Shaping the Future of the Cloud-Edge Continuum: the EU Cloud Alliance Releases Its Telco Cloud Reference Architecture

EU Cloud Alliance releases TCRA, a key framework for advancing telecom cloud integration, interoperability, and security across Europe's digital infrastructure.

MADRID, SPAIN, March 3, 2025 /EINPresswire.com/ -- The European Alliance for Industrial Data, Edge, and Cloud (the EU Cloud Alliance) has officially released a Telco Cloud Reference Architecture (TCRA), a critical specification developed at the request of the European Commission (EC). This document serves as a continuation of the Telco Cloud Thematic Roadmap published in July 2024. It elaborates on the requirements defined in that document in order to deliver the integration framework needed to support Europe's evolving telecommunications infrastructure.

> "The Telco Cloud Reference Architecture is a key step in defining the global cloud-edge framework, ensuring interoperability to meet 2030 AI demands and integration across European initiatives."
>
> *Ignacio M. Llorente, CEO of OpenNebula Systems*

The EU Cloud Alliance is an advisory organization composed of European industry leaders, cloud technology providers, and telecom operators, working together to shape policies and technological frameworks for next-generation edge and cloud computing. Its Cloud and Edge Industrial Working Group, chaired by the CEO of OpenNebula Systems, Ignacio M. Llorente, plays a key role in these efforts, producing investment roadmaps and strategic recommendations to close technological gaps in Europe's cloud and edge ecosystem.

Following the official release of the Telco Cloud Thematic Roadmap, the EC tasked the EU Cloud Alliance with developing a reference architecture to provide a detailed functional framework for telco cloud systems. This document had to describe essential components required to integrate cloud technologies for telecommunications environments while ensuring interoperability, security, and efficiency.

The TCRA was developed by a specialized task force within the EU Cloud Alliance, bringing together major industry stakeholders, including the main European telecom operators (Telefónica, Deutsche Telekom, Orange, TIM), cloud technology providers (OpenNebula Systems, Vates), and research and technology organisations (TNO).

This task force collectively contributed their expertise to define a functional architecture tailored to the unique needs of the EU telecommunications sector. While traditional cloud environments focus on general computing and storage, telco clouds must support highly complex, distributed telecom services across hybrid multi-cloud environments. The TCRA addresses these challenges by providing a framework for integrating diverse cloud solutions that facilitates portability and interoperability, enabling seamless operation and scalability.

The TCRA introduces a structured approach to managing the functional components of a telco cloud, ensuring efficient service delivery across distributed networks. The TCRA describes a Functional Architecture, defining functional components or building blocks, and the interactions needed to support telecom services.

Other architectural aspects, such as integration (guidelines for interconnecting cloud and network elements), exposure (how telco cloud services interact with external systems and users), and federation (interoperability across multiple telco cloud providers), are left for further work at the EU Cloud Alliance or within other European initiatives.

The TCRA aligns with ongoing European cloud initiatives, including the €3B IPCEI Cloud, which aims to enhance Europe's sovereign cloud-edge infrastructure. Additionally, contributions from open source projects like OpenNebula, ETSI NFV, Open Source Mano, Sylva, and Camara have played a vital role in shaping the reference architecture.

What Industry Leaders Say about the TCRA

“The Telco Cloud Reference Architecture is a crucial first step in defining the global architecture of the cloud-edge continuum, establishing the interoperability framework required to meet the AI processing demands of 2030. The aim is to provide a common framework that ensures seamless integration across key related initiatives at the European level, fostering cohesion and interoperability in the evolving cloud-edge continuum,” says Ignacio M. Llorente, CEO of OpenNebula Systems.

“The TCRA sets the reference for the distributed and dynamic architecture required to enable the new services coming with edge computing in the following years and helps defining a cloud continuum for federation within the European telco industry,” says Luis Velarde, Head of Cloud & Infra, CTIO Office in Telefónica.

“TIM believes the Telco Cloud Reference Architecture is pivotal and in line with the company’s commitment to defining a common vision, policy strategy, and industrial initiatives for the development of European solutions for cloud and edge computing, an objective to which the EU Cloud Alliance contributes effectively,” says Andrea Calvi, Head Technology Evolution, TIM.

The release of the TCRA marks a significant milestone in Europe’s journey toward a robust and

scalable telecom cloud ecosystem. However, this is only the beginning—further work will focus on refining integration, exposure, and federation architectures, ensuring seamless collaboration across cloud providers and telecom operators.

For more information, access the full Telco Cloud Reference Architecture.

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