DELL Technologies

Solution brief

Find your edge

Comprehensive solutions for the telco edge from Dell Technologies

Telco

45%

The amount of global mobile data traffic predicted to be 5G by 2025[2]

75.44 billion

The number of Internet of Things (IoT)-connected devices projected worldwide by 2025[3]

33%

The percentage of companies processing data in real time[4]

The 5G revolution is here, opening the door for benefits that consumers and enterprises previously only dreamed of. 5G networks will offer throughput rates as high as 20 Gbs and latencies as low as 1 ms, drastically increasing the speed at which users can download and receive data.[1] To take advantage of all that 5G offers, telcos must create infrastructures that can support it. Many 5G-enabled services and applications need low latency and high performance. To meet these demands, telcos are looking to redesign their edge network and enable use cases such as virtual Content Delivery Networks (vCDN) and virtual Radio Access Networks (vRAN). With these architectures in place, telcos can deliver the promise of 5G to consumers and enterprise customers in a simplified and cost-effective way.

Today, most traditional edge infrastructures aren't equipped to deliver the 5G promise. The existing telco edge network is made up of legacy equipment that can't meet the performance demands of 5G, rigid and unscalable infrastructures and high operating expenses. To meet these challenges, telco companies need fast, flexible solutions designed to optimize performance at the edge. Dell Technologies offers a unified family of edge-optimized platforms that enable a consistent approach to deploying hardware and applications and managing infrastructure and data. This brief expands on key portfolio offerings, with a particular emphasis on the new Dell EMC PowerEdge XE2420.

Evaluating networking architectures for the edge

In designing for edge networks, telcos must determine which applications will be deployed at each part of the edge and what's needed to connect an edge deployment to a central data center. This might include cellular data, wired Ethernet or WiFi. The design and evaluation process should account for:

- The network bandwidth required to meet service-level objectives
- Architectures that incorporate scalability in the event that initial estimates require adjustment or networking needs continue to grow over time
- Security features and monitoring tools that can help identify and prevent breaches or attacks

Best practices for telcos at the edge

Telco customers are building applications that will rely on the localized compute and low latency expected of a 5G node out at the edge. So what does it take for telco providers to be ready? The short answer: an infrastructure optimized for the constraints of the edge.

Below are some best practices and considerations for telcos seeking to expand and optimize their edge infrastructure.

- **Rapid deployments will be necessary for telcos looking to take advantage of the opportunities provided by 5G.**
  - Any edge infrastructure must be suited to a speedy initial deployment and sized to fit the current needs of customers.
- **As customers realize the potential of 5G, telcos will also need to scale their infrastructure to meet growing demands.**
  - An optimal solution will enable rapid deployment and dynamic configuration so telcos can ramp up their compute in parallel with increased demand.
- **Telcos should choose compute that is suitable for the environment to which they are deploying.**
  - The ideal solution will be designed with durability in mind, tolerating inhospitable environments—such as variant temperatures and dust—that traditional servers cannot.
  - It should also be able to fit within existing infrastructure (for example, a small data center that only has two-post racks) without requiring a major (and costly) overhaul of IT infrastructure.
- **In crafting a deployment strategy, telcos should account for security and remote management.**
  - Assuming that IT staff will not be able to regularly monitor and maintain equipment, remote monitoring and remediation options are a must.
  - Because traditional data center strategies—like overprovisioning resources—are costly at the edge, an optimized edge infrastructure should also provide users with access to data analytics to improve operational efficiencies with precision.

Applications at the edge

- vCDN
- vRAN
- Telco cloud
- 5G cell processing
- Network
- Function virtualization support
- Multi-access edge computing implementation

The Dell EMC portfolio has solutions to suit every need, from the core to the cloud to the edge

iDRAC9 Datacenter
The new Datacenter license for iDRAC9 includes telemetry streaming, real-time BIOS Live Scanning, automatic SSL certificate enrollment and renewal and enhanced thermal management.

Dell EMC PowerEdge XR2
Built from the ground up for harsh environments, the compact Dell EMC PowerEdge XR2 is temperature resilient and shock resistant and has a minimal footprint.

Top 5 considerations for telcos at the edge

To implement these best practices, telcos need a compute solution with the right mix of power, speed, flexibility, durability and security. The table below demonstrates how the Dell EMC PowerEdge XE2420, powered by Intel, meets these needs.

Requirements for telcos with infrastructure at the edge	How the Dell EMC PowerEdge XE2420 meets these needs	How telcos can benefit
1. High performance: An edge solution must have enough accelerators to support the demands of 5G networks and IoT-driven apps	Supports up to four accelerators for high performance	Boost ROI with a high-performance solution that supports telco applications and new services at the edge
2. Low latency: For 5G networking and IoT technologies (such as time-sensitive apps for machine learning and virtual reality), a solution must be able to deliver data quickly without impacting user experience	Low-latency system with fast networking and high network throughput (from 1-100 Gbe)	Support bandwidth-hungry and/or low-latency applications and workloads in delivering data quickly
3. Automation/dynamic configuration: Telcos need a flexible solution that can scale readily and quickly to capitalize on growing customer demands for 5G	Supports multiple accelerators and up to 92 TB of storage	Add accelerators and storage as compute needs evolve to support telco apps and customer services
4. Ruggedness: Telcos need a robust solution that can withstand harsh conditions at data centers located near edge locations	Extended operating temperature tolerance (from 5° to 40° C), optional filtered bezel to protect equipment in dusty environments and Network Equipment-Building System (NEBS) Level 1 certification	Save on repair and maintenance costs with a solution optimized for harsh edge environments
5. Security: Telcos require a solution that protects data from malicious actors	All versions of iDRAC9 include silicon root of trust, and the new Datacenter license also employs real-time BIOS Live Scanning	Minimize the risk of equipment being compromised at the edge and secure valuable data

In addition, telco companies need a solution that allows them to:

- Deploy key services remotely and without high IT involvement
- Save on power and cooling expenses and prevent costly IT buildouts with a dense, adaptable compute solution
- Easily access equipment even in cramped or confined environments

To meet these needs, the Dell EMC PowerEdge XE2420 delivers low-touch management features like automatic SSL certificate enrollment and renewal, a short-depth (600mm) form factor that can fit into small areas and existing IT architecture and front-accessible I/O and power.

Reap the benefits of an optimized infrastructure with solutions designed for the edge

With 5G networks and IoT-driven applications on the rise, telcos must bring the edge of the network closer to customers in order to create lower latencies and higher bandwidth. But to implement these innovations, they need equipment that has been designed to deliver power, speed, flexibility and security at the edge.

Dell Technologies offers a full portfolio of solutions to address the compute, network and storage needs of telcos operating at the edge. With Dell EMC PowerEdge XE2420 servers and iDRAC9 management software, telcos can increase their return on investment, lower total cost of ownership and protect their valuable data. From the edge to the cloud to the core data center, Dell Technologies helps companies thrive.

To learn more about how Dell Technologies solutions can help your company gain an edge, visit https://www.delltechnologies.com/en-us/servers/specialty-servers/PowerEdge-XE-Servers.

Intel and Dell Technologies:

Working together to create comprehensive solutions for the edge

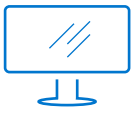
Telco organizations can't afford to compromise service speed and agility—they need strong infrastructure performance, robust security and reliable solutions that can scale to meet regional and worldwide demands. Dell EMC and Intel provide the infrastructure and partnership that telcos need to focus on deploying and expanding their services. The Dell EMC PowerEdge XE2420 demonstrates an ongoing evolution from the core to the cloud to the edge, leveraging the capabilities of Intel® Xeon® Scalable processors as telcos transform their networks and prepare for the 5G revolution. The combination of these two technologies provides a powerful edge platform from which telcos can deliver applications (such as vCDN and vRAN) while providing the foundation for new 5G-based enterprise services to industries such as healthcare and manufacturing.

[1] https://innovationatwork.ieee.org/3-key-benefits-of-5g/

[2] https://www.ericsson.com/en/mobility-report

[3] https://www.statista.com/statistics/471264/iot-number-of-connected-devices-worldwide/

[4] https://www.techrepublic.com/article/data-streaming-on-the-rise-according-to-developers/



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