Hybrid Packet Broker

Multifunctional Bypass Packet Broker

The Niagara 3808 hybrid packet broker uniquely combines multipurpose bypass functionality with a fully featured network packet broker. The 3808 hybrid packet broker supports up to two double bay field replaceable modules, each with 4 network links and 16 appliance ports. This flexibility lets you configure the 3808 with up to eight 1/10/25Gb multipurpose bypass segments, up to fourty eight 1/10/25Gb I/O packet broker ports, or any combination of bypass segments and packet broker ports.

Figure 1: 3808 front panel populated with two modules, each with four links and 16 1/10/25Gb ports

Multifunctional Network Packet Brokers Segments

Each four port segment comprises two network and two appliance ports. The network ports offer direct single mode (SM) or multimode (MM) connectivity. The appliance ports utilize SFP28/SFP+, giving the flexibility to connect appliances (tools) using 1Gb, 10Gb, or 25Gb whether SM, MM or copper. Each of the segments' four ports can be configured as fully featured I/O packet broker ports. Integrated transceivers compatible with 1/10/25Gb on the network ports connect the network traffic to a common, non-blocking backplane switching fabric layer. Because all of the ports of a single module connect to a common non-blocking switch fabric backplane, inputs from any port of a double bay module can be used as outputs in any other port.
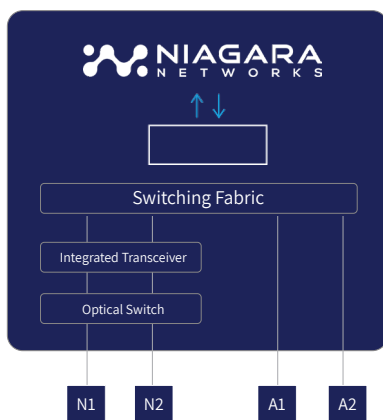

Figure 2: Multipurpose four port segment. Appliance ports can serve the hybrid functionality of fully-featured I/O packet broker ports.

Product Highlights

High Density
- Up to 8 network links (bypass segments)
- Up to 48 ports
- Up to 2 modules each with 24 ports

Multifunctional Segments
Network ports support SX/SR and LX/LR 1/10/25 Gb
- Bypass for inline deployments
- Active TAP split mode
- Active TAP aggregate mode

Management
- Robust command line interface (CLI)
- User-friendly, web-based user interface
- REST API for third-party integration
- Managed by Niagara Visibility Controller (NVC)

Form Factor
- 1U Rackmount
- Field-replaceable power supply redundancy

Fabric Flow™
FabricFlow™ technology exposes network packet broker features enabling the user to map traffic from one segment to any other segment (or from one port to any other port). The fully featured network packet broker functionality includes:
- Aggregate traffic to single port
- Replicate traffic to multiple ports
- Sophisticated filtering—L2-L4, User Defined Byte
- Flexible multi-load balancing schemes
- User-configurable packet heartbeat
- Ingress and egress filters

Network Bypass Technology

The two network ports in each 4-port segment have additional special capabilities. They can be used to configure the network ports to function as an active TAP or as a bypass.

When configured as a bypass our signature BypassP2™ Technology offers double-protection. A fail-safe optical relay on network ports, and user-configurable heartbeat-generated packets on appliance ports.

Figure 3: Inline deployment

Figure 4: Power Failure Mode

In Bypass/Inline deployment, traffic from one side of the network is forwarded to the inline appliance, and through the inline appliance to the other side of the network. This is the common network deployment for inline security devices such as firewalls and intrusion detection systems. Any two appliance ports from the network's port segment or from any other four port segments can participate in this configuration since all ports are connected to a common non-blocking switch fabric backplane.

Failsafe Protection
Protecting network traffic flow in the event of Network Packet Broker (NPB) failure. When power fails, as depicted in Figure 4, the optical-relays ensure that the network flow continues uninterrupted. The optical relays can be configured fail open or fail close to meet specific deployment needs. An optical switch mechanism is the most reliable method for connecting inline devices to your network, while ensuring uninterrupted network services under all conditions.
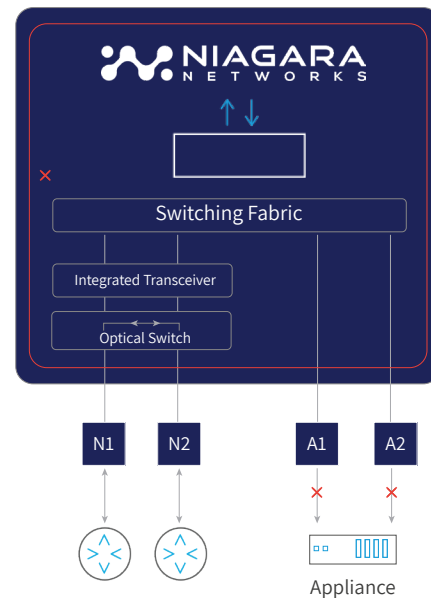
Heartbeat Protection
Protecting network traffic flow in case of appliance failures. The NPB transmits a user-configurable heartbeat on the appliance ports as depicted in Figure 5. In the event of an appliance malfunction (such as a software crash, system failure or loss of power depicted in Figure 6), the failure is detected, and the NPB bypasses the traffic intended for the inline appliance to the network ports, allowing it to continue to flow through the network link. This feature also enables the network appliances to be removed and replaced without network downtime. Once the system is back up, or the power is restored to the appliance, it is detected by the NPB's heartbeat mechanism, and network traffic is seamlessly diverted back to the inline device, allowing it to resume its critical functions.

Niagara's heartbeat mechanism is an integrated configurable sub-second-rate mechanism that is available independently for each segment. The number of missed heartbeat packets before entering bypass mode is configurable, so too is the number of received heartbeats to determine that the appliance is back on-line. NPB heartbeat does not require additional drivers to be installed on connected appliances.
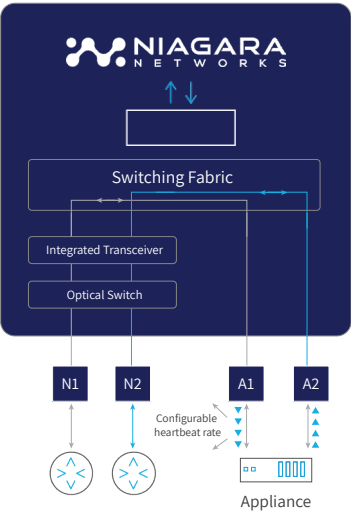

Figure 6: Appliance Failure Mode

Figure 5: Normal inline Operation Mode

Note: The appliance ports (A1, A2) depicted in the Figures belong to the same four port segment as the networks ports (N1, N2). However, any two appliance ports from any other 4-port segments can participate in this configuration, since all ports are connected to a common non-blocking switch fabric backplane.

Active TAP (aggregation)

In Active TAP, traffic on the network side is always maintained. Each appliance port receives a copy of the Rx from both sides of the network. This mode economizes on monitoring tool ports, if the total traffic throughput from both network sides is below that of the single appliance port. Any appliance port from any of the other 4-port segments can participate in this configuration, since all ports are connected to a common non-blocking switch fabric backplane.
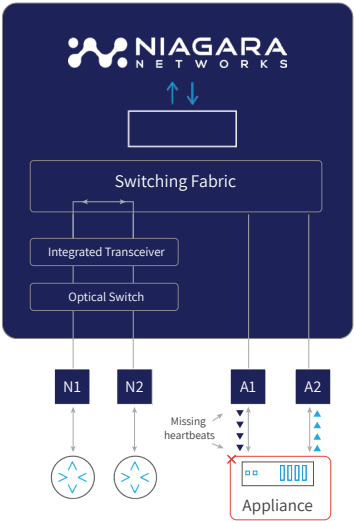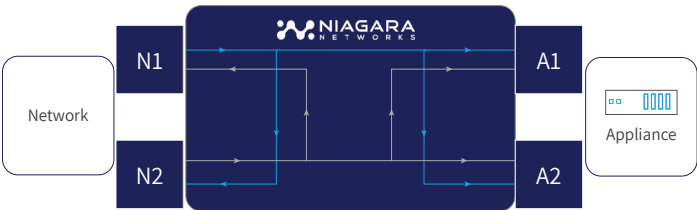

Figure 7: Active TAP (aggregation)

Active TAP (split)

In this Active TAP mode, traffic on the network side is always maintained. Each appliance port receives a copy of the Rx from one of the network ports. Any appliance port from any of the other 4-port segments can participate in this configuration since all ports are connected to a common non-blocking switch fabric backplane.
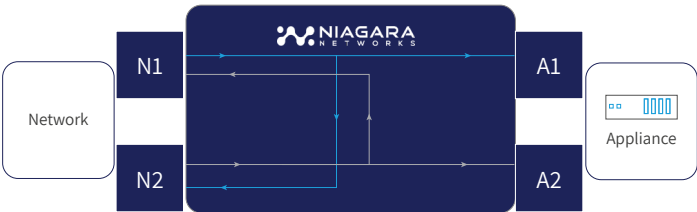

Figure 8: Active TAP (split)

Specifications

Height	1.75 inches (44.45 mm)		
Length	21.5 inches (546 mm)	Max Power Power	229 Watts
Width	17.0 inches (431.8 mm)	Airflow	No Fan
Weight	20.7 lbs (9.4 kg)	AC	100-240V, 50/60 Hz., 2-1 A
Operating Temp	32 to 104 °F (0 to 40 °C)	DC	
Operating Humidity	5 to 95%	Current	2.29 Amps

Emissions	Immunity
FCC Part 15B, ICES 003, EN55032	EN55024

Safety	Certifications	
UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences	North America (NRTL) European Union (EU) VCCI (Japan)	2014/35/EU Low Voltage Directive 2014/30/EU EMC Directive 2011/65/EU RoHS Directive 2012/19/EU WEEE Directive

Part Number	Description	Ordering Details
3808-MN-AC -xx	3808 Hybrid packet broker main chassis AC with up to three power supplies (2+1) or (1+1). Can support up to two double bay modules	xx - users should specify number of power supply configuration: • 1+1 power supplies. Can support one double bay module • 2+1 power supplies. Can support up to two double bay modules Modules orders separately
3808-SG-1/10G-xx-4B+8	4 full bypass segments (4 links), each with 2 network ports and 2 appliance ports. An additional 8 appliance ports. Network ports 1/10Gb. Appliance port transceivers ordered separately	xx - users should specify network side fiber type: • SR – multimode 50/125 • LR – singlemode Transceivers for appliance ports ordered separately
3808-SG-10/25G-xx-4B+8	4 full bypass segments (4 links), each with 2 network ports and 2 appliance ports. An additional 8 appliance ports. Network ports 10/25Gb. Appliance port transceivers ordered separately	xx - users should specify network side fiber type: • SR – multimode 50/125 • LR – singlemode Transceivers for appliance ports ordered separately

About Niagara Networks

Niagara Networks provides high performance network visibility solutions for seamless administration of security solutions, performance management and network monitoring. Niagara Networks products provide advantages in terms of network operation expenses, downtime, and total cost of ownership. A former division of Interface Masters, Niagara Networks provides all the building blocks for an advanced Visibility Adaptation Layer at all data rates up to 100Gb, including TAPs, bypass elements, packet brokers and a unified management layer. Thanks to its integrated in-house capabilities and tailor-made development cycle, Niagara Networks is agile in responding to market trends and in meeting the customized needs of service providers, enterprises, data centers, and government agencies. For more information please visit us at www.niagaranetworks.com.