First Look

Maximizing Edge Performance for Distributed Applications with Dell PowerSwitch E3200-ON Series

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Challenges: [1]

The percentage of organizations that cite ***the cost of deploying physical infrastructure at each remote site*** as a top factor influencing the decision-making process for where edge computing applications are deployed.

The percentage of organizations that cite ***the ability to centrally manage all edge environments and automate areas of deployment*** as another top factor influencing the decision-making process for where edge computing applications are deployed.

Modern applications are distributed across computing and storage resources that are deployed on-premises, in the cloud, and at the edge. The distributed nature of applications, particularly at the edge, has gained traction, as organizations want to collect and analyze the data generated at these remote sites to fulfill business objectives such as improving product quality, delivering customer and employee-enhanced experiences, and gathering deeper insights into the business. However, organizations still expect that application performance is at least maintained, regardless of where that data is processed.

With the continued data growth and the amount of data processing to be coordinated between components of the distributed application, the availability of network bandwidth from the edge to the corporate data center and cloud environments becomes a concern. However, upgrading the network architecture to support network bandwidth-intensive applications is no small feat. Constrained physical edge environments limit not only the actual switch size but also the amount of power consumption, as these edge locations must support other infrastructure, such as compute and storage resources and Internet-of-Things (IoT) devices. Power and cooling costs, especially when considering the number of edge locations to support, can easily accumulate.

Deploying and managing network infrastructure at the edge also becomes complicated, as these edge locations can span regions, countries, and around the globe. Edge locations are not typically staffed with the adequate personnel to address problems immediately, and the continued pressure on IT budgets cannot support IT personnel with the proper skill sets for multiple edge locations.

Dell PowerSwitch E3200-ON Series

To help organizations in edge deployments, Dell Technologies introduced the PowerSwitch E3200-ON series, a line of high performance, open networking multigigabit switches. These switches are designed specifically for supporting distributed, network bandwidth-intensive applications in edge locations while controlling both capital and operational expenses.

Dell Technologies offers two versions of the first model, the PowerSwitch E3248:

- E3248P-ON: enabling multi-rate support of up to 1Gbps with 48 10/100/1000Mbps ports, each with four-port 10Gbps and two-port 100Gbps uplinks.
- E3248PXE-ON: enabling multi-rate support of up to 10Gbps with 48 1/2.5/5/10Gbps ports, each with four-port 25Gbps and two-port 100Gbps uplinks.

Both versions offer standards-based Power-over-Ethernet (PoE) support to help organizations control power and cooling costs within their constrained edge environments. While the PowerSwitch E3248P-ON offers 802.3at PoE auto-sensing support (up to 30W per port), the PowerSwitch E3248PXE-ON offers 802.3bt Type-4 PoE auto-sensing support (up to 90W

[1] Source: ESG Complete Survey Results, *The State of Digital Ecosystems at the Edge*, August 2022. All ESG research references in this ESG First Look have been taken from this survey results set.

per port). This can specifically help organizations managing multiple PoE and IoT devices at the edge, such as WiFi 6E and 5G access points, video surveillance cameras, point-of-sale systems, and building automation devices. Both models can also support up to two internal power supply units and an external power supply to accommodate a wide range of power consumption budgets. With the PoE and PSU support, organizations can better control capital expenses related to power management.

The Dell PowerSwitch E3200-ON series supports Enterprise SONiC Distribution by Dell Technologies Edge bundle, an innovative, scalable open source network operating system designed for large-scale data center fabrics with enterprise-grade management features and 24/7 global support.[2]

ESG Highlights

After our initial evaluation of the Dell PowerSwitch E3200-ON series, ESG noted:

- Both models are equipped with Broadcom Trident3 class silicon (Trident3-X3 on E3248P and Trident3-X5 on E3248PXE), enhanced CPU, and additional RAM and SSD capacity so that organizations can support add-on container applications (e.g., telemetry and analytics) at the edge.
- Organizations can reduce operational expenses should they take advantage of Dell Technologies' support for open networking standards if they choose the same network operating system (NOS) both for the data center and at the edge. By supporting the same NOS extending from the data center to edge locations, organizations can use familiar data center networking tools to monitor, manage, and deploy the Dell PowerSwitch E3200-ON series, such as Ansible and Apstra.
- Operational expenses can also be reduced with the level of automation and orchestration support provided by Enterprise SONiC Distribution by Dell Technologies that comes with gNMI and REST APIs support, allowing the same automation capability for the edge, previously only available for the data center.
- With Dell PowerSwitch E3200-ON's multirate support, organizations can provision the appropriate port speeds as business needs require without adding additional switches and capital expenses. It also minimizes the need for hardware upgrades as the network scales and traffic patterns change. This also helps in managing power consumption in constrained physical environments.
- The combination of the automation capabilities provided by Enterprise SONiC Distribution by Dell Technologies, the power-efficient switch design, and the infrastructure consolidation (via its form factor and NOS) can help organizations to fulfill their sustainability goals. This applies across all PowerSwitch models that operate at the data center and the edge.

First Impressions

The continued adoption of distributed applications has created the need for a switch that can handle the increase in network traffic between on-premises and edge environments. However, as the number of edge locations increases, the added infrastructure can easily incur unwanted capital and operational expenses. Given our review of the Dell PowerSwitch E3200-ON series, we believe that Dell Technologies provides a switch that will help organizations' high performance and network bandwidth-intensive applications. With Dell Technologies' entry into the edge switch market, organizations can better control both the capital expenses related to power consumption and the operational expenses via automation and orchestration of deployment, management, and administration tasks.

[2] For more information about Enterprise SONiC Distribution by Dell Technologies, please refer to the following ESG First Look: Accelerating Innovation with Enterprise SONiC Distribution by Dell Technologies.