Cisco Nexus Dashboard Insights

Overview

Q **What is the Cisco Nexus® Dashboard Insights?**

A Cisco Nexus Dashboard Insights gives customers the ability to pre-empt unintentional errors, monitor and analyze networks in real time to identify anomalies, provide root-cause analysis and capacity planning, and accelerate troubleshooting. By tracking historical context, collecting and processing hardware and software telemetry data, and correlating customer designs with Cisco best-practices, customers can get excellent visibility and awareness of issues affecting their environment and take corrective actions.

Q **Is Cisco® Network Assurance Engine getting unified with Cisco Nexus Dashboard Insights?**

A Yes. The features and functionalities of Cisco Network Assurance Engine are unified into Cisco Nexus Dashboard Insights with the 6.0 release.

Q **What is the Cisco Nexus Dashboard, and why do I need it for Cisco Nexus Dashboard Insights?**

A Nexus Dashboard functions as a central management console for all the onboarded data center sites as well as a central hosting platform for data center operation applications, such as Nexus Dashboard Insights. It simplifies the operation and life cycle management of various applications, and reduces the infrastructure overhead to run the different applications by providing a common platform and application infrastructure. Additionally, it provides a central integration point for API-driven 3rd party applications with the applications that are hosted on Nexus Dashboard.

Nexus Dashboard Insights is a microservices-based application natively hosted on Cisco Nexus Dashboard. Nexus Dashboard provides a cluster of compute nodes that are horizontally scalable. The sizing/number of compute nodes required for Nexus Dashboard Insights depends on the number of sites, the number of switches in each site, and the flows per second that the users want the application to support.

Q **Is Insights pre-packaged with Cisco Nexus Dashboard?**

A Starting with Nexus Dashboard Release 2.1(2), Insights is pre-loaded with the physical form factor of the platform during manufacturing.

Q **Does the Cisco Nexus Dashboard Insights application support either Cisco ACI®–based or NDFC-based deployments?**

A Yes, the Cisco Nexus Dashboard Insights application supports Cisco ACI–based or NDFC-based deployments. The same software image works for either deployment. Cisco NDFC is now an application on the Cisco Nexus Dashboard platform.

Q **What is the difference between Cisco Nexus Dashboard Insights on Cisco ACI and on Cisco NX-OS?**

A Minimal in terms of functionality. See Cisco Nexus Dashboard Insights Data Sheet for details.

Q **Which platforms support software telemetry?**

A Cisco Nexus 9000, Nexus 7000, Nexus 3000 support software telemetry. Please refer to the 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 **What is the data-retention period in Cisco Nexus Dashboard Insights?**

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

Q **Cisco ACI shows a capacity planning dashboard as well. How different is it from Cisco Nexus Dashboard Insights?**

A Today, APIC shows the capacity dashboard; however, the data is not historical and is not correlated. Cisco Nexus Dashboard Insights gathers resource utilization and shows the utilization, trends, and anomalies when thresholds are exceeded or a sudden change from normal behavior (that is, the rate of change) is observed.

Q **Which types of data center network deployments does Cisco Nexus Dashboard Insights support for DCNM/NDFC?**

A Starting DCNM Release 11.2, Cisco Nexus Dashboard Insights supports LAN classic and LAN fabric modes.

Q **How do the learning models in Cisco Nexus Dashboard Insights get updated (for example, signatures, etc.)? Are such updates automatic, or do they have to be manually updated?**

A Metadata is updated automatically. Manual update is not needed.

Q **What's the format of the signatures used in Cisco Nexus Dashboard Insights?**

A Signatures are defined in JSON format and are provided by Cisco Systems, Inc.

Q **What are the functionalities of the correlation engine in Cisco Nexus Dashboard Insights?**

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 Insights.

Q **What capacity-planning features does Cisco Nexus Dashboard Insights cover?**

A Cisco Nexus Dashboard Insights displays the following:

- Current utilization of resources
- Trends across resources at both node and network level
- Any threshold violations across resources
- Rate-of-change anomalies

All the above is available for operational, configuration, and hardware resources (for example, how many ports and how much bandwidth is in use), and switch environments.

Q **What kind of Advisories are generated in Nexus Dashboard Insights?**

A Nexus Dashboard Insights considers Field Notices, EOL/EOS of Hardware and Software, PSIRTs produced by Cisco. It then correlates these with features enabled in the respective data center network along with hardware and software used in each switch in the data center network. If a match is found and the app finds a switch is impacted, it will generate an advisory to bring operator attention on how a notice for example impacts a 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 me in Nexus Dashboard Insights?**

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

Q **Can Insights track changes in infrastructure or predict configuration changes due to software upgrades?**

A Insights proactively checks to prevent compliance violations and enable continuous assurance to address compliance posture, ensuring business services continuity. It accelerates troubleshooting and evaluates the impact of configuration changes with pre-change analysis, to minimize the risk of unintended consequences.

Deployment guidelines

Q **Is ND Insights supported on Virtual Nexus Dashboard?**

A Starting with ND Insights 6.0 release and Virtual ND 2.1 release, ND Insights is supported on Virtual Nexus Dashboard.

Q **Is there any difference in feature and scale when ND Insights is hosted on Virtual ND versus Physical ND?**

A Full feature parity is supported for ND Insights. Verified scale is different and details can be found in release notes.

Q **Do I need to deploy separate instance of ND Insights to operate ACI and NDFC based sites?**

A Starting with ND Insights 6.0 and Nexus Dashboard 2.1 releases, single instance of ND Insights supports hybrid sites. You can use the same instance to operate one or more ACI and NDFC sites.

Q **Is there a sizing calculator available to calculate the size of the Nexus Dashboard cluster suitable for my deployment?**

A Yes, the sizing calculator is available here.

Q **Will APIC and NDFC push the required configurations to enable telemetry collection from the switches?**

A Yes, the controllers are responsible to push the required configurations for enabling telemetry data collection from the switches.

Q **When using Cisco Nexus Dashboard Insights with NDFC, do I have to use NDFC to provision the network?**

A With Cisco Nexus Dashboard Insights, the customer will have two options. The network is either in managed mode or monitored mode. In case of the latter, the expectation is that the user will push the required configuration to the switches using CLI or APIs. NDFC shows the required configuration within the Nexus Dashboard Insights setup screen.

Q **In Cisco Nexus Dashboard Insights, can we set custom thresholds for resource utilization?**

A Currently the thresholds are preset to fixed values. The anomaly detection function raises anomalies when the thresholds are violated. In future releases, Nexus Dashboard Insights will provide users the ability to tweak the thresholds values.

Q **How different is NetFlow from Nexus Dashboard Insights flow telemetry?**

A NetFlow and flow telemetry use the same flow records stored in the flow table. However, the ways these resources are transported from the switch are different. NetFlow uses CPU cycles and is transported to a defined collector. Flow telemetry, however, never uses the CPU; these records are transported periodically through the front panel port to the Cisco Nexus Dashboard Insights application. Nexus Dashboard Insights application thereafter normalizes these flow records, correlates them together to provide end to end flow path, latency, where the drops happened and why if any, thereby providing very rich flow data, historically.

Q **What does a flow record consist of?**

A
- 5-tuple flow information
- Interface/queue information
- Time stamp
- Flow latency
- Additional flags

Q **Can Cisco Nexus Dashboard Insights run on an APIC cluster, or does it require a Cisco Nexus Dashboard (previously known as Cisco Services Engine) cluster?**

A Cisco Nexus Dashboard Insights is not supported on an APIC cluster. Cisco Nexus Dashboard Insights application can be hosted on Nexus Dashboard only for ACI based environments. For NDFC based environments, Nexus Dashboard Insights 6.0.2 release can be hosted on NDFC compute. From Nexus Dashboard Insights 5.1 release onwards, Nexus Dashboard is required for hosting Nexus Dashboard Insights with DCNM environments. Please refer the latest releases notes for support details.

Q **What encoding and transports are supported for telemetry data?**

A Software telemetry is encoded using GPB/JSON and transported over TCP and gRPC to Cisco Nexus Dashboard Insights. Hardware telemetry is not encoded and is transported over UDP to Cisco Nexus Dashboard Insights.

Q **What data lake does Cisco Nexus Dashboard Insights use?**

A It uses Elastic search to store data in a time-series database.

Q **How can I get more details if customers want to build their own stack to consume telemetry data?**

A If the customer wishes to build their own receiver, we publish the prototype file on GitHub; we have an integration with Telegraf for TCP/gRPC telemetry. See the following link: https://github.com/influxdata/telegraf/tree/master/plugins/inputs/cisco_telemetry_mdt.

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

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

Q **How does Cisco Nexus Dashboard Insights detect known caveats, and what does it do next?**

A Cisco Nexus Dashboard Insights performs as follows:

- Collects tech-support logs for each switch and matches with the digital signatures of known digitized CFD bugs.
- It then generates an advisory with the recommended fix.
- If the fix is to upgrade the software, Insights will inform you about the bugs that will be fixed when you upgrade to the recommended release.
- Users can also measure the upgrade impact from within Insights, which runs pre- and post-checks and measures if the upgrade will be disruptive or nondisruptive.

Q **Is either Multi-Pod or Multi-Site supported in Cisco Nexus Dashboard Insights for Cisco ACI?**

A Multi-Pod and Multi-site are both supported. No data from the IPN/ISN nodes is currently shown; however, presentation of such data is on the roadmap for a future release.

Q **Is Multi-Site supported in Cisco Nexus Dashboard Insights for NX-OS?**

A Multi-site support for a DCNM-based network is supported from Nexus Dashboard Insights Release 5.1 onward and NDFC-based network from Release 6.0.2 onwards.

Q **How is data collected from switches?**

A Telemetry data is collected via in band management network.

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 N9K switches or 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 drops and drop reasons. This is currently supported for N9K CloudScale platforms. If there are other platforms along the path which do not support flow telemetry, Nexus Dashboard Insights will try to find intermittent node/interface details using LLDP. Please check user guide for Nexus Dashboard Insights on supported topologies for ACI/NXOS.

Q **If Precision Time Protocol (PTP) is needed, do we need a PTP grand master clock?**

A In order to maintain clock synchronization, Nexus Dashboard Insights needs a device that is external to the data-center network sites to function as the PTP grandmaster. But this device does not need to be a true PTP grandmaster, which offers nano-sec-level clock accuracy.

Nexus Dashboard Insights only needs usec-level accuracy; therefore, this external PTP grandmaster device can be a switch, a router, or a Linux server.

With Cisco NDFC, Precision Time Protocol (PTP) must be configured on all nodes you want to support with Cisco Nexus Dashboard Insights. In both managed and monitor site mode, the user must ensure PTP is correctly configured on all nodes in the site. For more information, please refer to the Cisco Nexus Insights for Cisco DCNM user guide.

Precision Time Protocol (PTP) must be enabled on Cisco APIC. In Cisco APIC, choose System > System Settings > Precision Time Protocol > Admin State to enable PTP. For more information, please refer to the Cisco Nexus Insights for Cisco ACI user guide.

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

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

Q **Is FTE available today?**

A FTE support has been added as part of Cisco Nexus Dashboard Insights Release 5.0 with Cisco ACI and NX-OS. Please refer Nexus Dashboard Insights release notes for platform version dependencies.

Q **Do we have any information on what different metrics are collected by Cisco Nexus Dashboard Insights 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/ASIC counters using hardware telemetry. Cisco Nexus Dashboard Insights 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 Insights.

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

Table 1. Platform capabilities

Cisco Nexus platform	DME	NX-API
3000 with 8GB+ DRAM	✔	✔
9200/9300	✔	✔
9500	✔	✔
5000/5500/6000	✖	✖
7000/7700	✖	✔

Table 2. Telemetry capabilities

Platform	FT	FTE	SSX
9300/9500-EX	✔	✖	✖
9300/9500-FX	✔	✔	✖
9364C	✖	✖	✔
9300/9500-FX2	✔	✔	✔
9300/9500-FX3	✔	✔	✔
9300/9500-GX	✔	✔	✔

Q **Can the Cisco Nexus Dashboard Insights application use remote storage?**

A Remote storage is currently not supported.

Q **Is there any latency-tolerance range between the Cisco Nexus Dashboard Insights application and APIC software when the Cisco Nexus Dashboard Insights application is hosted on a Cisco Nexus Dashboard (previously known as Cisco Services Engine) cluster?**

A The following are the latency tolerances:

- Between the Cisco Nexus Dashboard Insights application and APIC/NDFC controllers, the latency tolerance is up to 50 ms.
- Between the Cisco Nexus Dashboard Insights application 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 Insights and AppDynamics, the latency tolerance is up to 500 ms.
- Between Cisco Nexus Dashboard Insights and Intersight, the latency tolerance is up to 500 ms.

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 **To what do the switches export flow telemetry data?**

A Flow telemetry data is exported to the Cisco Nexus Dashboard Insights application.

Q **How frequently is the Flow Telemetry data exported from the switches?**

A Data is exported at 1 sec interval.

Q **Is the flow telemetry data exported on an infra VLAN?**

A No, it is exported on an inband management network.

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

A The clock source is Precision Time Protocol (PTP); this is a mandatory configuration requirement.

Q **What is the typical amount of data generated by a single leaf per day for software telemetry?**

A The typical amount is approximately 600 MB.

Q **What is the typical amount of data generated by flow analytics while monitoring 10,000 flows for a period of 24 hours?**

A The typical amount is approximately 1.2 TB.

How to buy

Q **What are the licenses required to run Cisco Nexus Dashboard Insights on Cisco ACI?**

A Licenses are required for each device (leaf switch only). Please refer to the ordering guide for more details.

Q **Where is the application store to download Cisco Nexus Dashboard Insights for Cisco ACI and Cisco NX-OS?**

A The application store can be accessed via Nexus Dashboard. In case the Nexus Dashboard has restricted access and cannot reach the outside world, the application can be downloaded from: https://dcappcenter.cisco.com/.

Q **Is there an evaluation version of the Cisco Nexus Dashboard Insights application?**

A Yes, the application is available in try-and-buy mode. Customers can download and use the Cisco Nexus Dashboard Insights (formerly Nexus Insights) application in lab or test environments without purchasing license for a maximum of 180 days. For production deployments, purchase of licenses is required. Download the application from the Cisco DC App Center: https://dcappcenter.cisco.com/nexus-insights.html.

Q **Will Cisco Network Assurance Engine continue to be sold as a separate product and/or license?**

A No. Cisco Network Assurance Engine is no longer being sold as a separate product and/or license. It is part of Cisco Nexus Dashboard Insights license. Click here for an ordering guide.

C67-742795-08 04/22