DATA SHEET

Apstra Intent-Based Data Center Automation 3.0

CHALLENGES

- Network admins manually track and verify thousands of elements, even for a small spine-leaf networks with a handful of devices.

SOLUTION

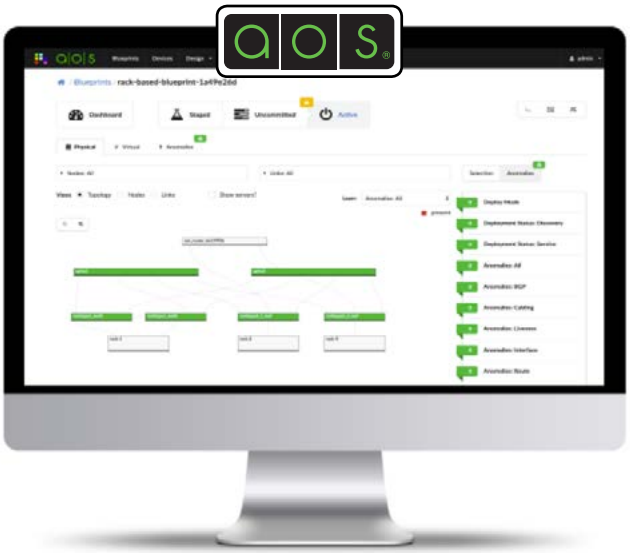
- **Apstra AOS®**
  A turn-key software that helps networking teams manage data center networks as a cohesive system.

RESULTS

- From the AOS Server GUI customers can design, build, deploy, and operate a spine-leaf network in days, rather than in months, including racking, stacking, cabling and validating all design intent is met in real-time.

Extending Automation & Policy Across Multiple Domains

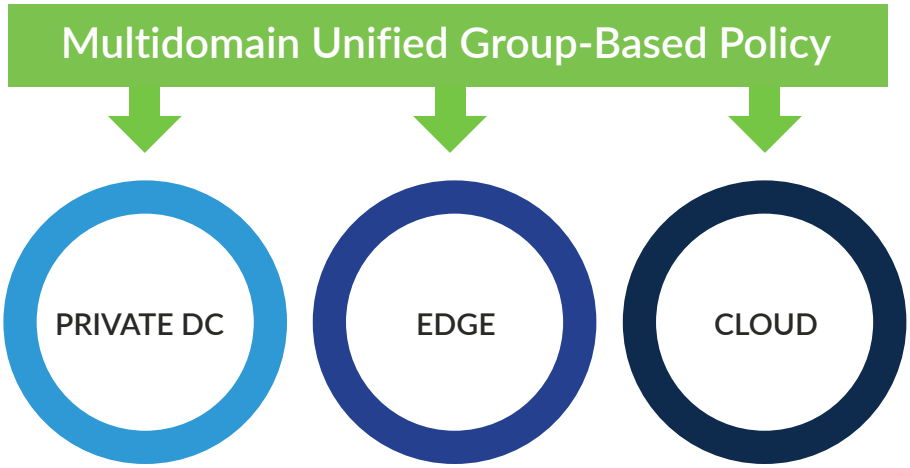
Apstra® Intent-Based Data Center Automation increases application availability and reliability, simplifies deployment and operations, and dramatically reduces costs for Enterprise, Cloud Service Provider, and Telco data centers. Apstra empowers Intent-Based Data Centers through its pioneering Intent-Based Networking, distributed system architecture, and vendor-agnostic overlay. AOS® 3.0 continues to deliver on the vision of complete end-to-end cloud and private data center automation as the only Intent-Based Networking technology to be hardware and device OS vendor-agnostic. AOS 3.0 adds innovative and industry leading capabilities such as Multidomain Unified Group-Based Policy, Enterprise Cloudification scale, and significant Intent-Based Analytics enhancements.



Apstra Operating System

Multidomain Unified Group-Based Policy

Enterprises struggle to manage an increasingly diverse combination of private and public cloud compute resources combined with a multitude of networking device types and vendors. The typical organization has more than one data center and at least one cloud service provider and all of them utilize different policy languages and implementation methods. Inside a single private datacenter, an operator can expect to find an assortment of new and legacy equipment, from different vendors, all with different management platforms. Many organizations also find themselves "locked in" to a single vendor for device types (i.e., switches, routers, security appliances, etc.) in their data centers.



Apstra Intent-Based Data Center Automation 3.0 expands the industry's first and most advanced Intent-Based Networking technology to include Multidomain Unified Group-Based Policy which unifies these disparate centers of policy data and allows for automated and validated enforcement regardless of the location, manufacturer, or type of device.

Multidomain Unified Group-Based Policy provides a simple user interface and API that delivers end to end policy deployments, rendered in the vendor-specific syntax and methods automatically without requiring the user to know how or where the policy must be implemented. This intent-derived logic is unique to Apstra and frees IT from the complexities of ACL syntax, enforcement locations, and multitenant communication policies.

VMware

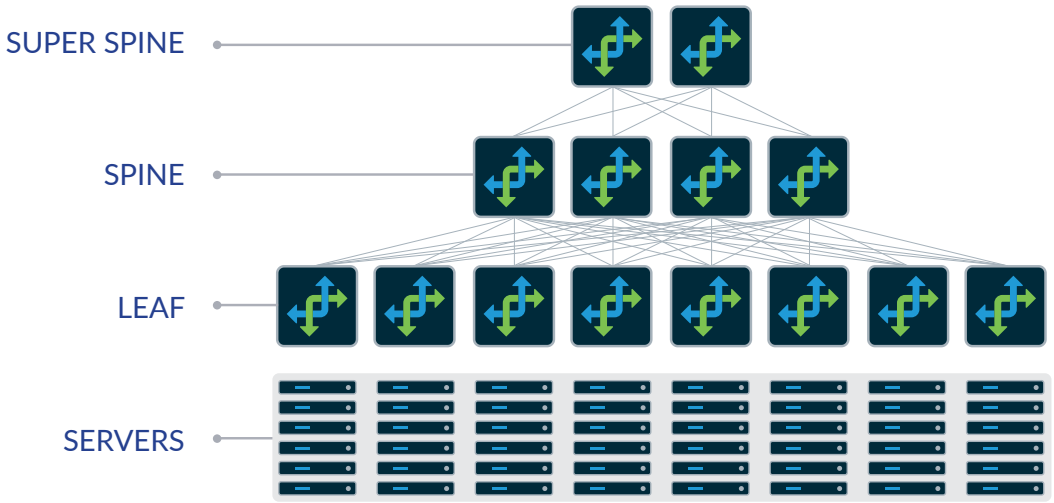
vSphere Integration with Automated Remediation

AOS 3.0 extends VMware vSphere integration capabilities to support automatic remediation of network anomalies. AOS combines Intent-Based Analytics probes which constantly check the network to ensure that the network configuration between the AOS managed topology and the ESX servers are in sync. If a deviation is detected (i.e., network fabric is missing VLANs configured in vSphere), AOS can automatically create the needed VLANs to guarantee that VMs are not stranded on isolated port groups.

Cloud Scale for Enterprises

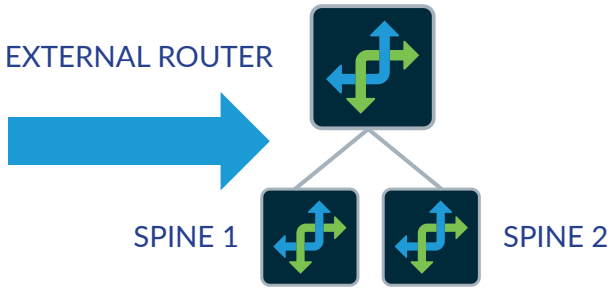
5-Stage Clos

AOS 3.0 supports large IP Clos fabrics which include an additional layer of "Super Spines" for building larger pods with a unified management plane. This enables architects to design massive IP fabrics for the largest datacenters, all the while maintaining a simple and unified policy for isolating workloads with EVPNs, VXLAN, ACLs, and VRFs. 5 Stage Clos templates can be configured and deployed in minutes, even without knowing which vendor platform(s) will ultimately be selected (truly vendor-agnostic), effectively eliminating hardware selection and qualification as a gating factor in the design of any size network. Operators manage these larger deployments with all of the existing features of AOS and are able to increase the size of the server hosting environment at any time.



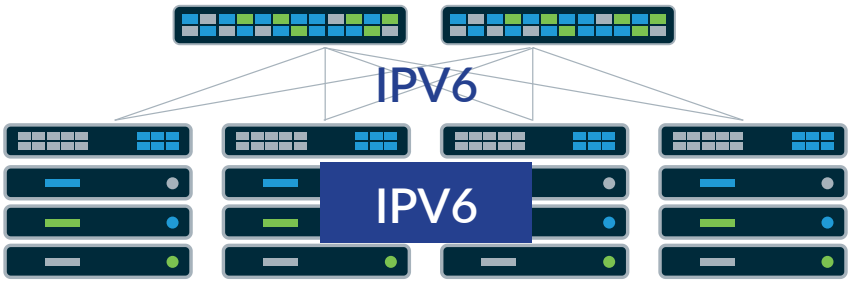
External Routing Policies

Multitenant environments often require complex routing adjustments to prioritize traffic flows to match business requirements. For example, different business units may utilize separate internet connectivity and routing scenarios. Each of those connected ISPs may have unique requirements for EBGP routing adjustments, in addition, there is often a need to provide finely tuned summary routes when egressing from a large network segment. AOS 3.0 enables architects to create External Routing Policies utilizing prefix-lists, complex route-maps, and larger summary routes.



IPv6 Application Support

AOS 3.0 supports IPv6 applications, enabling architects to minimize their use of limited IPv4 address space as well as offering fully dynamic server and container addressing. IPv6 is becoming more prevalent in data centers to address growing needs of IP addresses as the number of workloads increases. AOS 3.0 allows IT to seamlessly provide dual stack IPv4 and IPv6 access to your servers and applications.



Intent-Based Analytics Advances

Intent-Based Analytics Dashboards

AOS supports composable Intent-Based Analytics dashboards, allowing operators to create application or topology specific viewports that combine elements of multiple Intent-Based Analytics probes. A dashboard could include a heatmap of indicators for Intent-Based Analytics anomalies including the count of anomalies, a topology heatmap (bandwidth headroom), bar graphs and charts, time series views, and more. These dashboards automatically update both content and context in real-time, freeing the network operators from updating the dashboards with each change to the network. Dashboards can also be shared with application owners and enterprise teams.

INTENT BASED ANALYTICS DASHBOARD

Intent-Based Analytics Reference Values

Intent-Based Analytics probes now support the insertion of reference values for SLAs and maximum desired operating thresholds. An operator can simply insert these values during probe creation and update them at a future point in time to "fine tune" the reporting or alerting desired. Enterprises can set these SLAs once and ensure compliance dynamically.

Telemetry Health Service and AOS Server Clustering

Intent-Based Analytics probe resource consumption can be visualized within the UI, offering a quick way to understand how many probes are deployed and the probe capacity on a specific server at any time. Before deploying new probes, the operator can check the resource scoring to ensure that the new services will not create contention. Intent-Based Analytics probes can be offloaded to a additional VM/ servers for horizontal scaling of the AOS deployment. New servers can be added easily through the AOS UI, and integrated health monitoring ensures that probes can be placed on the proper server for even load distribution.

Summary

Apstra addresses IT application, hybrid cloud, and data center automation needs with the deployment of Intent-Based Data Center Automation to achieve higher reliability, vendor choice, and reduced costs. AOS is the Operating System for the Data Center and enables network engineers and operators to quickly and reliably design, build, operate, and continuously validate data centers of any size.

AOS 3.0 Features and Specifications

Services:

- BGP L3 Clos fabric with multi-tenancy EVPN (RFC 7432)
- Intra-rack (VLAN), or inter-rack (VXLAN)
- L3 VXLAN routing
- L3 server routing with dual attachment
- IPv6 fabric and applications*
- Extensible services (intent, resources, expectations)
- DHCP relay
- VRFs

Telemetry:

- LLDP, BGP, EVPN, Config Deviation
- Interface counters
- Routing table verification
- Host, transceiver, interface, LAG / MLAG
- MAC & ARP
- Server and devices health
- Intent-based anomaly detection
- Telemetry streaming via protocol buffers
- Extensible telemetry collection
- Interactive Network Visualization

Root Cause Identification:

- Connectivity Fault Model
- Miscabling Fault Model

Intent-Based Analytics (IBA):

- Intent-Based Analytics Dashboards and Widgets*
- Intent-Based Analytics Property Sets*

Device OS:

- Cisco NX-OS and vNX-OS
- Arista EOS and vEOS
- Juniper Junos OS
- Cumulus Linux and CVX
- Dell OpenSwitch (OPX)
- Microsoft SONiC
- Ubuntu Servers with Free-Range-Routing (FRR)
- CentOS Servers

Platform:

- AOS Backup / Restore
- RESTful APIs
- Graph model and GraphQL/QE API
- AOS-CLI
- AOS Developer SDK (Python)
- Extensible on-box or off-box device agents
- AOS Server Clustering*

Security:

- Multi-User Authentication
- Role Based Access Control
- LDAP Authentication
- TACACS+ Authentication
- Active Directory Authentication*
- HTTPS UI
- AOS Server Security Hardening
- Headless Operation
- SSL/TLS Transport - Tech Preview*

AOS 3.0 Features and Specifications (Cont.)

Blueprint Customization:

- External Routing Policy*
- Advanced Configlets
- Property Sets
- Resource Management

AOS Extensibility Tool For the Community (AOS ETC):

- Zero Touch Provisioning (ZTP) Server
- Demo Tools
- Template Catalog
- 3rd Party Tool Integration (protobuf)
- Legacy Devices Integration

Maintenance workflows:

- Staged/Commit Workflows
- Scale-out Maintenance
- NOS Management
- Device Maintenance Mode
- Replacement Maintenance
- Decommission Maintenance

Workload Change Operations:

- Group Based Policy*
- Virtual Network Management

Device Management:

- Device Agent Installer
- Lifecycle Management
- Device Quarantine
- NOS Management
- Device Import/Export
- Device Profiles
- Logical Devices

* New features introduced in AOS 3.0

Intent-Based Analytics Probes:

- East-West traffic
- MLAG imbalance
- Headroom
- ECMP imbalance
- Hot / Cold fabric ports
- Interface flapping
- BGP (VRF aware)
- Default gateway count
- MLAG domain
- TCAM usage
- OS version
- Interface bandwidth
- Interface errors (overloaded int bandwidth)
- Sustained Interface discards
- SFP
- Interface buffers
- BUM traffic
- PIM state on a Leaf, Spine, Border Leaf
- PIM RP on Leaf, Spine
- PIM Anycast RP on Border Leaf
- PIM MRoute Anomalies on Border Leaf
- VTEP
- STP state
- Flag STP state changes
- Hypervisor and Fabric VLAN config mismatch*
- VMs without Fabric configured VLANs*
- Hypervisor and Fabric LAG config mismatch*
- Hypervisor missing LLDP config*
- Power Supply Anomalies Probe*

An open source catalog of Intent-Based Analytics probe configurations is available, to enable an ecosystem with customers, partners, and other third parties

About Apstra

Apstra® Intent-Based Data Center Automation increases application availability and reliability, simplifies deployment and operations, and dramatically reduces costs for Enterprise, Cloud Service Provider, and Telco data centers. Apstra empowers Intent-Based Data Centers through its pioneering Intent-Based Networking, distributed system architecture, and vendor-agnostic overlay. Headquartered in Menlo Park, California and privately funded, Apstra is a Gartner Cool Vendor and Best of VMworld winner.

For more information, visit www.apstra.com, contact sales@apstra.com or follow @ApstraInc

Engage with Apstra on Twitter, Follow Apstra on LinkedIn, Like Apstra on Facebook

www.apstra.com