# Introduction to Bypass Switches

## A guide to protecting in-line tools and critical link integrity with Bypass Switches

### What is a Bypass Switch

- Bypass switches are in-line devices that provide robust protection for in-line tools, such as Intrusion Prevention Systems (IPS) and Deep Packet Inspection tools (DPI.)

- In-line tools often lack a passive bypass feature allowing them to "fail to wire" in the event that the tool loses power or completely fails. Bypass switches provide this power fault tolerance, ensuring that the link remains viable if the tool fails.

### Why use a Bypass Switch?

- User configurable Heartbeats are passed from the switch through the tool, allowing it to automatically be taken off-line if they pass too slowly. This allows tools with performance issues to be bypassed - even if they still have power.

- Bypass switches supporting two in-line tools provide High Availability. If the primary tool fails, then the backup or passive tool can automatically take over as primary, thus ensuring that the link is still protected.

### What options are available?

- Choices include a basic model that supports one tool, one that supports two tools and the High Availability feature, and a Dual Bypass Switch that supports High Availability and Dual LINKprotect. When deployed in Active-Passive or dynamically bonded link pairs, LINKprotect ensures that if one of the links fails or one of the tools fails - or both - that the viable link and/or tool carries all the traffic until the issues are resolved.

- Currently offered models provide support for tools used in 1G or 10G fiber links.

- SFP+ appliance ports allow 10/100/1000 copper, 1G fiber, or 10G fiber tools to be deployed

- All models offer SSH for secure remote CLI configuration, and SNMP V2/V3 traps to notify of link failures, power supply failures, and fans that are performing out of spec.

### Typical NPB placement
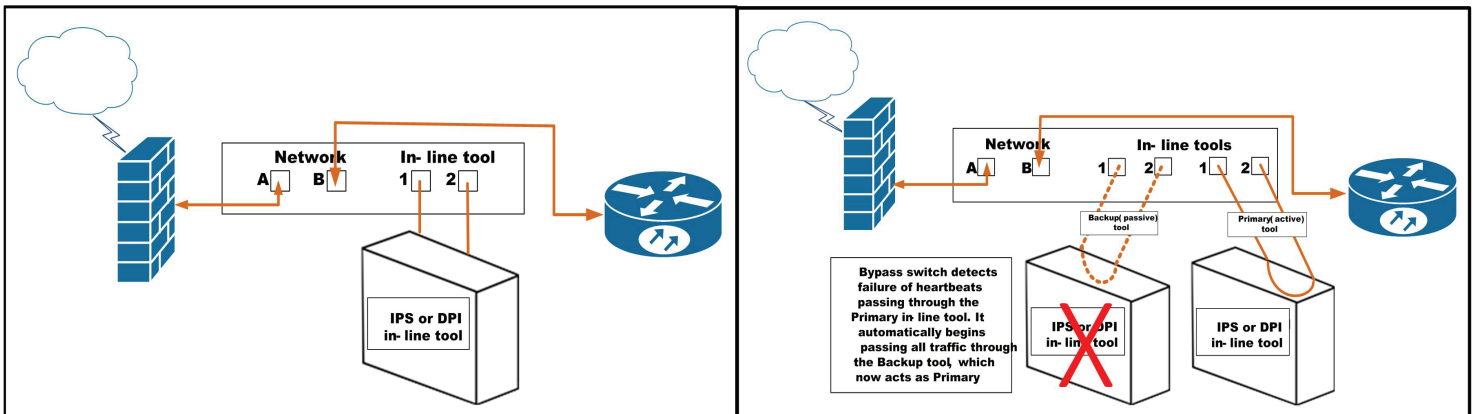
Bypass switches - used to provide link protection and High Availability for in-line tools

| Product Number | Photograph | Number of links protected | Link Type & Speed | Number of in-line tools supported | Appliance port type / speed | Supports High Availability | User Configurable Heartbeats | Dual Link Fault Protection |
|---|---|---|---|---|---|---|---|---|
| DS-1404 |  | 1 | 1G/10G 50/62.5 micron SX; 9 micron LX | 1 | SFP+ 1G/10G | No | Yes | No |
| DS-1406 |  | 1 | 1G/10G 50/62.5 micron SX; 9 micron LX | 2 | SFP+ 1G/10G | Yes | Yes | No |
| DS-2408 |  | 2 | 1G/10G 50/62.5 micron SX; 9 micron LX | 2 | SFP+ 1G/10G | Yes | Yes | Yes |