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WHAT IS ARUBA CLIENTMATCH?

Patented Wi-Fi client optimization with Wi-Fi 6 awareness

Ensuring that all wireless network clients receive appropriate levels of service is a major challenge, especially when phones, tablets, and other mobile devices choose which available SSIDs to connect to regardless of network health. This can have a significant impact on the performance of the client as well as the overall health of the network. Issues can stem from clients that connect with weak signals, connect to an oversubscribed access point (AP), and from clients that stubbornly remain connected to a single AP even when it roams to an area with APs that offer better connectivity (e.g. sticky client issues).

A BETTER WAY TO OPTIMIZE CLIENT PERFORMANCE

To solve these problems, Aruba enhances traditional radio and roaming techniques (i.e. band steering and 802.11k/v/r) with the introduction of ClientMatch. This patented RF optimization technology on Aruba APs, significantly boosts client performance and enables a predictable, consistent connectivity experience across the entire wireless LAN (WLAN). As part of Aruba's AI-powered Mobility solution, ClientMatch continuously monitors the health of all clients connected to each AP and intelligently groups clients to APs optimized to carry their traffic – no specialized client software required (Figure 1). As a result, the impact clients have on the performance of overall WLAN is dramatically reduced.
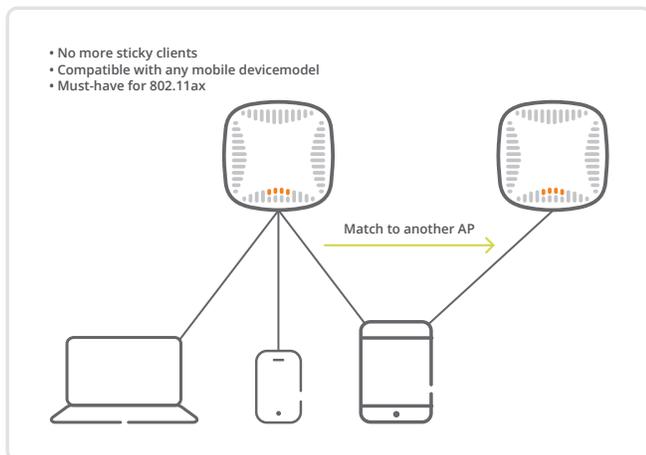
KEY FEATURES

- Resolves sticky client issues and improves performance of Wi-Fi 6 and Wi-Fi 5 clients
- Takes part in Aruba's AI-powered Mobility solution
- Continuously optimizes client connections so overall network performance remains consistent
- Backwards-compatible for all 802.11a/b/g/n/ac clients – no additional software required

Characteristics used to improve the quality of the network include: supported Wi-Fi standards (i.e. Wi-Fi 6, Wi-Fi 5), MU-MIMO capabilities, available radios, rate vs. range and other system-level attributes.

WI-FI 6 (802.11AX) AND MU-MIMO AWARENESS

The latest Wi-Fi standard brings enhanced performance, speed, and efficiency with features such as OFDMA, 1024-QAM, and bidirectional MU-MIMO. But these capabilities cannot be fully realized if clients that are not Wi-Fi 6 enabled (e.g. an 802.11n sensor or 802.11ac printer) share the same AP as Wi-Fi 6 clients. To address this, ClientMatch has been enhanced with Wi-Fi 6 awareness, which allows Wi-Fi 6 clients to be grouped together to take full advantage of Wi-Fi 6 specific multiuser features. Likewise, ClientMatch also enhances the experience of MU-MIMO capable Wi-Fi 5 clients by also grouping them together to realize enhanced benefits.

HOW CLIENTS CAN IMPACT THE WLAN

Client behavior plays a significant role in WLAN performance. Factors include:

Client-based decision-making

Clients typically control connectivity decisions such as which AP to associate to, data rates, and roaming. Because they lack a system-level view, clients in a crowded environment may still connect to a congested 2.4GHz band even when a cleaner 5GHz band is available – significantly impacting client and overall performance.

- No more sticky clients
- Compatible with any mobile devicemodel
- Must-have for 802.11ax

Match to another AP

Figure 1: ClientMatch technology eliminates sticky client problems for any mobile device

Unpredictable performance

Poor client performance directly impacts user experience, and can lead to rising support costs. IT will often allocate resources to manage help desk tickets and troubleshoot the network for slow Wi-Fi performance or connections.

Client Diversity

With the growing number and type of mobile and IoT clients accessing bandwidth-intensive applications, airtime is becoming increasingly valuable. The sheer number and diversity of clients impacts performance because slow clients (like traffic on a highway) impede all other clients. To illustrate this, if Client 1, an 802.11g tablet capable of 54Mbps is accessing Dropbox on AP 1, then Client 2, a Wi-Fi 6 laptop capable of 3.5Gbps must wait in queue before communicating with the same AP 1.

Sticky client issues and poor roaming algorithms

Once attached to an AP, clients tend to stay attached – even when users roam away from the AP. This sticky client issue will degrade the performance for every connected client, not only because signals tend to weaken as users move away from an AP, but speeds downgrade to a slower rate.

Clients connect to APs based on signal, not load

In addition to sticky client issues, devices typically connect to the strongest AP they hear – even if the AP is oversubscribed (e.g. in a busy lobby, auditorium, lecture hall, etc.), creating an imbalance in network utilization.

HOW IS CLIENTMATCH DIFFERENT?

What makes ClientMatch different is that it uses a system-level view of the entire network to continuously monitor the health of all associated clients. By dynamically gathering client information (e.g. signal strength and channel utilization) from each AP without any client-based software to install or maintain it's easy to implement at scale. This client data is then aggregated and shared among all APs to coordinate and make real-time decisions as conditions change.

For instance, ClientMatch will identify when a client is connected to an oversubscribed AP and when there's a less congested AP with a stronger signal only 15 feet away. It will then dynamically move clients appropriately.

ENHANCED CAPABILITIES

Video and voice-awareness

ClientMatch includes built-in awareness of active video and voice sessions. This means that clients engaged in a Skype for Business call will remain connected to minimize disruption to a user's experience.

Band steering

Dual-band capable clients will be moved away from a 2.4GHz radio to an available 5GHz radio that has good-to-excellent signal strength in order to improve the number of available channels, signal-to-noise ratio (SNR), and client throughput (e.g. enabling the use of wider channels).

Client steering

Client and AP performance are continuously monitored to ensure the best possible client experience. Clients are moved away from suboptimal APs during connection attempts and when a client's health degrades. For example, a client that connects to an AP with a weak signal will be moved to a more suitable AP (Figure 2), and a client that remains connected to an AP as it roams away (sticky client problem) will also be moved to a better performing AP it is closer to (Figure 3).

Figure 2: This floor plan shows an unhealthy client (red), which ClientMatch will automatically steer to a better AP and radio to optimize overall performance.
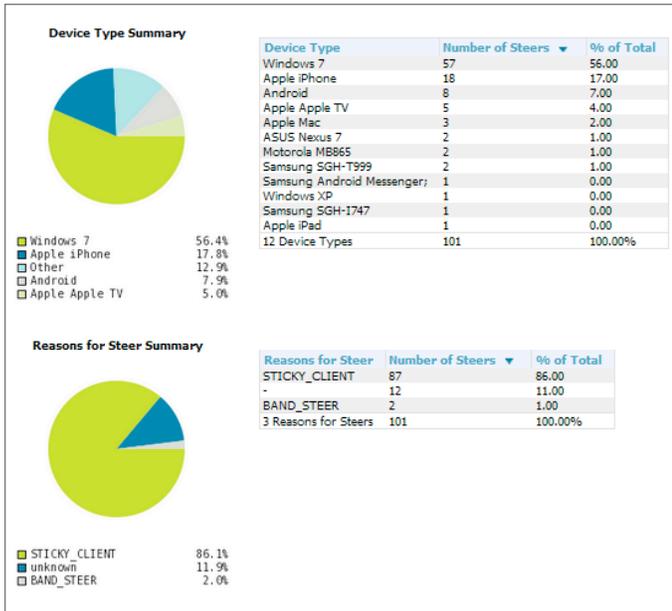
Device Type Summary

Device Type	Number of Steers ▼	% of Total
Windows 7	57	56.00
Apple iPhone	18	17.00
Android	8	7.00
Apple Apple TV	5	4.00
Apple Mac	3	2.00
ASUS Nexus 7	2	1.00
Motorola MB865	2	1.00
Samsung SGH-T999	2	1.00
Samsung Android Messenger;	1	0.00
Windows XP	1	0.00
Samsung SGH-I747	1	0.00
Apple iPad	1	0.00
12 Device Types	101	100.00%

☐ Windows 7   56.4%
☐ Apple iPhone   17.8%
☐ Other   12.9%
☐ Android   7.9%
☐ Apple Apple TV   5.0%

Reasons for Steer Summary

Reasons for Steer	Number of Steers ▼	% of Total
STICKY_CLIENT	87	86.00
-	12	11.00
BAND_STEER	2	1.00
3 Reasons for Steers	101	100.00%

☐ STICKY_CLIENT   86.1%
☐ unknown   11.9%
☐ BAND_STEER   2.0%

Figure 3: This ClientMatch report shows sticky clients that were steered, how many times they were steered and why they were steered.

Dynamic load balancing

This allows for the distributing a subset of clients automatically across available APs and channels to maximize client performance in highest density use cases – while ensuring APs and channels are not oversubscribed.

Full interoperability with standards-based clients

ClientMatch uses industry standards such as 802.11k and 802.11v for its monitoring and control functions which ensures support for all client devices without additional software.

Backwards compatibility for investment protection

ClientMatch operates on all Aruba 802.11n, 802.11ac (Wave 1/Wave 2), and Wi-Fi 6 access points to maximize network performance for all clients, new and existing. ArubaOS 6.3/InstantOS 4.0 is the minimum software version that supports the ClientMatch feature.

TO LEARN MORE

For additional information on Aruba WLAN products, please refer to:

- ArubaOS network operating system Data Sheet (and licenses)
- Aruba AirMatch Tech Brief
- Access Points

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