DELL Technologies

Solution Brief

Dell Technologies Services Edge: MEC Reference Architecture with Intel® Smart Edge & Red Hat® OpenShift®

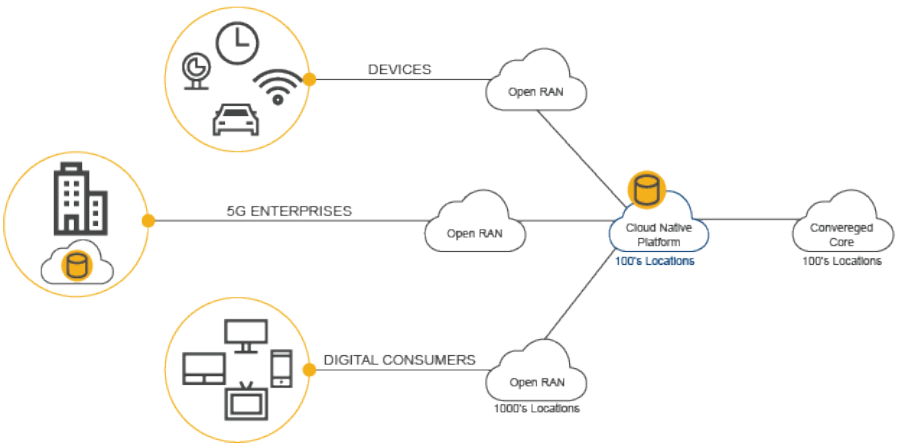
A proven, best-of-breed model for cloud-native communications networks

Summary

- A reference architecture for multi-access edge computing built by Dell Technologies, in partnership with Intel® and Red Hat.
- Built upon Intel® Smart Edge; an "edge-native" solution targeted for the enterprise with features that include zero-touch provisioning, zero-trust security, full infrastructure, and application orchestration; designed to be easily consumed by enterprise IT.
- Integrated with an industry-leading, open, cloud-native architecture, Red Hat OpenShift
- Telecom-grade, purpose-built hardware designed for real-world core, edge, and RAN environments from Dell Technologies.
- Co-creation services from Dell Technologies to help CSPs create and deploy new services faster to connect with B2B opportunities and drive new monetization models in the industry.

The rapid monetization of 5G network investments will be critical to communications service providers' (CSPs) success in the coming years. One of the most compelling use cases for that revenue generation is through edge-based offerings such as private mobility services for enterprises. Moving the mobile experience closer to enterprise users through multi-access edge computing (MEC) gives CSPs a compelling architecture that can help drive the next wave of enterprise innovation from Industry 4.0 to real-time healthcare applications to a modern retail experience - and the list goes on.

In partnership with Intel® and Red Hat, Dell Technologies now offers CSPs an opinionated MEC reference architecture featuring best-of-breed, telecom-grade components from the industry leaders in network transformation. This validated reference architecture enables CSPs to rapidly and cost-effectively connect with new B2B types of scenarios and extend the connectivity options to provide a more managed, dedicated and secured experience for the enterprise or campuses. Delivered through Dell Technologies Services Edge, the MEC reference architecture is the competitive edge that CSPs need to win enterprise market share and monetize their 5G network investments faster. Time to market is critical and having a strategic partner like Dell helps bridge the connection between the CSP and the Enterprise and helping the CSPs to create and maintain their marketplace in the future.



Dell Technologies MEC

Dell Technologies + Red Hat OpenShift: A cloud-native foundation

Dell Technologies and Red Hat have partnered to create a telecom-grade, cloud-native network infrastructure for operators based on Red Hat's OpenShift architecture and Dell's purpose-built hardware. Through this validated and jointly developed reference architecture, CSPs can move into the edge with confidence through a flexible, scalable, and open network foundation. Featured within this framework are Dell Technologies' telecom-optimized servers and software to support edge, core, and RAN environments. These products are backed by Dell Technologies' secure, global supply chain and enhanced with the Dell Technologies co-creation services and consulting.

Cloud-native technologies and containerization are critical to the successful deployment of edge services. With Dell Technologies and Red Hat OpenShift, CSPs can quickly launch cloud-native MEC services while leveraging the industry's leading telecom-grade infrastructure and advanced technologies such as AI, analytics, and automation.

Dell Technologies + Intel® Smart Edge: Power in the core and at the edge

MEC services require that CSPs separate the core and edge computing functions in a way that supports flexibility, scalability, and resiliency. Intel® Smart Edge solves this challenge by providing a bundle of containerized, cloud-native network functions (CNFs) centrally managed in the operator core network and run at the edge for optimal speed, performance, and simplicity of management. Smart Edge features two main components as part of a MEC deployment: the Edge Node Software and the Controller.

The Intel® Smart Edge Node Software sits in the enterprise/customer premises (e.g. industrial sites, retail locations, warehouses, ports, hospitals, venues, street furniture, etc.) to meet MEC requirements for security, local data access, and low-latency responsiveness. Under the direction and control of Controller, the Edge Node software provides application life-cycle management, comprehensive zero-trust security, operational telemetry, policy enforcement, data routing and filtering and hardware management for applications, virtual machines, and containers. The Intel® Smart Edge Node software supports multiple access topologies including wired and wireless. This flexibility enables a broad array of environments including Wi-Fi, Private LTE (CBRS), or 5G. Through the Dell Technologies and Intel® partnership, Intel's® Edge Node Software has been optimized to take full advantage of Intel® architecture innovations and efficiently run on multiple Dell Technologies' edge-based server platforms for maximum speed/performance.

The Controller gives CSPs the ability to manage thousands of edge nodes from a centralized location at scale. The Controller may operate from an operator core network or in the public cloud facility and includes several important services:

- Life cycle and configuration management of the Edge Node firmware and software (including operating environment)
- Management and provisioning of Edge Node software features
- Full application life cycle management for CSP and 3rd party applications
- Centralized reporting and capacity planning
- Management of 4G and 5G network services
- Role based access control and multi-tenancy capability

All communication between the Edge Node and Controller uses IPsec and mutual TLS for network communication, leveraging native Controller public key infrastructure services and X.509 client and server authentication for all endpoints. The controller has been optimized to work with Dell Technologies' telecom-grade edge/core servers and Red Hat's OpenShift environment to provide a complete MEC platform that scales across the CSPs edge network.

Why Dell MEC?

Dell Technologies is committed to helping CSPs transform their networks and seize the opportunity of 5G to create and monetize new telecom services for enterprises and consumers. Together with Intel® and Red Hat, Dell Technologies is bringing an open, best-of-breed approach to the telecommunications industry to help CSPs unlock innovation faster and deliver game-changing 5G services sooner. In addition to an expanding portfolio of telco-grade, purpose-built hardware for edge, core, and RAN applications, Dell now offers consulting services to help CSPs create, deploy, and manage vertical industry and consumer services.

With Dell Technologies, CSPs have access to the latest hardware and software innovations, a global supply chain that leads the world, and a rich ecosystem of partners that build the future on open standards and cloud-native principles. The Dell Technologies MEC reference architecture with Intel® Smart Edge and Red Hat OpenShift represents our collective commitment to helping CSPs bring the 5G services of tomorrow to market today. To learn more about Dell Technologies Dell MEC reference architecture for CSPs, visit us at delltechnologies.com/telecom.

MEC in Action: Private LTE/5G Networks

Private LTE/5G enterprise networks are among the fastest-growing use cases for multi-access edge computing (MEC), particularly in the manufacturing industry where Industry 4.0 is creating a demand for secure, scalable, mobility connectivity within the enterprise environment. The Dell Technologies MEC reference architecture with Intel® Smart Edge and Red Hat OpenShift is ideal for private network applications. It delivers on the critical requirements of zero-trust security, privately managed mobility, and local application processing at low latencies.

Choosing a validated Dell MEC reference architecture with partners Intel® and Red Hat to quickly deploy and scale private LTE/5G network services anywhere in the world. The benefits of selecting this open, best-of-breed path include:

- Faster time-to-market and time-to-revenue
- Highest-performance computing and storage technology
- A highly secure and scalable environment
- Cloud-native technologies based on a proven architecture
- Support and services from global technology leaders