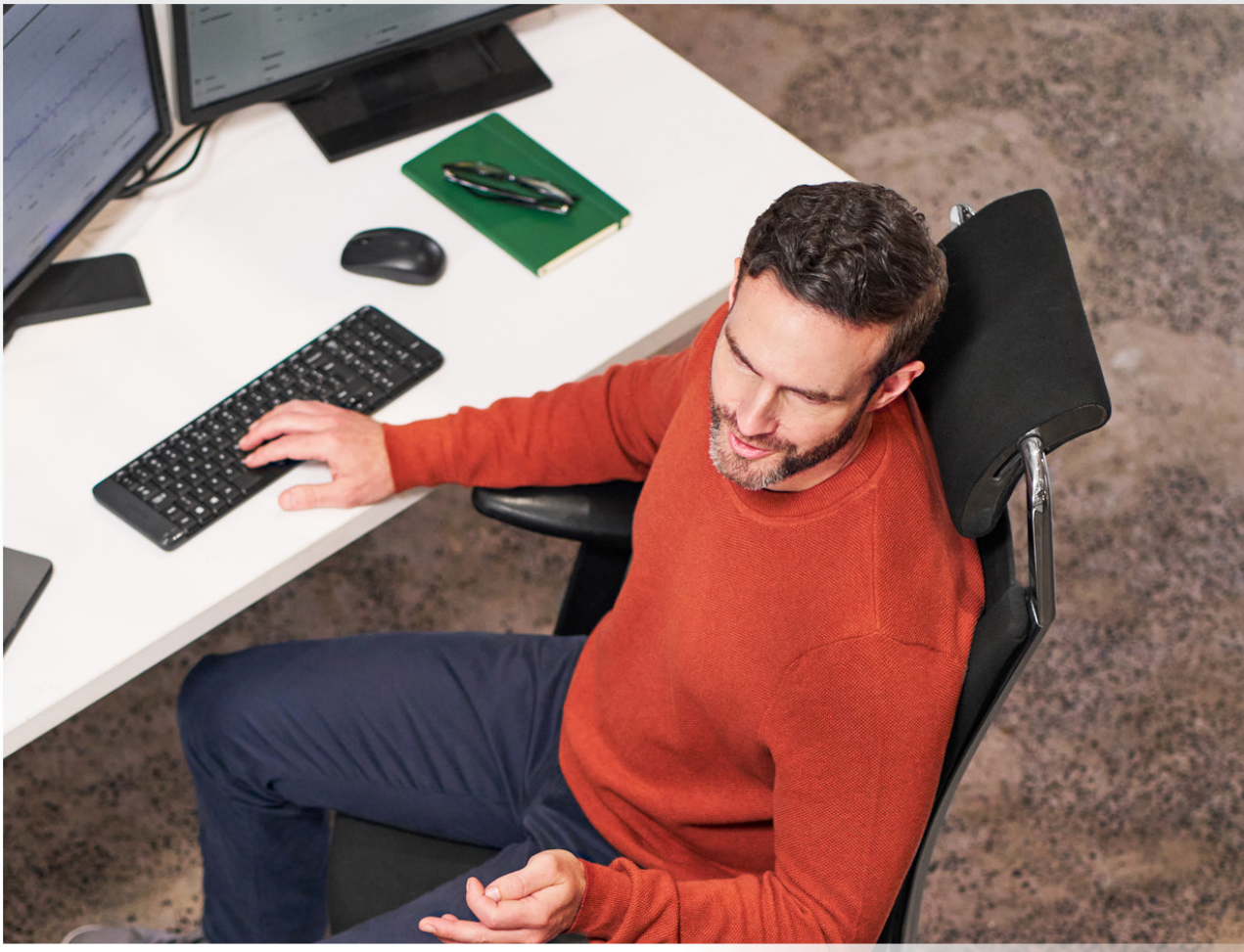
HPE aruba networking

Solution overview



Visibility and insight for today's IoT-driven networks

An AI-powered approach to securing network endpoints with Client Insights

HPE

As the breadth and complexity of endpoint clients in the network continue to grow at a staggering rate, many organizations are struggling to address an expanding attack surface. With the growing ubiquity of the Internet of Things (IoT) and new use cases generated by digital transformation initiatives, the adoption of IoT has outpaced critical security and compliance best practices in favor of improved operational efficiencies and business outcomes.

With this shift, IT and security teams are often unaware of when, where, and what types of new clients are being connected to the network. This lack of visibility prevents them from implementing timely security and compliance safeguards. Best practices would require that each new client be accurately identified, onboarded, and assigned a policy, but IT is often caught off guard.

Blind spots in current approaches

The existing network visibility toolset has focused on a fairly narrow set of clients that are easily identified using basic discovery and profiling techniques. This includes finding things such as popular smartphones and laptops running common desktop or mobile operating systems. Identifying a smartphone running Android™, from a laptop running Windows has been common using these techniques.

Identifying clients such as IoT devices is particularly difficult for several reasons, some of which include:

— Many IoT devices are produced by emerging vendors and cannot be communicated using standard discovery and profiling techniques, making them difficult to accurately profile.

— It is also common to see IoT devices that are built with generic hardware and software, such as a Raspberry Pi that serves different roles, making it difficult to decipher as well.

— Due to inaccurate or partial profiling, clients are often identified as generic Windows or Linux® clients, which makes it difficult to apply accurate policies.

— Most network visibility solutions require collectors or agents, and it is not always feasible to deploy collectors across locations at scale.

The importance of context

With this shift, a full-spectrum approach to visibility across the entire wired and wireless infrastructure is needed that doesn't require using agents or logging onto clients to see what they are. This means understanding the actual behavior of a device—what protocols are being used, what applications and URLs are being accessed—and in the end, what function a client is serving on the network. For many purpose-built IoT devices, such as those found in a hospital or manufacturing plant, this rich context is the only way to accurately fingerprint them.

The HPE Aruba Networking solution: AI-powered Client Insights

HPE Aruba Networking network management solution HPE Aruba Networking Central cloud now includes AI-powered Client Insights which offers one of the most granular profilings and visibilities in the industry. Client Insights leverages native infrastructure telemetry from access points, switches, and gateways, as well as clients without requiring the installation of physical collectors or agents. Machine learning (ML)-based classification models are used to fingerprint, identify, and accurately profile a wide variety of clients across the entire wired and wireless infrastructure.

Figure 1 shows how Client Insights uses ML and crowdsourcing to identify client types.

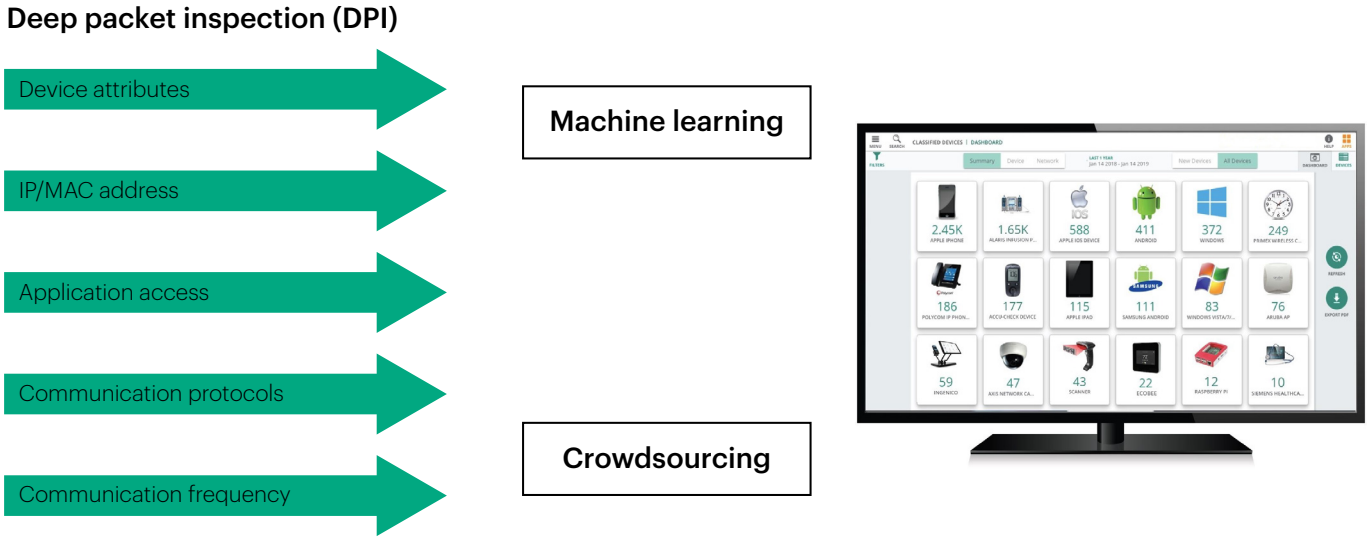


Figure 1. Client Insights utilizes advanced machine learning and crowdsourcing to accurately identify any client type

These capabilities are further enhanced with deep packet inspection (DPI), which provides additional context and behavioral information that helps to accurately identify those hard-to-detect IoT devices. By leveraging DPI, Client Insights can utilize a broader set of device attributes for more accurate identification. Client attributes that include communication and behavioral patterns are analyzed to dynamically build clusters of similar devices.

ML models are used to constantly learn and update these attributes to dynamically update fingerprints and provide classification recommendations. Controlled crowd-sourcing technology is used to validate fingerprints at multiple customer sites before adding them to the HPE Aruba Networking classification database. This increases the precision and comprehensiveness of the classification engine.

Figure 2 shows how Client Insights uses telemetry from HPE Aruba Networking infrastructure devices to identify clients.

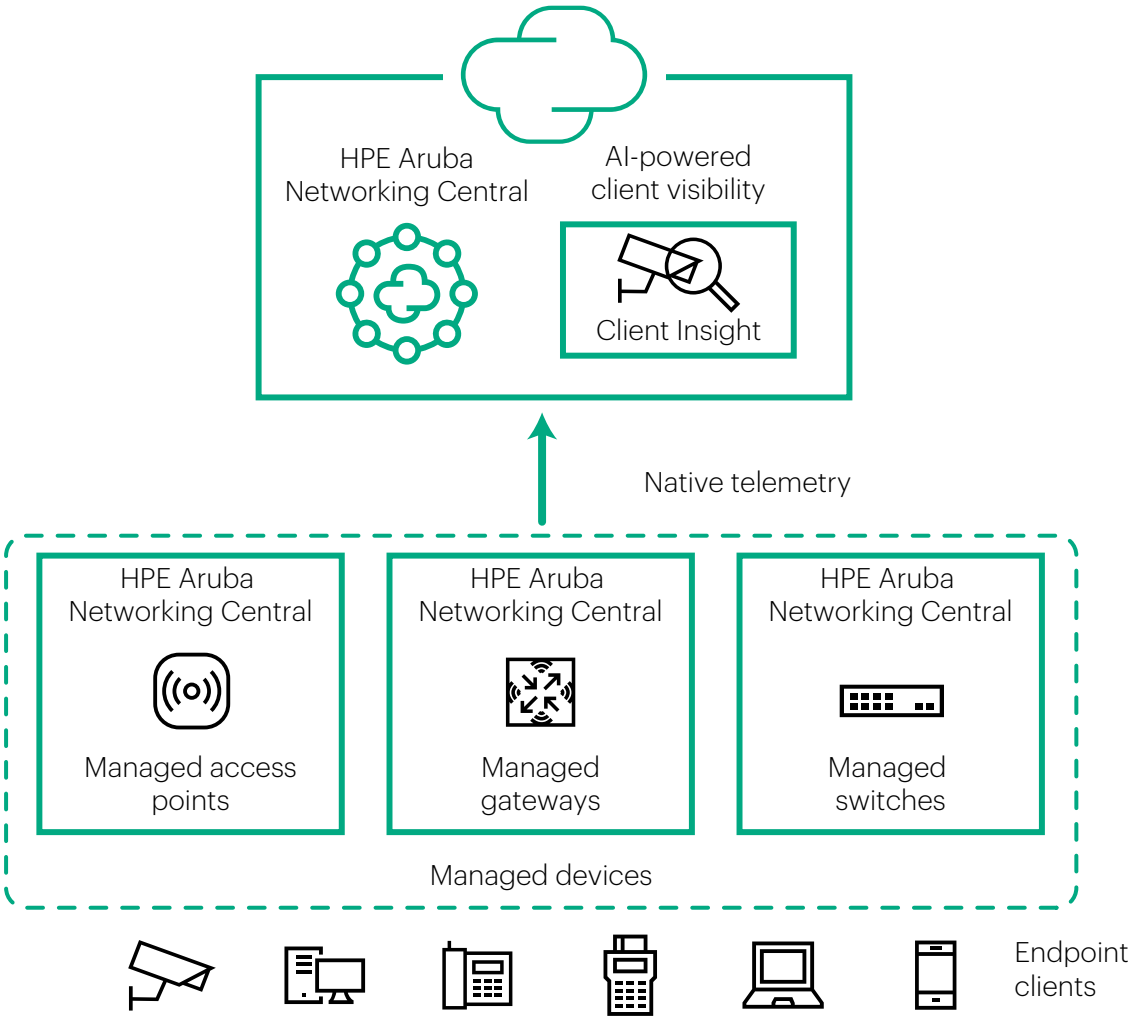


Figure 2. Native telemetry from HPE Aruba Networking infrastructure is used to accurately identify connected clients using ML-based classification

Figure 3 shows the dashboard of Client Insights with different devices listed under different categories.

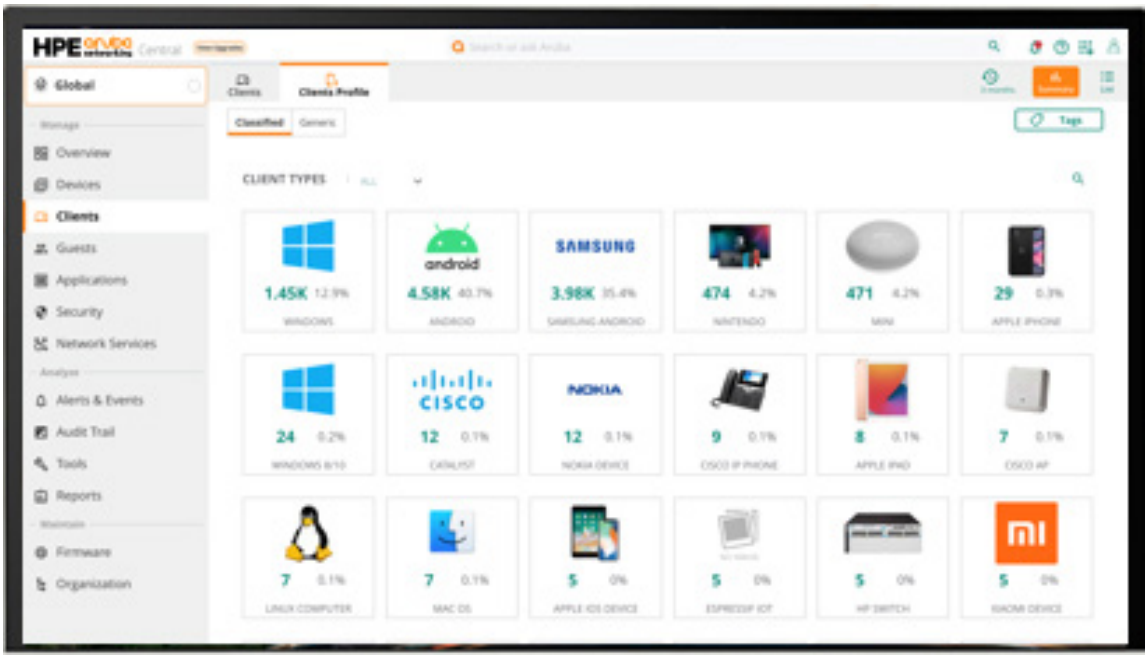


Figure 3. HPE Aruba Networking Central cloud Client Insights dashboard shows all connected devices by category

For devices previously seen as generic, sophisticated ML models are used to analyze attributes and group similar clients together. As clients are grouped, they can be easily labeled based on key attributes. Once labeled, new clients connecting to the network are automatically added to their specific cluster and labeled accordingly.

For environments that are not currently managed by HPE Aruba Networking Central cloud or for environments with third-party network devices, HPE Aruba Networking ClearPass Device Insight can be leveraged for ML-based identification and profiling of clients. HPE Aruba Networking ClearPass Device Insight requires the installation of either a physical or a virtual collector and is separately licensed.

The value of automated policy enforcement

Visibility without proper control can leave organizations susceptible to security and compliance risks. Client Insights allows for continuous monitoring of clients, which when paired with HPE Aruba Networking ClearPass Policy Manager provides closed-loop, end-to-end access control. This delivers visibility and automated policy enforcement and greatly reduces the need for manual intervention in any multivendor wired and wireless network. HPE Aruba Networking ClearPass Device Insight also integrates seamlessly with HPE Aruba Networking ClearPass Policy Manager.

Automated policy enforcement addresses several different use cases, from the point when clients initially join the network, to where an unwanted event triggers the need to remove a client due to security or compliance concerns. For instance, when a new camera first connects to the network, it can automatically be segmented as an unknown client type to ensure that it does not affect critical infrastructure or servers. If a client has been compromised or acts in a suspicious fashion, it can be quarantined completely to be tested, repaired, or replaced.

Figure 4 shows how Client Insights works with HPE Aruba Networking ClearPass Policy Manager for automated segmentation and enforcement.

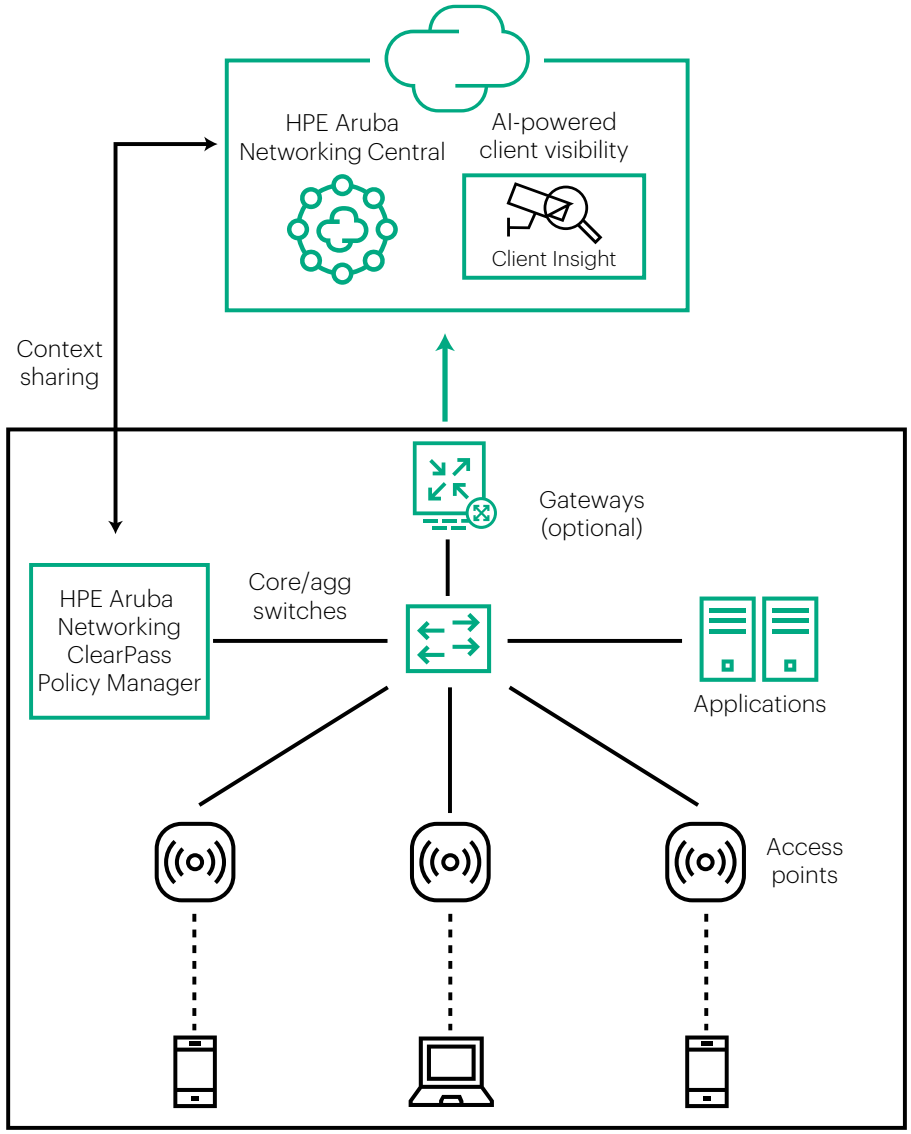


Figure 4. Client Insights integrates with HPE Aruba Networking ClearPass Policy Manager for automated segmentation and enforcement

HPE Aruba Networking Central cloud with Client Insights: Accelerating time to value

Managing business-critical applications across increasingly distributed environments drives the expectation for improved availability, performance, and security. HPE Aruba Networking Central cloud offers modern features, scale, management, and orchestration, which include advanced AI/ML and security features—enabling IT organizations of all sizes to deliver superior user experiences with amazing simplicity.

Client Insights leverages these unique features and native telemetry from network infrastructure to reduce deployment time and cost, accelerating time to value. This approach provides centralized, uninterrupted discovery and monitoring of network endpoints across distributed deployments while increasing your visibility and security posture.

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Summary

With the accelerated adoption of IoT devices, the number of clients on customer networks continues to grow, creating new use cases while also expanding the attack surface. Comprehensive visibility is essential to ensure security and compliance with best practices to keep pace with the operational efficiencies that come with the adoption of IoT.

Accurately identifying and profiling clients for fine-grained role-based policies and ensuring that each has the right level of access control to reduce overall risk levels is no longer a nice to have—it's a requirement.

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