

TECHNOLOGY BRIEF

WHAT IS ARUBA CLIENTMATCH?

Patented Wi-Fi client optimization with 802.11ax awareness

WI-FI IS A SHARED MEDIUM

Ensuring that all wireless network clients get appropriate levels of service is a major challenge, especially when phones, tablets, and IoT devices control their own connectivity and roaming decisions. Just a few of these clients can have a significant impact on overall client and WLAN performance. Issues can stem from clients that connect with weak signals, to those that connect to an oversubscribed access point (AP), and especially clients that stay connected to one AP even when they roam the environment (e.g. sticky clients).

Aruba's patented ClientMatch technology is a RF optimization capability that significantly boosts WLAN performance and gives users a predictable, consistent experience no matter what type of client used. As an enhancement to Adaptive Radio Management, ClientMatch is a part of Aruba's AI-powered mobility solutions (along with [AirMatch](#) and [NetInsight](#)). It utilizes machine learning algorithms to automatically determine where best to connect a client by using a system-level view of the network and analytics to make proactive decisions without any specific client software or manual intervention.

ClientMatch goes a step further than technologies that simply disassociate clients from certain APs by monitoring the health of all clients and proactively matching either a single client or a group of clients to the right radio on the right AP (Figure 1). This helps boost the overall performance for every user and client on the network, including optimized performance for 802.11ax (Wi-Fi 6) capable clients.

KEY FEATURES

- Resolves sticky client issues and vastly improves performance when roaming
- AI-powered network analytics and automation – no manual intervention required
- Enable up to 4x the performance in high density 802.11ax network environments
- Continuously optimizes client connections so overall network capacity remains consistent
- Backwards-compatible for all 802.11a/b/g/n/ac clients – no additional software required

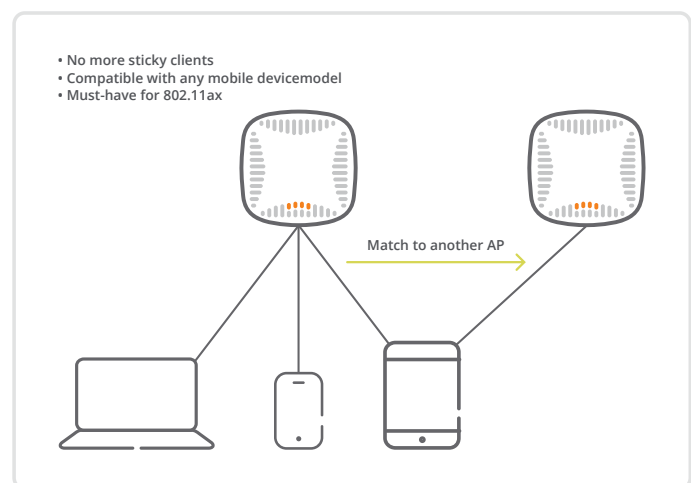


Figure 1: ClientMatch technology eliminates sticky client problems for any mobile device, including 802.11ac devices.

HOW CLIENTS CAN IMPACT THE WLAN EXPERIENCE

Client behavior has a significant impact on WLAN performance. Key issues include:

Client-based decision-making

Clients typically control connectivity decisions such as which AP to associate with, data rates, and roaming. Without a system-level view, clients in a crowded environment may still attach themselves to a congested 2.4GHz band when a cleaner 5GHz band is available – significantly impacting client and overall performance.

Unpredictable performance

When client performance impacts user experience, IT teams find themselves fielding helpdesk tickets about slow app performance and poor roaming experiences – this increases support costs and can lead to unnecessary hardware to improve the WLAN experience.

Client Diversity

With the growing number and type of mobile and IoT clients accessing bandwidth-intensive applications (not to mention the number of different operating systems and chipsets), airtime is becoming increasingly valuable. This diversity of clients impacts performance because slow clients (like slow cars on a highway), impede all other clients. For instance, Client 1, an 802.11g device capable of 54Mbps, must finish its transaction before Client 2, an 802.11ax device capable of 3.5Gbps, can begin.

Poor roaming algorithms

Once attached to an AP, clients tend to stay attached – even when users roam. 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, they 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?

ClientMatch 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. This client data is then aggregated and shared among all APs to coordinate and make real-time decisions as conditions change.

To illustrate this benefit, a client connected to an oversubscribed AP may not know that there's a less congested AP only 15 feet away or that a nearby AP has a stronger signal, or that it should associate with another AP when it roams into another AP's coverage area. ClientMatch is aware of all of this data and can dynamically move clients to ensure more healthy and predictable performance. ClientMatch is also voice-aware – ensuring that clients do not disassociate during an active call session.

With the introduction of 802.11ax support on the latest versions of ArubaOS software, ClientMatch can automatically group bidirectional MU-MIMO and OFDMA-capable clients together on 802.11ax APs to enable the full benefits of MU-MIMO during the early days of market transition. This unique enhancement is critical for 802.11ax clients that are coexisting with a larger concentration of 802.11a/b/g/n/ac clients in the same network.

ENHANCED CAPABILITIES

802.11ax (Wi-Fi 6) awareness with MU-MIMO grouping

The latest Wi-Fi standard brings enhanced performance, speed, and efficiency with key features such as OFDMA, 1024-QAM, and bidirectional MU-MIMO. Combined with Aruba's patented ClientMatch technology, 802.11ax-capable clients will now be grouped together in 802.11ax environments as well as hybrid 802.11a/b/g/n/ac/ax environments to take full advantage of MU-MIMO capabilities and maximize the user 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.

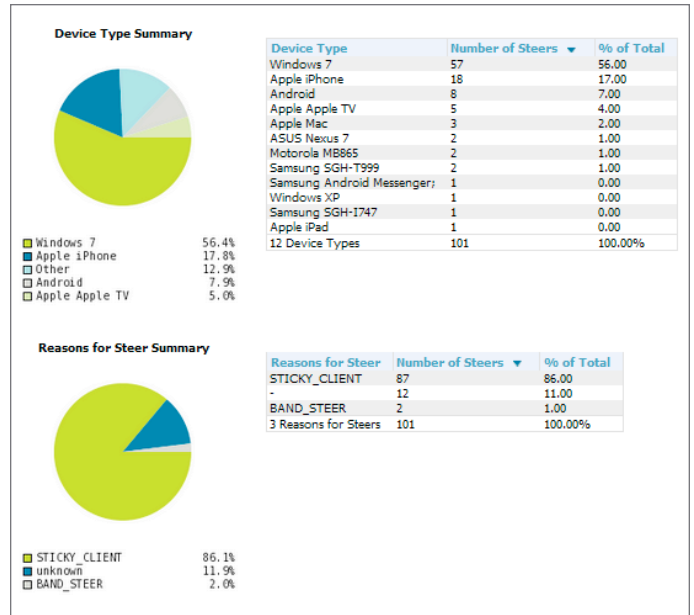


Figure 3: This ClientMatch report shows sticky clients that were steered, how many times they were steered and why they were steered.

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 802.11ax 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) – https://www.arubanetworks.com/assets/ds/DS_AOS.pdf
- Aruba AirMatch Tech Brief – https://www.arubanetworks.com/assets/tg/TB_AirMatch.pdf
- Access Points – <https://www.arubanetworks.com/products/networking/access-points/>