Market Guide for Data Center Switching

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Initiatives: Data Center Infrastructure; Cloud and Edge Infrastructure

Driven primarily by refresh, the data center switching market is evolving incrementally, with long-term market disruption enabled by SONiC and FACs. When investing, I&O networking leaders should focus on integration with broader data center systems and automation, rather than hardware.

Overview

Key Findings

- The top driver of enterprise investment in this market is the deployment of new switches, due to refresh or new build.

- The key differences among switching vendors reside in automation and integration in broader orchestration systems. Most vendors’ switches are more than good enough for most enterprises.

- Data center networking customers are looking to extend data center networking solutions into public cloud environments.

- SONiC and FACs will be disruptive long-term drivers of change in this market.

Recommendations

I&O leaders responsible for data center network infrastructures should:

- Deploy rightsized physical infrastructures by using a leaf/spine topology with fixed-form-factor switches and 25/100G-capable interfaces.

- Optimize vendor selection by focusing on the management, automation and integration with broader data center orchestration systems, when buying switches and selecting vendors (versus hardware characteristics).

Strategic Planning Assumptions

By 2025, 40% of organizations that operate large data center networks (more than 200 switches) will run SONiC in production environments.
By 2025, 30% of enterprises will use hardware as a service (HWaaS) to procure data center switches.

By 2023, enterprise network teams using a SaaS-based management console for data center networks will increase by fivefold to more than 1,500.

Market Definition

This market (see Note 1 and Note 2) covers physical data center network switches, and requisite management for them. Data center switches are Ethernet switches installed in a data center environment intended to provide LAN connectivity to endpoints including servers and other data center devices, such as firewalls and mainframes. Specific components of switching products include physical switches, network operating systems (software running on the physical switches), fabric/controller software (to manage multiple switches as a single construct), and the requisite management and automation, for these components.

This market does not include campus or branch switches, which are meant primarily to connect end-user devices, such as laptops and PCs (those are covered in the Magic Quadrant for Wired and Wireless LAN Access Infrastructure).

Market Description

Physical switches are the anchor technology in this market. The collection of switches deployed is also referred to as the “underlay” or “switching fabric” (see Note 3). These data center network switches are typically installed in on-premises data centers or in colocation facilities. Investments in this market are driven heavily by hardware refresh and new build-outs to support applications in the data center. Enterprises can manage their switches directly or via a managed service provider (MSP). Within enterprises, switching decisions are often made by the networking team (engineering and/or operations), which reports to a vice president of infrastructure.

Vendors that participate in this market provide most (but not necessarily all) of the components described earlier, including switches, network operating systems (NOSs) and fabric software. For example, vendors may offer an NOS without physical switches or vice versa.

There are several styles of switches:

1. (Traditional) Integrated Switch — This is the common style for enterprises, in which a switch includes hardware and the NOS, which are tightly coupled, and sold and supported as an integrated unit.

2. White-Box Switch — The physical switch, without an NOS. This means that the hardware platform can run third-party switch NOSs. Procurement and commercial support is split among multiple vendors.

3. “Brite”-Box Switch — Brite is shorthand for Branded + White, and means the switch supports disaggregation, but is sold and supported by a single supplier. The hardware platform can run third-
party NOSs. The entire switch (switching hardware and NOS) can be sourced and commercially supported via a single supplier, which offers multiple NOS options.

Market Direction

Gartner previously covered the data center switching market as part of the broader Data Center and Cloud Networking Magic Quadrant, which bundled physical switching and cloud networking software together. Cloud networking software could be run in private data centers or within public cloud infrastructure as a service (IaaS) environments. However, based on client inquiry and survey data, only a small percentage of clients want to bring their traditional data center networking vendors’ software into the public cloud. Thus, to best align with our clients needs and with future market direction, we now cover data center switching as a dedicated market, separate from cloud networking software.

Data Center Networking Drivers

Organizations invest in data center networks primarily in support of switching hardware refresh or new build-out. In addition, they invest to improve network agility, often in conjunction with a cloud initiative (see Figure 1).
Near-Term Shifts

In the near term through 2022, we anticipate incremental change in this market. This is because this market is heavily driven by refresh and build-out within existing data centers, and, in these scenarios, enterprises don’t desire dramatic operational or technological changes. Instead, they prefer to maintain consistency with established technologies and operational practices. Given that context, we expect the following moderate incremental changes in this market through 2022.

25 Gbps

In 3Q20, total 25 Gbps port shipments surpassed 10 Gbps for the first time. Although 25 Gbps is the leading port being shipped, most enterprises still deploy 10 Gbps to connect physical servers, because switches support 10 Gbps server connections on 25 Gbps ports (see Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 3Q20 for additional share details).

Increasing Automation
To support digital and cloud initiatives, I&O leaders are increasingly looking to improve agility. The level of automation in data center networking operational activities is relatively low at an estimated 30%, but has risen incrementally during the past several years from a rate of 15% in the 2015 time frame. Driven by the continued desire to support agile delivery and/or DevOps processes, and increased programmability of switch components, we expect the percentage of automated operational activities to increase to 40% by YE22. This includes the 10% of enterprises that will fully integrate data center networking activities into continuous integration and continuous delivery (CI/CD) pipelines by 2023, which is an increase from approximately zero in early 2020.

Vendor Changes

HWaaS

We expect vendors to increasingly offer HWaaS pricing models, to align with customers who prefer a more “cloudlike” delivery service and pricing model. HWaaS is not just equipment leasing, which is a sourcing model. HWaaS is a service delivery model in which the hardware is owned by the vendor and delivered to the customer as a service, for a subscription fee, based on some unit, such as per port or per switch, and with an SLA. The service delivered is independent of the life cycle of the physical hardware (i.e., the vendor is responsible for refresh, upgrades/downgrades, etc.).

We predict enterprise adoption will be gradual. By 2025, 30% of new data center hardware switches sold will be procured via HWaaS, which is an increase from nearly zero today. Although we don’t expect true pay-for-use consumption models (i.e., bandwidth utilization) to be widely available at reasonable price points prior to 2023, subscription-based operating expenditure (opex) models will become more prevalent with the potential for more granularity of pricing, such as per port.

SaaS-Based Management

Cloud-based management consoles are common in WLAN and software-defined WAN (SD-WAN). However, to date, they haven’t been widely available or adopted in data center networks. We expect that to shift during the next two to three years as enterprises:

- Look for the simplified experience
- Finally invest in this management style

We predict that, by the end of 2022, the number of enterprise network teams using a SaaS-based console to manage data center networks will increase by more than five times to more than 1,500. This approach will be particularly compelling in edge locations, since they represent more greenfield opportunities and have limited space and personnel.

Improved Day 2 Management

We are seeing vendors increasing investments in their management and analytics capabilities. We expect this will be used increasingly to improve proactive management of issues that can be detected via machine learning (ML) and data science techniques earlier than humans would find them. This will
lead to recommendation engines from vendors and extending to auto-remediation of issues. Examples include prediction of transceiver failures in the field, memory, CPU, TCAM exhaustion, detection of configuration deviations from best practices, etc. This can lead to increased proactive remediation (outage avoidance) and improved mean time to repair (MTTR; outage reduction).

**Midterm Trends**

Through 2023, we expect that enterprise data centers will become more “prescribed,” particularly within smaller and midmarket data centers. This prescription occurs as adoption of hyperconverged infrastructure (HCI) and distributed cloud (such as AWS Outposts and Azure Stack) occurs. Gartner forecasts HCIs adoption to grow at 15% compound annual growth rate (CAGR) through 2024. More than 50% of enterprises will use a distributed cloud option to process data at the location of their choice by 2025. HCI and distributed cloud solutions increasingly prescribe the network switching topology and sometimes even include switching in the system. This will affect how switching infrastructures are designed, bought and implemented, and lead to less autonomy in the implementation and selection for enterprise network teams.

**Higher-Performance Fabrics**

We’ve observed limited, but increasing, interest in high-performance switching fabrics. These fabrics are meant to support workloads with stringent latency and/or loss requirements including storage, big data, artificial intelligence (AI), high-frequency trading and high-performance computing (HPC). We estimate that fewer than 5% of enterprises have deployed such fabrics as of YE20, but expect adoption to double by YE23.

**Disruptive Longer-Term Trends**

Longer term (i.e., 2023 and beyond), the two most dramatic changes or disruption we anticipate in this market are related to SONiC and FACs.

**SONiC**

A viable commercial ecosystem is forming around an open-source NOS: Software for Open Networking in the Cloud (SONiC). SONiC was initially written and open-sourced by Microsoft, and is reportedly deployed within Microsoft Azure, Tencent, and other large networks, including service providers and several enterprises. Client interest in SONiC increased 87% year over year from 2020 to 2021. Several switching vendors are aggressively investing in and/or supporting SONiC. Dell, NVIDIA, Arista Networks, Juniper Networks and nearly all white-box vendors are on the official SONiC hardware compatibility list. Several other vendors, including Cisco, Huawei, H3C and Ruijie Networks, allow SONiC to run on their switches, in certain customer scenarios. Furthermore, Dell, NVIDIA, Edgecore Networks and IP Infusion provide commercial support and/or a commercial distribution for SONiC.

Due to this rapidly expanding customer interest and commercial ecosystem, there is a strong possibility that, during the next three to six years, SONiC for data center networking will become analogous to Linux as a server OS, allowing enterprises to standardize on an NOS that is supported across hardware
vendors. This creates opportunity for innovation in the same manner that Linux-based tooling and Linux expertise propelled benefits for customers

Next Generation of SmartNICs: Function Accelerator Cards (FACs)

FACs are a class of network interface hardware that improve and accelerate server availability, bandwidth performance and data transport efficiency in a network. Besides enabling connectivity to a network, FACs support 1 or 2 x 100 Gbps physical ports and support hosting network functions. These include virtual switches, NOS (such as SONiC), firewall and other security functions, load balancing, CGNAT, etc. Hosting of these functions on the NIC can reduce server load and/or circumvent the need for dedicated network appliances. Adoption of FACs to date has predominantly been in hyperscaler environments to improve performance and scale.

We also see strong investments in this technology from several vendors including NVIDIA, Broadcom, VMware and Pensando with the intent to address more enterprise use cases including high-performance workloads such as AI. By 2023, we predict that one in three network interface cards shipped will be a FAC. In some customer environments, the FAC will consume the leaf layer in existing leaf/spine environments. As a result, FACs have the potential to be extremely disruptive in the data center switching market, driving topological change (FAC/spine).

Market Analysis

The total market size for the data center switching market is $15 billion to $16 billion (end-user spending), and we forecast growth of 2.2% CAGR through 2024. In 2020, 28% of port shipments were self-build/ODM or “white box,” which is attributable primarily to cloud and service providers. Despite accounting for 28% of port shipments, more than 90% of vendor revenue in this market comes from OEM (i.e., non-white-box) vendors.

We estimate there are 100,000 data center networking customers with at least one data center network. The majority (we estimate more than 90%) of these customers deploy only traditional integrated switches. Fewer than 1% of customers prefer a true disaggregated white-box approach, primarily in very large environments (more than 1,000 switches), such as cloud providers and service providers. We estimate that between 2% and 5% of customers use brite-box approaches in at least some portions of their environments, including service providers, cloud providers, large enterprises and forward-leaning organizations.

See Table 1 for a listing of the various switching approaches and sample vendors.
Table 1: Switching Approaches and Sample Vendors

<table>
<thead>
<tr>
<th>Sample Vendors Offering White-Box Switches</th>
<th>Sample Vendors Offering Brite-Box Switches</th>
<th>Sample Vendors Offering NOS for White- and Brite-Box Switches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cisco, Arista, Huawei, H3C, Juniper Networks</td>
<td>Accton Technology-Edgecore Networks, Quanta, Celestica, Centec, Alpha Networks</td>
<td>Dell, NVIDIA, Pluribus Networks, Arrcus, IP Infusion, Pica8, SONiC (open-source and commercial options)</td>
</tr>
</tbody>
</table>

Source: Gartner (March 2021)

Network Designs

The most common topological design we observe for new deployments is a two-tier “leaf-spine” topology (see Solution Path for Evolving to Next-Generation Enterprise Networks). In extra-large environments (hundreds of switches in the same location), an additional switching tier above the spine is often deployed, sometimes referred to as a “super spine” (see Note 4). In smaller environments (500 virtual machines [VMs] or fewer), a two-switch data center (with a shared Campus core) is often optimal, although we see few vendors lead with this approach.

The two most common protocol implementations we see are VLAN-based and VXLAN-based. VLAN-based architectures are typically L2-based, using MLAG and/or a vendor’s proprietary fabric technology. This approach is widely used within customers’ installed-base today. This is also a valid deployment in smaller environments going forward. For new deployments, we see VXLAN-based architectures that are L3-based (see Decision Point for Choosing a Data Center Networking VXLAN Architecture). These designs are widely supported by nearly all commercial vendors participating in the market.

Independent software overlays can be deployed “on top” of either of these architectures.

Key Differences

For most data center environments, there is not a lot of differentiation at the hardware or NOS level. There are occasionally features, such as Fibre Channel over Ethernet (FCoE), that are not widely supported across vendors, and not all vendors offer high-performance fabrics (described earlier). However, these are relatively uncommon requirements. Hence, most hardware/NOS capabilities from most commercial vendors are good enough for most environments. Simply put, most switches from most vendors are good enough for most enterprise environments. Thus, the differences between vendors often lie with fabric controllers, which handle management of the underlay (switches), visibility and automation/orchestration.
Integrations

An area of increasing importance to customers is integration with automation and orchestration between data center networks to tie into broader data center systems, such as automation tools or cloud management.

Furthermore, there is ample differentiation between switching vendors regarding which integrations they support in a "turnkey" manner (i.e., turnkey indicates full GA commercial support). Some of the more important integrations needed in the enterprise include:

- Ansible Modules, designed for switches//NOS.
- Ansible Modules, designed for centralized controller (not individual devices)
- Python API
- ServiceNow integration
- Terraform Integration (Terraform provider)
- RESTful API for your management systems exposing at least 80% of product features
- Integration with Puppet, Chef and Salt
- VMware vCenter Integration
- Microsoft Hyper-V/Systems Center Integration
- VMware NSX-T integration
- CNI Plugin for Kubernetes
- OpenConfig

Pricing

Vendors have different packaging mechanisms, but ultimately charge for hardware (switches), software and support. Vendors are increasingly shifting the software aspects of switches to subscription-based pricing options. However, data center switches are increasingly similar in terms of performance and features across most enterprise use cases. This makes pricing all the more important and the vendor brand less important. Average pricing in this market per 25G port is $88, but there is substantial variance across vendors, from below $30 (Ruijie) to above $200 (Cisco), based on Gartner's market share data (see Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 3Q20). Pricing organizations should include hardware, software and management over a three- to five-year time horizon to ensure an apples-to-apples pricing comparison. In our client discussions, this often helps to illuminate major pricing differences in vendor proposals that, on the surface, wouldn't otherwise be clear.
Representative Vendors

Market Introduction

The vendors listed in this Market Guide do not imply an exhaustive list (see Note 1). This section is intended to provide a broad understanding of the vendors in the market. It is intended to show vendors that can support a diverse range of customer environments, including from technologically advanced “forward-lean” operators of large data center environments to smaller midsize enterprises who may only need a handful of switches.

Key Characteristics

Table 2 identifies key hardware switching capabilities provided by a representative sampling of vendors.\textsuperscript{7,8}
### Vendor Profiles

**Arista Networks**

Arista Networks is based in Santa Clara, California, U.S. Gartner estimates it has more than 7,000 data center switching customers, of which over 95% are enterprises. Arista is best representative of an integrated switching vendor, although it does support other approaches. Its portfolio is branded as Universal Cloud Networking (UCN) and includes switches (7000 Series), NOS (EOS) and CloudVision as the primary interface for fabric management and visibility/analytics. Arista operates globally, with 90% of its customers based in the North America, Europe and Asia continents.
Cisco
Cisco is based in San Jose, CA, U.S. We estimate it has more than 45,000 data center switching customers, of which 90% are enterprise. Cisco is best representative of an integrated switching vendor, although it does support other approaches for certain customers. Its portfolio includes Nexus switches (9000 and 3000 Series), NOS (ACI or NX-OS), fabric management (ACI or DCNM), and Nexus Dashboard for visibility/analytics. Cisco operates globally, with a strong presence in all geographies.

Dell Technologies
Dell Technologies is based in Round Rock, Texas, U.S. We estimate it has more than 20,000 data center switching customers, of which over 95% are enterprises. Dell Technologies is representative of a brite-box vendor, and also offers integrated switching. Its portfolio is branded as PowerSwitch and includes switches (S, Z and N series); multiple NOS; and Dell EMC SmartFabric Director as the primary fabric manager. As a brite-box vendor, Dell Technologies supports SONiC, Pluribus, Arista’s fabric offerings, as well as its own OS10. Dell Technologies operates globally, with a strong presence in all geographies.

Edgecore Networks
Edgecore Networks is a wholly owned subsidiary of Accton and is based in Hsinchu, Taiwan. We estimate it has 1,000 data center switching customers, of which 25% are enterprise. Edgecore Networks is representative of a white-box hardware vendor. It primarily offers AS-series switches for data center use-cases (based on Broadcom silicon). Edgecore Networks does not provide its own NOS, but supports multiple NOS options, including SONiC, Pluribus, Arrcus and others. Edgecore Networks operates globally, and most customers are operators of large networks in North America, Europe and Asia.

Extreme Networks
Extreme Networks is based in San Jose, California, U.S. We estimate it has more than 4,000 data center switching customers, of which 85% are enterprise. Extreme is representative of an integrated switching vendor. Its portfolio is branded as ExtremeSwitching and includes multiple switching hardware lines (including VSP and SLX series), and multiple NOS (including VOSS and SLX-OS). Fabric management and visibility/analytics are delivered via Extreme Management Center (on-premises) and ExtremeCloud IQ (cloud-managed). Extreme operates globally, with a solid presence in all geographies, except Africa.

H3C
H3C is a joint venture of Tsinghua Unigroup and HPE, with headquarters in Hangzhou and Beijing, China. We estimate that it has more than 3,000 data center switching customers, of which 80% are enterprise. H3C is representative of an integrated switching vendor, although it does support other options. Its portfolio is branded as AD-DC (Application Driven Data Center) and includes switches (S Series), NOS (Comware V7 and V9), and SeerEngine-DC as the primary interface for fabric management, and SeerAnalyzer-DC for visibility/analytics. H3C operates predominantly in Asia.

Hewlett Packard Enterprise (HPE)-Aruba
Hewlett Packard Enterprise (HPE) is based in Santa Clara, California, U.S. We estimate it has more than 7,000 data center switching customers, of which 95% are enterprises. HPE is representative of an integrated switching vendor. Its portfolio is branded as Aruba CX and includes switches (8000 and 6000 Series), NOS (AOS-CX), and Aruba Fabric Composer as the primary interface for fabric management. HPE operates globally, with a strong presence in all geographies except Africa.

Huawei

Huawei is based in Shenzhen, China. We estimate it has more than 10,000 data center switching customers, of which 90% are enterprises. Huawei is representative of an integrated switching vendor. Its portfolio is branded as CloudFabric and includes switches (CloudEngine Line), NOS (VRP8), fabric management (iMaster NCE-Fabric), and enhanced visibility/analytics (iMaster NCE FabricInsights). Huawei operates globally, with a strong presence in all geographies other than North America.

Juniper Networks

Juniper Networks is based in Sunnyvale, California, U.S. We estimate it has more than 9,000 data center switching customers, of which more than 90% are enterprises. Juniper is representative of an integrated switching vendor, although ity supports other approaches also. Its portfolio includes switches (QFX, PTX and EX Series), NOS (Junos OS), and Apstra Fabric Conductor for fabric management and visibility/analytics. Juniper operates globally, with a strong presence in all geographies.

NVIDIA

NVIDIA is based in Santa Clara, California, U.S. We estimate it has more than 5,000 data center switching customers, of which over 90% are enterprises. NVIDIA is representative of a vendor that supports integrated and brite-box switching. Its portfolio includes switches (Spectrum) and Cumulus NetQ as the primary interface for fabric management and visibility/analytics. NVIDIA supports multiple NOS options including its own offerings, SONiC and others. NVIDIA operates globally, with 90% of their customers based in the North America, Europe and Asia continents.

Pluribus Networks

Pluribus Networks is based in Santa Clara, California, U.S. We estimate it has more than 300 data center switching customers, of which over 60% are enterprises. Pluribus represents a software-focused vendor that supports multiple hardware switches, including white boxes. Its portfolio includes switches (Freedom Series), NOS (Netvisor ONE Operating System), fabric manager (Adaptive Cloud Fabric) and management/Insight/analytics (UNUM). Pluribus operates primarily in the North America, Europe and Asia continents, where 90% of its customers are located.

Ruijie Networks

Ruijie Networks is based in Beijing, China. We estimate it has more than 1,500 data center switching customers, of which more than 95% are enterprises. Ruijie is representative of a vendor that supports integrated switching and white-box switching. Its portfolio includes switches (S and B Series), NOS
(ARGOS and SONiC), and RG-ONC as the primary interface for fabric management. Ruijie operates predominantly in Asia.

**Market Recommendations**

- When selecting switches, focus on the management and automation aspects of the underlay, versus the hardware characteristics of the switches.
- Deploy rightsized physical infrastructures by using a leaf/spine design with fixed-form-factor switches and 25/100G-capable interfaces.
- In smaller environments (500 VMs or fewer), adopt a two-switch implementation and look for SaaS-based management consoles to simplify operational overhead.
- In larger-scale environments (more than 100 switches), look to brite-box solutions to reduce cost, increase software choice, and reduce vendor lock-in.
- In very large (more than 250 switches) environments and/or within forward-leaning organizations, pilot SONiC as an NOS to increase software innovation and reduce lock-in.

**Evidence**

1. Gartner analysts handled more than 450 client inquiries on the topic of data center networking from February 2020 through January 2021.

2. Gartner's Public Cloud Poll (2020) was conducted online from 28 September through 8 October 2020 with 202 Gartner's ITL Research Circle Members — a Gartner-managed panel of IT leaders. Participants are IT leaders focused on enterprise architecture (EA) and/or infrastructure and operations (I&O) from a range of regions, industries and revenue sizes. (The results of this study represent the respondent base, not necessarily the market as a whole.)

3. Gartner's Data Center Priority Poll 2021 was conducted online from 11 January through 18 January 2021 with 427 Gartner's ITL Research Circle Members. Participants are enterprise-level CIOs/CTOs, IT leaders focused on EA and/or I&O from a range of regions, industries and revenue sizes. (The results of this study represent the respondent base, not necessarily the market as a whole.)

4. **Market Share: Enterprise Network Equipment by Market Segment, Worldwide, 3Q20**

5. Source: Gartner Annual I&O Leaders Survey 2020, whereby “increase agility” was tied for No. 2 in response to this question: Q01. What are the most important goals of your IT I&O organization during the next 12 months? n = 133; all respondents, excluding “Unsure” via Gartner Research Circle members and external.

6. Gartner analysts reviewed peer insights for data center switching products.
All vendors responded to a brief survey regarding their existing capabilities and customers.

Gartner analysts reviewed publicly available information about the vendors and their switching portfolios, including information on their websites, such as product technical specification sheets and blogs.

SONiC: Supported Platforms, GitHub

**Note 1: Representative Vendor Selection**

The vendors named in this guide were selected as representative vendors. These vendors have achieved a degree of traction and visibility in the market and/or are representative of a specific switching approach.

**Note 2: Gartner’s Initial Market Coverage**

This Market Guide provides Gartner’s initial coverage of the market and focuses on the market definition, rationale for the market and market dynamics.

**Note 3: Underlay and Overlay Terminology**

Organizations increasingly implement a design pattern in their data center networks referred to as “underlay” and “overlay.” The underlay includes switches, NOS and associated management. The overlay typically indicates a software-based networking abstraction layer. Overlays can be provided via a variety of technical implementations and vendors. Switching vendors provide protocols such as EVPN and VXLAN that can serve as an overlay. Other vendors and open-source projects that provide software overlays are independent of the switching protocols, including VMware NSX, Nuage Networks and Juniper Contrail. The overlay network provides additional network capabilities notably around scale or functionality. Overlays are often implemented to help improve network manageability to align with cloud and digital initiatives.

**Note 4: Core/Pod Designs**

In extra large environments, we see an additional switching tier providing IP connectivity among individual leaf/spine networks (sometimes called “super spine”). The individual spine/leaf environments are deployed as modular “pods,” and this is also referred to as a core-pod design. The pod approach is modular, and allows organizations to iterate and scale their infrastructure in a more structured way, as requirements change and technological capabilities change/advance.

**Recommended by the Authors**

- Decision Point for Choosing a Data Center Networking VXLAN Architecture
- Market Guide for Server Virtualization
- Bring Web-Scale Networking Concepts to Your Data Center