nGenius 5100 Packet Flow Switch

Software-Driven and Cost-Effective Performance

HIGHLIGHTS

- 1 rackmount unit (RU), space-efficient, fixed configuration device
- 3.2Tbps throughput
- Up to 32 ports of 100GbE
- Up to 32 ports of 40GE
- Up to 128 ports of 10GE
- Network packet broker functionality such as aggregation, replication, filtering, load balancing, and source port tagging
- IP Tunnel termination (e.g. ERSPAN, NVGRE)
- Intelligent fully meshed stacking / interconnect (pfsMesh)
- Active inline traffic forwarding for active security or WAN optimization
- Management via command line, NETCONF, and graphical user interfaces for local and remote access
- Software-driven and powered by the NETSCOUT® Packet Flow Operating System (PFOS)

Product Description

The nGenius® 5100 Packet Flow Switch (PFS) is a dense 100G model and is a part of the nGenius 5000 series of packet flow switches. The nGenius 5100 model is designed with 100GbE deployments in mind, and bridges the gap between 10GBE, 40GbE and 100GbE Ethernet networks and tools.

The nGenius 5100 packet flow switch delivers 32 x 100GbE QSFP28 ports, which are capable of 32 x 40GbE QSFP+, and a maximum of up to 128 10GbE ports, via breakout cables, all in a 1RU, fixed-configuration form factor. All ports are enabled by default, with each port configurable as an input port, intermediate (service) port, or output port. With the NETSCOUT pfsMesh, a self-organizing architecture, traffic capture devices can be deployed in a redundant, low-latency meshed architecture for dynamic and fault-tolerant visibility that can scale to over 4000[1] ports across LAN and WAN environments.

Cost-effective Feature Set

Packing a lot of interfaces into a compact form factor, the nGenius 5100 packet flow switch supports core network packet broker features, which includes filtering, load balancing, replication, and aggregation. With an expansive feature set, the nGenius 5100 packet flow switch is, like other devices in the PFS portfolio, capable of supporting and managing a monitoring network independently. Connect HD Fiber TAPs and any number of tools, including the NETSCOUT InfiniStream® product, to the nGenius 5100 packet flow switch, and easily manage a diverse and complex monitoring network.

Flow-aware load balancing enables intelligent control of traffic distribution to the monitoring tools, increasing output capacity while maintaining session integrity. For example, a 100GbE tap from the network can be captured and automatically balanced across multiple 10GbE or 40GbE monitoring tool ports based on user-defined session criteria. Flow-aware load balancing can operate in tandem with hardware-based filtering or independently.

[1] Total number of ports in a single pfsMesh is dependent on quantity and complexity of filtering.

100GbE Option | 32 x 100Gb QSFP28 Ports
40GbE Options | 32 x 40GbE QSFP+
10GbE Options | 128 x 10GbE Ports (expandable from QSFP+ using breakout cables)

Security Optimization

To take action as offenders and bad actors are detected, the active inline security tools need to see and handle all the traffic that needs to be inspected.

nGenius packet flow switches with inline tool chaining allow aggregation, filtering, and load-balancing of actual network traffic toward multiple inline security applications whilst maintaining only a single intrusion into each network link, and provide application-specific health checks (not just heartbeats) to ensure the active security tools are connected and functioning properly. External bypass TAPs can be used to ensure that the security policies are adhered to during power failure.

Management

The nGenius 5100 packet flow switch systems can be managed via a Web UI, CLI, and NETCONF XML API using HTTP, HTTPS, SSH, or Telnet. The system can be monitored via Syslog and SNMP. Each device ships with an intuitive and easy to use graphical element management system (EMS) out of the box. Simply point a web browser at the nGenius 5100 packet flow switch to manage, and let the web-based user interface (WebUI) power the packet flow system.The nGenius 5010 packet flow switch provides automated event driven monitor output traffic direction and responses (Syslog messages, SNMP traps, deactivate ports). The devices support field software updates for maintenance and feature or performance enhancements.

Virtual Access

For accessing traffic that is completely virtualized and never makes it onto a physical network, traffic can be mirrored and forwarded from the virtual network to the physical network using tunneling protocols such as NVGRE (L2GRE) or ERSPAN, which encapsulate the traffic of interest. The nGenius 5100 packet flow switch system can be the destination of these tunnels and terminate them, and the traffic can then be forwarded on to monitoring applications.

Power and Cooling

The nGenius 5100 packet flow switch supports two redundant, hot-swappable power supplies. The nGenius 5100 packet flow switch also provides six redundant, hot-swappable fan modules (in a 5:1 configuration) to supply ample cooling, in a front to back air flow configuration.

Features and Benefits

Features	Benefits
Up to 32 ports in a 1RU, Fixed Configuration • 32 x 100GbE QSFP28 Ports • 32 x 40GbE QSFP+ • 128 x 10GbE SFP+ via breakout • Mix of 10, 40, 100GbE ports per nGenius PFS 5100 For complete details on transceivers, please refer to list of QSFP+, QSFP28 transceivers offered by NETSCOUT Systems	**High Density System:** • Drives cost effectiveness by reducing per-port cost and increases flexibility • Condenses the nGenius PFS footprint (rack space) into the most compact 1RU in a fixed configuration • Reduces power consumption • Software-driven, simplifies management
I/O Configurable • Full flexibility in selecting ports for network access, intermediate service, interconnect, or monitor output • IP tunnel (e.g. NVGRE) termination	• Enables agile response to monitoring infrastructure changes
Selective Aggregation • Fully flexible any-to-any port mapping	• Enables large scale aggregation to maximize tool visibility • Addresses asymmetrical routing issues
Flexible and Powerful Filtering • User-independent • OSI Layers 2 - 7 • Ingress • Overlapping	• Allows only "traffic of interest" to be forwarded to each tool, which increases tool efficiency and reduces the number of required tool interfaces

Features	Benefits
Monitor Traffic Port Tagging • Provides identification of traffic based on source network/link using VLAN tagging	• Users can quickly and precisely pinpoint where an issue, such as latency or security event, is occurring in the network • Allows different tools to access port identification
Intelligent Stacking (pStack) • Enables pfsMesh architecture for local and remote of up to 2564 PFS devices as a single redundant system	• Ensures highly available monitoring • Scales visibility with network infrastructure and new tools • Ensures delivery of traffic across LAN or WAN to tools
Active Inline Access and Forwarding • Aggregation of multiple network segments • Filtering and load balancing towards applications/tools • Easy to configure simple and complex inline tool chaining • Customizable health check packets for "positive" (return) and "negative" (no return) checks	• Removes multiple points of failure • Gains visibility for a single inline security tool (e.g. security proxy, IPS) and/or WAN optimization • Easy deployment of layered security • Removes multiple points of failure by fully exercising tools
Session-based/flow-aware Load Balancing • Distributes traffic load across multiple instances of a tool or tool port • Maintains session stickiness for full conversations	• Prevents oversubscription of monitoring tools and security systems – eliminating blind spots without sacrificing session integrity • Copied traffic can be easily distributed across multiple lower speed tool ports, allowing users to preserve existing tool investments
Local and Remote Management • XML API • CLI (Telnet/SSH) • GUI (HTTP/HTTPS) • SNMP (v1, v2, v3) • Syslog	• Easy to use via graphical interfaces or via CLI • Easy integration with applications using CLI or NETCONF XML API • Alerts can be received by any Syslog server or SNMP manager
Role-based Access • Multiple user and user role support • Flexible user/role defined privileges, unique screen views, and access control	• Conforms to security policy needs of IT organizations
AAA security with Remote (RADIUS and/or TACACS+)	• Meets authentication policy needs of IT organizations and Local Authentication
Redundant Power Supplies • AC and DC hot-swappable options	• Maintains high availability for the device
Traffic Statistics • Port-level packet and throughput metrics, including overflow drops, bad packets, etc. • Flow level packet and throughput metrics	• Visibility into network and tool port activity • Visibility into traffic type activity

Standards and Compliance

Standard	Specification(s)
Ethernet	IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3ae, IEEE 802.3z
VLAN ARP	IEEE 802.1Q, IEEE 802.1ad IETF RFC 826
IP	IETF RFC 791, 2460
UDP TCP	IETF RFC 768 IETF RFC 793
FTP	IETF RFC 959, 2228
Telnet	IETF RFC 854
SSH	IETF RFC 4251, 4252, 4253
HTTP TLS (SSL)	IETF RFC 2616, 2817 IETF RFC 4492, 5246
SNMP	IETF RFC 1157, 3411-3418
Syslog	IETF RFC 5424
RADIUS	IETF RFC 2865, 2866

Standard	Specification(s)
TACACS+	IETF RFC 1492
NTP	IETF RFC 5905
EMC	FCC Part 15 Subpart B/ICES-003 Class A, EN 55032 Class A, VCCI Class A, AS/NZS CISPR 32 Class A, EN 61000, EN 300 386 Class A, CNS 13138 Class A, KCC Class A, TUV-GS
Safety	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013, UL 60950-1, CAN/CSA-C22.2 No. 60950-1, UL/CUL

Ordering Information

Part Numbers	Description
51FCNANBB0H0	nGenius 5000 Series Packet Flow Switch-5100 Switch,32x100G Ports, AC Power
51FCNDNBB0H0	nGenius 5000 Series Packet Flow Switch-5100 Switch,32x100G Ports, DC Power

For transceivers, please refer to list of QSFP+ and QSFP28 transceivers offered by NETSCOUT Systems.

SPECIFICATIONS

Packet Capture Ports	32 x 100GbE QSFP28 Ports 32 x 40GbE QSFP+ 128 x 10GbE SFP+ Ports via breakout Mix of 10, 40, 100GbE ports per nGenius 5100 packet flow switch
Data Rates	10Gbps, 40Gbps, 100Gbps
Interface Types	Ethernet: 10 GigE Base-LR, 10G Base-SR, 40G Base-SR4, 40G Base-LR4, Cisco 40G Base-SR2 BiDi, 100GBase-SR4, 100GBase-LR4
Rack Unit	1 Rack Unit (1RU)
nGenius 5100 Packet Flow Switch	1.75 in (44 mm) Height 17.3 in (438 mm) Width 20.3 in (515 mm) Depth
Power Supply Unit (AC)	2.15 in (40 mm) Height 1.58 in (50.5 mm) Width 12.2 in (310 mm) Depth
Power Supply Unit (DC)	2.15 in (40 mm) Height 1.58 in (50.5 mm) Width 12.2 in (310 mm) Depth
Weight	23 lbs (10 kg)
Power (AC)	Input Range 100-240VAC, 50-60Hz, 350W max (without transceivers), 650W max (with transceivers), front to back airflow
Power (DC)	48VDC, 350W max (without transceivers), 650W max (with transceivers), Input range -36 to -72 VDC, front to back airflow
Operating Temperature	32° to 113°F (0° to 45°C)
Storage Temperature	-40° to 158°F (-40° to 70°C)
Operating Humidity	5% - 95% (non-condensing)

MORE INFORMATION OR QUESTIONS

For more information or any questions, about NETSCOUT or its products, please contact your local representative, call:

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