**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 1/10/25Gb bypass segments, active TAP versatility and multifunctionality.

![3808E front panel populated with two modules, each with four links and 16 1/10/25Gb ports](image1)

**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 or 25Gb, whether SM, MM or copper.

Integrated transceivers 1/10Gb or 10/25Gb 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 and 25Gb appliance links.

![Multipurpose four port segment. Appliance ports can serve the hybrid functionality of fully-featured I/O packet broker ports.](image2)

**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 and LX/LR
- Multi-rate interfaces - 1/10/25 Gb
- 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.

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.

Figure 3: Inline deployment

Figure 4: Power Failure Mode
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](image)

**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 6: Appliance Failure Mode](image)

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 (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 7: Active TAP (aggregation)](image)

![Figure 8: Active TAP (split)](image)
### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Height</td>
<td>1.75 inches (44.45 mm)</td>
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<tr>
<td>Length</td>
<td>21.5 inches (546.1 mm)</td>
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<tr>
<td>Width</td>
<td>17.0 inches (431.8 mm)</td>
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<tr>
<td>Weight</td>
<td>24.65 lbs (11 kg)</td>
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<td>Operating Temp</td>
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<tr>
<td>Operating Humidity</td>
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<td>Max Power Power</td>
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<tr>
<td>DC</td>
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<td>Current</td>
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### Emissions

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<td>FCC Part 15B, ICES 003, EN55032</td>
<td>EN55024</td>
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### Safety

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### Part Number

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Ordering Details</th>
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</table>
| 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 orders separately |
| 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 |
| 3808E-SG-xx-y-1B | 3808E module 1 bypass segment (1 link), with 2 network ports. 2 appliance ports. Appliance port transceivers ordered separately. Double bay module. | xx - user should specify network port traffic rate  
- 40 - 40Gb  
- 100 - 100Gb  
y - user should specify network side fiber type  
- M - SR4 multimode  
- S - LR4 single mode |
| 3808E-SG-xx-y-2B | 3808E module 2 bypass segment (2 links) with 4 network ports. 4 appliance ports. Appliance port transceivers ordered separately. Double bay module. | xx - user should specify network port traffic rate  
- 40 - 40Gb  
- 100 - 100Gb  
y - user should specify network side fiber type  
- M - SR4 multimode  
- S - LR4 single mode |