Cisco Nexus Hyperfabric

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Cisco Nexus® Hyperfabric is a cloud-managed network fabric data-center solution, delivered as a service, that enables customers to easily design, deploy, manage, and scale multiple fabrics globally with a minimum of expertise.

Product overview

Cisco Nexus Hyperfabric enables customers to easily design, deploy, and scale any number of data- center fabrics located anywhere. Delivered as a fabric-as-a-service solution, it reinvents and simplifies every step of IT operations, ensuring repeatable and predictable outcomes.

Cisco Nexus Hyperfabric is a cloud-managed vertical stack solution consisting of purpose-built hardware, software, a cloud controller, day-2 operations, automation, and Cisco support that eliminates complexity. IT, application and DevOps teams manage the full lifecycle of designing, ordering, deploying, validate, monitoring, and scaling fabrics without requiring deep networking or operational expertise.

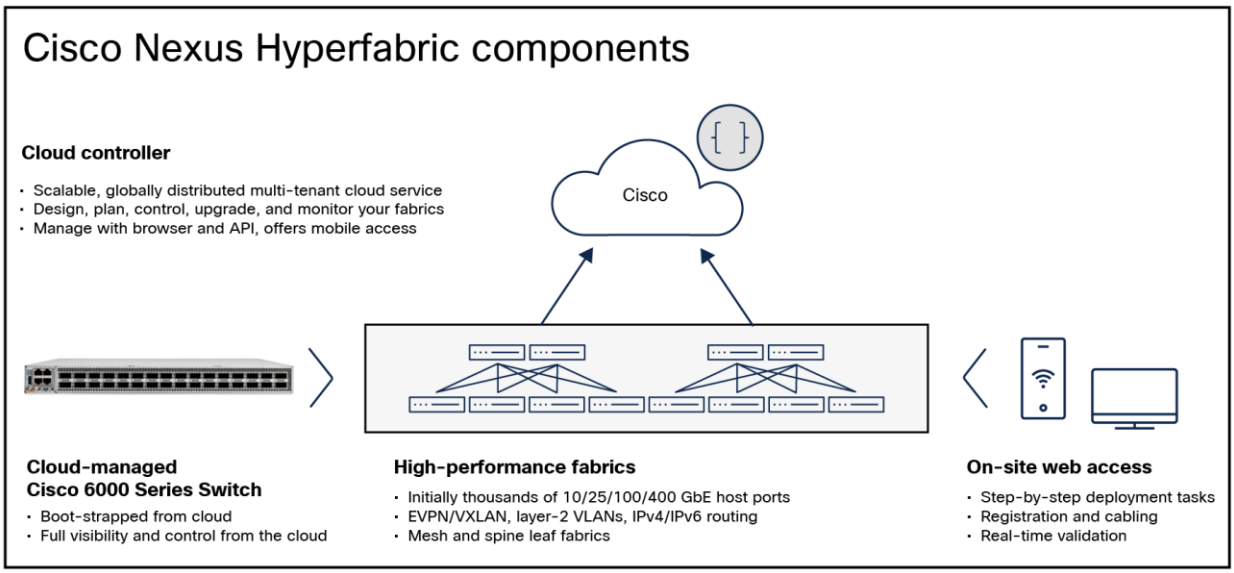

Figure 1.
Cisco Nexus Hyperfabric vertical stack solution

Customers log in to Nexus Hyperfabric to begin building a validated fabric design tailored to their desired host and port capacity, oversubscription and environmental considerations such as cabling and power. Customers then define the Layer-2 and Layer-3 networks the fabric exposes to hosts, maps them to ports, and specifies the routing needed to connect the fabric to the rest of the network. Nexus Hyperfabric is integrated with Cisco's ordering tools to guarantee there are no errors when converting the components in a design into a bill of materials. When the Cisco 6000 Series Switches arrive on site and are deployed, they automatically connect to the cloud, to be claimed and provisioned by the cloud controller with a zero-touch plug-and-play approach. This process takes just minutes and results in a fully operational network fabric. Assertion-based monitoring of availability and reliability of the fabric and connected resources are continuously verified, and the root cause of any issue detected is immediately identified. Later, if it is necessary to change the capacity or shape of the design, customers can modify the in-flight design, approve the changes, and follow the entire design to deploy process again. Nexus Hyperfabric provides guidance for all the physical changes needed to migrate the old topology to the new desired state, including cabling adjustments, and it reconfigures itself automatically.

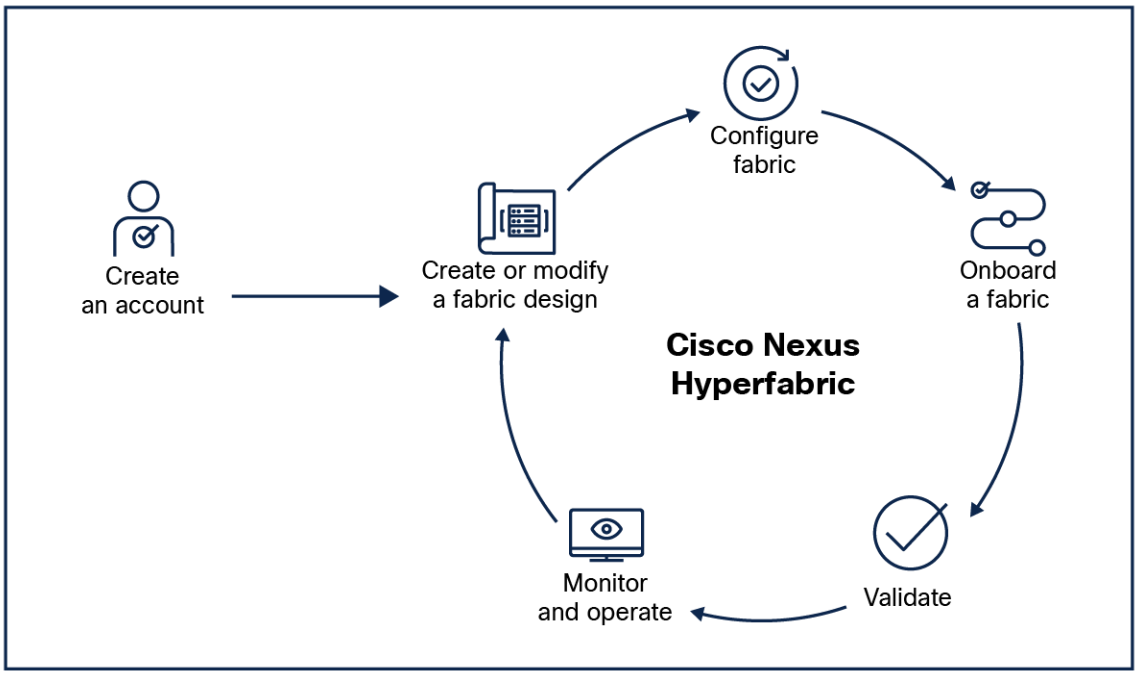

Figure 2.
Cisco Nexus Hyperfabric lifecycle

Features and benefits

Table 1. Feature and benefits

Feature	Benefit
Cloud controller managed by Cisco	Manage any number of data-center network fabrics globally with a minimum of expertise
Ease of use	Designed for use by IT generalists and application and data-science teams; no deep network or operational expertise required
Cloud-delivered automation	After the Layer-2, Layer-3, and upstream routing services have been defined, the rest of the system is then automatically provisioned and becomes operative.
Edge and remote fabrics	Operate fabrics of one or more switches located anywhere globally, with no local management required
Designer	Guides the process of designing the topology, exposed network services, and upstream route peering, then generates a bill of materials, a cabling plan, and a ready-to-operate blueprint
Automated lifecycle management	Switch software reliably and automatically upgraded according to your schedule and chassis order
API first	DevOps tools such as HashiCorp Terraform and Red Hat Ansible integrate once to the Nexus Hyperfabric cloud controller, so all your fabrics are provisioned and managed from a single API endpoint

Prominent feature

Cloud-managed solution

A cloud controller operated by Cisco manages your fabrics regardless of where they are geographically located, and eliminates the need to deploy and manage your own on-premises provisioning and monitoring tools. The cloud controller is a scalable, distributed, multitenant service hosted in the public cloud. Starting from fabric design, the cloud controller spans Nexus Hyperfabric's entire operational lifecycle. The service includes capacity and environmental planning, fabric tenant port allocation, bill-of-materials and cabling planning, web-based step-by-step deployment assistance, device claiming and assignment, day-2 monitoring, software management, and fabric redesign, all in a single interface with a consistent workflow. An API-first approach allows you to integrate your operation tools or use built-in integrations with leading industry provisioning and monitoring products.

Easy enough for IT generalists and application and DevOps teams to operate

Designed for simplicity, Cisco Nexus Hyperfabric enables operators with a diversity of skills to reliably deliver working solutions with minimal effort. Customers do not need to manage controller or switch configurations, understand complex fabric protocols, or manage the switch-network operating system. The cloud controller guides you through all stages of building and maintaining the fabric – from designing, to ordering, to deploying, to validating, to monitoring, to scaling, to collaborating. This ensures standardization, repeatability, and reliability. Scaling the fabric up or down can be done easily. Ergonomically, it offers an operational model akin to cloud hosting rather than on-premises tooling.

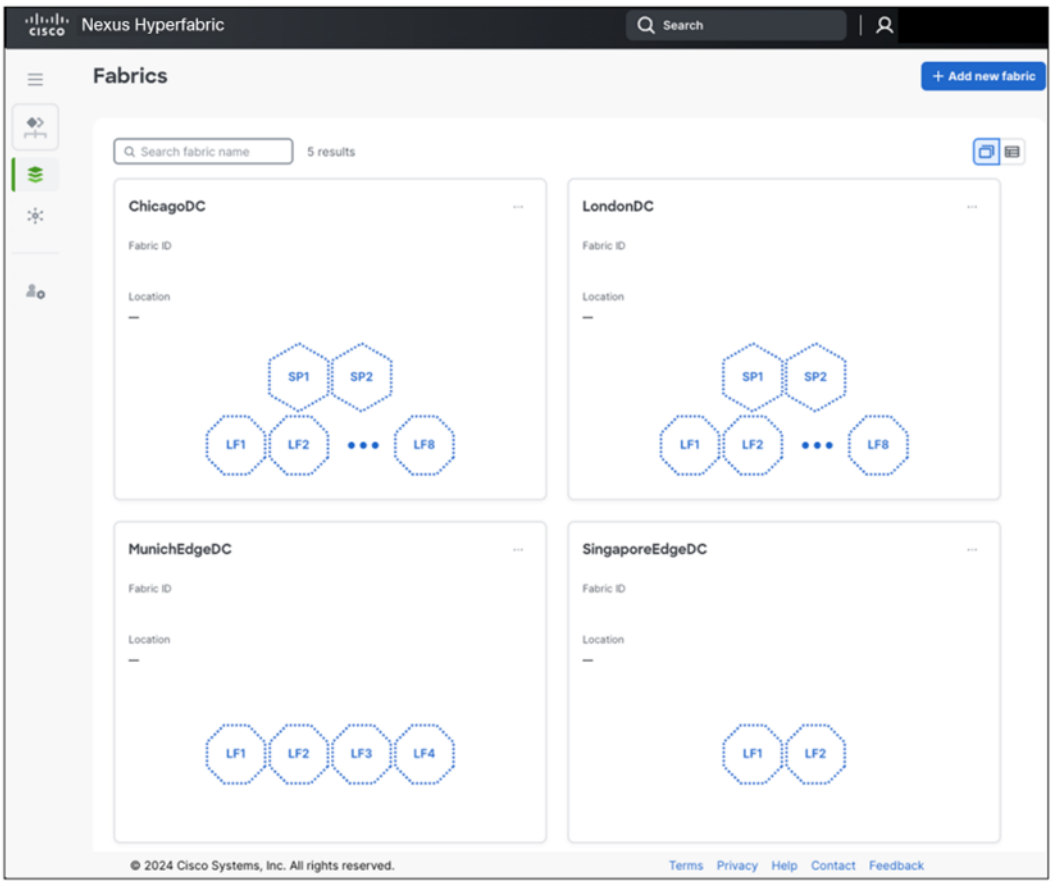

Figure 3.
Add fabrics with ease

High-performance fabrics

Fabrics need high-performance bandwidth, reliability, simplicity, and a small footprint. With Cisco Nexus Hyperfabric, you may deploy switches wherever your organization requires them – all they need is connectivity to the public internet to tether to the cloud controller. Port speeds in the Cisco 6000 Series Switches range from 10 to 800 Gb, and optics are available to down shift to 1 Gb, allowing you to deploy scalable, high-performance fabrics. Cisco Nexus Hyperfabric switches are fully cloud-managed – all visibility and control are done through the cloud controller rather than through a command line interface. Fabrics can scale down to a single or a pair of switches or scale up to a full spine-leaf topology to cover edge and primary data-center deployments. Fabrics are based on Ethernet VPN-virtual extensible LAN (EVPN-VXLAN) underlay networks that are automatically provisioned and monitored without the need to be integrated with your network's addressing and upstream routing.

Vertical stack solution

Cisco Nexus Hyperfabric is a purpose-built data-center network fabric-as-a-service solution consisting of hardware, software, cloud management, day-2 automation, and Cisco support. Cisco Nexus Hyperfabric manages the cloud controller, which is the single point of administration for all fabrics regardless of location. Switches connect to the cloud for full lifecycle management, and fabrics are automatically built and maintained by the controller. Telemetry, monitoring, and Cisco® TAC support are all part of the solution.

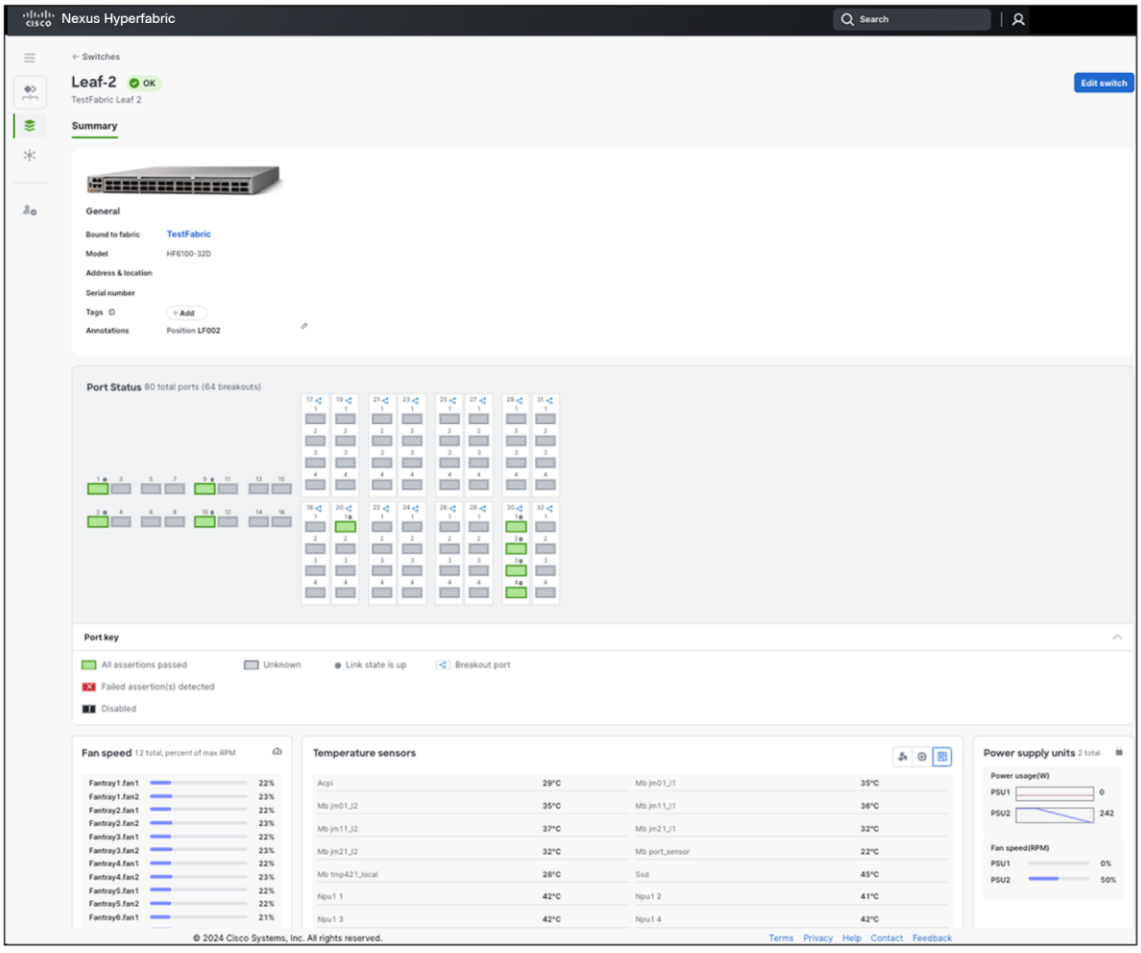

Figure 4.
Cloud-managed switch

Platform support

Table 2. Cisco Nexus Hyperfabric switch platform support

Product family	Platforms supported	Feature sets supported
Cisco 6000 Series Switches	HF6100-60L4D, HF6100-32D, HF6100-64ED	Cisco Nexus Hyperfabric Essentials and Premier licenses

Licensing

A subscription entitlement is needed for every Cisco 6000 Series Switch that is deployed and used. Subscription entitlements may be initially purchased for three, five, or seven years and may be renewed. The subscription-feature entitlement tiers are based on fabric use cases. Currently, two packages are available: one ("Essentials") for general-purpose fabrics and the second ("Premier") for AI fabrics. All the switches in a fabric must use the same entitlement tier; however, an organization may concurrently manage multiple fabrics that use different entitlement tiers.

Table 3. Entitlement feature tiers

Features	Essentials entitlement	Premier entitlement (only for Cisco Nexus Hyperfabric AI)
Cisco support 8x5xNBD	Yes	Yes
Cloud controller	Yes	Yes
Designer (no purchase required)	Yes	Yes
Cloud-driven Software Upgrades	Yes	Yes
BOM Generation with Optics	Yes	Yes
On-site Deployment Assist	Yes	Yes
Plug and Play Deployment	Yes	Yes
Spine-Leaf Topologies	Yes	Yes
Mesh (Spineless) Topologies	Yes	Yes
EVPN/VXLAN underlay (opaque)	Yes	Yes
Static and BGP routing	Yes	Yes
MLAG	Yes	Yes
Supports RDMA over Converged Ethernet v2 (RoCEv2)	Yes	Yes
Real-time Cloud-Accessed Telemetry	Yes	Yes
IPv4 and IPv6	Yes	Yes
Assertion-based Monitoring	Yes	Yes

Features	Essentials entitlement	Premier entitlement (only for Cisco Nexus Hyperfabric AI)
Survivable Data and Local Management Plane	Yes	Yes
Hardware-based Attestation and Security	Yes	Yes
API for Headless Provisioning and Monitoring	Yes	Yes
AI Use-case Support	Yes	Yes
Aligned to NVIDIA Enterprise Reference Architecture	No	Yes
Deploy AI Validated Blueprints Built into Workflow	No	Yes
Automatically Provisions Lossless Backend AI and Storage Networks	No	Yes
Internal Performance Monitoring between Switches and Servers	No	Yes
Options for AI Servers	Cisco UCS or Bring-Your-Own	Bundled Cisco UCS

Product sustainability

Information about Cisco's environmental, social, and governance (ESG) initiatives and performance is provided in Cisco's CSR and sustainability reporting.

Table 4. Cisco environmental sustainability information

Sustainability topic		Reference
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries, and packaging	WEEE Compliance
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
	Countries and regions supported	Table 6: Regulatory Compliance
Power	Power (including pluggable)	Table 11: Card Specifications
Material	Product packaging weight and materials	Contact: environment@cisco.com
	Weight	Table 11: Card Specifications

Cisco and partner services

Cisco and partner services offer a wide range of services to help accelerate your success in connecting Cisco 6000 Series Switches to the Nexus Hyperfabric cloud controller. Our innovative service offerings are delivered through a unique combination of people, processes, tools, and partners and are focused on helping you increase operational efficiency and improve your network control. Cisco Nexus Hyperfabric solution provides proactive support with the Cisco SMARTnet® service to help you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources. Spanning the entire network lifecycle, our service offerings help increase investment protection, optimize network operations, support migration operations, and strengthen your IT expertise.

For more information, please visit www.cisco.com/go/services.

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For more information

Try before you buy

Anyone with a Cisco ID or CCO ID may log into the Cisco Nexus Hyperfabric cloud controller at hyperfabric.cisco.com to request an organization identifier; they can then begin building network fabric blueprints for free.

Document history

New or revised topic	Described in	Date
Updates were made throughout the entire data sheet.	The entire data sheet.	October 2024

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