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Dell Technologies 5G Core Solution Reference Architecture with Affirmed UnityCloud and Red Hat OpenShift Container Platform

Reduce the cost and complexity of deploying 5G networks

Summary

The Affirmed 5G Core with Dell Technologies and Red Hat OpenShift Container Platform solution reference architecture is designed to help communication service providers quickly deploy 5G services. The reference architecture features a 5G core platform, container management and orchestration platform, and telco-grade infrastructure in a fully validated solution design.

A solution reference architecture for the future

The arrival of 5G not only changes the type of services that communications service providers (CSPs) will deliver but also how they will deliver those services. Multicloud and hybrid cloud deployments, multi-access edge computing (MEC), containers and Kubernetes, and cloud-native network functions all have an important role to play in the telecom network architecture of tomorrow. 5G networks represent a very different world than the proprietary, appliance-based networks of the past—one where flexibility, scalability, and open-source technology are critical to success.

CSPs know that they need to change the way they architect their networks, and that means changing partners to embrace new 5G innovations including hyperscale cloud platforms, microservices-based network functions, and Kubernetes-based container orchestration. Existing network equipment vendors may be able to offer CSPs virtualized network functions (VNFs), but a true 5G solution requires a best-of-breed partnership that addresses core-to-edge capabilities. Dell Technologies, Affirmed Networks (a Microsoft Company), and Red Hat have partnered together to build that best-of-breed, end-to-end 5G architecture today.

Reduce time, reduce costs with a validated, end-to-end approach

5G telecommunications networks represent a combination of cloud-based technology from the enterprise world and new 5G network functions as defined by 3GPP. Affirmed, Dell Technologies, and Red Hat bring these unique perspectives together in their 5G Core (5GC) solution reference architecture. Affirmed UnityCloud is a cloud-native 5G mobile core solution, built on the current and future requirements of 5G networks, providing CSPs with the ability to deploy services anywhere, seamlessly operate Any G functions, and increase service agility and assurance. Red Hat's Open Container Platform (OCP) provides a simple, scalable, and reliable platform for container management and orchestration of webscale workloads as well as microservices-based 5G network functions. Dell Technologies delivers enhanced, telco-grade servers for virtualized and bare-metal private cloud infrastructure.

The 5GC solution reference architecture is a joint partnership between Affirmed, Dell Technologies, and Red Hat that was formed to help CSPs accelerate 5G network deployments while reducing the cost and risk associated with network transformation efforts. As CSPs look to scale 5G services and extend them to the edge, building that future on a trusted, validated, best-of-breed foundation provides them with the flexibility and reliability they need to move forward with confidence. Running an Affirmed 5G core on Red Hat OCP and Dell hardware delivers disruptive technology on a proven platform for a true competitive advantage.

DELL Technologies — **5G Core Reference Architecture**

affirmed · Red Hat · intel

- Affirmed UnityCloud 5G Core
- Red Hat Open Shift Container 4.6
- Dell PowerEdge R640/R740 with Intel 3rd Gen Xeon scalable processors

Affirmed 5G Core solution

Affirmed UnityCloud 5GC solution brings together a cloud-native core with advanced features including network slice management, fully virtualized probes, and an automated service creation platform. The microservices-based 5G network functions are fully virtualized and containerized for simple deployment in private, public, or hybrid cloud environments. Affirmed's 5GC solution is the only core solution on the market today that can be fully deployed in the cloud as a mobile-core-as-a-service solution, dramatically reducing the costs of owning, installing, operating, and maintaining a mobile core.

Affirmed UnityCloud uses best-of-breed open-source cloud tools for the life cycle management of 5G network functions, providing CSPs with the freedom to select any open-source component. These tools include Prometheus (network monitoring), Grafana (network analytics), Istio (service mesh), and a variety of cloud databases. Affirmed's 5GC solution combines open-source cloud technology with 3GPP-defined 5GC services for a highly scalable mobile core platform that connects seamlessly to the edge.

Telco-grade infrastructure from Dell Technologies

Dell PowerEdge rack-mountable servers deliver industry-leading price/performance in a highly scalable, ultra-reliable form factor. In the 5GC solution reference architecture, PowerEdge R640 and R740 servers are designed to telco-grade specifications that deliver high availability in both mobile core and harsher edge environments. Customizable hardware acceleration options from Dell Technologies provide optimal server performance characteristics for core/edge workloads. The hardware is further configured based on Affirmed specifications and validated in solutions lab testing with Red Hat OCP to provide the best performance in real-world deployments.

Dell Technologies also delivers technical support and services to help CSPs install, integrate, manage, and upgrade their private cloud infrastructure for 5G workloads. Dell PowerEdge servers are backed by Dell's trusted global supply chain to provide continuity and security for CSPs as they expand and extend their 5G networks. Dell's commitment to delivering the best price/performance for its servers is reflected in its ongoing innovation partnerships with AMD and Intel.
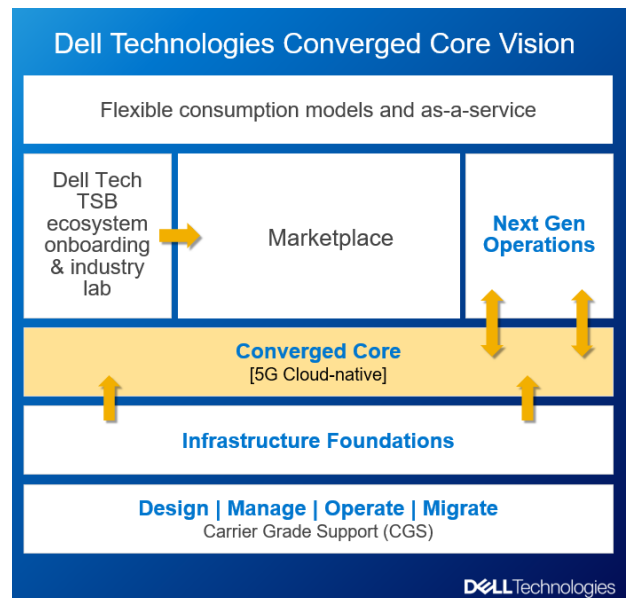
Red Hat OpenShift Container Platform

The 5GC solution reference architecture includes Red Hat OCP 4.6 as the management and orchestration platform for the containerized 5GC network functions and services. Red Hat OCP enables CSPs to quickly scale 5GC services from several virtual machines to several thousand and manage those services in a single-cloud, multicloud, or hybrid-cloud environment. OCP supports open-source Kubernetes and leverages Red Hat's familiar Linux operating system to provide a familiar interface for network operations teams. By deploying 5GC services in Red Hat's Kubernetes-based platform, CSPs gain more flexibility, simplicity, and efficiency in the life cycle management of containerized 5G workloads.

Where 5G innovation meets telco's expectations

Dell Technologies' architectural vision for our converged core is based on solutions complete with services, support and as–a–service offerings. The architecture is designed to bring converged core validated solutions that deliver 5G cloud-native support, enhanced services, resale model for all components, flexible consumption models, and bare-metal automation.

The 5G future won't be built by any one vendor. It calls for a collaboration of innovation from the leaders in cloud, telecommunications, containers, and other technologies. Affirmed, Dell Technologies, and Red Hat are taking a step forward toward that future with their reference architecture for a fully containerized, cloud-native 5GC solution. Our goal is to provide the service providers of today with a fully validated, accelerated path to the 5G services of tomorrow.

Dell Technologies Converged Core Vision

Flexible consumption models and as-a-service

Dell Tech TSB ecosystem onboarding & industry lab → Marketplace | Next Gen Operations

Converged Core
[5G Cloud-native]

Infrastructure Foundations

Design | Manage | Operate | Migrate
Carrier Grade Support (CGS)

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Solution Highlights

The 5G Core solution reference architecture combines industry-leading technology from Affirmed Networks, Dell Technologies, and Red Hat including:

- Affirmed 5GC solution platform with a full set of cloud-native network functions, advanced analytics, service automation, and robust network slice management
- Dell Technologies' telco-grade PowerEdge infrastructure to support high-density, high-performance 5G core and edge workloads
- Red Hat OCP open-source, Kubernetes-based container management and orchestration platform for 5G container-based network functions
- Consulting and services from Dell Technologies, Affirmed Networks, and Red Hat
- Single-source financing options through Dell Financial Services

To learn more about how Affirmed, Dell Technologies, and Red Hat fit into your 5G future, visit us at delltechnologies.com/telecom.

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