

Arbor Networks SP

Part of the Cisco ASR 9000 vDDoS Protection Solution

Product Overview

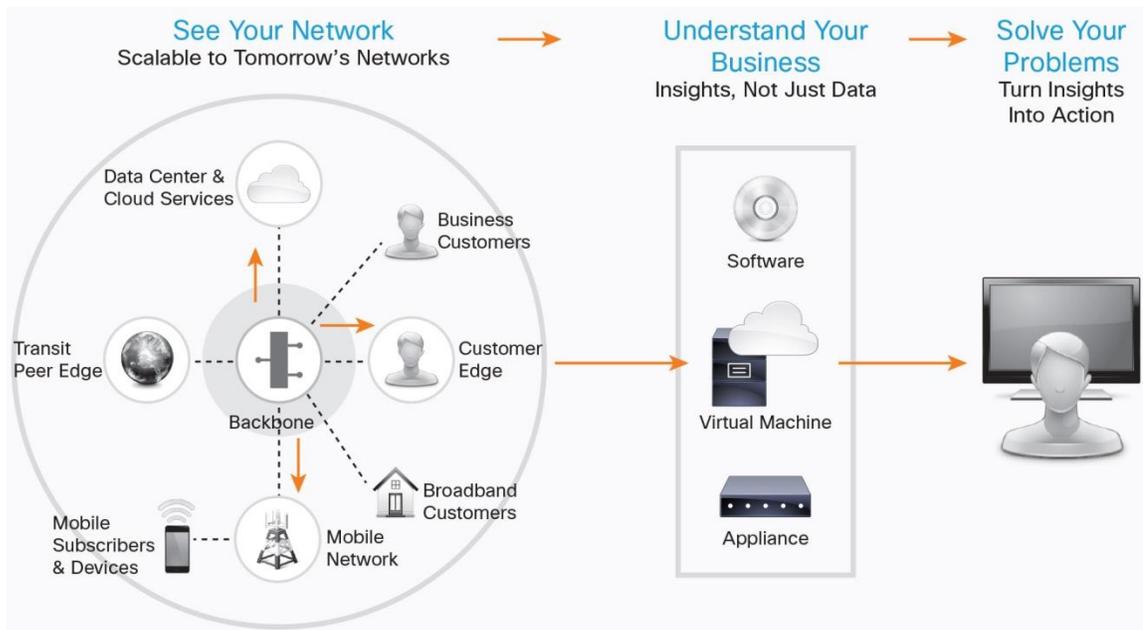
Network data is proliferating in growth. Annual global IP traffic will surpass the zettabyte (or ZB; 1000 exabytes) threshold in 2016, and the 2-ZB threshold in 2019. That data necessitates the underlying network to grow and evolve continually. The pressure on service providers is to keep up with the challenges of the network growing so quickly in a competitive market, where customer loyalty, margins, and revenues are all concerns. Crucial to understanding these challenges is having proper and complete visibility of your network. To empower service providers, Cisco has teamed up with Arbor Networks to resell Arbor Networks' industry benchmark network visibility product, SP. Arbor Networks SP can give you the insight into your network to understand what your network is doing and how to evolve it.

SP unlocks pervasive visibility into your network and its traffic. It was built for operators and proven to scale cost-effectively across your entire global network. SP analyzes NetFlow, Simple Network Management Protocol (SNMP), and Border Gateway Protocol (BGP) routes sent from any capable router from across the network and transforms that raw data into business insights. This transformation empowers you to act on these insights to solve your organization's most pressing problems, from network planning and engineering to service availability and enablement.

This solution is part of the Cisco® ASR 9000 vDDoS Protection solution, providing distributed-denial-of-service (DDoS) attack detection and management of both Cisco vDDoS Protection deployments and Arbor Networks TMS appliances to mitigate any detected DDoS attack that might threaten the availability of your network. SP is completely virtual and runs on a range of hypervisors for ease of deployment and flexibility that can adapt your deployment to suit your organization's evolving needs.

Figure 1 shows Arbor Networks SP, part of the Cisco ASR 9000 vDDoS Protection solution, transforming data into business insights.

Figure 1. Arbor Networks SP Transforms Network Data into Business Insights



The Solution That Evolves with Your Business Needs

Service providers demand a solution that evolves with their business needs. SP has been evolving with operators over the last decade and is the de-facto standard to manage service provider networks. SP addresses the following primary business objectives:

- **Keep the network and services running:** Time is money. Service providers must quickly detect and resolve problems before they affecting availability of your network. SP can detect potential outages from DDoS attack traffic, network "hot spots", BGP hijacks, or even network misconfigurations. Then SP provides root cause analysis tools to quickly diagnose and resolve the issue.
- **Need business insights, not just data:** The network is the business. Service providers must optimize resources to save money, and SP provides robust capabilities from network wide capacity planning to managing overlay 2547 BGP/Multiprotocol Label Switching (MPLS) VPNs. This pervasive network data can also be used to make routing designs, lower transit costs, and provide marketing insights.
- **Launch revenue-generating services:** Growth is crucial. Engineers must support and even drive overall growth. With SP, service providers can propose new service offerings such as DDoS attack detection, DDoS protection, customer or ASN specific traffic analytics, quality of service (QoS), and MPLS VPN services. Current investments and infrastructure can be utilized to quickly launch new services or enhance existing ones. The built-in customer portal, customer scoping, and extensive RESTful API can facilitate these new revenue-generating services.

Solution Features and Benefits

Minimize Outage Time and Safeguard Network Availability

Through proactive detection of network or service availability threats, quickly diagnose and prevent misconfigurations, flash crowds, or malicious threats such as DDoS attacks from affecting availability. Arbor Networks SP, the industry-leading solution, manages both Cisco ASR 9000 vDDoS Protection installations and Arbor Networks TMS appliances for comprehensive DDoS protection to automatically detect and mitigate DDoS attacks in as little as one second.

Optimize Network Resources

Use comprehensive traffic, customer, and geographic reports for smarter traffic engineering. Reduce transit costs, improve utilization, and intelligently plan for the growth of your network.

Serve the Business

Provide insights to the business using built-in and ad-hoc traffic and market reports. Uncover trends to help your business grow.

Control Your Data

SP puts you in control of your data. You decide which routers send it data, where that data is stored, and who has access to it. No need to worry about where your data is or the country that it resides.

Perform Efficiently at Scale

SP has cloud based licensing that unlocks new performance and scalability while lowering the total cost of ownership (TCO). RESTful (Representational state transfer) APIs (application program interfaces) enable you to integrate with your systems to automate processes to drive more value from your network.

Launch Services (SO)

Use the same SP platform used for network visibility and threat detection to easily provision, deliver, and maintain new services from traffic intelligence, market breakdowns, quality of service (QoS), and MPLS/BGP VPNs.

Table 1 summarizes features and specifications of SP.

Table 1. Arbor Networks SP Features and Specifications

Feature	Benefit
Flows per second (non-sampled)	30,000,000
BGP routes (unique)	3,750,000,000
Routers	5,000
Monitored interfaces	200,000
Local interfaces	550,000
Managed objects (MO)	20,000
Virtual machine collection instances	150
Mitigation points (vDDoS Protection installations and Arbor Networks TMS appliances managed)	100
Arbor Networks APS appliances (listening for cloud signaling from)	200
Total users	700
Concurrent users	100

Figure 2 displays ingress and egress traffic for each selected peer over time, essential to optimize your peering relationships.

Figure 2. Traffic Peering Analysis

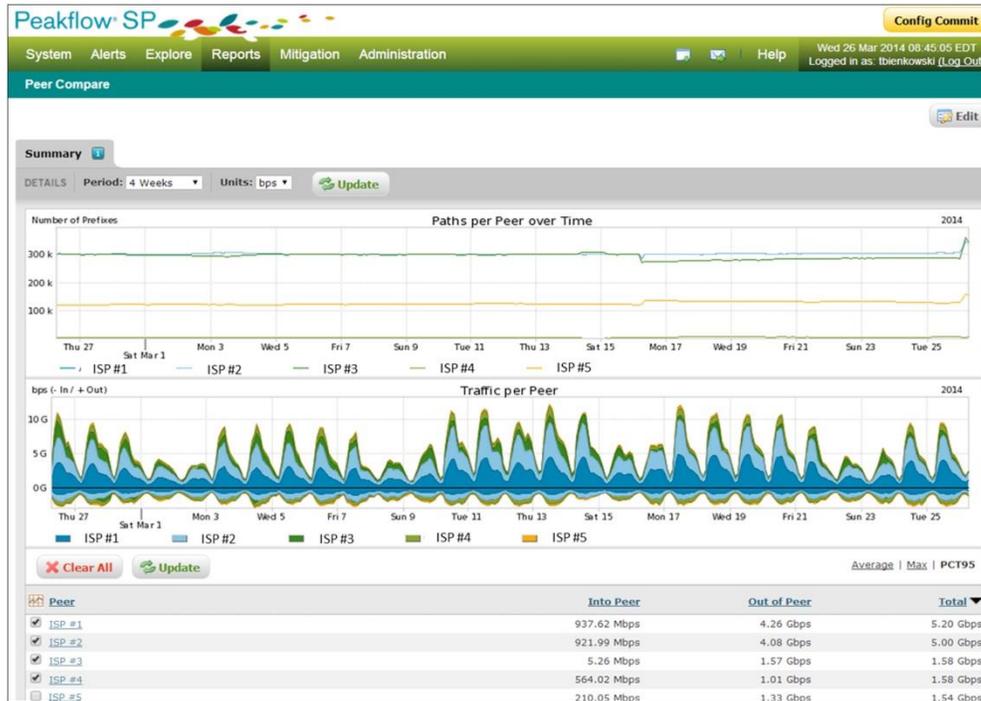


Figure 3 displays traffic for a particular customer.

Figure 3. Customer Traffic Analysis



Figure 4 displays a summary of ingress and egress traffic to a network, which is essential to network planning.

Figure 4. Traffic Analysis by AS



Figure 5 displays summary traffic on various MPLS/VPN networks being managed.

Figure 5. MPLS/VPN Traffic Analysis



SP Roles

Arbor Networks SP on a virtual machine is configured to operate as one of the following roles:

Traffic and Routing

- Collects up to 200,000 flows per second from up to 32 core routers or 100 edge routers in a deployment
- Performs collection and analysis functions, except for BGP peering analysis

User Interface

- User interface for management of SP deployments and reporting
- Supports up to 100 concurrent users or 700 per deployment
- Supports up to 200 Arbor Networks APS appliances for Cloud Signaling designed for managed services, supporting multi-tenant customer portals, portal API, and more concurrent users

Data Storage

- Dedicated management platform for creating monitored and protected managed objects (customers, networks, resources)
- Supports up to 1000 managed objects (MOs) per virtual machine and up to 20 data storage virtual machines in a SP deployment enable up to 20,000 managed objects

Platform Support and Compatibility

Arbor Networks SP is supported on the following virtual machine hypervisors:

- KVM QEMU
- VMware vSphere
- Xen Cloud Platform

Table 2 summarizes requirements for each SP role by hypervisor.

Table 2. Requirements for Each Arbor Networks SP Role Type and Virtual Machine Hypervisor

Hypervisor	VMware vSphere [*]	KVM QEMU	Xen Cloud Platform
Hypervisor versions supported	5.0, 5.1, 5.5	1.4.2	1.6.10-61809c
For User Interface Role			
vCPUs supported	8 to 32	8 to 32	8 to 15
Network interfaces supported	1 to 10 ^{**}	1 to 10 ^{**}	1 to 10 ^{**}
Memory supported	8, 16, 24, or 32 GB	8, 16, 24, or 32 GB	8, 16, 24, or 32 GB
Storage required for user interface role	100+ GB	100+ GB	100+ GB
For Traffic and Routing Analysis Role			
vCPUs supported	32	32	15
Network interfaces supported	1 to 10 ^{**}	1 to 10 ^{**}	1 to 10 ^{**}
Memory supported	32 GB	32 GB	32 GB
Storage required for traffic and routing analysis role	500+ GB	500+ GB	500+ GB

^{*} **Note:** Use the default settings except for the following: network adapter: E1000; OS: other Linux 32-bit; storage: thick provisioned lazy zeroed.

^{**} **Note:** Arbor Networks recommends no more than 2 VM instances per network interface.

Table 3 shows how SP scales in terms of flows per second by the number of virtual CPUs and hypervisor.

Table 3. Arbor Networks SP Virtual Machine Sizing by Hypervisor for Flow Collection

Hypervisor	Number of vCPUs	Flows per Second
VMware vSphere	8	50,000
	16	100,000
	32	200,000
KVM QEMU	8	40,000
	16	50,000
	32	100,000
Xen Cloud Platform	8	40,000
	15	40,000

Note: Only up to 15 cores supported on the Xen Cloud Platform.

Virtual Machine Recommendations

- Do not overprovision memory allocation.
- Configure Arbor Networks SP for high availability by using vSphere HA or similar functionality.
- When migrating Arbor Networks SP VMs, use VMware vMotion or similar functionality.
- Enable Network Time Protocol (NTP) on the VM host server.
- Dedicate a network interface per Arbor Networks SP VM when possible.

Warranty Information

Warranty information is available on Cisco.com at the [Product Warranties](#) page.

Ordering Information

To place an order, visit the [Cisco Ordering homepage](#) and use the information provided in Table 4. To download software, visit the [Cisco Software Center](#).

Table 4. Ordering Information

Product Name	Part Number
Perpetual SP software license for Basic features. Does not include any router monitoring or flow processing licenses. To only be used as the SP leader/management console for TMS and when no other SP functionality is desired.	A9K-DDoS-SP-BASIC
Perpetual SP software license for monitoring 1 Core router and 10,000 FPS Flows Per Second	A9K-DDoS-SP-CORE
Perpetual SP software license for monitoring 1 Edge router and 2,000 FPS Flows Per Second	A9K-DDoS-SP-EDGE
Spare Perpetual SP software license for Basic features. Does not include any router monitoring or flow processing licenses. To only be used as the SP leader/management console for TMS and when no other SP functionality is desired.	A9K-DDoS-SP-BASIC=
Spare Perpetual SP software license for monitoring 1 Core router and 10,000 Flows Per Second	A9K-DDoS-SP-CORE=
Spare Perpetual SP software license for monitoring 1 Edge router and 2,000 Flows Per Second	A9K-DDoS-SP-EDGE=
Perpetual software license for SP operation by 25 additional simultaneous users beyond the 25-user limit included with base SP licenses.	A9K-DDoS-SP-U25
Perpetual SP software license for monitoring 500 additional managed objects beyond the 1000 managed objects included with base SP licenses.	A9K-DDoS-SP-MO500
SmartNet support for A9K-DDoS-SP-BASIC license	CON-SAU-A9K-SP-BASIC

Product Name	Part Number
SmartNet support for A9K-DDoS-SP- CORE license	CON-SAU-A9K-SP-CORE
SmartNet support for A9K-DDoS-SP- EDGE license	CON-SAU-A9K-SP-EDGE
SmartNet support for A9K-DDoS-SP- U25license	CON-SAU-A9K-SP-U25
SmartNet support for A9K-DDoS-SP- MO500license	CON-SAU-A9K-MO500

Cisco Services

Through a lifecycle services approach, Cisco delivers comprehensive support to service providers. We help you successfully deploy, operate, and optimize your IP next-generation networks (IP NGNs). Cisco Services for Cisco ASR 9000 Series Aggregation Services Routers provide the services and approach needed to help assure effective deployment. We will help you get the most out of your network investment, with the best possible performance and availability. We deliver our services using leading best practices, tools, processes, and lab environments developed specifically for Cisco ASR 9000 Series deployments and post implementation support. Our Cisco Services team addresses your specific requirements and works to mitigate risk to your existing services, while helping you accelerate time to market for new network services.

Cisco Capital

Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce CapEx. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. [Learn more.](#)

For More Information

For more information about the Cisco ASR 9000 vDDoS Protection solution, visit <http://www.cisco.com/go/vDDoS> or contact your local account representative.

For more information about Cisco Services, contact your local Cisco account representative or visit <http://www.cisco.com/go/spservices>.

To view the Cisco Visual Networking Index: Forecast and Methodology, 2014–2019 white paper, visit http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html.

To view the Cisco Visual Networking Index Forecast Highlights, visit http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html.



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