

HPE Aruba Networking AirMatch technology

AI-powered Wi-Fi RF management and automation

HPE 
GreenLake





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
- Proactive channel assignments to mitigate co-channel interference
- Available in HPE Aruba Networking Wireless Operating System Software 8 and HPE Aruba Networking Wireless Operating System Software 10

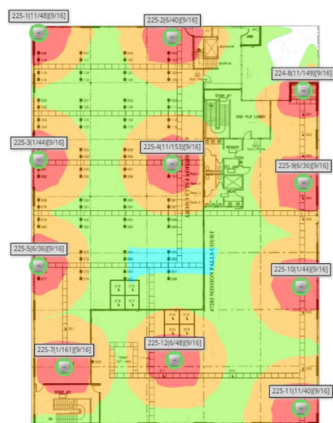


Figure 1. Channel assignment with HPE Aruba Networking AirMatch

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

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.

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

AirMatch is a key component of HPE Aruba Networking's AI-powered wireless solution and is supported in environments utilizing the HPE Aruba Networking Mobility Conductor (HPE Aruba Networking Wireless Operating System Software 8), or in HPE Aruba Networking Central (HPE Aruba Networking Wireless Operating System Software 10) for AP-Only and AP/Gateway deployments. This delivers automated system-wide channel, bandwidth and EIRP optimization — no manual intervention required.

AI-powered innovation

HPE Aruba Networking 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 HPE Aruba Networking 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 occur, APs will automatically change channels. Figure 1 shows HPE Aruba Networking AirMatch automatically distributing channels evenly across all APs in the network.



Dynamic bandwidth adjustments

By analyzing the interactions between APs and density on the network, HPE Aruba Networking AirMatch will automatically adjust channel widths between 20 MHz, 40 MHz, 80 MHz, and 160 MHz to maximize system capacity and overall network efficiency. If device density increases, the channel width will automatically change to either 40 MHz or 20 MHz. If it decreases, then the channel width will revert to the wider channel.

For very high-density areas such as lecture halls and stadiums where 20 MHz is typically recommended, AirMatch will utilize analytics over a 24-hour period to automatically change higher channel bandwidths (e.g. 40 MHz or above) to 20 MHz, 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 5 GHz band — more available channels in 20 MHz allows for the support of denser capacity needs. Figure 4 shows the FCC channel allocation in the 6 GHz band — more than double the size of 2.4 GHz and 5 GHz spectrums combined.

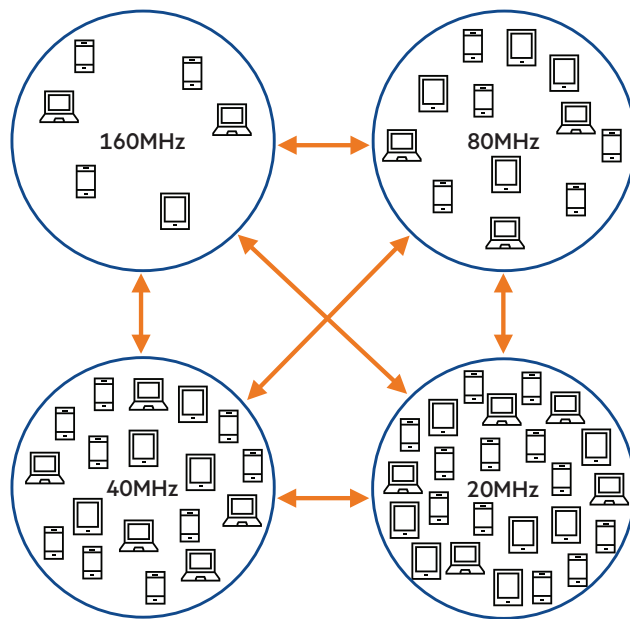


Figure 2. Channel width adjustment with HPE Aruba Networking AirMatch in high density environments

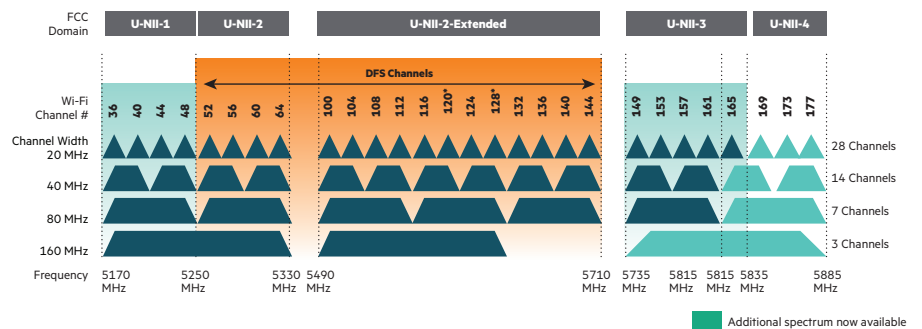


Figure 3. 5 GHz channel allocation in North America



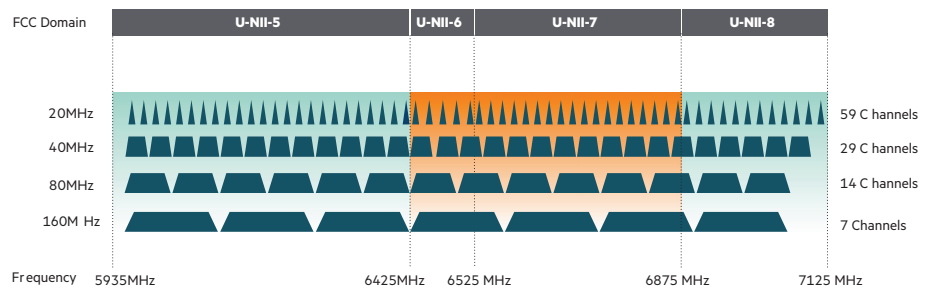


Figure 4. 6 GHz channel allocation in North America

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, HPE Aruba Networking AirMatch will 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 3 shows AirMatch extending 2.4 GHz and 5 GHz coverage to the area in dark blue by symmetrically adjusting the EIRP values for all neighboring APs to 9 dbm in the 2.4 GHz band and 16 dbm in the 5 GHz band.

Summary

For performance management, HPE Aruba Networking 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.

Learn more

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

- [HPE Aruba Networking Wireless Operating System Software Overview](#)
- [ClientMatch Tech Brief](#)
- [Access Points Overview](#)

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