QuickSpecs

Overview

HPE Aruba Networking Analytics and Location Engine

HPE Aruba Networking Analytics and Location Engine™ (ALE) is a virtual context aggregation and location engine that collects data about Wi-Fi-enabled mobile devices that are nearby or connected to an HPE Aruba Networking WLAN. This data is made available to analytics and data mining systems through high- performance APIs.

Contextual data allows external analytics and applications to mine the wealth of information about the people, devices and apps being used on the network – whether in enterprises or inside public venues – and extract useful business intelligence.

Insights about traffic patterns – including most traversed paths, dwell times and repeat visitor frequency – are correlated with other data sources, such as sensors, loyalty databases, and point-of-sale systems.

This enables enterprises to optimize real estate, merchandise locations, evaluate marketing effectiveness, offer guests and employees more personalized experiences and improve overall operational effectiveness.

Standard Features

Services Supported by Ale

Associated and unassociated HPE Aruba Networking Wi-Fi client information is received and decoded by ALE. With this information, ALE performs three primary functions:

- Extract contextual information from the network, including user identity and roles, device types and application usage.
- Calculate location for associated and unassociated clients based on received signal-strength information or simply indicate the presence of a device in proximity to a specific AP.
- Forward and store contextual user and location data and present it to third-party applications/services through standard polling or publish-subscribe streaming APIs.

Analytics

Third-party analytics engines and big-data mining services analyze traffic flows and patterns and aggregate this data with loyalty databases and other business systems to provide a better understanding about customer behavior.

Within this analytics architecture, ALE aggregates as much opt-in information as possible from the WLAN and feeds it to a third-party analytics engine in the HPE Aruba Networking partner ecosystem. A presence feed indicates that a device is within range of the WLAN, and an events feed indicates when a device enters, crosses or leaves a predefined geofenced area.

Venues that need to know what types of devices enter their location can use ALE to procure the manufacturer, model, operating system DHCP and the browser user-agent (the line of text that identifies the browser) and the operating system to the web server. Venues can also observe app usage and destination URLs by monitoring data-plane traffic from the device.

ALE publishes this information via feeds to which third-party analytics engines can subscribe. Third-party analytics engines store the opt-in information in a database and analyze it with other opt-in sources of data that may include:

- Consumer online search and purchase history.
- Consumer point-of-sale records for in-store purchases.
- Demographics about the opted-in customer, including geographic location, birthday and family information.
- Environmental information like hot, cold or rainy day, public holiday or weekend, and seasonal influences.
- Other data-mining sources that are useful in revealing patterns in consumer activity.
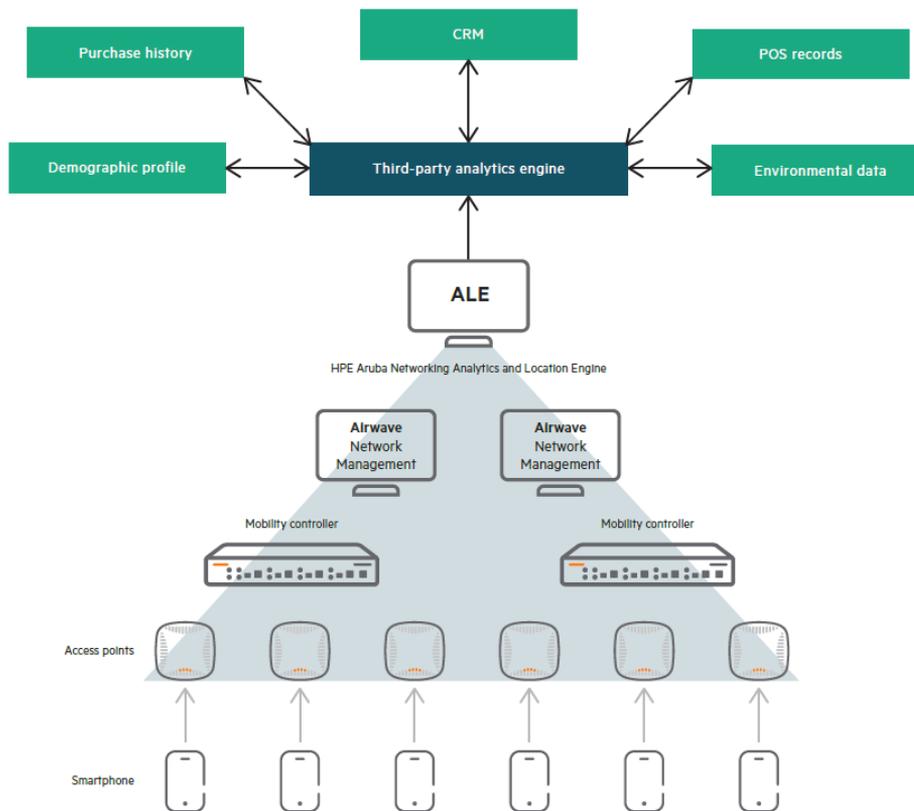
Standard Features

HPE Aruba Networking Analytics and Location Engine and Privacy

Businesses and the analytics industry are rightly aware of the sensitivity of personally identifiable information (PII). By default, all PII gathered from ALE is anonymous, including user identities and device MAC and IP addresses.

HPE Aruba Networking strongly recommends reviewing privacy policies with local regulators before implementing any data collection activities in public venues and to always ensure that users agree to terms and conditions.

Figure 1. The HPE Aruba Networking Analytics and Location Engine works with an ecosystem of HPE Aruba Networking analytics engine partners and the WLAN infrastructure

ALE-based analytics deliver business intelligence that can be used to improve the mobility experience in brick-and-mortar facilities, increase customer satisfaction, boost overall or category sales, or any other goal of the organization.

For instance, retailers can monitor real-time traffic patterns to determine whether more sales associates are needed on the floor during busy periods. Visitor flows can be analyzed at airports to alleviate bottlenecks so travelers can reach their flight departure gates on time.

Location and network analytics also help enterprises improve the quality of experience for critical apps and also enforce location-specific security and access policies.

Technical Specifications

System overview

- HPE Aruba Networking Analytics and Location Engine is deployed as a virtual machine (VM) image.
  - One VM image, delivered as an OVA file, can be deployed with various hardware configurations – for CPU, memory, hard disk – based on scale requirements (see below).
  - CentOS 6.4 pre-installed with all needed dependencies.
- Supported on VMware ESX/ESXi 5.0 or higher.
- ALE requires a connection to HPE Aruba Networking Management Software (AirWave) ™ network management VisualRF™ module to show a site map with AP locations. For small venues with 1-2 APs where presence is required but not triangulated location, ALE supports a mapless feature when used with HPE Aruba Networking Instant APs.
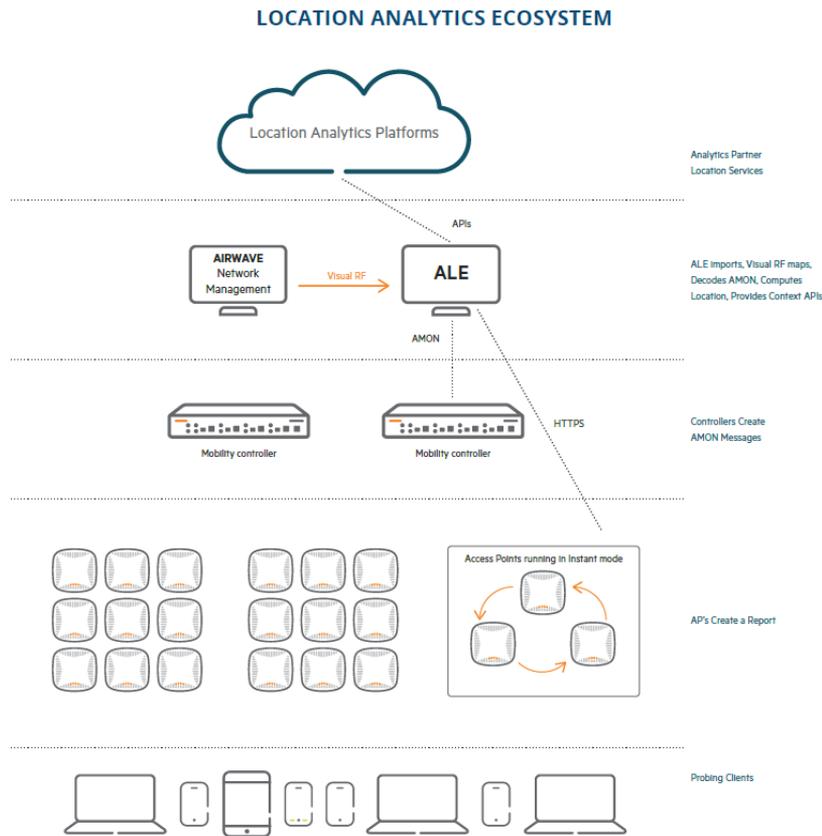
LOCATION ANALYTICS ECOSYSTEM

Figure 3

System requirements

This table shows recommended system requirements for ALE in small, medium and large configurations. Up to 2,000 APs and 32,000 devices are supported on a single ALE instance.

Number of APs/clients	CPU cores	RAM (default)	Hard disk	Size
500/8,000	8	16 GB	100 GB	Small
1,000/16,000	8	24 GB	320 GB	Medium
2,000/32,000	16	48 GB	1 TB	Large

- ALE supports the WebSockets protocol for secure communication over TCP with external cloud and analytics platforms

Technical Specifications

APIs

ALE is an API-driven solution. It supports two types of APIs:
1. **Polling API** based on representational state transfer (REST): This API provides the ability to query for specific information such as stations, location, URL destinations and applications. This API is mostly recommended for bootstrapping an application when it first starts up. It supports HTTP GET operation by providing a specific URL for each query and the output format is JSON.
2. **Publish/Subscribe API** based on Google Protobuf and ZeroMQ: This API allows the ability to subscribe for specific information. Once subscribed, ALE will start publishing messages on the subscripted topics, and sends them to the subscribers. The subscriber application needs to use 0MQ (or ZeroMQ) client libraries to connect to ALE.

    Application developers processing the data uses the .proto file and the protocol buffer compiler (.protoc) to generate the message parsing code in various languages (C++, Java or Python). This API is recommended for any application that wants real time updates for all the devices on the network.

    API details are documented in the ALE API Guide, which is available to development partners through the HPE Aruba Networking support web site.

Supported infrastructure

*   ALE can be used with HPE Aruba Networking Mobility Controllers and controllerless HPE Aruba Networking Instant WLANs.
    -   Requires HPE Aruba Networking Operating System 6.3 or higher for HPE Aruba Networking controller- managed WLANs.
    -   Requires HPE Networking InstantOS 4.0 or higher for HPE Aruba Networking controllerless WLANs.
    -   All new 802.11n and 802.11ac APs are supported. Some older generation APs have not been tested.

Ordering information

*   ALE is licensed on a per-AP basis and it is available as free beta until June 2015. Please contact your local HPE Aruba Networking sales representative for access to ALE. Pricing and SKUs will be updated in June 2015.
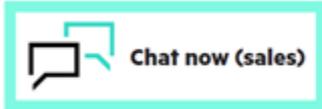
Summary of Changes

Date	Version History	Action	Description of Change
16-Dec-2024	Version 3	Changed	QuickSpecs was updated
23-Oct-2017	Version 2	Changed	HPE Aruba Networking information updated
01-Nov-2016	Version 1	Created	Document creation.

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