



NARSIMHA REDDY ENGINEERING COLLEGE

**An Autonomous Institution | Affiliated to JNTUH | Approved by AICTE
Accredited by NBA & NAAC with 'A' Grade**

Department of Computer Science and Engineering

Program Name : B.Tech CSE

Subject: CLOUD COMPUTING

Course Code : 23CS706

Semester & Year: I/IV

Faculty Name : G. MAHESH

UNIT-IV

Agenda

- Cloud Networking Fundamentals
- Virtual Networks
- SDN
- NFV
- Data Centers
- Security
- Challenges

Introduction to Cloud Networking

- **Cloud Networking** is the use of cloud-based infrastructure, services, and technologies to manage, connect, and deliver network resources over the Internet. It allows organizations to create, manage, and access networks without relying entirely on physical networking hardware.
- In simple terms, cloud networking provides networking services such as routing, switching, firewalls, load balancing, and connectivity through cloud platforms instead of traditional on-premises devices.
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Cloud Network Architecture

- Clients
- Internet,
- Cloud Gateway,
- Data Center Services.

Users

Internet

Gateway

Cloud DC

Key Components

- Routers,
- Switches,
- Firewalls,
- Load Balancers,
- Gateways.

Data Center Networking

- Spine-Leaf architecture
- High-speed connectivity.

Virtual Networking

- VPC,
- VLAN,
- VPN,
- Virtual Switches.

SDN Architecture

- Application Layer, Control Layer, Infrastructure Layer.



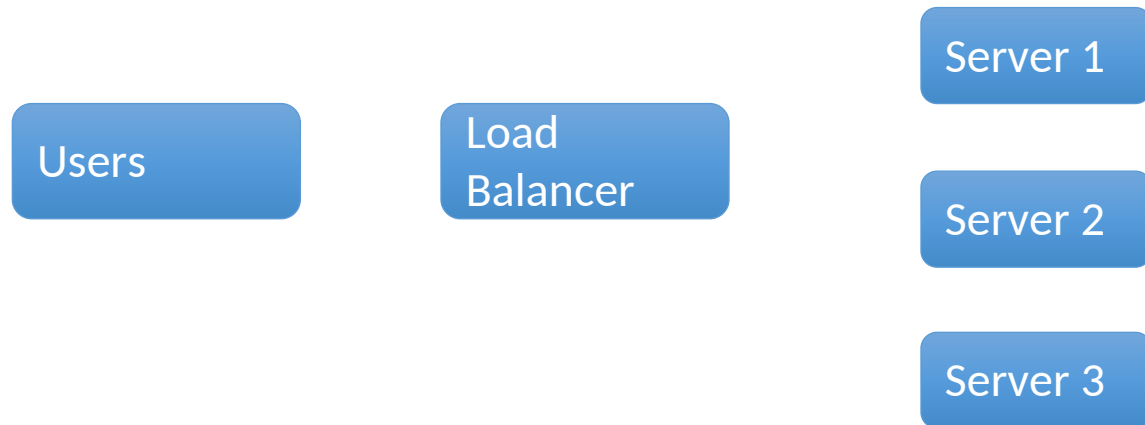
Applications

SDN Controller

Network Devices

Load Balancing in Cloud

- Traffic distribution across servers.



Cloud Security

- Encryption,
- Firewalls,
- IDS/IPS,
- Zero Trust.

Cloud Service Models

- IaaS,
- PaaS,
- SaaS networking requirements.

Major Cloud Providers

- AWS,
- Azure,
- Google Cloud networking services.

Challenges

- Latency,
- Bandwidth,
- Security,
- Reliability.

Emerging Trends

- 5G,
- Edge Computing,
- AI-driven Networking.

Advantages

- Scalability,
- Flexibility,
- Cost Optimization.