

## Hybrid Packet Broker - all-in-one intelligent bypass TAP and Network Packet Broker

The 3299 is a multifunctional solution that combines hybrid bypass TAP functionality with a fully featured network packet broker, providing 1Gb bypass and active TAP versatility in a compact form factor to serve a wide range of use cases. Network architects can perform intelligent aggregation and filtering of data traffic that's captured/tapped by 3299 - this includes five tuple anchors for intelligent filtering and traffic optimization.



Figure 1: Fanless rackmount chassis populated with two dual bypass segment fiber modules and one dual segment copper bypass module.

Operation teams tend to designate the platform as an intelligent TAP to network architects and security teams. It enables a significant power multiplier by efficiently intercepting the required data with optimal and simple implementation while filtering closer to the source, which reduces the bottlenecks and allows the utilization of the available bandwidth". In addition, such a powerful and flexible solution enables CAPEX savings of over 50% by reducing the number of visibility elements and efficient aggregation at the TAP level.

The power of the 3299 hybrid configurations enables fully-featured load balancing. Additionally, the 3299 includes four 10Gb aggregation ports that aggregate the traffic from the multiple 1Gb segments. With this, much fewer links are required towards an aggregator or network packet broker device, reducing points of failure and reducing the total cost of deployment.

### Product Highlights

#### High Density

- Up to 24 1Gbps packet broker ports / six bypass segments
- Four 10Gbps packet broker ports / aggregation ports

#### Advanced TAP Functionality

- The 3299 copper modules can be configured as the bypass segment to protect inline appliances. Additionally, the copper ports can be configured as a copper TAP segment or as separate packet broker ports. Combined with the filtering capabilities of the 3299, the chassis can be deployed as a 1G advanced filtering TAP with up to 12 copper TAP segments and up to four, optionally load-balanced, 10G output ports

#### Multi-functional Segments

- Two copper ports can be configured as a copper TAP segment
- Network ports support SX, LX and RJ45
- Bypass for inline deployments
- Active TAP split mode
- Active TAP aggregate mode

#### Packet and Flow Processing<sup>1</sup>

- Mapping traffic flow relationships between source and destination ports:
  - Aggregate traffic to a single port
  - Replicate traffic to multiple ports
  - Sophisticated filtering - L2-L4, User Defined Byte (UDB)
- Tunnel handling: MPLS, VLAN, GRE initiation
- Multiple flexible load balancing regimes
  - Layer 2 to Layer 4 hashing criteria
  - Session stickiness
- Ingress and egress filtering, internal traffic loopback for efficient creation of sophisticated multi-level filters
- Filter templates for rapid deployment and filter re-use
- Port configuration for listen-only, transmit-only and bi-directional deployment

#### Management

- SNMP v1, v2, v3 support
- Local, RADIUS, and TACACS+ support (members and groups)
- Intuitive, web-based user interface
- Granular access control features
- Syslog
- REST API for third-party integration and support (optional)
- Managed by the NVC (optional)
- Highly scalable management of an unlimited number of nodes in a cluster as a single virtual node by using the NVC orchestrator
- Niagara Networks' NVC single pane of glass can provision visibility infrastructure with the 3299 solution in scalable and simple point & click GUI, thus reducing operational expenses by performing design, implementation, and management of intelligent TAPs without complex CLI configurations

<sup>1</sup> The 3299 model supports bypass/TAP functionality by default, but can be upgraded with packet broker features via a license.

# Multipurpose hybrid packet broker for a wide variety of use cases

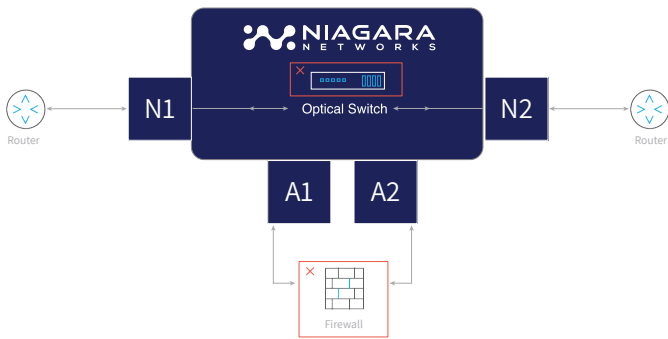


Figure 3: Protect network traffic in case of security appliance failure.

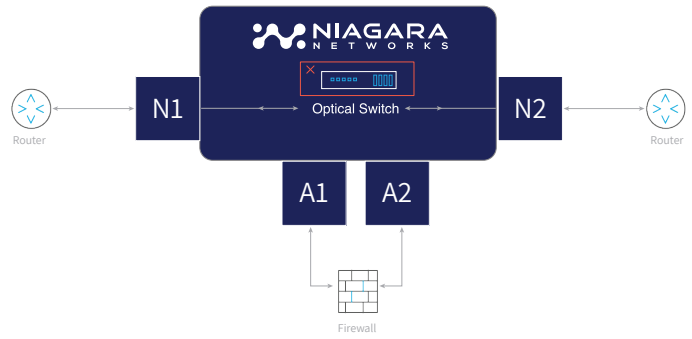


Figure 4: Hardware bypass in case of power or other major failure. Provides 100% network uptime.

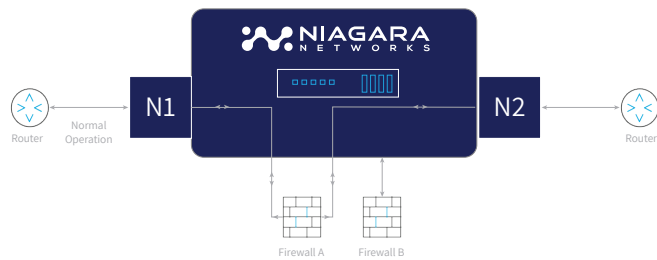


Figure 5: Load balancing n+1 and Failover mode of 1:1.

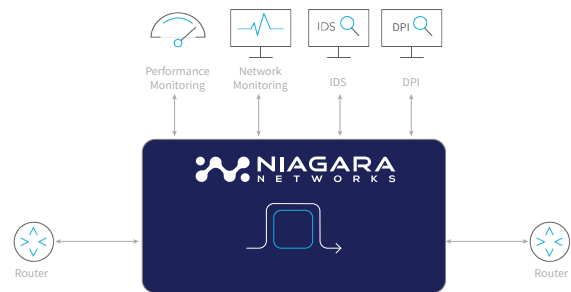


Figure 6: Send copy of network traffic to multiple tools.

## Niagara Visibility Controller (NVC) Device Management for 3299 Platform

The NVC supports the hybrid packet broker 3299 platform. This means you can now leverage NVC's robust, centralized device management capabilities, along with Niagara's FabricFlow™ technology, to configure maps, filters, bypass functionality, and more—managing multiple 3299 devices seamlessly from a single system.



## Multifunctional Bypass Segment

A bypass segment comprises two network and two appliance ports. The network ports offer, depending on the module, direct 1000Base-T (RJ45), single mode (SM) or multimode (MM) connectivity. The appliance ports utilize customer pluggable transceivers, and support the flexibility to connect appliances (tools) using 1Gb, SM, MM or copper. The dual copper bypass segment module includes direct 1000Base-T (RJ45) and 1000BaseT (RJ45) interfaces on the appliance ports.

The network ports connect to the non-blocking switching fabric via integrated transceivers. FabricFlow™ technology provides the ability to forward the traffic from one segment to any other segment.

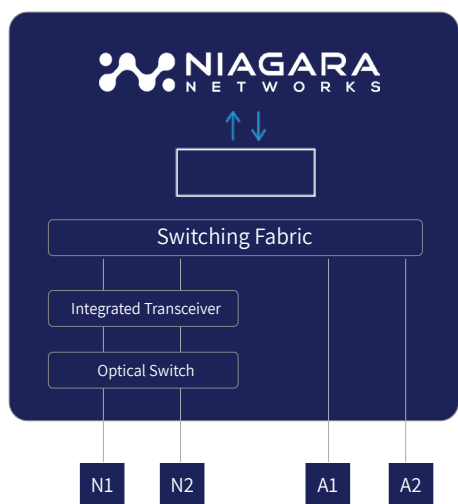


Figure 7: Multi-purpose four port segment

## Network Bypass Technology

Niagaras' signature BypassP2™ offers **double-protection** bypass technology. A Fail-Safe bypass relay on network ports, and user-configurable heartbeat-generated packets on appliance ports. In Bypass/Inline deployments, 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.



Figure 8: Inline deployment

## Fail-Safe Protection

Protecting network traffic flow in the event of BypassP2™ failure. When power fails, as depicted in Figure 9, the Fail-Safe bypass relay ensures that the network flow continues uninterrupted. The relays can be configured as Fail-Open or Fail-Close to meet specific deployment needs. A Fail-Safe bypass mechanism is the most reliable method for connecting inline devices to your network, while ensuring uninterrupted network services under all conditions.

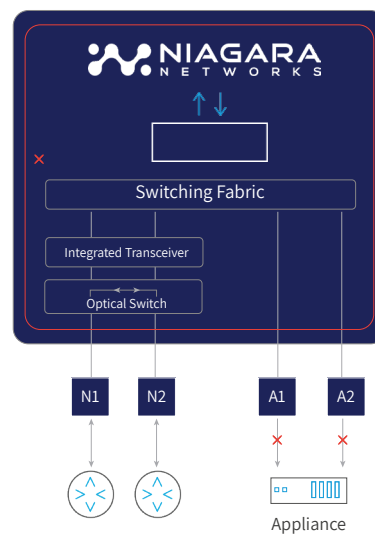


Figure 9: Power failure mode

# Heartbeat Protection

Protecting network traffic flow in case of appliance failures. The BypassP2™ transmits a user-configurable heartbeat on the appliance ports as depicted in Figure 10. In the event of an appliance malfunction (such as a software crash, system failure or loss of appliance power as depicted in Figure 11), the failure is detected, and the BypassP2™ ignores 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 BypassP2™ 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, as failsafe bypass relay is the number of received heartbeats to determine that the appliance is back on-line. BypassP2™ heartbeat does not require additional drivers to be installed on connected appliances.

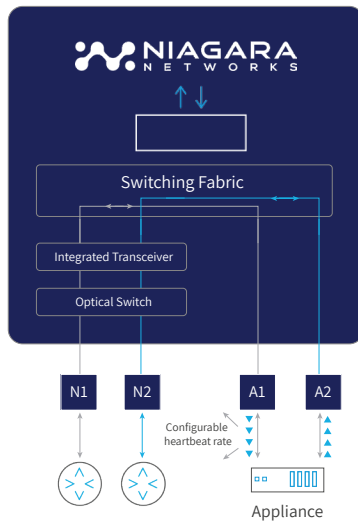


Figure 10: Normal inline operation mode

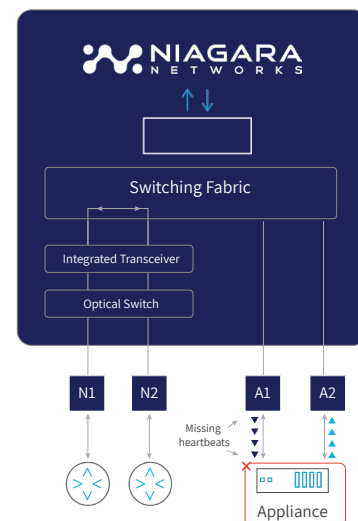


Figure 11: Appliance failure mode

## Active TAP (aggregation)

The bypass segment is configured as an active TAP, supporting one network link. 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 in case the total traffic throughput from both network sides is below that of the single appliance port.

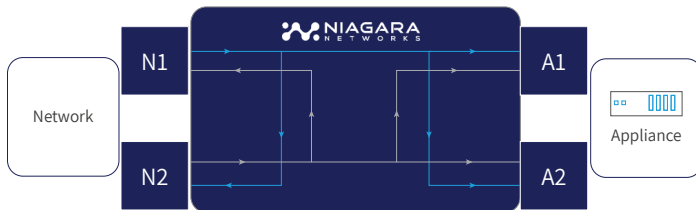


Figure 12: Active TAP (aggregation)

## Manual Active Bypass

In this mode, the segment becomes transparent to the network traffic. Network traffic flows unimpeded between N1 and N2. This mode is useful for carrying out maintenance on the appliance ports without bringing the network side down.

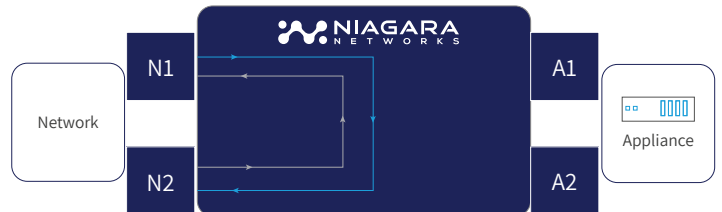


Figure 14: Manual active bypass mode

## Active TAP (split)

The bypass segment is configured as an active TAP, supporting one network link. Traffic on the network side is always maintained. Each appliance port receives a copy of the Rx from one of the network ports.

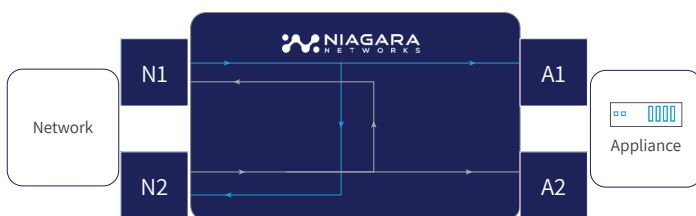


Figure 13: Active TAP (split)

## Copper TAP

In copper TAP mode, each port pair (network ports and appliance ports) can be used as a copper TAP segment, thereby creating up to 12 copper TAP segments per device.



Figure 15: Copper TAP

Specifications		
Height	1.74in (44.2mm)	
Length	24in (609.64mm)	
Width	18.95in (481.33mm)	
Raw Power	46.50 Watts	
AC	100-240V, 50-60Hz, 2-1A	
DC	36--72V, 6-3A	
Operating Humidity	5%-95%	
Operating Temp	0° - 40 °C	
Max Power	33.97 Watts	
Max Current	0.34A @ 100V <sub>AC</sub> 0.94A @ 36V <sub>DC</sub>	
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
Ordering Details		
Part Number		
3299-MN-AC	3299 main chassis AC, bypass and active TAP only, including fixed (4)x 10GbE aggregation/uplink ports. Two internal power supplies.	
3299-MN-DC	3299 main chassis DC, bypass only, including fixed (4)x 10GbE aggregation/uplink ports. Two internal power supplies.	
3299-LC-NPB	3299 license to enable Packet Broker functionality.	
3299-SG-TX-2B	2 bypass segments of 1000Base-T. Each segment includes 2 network ports and 2 appliance ports.	
3299-SG-SX-2B	2 bypass segments of 1GbE. Each segment includes 2 SX 62.5/125 network ports and 2 appliance ports. Appliance port transceivers ordered separately.*	
3299-SG-SX5-2B	2 bypass segments of 1GbE. Each segment includes 2 SX 50/125 network ports and 2 appliance ports. Appliance port transceivers ordered separately.	
3299-SG-LX-2B	2 segments of 1GbE. Each segment includes 2 LX network ports and 2 appliance ports. Appliance port transceivers ordered separately.*	
Accessories / Spares		
3299 -PSU-AC	Field replaceable power supply unit AC for 3299.	
3299-RLS-20	Rail Kit for 3299 - 20 inches.	
3299-RLS-26	Rail Kit for 3299 - 26 inches	

\* Appliance port transceivers ordered separately

## ABOUT NIAGARA NETWORKS

Niagara Networks™ is a Silicon Valley based company that pioneered the Open Visibility Platform™ to bring desperately needed agility to network security. Niagara Networks provides high-performance, high-reliability network visibility and traffic delivery solutions for the world's most demanding service providers and enterprise environments.

We design, develop and manufacture our products in the Silicon Valley, USA.



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