



Ensuring proper quality of service across end-to-end infrastructures integrating device, network, computing and communication capabilities for Telco Edge Cloud deployments, is a critical challenge. Service Level Objectives (SLOs) establish measurable targets for system behavior, such as latency, throughput and availability, that must be met to satisfy application requirements and user expectations. Quality of Service (QoS) encompasses the suite of techniques and mechanisms that ensure SLOs are achieved despite variability and contention in underlying networks and compute resources.

Given the dynamic nature of the devices, network, and computing infrastructure in the next European Federated Cloud-Edge Continuum, infrastructure and service providers struggle to make efficient resource allocation decisions while maintaining QoS because they are unable to pinpoint the root causes of their fluctuating performance, leading to multiple issues. This holds back the delivery of reliable services to customers and application developers. Figure 1 exemplifies the critical need for and end-to-end QoS management through a monitor and control loop in the Cloud-Edge Continuum.

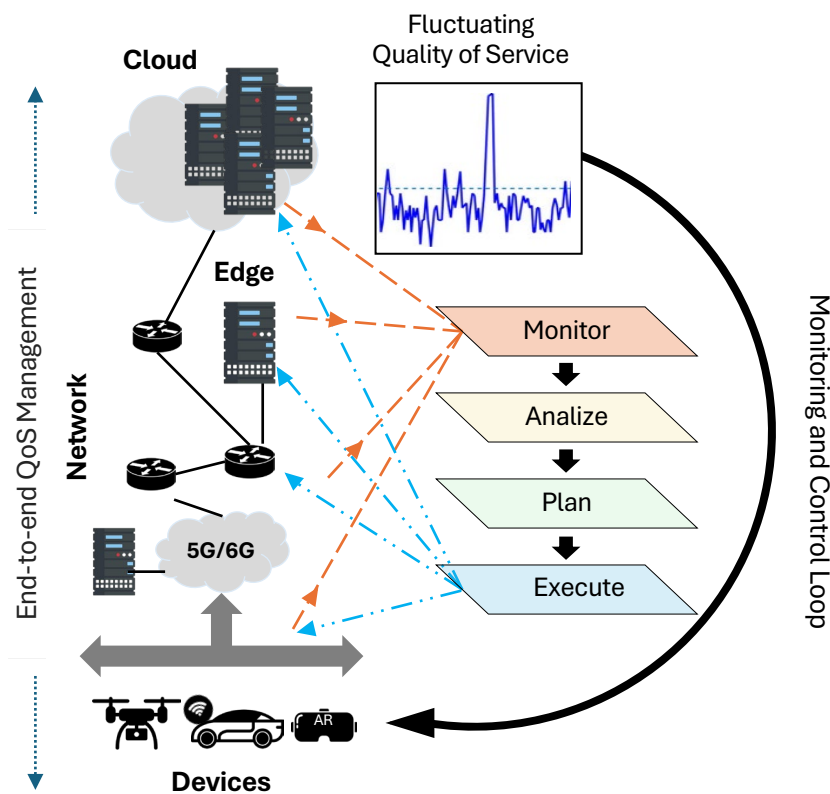


Figure 1: QoS Management for Ensuring SLOs in the End-to-End Cloud-Edge Continuum.



Our team strengths and assets include:

- **Deep expertise in edge, cloud and networking:** We are positioned to define, enforce and maintain stringent SLOs across a Federated Cloud-Edge Continuum while optimizing both performance and energy efficiency.
- **A validated Service Quality Platform:** Which provides end-to-end visibility and rapid reaction via lightweight monitoring agents on edge nodes and network devices to feed performance data into a real-time analytics pipeline.
- **Design of multi-access edge orchestrators for federated platforms:** We have designed and validated algorithms for workload placement while maintaining QoS. We focus on latency, and energy efficient/ green energy orchestration solutions.
- **Digital twins for end-to-end emulation:** We test QoS performance in multiple scenarios under controlled event generation (e.g., determining the influence of cloud-edge workload over the QoS perceived by the devices).
- **Smart algorithms:** Localize QoS-critical segments and to compensate for measurement inaccuracies caused by fluctuating workloads or black-box components.
- **Infrastructure:** Multiple high-computing servers and our own 5G network for testing solutions in emulated, laboratory and larger-scale setups.
- **Multidisciplinary team:** Our team can bring to the table experts in embedded devices, real-time systems, 5G/6G, Core Network, HW accelerators, AI, and industry-level software development.

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