Q&A

Cisco NetFlow Generation Appliance (NGA) 3140

General Overview

Q. What is Cisco® NetFlow Generation Appliance (NGA) 3140?

A. Cisco NetFlow Generation Appliance 3140 is purpose-built, high-performance solution for flow visibility in high-throughput Gigabit Ethernet networks typical in most data centers and campus core deployments. It empowers network operations, engineering, and security teams with actionable insight into network traffic for the purpose of resource optimization, application performance improvement, traffic accounting, and security needs.

Cisco NGA consumes raw network data from platforms such as Cisco Nexus® 7000, Cisco Nexus 5000, and Catalyst® 6500 Series Switches to create and export NetFlow Data Export (NDE) records (v5, v9, IPFIX) for traffic analysis and other management needs. The power of visibility is dramatically amplified when NGA is connected to multiple network devices to analyze flows hop by hop, essential for security, capacity planning, and troubleshooting. To simplify operational manageability, the appliances can be deployed at key observation places such as the server access layer, fabric path domains, and Internet exchange points.

Designed for high performance and maximum deployment flexibility, the appliance gathers network data using Switched Port Analyzer (SPAN) and network tap, implements a large active flow cache, and can be configured to export NetFlow data to multiple collectors. The NDE flows are exported in weighted round-robin fashion for load balancing and the exports can be customized to meet specific management application needs using 10 filters per destination.

Q. What are the key features and benefits of the Cisco NGA solution?

A. The Cisco NetFlow Generation Appliance 3140 redefines network visibility and sets a new standard for high-performance, cost-effective NetFlow generation. The key features and benefits are outline in Table 1.

Table 1. Cisco NGA Features and Benefits

Feature	Benefit
Purpose-built, high-performance form factor	• Improved performance of forwarding device by offloading NetFlow generation function • 100 percent accuracy with full visibility into traffic flows • Cost-effective application and traffic visibility in high throughput Gigabit Ethernet networks
NetFlow v5, v9, and IPFIX support	• Ease of integration with any standard NetFlow collector
SPAN and network tap support **Multiple collectors (up to six)** **Advanced filters for custom exports**	• Improved return on investment (ROI) with the flexible deployment choices • Hop-by-hop flow visibility across multiple network tiers • Efficient use of NetFlow information across multiple management applications for monitoring, troubleshooting, capacity planning, and security
Load balancing and flow replication across multiple collectors	• Effective network design to maximize scalability
Application awareness	• Enhanced application recognition and reporting. Cisco NGA recognizes application on the basis of port, port-ranges, and built-in heuristics
Predictable cost model	• Simplified licensing model
Embedded GUI and command-line interface (CLI) for configuration	• Ease of configuration, reduced learning curve, and improved productivity

Q. What are the business benefits of deploying Cisco NGA?

A. Cisco NGA helps to improve network ROI, enhance operational efficiency, and reinforce network security. The key benefits are described in Table 2.

Table 2. Key Benefits of Cisco NGA

Benefits	Description
Improved network ROI	• Improve performance of forwarding device by offloading NetFlow generation function • Right-size physical and virtual network resources with true capacity planning • Characterize network usage for accurate billing or chargeback implementation
Enhanced operational efficiency	• Gain comprehensive network visibility combining multiple network observation points using SPAN and network tap • Create custom NetFlow exports for specific management needs • Improve scalability and design efficiency supporting up to six collectors with load balancing
Reinforced network security	• Help enable full network protection with visibility into every flow • Isolate offending network behavior with detailed traffic visibility by protocol, endpoint, conversations • Ease network threat detection with end-to-end multihop correlated flow information

Q. What is the deployment benefit of using Cisco NGA compared to the NetFlow supported natively on the network devices?

A. Cisco IOS® Software NetFlow supported natively on network devices provides valuable information about network users and applications, peak usage times, and traffic routing. Cisco invented NetFlow and is the leader in IP traffic flow technology. Cisco NGA complements the native NetFlow with a cross-device approach to flow analysis facilitating correlated hop-by-hop flow visibility essential for troubleshooting and security needs. The key deployment benefits of Cisco NGA are listed below:

- Obtain granular flow visibility from network devices
- Achieve 100 percent accuracy and coverage without the risk of affecting packet forwarding performance of the network device
- Gain end-to-end flow visibility with the cross-device approach to flow analysis
- Realize high performance and scalability needed for next-generation data center deployments
- Take advantage of deployment flexibility to get traffic visibility from multiple devices, and implement custom exports to multiple management applications with specific data needs
- Simplify setup, configuration, and collection of flow information

Q. What are the different management applications that I can use Cisco NGA for?

A. Cisco NGA can be used with any management application that consumes NetFlow v5, v9, or IPFIX. These applications may include network security monitoring, cloud services monitoring, capacity planning, performance troubleshooting, and so on. Cisco NGA offers granular insight into the application traffic to support the use cases for these functions.

Technical Overview

Q. What versions of NetFlow does Cisco NGA support?

A. Cisco NGA supports NetFlow v5, v9, and IPFIX.

Q. Does Cisco NGA support both Layer 2 and Layer 3 NetFlow?

A. Yes, Cisco NGA can provide visibility into the Layer 2 traffic by configuring NGA to set up a flow monitor with NetFlow v9 export and a “layer2” record. The configuration should include MAC addresses instead of IP addresses as match fields. Other Layer 2 fields that can be used for matching include “vlan,” ethertype,” and “cos.”

Q. Does Cisco NGA support IPv6 traffic?

A. Yes.

Q. How does Cisco NGA gain visibility into network traffic?

A. There are multiple ways for Cisco NGA to gain visibility into traffic from more than one device:

- The appliance includes four 10 Gbps monitoring interfaces, which allow it to collect traffic from more than one network device.
- The appliance can also be used with a network inline tap to monitor traffic from/between multiple devices.

Q. What is the purpose of the management port on Cisco NGA?

A. Cisco NGA has one 1 Gbps management port used for NetFlow Data Export, supporting up to six collectors.

Q. Is there a limit on the number of SPAN sessions that the Cisco NGA can support?

A. Cisco NGA has four physical 10 Gbps monitoring interfaces and can monitor up to four network devices using SPAN at one time. Check your switch documentation for the number of SPAN sessions it supports.

Q. Can Cisco NGA connect to Cisco Nexus switches with Virtual Port Channel (vPC)?

A. Yes, you can configure a vPC on switch as the SPAN destination, then connect up to four 10G ports in the vPC to NGA data ports. Please refer to the Cisco Nexus documentation on how to configure the vPC on the platform.

Q. What are the benefits of configuring a “managed device” on the Cisco NGA solution?

A. Configuring a network traffic source as a “managed device” allows Cisco NGA to gather the interface index from the device. Cisco NGA populates exported NetFlow records with the interface (ifIndex) values from the device that is being monitored, rather than the interface values from the NGA appliance itself. For example, in a scenario when a flow enters the Cisco Nexus switch on interface 50 and leaves on interface 60, and it is also being replicated (through SPAN) to interface 2 of the NGA, if the Cisco Nexus switch is configured as the “managed device,” Cisco NGA can report input interface 50 and output interface 60 for the flow. Otherwise, it will report interface 2 for both input and output, as this is the NGA interface on which a copy of the flow is received. Note that the “managed device” feature support is limited to platforms indicated in Table 3.

Table 3. Managed Device Support

Platform	Cisco Nexus OS Version
Cisco Nexus Series 7000	5.2(1), 5.2(4), 6.0 and later
Cisco Nexus Series 5000	5.1(3)N2(1) and later

Q. How is load balancing across multiple collectors achieved with NGA? What are the benefits?

A. When configuring a flow exporter on the NGA, you may select more than one collector as the export destination. You may select a round-robin policy for the exporter to achieve load balancing among those collectors. In this case, NetFlow packets being exported will rotate among the specified collectors according to the desired weighting. This may avoid overloading any one collector with too many exported records/minute. If, on the other hand, you wish every flow to be exported to **all** collectors, specify a multidestination policy instead.

Q. Does Cisco NGA provide application visibility?

A. Cisco NGA recognizes applications on the basis of port number or port number range.

Q. What are the CLI options available to configure Cisco NGA?

A. Cisco NGA device can be fully configured using only the command-line interface if desired. The commands can be found under the “flow filter,” “flow collector,” “flow record,” “flow exporter,” “flow monitor,” and “managed-device” top-level keywords. Please refer to the command-line reference manual for complete documentation of the CLI.

Q. Where can I find deeper technical details about Cisco NGA?

A. For more details, please refer to the Cisco NGA User Guide.

Deployment

Q. What is required to deploy the Cisco NGA solution?

A. The following are required to deploy the Cisco NGA solution:

- Cisco NGA 3140 hardware
- Web browser running English Firefox 3.6+ or Microsoft Internet Explorer 8+ or later (Microsoft Internet Explorer 7 is not supported)

Q. Where can Cisco NGA be deployed in the network?

A. Cisco NGA is targeted for deployment in high traffic throughput environments such as the data center and campus core. It can be deployed at key observation places such as the server access layer, fabric path domains, and Internet exchange points. To take advantage of the cross-device approach to flow analysis, NGA can be deployed to observe flows across access switches, access and distribution switches, before and after a firewall, and so on.

Q. Can the Cisco NGA solution be only used with Cisco Nexus 7000 and Cisco Nexus 5000 Series Switches?

A. Cisco NGA can work with any switch that supports SPAN or network taps if that is available. However, the first release of NGA has been designed to obtain interface information from Cisco Nexus 7000 and Cisco Nexus 5000 Series devices, thereby providing a richer NetFlow analysis, allowing users to analyze specific interfaces associated with the flow information, for example to understand interface utilization or traffic distribution by Differentiated Services Code Point (DSCP) on the interface. To obtain the interface information, the Cisco Nexus switch needs to be configured as the “managed device” on Cisco NGA.

Q. Can the Cisco NGA be connected with multiple network devices?

A. Cisco NGA has four 10 Gbps monitoring ports that can be used to connect to multiple network devices. For example, Cisco NGA can be connected to four Cisco Nexus 5000 Switches in the data center access layer with each port connected to a switch. One can also connect different types of network devices to NGA. For example, two NGA ports can be connected to a Cisco Nexus 5000 Switch in vPC mode, one NGA port connected to a Catalyst 6500 Switch, while the fourth NGA port could be connected to a network tap.

Q. What are the benefits of connecting Cisco NGA with multiple devices?

A. Cisco NGA can provide traffic visibility from multiple core/aggregation switches or a combination of core/aggregation and access switches. The power of visibility is dramatically amplified when you connect multiple network devices to the Cisco NGA to analyze flows hop by hop, for security, troubleshooting, or capacity planning needs. As an example, Cisco NGA can be used to analyze the flows before and after a firewall to determine if the firewall is dropping the flow.

Q. Can multiple VLANs be spanned to the Cisco NGA?

A. Cisco NGA provides VLAN visibility based on SPAN configuration that allows the user to select VLANs of interest. This is specifically useful when monitoring traffic on server VLANs.

Q. Can you provide more information on the use of a tap as a data source?

A. Based on a network tap infrastructure, SPAN collected from a central tap aggregator can be directed to NGA. The tap can be connected to one or more of the four 10 Gbps monitoring ports on the NGA. SPAN through a tap is treated like SPAN from a switch. However, there is no support of switch interface learning through a tap due to tap vendor design considerations. Commonly, a network tap could be used to gather traffic from multiple network devices.

Q. What taps does Cisco recommend that I use with my NGA hardware?

A. Cisco has tested several taps that can be used with the Cisco NGA. The list is documented in the NGA User Guide. Additional taps from the same vendors or taps from other vendors may also support the NGA hardware, but they have not specifically been tested by Cisco.

Q. How do I deploy my NetFlow reporting application if the collector does not scale to the performance of NGA?

A. Cisco NGA is designed to support high performance and deployment flexibility. In scenarios where a collector is not able to scale to handle the exported NetFlow records, the following options are available:

- Configure filters to limit the exported NetFlow records to the traffic of interest. These filters can be configured independently for each collector.
- Load balance exported NetFlow records across multiple collectors in a weighted round-robin fashion.

Q. What are the different export filters supported by Cisco NGA?

A. Cisco NGA supports a rich set of filters for the NetFlow exports. These filters can be applied independently for each collector. Please refer to the Cisco NGA User Guide for a list of filters.

Q. How can I use the filters to create custom export for my management applications?

A. During the NetFlow export or collector configuration, the user can associate multiple filters to send only flow records of interest to the collectors. Cisco NGA offers flexibility to create custom exports to meet the requirements of specific management applications that consume the flow information. For example, all flows could be forwarded to a security application, while flows specific to an application or endpoint could be forwarded to a management application for capacity planning. Please refer to the Cisco NGA User Guide for details on how to configure the custom filters.

Q. To how many collectors can I export NetFlow from Cisco NGA?

A. Cisco NGA can export NetFlow to up to six collectors. NGA can export the same NDE packet to multiple collectors or load balanced among multiple collectors using weighted round-robin in the export policy.

Q. What are the configuration options available with the Cisco NGA solution?

A. Cisco NGA offers a comprehensive configuration for each area including export filters, flow collectors, flow records, exporter policy, and monitor configuration. For more detailed information for configuration in each area, please refer to the Cisco NGA User Guide.

Reporting and Management

Q. What reporting applications does Cisco NGA support?

A. Cisco NGA exports standard NetFlow (v5, v9, IPFIX). Any NetFlow collector supporting these formats can be used for visualizing NetFlow data exported by Cisco NGA. To expose the source device interface index in the NetFlow exports, the traffic source device must be configured as the “managed device” in Cisco NGA.

Q. Can Cisco Prime Network Analysis Module be used for collecting NDE from Cisco NGA?

A. Cisco Prime NAM can be used for collecting NDE from Cisco NGA. Note that Cisco Prime NAM uses NetFlow primarily for troubleshooting, traffic trend, and optimization analysis. It does not retain raw NetFlow records and aggregated NetFlow statistics for historical reporting.

Q. What are the benefits of using Cisco Prime Assurance Manager (AM) with Cisco NGA?

A. Cisco Prime AM provides end-to-end visibility for service-aware networking and assurance for applications, services, and end users. In addition, it integrates with network service lifecycle management, providing visibility across various phases, namely design, deploy, operate, and optimize. Deployed in conjunction with Cisco NGA, Cisco Prime AM offers customizable prepackaged dashboards for NetFlow analysis, along with the ability to retain raw NetFlow records and aggregated NetFlow statistics for historical reporting.

Q. What is Cisco Prime for Enterprise?

A. Cisco Prime for Enterprise is an innovative strategy and portfolio of management products that empower IT departments to more effectively manage their networks and the services they deliver. Cisco Prime is built on a network services management foundation and a set of common attributes. It delivers an intuitive workflow-oriented user experience across Cisco architectures, technologies, and networks. Cisco Prime simplifies network management, improves operations efficiency, reduces errors, and makes the delivery of network services more predictable.

Q. Is Cisco Prime a product?

A. Cisco Prime is a portfolio of integrated management products that are each licensed separately. The portfolio includes three solution families and their associated products:

- Cisco Prime Infrastructure includes Cisco Prime Network Control System (NCS) and Cisco Prime LAN Management Solution (LMS)
- Cisco Prime Assurance includes Cisco Prime Assurance Manager and Cisco Prime Network Analysis Module
- Cisco Prime Collaboration includes Cisco Prime Collaboration Manager (CM) and Cisco Prime Unified Communications Management Suite

Q. Can I manage Cisco NGA with Cisco Prime LMS solution?

A. Cisco Prime LMS supports management functions, namely, inventory, configuration, and image and fault management.

Q. If I already have a NetFlow reporting solution from a Cisco partner, can I use it for Cisco NGA reporting?

A. Yes, any NetFlow reporting application that supports NetFlow v5, v9, and IPFIX can be used to visualize NetFlow data exported by Cisco NGA. As mentioned above, to expose the source device interface in the NetFlow reports, the source device must be configured as the “managed device” in Cisco NGA.

Ordering

Q. How do I order the Cisco NGA solution?

A. To place an order, visit the Cisco Ordering Homepage. To download software, visit the Cisco Software Center. Cisco NGA part numbers are indicated in Table 4.

Table 4. Ordering Information

Product Name	Part Number
Cisco NetFlow Generation Appliance (NGA) 3140	NGA3140-K9
NetFlow Generation Software Version 1.0	NGA-SW-NGA1.0-K9

For ordering convenience, following SFP part numbers are available on Cisco Ordering Homepage when ordering Cisco NGA. Please refer to Cisco 10GBASE SFP+ Modules Data Sheet for ordering information for these Cisco SFP+ modules and related cables.

Product Name	Part Number
10G base Short-Range SFP Module (Spare)	SFP-10G-SR=
10G base Long-Range SFP Module (Spare)	SFP-10G-LR=

Q. Must I purchase the SFPs from Cisco or can I purchase them elsewhere?

A. For your ordering convenience, the SFP part numbers (Table 4) are available as options when ordering the Cisco NGA. The SFPs can also be purchased elsewhere, if desired. It should be noted that if the XFPs are not purchased from Cisco, they would not be covered by Cisco SMARTnet®.

Q. How do I obtain access to new Cisco NGA software updates?

A. Customers who have purchased SMARTnet for their NGA are entitled to download software updates covered with the contract from the Cisco.com Software Center.

Additional Information

Q. Are any components of the Cisco NGA field replaceable?

A. Two components of Cisco NGA are field replaceable, namely the hard drive and power supply unit. For example, if a power supply fails, a new one will be shipped from the services depot for replacement assuming a valid SMARTnet services contract is in place.

Q. Where can additional information about the Cisco NGA be found?

A. For more information about the Cisco NGA, visit http://www.cisco.com/go/nga or contact either your local account representative or the NGA product marketing group at nga-info@cisco.com.

Q. Where can I get more information about Cisco Prime products?

A. For more information about Cisco Prime products please visit http://www.cisco.com/go/prime.

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