Multifunctional Hybrid Packet Brokers

Carrier-Grade Bypass Packet Broker Platform

The 3808E network bypass device is part of the Niagara's BypassP2 carrier grade product line. The 3808E supports up to two double bay field-replaceable modules, each with up to four bypass segments and integrated additional monitoring ports. This flexibility lets you configure the 3808E with up to eight 1/10/25/40/100Gb bypass segments, active TAP versatility and multifunctionality.

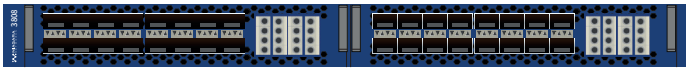

Figure 1: 3808E front panel populated with two modules, each with four links and 16 1/10/25Gb ports

Multifunctional Network Packet Brokers Segments

A full bypass 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, 25Gb or 40/100Gb, whether SM, MM or copper.

Integrated 1/10Gb or 10/25Gb and 40/100Gb on the network ports, connects the network traffic to a common, non-blocking switching fabric layer. This feature enables the 3808E to support 1Gb, 10Gb, 25Gb or 40/100Gb appliance links.

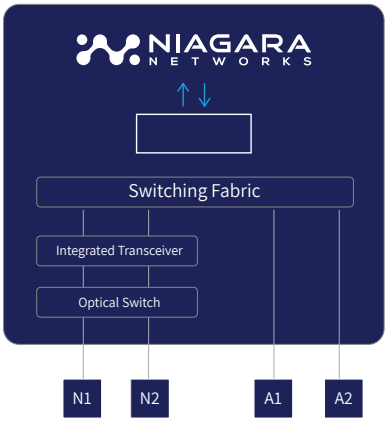

Figure 2: Multipurpose four port segment. Appliance ports can serve the hybrid functionality of fully-featured I/O packet broker ports.

Product Highlights

High Density

- Up to 8 network links (bypass segments or active TAP segments for maximum flexibility)
- Up to 2 modules - each with 24 ports (48 ports per chassis)

Multifunctional Segments

- Network ports support SX/SR , LX/LR and BiDi
- Multi-rate interfaces - 1/10/25 Gb
- 40/100Gb high-speed 2 or 4 bypass segments
- Bypass for inline deployments
- Failsafe optical protection (<50ms)
- Configurable packet heartbeat (ms resolution)
- Active TAP split mode
- Active TAP aggregate mode

Integrated Monitoring/TAP Ports per Module

- Up to 4 bypass segments and 16 packet broker ports

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

- Compact 1U Rackmount
- Field-replaceable power supply redundancy

Fabric Flow™

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 ingress/egress filtering - L2-L4, User Defined Byte
- Flexible session-aware load balancing schemes
- High-availability between primary and secondary bypass segments - combined with NPB policy

Network Bypass Technology

The two network ports in each four-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 carrier-grade double-protection. A fail-safe optical relay on network ports, and user-configurable heartbeat-packets on appliance ports.

Figure 3: Inline deployment

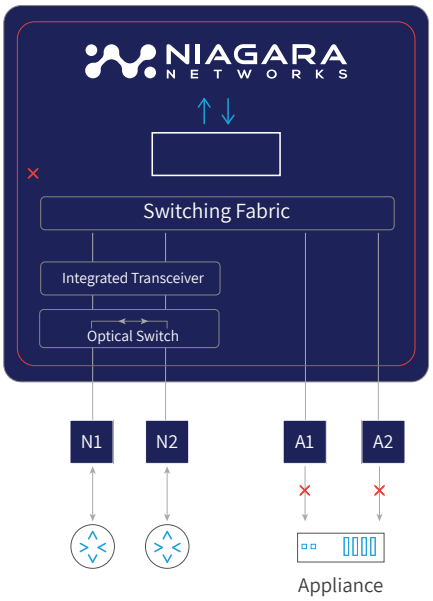

Figure 4: Power Failure Mode

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 SFP/SFP+ packet broker ports on the 3808 module can be assigned to function as appliance ports for any of the four bypass segments, and still retain their packet broker functionality since all ports are connected to the module's common non-blocking switch fabric backplane per module.

Failsafe Optical Protection (<50ms)

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.

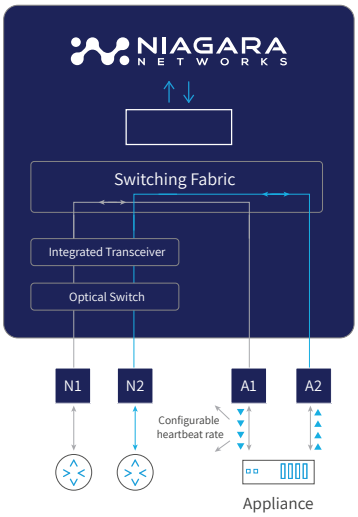

Figure 5: Normal inline Operation Mode

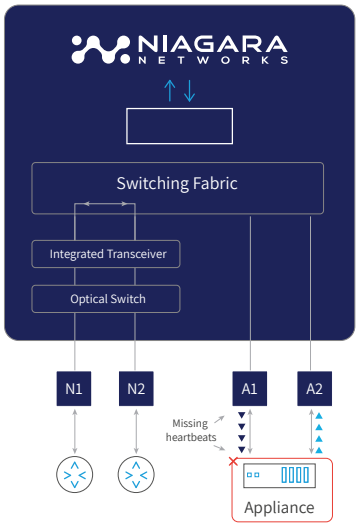

Figure 6: Appliance Failure Mode

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 four-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 four-port segments can participate in this configuration, since all ports are connected to a common non-blocking switch fabric backplane.

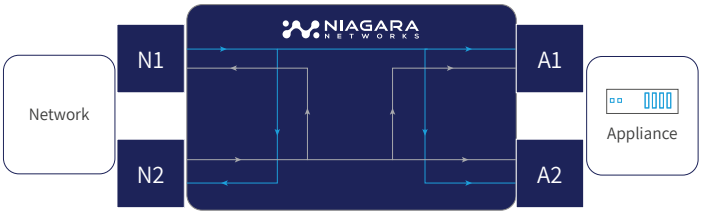

Figure 7: Active TAP (aggregation)

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 four-port segments can participate in this configuration since all ports are connected to a common non-blocking switch fabric backplane.

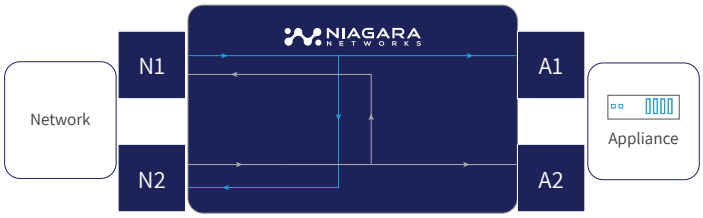

Figure 8: Active TAP (split)

Specifications

Height	1.75 inches (44.45 mm)	Max Power Power	275 Watts
Length	21.5 inches (546.1 mm)	Airflow	80 CFM
Width	17.0 inches (431.8 mm)	AC	100-240V, 50-60 Hz., 8.5-2.7A
Weight	24.65 lbs (11 kg)	DC	36 to 72VDC 20A-9.6A
Operating Temp	32 to 104F (0 to 40 °C)	Current	2.75 Amps
Operating Humidity	5 to 95%		

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

Safety	Certifications	
UL/CSA 62368-1, EN 62368-1, IEC 62368-1 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
3808E-MN-xx	3808E Hybrid packet broker main chassis. Two power supplies (1+1). Can support up to two double bay modules.	xx - users should specify AC or DC power supply: • AC - AC power supply • DC - DC power supply Modules ordered separately
3808E-SG-10G-xx-2B	2 full bypass segments (2 links), each with 2 network ports and 2 appliance ports. Network ports 1/10Gb preconfigured single or multi mode XX - LX /SX . Appliance port transceivers ordered separately. Double bay module.	xx - user should specify network side fiber type • SR - multimode 50/125 • LR - singlemode
3808E-SG-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
3808E-SG-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

Part Number	Description	Ordering Details
3808E-SG-xx-yy-2B+4	2 full bypass segments (2 links), each with 2 network ports and 2 appliance ports. An additional 4 appliance ports. Appliance port transceivers ordered separately. Double bay module.	xx - user should specify network port traffic rate • 40G • 100G yy - user should specify network side fiber type • SR4 • LR4
3808E-SG-xx-LR4-4B	4 full bypass segments (4 links) each with 2 network ports and 2 appliance ports. Appliance port tranceivers ordered separately. Double bay module.	xx - user should specify network port traffic rate • 40G • 100G
3808E-SG-xx-BD-4B	4 full bypass segments (4 links) each with 2 network ports and 2 appliance ports. Network ports 40G/100G BiDi multi mode. Appliance port transceivers ordered separately. Double bay module.	xx - user should specify network port traffic rate • 40G • 100G
3808E-SG-xx-BD-2B+4	2 full bypass segments (2 links), each with 2 network ports and 2 appliance ports + additional 4 appliance ports. Network ports 40G/100Gb BiDi multimode. Appliance port tranceivers ordered separately. Double bay module.	xx - user should specify network port traffic rate • 40G • 100G
3808E-MN-BP-AC	3808E Hybrid bypass main chassis, bypass functionality only. AC with two power supplies (1+1). Can support up to two one double bay modules. Modules sold and ordered separately. Packet broker functionality license sold and ordered separately.	
3808E-MN-BP-DC	3808E Hybrid bypass main chassis, bypass functionality only. DC with two power supplies (1+1). Can support up to two one double bay modules. Modules sold and ordered separately. Packet broker functionality license sold and ordered separately.	
3808E-LC-NPB	License to enable Packet Broker functionality on 3808E-MN-BP-XX bypass switches	

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.

NIAGARA NETWORKS

48430 Lakeview Blvd,
Fremont, CA 94538, USA

www.niagaranetworks.com
info@niagaranetworks.com

Tel: +1 408 622 0354
Fax: +1 408 213 7529