

# Innovate and Monetize the Multi Access Edge with an Automated Federated Platform

## Leverage Ori Global Edge running on VMware

### AT A GLANCE

- Fast to deploy and monetize edge Infrastructure-as-a-Service (IaaS) or Platform-as-a-Service (PaaS) by leveraging existing infrastructure
- Multi-carrier federated edge cloud application platform
- Edge computing delivered from the provider edge or on-premises
- Low-latency, real-time applications with cloud-based manageability
- Open application developer ecosystem
- Intelligent workload/application placement that is contextually aware of location, geospatial, security, identity, and traffic
- Centralized management and operations
- Data residency and sovereignty to satisfy regulatory and security requirements

### Introduction

Emerging edge computing and cloud-based applications enable communication service providers (CSPs) and enterprises alike to support countless new use cases, from Industry 4.0, smart cities, data-driven retail analytics, to high-definition telehealth, immersive entertainment and gaming.

By leveraging Ori Global Edge running on VMware Telco Cloud Platform™ CSPs and enterprises can quickly deliver low latency data and applications to their customers at the provider edge. This offers a seamless way to extend the full benefits of 5G and edge computing to enterprise customers and ISVs without building out complex and expensive new systems. The interoperable solution reduces complexity and cost and increases service velocity to rapidly innovate and monetize 5G.

### The Opportunity: A Global Edge from On-Premises to Multi-Cloud

Edge computing addresses the limitations of centralized computing—such as latency, bandwidth and data privacy—by moving processing closer to devices and end-users, where data is generated. CSPs including Telco's, cable operators and mobile operators, are uniquely positioned in this new edge ecosystem with networks and points of presence (PoP) that are closest to enterprise customers and end-users, and the ability to control traffic routing to multi-cloud environments.

Ori Global Edge running on VMware Telco Cloud Platform provides a consistent methodology that simplifies the deployment and delivery of low-latency applications and services from these multiple networks and regional (Metro) PoPs to thousands of distributed providers' edge sites and on-premises locations. This global edge architecture seamlessly connects edge networks between different regions and providers, enabling CSPs to deliver their enterprise customers a unique solution that combines the deployment flexibility and manageability of cloud with the performance and security of edge and on-prem.

**ORI GLOBAL EDGE**

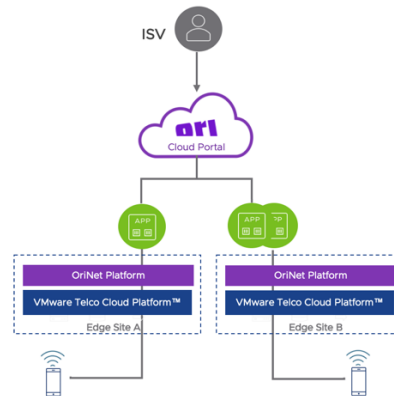
- Ori Cloud Portal running on VMware Telco Cloud Platform provides the CSP with a slice of the Ori Global Edge Cloud, with their own branding
- Enables CSP to expose their edge compute infrastructure and create a marketplace for enterprises and ISVs, monetizing their network asset
- Edge cloud services are provided on top of VMware Telco Cloud Platform, with intelligent workload placement and traffic routing placing applications in the most performant locations
- Ecosystem of edge-ready use cases with multiple ISVs across many industry verticals are pre-integrated with the platform
- Federation for edge cloud interconnectivity expands the CSP services portfolio via Ori Global Edge



**FIGURE 1:** Different requirements and challenges at the edge

**The Challenge: Unlocking Valuable New Use Cases for CSP End-Customers**

Provisioning and deploying applications from the cloud to the edge is difficult and complex, especially when an enterprise is encumbered by rigid resources and unforeseen shifts in demand. Application developers require flexible access to edge resources—across multiple CSPs—to seamlessly deliver the highest quality of experience for end-users across different geographies.



**FIGURE 2:** Ori Cloud Portal for the edge sites

Cloud-based architecture is flexible and scalable, allowing users to roll out applications quickly, and provides simpler models for management and orchestration. But it does not extend seamlessly into the on-premises and edge layers to deliver the necessary performance and data locality. And for enterprise and ISV end-customers, interoperating between multiple clouds without intelligent automation can make the prospect of implementing multi-cloud and edge solutions even more daunting.

CSPs looking to improve their competitive position and capitalize on their 5G investments must not only transform their existing network architecture, but also provide solutions for the end-to-end process of provisioning, deploying, and managing application instances. However, the complex, siloed architecture of existing CSP networks often stands in the way of rapid innovation and operational agility. They tend to be founded on vertically

**ADVANTAGES OF ORI RUNNING VMWARE TELCO CLOUD PLATFORM**

- Multi-cloud computing provides consistent infrastructure for both legacy and cloud-native applications
- Scale from a single server to many servers and scale to multiple sites with assured performance, security, and availability
- Unified edge compute enables operators and enterprises to start from any edge workload and expand to other workloads on the same infrastructure
- Centralized management increases operational efficiency for deploying and managing distributed edge services
- Consistent infrastructure, automation and operations, from the core to the cloud and the edge
- Multi-layer automation accelerates time to market and increases the scalability, repeatability, and operational efficiency
- Platform ecosystem ready with multiple vendors and solutions provides operators flexibility

integrated, monolithic stacks designed to run vendor-specific virtual network functions (VNFs), making automating deployment and management difficult.

The complexity of coordinating network functions and managing multiple services demands a simple, automated approach that speeds up deployment and automates error-prone manual processes. But traditional orchestration tools lack telco-centric features to automate multi-tenant, distributed cloud-native network functions and to deliver the resiliency and reliability that’s required in a highly regulated industry with strict service-level agreements (SLAs) and demanding consumers.

**The Solution: Leveraging CSP Scale at the Provider Edge**

VMware Telco Cloud combined with Ori’s Global Edge provides a unified solution for CSPs to allow their enterprise and ISV end-customers to move applications and data from the cloud to the provider edge seamlessly with a uniform developer experience, by peering between clouds and connecting multi-vendor networks.

VMware Telco Cloud portfolio combines telco-specific cloud-native solutions and cloud-first automation with consistent infrastructure and holistic assurance, while Ori’s Global Edge provides worldwide connectivity to federate between provider edge platforms, hybrid and multi-cloud environments.

MONETIZE	OPERATE	EXPAND
<ul style="list-style-type: none"> <li>• Monetize the provider network</li> <li>• Streamlined onboarding of provider MEC sites into the edge</li> <li>• Start deploying use cases and applications</li> </ul>	<ul style="list-style-type: none"> <li>• Managed cloud service offering</li> <li>• Simplified infrastructure operations</li> <li>• Leverage cloud-native and industry standards</li> <li>• Multi-tenancy</li> </ul>	<ul style="list-style-type: none"> <li>• Expand the CSP services portfolio with provider edge cloud</li> <li>• Run on cloud platform:                             <ul style="list-style-type: none"> <li>– Kubernetes orchestration</li> <li>– Powerful and secure mesh networking</li> <li>– Federation for global reach</li> </ul> </li> </ul>

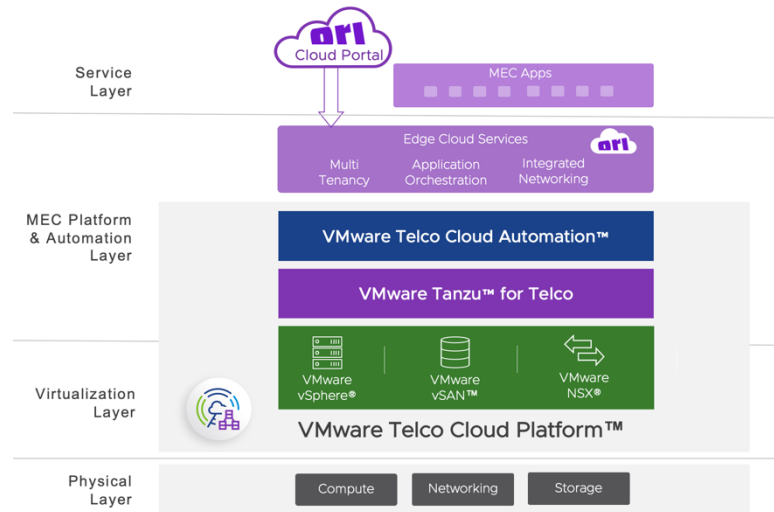
**How It Works**

Ori Global Edge is a managed cloud service offering that provides intelligent workload placement across multi-cloud, OriNet and enterprise edge layers. The interoperable Ori and VMware solution delivers a hybrid edge by leveraging multiple Ori PoPs that connect to the CSP infrastructure on one end, and different clouds on the other end. These regionally located nodes are the “connective tissue” that enables Ori’s intelligent workload placement at the edge. The solution provides CSPs with the ability to take infrastructure that potentially isn’t being used, or that is being used infrequently, and expose it for other applications.

Through a simple, provider-branded portal, Ori Global Edge allows end-customers to dynamically place workloads across on-premises, Ori nodes (OriNet) or public clouds. VMware Telco Cloud infrastructure handles dynamic changes, enabling scaling up where necessary from a single source, and dynamically allocating workloads as needed. The key benefit of the combined Ori and VMware Telco Cloud Platform is the ability to place workloads at the edge of the network as close as possible to where the actual work is done, so the end user experiences low latency, close to real-time interaction.

**VMWARE TELCO CLOUD PLATFORM™**

- VMware Telco Cloud Platform™ - 5G Edition is powered by field-proven compute and networking of VMware Telco Cloud Infrastructure™ coupled with VMware Telco Cloud Automation™ and VMware Tanzu™ Standard for Telco, a telco-grade Kubernetes distribution
- It enables CSPs to launch innovative services on consistent infrastructure, reducing operational complexity and radically improving agility.
- It enables CSPs to rapidly deploy and efficiently operate multi-vendor CNFs and VNFs with agility and scalability across 5G and edge networks.
- It features telco-specific cloud-native solutions and cloud-first automation with consistent infrastructure to propel CSPs and enterprises into the future with agility and efficiency while maintaining carrier-grade performance and reliability.



**FIGURE 3:** Ori running on VMware Telco Cloud Platform™

Ori Global Edge is the result of partnering with global Tier-1 providers, creating nodes in multiple global locations that allow interconnection between public clouds and provider infrastructure. This allows Ori and VMware to enable distributed applications to be deployed seamlessly and securely across geographic borders and networks with consistent security, visibility, and monitoring.

VMware Telco Cloud Platform delivers true multi-cloud capability by providing resource abstraction for computing, networking and storage for both virtual machines and containers. It delivers consistent horizontal architecture across provider and edge clouds, enabling consumption of services from different public clouds. The Telco Cloud Platform allows a flexible footprint by launch, connect and scale of edge sites seamlessly. Such a capability is critical to enable edge use-cases such as Industrial IoT, smart retail or Gaming and Media.

The combined solution presents a modern unified orchestration that can distribute workloads from core to the edge in hybrid cloud and multi-cloud environments. It also promotes dynamic, cost-efficient resource allocation by catering to unpredictable demand, enabling end-customers to scale elastically without having to locate or build out infrastructure for themselves.

Ori Global Edge running on VMware Cloud Platform allows CSPs to focus on delivering value for their end-customers and creates opportunities to provide new products and services for a rapidly growing ecosystem of applications and digital services. They can in turn deliver increasingly rich experiences for end-users, as well as breakthrough technology solutions across a vast array of use cases including manufacturing, retail, transportation, smart cities and healthcare.

## Use Cases

CASE STUDY: DATA LOCALITY FOR BANDWIDTH / PROCESSING – REAL TIME SMART CITY STREAMING ANALYTICS		
CSP / CUSTOMER	CHALLENGE	SOLUTION
<p><b>Category-leading global software vendor</b> deploying real time streaming analytics solutions</p> <p><b>Tier 1 European CSP</b></p>	<p><b>Low latency and local data stores required</b> to showcase high performance real-time analytics for smart city data applications.</p> <p>Provider edge needed to provide high performance for time series DB customer solutions, but <b>integration and operating costs need to be controlled and scaled flexibly.</b></p>	<p><b>Ori Global Edge turns the CSP's infrastructure into a scalable cloud</b>, externally accessible by ISVs in seconds.</p> <p><b>Gives end-customers the performance and data locality of on-prem with the flexibility and economics of cloud-based architecture</b>, using features like edge application mobility, UE traffic steering, simpler operability.</p>

CASE STUDY: DATA LOCALITY FOR PRIVACY AND SECURITY – IMAGE PROCESSING/AR FOR MEDICAL DIAGNOSIS		
CSP / CUSTOMER	CHALLENGE	SOLUTION
<p><b>Global systems integrator</b> specializing in 5G deployments</p> <p><b>University</b> medical research department</p> <p><b>Tier 1 UK CS</b></p>	<p>New imaging ML algorithms can process medical imaging (like X-ray) and automatically detect signs of chest diseases, such as COVID-19, flu, tuberculosis, etc.</p> <p>However, these <b>applications require low latency and privacy is a massive concern.</b> Health data cannot leave the hospital.</p>	<p>Ori Global Edge provides a private 5G MEC implementation for hospitals that allows near-real-time processing of images for disease detection.</p> <p><b>Data is always stored locally, keeping patient privacy safe.</b></p>

CASE STUDY: EXTREME LOW LATENCY PERFORMANCE – GAMING PLATFORM QOE		
CSP / CUSTOMER	CHALLENGE	SOLUTION
<p><b>Gaming platform provider</b> deploying gaming applications at global scale</p> <p><b>Multiple Tier 1 CSPs</b></p>	<p><b>Latency and lag are major concerns</b> for gaming platforms and game publishers today</p> <p>Customers want to be able to place runtime and game servers closest to users, to <b>deliver sessions with lowest ping in the industry.</b></p>	<p>Ori Global Edge places game sessions on servers at ISP/Telcos that are closest to where the gamers are.</p> <p>Game traffic does not need to travel through different countries to reach game servers anymore that <b>reduces latency.</b></p>

CASE STUDY: FLEXIBLE SCALING OF COMPUTE – COMPUTER VISION FOR RETAIL SENTIMENT ANALYSIS		
CSP / CUSTOMER	CHALLENGE	SOLUTION
<p><b>Computer vision and machine learning</b> software vendor deploying camera feed-based sentiment analysis platform</p> <p><b>Tier 1 European CSP</b></p>	<p>ML and computer vision at scale relies on 100s of GPUs (in some cases CPUs) at the edge in order to perform their analysis, filter it, and send back to the cloud.</p> <p><b>Compute performance would require on-prem, which cannot be rapidly scaled up or down.</b></p>	<p>Ori Global Edge runs servers at the provider edge, removing the need for providers and enterprises to invest in capital-heavy infra operations, so they can <b>dynamically scale up and down and pay for what they use.</b></p>

