TECHNOLOGY BRIEF

ARUBA AIRMATCH TECHNOLOGY

AI-powered Wi-Fi RF management and automation

Organizations are seeing a soaring growth in client density and data consumption, driven by BYOD, IoT, and cloud initiatives. Because of this, the demand for fast and reliable Wi-Fi in workspaces and public venues is no longer a nice to have – it's a must have.

To optimize the experience for users, the stability of the network requires a new level of intelligence to quickly adapt to changing RF conditions across the network – such as higher density, co-channel interference (CCI), coverage gaps and roaming.

Aruba AirMatch goes beyond Adaptive Radio Management (ARM) by utilizing AI/machine learning to provide automated radio frequency (RF) optimization. Instead of looking at each individual AP like in the ARM model, AirMatch looks at analytics across the entire WLAN.

AirMatch is a key component of Aruba's AI-powered Mobility solution and is supported in environments utilizing the Aruba Mobility Master (ArubaOS 8+). This delivers automated system-wide channel, bandwidth and EIRP optimization – no manual intervention required.

AI-POWERED INNOVATION

AirMatch analyzes periodic RF data across the entire network, or a subset of the network (e.g. a controller cluster), to algorithmically derive configuration changes for every Aruba AP on the network. The APs receive regular updates based on changing environmental conditions, which benefits both IT and users.

Improved Channel Assignments

The proactive optimization of the channel allocation plan on a daily basis ensures the even distribution of channels to reduce co-channel Interference (CCI) and improve channel reuse. Should a local RF event, such as an increase in the noise floor or a radar detection event occurs, APs will automatically change channels. Figure 1 shows AirMatch automatically distributing channels evenly across all APs in the network.

KEY FEATURES

- Automated RF network optimization via machine learning
- Dynamic bandwidth adjustments per changing device density
- Enhanced roaming using an even distribution of EIRP to radios
- Real-time channel assignments to mitigate co-channel interference
- Expanded RF awareness with peer comparisons delivered through Aruba NetInsight

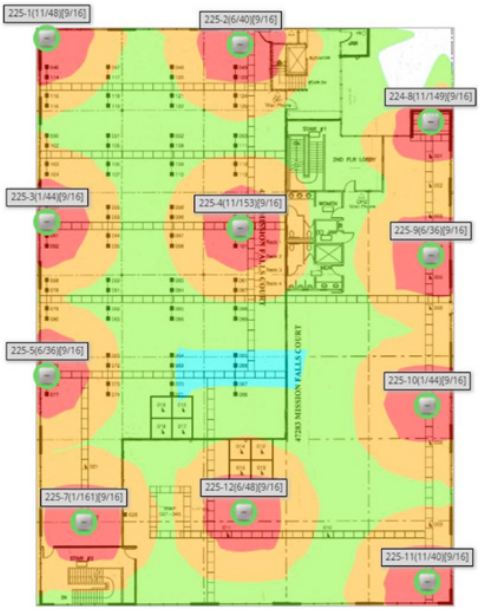

Figure 1: Channel assignment with AirMatch*

*The data labels for each AP should be interpreted as noted in this example – 225-1(6/149)(6/12). AP name: 225-1; 2.4GHz channel allocation: 6; 5GHz channel allocation: 149; EIRP for 2.4GHz: 6dbm; EIRP for 5GHz: 12dbm

Dynamic Bandwidth Adjustments

By analyzing the interactions between APs and density on the network, AirMatch will automatically adjust channel widths between 20MHz, 40MHz and 80MHz to maximize system capacity and overall network efficiency. If device density increases, the channel width will automatically change to either 40MHz or 20MHz. If it decreases, then channel width will revert to the wider channel.

For very high density areas such as lecture halls and stadiums where 20MHz is typically recommended, AirMatch will utilize real-time analytics to automatically change channel bandwidths from 80MHz or 40MHz to 20MHz, and make ongoing adjustments based on overall network health.

Figure 2 shows channel width adjustments based on the number of devices in a high-density environment. Figure 3 shows the FCC channel allocation in the 5GHz band – more available channels in 20MHz allows for the support of denser capacity needs.

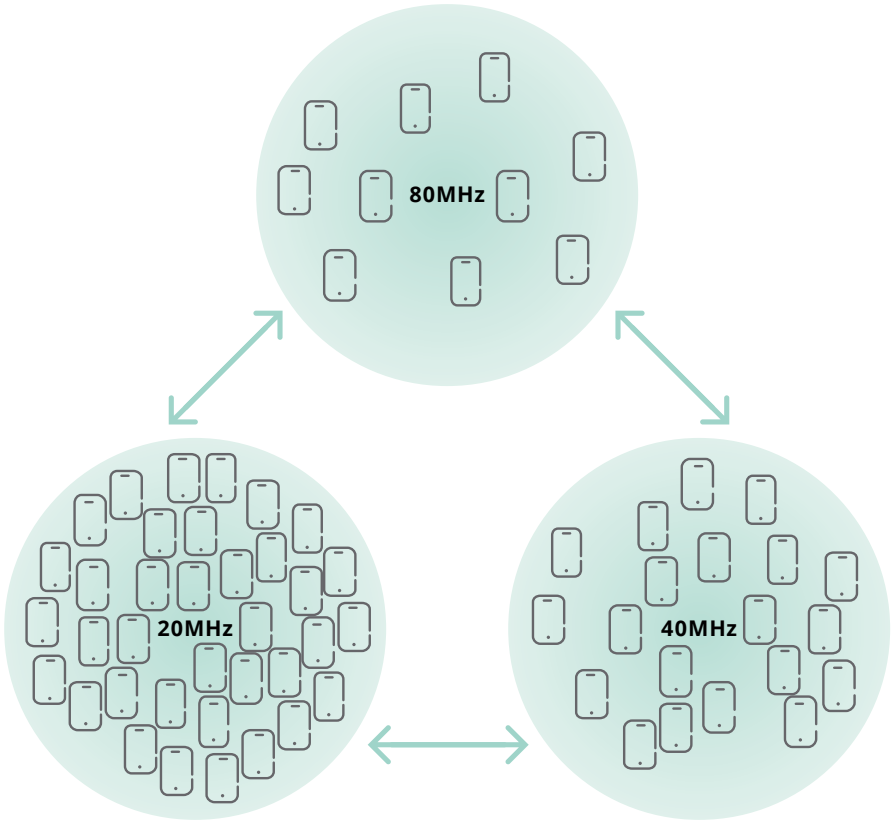

Figure 2: Channel width adjustment with AirMatch in high density environments

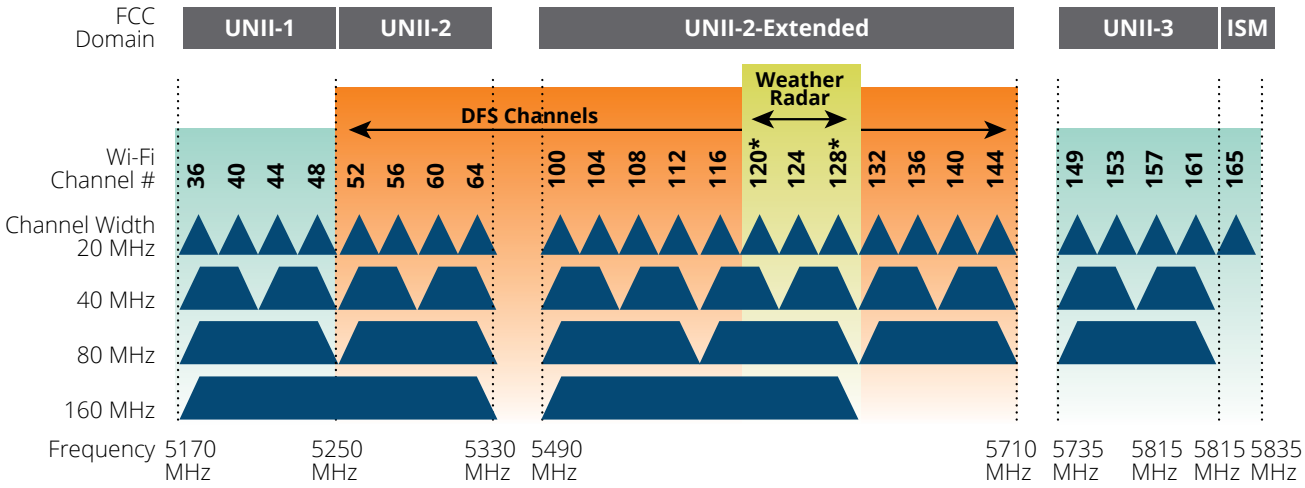

Figure 3: 5GHz channel allocation in North America

Automated Power Adjustment

The even distribution of EIRP across all APs provides better coverage and roaming performance in scenarios where RF events or coverage gaps are being experienced. In cases of high network interference due to a concentration of clients, radar conditions or other sources, AirMatch will dynamically change channels to mitigate CCI. It will also minimize large EIRP swings across neighboring APs to ensure a seamless user experience.

For coverage gaps, Figure 1 (again) shows AirMatch extending coverage to the area in blue by symmetrically adjusting the EIRP values for all neighboring APs to 9dbm in the 2.4GHz band and 16dbm in the 5GHz band.

Enhanced Analytics via Aruba NetInsight

With the latest ArubaOS release, AirMatch and NetInsight integration provides the benefit of looking at a host network and anonymized insights from peer organizations with similar network configurations to better optimize the RF characteristics of the host network. Learn more.

SUMMARY

For performance management, AirMatch delivers automated RF optimization for enterprises with high client density or fast-changing environments. Intelligent machine learning algorithms dynamically reduce co-channel interference and adjust channel bandwidth based on device density. And roaming is enhanced by evenly distributing EIRP across available radios.

A new and expanded model for understanding RF awareness is available for customers using Aruba NetInsight as insight is drawn from a large pool of APs to make smarter adjustments based on peer comparisons.

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 ClientMatch Tech Brief – https://www.arubanetworks.com/pdf/solutions/TB_ClientMatch.pdf
- Access Points – https://www.arubanetworks.com/products/networking/access-points/

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