**1. Compute (Processing Power)**

Handles application logic, user requests, and data processing.

Types of Compute Services:

Virtual Machines (VMs): AWS EC2, Google Compute Engine, Azure Virtual Machines.

Containers & Orchestration: Docker, Kubernetes (AWS EKS, Google GKE, Azure AKS).

Serverless Computing: AWS Lambda, Azure Functions, Google Cloud Functions.

Bare Metal Servers: Dedicated physical servers for high-performance applications.

**2. Storage (Data Persistence & Management)**

Stores app data, logs, backups, and static assets.

Types of Storage:

Block Storage: High-speed storage for databases and applications (AWS EBS, Azure Managed Disks).

Object Storage: Scalable storage for unstructured data (AWS S3, Google Cloud Storage, Azure Blob Storage).

File Storage: Managed network file systems (AWS EFS, Azure File Storage).

Databases:

Relational Databases (SQL): MySQL, PostgreSQL, Amazon RDS, Azure SQL.

NoSQL Databases: MongoDB, DynamoDB, Firebase Firestore.

In-Memory Databases: Redis, Memcached.

**3. Network (Connectivity & Communication)**

Ensures secure and reliable communication between services and users.

Key Networking Components:

Load Balancer: Distributes traffic across servers (AWS ALB/ELB, Nginx, HAProxy).

Content Delivery Network (CDN): Improves latency and performance (Cloudflare, AWS CloudFront).

Virtual Private Cloud (VPC): Isolated cloud network (AWS VPC, Azure VNet).

DNS (Domain Name System): Routes user requests (AWS Route 53, Cloudflare DNS).

API Gateway: Manages and secures APIs (AWS API Gateway, Kong, Apigee).

Firewall & Security Groups: Protects from unauthorized access (AWS Security Groups, Azure NSG).

**4. Security & Identity Management**

Protects infrastructure from threats and unauthorized access.

Components:

IAM (Identity & Access Management): AWS IAM, Azure AD, Okta.

Encryption & Certificates: SSL/TLS, AWS KMS.

Web Application Firewall (WAF): Protects against attacks (AWS WAF, Cloudflare WAF).

DDoS Protection: AWS Shield, Cloudflare.

**5. Observability & Monitoring**

Ensures app performance and detects issues.

Key Tools:

Logging: ELK Stack, AWS CloudWatch, Splunk.

Monitoring: Prometheus, Datadog, New Relic.

Tracing & Debugging: OpenTelemetry, AWS X-Ray.

**6. DevOps & CI/CD (Automation & Deployment)**

Automates development, testing, and deployment.

Tools:

CI/CD Pipelines: Jenkins, GitHub Actions, GitLab CI/CD.

Infrastructure as Code (IaC): Terraform, AWS CloudFormation.

Configuration Management: Ansible, Chef, Puppet.