

# Application Note

## Carrier-Grade Bypass solution - Enabling uncompromised high-availability with COTS-based appliances

### Introduction

With the increasing wealth of security appliances, and applications there is a noticeable trend of vendors of these appliances moving away from expensive dedicated appliances and putting effort in making their appliances available on Common, of the Shelf (COTS), hardware in a new form of soft- or virtual appliances.

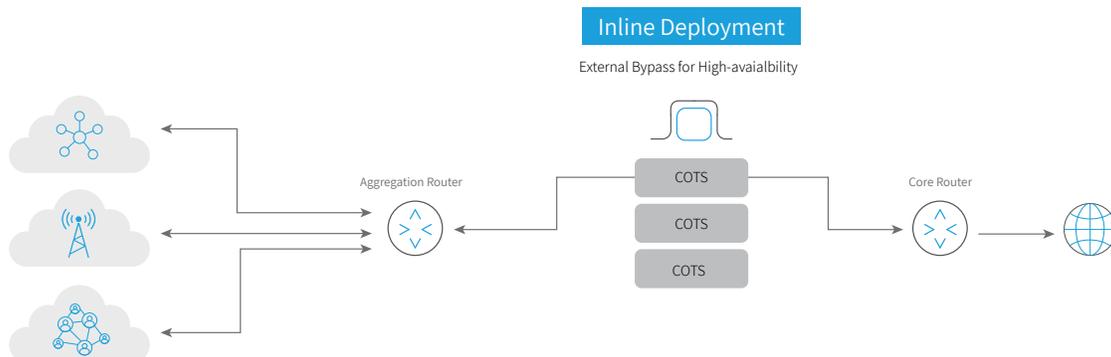
Running the appliances on standardized hardware enables vendors to focus on the development of application and functionality instead of designing and manufacturing hardware and the need to scale and improve the hardware performance every couple of years. The transition to us standardized hardware is also beneficial to customers as it enables ease of scalability by either selecting a stronger hardware platform (server) or by adding additional servers for increased performance and resilience.

### Challenge

Traditionally advanced appliances had embedded network bypass functionality to prevent network outages due to appliance failure. While not the optimal solution as it does not allow for the removal of the appliance from the network without breaking the network connection, it provided a minimal network outage protection and enabled customers to take down the appliance for maintenance.

With the use of common, of the shelf hardware, this protection is no longer available and creates architectural complexity and dependence on a “soft” homogenous solution that has a dependency on many variables with respect to top resiliency which is mandatory in an inline security stack.

### Maximum high-availability for the inline security service chain

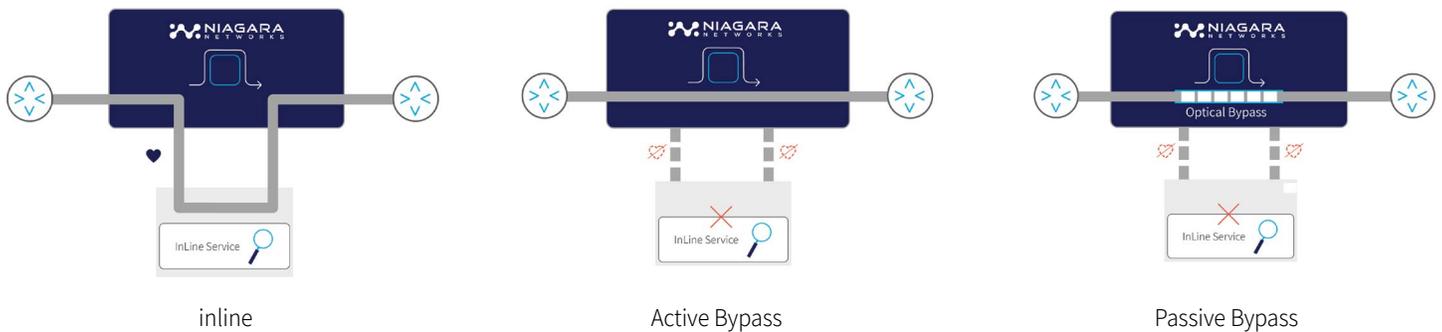


# Solution

To overcome this loss of (often) critical functionality Niagara Networks introduced the 3808E multifunctional hybrid bypass switch. The 3808E combines Niagara’s carrier-grade double-protection bypass technology with advanced packet broker functionality to provide the highest density bypass solution together with advanced load-balancing (1:1, 1:n, n:1, and n:m), filtering, and tapping capabilities.

Niagara Networks' 3808E multifunctional Hybrid Packet Broker solution supports one of the highest 40/100Gb segment densities available on the market today. The solution increases dramatically operational efficiency and the high availability of complex inline cybersecurity tools.

## Double-protection bypass

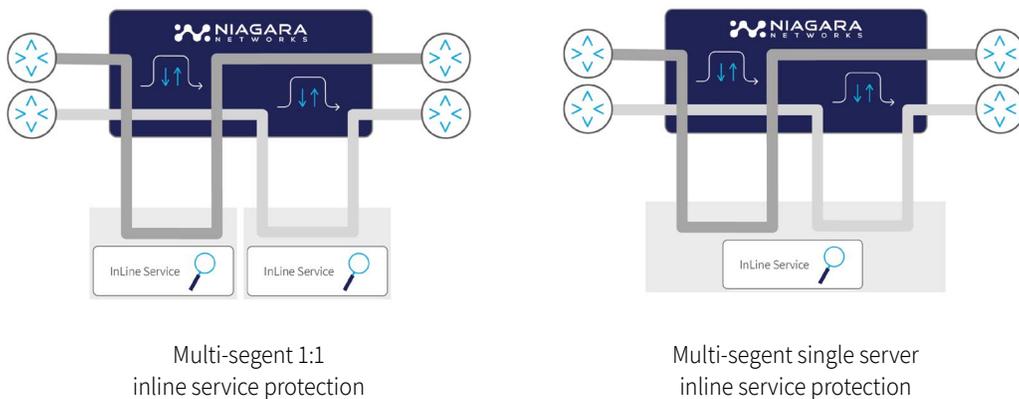


The Niagara Networks External Bypass Switch consists of two bypass technologies:

**Active Bypass:** The Niagara Networks 3808E External Hybrid Bypass Switch can use an intelligent “active” mechanism that senses the health of the protected server by sending a configurable, unidirectional, or bidirectional heartbeat. If the heartbeat is lost, the system automatically reroutes the traffic around the server until it has recovered. The intelligent, active bypass mode preserves the link, and the transition is made seamlessly.

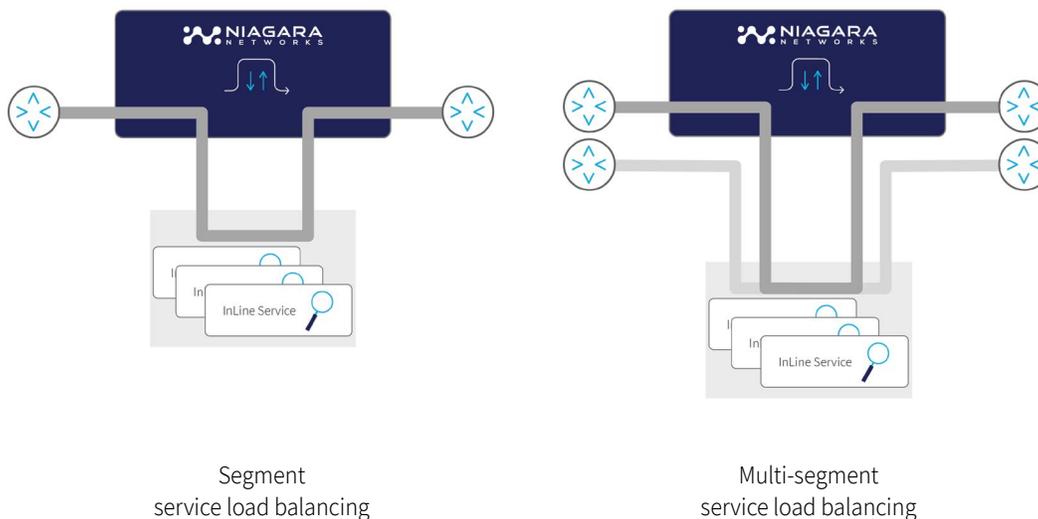
**Passive Bypass:** The second, passive bypass mode monitors the bypass’s power supplies. Upon detection of a power outage on all power supplies, the system fails open, making sure that network connectivity stays intact.

## Advanced configuration



The Niagara 3808E provides carrier-grade double protection bypass for up to 8x 1G/10G/25G segments.

Each bypass segment can protect a service, provided by a single appliance. Additionally, multiple segments connected to a single server can be protected. More advanced configurations can be supported by using the load balancing functionality of the 3808E hybrid bypass.



A single segment can be protected by multiple servers for increased service availability and resilience. Combining multiple segments protected by security services provided through multiple servers (COTS) allow for advanced service protection and optimized server deployments.

Advanced filtering capabilities enable optimization of traffic to the inline inspection tools.

In addition to the bypass protection, the 3808E supports the additional creation of (filtered) copies of the traffic for off-line inspection and/or reporting.

## Features and Benefits

- Deploy Common Off-The-Shelf (COTS) high-speed servers as inline security tools while maintaining the network's high availability using Niagara's carrier-grade double-protection bypass technology
- Increase service availability by load-balancing – per session and other sticky criteria
- Optimize tool utilization by advanced filtering and traffic redirection
- Server and/or tool maintenance without service disruption – enable agile and elastic security chain environment

## Summary

The Niagara 3808E hybrid bypass enables carrier-grade availability and service resilience to be implemented on common, off-the-shelf hardware in a new modern network architecture.

Combining the 3808E hybrid bypass with generic hardware enables for cost-optimized inline security solutions in service-provider and enterprise mission critical networks.

- Design carrier-grade always-on inline security stack in a complex multi-vendor scenario
- 400% higher density of bypass segments per single rack space for 40/100Gb networks versus other alternatives
- Simplified deployment as a single modular hybrid platform with low TCO
- Pay-as-you go economical model with a modular solution that offers a hybrid packet broker, bypass, and TAP for all interface speeds 1/10/25/40/100Gb
- Automation of fail-safe scenarios via REST API for unconstrained network security architecture

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## 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 network TAPs, bypass elements, packet brokers and a unified management layer.

For more information please visit us at [www.niagaranetworks.com](http://www.niagaranetworks.com)

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