SOLUTION BRIEF

High Availability Makes Monitoring More Reliable

DEPLOYMENT SCENARIO: INLINE & OUT-OF-BAND VISIBILITY

With the current business demands being placed upon corporate networks, network reliability continues to remain an increasingly important topic. This is with good reason. According to the 2016 Veeam Availability Report: How to close a widening Availability Gap, 84% of the businesses surveyed are not delivering the uptime for services and applications that their users require. Downtime often correlates to real money lost, so it is easy to understand the concern. According to a Ponemon Institute study (Cost of Data Center Outages, January 2016), the average cost of network downtime is $7,790 per minute.

This availability concern also ripples through associated technologies like network monitoring and inline tool deployments. According to a survey run by Enterprise Management Associates in October of 2016, High Availability (HA) is one of the top three most important features for data monitoring equipment. The reason is simple, IT needs the monitoring data to isolate issues as fast as possible and inline device deployments cannot be allowed to interrupt or disable the network.

Network packet brokers (NPBs) that support HA are important for both inline and out-of-band monitoring solutions because they support the high network reliability standards that are needed for today's networks.

BENEFITS

- Increase network reliability for inline security tool deployments
- Protect against monitoring data loss for out-of-band monitoring tool deployments
- Reduce corporate risk from loss of security and monitoring data

SOLUTION COMPONENTS:

- Ixia Network Packet Brokers
- NetStack
- Bypass switches
- Taps

ixia
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SOLUTION OVERVIEW

This network visibility solution allows you to:

- Use HA to create full redundancy (n+n) for inline deployments of NPBs and bypass switches
- Use HA to create full redundancy (n+n) for out-of-band deployments of NPBs
- Maximize security and monitoring tool effectiveness and optimize resources by deploying Active-Active CPU configurations

WHAT IS HIGH AVAILABILITY?

High availability, according to Wikipedia, refers to an agreed level of uptime for a longer than normal period of time. Components may fail but the architecture and network must survive.

From a network monitoring perspective, there are two deployment scenarios—inline and out-of-band. IT personnel desiring HA may need it for both scenarios. This is especially true for companies that are service providers, large enterprises, or generate significant ecommerce revenue. For these organizations, an NPB that supports HA will be critical.

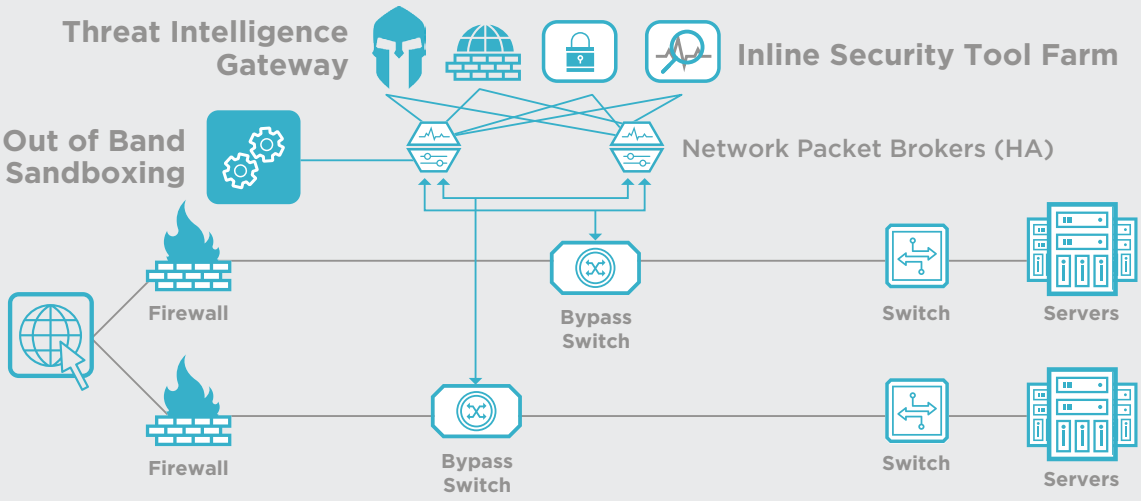
MAKE INLINE SECURITY TOOL DEPLOYMENTS MORE RELIABLE

This solution is an illustration of how you can increase network reliability and security by implementing an improved survivability strategy. HA can be used to create full redundancy (n+n) for inline deployments of NPBs and bypass switches. A full redundancy option is highly effective at maintaining maximum network and tool up time. You literally have a second copy of every component (bypass switch, packet broker, and tools) in the network. If one component, or path fails, the secondary equipment can handle the load.

How the HA solution is deployed is critical though. There are two options — Active-Active and Active-Passive. Active-Active means that both processors are working simultaneously to process traffic. Active-Passive means that only one of the processors is active while the second processor is in stand-by mode.

Figure 1.

Inline Deployment



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The Inline solution shown offers several layers of survivability components. The first layer is to use redundant bypass switches that provide HA and network failover options. The second layer is to provide redundant NPBs that can be feed redundant security and monitoring tools. These NPBs also have hardware redundancy (CPUs, power supplies, etc.) that are internal to the devices. For HA to truly work, the NPB must support Active-Active configurations for the processor units. Active-Standby configurations will cause a loss of data and increase the risk that a security threat got through. A third layer of survivability is the use of heartbeat signaling between the bypass switches and the NPBs and then also between the NPBs and the tools. This helps to create a self-healing architecture. If heartbeat connectivity is lost along the path, fail-over initiatives are implemented in a matter of a few seconds.

By using redundant external bypass switches and packet brokers, versus just redundant tools, you can increase your network uptime and reliability far beyond the level provided with just redundant tools. In addition, the external bypass switch and packet broker can reliably connect the redundant tools in a more cost effective and less complicated manner than special purpose load balancing devices. An external bypass approach has the benefit of delivering superior resilience due to more granular failure detection, faster failover, and better application session integrity. This makes the system more resilient.

HA can be used to create full redundancy (n+n) for inline deployments of NPBs and bypass switches. A full redundancy option is highly effective at maintaining maximum network and tool up time.

IMPROVE OUT-OF-BAND MONITORING SOLUTION RELIAIBLITY

The out-of-band version of HA is similar to an inline implementation, although there are a few differences. The first difference is that the bypass switch is replaced by a tap. Since the tap is a passive device, there is no heartbeat signaling between the tap and the NPB. At the same time, none is really needed—due to the nature of an out-of-band architecture. Otherwise, the solution deploys a full redundancy option that is highly effective at maintaining maximum network and tool up time. In terms of the network packet broker, this typically includes dual CPUs, dual power supplies, and fail-over between internal components. If one component, or path fails, the secondary unit can still handle the load.

How the HA solution is deployed is critical though. There are two options — Active-Active and Active-Passive. Active-Active means that both processors are working simultaneously to process traffic. Active-Passive means that only one of the processors is active while the second processor is in stand-by mode. Visibility solutions that are configured in Active-Passive mode will typically need a minute or more to restore full processing and restart data delivery. But a lot can happen in 60 seconds, and a lot of security issues can be missed. Redundant NPBs configured in Active-Active mode work with complete synchronicity to aggregate, filter, process, and deliver data to all security and monitoring solutions. This lets them work more efficiently, handle periodic traffic bursts, and failover in a few seconds or less to maintain continuous security inspection, without gaps.

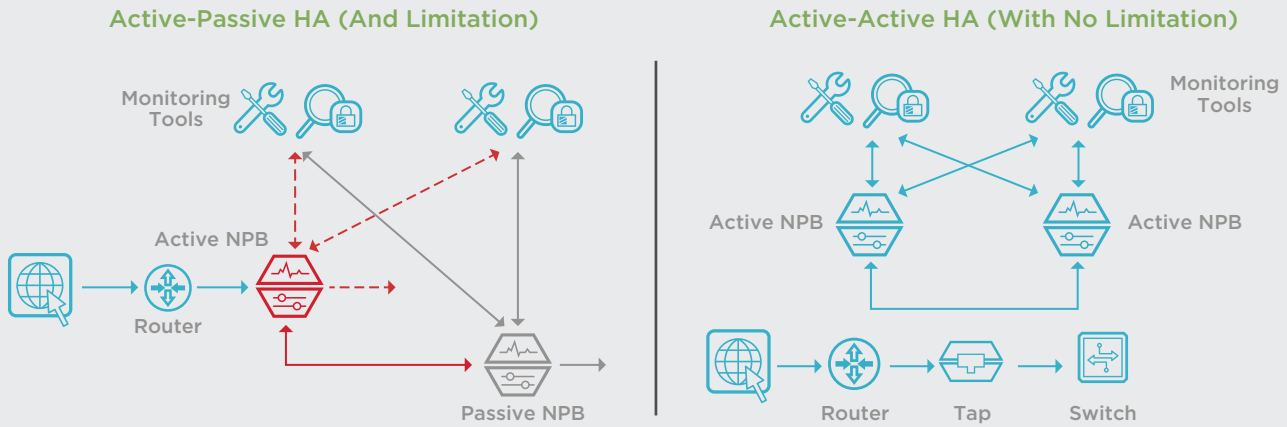
Active-Active configurations also reduce waste and improve efficiency. In Active-Standby configurations, you literally have a duplicate set of equipment that sits idle until it is needed, which is hopefully never. This is typically a large cost for something that is not being used.

By using HA NPBs you can increase your network uptime and reliability far beyond the level provided with just redundant tools. And since you have a redundant NPB, maybe you do not need a redundant set of tools.

The following diagram shows how a visibility architecture using an out-of-band solution.

A visibility architecture can be used to deliver performance improvements by delivering components that can be used to create a highly available architecture.

Figure 2.
OOB Deployment



SUMMARY

Network reliability and application availability are now critical components to the IT network. Any downtime of applications or the network are becoming costly as most corporations rely heavily on these networks now.

A visibility architecture can be used to deliver performance improvements by delivering components that can be used to create a highly available architecture. This architecture increases the mean time between failures (MTBF) to the highest reasonable possible limit. HA solutions using NPBs have component redundancy, device redundancy, and heartbeat signaling which offers an architecture that maximizes uptime. Solutions deploying an Active-Active CPU configuration not only provide fail-over advantages but deliver more efficient solutions as well.

VISIBILITY ARCHITECTURE SOLUTIONS FROM IXIA

Ixia's network visibility solution involves using NPBs in conjunction with application filtering and taps. Learn more about Ixia's Network Packet Brokers, Bypass Switches, and NetStack technology along with our technical partner solutions.

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