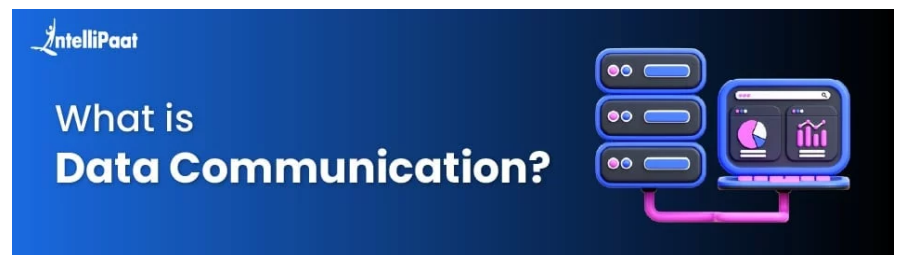


Apa Itu Komunikasi Data dalam Jaringan Komputer? Bagaimana Manfaatnya di Dunia Saat Ini?

Oleh [Rupinder](#) | Terakhir diperbarui pada 3 September 2025 | 452 Tayangan



[Berikutnya](#)

Poin-Poin Penting:

- Komunikasi data adalah pertukaran informasi antar perangkat menggunakan media transmisi dan protokol.
- Komponen utamanya adalah pengirim pesan, penerima, media transmisi, dan protokol.
- Jenis-jenis komunikasi meliputi analog vs digital dan sinkron vs asinkron.
- Data dapat mengalir dalam mode simpleks, half duplex, atau full duplex.
- Media transmisi berupa kabel seperti serat optik, koaksial, dan pasangan berpilin, atau nirkabel seperti radio dan gelombang mikro.
- Protokol mendefinisikan aturan untuk penanganan kesalahan, kontrol aliran, dan keamanan dalam jaringan.
- Metode deteksi dan koreksi kesalahan memastikan komunikasi yang andal.
- Aplikasi meliputi komputasi awan, konferensi video, IoT, dan telekomunikasi.

Setiap email yang Anda kirim, setiap kursus online yang Anda ikuti, dan setiap acara Netflix yang Anda tonton didasarkan pada satu fondasi penting yang tak terlihat, yaitu komunikasi data. Ini adalah proses di mana informasi berpindah dari satu mesin ke mesin lain, memastikan bahwa pesan sampai dengan akurat dan andal.

Secara teknis, komunikasi data merujuk pada **pertukaran data antara dua perangkat atau lebih, melalui media transmisi, dan menggunakan protokol yang disepakati**. Secara praktis, komunikasi data adalah mesin yang menggerakkan Internet, komputasi awan, Internet of Things (IoT), dan hampir setiap interaksi digital yang kita andalkan setiap hari.

Artikel ini merupakan eksplorasi mendetail tentang komunikasi data, definisi, komponen, jenis, dan contoh penggunaannya di dunia nyata. Pada akhir artikel, Anda akan memahami mengapa komunikasi data merupakan tulang punggung jaringan komputer modern.

Daftar isi:

- [Apa itu Komunikasi Data?](#)
- [Komponen-komponen Sistem Komunikasi Data](#)
- [Diagram Blok Sistem Komunikasi Data](#)
- [Proses Komunikasi Data](#)
- [Jenis-jenis Komunikasi Data](#)
- [Modus Komunikasi Data](#)
- [Keuntungan dan Kerugian dari Tiga Mode Komunikasi](#)
- [Karakteristik Komunikasi Data](#)
- [Klasifikasi Media Transmisi dalam Komunikasi Data](#)
- [Protokol dalam Komunikasi Data](#)
- [Deteksi Kesalahan dan Integritas dalam Komunikasi Data](#)
- [Aplikasi Komunikasi Data](#)
- [Komunikasi Data dalam Jaringan Komputer](#)
- [Tren Modern dan Masa Depan Komunikasi Data](#)
- [Karier di bidang Komunikasi Data](#)

Apa itu Komunikasi Data?

"Data communication refers to the exchange of data between two or more devices through a transmission medium such as a cable, fiber optic line, or wireless channel."

For the transfer of information to happen successfully, the two devices must be part of a communication system and adhere to certain agreed-upon guidelines (protocols) so that correct data can be transferred to the correct recipient.

To simplify, every time information moves from one point (sender) to another (receiver) through a medium with agreed-upon rules, data communication takes place.

Importance of Data Communication in Today's World

In our digital age, nearly every activity we do – from sending an email to watching a video on the internet – involves data communication. It is the foundation of computer networks and underpins applications such as:

- **Video conferencing** (Zoom, Google Meet)
- **IoT communication** (smart home devices, wearables)
- **Cloud computing services** (Google Drive, AWS)
- **Social networking and messaging apps** (WhatsApp, Facebook, Slack)

These examples highlight that without efficient data communication, **modern computing and the Internet as we know it wouldn't exist.**

Advance from Data Communication to Cloud Expertise

Master cloud networking and infrastructure on platforms like AWS, Azure, and GCP to power scalable, modern networks empowered by intelligent design.

[Explore Program](#)

Components of the Data Communication System

A communications system consists of five fundamental elements:

1. **Message** → The actual data or information that is to be transmitted (i.e., text, image, audio, or video).
2. **Sender (Transmitter)** → The machine that produces and sends the message (i.e., computer, smartphone).
3. **Receiver** → The machine that gets the message (i.e., computer, server) and interprets it.
4. **Transmission Medium** → The medium or wireless channel used to get the message (i.e., cables, fiber optics, radio).
5. **Protocol** → The rules that govern data communication, ensuring compatibility and reliability (e.g., TCP/IP, HTTP, Bluetooth)

Example: Sending a WhatsApp message involves a sender (your phone), a message (text or image), a medium (cellular/Wi-Fi network), a receiver (your friend's phone), and a protocol (Internet Protocol suite).

Block Diagram of Data Communication System

The message is generated by the sender, the protocols define how it is encoded and transmitted, the medium carries it, and the receiver interprets it.

Process of Data Communication

The process of data communication ensures that information is accurately transmitted from one device to another. A successful communication system depends on proper connectivity between the sender and the receiver through a reliable medium.

1. **Encoding** → Involves converting data into signals to be transmitted.
2. **Transmission** → Involves sending the encoded signals over the medium.
3. **Reception** → Involves receiving the signals on the other end.
4. **Decoding** → Involves converting those signals into data that can be used.
5. **Delivery** → Involves making sure it gets to the right person.

Types of Data Communication

Data communication types help classify the methods for sending data between devices. Understanding them helps network engineers and IT personnel design and build efficient communication systems.

1. Analog vs Digital Communication

- **Analog Communication:** It transmits data in **continuous data values**. A common example is the standard phone communication system and radio broadcasting. Analog data is **subject to noise and distortion**, but it can transmit information over long distances using relatively simple hardware.
- **Digital Communication:** It transmits data in discrete data values (0s and 1s). Common examples are computer networks, e-mails, and internet forms of communication. Digital communication provides a more accurate, secure form of communication and data, and it is less affected by noise than analog communication.

2. Synchronous vs Asynchronous Communication

- **Synchronous Communication:** The data is passed on a **regular interval** by a clock signal that keeps the sender and receiver in sync. Ethernet local area networks (LANs) or video conferencing are examples of synchronous communication.
- **Asynchronous Communication:** The data is transferred **irregularly** and does not have a common clock. In async communications, the sender sends start bits and stop bits to indicate when data is starting and ending. Emails, keyboard input, and serial communication (i.e., I/O operations, etc.) are examples of asynchronous communication.

3. Serial vs Parallel Communication

- **Serial Communication:** Serial communication is where a single bit (0 or 1) is sent over a single channel (wire) at a time. USB communication and RS-232 interfaces are examples of serial communication. Serial communication is slower than parallel communication, but it is simpler and better for long-range communication.
- **Parallel Communication:** It is the communication where multiple bits are transmitted over multiple channels. Examples include older printer ports (Centronics) and internal CPU buses. Faster, but it will skew the data signal over a long distance.

4. Wired vs Wireless Communication

- **Wired Communication:** Data is sent over wires or cables, like twisted pair, coaxial, or fiber optics. Reliable and secure, but limited by physical infrastructure.
- **Wireless Communication:** Data is transmitted by radio waves, microwaves, or infrared

signals. Some examples are Wi-Fi, Bluetooth, and cellular (mobile) data networks. While wireless communication allows mobility as a benefit over wired communication, it is subject to interference and security issues.

Modes of Data Communication

Modes of data communication define how data flows between a sender and a receiver. Using the right mode guarantees efficiency and error-free transmission of data. There are three main modes in Data Communication:

1. Simplex Mode

In a simplex mode, **data travels in one direction only**, from the sender to the receiver. The receiver cannot communicate data back to the sender.

Example:

- A keyboard sending data to a computer
- A TV station sending a broadcast channel.

2. Half-Duplex Mode

Half-duplex is when **data flows both ways**, i.e., both devices can send and receive data, **but not at the same time**. That is to say, while one device is sending, the other is receiving, but they cannot both send and receive at the same time.

Example:

- Walkie-talkies
- Two-way radio communication

3. Full-Duplex Mode

Full-duplex is when **data flows both ways**, i.e., when both devices can send and receive data **simultaneously**, so the two-way communication can happen in real-time.

Example:

- Telephone calls
- Video conferencing
- Internet data transfer

Advantages and Disadvantages of Three Modes of Communication

Mode	Advantages	Disadvantages
Simplex	• Simple and inexpensive • No data collision	• Data flows only in one direction • No feedback possible
Half-Duplex	• Supports two-way communication • Less expensive than full-duplex	• Slower than full-duplex due to alternating transmission
Full-Duplex	• Real-time two-way communication • Efficient use of transmission medium	• More complex and expensive than half-duplex

Characteristics of Data Communication

The attributes of data communication are important to understand because they help to indicate how well the information can be exchanged between systems connected via data communication networks. All communication systems seek to optimize these characteristics as much as possible in order to send data reliably, quickly, and accurately.

1. Accuracy

Accuracy refers to the degree to which the transmitted data accurately represents the original data. All it takes is an error in transmission due to noise or interference, and the message can be invalidated due to corruption. Today's modern networks use error detection and correction techniques, including cyclic redundancy check (CRC) and parity bits, to maintain accuracy.

2. Timeliness

Timeliness measures how fast data arrives to the receiver after the sender sends the data. For real-time applications like video conferencing, online gaming, or live streaming, there should be minimal delay for the communication to flow smoothly. Delays can lead to latency or lag and can affect the user experience.

3. Delivery

Delivery signifies the successful arrival of data at its destination. Proper delivery includes routing data to the proper destination and ensuring that it actually arrives, typically with acknowledgment in network protocols like TCP.

4. Jitter

Jitter is the variation in the arrival time of data packets. High jitter can affect the quality of certain types of data transmission, like voice over IP (VoIP) calls, video calls, and streaming applications, resulting in audio and/or video delays or distorted playback. Jitter is minimized using buffering and synchronization mechanisms.

5. Reliability

A dependable data communication process must provide consistent results every time and proper results, even in the case of network errors or failures. Protocols such as TCP offer error checking and retransmission processes to ensure true reliability.

Classification of Transmission Media in Data Communication

The term “transmission media” refers to the path or way in which data travels from sender to receiver. When designing a communication system, the correct media selection is critical for speed, reliability, and low cost. Transmission media can be divided into two major categories: guided (wired) and unguided (wireless). Let’s know them more:

1. Guided Media:

In guided media, the data signal stays contained within a physical path.

Twisted Pair Cable

- The twisted pair cable is made of pairs of insulated copper wires twisted into pairs to minimize electromagnetic interference.
- Its common usage is in telephone networks and LANs.
- **Advantages:** inexpensive, easy to install
- **Disadvantages:** bandwidth limitations, susceptible to noise

Coaxial Cable

- It consists of a copper center conductor, insulation, and a metallic shield.
- It is used with cable TV, broadband internet, and Ethernet.
- **Advantages:** Higher bandwidth than twisted pair, less interference with the shield.
- **Disadvantages:** It is expensive and very inflexible

Fiber Optic Cable

- It sends data as pulses of light via glass or plastic fiber.
- It is used with backbone networks, long-distance telecommunications, and high-speed internet.
- **Advantages:** Very high speed, low attenuation, and totally immune to electromagnetic interference.
- **Disadvantages:** Very expensive and not easy to install.

2. Unguided Media (Wireless Communication)

In unguided media, data signals are allowed to travel through air or space without any physical conductor.

Radio Waves

- It is used for broadcasting, **mobile phones, and Wi-Fi.**
- **Advantages:** Wide-area coverage, no physical cable required
- **Disadvantages:** Susceptible to Interference, lower level of security

Microwaves

- These are high-frequency signals, often used for satellite communication or long-distance terrestrial links
- **Advantages:** High data rate, long-distance coverage
- **Disadvantages:** Line-of-sight needed, affected by weather

Infrared

- It is short-range communication, used in remote controls, wireless peripherals, and some LANs
- **Advantages:** It is secure and low-cost
- **Disadvantages:** It has a limited range, and is blocked by obstacles

Protocols in Data Communication

Protocols are rules and standards for how devices in a network send and receive data. Without protocols, the devices would not know how to understand or process the data and would create errors without being able to communicate.

1. What is a Protocol?

A protocol is a set of agreed-upon rules that govern:

- How data is formatted and encoded
- How data is transmitted and routed
- How errors are detected and corrected

Protocols are essential for interoperability so that devices from different manufacturers can communicate effectively.

Example: The Internet uses the TCP/IP protocol suite to ensure effective and reliable exchange of information between web browsers, servers, and routers.

2. Purpose of Protocols

Protocols have several major purposes in data communications:

- **Standardization** → ensures that devices conform to the same rules.
- **Error Handling** → detects and corrects any errors during transmission.
- **Flow Control** → manages the rate of data transfer so that the communication medium does not become congested.
- **Security** → provides communication security through various mechanisms such as encryption, authentication, and data agreement.

3. OSI and TCP/IP Models

To understand protocols, it's essential to be familiar with network models, as they categorize communications into layers.

a. OSI Model (Open Systems Interconnection)

- **Seven layers:** Physical, Data Link, Network, Transport, Session, Presentation, and Application
- Each layer has a distinct function, from transmitting bits to controlling the communication process from host to host.
- The OSI model is commonly utilized as a reference model to aid in the design and troubleshooting of networks.

b. TCP/IP Model

- **Four Layers:** Network Interface, Internet, Transport, and Application.
- The TCP/IP model is used to describe the real-world communication of the Internet and supports protocols such as HTTP, FTP, and SMTP.
- Simpler and more relevant than when discussing OSI in relation to modern TCP/IP based networks.

4. Popular Data Communication Protocols

Protocol	Function	Usage
HTTP/HTTPS	Hypertext transfer	Web browsing
FTP/SFTP	File transfer	Upload/download files
TCP/IP	Transmission control	Internet communication
SMTP/POP3/IMAP	Email	Sending and receiving emails

Bluetooth	Short-range wireless	IoT devices, peripherals
NFC	Near-field communication	Contactless payments

Error Detection and Integrity in Data Communication

Data communication systems are prone to errors occurring during communication because of noise, interference, or attenuation in the signal. Data integrity must be ensured for communication to be considered reliable, as using error detection and correction methods can help to ensure the network's reliability, accuracy, and trustworthiness.

1. Types of Errors in Data Communication

Errors in data communication are classified into three main types:

- **Single-Bit Error** – Only one bit in the data stream is altered (e.g., 0 → 1).
- **Burst Error** – Two or more consecutive bits are corrupted.
- **Omission Error** – Some bits or messages are completely lost during transmission.

2. Attenuation

Attenuation is the gradual loss of signal strength while propagating through the transmission medium. High attenuation may lead to data loss or misinterpretation. There are a number of techniques that can help to overcome the problems of attenuation in long-distance communications, including signal amplification or repeaters.

3. Error Detection Techniques

- **Parity Check**
 - Adds a parity bit (even or odd parity) to the data.
 - While it is effective to detect single-bit errors, it does not correct them
- **Cyclic Redundancy Check (CRC)**
 - A CRC generates a checksum using polynomial division.
 - Using polynomial division, the receiver performs a CRC calculation and then compares the checksum that is calculated with the checksum sent to determine if an error is detected.
 - Highly effective in detecting burst errors.
- **Checksum Method**
 - The data is divided into blocks, with a simple sum of bits calculated and sent.
 - The receiver performs the same calculation to verify integrity

4. Error Correction

Some systems may implement error correction, which allows the receiver to correct detected errors without retransmission. For example:

- **Hamming Code:** It can correct single-bit errors and detect double-bit errors.
- **Forward Error Correction (FEC):** It duplicates data for redundancy and enables automatic correction at the receiver.

Are you preparing for your first Computer Networking job? Then don't forget to explore [key computer networks questions](#) to stay prepared!

Get 100% Hike!

Master Most in Demand Skills Now!

Alamat Email	+91 IN	Nomor telepon
--------------	--------	---------------

☒ By providing your contact details, you agree to our [Terms of Use & Privacy Policy](#)

Submit

Applications of Data Communication

Data communication governs modern networking, a major component of business, education, entertainment, and everyday life. It has myriad applications and is constantly evolving as new technological developments are introduced.

1. Business and Enterprise

- **Email and Instant Messaging:** Gmail, Slack, and Microsoft Teams are all tools that enable people to communicate reliably at a distance and in real-time. Each of them requires data communication channels for its operation.
- **Cloud Computing:** Companies such as AWS, Google Cloud, and Microsoft Azure provide a service for online storage, computing, or collaboration; each of these services relies on data communication.
- **Video Conferencing:** Zoom, Microsoft Teams, and Google Meet enable people to conduct meetings in real time and in multiple locations anywhere in the world, all due to the use of data communication.

Example: When it was found that companies such as Zoom were able to support millions of concurrent video calls, it was theorized that data communication protocols and transmission media had been established beforehand.

2. Social Media and Entertainment

- **Streaming Services:** Netflix, YouTube, and Spotify utilize data communication to send video and audio quickly and without delay.
- **Social Networking:** Facebook, Instagram, Twitter, and TikTok send millions of messages,

pictures, and videos all day long.

Example: Netflix uses Content Delivery Networks (CDNs) to allow data communication between its servers and end-users quickly and reliably anywhere in the world.

3. Education and E-Learning

- Online classes and webinars send video, audio, and educational materials in real-time and engage students via data communication.
- Intellipaat, Coursera, Khan Academy, and edX all use reliable network communication to bundle as efficiently as possible the delivery of learning content.

4. IoT and Smart Devices

- **Smart Homes:** Devices such as Amazon Alexa, Google Nest, and smart thermostats communicate data to provide some level of automation and control.
- **Healthcare IoT:** Remote patient monitoring devices send essential health data to health practitioners.
- **Industrial IoT:** A factory may use data communication to allow its machines and sensors to optimize production and maintenance.

5. Telecommunication Networks

- **Mobile Communication:** Data communication contains cellular services like voice calls, SMS, and also internet communication.
- **Satellite Communication:** Data communication encompasses satellite services, global positioning systems (GPS), television communication services, and internet access in rural areas.

Data Communication in Computer Networks

Data communication in computer networks is essentially the exchange of data between devices connected by LANs, MANs, or WANs to enable the sharing of resources, exchange of information, and endless connectivity. It is important to know how data moves within a network to develop systems that can also be effective, reliable, and secure.

1. Role in Different Network Types

■ **LAN (Local Area Network):**

- Typically involves a **small geographic area**, such as offices or campuses.
- Allows high-speed data communication between computers, printers, and servers.

■ **MAN (Metropolitan Area Network):**

- Connects two or more LANs that are at a geographic distance, spanning a city or metropolitan area.
- Most metro networks will **connect two or more LANs** to establish telecommunications for companies and city zones.

- **WAN (Wide Area Network):**
 - Spans **large geographic areas** and connects a mixture of LANs and MANs.
 - The **internet is the world's largest WAN**, allowing communication between billions of people, enabling endless possibilities for communication.

1. Switching in Data Communication

Switching is the process of **routing data packets from the sender to the receiver** efficiently. There are three main types:

- **Circuit Switching:**
 - A dedicated path is established for the entire communication session.
 - Example: Traditional telephone networks.
- **Packet Switching:**
 - Data is divided into **packets** and transmitted independently.
 - More efficient and robust, used on the **Internet and in modern networks**.
- **Message Switching:**
 - Entire messages are routed from node to node.
 - Less common in modern high-speed networks, but still used in SMS, email servers, and specialized systems.

3. Topology in Data Communication

Network topology defines the **physical or logical arrangement of devices**. Common topologies include:

Topology	Description	Example
Bus	All devices share a single communication line	Small LANs
Star	All devices connect to a central hub/switch	Office networks
Ring	Devices connected in a circular manner	Token Ring networks
Mesh	Every device connects to every other device	High-reliability networks
Hybrid	A combination of two or more topologies	Enterprise networks

Modern Trends and Future of Data Communication

The landscape of data communications is changing at a rapid pace due to the demand for

faster speeds, lower latencies, and more secure transmission mechanisms. New technologies like 5G, edge computing, artificial intelligence, and quantum communication are taking effect to influence the relationships between devices and networks. When looking to the future, it is anticipated that the change to 6G will again change the future of data communications.

1. 5G & Low-Latency Networking

5G technology offers a complete paradigm shift in data communications through:

- **Ultra-low latency** (<1 ms) that makes it suitable for **real-time use cases** such as autonomous driving and remote surgeries.
- **High bandwidth**, resulting in the ability to seamlessly stream video, support IoT applications, and massively connect devices.
- **Improved reliability** makes 5G a good fit for industries that require mission-critical communications
- 5G is making a possible tree for **smart cities, industrial IoT, and access to the cloud at faster speeds.**

2. Edge Computing & Cloud

While cloud computing has often resulted in storage and processing occurring in a centralized location, edge computing brings processing closer to the data source (IoT devices/sensors or local servers).

- **Benefits** include decreased latency, faster response time, and improved bandwidth efficiencies.
- **Use cases** include smart homes, real-time analytics, autonomous systems, and industrial automation.

3. AI & Quantum Communication

–**Artificial Intelligence (AI):**

- AI is transforming the way data communications protocols operate with optimizations to routing efficiency, how bandwidth is utilized, and error correction.
- AI predictive analytics can increase network security and reduce congestion

–**Quantum Communication:**

- Quantum communication uses a fundamental principle of Quantum mechanics to provide ultra-secure communication.
- Quantum Key Distribution (QKD) assures that any eavesdropping attempt can and will be detected at the same time as the attack, while providing improved security.
- Quantum communication is expected to be a critical component of a secure next generation of networks.

4. The Road Toward 6G (“the future of data communication”)

While 5G is still being adopted worldwide, research into **6G networks** has officially started now.

- **Speed:** Expected to reach **1 Tbps.**

- **Latency:** Ultra-reliable with virtually no latency.
- **Integration:** Will include AI, edge computing, quantum communication, and IoT into one framework.
- **Applications:** Holographic communication, immersive AR/VR, brain-computer interfaces, and automation at new levels of intelligence.

6G represents the true future of data communication, where the digital and physical merge as one.

Careers in Data Communication

The field of **data communication** offers multiple career opportunities for professionals interested in designing, securing, and optimizing the flow of information across networks. Below are some of the most in-demand roles:

1. Data Communication Analyst

A **data communication analyst** is responsible for managing and improving an organization's communication and network systems. Their role includes:

- Researching and selecting suitable data communication technologies.
- Designing, configuring, and testing network systems.
- Monitoring performance and ensuring system reliability.
- Troubleshooting issues and maintaining network documentation.

[Data Communication Analyst Average Salary:](#) Around ₹10,07,000 per year, with entry-level salaries at approximately ₹7,46,900 and senior roles up to ₹12,52,400.

Education Requirements: Bachelor's degree in computer science, information technology, cybersecurity, or data science.

2. Data Communication Engineer

A **data communication engineer** focuses on the design, implementation, and maintenance of communication infrastructure. They work with both hardware and software to ensure efficient and secure data transmission. Core responsibilities include:

- Designing and configuring routers, switches, and firewalls.
- Implementing **VPNs (Virtual Private Networks)** and **MPLS (Multiprotocol Label Switching)** for enterprise connectivity.
- Ensuring compliance with network security standards.
- Optimizing bandwidth usage and reducing latency in data transfer.

[Data Communication Engineer Average Salary :](#) ₹6,55,000 per year on average, typically ranging between ₹3,90,000 (25th percentile) and ₹11,35,000 (75th percentile), with top earners reaching ₹19,50,000.

Education Requirements: Bachelor's degree in computer science, data science, or cybersecurity, plus certifications like **CompTIA Network+** or **Cisco CCNA**.

3. Network Security Engineer

A **network security engineer** specializes in **protecting communication networks** from cyber threats, vulnerabilities, and unauthorized access. Their responsibilities include:

- Implementing firewalls, intrusion detection/prevention systems (IDS/IPS), and encryption protocols.
- Conducting penetration testing and vulnerability assessments.
- Creating disaster recovery and incident response strategies.
- Continuously monitoring traffic for anomalies or breaches.

[Network Security Engineer Average Salary](#) : Based on parallel network and security roles, estimated ₹6–11 L per year, with senior positions reaching ₹15–18 L depending on experience and certifications.

Education Requirements: Bachelor's degree in **cybersecurity, information technology, or computer science**, along with advanced certifications like **CISSP, CEH, or CCNP Security**.

Conclusion

Data communication is a vital part of our digital lives, from a quick WhatsApp message to incorporating future technologies, including 5G, AI, and quantum communication. As data communication provides suitable, secure, and real-time information flow, it underlies all of our current enterprises of business, education, healthcare, the Internet of Things (IoT), and global connectivity.

Additionally, as we enter the journey of 6G and beyond, data communication will become increasingly vital, leading to developments like holographic calls, autonomous systems, and ultra-reliable networks. In summary, data communication is not just about computer networking; it is about the future of technology and human communication.

FAQs on Data Communication

1. What do you mean by data communications?

Jawab: Komunikasi data adalah transmisi data digital atau analog antara dua perangkat atau lebih melalui media transmisi, yang dapat berupa kabel, nirkabel, atau menggunakan serat optik.

2. Name data communication components.

Jawab. Ada lima komponen utama komunikasi data, yang meliputi

- (1) Pesan (data);
- (2) Pengirim;
- (3) Penerima;
- (4) Media Transmisi; dan
- (5) Protokol.

Kelima komponen komunikasi data tersebut membentuk sistem komunikasi secara keseluruhan yang khusus untuk data.

3. What are the types of data communication?

Jawab. Ada tiga jenis dasar komunikasi data. Jenis-jenis tersebut adalah (1) Komunikasi Simplex (satu arah); (2) Half-Duplex (dua arah tetapi hanya satu pihak yang dapat berkomunikasi pada satu waktu); dan (3) Full-Duplex (komunikasi dua arah secara bersamaan).

4. What does the term attenuation mean in data communication?

Ans. Attenuation means that as the data travels, it is weakened and therefore loses transmission strength, and the loss of the strength continues, possibly requiring the use of amplifiers or repeaters to sustain the data characteristics as they traverse the medium.

5. Define protocols in data communications.

Ans. Protocols are the rules that govern how data will be transmitted and include the formatting of data, how time will be synchronized, data error handling, and data security.

About the Author



[Rupinder](#)

Senior Cloud Computing Associate, Xebia

Rupinder is a distinguished Cloud Computing & DevOps associate with architect-level AWS, Azure, and GCP certifications. He has extensive experience in Cloud Architecture, Deployment and optimization, Cloud Security, and more. He advocates for knowledge sharing and in his free time trains and mentors working professionals who are interested in the Cloud & DevOps domain.

Recommended Programs



[Executive Post Graduate
Certification in Cloud Computing...](#)

5 (6582)



[Cloud & DevOps Course](#)

5 (7532)



[Cloud Computing and DevOps –
Interview Guarantee Program](#)

5 (4551)