Key Features

- Centralized configuration and policy management
- Cognitive cloud-based network baselining and troubleshooting with root cause analysis engine for WiFi APs and access switches.
- Application QoE Monitoring
- Wi-Fi analytics for business intelligence
- Wireless Intrusion Prevention (WIPS)
- Application Visibility and Control
- Visual packet trace and analysis
- Wireless Access Security
- Client location tracking
- Wired-wireless monitoring
- Management of multi-function radio for network assurance, RF monitoring and WIPS
- API Integration
- Cloud and On-Premises options

ML/AI based Platform

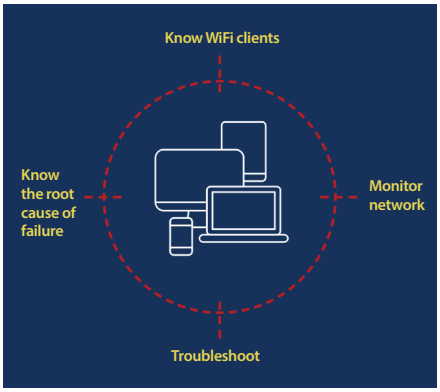
Machine learning based self-aware, self-healing network with application performance assurance.

API Driven

API driven architecture makes a breeze of netops and other automation. APIs also enable extensions and custom application.

NetDB

State-based, cloud-hosted, network-wide database that collects real-time data streamed from wired and wireless devices for cognitive analytics.



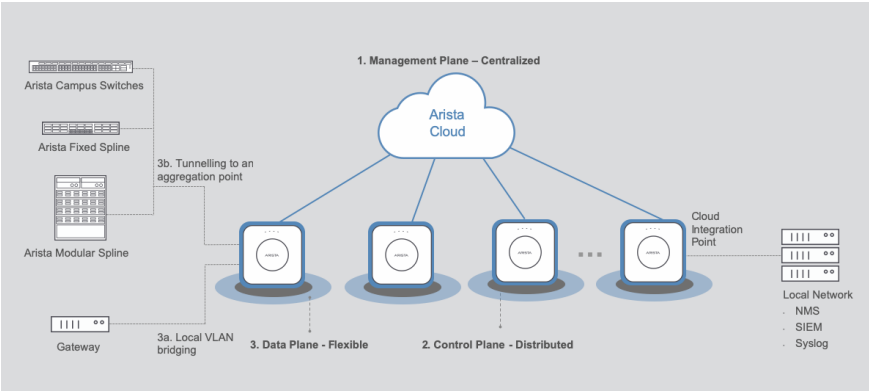
Overview

Arista has pioneered the cloud networking movement with its software driven approach, built on cloud principles with consistent, reliable software offering, open standards-based designs, and native programmability. CloudVision® extends the same architectural approach of simplification through software consistency as a multi-domain management plane for automating the entire network, across private, public and hybrid clouds as well as wired and wireless campus.

Harnessing the power of the cloud, big data analytics, machine learning and automation, CloudVision Cognitive Unified Edge (CV-CUE) brings the power of intelligence, speed and accuracy to wireless and wired networks. Through root cause analysis and proactive problem resolution options, CV-CUE reduces the mean-time-to resolve problems minimizing network troubleshooting effort while reducing total cost of ownership.

Enterprise ready cloud architecture

CV-CUE is powered by a cognitive management plane which simplifies configuration and troubleshooting while delivering richer telemetry to network administrators. A centralized management plane remarkably simplifies policy management and provisioning of campus networks. A flexible data plane allows wireless access points to provide customizable traffic redirection at the network's edge. A distributed control plane enables enterprise Wi-Fi features without the scalability issues of older architectures - and an innovative cognition plane with streaming telemetry automates network monitoring and troubleshooting to optimize the user experience and minimize the mean time to resolution (MTTR) for network access and performance issues.



Simplicity Redefined

Centrally managing a Wi-Fi network has many advantages - it is simple to change a network configuration globally, physically locate a Wi-Fi device, view real-time or historical experience of Wi-Fi users or capture and visualize a packet trace from a remote site.

Mission-critical Reliability

Arista's distributed architecture ensures there is no loss of functionality if connectivity to the management plane is lost. The Wi-Fi network continues to support mission-critical applications and secure airspace at all times. Automated disaster recovery and high-availability ensures users do not experience downtime even in the event of a datacenter- or region-wide incidence.

Federal-grade Security

The Arista Cloud implements multiple tiers of security — including strong access controls, two-factor authentication, regular vulnerability scanning and management, encryption of data in transit (TLS) and at rest (EBS and S3), and PII data privacy. Arista Cloud is certified for SSAE SOC 2 Type II.

Seamless Scalability

With virtually unlimited and elastic availability of storage and compute resources, the Arista cloud eliminates artificial boundaries inherent in controller-based WLAN architectures. Naturally, it enables many innovative, previously unforeseen applications in big data analytics, machine learning and cognitive computing in the context of Wi-Fi.

Flexible Data Plane

Decoupling of data, management and control planes results in tremendous flexibility in data traffic forwarding. Traffic from the Arista APs can be locally routed or tunnelled to a central aggregation point, e.g., an Arista switch. APs support VXLAN and EoGRE based tunnelling. This allows enterprises to migrate their existing controller-based Wi-Fi networks to Arista's controller-less cloud architecture without having to change the design of their underlying campus network.

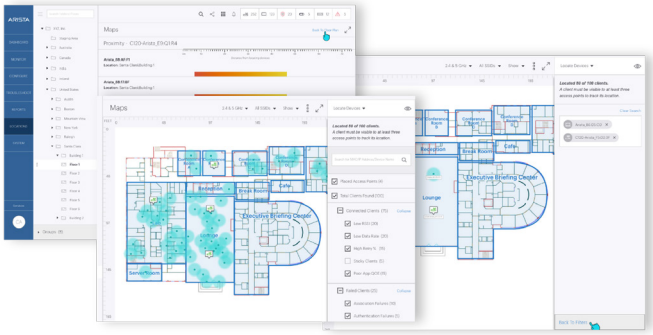
Tunneling of data to a central aggregation point may also be required by certain enterprises for regulatory compliance and by service providers for ease of billing. CV-CUE enables the configuration and monitoring of EoGRE and VXLAN endpoints on Wi-Fi APs. Tunnels can be configured in redundant mode with automatic failover.

Distributed Control Plane

Arista's Wi-Fi solution is based on intelligent-edge architecture where each AP is capable of autonomously taking control plane decisions such as channel/power selection, admission control, QoS management, client steering, roaming, etc. To enable this, APs periodically share state information with each other using a highly-efficient and secure protocol over the wired network. The distributed control plane provides unparalleled scalability, without the need for any controller.

Cognitive Management Plane

Arista uses cognitive computing to deliver the best experience possible to Wi-Fi administrators and users.

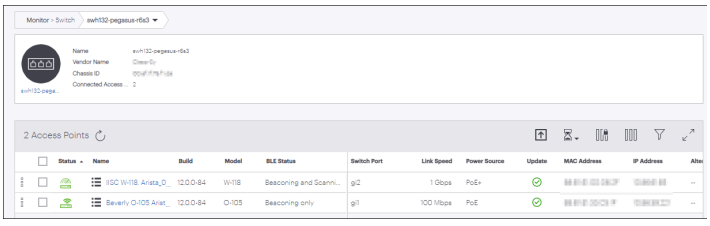


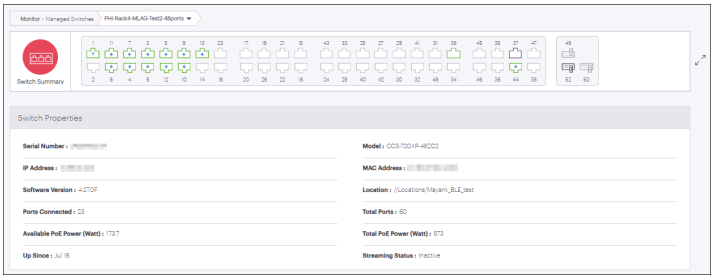
Location Tracking

CV-CUE supports tracking location of any Wi-Fi APs and clients on a floor. It enables visualization of Wi-Fi associations and includes filtering based on client or user information, or connectivity or performance issues. It can be used for mapping of Wi-Fi client connectivity and performance issues in the context of their physical location.

Unified Monitoring

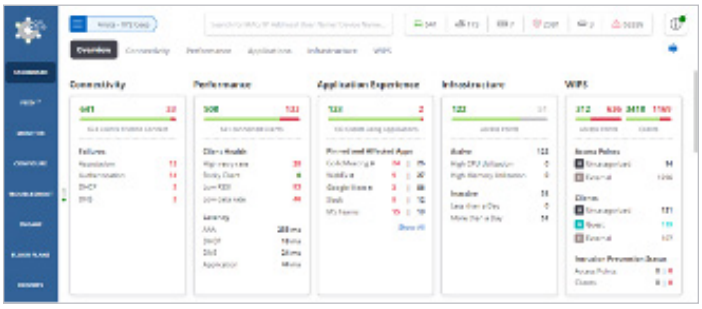
CV-CUE gives a single pane of glass to monitor WiFi access points and switches to which these APs are directly connected. CV-CUE shows switch details and also provides information about connectivity, performance and security related issues.This results in the fastest mean time to resolution, for troubleshooting and restoring networking services that impact users and endpoint devices. CV-CUE shows detailed data about access switches managed from Arista CVaaS. This enables full visibility of the edge network from a single pane. Wired hosts connected to Arista APs are also visible on the UI.





Wireless Network Overview

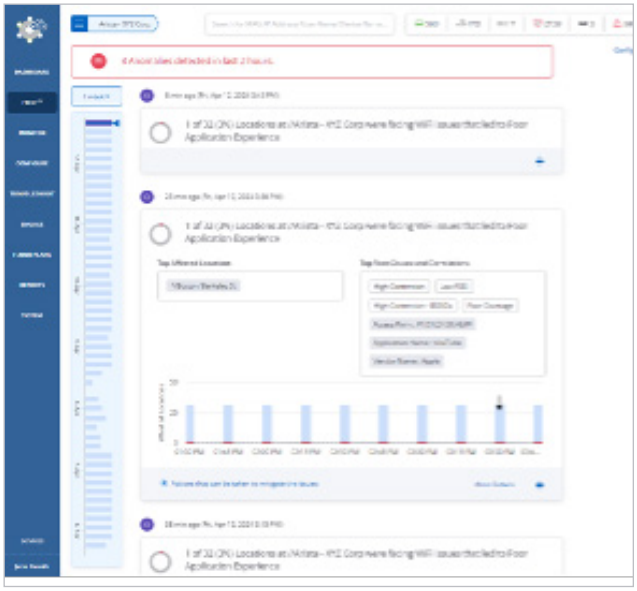
The default view on CV-CUE provides a overview of the wireless network that provides a single view into Connectivity, Performance, Application, Infrastructure and WIPS dashboards. This provides a quick check for the network health.



This overview also displays a set of baselines and network parameters to allow quick correlation of the parameters for the administrator to zero in on any incidents that she needs to troubleshoot. Administrators can go back up to 1 month for this correlation.

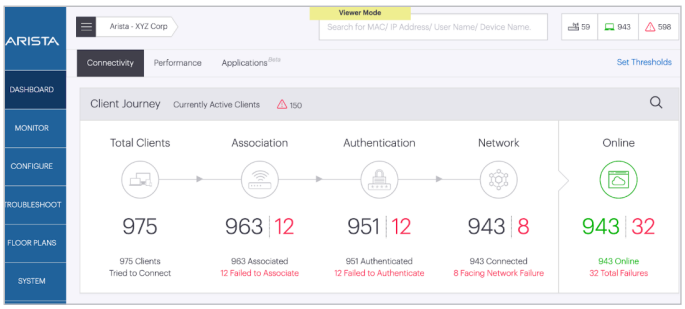
Network Feed

Currently in 'Early Access' mode, the network feed provides a running view of significant network incidents so that the administrators can either go back in time to better understand specific incidents and troubleshoot them if required or understand the network performance over time. Details of each incident, provides the location where the incident occurred, the top root causes and devices involved in the incident.



Client Journey™

CV-CUE provides direct and real-time insight into the experience of Wi-Fi clients as they journey on the network. Client Journey tracks when and why clients fail to connect to the network, reporting latencies of network services such as AAA, DHCP, and DNS. Administrators can drill down and access live and historical client connection logs to aid troubleshooting.

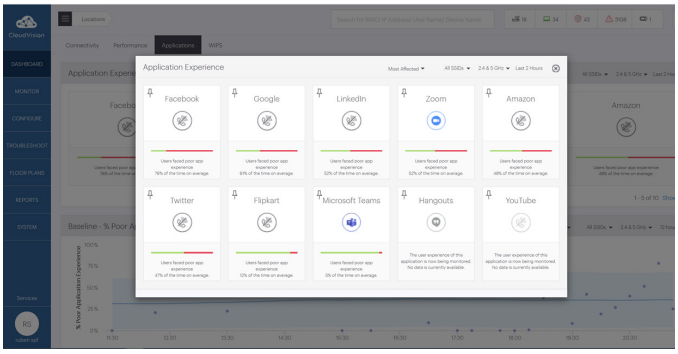


Network Baselining

Using ML algorithms on the data it collects, CV-CUE baselines network behavior and automatically detects and highlights anomalies. Baselining is done for connection failures, RF performance KPIs and application QoE. AI algorithms detect poor performance, identifies root causes and provides recommendations to resolve network problems.

Applications Health

CV-CUE monitors the Quality of Experience (QoE) of business-critical applications and identifies users facing poor QoE issues. A total of 25 applications can be selected for monitoring. This includes video collaboration applications such as Hangouts, Zoom, Teams as well as a wide variety of Web applications from enterprise app providers such as Adobe, Google, Microsoft, Oracle etc. Users can also add custom applications for QoE monitoring. For each application, CV-CUE tracks the percentage of time for which QoE was poor and displays the information on the Application dashboard. QoE baseline is also tracked per application as well as over all applications, for upto 30 days.



Infrastructure view

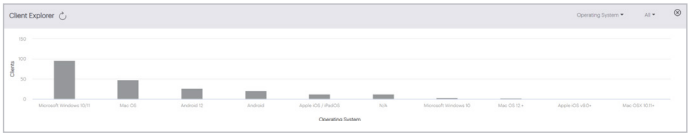
This view provides details on CPU and memory utilization of the APs distributed by models and locations.

Access Point Explorer

Access Point Explorer provides a summary view of all the APs in the network and provides an easy way for the network administrators to view the AP distribution for various attributes such as software version, AP model, Ethernet link speed etc.

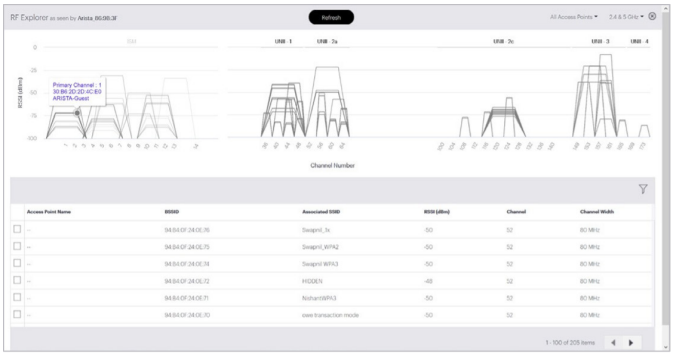
Client Explorer

Client Explorer provides a summary view of all the clients and provides an easy way for the network administrators to understand client distribution for different attributes such as protocol capability, vendor, OS etc.



RF Explorer

Leveraging the round-the-clock scanning capabilities of Arista APs, CV-CUE provides in-depth, live and historical, information about the RF environment seen by each AP. The RF Explorer is a powerful tool for monitoring, managing and proactively troubleshooting radio spectrum related issues.



Root Cause Analysis Engine

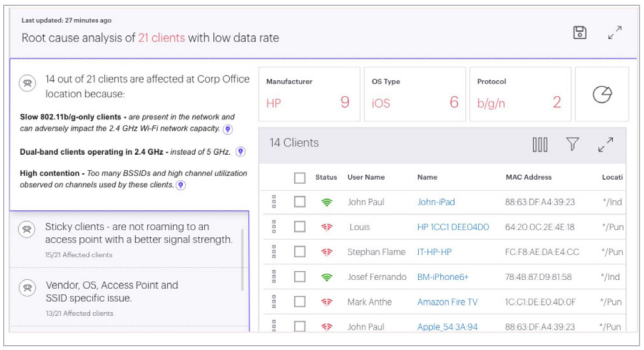
CV-CUE employs built-in domain expertise and protocol-level intelligence to help administrators maintain the network. In real time, it automatically detects and classifies Wi-Fi clients' connection failures and pinpoints the root cause—if it is related to Wi-Fi or to a network service such as DHCP or DNS, a client device, or an application. Similarly, it automates root cause analysis of poor performance, such as poor coverage, high retry rate and sticky clients.

Automatic Packet Capture

CV-CUE proactively captures packet traces to help diagnose problems. The traces are stored alongside related failures or symptoms to simplify troubleshooting later. Packet traces can be downloaded or directly visualized in Arista Packets, the cloud based, visual Wi-Fi packet analyzer.

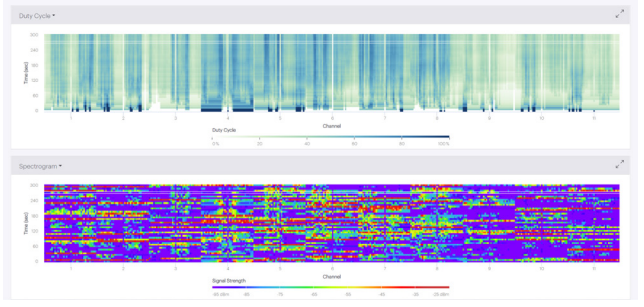
Client Inferencing

Wi-Fi clients may face poor experience due to various reasons. CV-CUE identifies such clients based on RF and application KPIs and then uses the Single Client Inferencing engine for automated root cause analysis of problems faced by clients.



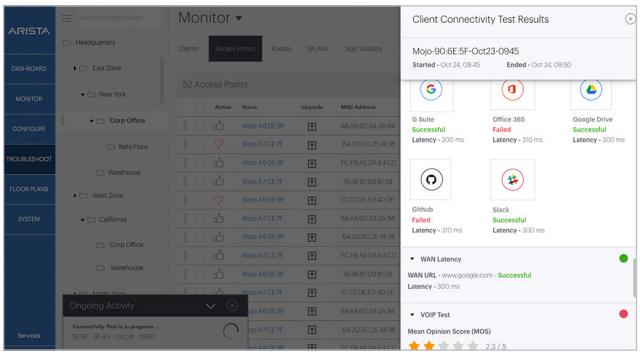
Spectrum Analyzer

Arista APs can be configured to run on-demand spectral scans to get an in-depth view of the RF activity on Wi-Fi spectrum bands, i.e 2.4GHz, 5GHz, 6GHz. Spectrum Analyzer illustrates the output of a spectral scan using a set of charts. Spectrogram shows the RF energy level across the band, as a function of time. The Spectrum Density chart indicates the relative distribution of different signal levels across the spectrum band. The Signal Strength chart shows the instantaneous and average RF energy level in different parts of the band. The Duty Cycle chart shows the percentage of time each channel is busy, based on the presence of RF activity above a certain signal level.



Active Network Assurance

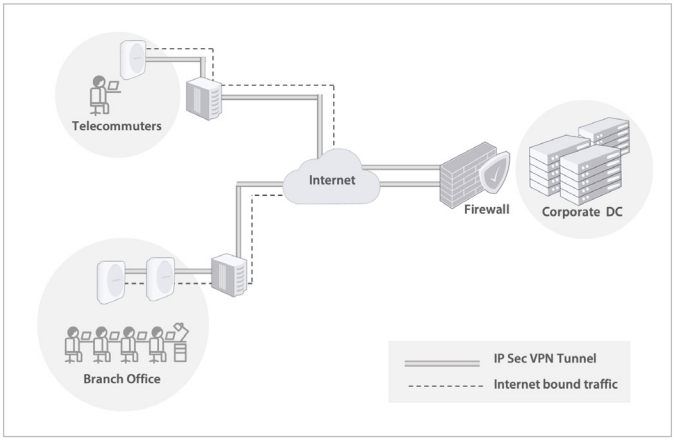
CV-CUE takes advantage of the multi-function radio, present in most Arista Wi-Fi APs, turning it into a client to run a wide variety of tests and proactively identify problems before users do. This helps validate the network's readiness for supporting business-critical applications.



Remote Workspace AP

Remote Workspace AP (RWAP) solution empowers enterprise customers with the ability to extend Corporate SSID to a remote workplace such as a teleworkers' home office or a small remote branch office. It uses industry-standard protocols to securely connect the AP deployed at a workplace with the Enterprise datacenter (DC) over the public Internet. With an IPSec VPN tunnel from the AP to the DC:

- Wi-Fi traffic mapped to the SSID flows via the tunnel to/from DC
- VPN setup not required individually on the Wi-Fi end clients
- Split tunnel functionality limits only corporate traffic through the tunnel



Web Shell

CV-CUE provides a Web-based SSH login to a specific Access Point CLI. Web Shell is helpful to troubleshoot AP issues, especially if an AP is behind a NAT.

Wireless Intrusion Prevention

With the multi-function radio acting as a dedicated wireless intrusion prevention (WIPS) sensor, wireless threats are detected and blocked almost instantly in your network. CV-CUE works with the APs, which are powered by patented techniques such as Marker PacketsTM, to enable surgical over-the-air intrusion prevention, automatically and accurately creating alerts and classifying wireless threats.

All Arista Wi-Fi 5 and Wi-Fi 6 APs can be configured to run as dedicated WIPS sensors. Arista APs equipped with BLE radios can also scan for BLE devices. Network administrators can view these devices on CV-CUE and also change their classification from 'Uncategorized' to 'Authorized' and vice- versa.

Edge Threat Management

Security being a key element of Arista's campus solution, CV-CUE provides Wireless IPS, Next Gen Firewall and Micro Edge for threat management. This integrated approach provides network administrators with the ability to

ensure protection, monitoring and control across devices, applications, and network airspace, enforcing a consistent security posture over the entire digital attack surface.

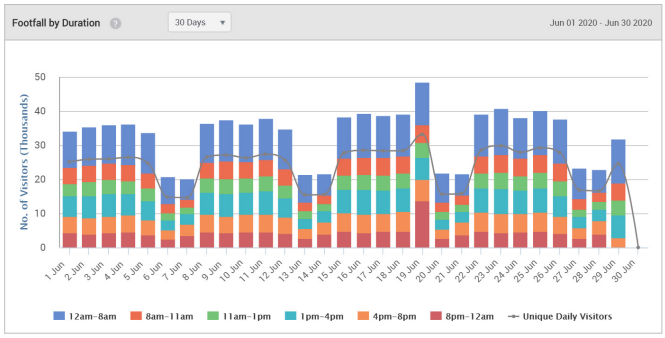
Wi-Fi Analytics

Analytics based on presence and behavior of Wi-Fi devices can provide significant business intelligence, and can inform business functions such as

- marketing research (A/B testing of storefront displays, measure ROI of marketing campaigns, context-based guest engagement)
- operations (staff planning, optimize facility utilization),
- IT (network planning and design based on user density).

Presence Analytics

Presence analytics provide anonymous, statistical information about the footfall (number of Wi-Fi devices detected), dwell time (duration for which Wi-Fi devices are present) and repeat versus new customers. These trends can be viewed for a site or aggregated across multiple sites, and across different time periods: intra-day, daily, weekly, monthly and year-over-year.

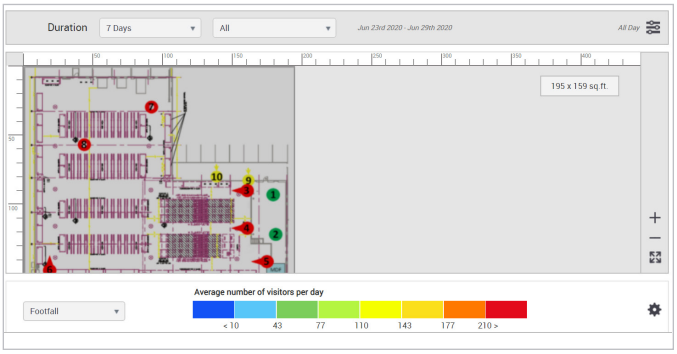


Engagement Analytics

Integration with social networks and third-party loyalty systems can be leveraged to collect demographics and other information from Wi-Fi users who opt in to share their personal details. This in turn can be used to engage with the opt-in Wi-Fi users, e.g., retail business can provide special deals to their loyal customers and convert them into brand ambassadors.

Zone Analytics

Zone analytics provide insight into the density and flow of Wi-Fi users by visualizing it on a floor map. This allows administrators to monitor how various parts of a facility are populated over a period of time. Zones can be demarcated as a region around Wi-Fi APs on a floor maps.



Content analytics and application visibility

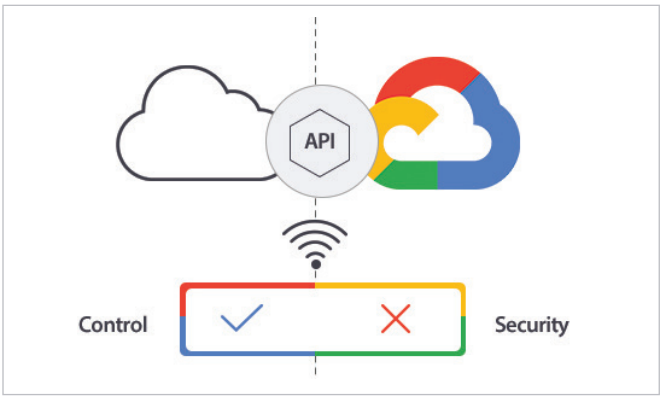
Web analytics and application visibility based on deep packet inspection can provide insight into Wi-Fi usage patterns and allow you to enforce policies in terms of the type of content or applications that can or cannot be accessed based on the type of Wi-Fi network (e.g., Corp vs. Guest) and user privileges (e.g., students vs. teachers) and assign the desired quality of service.

Wired and Wireless Access Security and Control

With a suite of features to identify users, devices, OS, and applications and to control the access and privileges they get on the network, Arista provides a comprehensive solution to enforce context-based policies and protect the network from abuse. For comprehensive wired and wireless access control, CV-CUE can integrate with AGNI, the next-generation NAC solution from Arista (see the Integration with AGNI section). CV-CUE also enables integration with 3rd party NAC solutions. The latest Wi-Fi security protocols such as Opportunistic Wireless Encryption (OWE) and WPA3 are supported by CV-CUE.

Integration with Google® G Suite

Google G Suite for business or education, can be used to enforce an additional layer of security for Wi-Fi users with Arista's Wi-Fi integration. No additional hardware, software or license is required. Regardless of whether PSK or 802.1X is being used for authentication, network access control for Wi-Fi users and devices can be enforced based on a users' Google account privileges and organization unit (OU) membership.



Integration with AGNI

CloudVision AGNI (Arista Guardian for Network Identity) is the Arista cloud-based NAC solution. CV-CUE integrates with AGNI to provide information that simplifies NAD provisioning. Examples of such information include:

- MAC addresses of the various NADs
- Defined Roles
- SSID information
- Location information

Role Based Control

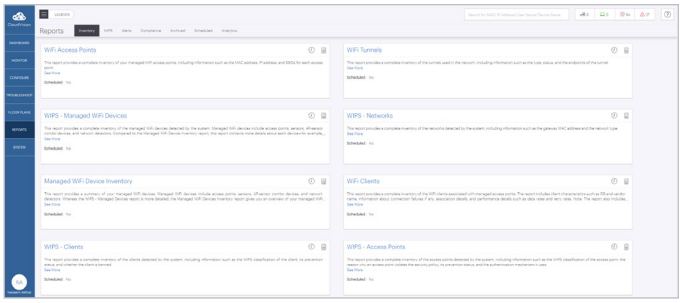
Role based controls can be enforced on a per SSID basis. Role profiles can be created to match roles configured in the RADIUS server, Google G Suite or both. Rules of precedence can be used to combine settings defined in a role profile and SSID, and enforce policies in terms of role attributes such as VLAN access, firewall rules, application firewall rules, per user bandwidth control and redirection to a captive portal.

SAML Integration

CV-CUE supports SAML Single Sign-on (SSO) integration with a captive portal for Wi-Fi user authentication. SAML allows the customers to use a third party authentication service for SSO. SAML SSO gives the ability to authenticate users using an Identity provider (IDP).

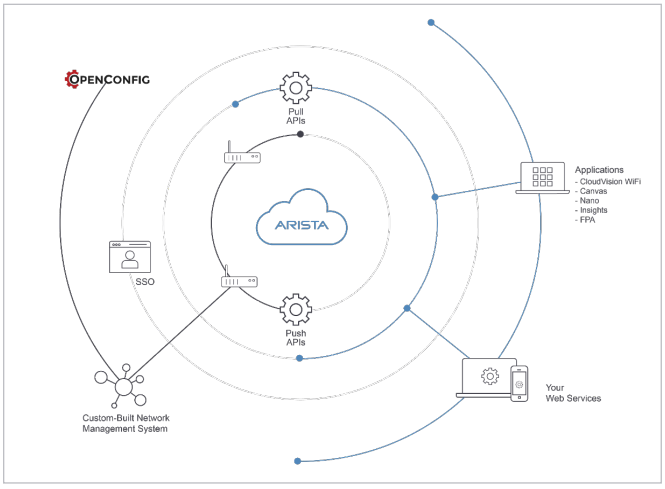
Wi-Fi Reports

CV-CUE supports on-demand and pre-scheduled generation of reports for inventory management, compliance and operational status updates. This includes inventory of managed Wi-Fi devices, in-depth compliance reports for WIPS, list of Wi-Fi and WIPS alerts etc.



APIs and Third-party Integration

Single Sign-On, powerful Web APIs, and secure tunneling, integrating the Arista Cloud with third-party systems, in-cloud, or on-premises, is easy. Both push and pull mechanisms are available. Using custom applications, Wi-Fi analytics can be pulled from the Arista Cloud or configuration and policy changes can be pushed to it. Wi-Fi analytics from the Arista Cloud or directly from the Arista APs can also be pushed to third-party Web services. RSSI data for BLE clients can also be pushed to 3rd-party servers, e.g. location-based systems.



Social Wi-Fi

IInbuilt integration with Facebook, Google+, Twitter, LinkedIn, Instagram and Foursquare enables guest on-boarding using social login.

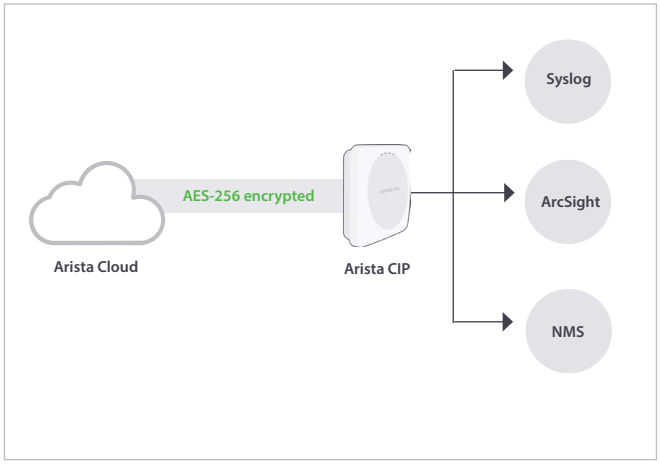
Bonjour® Gateway

Arista APs can be configured as a Bonjour Gateway to allow Wi-Fi clients to discover and access Bonjour services across VLANs. This feature can be enabled on a per SSID basis and works for both static and dynamic VLANs.

Cloud Integration Point

Whether you are using Arista WIPS or transitioning to cloud based Wi-Fi, integrating the Arista cloud Wi-Fi server with your on-premise systems allows you to leverage key advantages of the cloud server while continuing to use your existing infrastructure. It also saves you the time, effort, and cost of installing and maintaining an on-premise Arista Wi-Fi server. A Cloud Integration Point (CIP) is an Arista AP that enables the integration of the Arista Wi-Fi cloud server with existing third-party services on-premises.

The data exchanged between Arista Cloud and an on-premise Cloud Integration Point (CIP) is secured with AES-256 encryption. The CIP contains a firewall that only forwards traffic to the specified local destinations on thedefined ports. It also isolates the network with NAT so client connections cannot be established through the CIP.



Enterprise Security Management (ESM)

Integration with Enterprise Security Management servers enables Arista Cloud to send events and audit logs to Syslog and ArcSight servers, allowing customers to use their existing logging infrastructure to manage Arista events and logs.

GDPR Compliance

Arista Networks provides General Data Protection Regulation (GDPR) compliant Arista Cloud Wi-Fi to its partners, resellers, and customers in the European Union. The Arista Cloud acts as a GDPR Processor of personal data.

CV-CUE System Requirements

Feature/Platform	CV-CUE (Cloud Subscription)	CV-CUE (CVP Cluster on-prem)			
Supported Browser	Latest version of Chrome / Firefox / Microsoft Edge				
Base OS	Alma Linux				
System Requirements	NA	Deployment mode	Cluster Deployment	Resources per Node	Number of Devices per cluster
		Wired + Wireless	Three Node Cluster	28 CPUs, 52 GB RAM, 2TB SSDs or high-performance NAS (DCA-250-CV w/ extended disks, DCA-300-CV)	250 switches + 3000 APs
		Wired + Wireless	Three Node Cluster	70 CPUs, 116G RAM, 6TB SSDs or high performance NAS (DCA-350-CV)	1000 switches + 5000 APs
		Wireless	Three Node Cluster	28 CPUs, 52G RAM, 2TB SSDs or high performance NAS (DCA-250-CV w/ extended disks, DCA-300-CV)	5000 APs
		Wireless	Three Node Cluster	70 CPUs, 116G RAM, 6TB SSDs or high performance NAS (DCA-350-CV)	8000 APs
Client Journey	✓	✓			
Application Visibility and Control	✓	✓			
WIPS	✓	✓			
Baselining	✓	Limited[1]			
RCA Engine	✓	✓			
Auto Packet Capture and Troubleshooting	✓	Limited[2]			
Network Profiling	✓	✓			
RF Optimization	✓	✓			
Wi-Fi Analytics	✓	Limited[3]			
Guest and Captive Portal Management	✓	Limited[4]			
Wi-Fi ACLs	✓	✓			
RBAC	✓	✓			
Automatic Updates and Upgrades	✓	Customer Managed via CVP			

[1]**Baselining:** Based on only 7 days of history and drilldown not available from baseline charts.

[2]**Auto Packet Capture & troubleshooting:** Automatic display of packet capture in "Packets" not available.

[3]**WiFi Analytics:** No visualization of association and presence analytics data. No guest analytics.

[4]**Guest and Captive Portal Management**: No Canvas" to create captive portal and landing pages or campaigns. No social media authentication. No captive portal hosting capabilities.

SKUs, Service and Support

The CloudVision solution comprises three components: CloudVision eXchange, CloudVision Portal and CloudVision Cognitive Unified Edge. These components provide the platform for both orchestration and automation for wired and wireless networks as follows:
CloudVision eXchange is a EOS-based network-wide multi-function control point providing a single access point for real-time provisioning, orchestration and integration with third party controllers and services.

CloudVision Portal is a web platform and associated historical database built to automate the workflows for a variety of network provisioning, change management, and monitoring tasks.

For more details of CloudVision eXchange and CloudVision portal, consult the CloudVision Datasheet.

Software support for CV-CUE is included in the CloudVision software subscription license. Hardware support for the CloudVision Physical Appliance requires a corresponding A-Care service contract. Support for each EOS device managed by CloudVision is covered by standard A-Care offerings for each device. For more details on A-Care service offerings across all Arista products, see: http://www.arista.com/en/service.

SKU	Description
SS-COGWIFI-1M	Cognitive Cloud SW Subscription License for 1-Month for 1 x Wireless Access Point
SS-PREMWIFI-1M	On-premises SW Subscription License for 1-month for 1 x wireless access point

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