses in log files, we can easily identify which of the hosts are connected or tried to connect, with hosts in organizations. In this network, all communication channels flow through the central hub, and there are limited direct connections between other members. If any recipient is unavailable or slow in forwarding the message, it can impact the overall speed of information shared. Security threats: Viruses, malware, hacking and other security breaches can compromise network and data security. What is A Network? Here are some key reasons why communication networks are crucial: 1/ Conflict Resolution: Communication networks play a vital role in resolving conflicts within an organization. It is categorized into three types: LAN, MAN, WAN. Remote access: Enabling employees to access company resources, such as applications and data, from remote locations. From these beginnings came the key concept of an operating system as a resource allocator. They provide platforms for open and constructive dialogue, allowing individuals or teams to address issues, clarify misunderstandings, and find mutually beneficial solutions. Client-Server Communication Client as the name suggests it require something and Server as it means Someone Who serves. In organizational communication, the star network facilitates a clear chain of command, efficient information flow, and centralized control. A computer network links computers together via a combination of infrared light signals, radio wave transmissions, telephone lines, television cables, and satellite links. When employees feel informed and valued, they are more likely to be motivated and productive in their work. Key Components and Structure: Central Hub: The central hub is the main individual who holds a central position within the network. Each step or station in the process has a specific role and passes the product to the next step until it is completed. It has made it easier for people to connect, work more efficiently, and find information and resources quickly. Disadvantages: Message Distortion: As messages pass through multiple individuals in the chain, there is a higher likelihood of message distortion, especially if the message is not accurately conveyed at each step. A distributed DBMS manages a database whose components are distributed across several computers on a network. Information and directives flow down the hierarchical levels, ensuring adherence to established policies and procedures. They serve as the primary point of communication and coordination for the team or department. The data-link layer handles standard-sized “packets” of data and adds reliability in the form of error detection and flow control bits. Privacy : With increased data sharing over networks, there are heigh chance to protect data . Such as, superiors transmit instructions, goals, policies, performance feedback, and organizational announcements to subordinates. The first commercially viable operating systems were developed by IBM in the 1960s and were called OS/360 and DOS/360. Communication networks play a crucial role in facilitating the flow of information within organizations. Ans: The Star network is considered to be a commonly preferred communication network for its efficient information exchange and direct communication channels with the central hub. Communication Channels: Communication channels within a star network involve the hub sharing information, assigning tasks, providing feedback, and addressing inquiries or concerns raised by team members. Virtual memory is a scheme that gives users the illusion of working with a large block of contiguous memory space (perhaps even larger than real memory), when in actuality most of their work is on auxiliary storage (disk). It is used to facilitating, communication and collaboration between employees, customers and partners of the company. 5/ Collaboration and Teamwork: Communication networks foster collaboration and teamwork by providing channels for individuals and teams to exchange ideas and work together towards common goals. 4/ Circuit Network: The Circuit Network refers to a network structure where communication flows through predefined paths or circuits. Security – Security protects data from unauthorized access. The wheel network is suitable for situations where clear direction and control are necessary, such as in hierarchical organizations or when a central authority figure is required. Hardware Sharing – Devices that are connected to the network can be shared between multiple users. Interference: Interference from other devices and signals can negatively impact network performance, causing dropped packets and slow speeds. Communication networks help establish effective channels, and connections among employees, facilitating the exchange of ideas within the process of business communication. Control and Tracking: Circuit networks allow for better control and tracking of message flow, as each step of the circuit can be monitored and managed. His hospital uses a special technology called Cloud. Uses of WAN It is used to connect remote locations, such as branch offices and telecommuters, to the main office or headquarters. By understanding the different types of communication networks, organizations can optimize their internal communication and enhance collaboration among team members. It may include both formal channels, such as official memos, emails, and hierarchical reporting lines, as well as informal channels, such as casual conversations, social networks, and grapevine communication. The advent of time sharing, in which users enter commands and receive results directly at a terminal, added more tasks to the operating system. Recipients: Recipients are the individuals who receive the message from the previous sender and pass it along to the next recipient in the chain. For instance, in a document approval process, the document passes through predetermined circuits, such as managers or department heads, for review and approval before reaching the final recipient. E-commerce: Facilitating online transactions and commerce, such as online shopping and banking. It is used to providing remote access to business applications and data.. Lack of Flexibility: Circuit networks can be inflexible, as they follow predetermined paths. 4/ Efficient Information Flow: An effectively structured communication network guarantees the seamless and efficient circulation of information across the entire organization. If any then analysts trace that threat for the security of the organization and their data. Backup and Recovery: A Local Area network can provide backup and recovery services for data stored on network devices. Advantages and Disadvantages: Advantages: Centralized Communication: The central hub ensures that information flows efficiently as it is directly conveyed to all members. Maintenance: Regular maintenance is required to ensure network reliability and performance. A distributed database system, for example, has a database spread among (or replicated at) different network sites. These are just a few examples of the many uses of network and communication systems in today’s digital world. This strategy makes sense for groups that share audio collections on the Internet and for organizing social networks such as LinkedIn and Facebook. It encourages cooperation and problem-solving among employees. Project Manager and Team Members: In project management, the project manager serves as the hub, coordinating and communicating with team members. The hub serves as a primary point of contact, coordination, and decision-making. Each network type has its own characteristics and implications for communication and collaboration within organizations. It emphasizes the formal chain of command and follows the reporting relationships within the organization’s structure. The session layer supports interactions between applications on two communicating machines. These advancements have transformed data exchange and management, improving connectivity, efficiency, and global access to information. Supporting real-time data and video applications. Each layer is defined by the functions it relies upon from the layer below it and by the services it provides to the layer above it. The project manager conveys information, sets goals, and receives updates, while team members have limited direct communication with each other. The software must synchronize these two requests so that the remaining seat is assigned in a rational way (usually to the person who made the request first). A network is simply two or more computers that are linked together. See also list of Windows versions Networks and communication involve connecting different systems and devices to share data and information. 3/ Organizational Alignment: A communication network helps align individuals and departments within an organization. The record of the incident is stored in log files in systems involving in the network these log files contain the logs of network protocol operations. The server provides data and responds to requests from each client, while each client accesses the data on the server in a way that is independent and ignorant of the presence of other clients accessing the same database. Networks can be classified into several types including Local Area Networks, Wide Area Networks, Metropolitan Area Networks, and wireless networks such as Wi-Fi and cellular networks. Communication flows from executives to middle managers, who then pass it down to their respective teams and employees. Examples of Circuit Networks: Approval Processes: Circuit networks are commonly used for approval processes within organizations. They provide channels for communication, enabling individuals or departments to connect and share information. Examples of Wheel Network: CEO and Department Heads: In large organizations, the CEO often acts as the central hub, communicating with department heads who act as the spoke members. Protocols such as TCP/IP and HTTP are essential for communication between devices. Limited Member Interaction: Direct communication between members is restricted, leading to potential information gaps and reduced collaboration. Advantages and Disadvantages: Advantages: Clear Direction: The vertical network ensures clear communication channels and established reporting relationships, providing subordinates with clear direction and instructions from their superiors. Each network offers unique advantages and considerations for successful communication and collaboration within organizations. The communication network within an organization consists of various components such as hierarchies, departments, teams, and individuals, each with specific roles and responsibilities. Advantages Information Sharing – Authorized users can use computers on the network to access and share data. It is used to connect different LAN in a city or metropolitan area. So Archit takes his tablet and connect with School Network and Search his Assignment. Outdated hardware and software: Outdated network components can cause compatibility issues, reduce performance and increase security risks. Advancements in technology have led to the creation of complex communication networks, like the Internet. Since it would otherwise be impossible for different kinds of machines and operating systems to communicate with one another, the key concern has been that system components (computers) be “open.” This terminology comes from the open systems interconnection (OSI) communication standards, established by the International Organization for Standardization. Another area of operating system research is the design of virtual memory. Clear Chain of Command: The hierarchical structure of the wheel network provides clarity in terms of authority and reporting relationships. The network and transport layers break messages into the standard-size packets and route them to their destinations. A well-designed communication network promotes efficient information sharing, enhances teamwork, and plays a vital role in driving the overall success and productivity of the organization. Teleconferencing: Enabling real-time audio and video communication between individuals or groups in different locations. They communicate with their team members, provide guidance, allocate tasks, and ensure smooth coordination within the department. In this network, communication typically starts from a sender and is passed along through a series of individuals until it reaches the final recipient. Some networks promote direct peer-to-peer communication (e.g., star network), while others emphasize communication through a central hub (e.g., wheel network). 3/ Organizational Culture: The organization’s values, norms, and communication preferences may impact the choice of network. Communication Channels: Communication channels in a vertical network mainly involve formal channels such as meetings, performance reviews, email exchanges, memos, and official reports. Scalability issues: The network may not be able to handle increasing demand, leading to performance degradation and network downtime. 3/ Decision-Making Support: Communication networks play a crucial role in supporting decision-making processes. Such as employees providing feedback, suggestions, reports, or seeking guidance from their superiors. Other addresses of protocols can provide information on what the network connection attempt to do and is this behavior is normal or suspicious or dangerous for connection. They are connected to all other members and serve as the primary point for communication and coordination. All the connected devices in the network participate in network communication these classified as HOST. Communication flows vertically, from superiors to subordinates (downward communication) and from subordinates to superiors (upward communication). In general a given LAN will use only one type of transmission medium. If someone is interested or willing to join the world of Cyber Security he/she must be familiar with how Network Communication takes place. Sequential Communication: Messages flow sequentially from one recipient to the next, following a linear pattern until reaching the final recipient. Uses of MAN MAN refers to Metropolitan Area Network, it is a type of network that connects users with computer resources in a geographic region larger than a LAN but smaller than a WAN. By providing a platform for information exchange, networks contribute to well-informed decision-making that aligns with organizational goals. Similarities: All communication networks aim to facilitate the exchange of information within an organization. All the searched data flows with thousands of data on fiber network to ISP and this happens in just a fraction of Seconds. Information primarily flows from superiors to subordinates or from subordinates to superiors, aligning with the hierarchical structure of the organization. It is used to connects all the company’s computers and devices, allowing them to share information and resources internally. Conclusion In summary, networking and communication are dynamic for connecting computers using methods like infrared signals, radio waves, and satellites. Cloud allows hospitals to store patients reports, MRI, X-rays on a centralized location that can be accessed over the internet. Disadvantages: Delayed Communication: Circuit networks may introduce delays in communication as messages need to follow a predefined path. Lack of Flexibility: The linear nature of the chain network limits lateral communication and collaboration, as individuals typically interact only with the sender and the immediate recipient. Accompanying each job in a batch were instructions to the operating system (OS) detailing the resources needed by the job, such as the amount of CPU time required, the files needed, and the storage devices on which the files resided. They set the rules for how data is exchanged, ensuring a common connection. Reduced Miscommunication: By following fixed paths, circuit networks can minimize the potential for miscommunication or information distortion that may occur in networks with more open communication channels. A network is a set of computers connected through a transmission medium, to transmit and receive information from other computers in the network. The server contains all the data about upcoming flights, such as current bookings and seat assignments.

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