Magic Quadrant for Data Center Switching

31 March 2025 - ID G00811886 - 34 min read

By Andrew Lerner, Simon Richard, and 3 more

The data center switching market has undergone substantial change in the past 18 months due to interest in AI infrastructure. I&O leaders can use this research to shortlist vendors that best address their data center network requirements.

Strategic Planning Assumptions

- Through 2028, organizations that use existing data center switches to support AI/GenAI workloads will waste at least 30% of the processing capability.
- By 2027, the number of enterprises running SONiC in large data center networks (more than 250 switches) will double to reach 10%.

Market Definition/Description

This is the first version of the Magic Quadrant for Data Center Switching. It replaces the **Market Guide for Data Center Switching**.

This market covers data center network switches and the requisite management and automation platforms for them. Data center switches are Ethernet switches installed in a data center environment intended to provide connectivity for endpoints, including servers, firewalls, and Layer 4 through Layer 7 appliances and mainframes.

Data center switches provide foundational connectivity mostly for compute resources in the data center. This is required to enable applications in support of business requirements.

Emerging use cases that drive investments on data center networks include both AI and edge workloads.

Mandatory Features

The mandatory features for this market include:

- Network operating system (NOS) software — operating system software meant for installation on a physical Ethernet switch that controls both hardware (i.e., LED, physical ports, fan power) and logical components (i.e., routing and switching).
- Fabric management — software that enables multiple Ethernet switches to be managed as a single construct (a single logical entity) with a common API. Fabrics can be standards-based or proprietary in nature.
- Centralized management — software that includes role-based access control (RBAC) to enable life cycle management of switches and NOS. This includes an administrative UI that enables provisioning, configuration management, troubleshooting, analytics and reporting. (Note: Centralized management can be embedded with fabric management.) This also includes turnkey integrations — those with commonly deployed data center or automation technologies.

Common Features

The common features for this market include:

- Physical fixed-form factor network switches suitable for deployment at the data center network access (i.e., leaf), and core (i.e., spine) layers that provide IEEE 802.3 Ethernet network connectivity and services to endpoints — including servers, storage, user devices and peripherals
- Advanced physical capabilities such as (a) physical modular network switches suitable for deployment at data center network access (i.e., leaf) and core (i.e., spine) layers that provide IEEE 802.3 Ethernet network connectivity and services to endpoints, including servers, storage, user devices and peripherals; or (b) physical ultrahigh performance network switches, including IEEE 802.3 Ethernet switches designed for the most stringent performance requirements and workloads such as high-performance computing (HPC), high-frequency trading or AI

- Multivendor fabric management — fabric management supporting NOS and/or physical hardware from multiple vendors
- Microsegmentation
- Commercial support for the SONiC network operating system
- Advanced UIs including chatbots, conversational interfaces
- Virtual switches and/or container switches that operate in conjunction with a broader virtualization/container platform and handle the switching responsibilities for virtual machines or containers

Magic Quadrant

Figure 1: Magic Quadrant for Data Center Switching

Gartner

Vendor Strengths and Cautions

Alcatel-Lucent Enterprise

Alcatel-Lucent Enterprise (ALE) is a Niche Player in this Magic Quadrant. Its products in this market include OmniSwitch 6900 and 9900 switches, AOS network operating system (NOS), and the OmniVista management platform. Additional functionality is delivered via Fleet Supervision for basic inventory management and ALE's chatbot, OmniVista Network Advisor. The vendor's operations are global, and its clients tend to be midmarket enterprises primarily in the government, healthcare and transportation verticals. Gartner expects ALE to

focus its market investment on expanding hardware platforms and enhancing the functionality and integration of its AI agent.

ALE declined requests for supplemental information. Gartner's analysis is therefore based on other credible sources.

Strengths

- ALE has a solid offering for midsize enterprises that are looking for converged campus/data center infrastructure running a common NOS and managed via the same console.
- ALE launched Fleet Supervision in late 2024, which addresses key client inventory management needs, is delivered as a service and is free to customers.
- ALE's OmniFabric supports multiple data plane technologies (SPB, EVPN, MPLS) via a single management platform and NOS, which provides flexibility to customers.

Cautions

- ALE is late to market to deliver 400G/800G-capable switch interfaces, which limits its ability to address high-density or high-performance AI fabrics.
- The vendor's focus on campus networking is not well-aligned with the emerging needs of enterprises deploying AI fabrics or looking for a SONiC-based infrastructure.
- There is uncertainty over the vendor's long-term viability, due, in part, to the fact that it is a privately held company that is majority owned by China Huaxin Post and Telecom Technologies.

Arista Networks

Arista Networks is a Leader in this Magic Quadrant. Its products in this market include 7000 Series switches, EOS NOS and the CloudVision management platform. Its operations are globally distributed, and its clients tend to be large enterprises across a variety of verticals. Gartner expects this vendor to focus its market investment on software/hardware reliability and expand its ability to address emerging scale and performance-stringent needs for AI workloads.

Strengths

- Customers report high satisfaction with Arista's portfolio and CloudVision in particular.

- The vendor’s roadmap is well-aligned with emerging enterprise requirements for high-performance fabrics.
- Arista has consistently demonstrated market responsiveness with timely delivery of new hardware and software capabilities.

Cautions

- Compared to other vendors evaluated in this Magic Quadrant, Arista’s support for non-English languages is limited, and technical support is provided in fewer countries.
- Arista’s sales and geographic strategy is narrowly focused, which will limit its ability to attract enterprise customers.
- As the vendor grows and expands its product portfolio, it increasingly will compete with its current existing technology partners, which can limit its ability to grow.

Cisco

Cisco is a Leader in this Magic Quadrant. Its products in this market include Nexus 9000 Series switches, NX-OS and ACI-based fabrics, all managed by Nexus Dashboard. Additional functionality is delivered via Cisco 8000 Series hardware platforms. The vendor’s operations are globally distributed, and its clients tend to be enterprises of all sizes across a variety of verticals. Gartner expects Cisco to focus its market investment in simplified operational management, embedding security within the switching fabric and AI fabrics.

Strengths

- Cisco has solid products that can address the full range of data center switching use cases, from midmarket to large enterprise data centers, including open networking and AI Ethernet fabrics.
- Cisco has an ambitious roadmap and vision to simplify operations, enhance security and address high-performance use cases.
- The vendor has a large installed base of trained engineers and the channel breadth to support customers on a global basis.

Cautions

- Based on Gartner client inquiries and Peer Insights reviews, Cisco customers consistently cite concerns over complexity and pricing across the portfolio.

- Lack of integration across Cisco's data center switching products is an issue, and Cisco's product roadmap does not fully resolve this.
- Cisco was late to announce 800G-capable switch interfaces within the Nexus portfolio, compared to other vendors evaluated in this research.

Dell Technologies

Dell Technologies is a Visionary in this Magic Quadrant. Its products in this market include PowerSwitch series switches, SONiC and OS10 NOS, and the SmartFabric Manager. Additional data center network switching functionality is delivered via modules for its PowerEdge server platform. The vendor's operations are globally distributed, and its clients tend to be midmarket and larger enterprises across verticals. We expect Dell Technologies to focus its market investment on high-performance AI fabrics with open architectures, including Omnia and SONiC.

Dell Technologies declined requests for supplemental information. Gartner's analysis is therefore based on other credible sources.

Strengths

- Dell has a solid set of hardware and software capabilities to support AI Ethernet fabrics.
- The vendor has a documented track record of delivering market innovation around open networking and continues to make substantial investments with Omnia and SONiC.
- Dell's strategy and roadmap in this market is focused on addressing emerging enterprise use cases, including AI Fabrics and Open Networking.

Cautions

- Gartner estimates that enterprise adoption of the vendor's SmartFabric Manager is limited (with less than 100 customers).
- Dell Technologies' focus on high-performance fabrics will limit its effectiveness in addressing traditional data center switching environments.
- The vendor has limited data center switching market visibility among Gartner clients, which could hinder its ability to grow in the market.

Extreme Networks

Extreme Networks is a Niche Player in this Magic Quadrant. It provides multiple fabric options in this market, including Extreme IP Fabric and Extreme Fabric Connect. For hardware, its offerings primarily include the Extreme 7000, 8000 and SLX9000 Series switches. For software, the vendor offers SLX-OS and VOSS NOS, and ExtremeCloud Orchestrator and ExtremeCloud IQ management platforms. The vendor's operations are globally distributed, and its clients tend to be midmarket and enterprises across verticals. Gartner expects Extreme Networks to invest in expanding hardware platforms and integrating its data center portfolio into the Platform ONE unified cloud-based management platform.

Extreme Networks declined requests for supplemental information. Gartner's analysis is therefore based on other credible sources.

Strengths

- Fabric Connect is a solid offering for midsize enterprises that are looking for a combined campus/data center infrastructure managed via the same console.
- The vendor is committed to delivering all management aspects of its entire networking portfolio as a service, which can simplify management for customers.
- Multiple carriers have deployed Extreme Networks' data center products, illustrating a capability to deliver cost-effective performance at scale.

Cautions

- Extreme Networks was late to market to deliver 400G-capable interfaces and, as of this writing, does not offer switches with 800G interfaces.
- The vendor's offering is not well-aligned with the emerging needs of enterprises deploying AI fabrics or looking for a SONiC-based infrastructure.
- Compared with other vendors evaluated in this Magic Quadrant, Extreme Networks has been less focused on selling to enterprise data centers in the last 24 months.

H3C

H3C is a Niche Player in this Magic Quadrant. Its products in this market include S Series switches and Comware NOS, known as its Application-Driven Data Center (AD-DC) fabric. The SeerEngine and SeerAnalyzer products provide management and monitoring software. The vendor's operations are primarily in Asia, and its clients tend to be large organizations

across multiple verticals. Gartner expects H3C to focus its investment in this market on expanding hardware platforms and enhancing performance and scale capabilities to optimize Ethernet-based AI fabrics.

Strengths

- SeerEngine and SeerAnalyzer provide effective monitoring, troubleshooting and analysis of the data center fabric.
- The vendor's portfolio is well-aligned with customers deploying large-scale and AI Ethernet fabrics.
- Compared to other vendors evaluated in this research, H3C's overall offering (inclusive of hardware, software and support) is very cost-effective over the life cycle of the equipment.

Cautions

- Based on Gartner's analysis, H3C's planned innovations are less aligned with the broad needs of enterprise and midmarket customers, compared to other vendors in this research.
- The vendor has limited visibility among Gartner enterprise clients, which could hinder its ability to grow in the market.
- H3C's sales and marketing strategy is unlikely to drive enterprise market influence outside of Asia/Pacific.

HPE

Hewlett Packard Enterprise (HPE) is a Challenger in this Magic Quadrant. Its products in this market include HPE Aruba Networking CX Series switches, AOS-CX NOS, and fabric management software via HPE Aruba Networking Fabric Composer and HPE Aruba Networking Central. Additional product offerings include Comware-based switches, managed by Intelligent Management Center (IMC). HPE's operations are globally distributed, and its clients tend to be midmarket and larger enterprises across multiple verticals. Gartner expects this vendor to continue investing in enhancing observability and unification of management, and embedding security capabilities into the switching fabric.

HPE announced its intention to acquire Juniper Networks on 9 January 2024. At the time of analysis and publication, HPE met the inclusion criteria and operated as a separate

legal entity.

Strengths

- HPE has a solid portfolio to address traditional refresh, AI fabrics and embedded microsegmentation enterprise use cases.
- HPE is investing heavily in this market, which will help expand its portfolio and improve functionality to better address enterprise requirements.
- The vendor has a large installed base of data center infrastructure customers, as well as a large channel to support customers on a global basis.

Cautions

- HPE's planned innovations are less likely to disrupt the enterprise market or drive influence in the enterprise compared to other vendors evaluated in this Magic Quadrant.
- HPE does not support SONiC commercially on its hardware or within its fabric management platform.
- HPE has limited market visibility and awareness among Gartner clients, compared to other vendors included in this research.

Huawei

Huawei is a Leader in this Magic Quadrant. Its products in this market include CloudEngine series switches, Yunshan OS NOS and the iMaster NCE management platform. Additional functionality is delivered via iMaster NCE FabricInsights for advanced visibility. Huawei's operations are primarily in Africa, Asia, Europe and Latin America, and its clients tend to be large enterprises across a variety of verticals. Gartner expects this vendor to continue to invest in enhancing its hardware and software capabilities to improve performance and scale for AI-based Ethernet fabrics.

Strengths

- Huawei's product roadmap is well-aligned with emerging enterprise requirements.
- Huawei has extensive hardware and software capabilities and can address nearly all enterprise use cases.
- Huawei's fabric management software has deep management and troubleshooting functionality, an intuitive UI, and advanced predictive capabilities.

Cautions

- Huawei has limited experience with enterprise customers running SONiC.
- The vendor has a limited installed base, and sales are focused in several geographic regions (including North America and Western Europe), which hinders its ability to reach and support those customers, and limits its market growth potential.
- Huawei's marketing programs have limited efficacy compared to other competitors, which limits its growth potential in the market.

Juniper Networks

Juniper Networks is a Leader in this Magic Quadrant. Its products in this market include QFX, PTX and EX Series switches and Junos NOS, and the Apstra management platform. Additional functionality is optionally delivered via Apstra Cloud Services, which enhances visibility and management. The vendor's operations are globally distributed, and its clients tend to be large enterprises across a variety of verticals. Gartner expects Juniper Networks to continue investing in enhancing its hardware and software capabilities to address the emerging scale and performance requirements associated with AI workloads.

HPE announced its intention to acquire Juniper Networks on 9 January 2024. At the time of analysis and publication, Juniper Networks met the inclusion criteria and operated as a separate legal entity.

Strengths

- The vendor's Apstra has strong fabric management functionality and addresses non-Juniper devices, which eases administration, particularly in multivendor environments.
- Juniper Network's planned product innovations are well-aligned with the emerging needs of enterprise customers.
- Juniper Networks' delivers strong customer experience, as measured across multiple inputs, including Gartner client inquiries, reference surveys and Gartner Peer Insights reviews.

Cautions

- In Gartner client inquiry, Juniper Networks customers report high software licensing costs associated with Apstra.

- Juniper Networks' roadmap doesn't align well with smaller organizations that aren't focused on building out high-performance AI fabrics.
- Juniper Networks' customers have expressed concern regarding the pending acquisition by HPE and the uncertainty it creates.

Nokia

Nokia is a Visionary in this Magic Quadrant. Its products in this market include 7000 Series switches, Service Router (SR) Linux and/or SONiC NOS, and the Event-Driven Automation (EDA) management platform. The vendor's operations are global, and its clients tend to be service providers and large enterprises with mature automation capabilities. We expect Nokia to expand its data center switching offering to add enterprise features, while maintaining a strong focus and priority on software reliability.

Strengths

- Nokia's portfolio of hardware and software capabilities addresses the needs of enterprise customers across traditional environments and high-performance fabrics.
- Nokia has driven recent market innovation at the product level via introducing an "app store" construct within its fabric manager and natively embedding a digital sandbox.
- The vendor has an aggressive and clear marketing and sales strategy, which should help it to grow in the market.

Cautions

- Nokia lacks some key capabilities that are common among other vendors in the market, such as endpoint path tracing and group-based policy management.
- The vendor has limited visibility among Gartner clients, which could hinder its ability to grow in the market.
- Compared to other vendors in this research, Nokia has limited expertise in the enterprise data center switching market as a newer entrant in the space, with a smaller installed base of customers.

NVIDIA

NVIDIA is a Challenger in this Magic Quadrant. Its products in this market include Spectrum Switches and Cumulus Linux or SONiC NOS, managed by NetQ. Additional functionality is delivered via Air for simulation/testing, RCP for network configuration within an AI cluster and NVUE for device/configuration via CLI/API. The vendor's operations are globally distributed, and its clients tend to be enterprises of all sizes in a variety of verticals. We expect NVIDIA to focus its market investments on emerging performance and scale needs for AI fabrics.

Strengths

- NVIDIA's portfolio is well-aligned with the needs of enterprises deploying performance-stringent workloads, including AI Ethernet fabrics.
- The vendor's roadmap and planned innovations are well-aligned with the needs of customers deploying AI workloads in their data centers.
- NVIDIA has strong financial viability, which can help its ability to invest and grow in the market.

Cautions

- NVIDIA has limited focus and expertise in traditional data center enterprise switching environments that aren't associated with high performance.
- The vendor's pricing is higher than most competitors, due in part to a focus on high-performance use cases.
- NVIDIA's fabric manager lags behind competitors in terms of switching device life cycle management. The result is that clients must use multiple tools within NVIDIA's portfolio to address switch life cycle management.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

No vendors have been added because this is a new Magic Quadrant report for this market.

Dropped

No vendors have been dropped because this is a new Magic Quadrant report for this market.

Inclusion and Exclusion Criteria

To qualify for inclusion, providers need to meet all of the following requirements:

Key Terminology/Definitions

- Gartner defines “enterprise” as an organization with at least $50 million in annual revenue and/or 100 to 1,000 employees. Gartner defines “large enterprise” as an organization with at least $1 billion in annual revenue and/or over 1,000 employees. Enterprises can be a private for-profit organization or not-for-profit entities such as charitable organizations, government and education institutions.
- Gartner defines “general availability” (GA) as the release of a product to all customers. When a product reaches GA, it becomes available through the company’s general sales channel — as opposed to a limited or controlled release, pre-GA or beta version.

General Requirements

- Provide a GA data center switching offering as of 1 January 2025. All components must be publicly available, shipping and be included on the vendors’ published price list as of this date. Products shipping after this date only may influence the Completeness of Vision axis.
- Provide commercial support and maintenance for its enterprise data center switching offering (24/7) to support deployments on multiple continents. This includes hardware/software support, access to software upgrades, security patches, troubleshooting and technical assistance.
- Participate in the enterprise data center switching market, evidenced by actively pursuing enterprise data center switching opportunities, including selling and publicly marketing data center switching to enterprise customers.

- Be committed to developing new features for their data center switching offerings through calendar year 2025, and have no current plans to exit the market.
- Provide its data center switching product as a stand-alone offering and doesn't require purchase of a broader bundle such as a compute stack or application stack.
- Offer its data center switching product without the requirement for customers to consume it as a managed service.
- Own the majority of the intellectual property associated with its data center switching offering.

Product Requirements

- NOS software that is meant for installation on a physical Ethernet switch that controls both hardware (i.e., LED, physical ports, fan, power) and logical components (i.e., routing and switching).
- Fabric management software that enables multiple Ethernet switches to be managed as a single construct (a single logical entity) with a common API and user interface (UI).
- Centralized management software that includes role-based access control (RBAC) to enable life cycle management of switches and NOS. This includes an administrative UI that enables provisioning, configuration management, troubleshooting, analytics and reporting.
- Turnkey commercially supported integrations with at least one of the following: ServiceNow, Ansible, Terraform, vCenter or Kubernetes.

Customer Relevance/Adoption

- At least 100 unique enterprise customers that have purchased and deployed the vendor's data center switching offering in a production environment and are under an active commercial support license
- A primary offering that must address at least one use case (as defined by Gartner in the Critical Capabilities research) for data center switching
- At least 25 unique data center switching customers headquartered in multiple continents, under active support contracts — for example, 25 customers in Asia and 25 separate customers in North America

Honorable Mentions

- Arrcus has relevant switching software and is investing in this market, but did not meet adoption inclusion criteria as of the research cutoff date.
- Asterfusion Data Technologies has relevant technology and is investing in this market including SONiC-based offerings, but did not meet product inclusion criteria as of the research cutoff date.
- Aviz Networks has relevant networking software technology and is investing in this market, but did not meet adoption inclusion criteria as of the research cutoff date.
- Fortinet offers data center switches, but did not meet product inclusion criteria as of the research cutoff date.
- Hedgehog has relevant data center networking software and is investing in this market, but did not meet adoption inclusion criteria as of the research cutoff date.
- IP Infusion has relevant data center networking software and is investing in this market, but did not meet enterprise adoption inclusion criteria as of the research cutoff date.
- Netris has relevant data center networking software and is investing in this market, but did not meet product adoption inclusion criteria as of the research cutoff date.
- Ruijie Networks has relevant technology and is investing in this market, but did not meet geographic adoption inclusion criteria as of the research cutoff date.

Evaluation Criteria

Ability to Execute

Product or Service: We evaluate vendors by looking at their overall Data Center switching offering, including both hardware and software aspects. We consider the breadth and depth of data center switching functionality, including enterprise use cases they support. Specific functionality assessments include:

- Fabric management
- Ease of administration

- Platform integrations
- Automation integrations
- Embedded security
- Hardware platforms
- NOS
- High-performance networking
- Function accelerator card (FAC)/data processing unit (DPU) integration
- SONiC integration
- Product architecture

Overall Viability: We assess the vendor's overall financial health and the likelihood that the organization will continue to invest across multiple areas (marketing, sales, product, support) and grow its enterprise data center switching offering.

Sales Execution and Pricing: We assess the vendor's pricing and direct/indirect sales structure and effectiveness. The majority of this assessment is based on pricing/licensing offered to enterprise customers. We assess the pricing/licensing model, simplicity/complexity of pricing and ultimate value of the offering. For sales execution, we look at setup, investment and overall effectiveness of go-to-market activities of both the vendor's internal sales resources and its channels, and across geographies.

Market Responsiveness and Track Record: We assess the vendor's track record in delivering the right capabilities at the right time to address enterprise customer needs, compared with competitors. This criterion considers the vendor's history of responsiveness in terms of changing market demands and addressing limitations. This evaluation focuses primarily on product capabilities, including hardware and software, such as new features and interface speeds. However, it is not limited exclusively to products as it also includes broader emerging market trends.

Marketing Execution: We assess the efficacy of the vendor's marketing program. We evaluate the clarity, consistency and amplitude of messages, including (but not limited to) its website, social media channels, etc. We focus on whether the vendor's main messages resonate with enterprises, including key points of differentiation. We assess whether the

vendor is making appropriate investments in marketing and if they're delivering results. We look at how prominently prospects consider the vendor.

Customer Experience: We assess all aspects of the customer experience, including pre- and post-sales activities. This includes customer feedback regarding full life cycle experiences with the vendor's data center switching products, including presales, implementation, hardware/software quality and technical support. We look at how the vendor manages customer experience, as well as the broader corporate aspects of customer experience, including employee engagement.

Table 1: Ability to Execute Evaluation Criteria

Evaluation Criteria	*Weighting*
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	Medium
Market Responsiveness/Record	Low
Marketing Execution	Low
Customer Experience	High
Operations	NotRated

Source: Gartner (March 2025)

Completeness of Vision

Market Understanding: We assess the vendor's ability to understand the current and emerging data center switching needs of enterprises. Further, we look at the vendor's self-

awareness of its strengths and weaknesses, and its ability to recognize the competitive landscape in the market.

Marketing Strategy: We evaluate the ability of the vendor to influence the market into the future, through its messaging and marketing campaigns. This includes the vendor's plans to invest in its marketing program and ability to deliver concise, relevant and consistent forward-looking marketing messages that are aligned with buyer personas. We look at whether the strategy will raise awareness, generate leads and create thought leadership.

Sales Strategy: We evaluate the vendor's proposed use of direct and indirect sales and related investments to add new customers and/or extend sales within existing customers. Further, this includes the extent to which the vendor articulates a clear, consistent, and relevant sales strategy that resonates with enterprises. In addition, this includes how the vendor leverages new pricing models that are emerging due to market and technology transitions.

Offering/Product Strategy: We evaluate the vendor's data center switching product strategy. This includes key areas of focus and specific planned product enhancements the vendor has on its roadmap. When looking at roadmap plans, we look at value to target enterprise customers, range of customers impacted and market timeliness. We also assess whether the vendor closes key gaps in its existing offering. This is an assessment of the vendor's most impactful enterprise plans, not every single feature on the roadmap.

Innovation: We evaluate the vendor's plan to drive market innovation, including bringing unique and valuable capabilities to enterprises that add new value and/or to solve existing challenges in a more effective manner. We assess whether the vendor's most recent and planned innovations will add enterprise customer value, whether they're unique or differentiated, and whether they're true game changers. The majority of the weighting for this category is applied to future innovations, not current in-market capability. Innovation is not simply a list of new features/functionality or product improvements; it can be created across multiple areas, including product, pricing, go-to-market, use cases, etc. The most impactful innovations change the tenor of a market in terms of customers. Hence, we assess whether the vendor's innovations will disrupt the market via shifting enterprise customer expectations and/or forcing competitors to react.

Geographic Strategy: We assess whether the strategy is consistent and will resonate with enterprises in order to add or sustain customers on a global basis. We assess multiple

aspects of the vendor's plans to address specific needs within particular geographies, including localized technical support, documentation and product UIs.

Table 2: Completeness of Vision Evaluation Criteria

Evaluation Criteria	*Weighting*
Market Understanding	Low
Marketing Strategy	Low
Sales Strategy	Low
Offering (Product) Strategy	High
Business Model	NotRated
Vertical/Industry Strategy	NotRated
Innovation	Medium
Geographic Strategy	Low

Source: Gartner (March 2025)

Quadrant Descriptions

Leaders

A Leader can address current requirements in the market, as well as influence and impact future market direction. Leaders typically have strong offerings that address multiple use cases today, and have strategic plans that are well-aligned with emerging user needs across multiple use cases into the future. The vendor has strong potential to drive, shape and transform the market going forward.

A Leader typically has good visibility among customers/prospects, strong products (including hardware and software), a sizable installed base of customers and financial strength. Further, leaders typically maintain positive relationships with their customers on a global basis. A Leader typically is increasing its investments in the data center switching market. However, leaders may not fully address the specific needs of specialized market segments (such as a vertical market, geographic region or specific use case).

Challengers

A Challenger has a proven ability to address current end-user requirements in the market. A Challenger typically has good visibility among prospective buyers, a sizable installed base of customers, financial strength and products that are more than good enough for multiple use cases.

However, a Challenger's strategy and roadmap are typically narrower compared with Leaders and are consequently less likely to transform the enterprise market going forward. Larger vendors in mature markets may be positioned as Challengers because they choose to minimize risk or avoid disrupting their customers or their own activities.

Visionaries

Visionaries can disrupt and often help transform the market — from driving new ideas/innovations, including addressing emerging use cases, to solving longstanding enterprise challenges. While Visionaries often have a solid strategy and roadmap, they often lack a consistent, proven ability to address customer challenges in a scalable manner to date. For example, a visionary may have a limited installed base of customers, lack visibility to prospects, offer only partial geographic coverage, or lack comprehensive product capabilities across all enterprise use-case requirements today.

Niche Players

A Niche Player may be a perfect fit for your requirements. Niche Players are often focused on specific portions of the market, such as a specific use case, geography, vertical or technological specialty. They have a viable technology but have not shown the ability to drive the broader market or sustain execution in the broad enterprise market. A Niche Player typically has some limitations that manifest outside of their core focus areas. These limitations often include hardware or software depth, geographic reach, market visibility, target customers and installed base. For example, Niche Players may be focused on only

certain use cases, geographies or evolving their existing installed base. This focus can create limitations in the broader market, including reducing their ability to address emerging customer needs.

Context

The primary enterprise driver to investment in data center switches is hardware refresh and new data center buildouts. Within these refresh and buildout initiatives, security (notably segmentation) and automation are top-of-mind priorities for I&O networking leaders. Over the past year, the top questions from Gartner clients in this market include:

- How do we modernize our data center networking infrastructure?
- How can we enhance the level of security in our data center network and/or apply zero-trust or segmentation and microsegmentation?
- What are the key differences when choosing between major network vendors?
- What are the best practices for implementing network automation within my data center network?
- How do we address emerging requirements and trends including connectivity to support AI infrastructure?
- How can we optimize our spend on a vendor’s data center switching proposal?
- What are the best practices for migrating from existing to new data center networking platforms?

In addition, Gartner has observed renewed client interest in data center networking and switching over the last 24 months. Particularly, larger organizations are also focused on building infrastructures to support AI GPU-based workloads. The emerging demand for on-premises AI workloads requires new approaches, designs, and in some cases, new vendors because AI workloads demand high-performance infrastructure and new software features.

Market Overview

Data center switches are Ethernet switches installed in a data center environment to provide LAN connectivity to endpoints, including servers and other data center devices such as firewalls and mainframes. Gartner estimates that there are 100,000 customers with data centers switches, supporting 400,000 physical data center sites.

Core Components

The foundational aspects of vendor offerings in this market include fabric management software, NOS and hardware platforms. Fabric management software allows multiple switches to be managed as a single logical construct and are programmatically accessed via API. Fabric managers are also used to integrate with other data center systems such as cloud, container and automation tools.

Implementation: The most common physical design we observe for new deployments is a two-tier leaf-spine topology. However, 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. 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.

Key Market Drivers

Larger organizations are the primary buyers of data center switching infrastructure. Enterprises typically invest in data center switches as a result of hardware refresh cycles or new buildouts to support applications.

In the past 24 months, Gartner has seen accelerated change driven by the need to support AI workloads. AI workloads have different requirements than most existing data center workloads, and most existing enterprise data center switch deployments are suboptimal to support traffic from AI workloads. Specifically, AI workloads have much more stringent requirements around performance and loss.

AI adoption creates demand for new investment in switching. This represents substantial growth and revenue opportunity for vendors, and Gartner is seeing vendors invest heavily in their products to address high-performance network requirements for AI. This includes the need to create highly performant and lossless networks that are also power efficient to maximize GPU usage.

This is driving specific feature enhancements around higher bandwidth interfaces (800G and beyond), power-efficient hardware and optics, and features to optimize GPU traffic flows. Specific emerging feature capabilities include advanced low-entropy mitigation, adaptive load balancing/routing, advanced congestion protocols, highly granular telemetry, support for emerging Ultra Ethernet specifications, and support for new topologies/architectures including rail-optimized technologies, dragonfly, etc.

AI Fabrics

We observe (and recommend) clients building out dedicated fabrics to optimize GPU-to-GPU connectivity. This is resulting in new topologies and architectures being evaluated and deployed, including chassis-based (more devices on a single switch), rail-optimized (optimized for rail topologies), FAC/DPU-assisted networking and Dragonfly (full-mesh between compute).

The AI push has created a focus on energy efficiency, which is driving adoption of network designs that optimize and reduce power consumption. This focus has led to innovations in optics, cabling and interconnectivity technology. It has also spurred the creation of industry consortiums, including ultra Ethernet and ultra accelerator link. The goal of these consortiums is to create standard mechanisms that enable high-performance and lossless data network connectivity across Ethernet and interconnection.

Market Direction

Over the next 24 months, Gartner believes the biggest enterprise drivers will remain refreshes of existing infrastructure and new investments to support AI infrastructure. We believe that the current state of practice, which is a two-tier CLOS leaf/spine, will remain the primary topology in enterprise data center networks for the next 24 months. However, AI is driving several simultaneous changes, which result in network shifts in topology, architecture and sustainability.

AI is changing the dynamics of the market. NVIDIA, which sells chips/NICs/switches, offers a fully vertically integrated stack. This is driving vendors to behave differently, and we expect other chip companies, such as Intel, Broadcom and AMD, to more prominently position themselves in the market — increasingly going after the enterprise directly.

Refer to Gartner's **Forecast: Enterprise Network Equipment by Market Segment, Worldwide, 2022-2028, 4Q24 Update** research for market forecasting.

SONiC and Open Networking

Gartner continues to see consistent interest in SONiC from large organizations. SONiC is a modular, open-source NOS written and open-sourced by Microsoft that is now under the Linux Foundation. We estimate that several hundred organizations, including Baidu, Comcast, eBay, LinkedIn, Microsoft, Target, and Tencent are running SONiC in production, mostly in very large environments. We estimate that about 30% of existing SONiC adoption is in the enterprise.

Market Recommendations

For organizations making investments in data center switching hardware, software and associated management, Gartner recommends focusing on the management and automation aspects of the underlay rather than the hardware characteristics of the switches:

- Deploy rightsized physical infrastructures by using a leaf-spine design with fixed-form-factor switches and 25G/100G-capable interfaces to address traditional data center workloads.
- Build out separate physical dedicated switches for AI/GPU-based workloads, with higher-speed interfaces on a limited number of switches.
- In smaller environments (500 VMs or fewer), adopt a two-switch implementation and look for SaaS-based management consoles to simplify operational overhead.
- In very large (more than 250 switches) environments and/or within forward-leaning organizations, pilot SONiC as an NOS to drive innovation and reduce vendor lock-in.

This is the first version of the Magic Quadrant for Data Center Switching. It replaces the **Market Guide for Data Center Switching**.

⊕ Evidence

⊕ Evaluation Criteria Definitions