# QOS AND SLA MANAGEMENT IN EDGE-CLOUD

Funded by the European Union

# UNDERSTANDING QOS IN EDGE-CLOUD

Quality of Service (QoS) in the edge-cloud context refers to the system's ability to meet **predetermined service performance requirements**. Key metrics include **latency**, **throughput**, **reliability**, **availability**, and **security**. A robust QoS framework is essential for ensuring seamless service delivery to end-users in the edge-cloud environment.

# IMPORTANCE OF SLA MANAGEMENT IN EDGE-CLOUD

SLA management is critical in the edge-cloud as it establishes the expectations and obligations between service providers and consumers. It outlines desired **QoS levels**, penalties for non-compliance, and remedies for SLA violations. Effective SLA management ensures that defined QoS requirements are consistently met, fostering trust and reliability.

Funded by the European Union

# QOS AND SLA MANAGEMENT TECHNIQUES IN EDGE-CLOUD

CODECO

**Dynamic Resource Allocation**: Ensures resources are allocated based on real-time demands and changing workload patterns.

**Traffic Shaping and Prioritisation**: Regulates traffic flow to manage bandwidth allocation effectively. Assigns higher priority to critical services, ensuring they receive necessary resources for a high QoS.

**Fault Tolerance and Redundancy**: Implements mechanisms to maintain service availability during failures or disruptions.

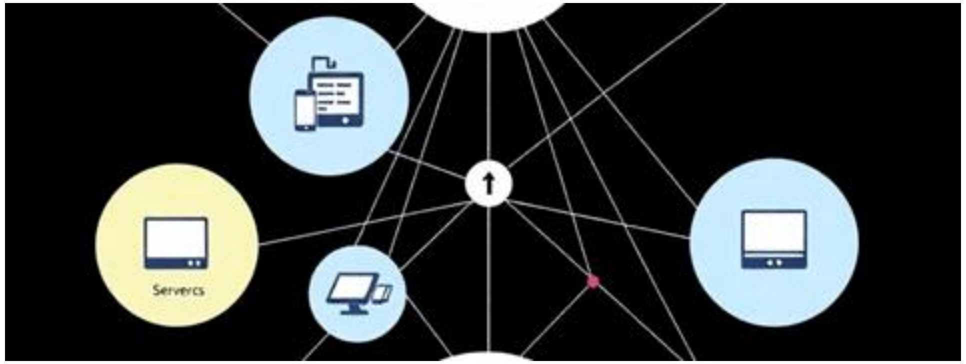
**SLA Monitoring and Enforcement**: Involves tracking and analysing performance metrics to ensure compliance with SLA terms..

**Predictive Analytics**: Leverages historical data and machine learning to anticipate future resource demands.

Funded by the European Union

# CHALLENGES IN QOS AND SLA MANAGEMENT IN EDGE-CLOUD

CODECO



## Heterogeneity

The edge-cloud environment consists of a diverse range of devices and infrastructure, complicating resource management and QoS provisioning.

## Mobility and Dynamic Workloads

User mobility introduces dynamic workload fluctuations, necessitating adaptive resource allocation techniques.

Funded by the European Union

# NETWORK CONSTRAINTS - SECURITY AND PRIVACY

Limited network bandwidth and latency in the edge-cloud environment challenge the ability to meet QoS requirements and enforce SLAs.

**Security and Privacy**: Balancing QoS and SLA requirements while ensuring security and privacy poses significant challenges in the edge-cloud context.

Funded by the European Union

# CONCLUSION

In summary, QoS and SLA management are vital for optimising resource management in the edge-cloud environment.

Challenges such as **heterogeneity**, **mobility**, **network constraints**, and **security** must be addressed to achieve efficient QoS and SLA management in the evolving edge-cloud landscape.