

# AEROHIVE®



Security and Control for all Devices on the Access Network

The logo is a white hexagon with 'A3' and 'TM' inside. It is the central focus of a series of concentric yellow hexagons. From the center, several bright white radial lines extend outwards across the entire page, creating a starburst or radar effect. The background is dark with some bokeh light effects.



**AEROHIVE®**  
NETWORKS

# Aerohive® A<sup>3</sup>™

**Aerohive A<sup>3</sup> is an innovative solution for securing, managing and controlling all devices on your Access Network – from standard wireless and wired clients to IoT and BYOD.**

A<sup>3</sup> provides a complete set of functionalities for device onboarding, guest management, automated device provisioning, device profiling and network access control. With its streamlined workflows and intuitive user interface, A<sup>3</sup> greatly reduces the operational complexity and cost typically associated with incumbent offerings. It can be deployed on all major vendors' access networks.

## Key Features & Benefits

### Supports all devices and users on the access network

A<sup>3</sup> secures standard wireless and wired corporate clients, BYOD, IoT and guest devices alike. It also supports the creation and administration of granular network access rights (e.g. by access to applications, time of day, location on the network) depending on the user's role.

### Complete onboarding for guest and corporate devices

A<sup>3</sup> includes a highly customizable captive web portal (CWP) that supports self-service onboarding for visitor devices, while a comprehensive management interface and automated device provisioning of 802.1X certificates enables onboarding of corporate devices.

### Comprehensive authentication toolset

For authentication of corporate devices, A<sup>3</sup> supports 802.1X certificates with its built-in RADIUS server. Where certificates are not practical, A<sup>3</sup> provides alternative authentication methods like Private Shared Keys (PSK), and Aerohive's Private Pre-Shared Keys (PPSK, coming in Q3 2018) that offer strong, unique keys without the complexity of 802.1X certificates.

### Network Access Control (NAC)

A<sup>3</sup> provides complete functionality for Network Access Control that ensures authorized devices stay secure over time. Features include device scanning for security compliance, quarantining of non-compliant devices to prevent network access, and guided self-remediation to reduce IT helpdesk calls.

### Security for the Internet of Things (IoT)

Connected devices like thermostats and lighting systems in the IoT context present a unique set of challenges for IT security. A<sup>3</sup> is uniquely equipped to onboard, secure and control "Things", with user-friendly bulk on-boarding, built-in device profiling and Aerohive's unique Private Pre-Shared Keys (PPSK, coming in Q3 2018).

### Seamless integration with existing IT security infrastructure

Customers can directly integrate A<sup>3</sup> with the market leading firewalls, MDM and endpoint security systems, Intrusion Detection Systems (IDS) and Posture Assessment solutions they already have installed and continue to leverage their existing security investment.

### Unparalleled deployment flexibility

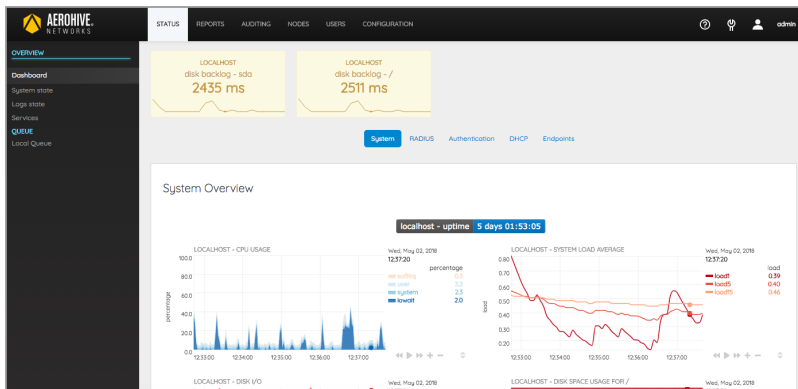
A<sup>3</sup> supports on-premises deployments, based on a Virtual Appliance (VA), with a choice of standard or clustered High-Availability configurations. As of Q4 2018, A<sup>3</sup> also offers a cloud-based solution, and a hybrid deployment model.

### Device fingerprinting and profiling

A<sup>3</sup> includes the largest available device fingerprint database, that is constantly updated. Device fingerprinting is the most comprehensive method for identifying a device type (e.g. laptop vs. smartphone vs. HVAC sensor) automatically when a device requests network access. A<sup>3</sup> then leverages this information to grant appropriate network access rights to each device based on its category. This includes IoT, which are otherwise very hard to identify and secure effectively, much less in an automated fashion.

### Supports access networks from all leading vendors

Access networks typically include wired and wireless infrastructure components from multiple vendors. A<sup>3</sup> supports WLAN equipment and switches from all leading vendors, including Aerohive, which provides an added level of deployment flexibility.



◀ Intuitive graphical dashboard

Services overview and administration ▶

The screenshot shows the 'Services on: A3' page. It features a table with columns for 'Service' and 'Status'. Each service has a corresponding status icon (green for 'Started', red for 'Stopped') and buttons for 'STOP', 'START', and 'RESTART'. The services listed are: Daemon, api-frontend, etcd, fingerbank-collector, haproxy-db, haproxy-portal, httpd-aaa, httpd-admin, httpd-collector, and httpd-dispatcher.

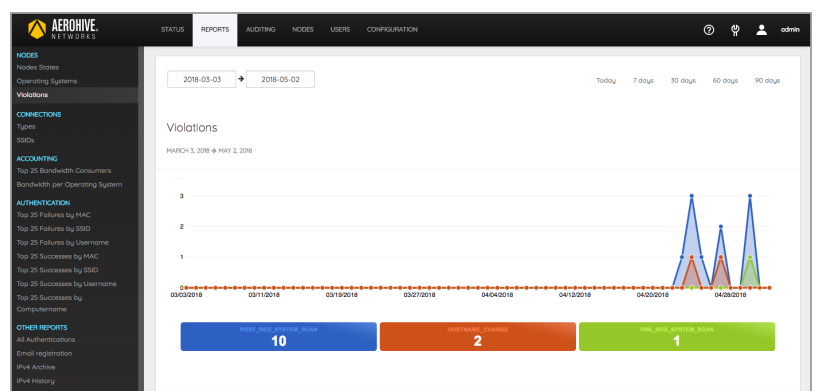
Service	Status	STOP	START	RESTART
Daemon	Started	STOP	START	RESTART
api-frontend	Started	STOP	START	RESTART
etcd	Started	STOP	START	RESTART
fingerbank-collector	Started	STOP	START	RESTART
haproxy-db	Stopped	STOP	START	RESTART
haproxy-portal	Started	STOP	START	RESTART
httpd-aaa	Started	STOP	START	RESTART
httpd-admin	Started	STOP	START	RESTART
httpd-collector	Stopped	STOP	START	RESTART
httpd-dispatcher	Started	STOP	START	RESTART

◀ Configuration of external authentication sources

The screenshot shows the 'External Sources' configuration page. It features a table with columns for 'Name', 'Description', and 'Type'. Each source has a corresponding 'CLONE' and 'DELETE' button. The sources listed are: smls, email, sponsor, null, Github O, Google G, Billing Sources, and AuthorizeNet.

Name	Description	Type	CLONE	DELETE
smls	Email	SMS	CLONE	DELETE
email	Facebook	Email	CLONE	DELETE
sponsor	Google	SponsorEmail	CLONE	DELETE
null	Kickbox	Null	CLONE	DELETE
Github O	LinkedIn	Github	CLONE	DELETE
Google G	OpenID	Google	CLONE	DELETE
Billing Sources	Twitter	Twitter	CLONE	DELETE
AuthorizeNet	AuthorizeNet	AuthorizeNet	CLONE	DELETE

Extensive reporting capabilities ▶



## Management Features

### • Role-based Access Control (RBAC)

- Per User
- Per Switch
- Per VLAN
- Per Client
- Per Client Category
- Per Device Type
- Per Time
- Per Location

### • Object based configuration management

- Define roles, domains, authentication sources, switches and WLANs, and connection profiles easily

### • Automated checkpoint and fix permissions tasks

### • Accounting based on several criteria

- Node, switch groups, user, role, OS, source, realm, SSID, profile and domain
- Violations, failures, successes, registration type and state

## Guest, BYOD and IoT Management

### • Customizable Captive Web Portal (CWP)

### • Wireless ISP Roaming (WISPR), Eduroam and Hotspot 2.0

### • Supports billable hotspots

- Billing and service tiers
- Payment processing through Paypal, Mirapay, Authorize.net, Stripe

### • Guest Access Self Registration

- With or without credentials
- Self- registration with Social login

### • User device registration

### • Employee sponsorship

### • Email Validation

### • SMS Validation

### • Password-of-the-day

### • “Device profile” or “device fingerprint” based onboarding

### • Aerohive Private Pre-Shared Key (Q3)

## Authentication

### • EAP Protocols

- EAP-FAST, PEAP, EAP-TTLS, EAP-TLS, PAP, CHAP, MSCHAPv1 and 2, EAP-MD5

### • 802.1X Support

- RADIUS to AD/LDAP server support for 802.1X authentication
- 802.1X (PEAP) or Certificate (TLS) BYOD automated onboarding
- User Authentication Portal (AD/LDAP)
- PKI with EAP EAP-TLS, EAP-TTLS, EAP-LEAP, EAP-PEAPv0, EAP-PEAPv1, EAP-MSCHAPv2

### • Authentication Types

#### • LDAP

- *Microsoft Active Directory*
- *Novell eDirectory*
- *OpenLDAP*
- *Any LDAP-compliant servers*

#### • RADIUS

- *Cisco ACS*
- *RADIUS (FreeRADIUS, Radiator, etc.)*
- *Microsoft NPS*
- *Any RADIUS-compliant servers*

#### • Local user file (Apache htpasswd format)

#### • OAuth2

- *Facebook*
- *Google*
- *GitHub*
- *LinkedIn*
- *Microsoft Live*
- *Twitter*

#### • SAML

- Additional built-in SQL DB for User store for deployments without LDAP
- PPSK (Q3)

## Secure Provisioning

### • Provisioning agents

- Android
- Windows
- API for all Apple devices



## Network Access Control

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- **Realtime security policy assessment (posture assessment) & notification for multiple OS**

- **Gradual Deployment**

- Pre-registration
- Per location/switch/port deployments

- **Automated Device Registration**

- By network device
- By device fingerprinting
- By MAC address vendor
- Integration w/ 3rd party systems for registration
  - *Short, Nessus, OpenVAS, Browser User-Agent and more*
- VLAN isolation and quarantining (*See supported switches below*)

- **Netflow / IPFIX**

- **Bandwidth accounting**

- **Floating device support**

- Switches and APs

## Profiling

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- **Functionality**

- Profiling of devices/ IoT device recognition
- Group based policies for network devices
- Device visibility and identification

- **Device Fingerprinting**

- World's largest device fingerprinting database
- DHCP v4 & v6
- User Agent
- MAC address Patterns
- OUI
- TCP fingerprints
- Behavioral analysis

## Integration Capability with Complementary Security Infrastructure

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A<sup>3</sup> supports direct integration with these 3rd party IT security solutions:

- **Intrusion Detection (IDS):**

- OPSWAT Meta defender
- Snort
- Suricata
- Fortigate
- TrendMicro

- **Vulnerability / Posture Assessment**

- Nessus
- OpenVAS
- Windows Management Interface
- TNC Statement of Health protocol

- **Endpoint Security**

- OPSWAT Meta defender Agent
- Symantec SEPM
- Sentinel One

- **Mobile Device Management (MDM)**

- Mobile Iron
- JAMF
- AirWatch (Q2)
- IBM MAAS 360 (Q3), Microsoft inTune (Q3)

- **Firewalls**

- Barracuda
- Checkpoint
- Cisco
- Fortinet
- Fortigate
- iBoss
- PaloAlto Networks
- Watchguard
- Sonicwall (Q2)

- **Microsoft PKI**

- Simple Certificate Exchange Protocol (SCEP)
- Network Device Enrollment Service (NDES)

## Deployment Flexibility

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- **Simplified Deployment**
  - Out of band deployment
  - Hybrid out of band
- **High Availability**
  - Active/Active Clustering
  - Supports deployments of millions of devices
- **Supported deployment models:**
  - Virtual Appliance (VA)
  - Cloud-based deployment (Q4)
- **Supports WLAN Infrastructure from the following vendors:**

Aerohive, Aruba Networks, AnyFi, Avaya, BelAir, Brocade, Cisco, D-Link, Dell, Extreme Networks, Enterasys, Extracom, Hewlett-Packard, Huawei, Juniper, Meraki, Meru Networks, MicroTik, Mojo Networks, Motorola/Zebra, Ruckus Wireless, and Xirrus Networks
- **Supports network switches from all leading vendors:**

Aerohive, Alcatel-Lucent, Avaya, Brocade, Cisco, Dell, D-Link, HP, Huawei, Juniper, Linksys, Ubiquiti, and more
- **VoIP support, also in heterogenous environments, for multiple switch vendors**

Avaya, Cisco, HP and more

## Hardware Requirements

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- **Virtual Appliance Support**
  - Deployed as VA
  - VMWare ESXi 4.0 and above
- **Minimum System requirements**
  - Intel or AMD CPU 3 GHz or better
  - 16 GB of RAM or more
  - 100 GB of disk space (RAID-1 recommended)
  - 1 network card (2 recommended)
- **High Performance Active Clustering**
  - Minimum recommended cluster is 3 hosts for HA, load balancing and failover
  - Significantly increases capacity and throughput
- **Contact your Aerohive partner or representative for configuration assistance**

## Professional Services

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- Optional professional services are available through local Aerohive partners.

AEROHIVE A<sup>3</sup> - SKUs

SKU	DESCRIPTION
<b>AH-A3-VA</b>	Software license for A3 Virtual Appliance (VA). Required with A <sup>3</sup> subscription.
<b>AH-A3-HA</b>	High Availability software license for 2 additional VA for cluster configuration; optional for all deployments.
<b>AH-A3-1K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for up to 1,000 concurrent clients/endpoints. Includes support.
<b>AH-A3-5K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for up to 5,000 concurrent clients/endpoints. Includes support.
<b>AH-A3-10K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for up to 10,000 concurrent clients/endpoints. Includes support.
<b>AH-A3-25K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for up to 25,000 concurrent clients/endpoints. Includes support.
<b>AH-A3-50K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for up to 50,000 concurrent clients/endpoints. Includes support.
<b>AH-A3-75K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for up to 75,000 concurrent clients/endpoints. Includes support.
<b>AH-A3-100K-SL-1Y/3Y/5Y</b>	1/3/5 Year subscription for 100,000 (and more) concurrent clients/endpoints. Includes support.

