Orange unveils results of Europe's first experimental end-to-end 5G Stand Alone (SA) network, Pikeo

- Orange achieves readiness to operate multi-cloud and run Pikeo 5G SA private network on premises or on hyperscaler cloud
- Experimental network showcased at MWC with partners - HPE, Casa Systems and Amazon Web Services (AWS)

Orange today announces that it has reached a major milestone on its journey towards software and data based, fully-automated networks, with the results of its end-to-end cloud-native 5G SA experimental multi-cloud network, named Pikeo. This experimental network, the first of its kind in Europe at the time of its launch in June 2021, represents a key stage in its preparation and underlines Orange's leadership in determining the shape of future networks. The experiment has run over two locations in France to date and is currently used by internal employees. The trial will be extended soon to a third site in Spain for internal use.

Deploying 5G private networks on powerful cloud environments creates new opportunities for cases like smart factories removing boundaries between network connectivity and digital applications. The Pikeo 5G SA network is multi-cloud and is deployed:

- either on an on-premises Orange Telco Cloud infrastructure, operated by Orange, and leveraging the SUSE/Rancher opensource Kubernetes distribution. This implementation was instrumental to the contribution to the first beta release of Sylva (the Linux Foundation's telco cloud solution).
- on AWS or using a hybrid architecture with AWS: the core network is deployed in an AWS Region completely or with an optional local AWS Outpost close to customer locations (in this instance, Orange locations) for user traffic control. The second option allows enterprise customers to benefit from low latency or security and local requirements.

Orange's software and data based telco vision will transform its activities, shaping how it builds, deploys, and operates its future networks. Automation, disaggregation, cloud, data/AI will all play a key role on this journey delivering networks that will operate much faster (for example, deployment 300 times faster; detection of anomalies, 100 times faster; and immediate security updates, when required). The successful implementation and operation of this greenfield network for more than one year has provided Orange with invaluable experience and knowledge on the automation of cloud native 5G SA networks. The experiment also developed Orange's know-how in integrating technologies from various partners such as Dell Technologies, AWS, Casa Systems and Hewlett Packard Enterprise, as well as Amdocs, Arista, Mavenir and Xiaomi and clarified what this means in terms of skills and transformation.

Furthermore, this experience has allowed Orange to demonstrate the growing maturity of Open RAN technologies, paving the way for field deployments in the coming years. As an example, last week's announcement of the first commercial sites to be deployed in a rural area in Romania this year demonstrates Orange's confidence that Open RAN is now ready for initial deployments on operational networks.

Leveraging automation and artificial intelligence, Orange's experimental network demonstrated that:

- the **5G network (core and RAN) can be automatically redeployed in less than one hour**, rather than days or weeks, as it does on a legacy network, thanks to the implementation of a DevSecOps pipeline.
- **automated anomaly detection for mobile networks is much faster.** Operational teams have access via a dashboard to automated explainable anomaly detection leveraging artificial intelligence to reduce the Mean Time to Detect (MTTD) an anomaly and to help them identify its root cause by correlating RAN, core and infrastructure metrics.
- **energy consumption can be optimised by automatically switching** off the 5G private network of a company or facility in the evening and switching on in the morning, which can be particularly relevant for some companies.
- dynamic **end-to-end slice management for critical communication services was modelled and successfully demonstrated** on the 5G SA core network with isolation, using security and traffic prioritization principles.
- **a zero-trust security model** was successfully implemented with identity and access management leveraging Orange Connect authentication, automated vulnerability detection and integration with SIEM (Security Incidents & Event management).

In parallel, since mid-2022, Orange has worked with Amazon Web Services (AWS) to demonstrate the feasibility to run network functions over a public cloud. This marks a key point in the maturity of how Orange and hyperscalers can work together to deliver compelling solutions to enterprise customers, insisting on two key elements: a Zero Trust security model using Orange identities and Amazon IAM (Identity and Access Management); optimizing energy efficiency with an on-demand use of AWS resources cloud infrastructure. The trial is extended in 2023 to further investigate the potential of automation through AI, as well as to evaluate vertical use cases.

Laurent Leboucher, Orange Group CTO and SVP Orange Innovation Networks, says: "We are proud to showcase the benefits of a fully automated cloud native multi-cloud 5G SA network at this year's Mobile World Congress. The experience gained from the Pikeo project and the expertise of Orange teams will be leveraged in the new Mobile Private Network cloud experimental offer launched by Orange Business. As Orange seeks to fulfil its ambition to become the telecom reference for resilient, green, software and data-based networks, the results of this trial to date mark a major milestone in achieving this."

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At MWC 2023, together with its key partners, HPE, Casa Systems and AWS, Orange will showcase two concrete examples of this implementation:

- On the AWS stand, a demonstration of the 5G mobile private network dedicated to the distribution broadcast of high-quality video in the context of sports events will be presented.
- On the HPE stand, a demonstration of the end-to-end orchestration of 5G slicing including automated anomaly detection and self-repair.

About Orange

Orange is one of the world's leading telecommunications operators with sales of 43.5 billion euros in 2022 and 136,000 employees worldwide at 31 December 2022, including 75,000 employees in France. The Group has a total customer base of 287 million customers worldwide at 31 December 2022, including 242 million mobile customers and 24 million fixed broadband customers. The Group is present in 26 countries. Orange is also a leading provider of global IT and telecommunication services to multinational companies under the brand Orange Business. In February 2023, the Group presented its strategic plan "Lead the future", built on a new business model and guided by responsibility and efficiency. "Lead the future" capitalizes on network excellence to reinforce Orange's leadership in service quality.

Orange is listed on Euronext Paris (symbol ORA) and on the New York Stock Exchange (symbol ORAN).

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