Cisco Nexus Dashboard



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Overview and definitions

Q: What is Cisco Nexus® Dashboard?

A: Cisco Nexus Dashboard is the simplest way to provision, manage, and operate data-center networks. It is a unified automation and operations platform that provides unprecedented simplicity by integrating services to configure, operate, and analyze customers' data-center networks through a single pane of glass. Using the Cisco Nexus Dashboard, IT operations teams can navigate seamlessly all aspects of infrastructure lifecycle tasks from initial configuration and capacity planning to running and troubleshooting their data-center networks.

Cisco Nexus Dashboard integrates these common data-center services into its platform, streamlining installation, upgrade, and usage. Users no longer select individual services, thereby simplifying their experience.

Q: What is the role of the Cisco Nexus Dashboard?

A: The new Cisco Nexus Dashboard unleashes a unified management experience and automation workflows by standardizing on the Cisco Nexus Dashboard platform (physical/virtual/cloud). Customers can now standardize operations' processes on a single platform, and teams can use advanced visibility, analytics, monitoring, orchestration, and deployment services from a unified pane of glass. The Cisco Nexus Dashboard platform can be deployed across data-center network infrastructure in the form factor of your choosing (physical/virtual or cloud). The Nexus Dashboard platform is extensible, integrates with third-party services such as Panduit and Splunk, and provides the central point for cross-domain integrations.

Q: Are Nexus Dashboard Fabric Controller, Insights, and Orchestrator still individual services that need to be enabled?

A: No, starting with Release 4.1, they are no longer individual services running on Nexus Dashboard. Moving forward, Nexus Dashboard will be a single image installation of a single product. All Fabric Controller, Insights, and Orchestrator functionalities are now features of the Nexus Dashboard product. Features are enabled based on Data Center Networking (DCN) licensing entitlement. Please refer to this page to learn more about the licensing tiers.

Q: What scale and size of data-center fabrics can Cisco Nexus Dashboard support?

A: Cisco Nexus Dashboard can configure, manage, and analyze from small sites to very large enterprise-grade implementations of Cisco Nexus switches. With its flexible hosting model (physical, virtual, and cloud-hosted), customers can choose the right model that is applicable to their environment. Refer to Nexus Dashboard Capacity Planning for more details.

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How to buy?

Q: Where can I find more information about how to run Cisco Nexus Dashboard?

A: Please refer to the Nexus Dashboard ordering guide.

Q: What type of licensing does the Cisco Nexus Dashboard require?

A: Cisco Nexus Dashboard and its services do not require an additional license. Based on the license level purchased for your Cisco Nexus 9000 Series switches, you will be entitled to use Cisco Nexus with different feature sets. For example, automation features and a selected number of visibility and telemetry features are included from the Cisco Data Center Networking **Essentials** tier. Visibility into basic inventory (including switches, controllers, interfaces, and endpoints), capacity, topology, software/hardware conformance, Sev-1 PSIRTs, and basic anomalies are included in the Essentials tier.

Orchestration and additional visibility and telemetry features require a Cisco Data Center Networking (DCN) **Advantage** license, and the full visibility and telemetry feature set requires a Cisco DCN Premier device license. Visibility into data and inventory (L3 neighbors, virtual port channel domains, routing tables), CAM analyzer, scale conformance, advisories, sustainability, and delta analysis (basic) are included in the Advantage tier.

A full feature set of Cisco Nexus Dashboard Insights is delivered as part of Cisco DCN **Premier** device license.

For a full list of features, please see the Cisco Data Center Network Subscriptions page.

Q: I have a Day 2 Operations license. How should I proceed?

A: Cisco Nexus 9000 Day 2 Ops Software licenses have been EOL'd (have reached their End-of-Life): https://www.cisco.com/c/en/us/products/collateral/switches/nexus-9000-series-switches/day-2-ops-eol.html

To migrate your licenses following subcription expiration, please contact your designated sales representative. Nexus Dashboard uses an honor-based licensing model, so product functionality will not be impacted during migration.

Q: I have a DCNM license? How should I proceed?

A: Cisco Data Center Network Manager (DCNM) licenses are still supported with Nexus Dashboard. Cisco DCNM server-based licenses that were generic for a given product family (for example, DCNM-LAN-N77-K9=, etc.) were tied to the DCNM server's MAC address. With Nexus Dashboard Fabric Controller, there is no "server MAC address," so the DCNM server-based licenses will need to be converted to Smart Licenses to be consumed with Nexus Dashboard.

Please refer to the following migration guide: https://www.cisco.com/c/dam/en/us/products/se/2020/8/Collateral/brownfield-conversion-qrg.pdf

Q: Is there a new way of ordering the Cisco Nexus Dashboard platform?

A: To order the newest generation Nexus Dashboard cluster, please use PID ND-CLUSTER-G5S, which is based on the Cisco UCS® M8 server architecture. Additional nodes can be purchased through the PID ND-NODE-G5S= (a Cisco Nexus Dashboard platform node based on the Cisco UCS M8 server). The previous generation you can order is ND-CLUSTER-L4, which is based on the Cisco UCS M6 server architecture. Additional nodes can be purchased through the PID ND-NODE-L4= (Cisco Nexus Dashboard platform node based on the Cisco UCS M6 server). The new generation of the platform and Product IDs (PIDs) are backward compatible. And virtual form factors of Cisco Nexus Dashboard (Open Virtualization Archive [OVA], KVM) may be purchased through ND-VIRTUAL. Please refer to the ordering guide.

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Q: What benefits do the new Cisco UCS M8 server bring?

A: The new Cisco UCS M8 server offers a range of enhanced benefits for users. It delivers improved scalability for both Traffic Analytics flows and switch management. Additionally, redundant hardware is now included as part of the standard configuration.to ensure increased availability.

Q: I'm currently using a Cisco UCS® M5 or M6 server. What happens when I upgrade my Nexus Dashboard to the 4.x release train?

A:

Hardware	What will remain the same?	What will change?
Cisco UCS M5 server	You can continue to leverage all the features you've been using on Nexus Dashboard, while also taking advantage of new capabilities introduced in version 4.1. The maximum switch scale will remain the same.	There will be no single product deployment scale. If you have separate clusters managing different features (ex: one cluster for controller, one cluster for telemetry), you may onboard them onto your controller-led cluster and co-locate.
Cisco UCS M6 server	You can continue to leverage all the features you've been using on Nexus Dashboard, while also taking advantage of new capabilities introduced in version 4.1. The maximum switch scale with remain the same.	We will offer a new single product deployment scale of 200 switches, where automation, telemetry, and orchestration functionality can all be leveraged on a single M6 cluster of Nexus Dashboard.

Q: Do I need to purchase a service/support PID for Virtual Nexus Dashboard?

A: The Virtual Nexus Dashboard PID "ND-VIRTUAL=" is free ($0). This PID provides the entire cluster. Reference the release notes for scale information. A support contract specific to Virtual Nexus Dashboard is not required. It is covered by the switch support.

Q: Do I need to purchase a service/support PID for Nexus Dashboard?

A: Please refer to the Data Center Networking (DCN) subscription document.

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Deployment guidelines

Q: Where can the Cisco data-center networking services version compatibility information be found? Are there any constraints to fabric versions?

A: Refer to the Cisco Data Center Networking Applications Compatibility Matrix.

Q: What is the scale (that is, how many sites and switches) Cisco Nexus Dashboard platform can support?

A: The Cisco Nexus Dashboard platform is built on scale-out architecture, which means you can add more nodes if you require additional resources. Please refer to the Nexus Dashboard sizing calculator to determine the cluster size.

Q: Does the Cisco Nexus Dashboard require connectivity to the internet? Can it be used on an air-gapped system?

A: When hosting Cisco Nexus Dashboard Insights on Cisco Nexus Dashboard, Cisco Nexus Dashboard needs to be connected to Cisco Intersight® periodically for Nexus Dashboard Insights to access the latest Cisco® database of known defects, field notices, Cisco Product Security Incident Response Teams alerts (PSIRTs), and sustainability information. Cisco Nexus Dashboard Insights can then run bug scans against the latest database. Offline customers can utilize Insight's "Advisory" features to better identify risks to their infrastructure (PSIRTs, defects, EOS/EOL notices, and field notices).

Q: Can you share best practices for design and deployment of the Nexus Dashboard platform cluster?

A: Refer to the Cisco Nexus Dashboard documentation to discover best practices for deployment per release. For recommendations.

Telemetry guidelines

Q: What is the data retention period for Nexus Dashboard?

A: Software telemetry and assurance data are stored for up to 30 days and flow telemetry for up to 7 days.

Q: Which platforms support software telemetry?

A: Cisco Nexus 9300/9500/9700, Nexus 7000, and Nexus 3000 series switches support software telemetry. Please refer to the specific switch's release notes for detailed information.

Q: Which platforms support hardware telemetry?

A: Cisco Nexus 9000 EX/FX/FX2/GX/FX3 platforms (fixed and modular). All future cloud-scale ASICs will support hardware telemetry as well.

Q: How does assurance and correlation work on Nexus Dashboard?

A: The correlation engine is used to dynamically correlate raw telemetry data across the network from each node to give useful insights. For example: if there is a routing-layer problem, the application can measure and evaluate the resources across Layer 1, Layer 2, and Layer 3 to root-cause the issue. The correlation engine also stitches the flows together using tuple and timestamp information to give complete end-to-end flow-path, latency, and ingress/egress information. It is also used to evaluate packet drops, including the exact point in the network where the drops occur and the reason for the drops. The correlation engine is one of the most important microservices in Cisco Nexus Dashboard.

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Q: What kind of advisories are generated in Nexus Dashboard?

A: Nexus Dashboard ingests field notices, EOL/EOS of hardware and software, and PSIRTs produced by Cisco, then correlates them with features that are enabled in the data-center network along with the hardware PID and software version of each switch in the network. If a match is found and the application discovers for example) that a switch is impacted, Nexus Dashboard will generate an advisory to bring a user's attention to the impact on the switch and generate recommendations on how to fix the issue. As an example: a software upgrade advisory to resolve a PSIRT.

Q: What kind of data does a software upgrade advisory provide in Nexus Dashboard?

A: A software upgrade advisory is provided as a recommendation to fix an issue observed by Nexus Dashboard. For example: a PSIRT, a known caveat, an EOL of software used in a switch, etc. The advisory will then show what release is recommended upgrading to that will resolve the issue. It also shows intermittent releases to upgrade to, in order to get to the destination software, and whether each of the upgrades will be disruptive or nondisruptive.

Q: How can I obtain more details for building a telemetry data stack?

A: If customers are interested in creating their own receiver for telemetry data, they can access our prototype file published on GitHub. We offer integration with Telegraf for TCP/gRPC telemetry. For more information, please visit the following link:

https://github.com/influxdata/telegraf/tree/master/plugins/inputs/cisco_telemetry_mdt

We also have integrations with Telegraf through gNMI. This is for direct consumption of telemetry data through gNMI for NX-OS-based environments without any analysis by ND:

https://github.com/influxdata/telegraf/blob/release-1.19/plugins/inputs/gnmi/README.md

Q: For latency monitoring, what is the recommended clock source for reference?

A: The required clock source for latency monitoring is Precision Time Protocol (PTP).

Q: What are the bandwidth requirements for telemetry data?

A: The telemetry data bandwidth requirements are split into two:

- Software telemetry: 500 Kbps per switch
- Flow telemetry: 10 Mbps for 10,000 flows

Q: Is there any latency-tolerance range between the Cisco Nexus Dashboard telemetry features and APIC software?

A: The following are the latency tolerances:

- Between the Cisco Nexus Dashboard application and the APIC or ND controller, the latency tolerance is up to 50 ms.
- Between Cisco Nexus Dashboard and switches, the latency tolerance is up to 50 ms.
- Between the nodes of a Cisco Nexus Dashboard cluster, the latency tolerance is up to 50 ms.
- Between Cisco Nexus Dashboard and AppDynamics®, the latency tolerance is up to 500 ms.
- Between Cisco Nexus Dashboard and Intersight, the latency tolerance is up to 500 ms.

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Q: Do we have any information on what different metrics are collected by Cisco Nexus Dashboard depending on the Cisco Nexus model? For example, what is the information that a Cisco Nexus 9300-FX can get that an EX cannot? Or what is the difference between FX2 and FX?

A: You are able to get control-plane information using software telemetry, and flows and ASIC counters using hardware telemetry. Cisco Nexus Dashboard will collect this data, store it in a time-series database, and correlate it to give users a lot more relevant data compared to the raw data from the switches – that's the power of Cisco Nexus Dashboard.

The tables below list the capabilities per platform. For supported features in a particular release, please refer to the release notes.

Table 1. Platform capabilities

Cisco Nexus platform	DME	NX-API
3000 with 8GB+ DRAM	Yes	Yes
9200/9300	Yes	Yes
9500	Yes	Yes
5000/5500/6000	No	No
7000/7700	No	Yes

Table 2. Telemetry capabilities

Platform	FT	FTE	SSX
9300/9500-EX	Yes	No	No
9300/9500-FX	Yes	Yes	No
9364C	No	No	Yes
9300/9500-FX2	Yes	Yes	Yes
9300/9500-FX3	Yes	Yes	Yes
9300/9500-GX	Yes	Yes	Yes

Q: Can customers access Cisco Nexus Dashboard data and events using other tools?

A: REST-API is supported to pull telemetry data from Nexus Dashboard. Kafka messaging support to push post-processed software telemetry and anomalies data is added in Nexus Dashboard Insights 5.0 release.

Q: How is data collected from switches?

A: Telemetry data is collected through an in-band management network.

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Q: As part of flow analytics and flow anomalies, can we see the packet path of the flow through the data-center network? Is the packet path shown only on Cisco Nexus 9000 Series switches or on other platforms as well?

A: As part of flow analytics and flow anomalies, the packet path of the flow through the data-center network is shown, with the drops and the reasons for the drops. This is currently supported for Cisco Nexus 9000 CloudScale ASIC platforms. If there are other platforms along the path that do not support flow telemetry, Nexus Dashboard will try to find intermittent node or interface details using LLDP. Please check the user guide for Nexus Dashboard on supported topologies for Cisco ACI®/Cisco NX-OS.

Q: How is the Nexus Dashboard Cluster redundant, and what options are available for disaster recovery?

A: The Nexus Dashboard cluster is redundant because it ensures high availability even if one node fails in a three-node cluster. There are multiple options for recovery in a failure state. Additionally, the internal database replicates the configuration and state data across nodes.

To learn more about deploying a highly available Nexus Dashboard cluster, please visit this white paper.

Q: Does Nexus Dashboard require specific switch software versions in order to manage them?

A: Yes, there are specific Cisco NX-OS and Cisco ACI releases qualified to run with Nexus Dashboard. You can view the software and hardware compatibility matrix here.

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