

WLAN Optimization (AI-RRM) White Paper

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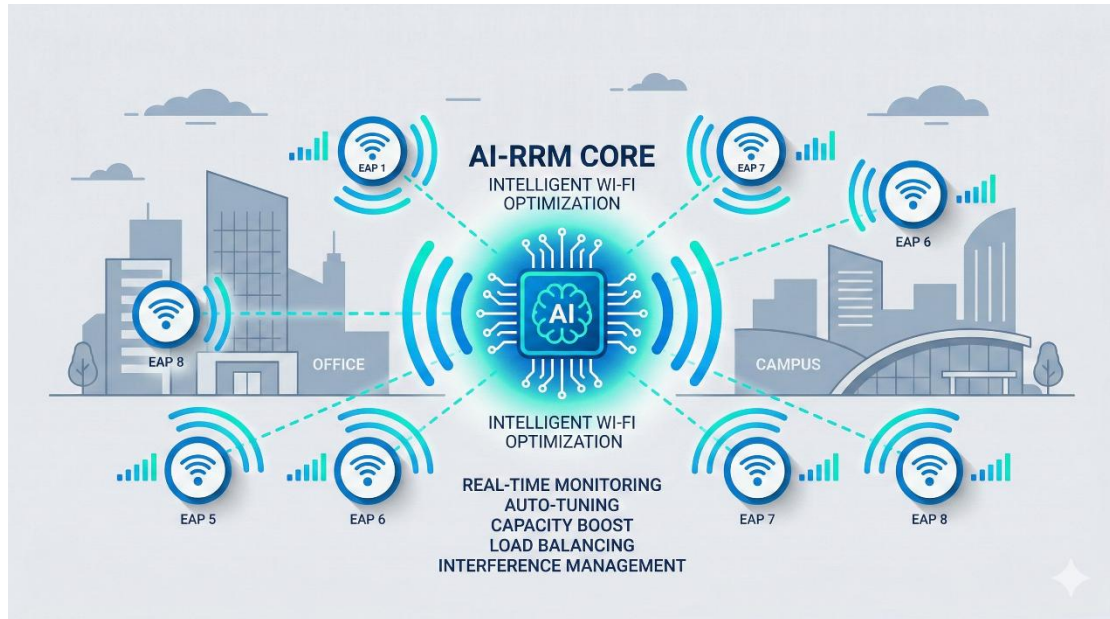
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1 Overview

1.1 Introduction



Alt text: AI-RRM Core delivers intelligent Wi-Fi optimization via real-time monitoring, auto-tuning, load balancing, and interference management

WLAN Optimization is a core feature in Omada 6.2 that brings AI-enhanced Radio Resource Management (AI-RRM) to enterprise wireless networks. Building on the foundation of Omada's existing Manual WLAN Optimization, this release introduces Adaptive (real-time) Optimization, Scheduled Optimization, and comprehensive RF Monitoring dashboards — enabling network administrators to move from reactive, manual RF management to proactive, automated wireless optimization.

1.2 Background

As 5G/5G-A, Wi-Fi 6/7, and private/vertical wireless networking expand across campuses, venues, and industrial sites, WLANs must support high-concurrency, latency-sensitive applications (e.g., UHD video, AR/VR, industrial control, and massive IoT), increasing pressure on spectrum use, interference control, and user experience.

In dense and fast-changing RF environments, static planning and manual tuning struggle to meet SLAs and may waste capacity. Intelligent closed-loop RRM ("sense-analyze-decide-act") is therefore critical to optimize resources, mitigate interference, and reduce O&M costs.

1.3 Purpose of This White Paper

- Systematically explain the principles and benefits of RRM technology.
- Provide detailed configuration guidelines and deployment strategies.

- Provide application strategies, recommended parameters, and implementation best practices for typical scenarios (e.g., high-density venues, hotels, and campus networks).
- Help network administrators understand and master the configuration and operations of AI-enhanced RRM.

2 Introduction of Key Technologies

2.1 Basic Concepts

WLAN Optimization is Omada's AI-enhanced Radio Resource Management (AI-RRM) system that automatically monitors and optimizes a wireless network's radio frequency (RF) environment. It continuously analyzes channel interference, AP density, and signal quality — then intelligently adjusts channel, bandwidth, and transmit power settings to deliver the best possible Wi-Fi experience.

2.2 Technical Advantages

- Intelligent automation — Reduces manual RF tuning from hours to no time.
- Three optimization modes — Manual, Scheduled, and Adaptive (real-time) to fit any operational model.
- Full visibility — Dashboard with CCI trends, AP density maps, and optimization history
- Explainable decisions — Every optimization action is logged with an explanation and before/after comparison.
- Business-hour aware — Time Window controls when strong interference-triggered Adaptive optimizations can occur.
- Multi-band support — Monitors and optimizes across 2.4 GHz, 5 GHz, and 6 GHz; per-band independent optimization for adaptive-strong interference triggers; all other modes optimize all bands simultaneously.
- 15-minute setup — Enable and configure from the Omada Controller or Omada app in minutes.

2.3 Market Demand

Enterprise Wi-Fi is increasingly complex due to growing device counts (3–5 per user), dense overlapping AP deployments, Wi-Fi 6/7 multi-band operation (2.4/5/6 GHz), and rapidly changing RF conditions. Without intelligent optimization, networks suffer from lower throughput, unstable connections, degraded peak-hour video, IoT drops, heavy manual tuning, and more user complaints. A closed-loop RRM ("sense-analyze-decide-act") is therefore essential to optimize resources, mitigate interference, cut O&M costs, and sustain service quality at scale.

3 Key Technical Principles

3.1 Protocol Analysis

3.1.1 CSA

Channel Switch Announcement (CSA) is an IEEE 802.11 mechanism that enables an access point to inform associated clients in advance of an upcoming channel change, including the target channel and timing. By allowing stations to prepare for the transition, CSA helps minimize service disruption, packet loss, and reconnection overhead during RF optimization actions such as dynamic channel reconfiguration or DFS-driven moves.

	Element ID	Length	Channel Switch Mode	New Channel Number	Channel Switch Count
Octets	1	1	1	1	1

Alt Text: Channel Switch Announcement element format

3.2 How WLAN Optimization Works

Omada WLAN Optimization (AI-RRM) operates as a closed-loop system with four key stages:

- a) **Full-Spectrum Sensing (Data Layer):** EAP access points continuously collect RF telemetry including channel utilization, co-channel interference (CCI), neighboring AP scans, client signal strength (RSSI), and DFS radar events.
- b) **Intelligent Analytics (Analysis Layer):** The controller aggregates and processes telemetry data into statistical insights — Top problem APs, CCI distribution across severity levels, AP density classification, and trend analysis.
- c) **Explainable Reasoning (Reasoning Layer):** When optimization is triggered, the system provides clear reasoning — which APs need adjustment, why (New AP, Strong Interference), and what the recommended configuration is.
- d) **Adaptive Execution (Action Layer):** The system applies optimized configurations — channel, bandwidth, and transmit power — using CSA (Channel Switch Announcement) for seamless channel transitions.

3.2.1 Adaptive Optimization Intelligence

- **Probability-based frequency control:** Applied to Strong Interference triggers only. Prevents excessive scanning and configuration changes that could impact user experience. New AP triggers bypass this control and proceed directly to optimization.
- **Event reporting throttling:** Controls interference event upload frequency to reduce cloud bandwidth consumption.
- **CSA-based channel switching:** Uses Channel Switch Announcement (802.11h) for

seamless, zero-downtime channel transitions.

- **Controller-side vs. Device-side events:** The controller triggers Adaptive Optimization for New AP and Strong Interference events only; devices autonomously handle DFS radar detection and ACS events (these do not trigger Adaptive Optimization and are not logged in **Controller Optimization History**).

3.2.2 Optimization Parameters

Parameter	Description
Channel	Selects the optimal channel to minimize co-channel and adjacent-channel interference based on RF scan data.
Bandwidth (Channel Width)	Adjusts channel width (20/40/80/160 MHz) to balance throughput vs. interference — narrower in dense deployments, wider in sparse environments.
Transmit Power (Tx Power)	Adjusts AP transmit power to reduce coverage overlap and co-channel interference while maintaining adequate signal strength.
Band Deployment (2.4 GHz Band Control)	Determines whether to enable or disable the 2.4 GHz band on each AP based on the wireless environment analysis — helps reduce 2.4 GHz interference in dense deployments.

Alt text: Parameter Optimization Details

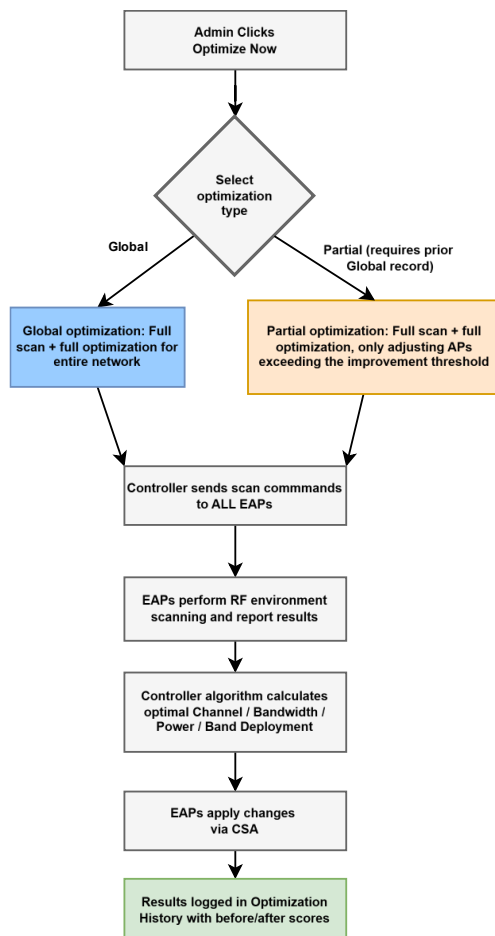
3.2.3 Wi-Fi Environment Score

The system calculates a composite score reflecting the overall RF health of the wireless network. Key factors include:

- Co-channel interference levels across all APs.
- AP deployment density relative to neighbors.
- Channel utilization distribution.
- Score is computed before and after each optimization for measurable improvement tracking.

3.3 Architecture & Optimization Flow

3.3.1 Manual Optimization



Alt text: Manual Optimization Flow — An admin manually selects the Global or Partial type, and the controller performs a full scan, calculates the optimal RF configuration, and pushes it to devices

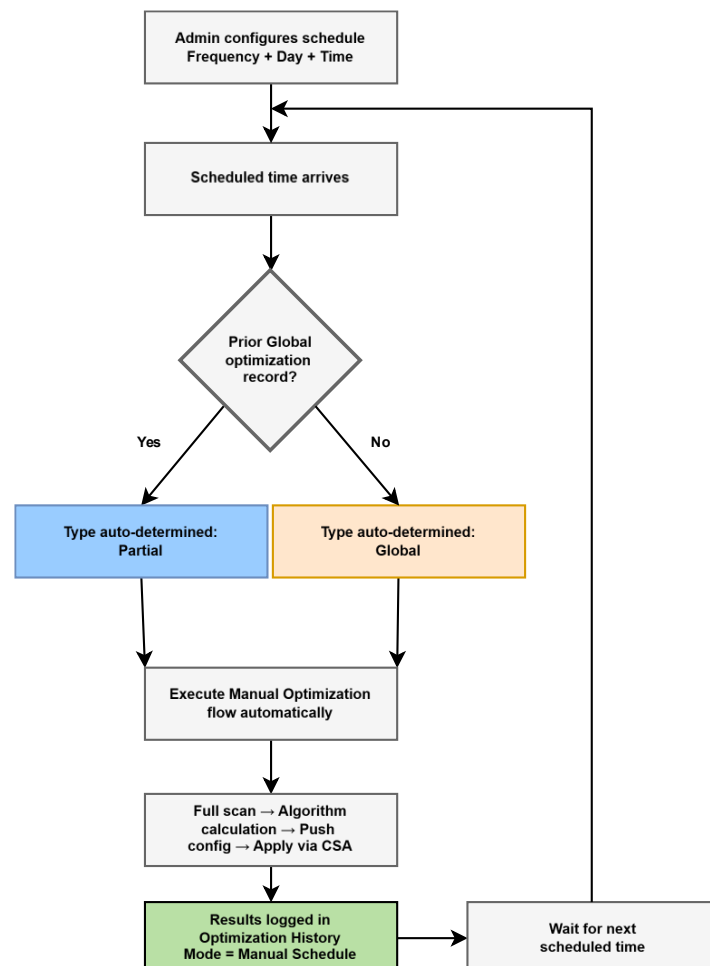
- a) An admin navigates to the WLAN Optimization page and clicks **Optimize Now**.
- b) The admin selects the **Global** or **Partial** optimization type:
 - **Global:** Full scan + full optimization — calculates optimal RF config for the entire network; larger changes but better optimization results.
 - **Partial:** Full scan + full optimization — only adjusts APs where expected improvement exceeds a threshold; smaller changes, less disruption; requires a prior Global optimization record.
- c) The controller sends scan commands to all EAPs (both Global and Partial perform full scans).
- d) EAPs perform RF environment scanning and report results.
- e) The controller's optimization algorithm calculates optimal channel/bandwidth/power/band assignments.

- f) The controller pushes new RF configuration to EAPs.
- g) EAPs apply changes using CSA for minimal client disruption.
- h) Results are logged in Optimization History with before/after scores.

Global vs. Partial — When to Use Which?

- If you have never run an optimization before, or want to recalculate the optimal RF configuration from scratch, use Global.
- If a prior Global optimization record exists, use Partial for fine-tuning. It achieves good results with smaller configuration changes and less user disruption.
- If you have run Partial multiple times but see little score improvement, it indicates the current configuration is near-optimal under existing conditions. If you still experience issues, try a fresh Global optimization to recalculate the entire network.

3.3.2 Manual Schedule Optimization

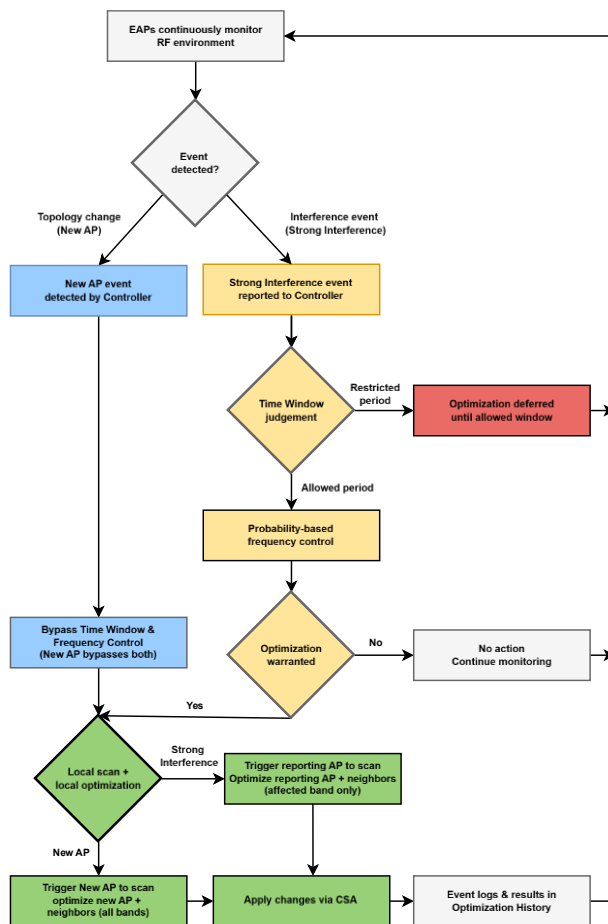


Alt text: Manual Schedule Optimization Flow — The system automatically performs Manual Optimization on the configured schedule, and the optimization type is automatically determined by the system based on whether a prior Global optimization record exists

Manual Schedule Optimization is essentially the automated, recurring version of Manual Optimization. The system periodically executes Manual Optimization on a configured schedule.

- a) An admin configures a schedule: Frequency (Daily / Weekly / Monthly), Day (if applicable), and Time (HH:mm).
- b) The optimization type is determined automatically. It cannot be manually selected:
 - If a prior Global optimization record exists → type = Partial
 - If no prior Global optimization record exists → type = Global
- c) At the scheduled time, the system automatically executes the same flow as Manual Optimization (full scan → algorithm calculation → push configuration → apply via CSA).
- d) Results are logged in Optimization History with the **Manual Schedule** mode.

3.3.3 Adaptive Optimization



Alt text: Adaptive Optimization Flow — Trigger conditions are Topology change detected (New AP) and Interference event detected (Strong Interference). The New AP event bypasses both Time Window and Probability-based frequency control

- a) When Adaptive WLAN Optimization is first enabled, the system immediately performs a Manual Global Optimization to ensure the network starts from an optimal baseline and to collect prerequisite data for subsequent adaptive decisions.
- b) After the initial Global optimization, EAPs continuously monitor the RF environment. The system watches for two trigger conditions:
 - **New AP:** A new AP joins the site — detected by the controller (Controller-side event)
 - **Strong Interference:** An AP encounters strong interference based on both RSSI and channel load — reported by the AP (device-side event).
- c) When a trigger event occurs, the event is detected by or reported to the controller.
- d) Event handling differs by trigger type:
 - **New AP trigger:** Bypasses both the Time Window and probability-based frequency control, proceeding directly to local scan + local optimization.
 - **Strong Interference trigger:** Subject to probability-based frequency control (to prevent excessive adjustments) and Time Window restrictions (if configured, optimization is deferred to allowed periods).
- e) When optimization proceeds, the controller triggers a local scan + local optimization for affected APs and their neighbors:
 - **New AP trigger:** triggers the new AP to perform a scan, then optimizes the new AP and its neighboring APs (all bands).
 - **Strong Interference trigger:** triggers the reporting AP to perform a scan, then optimizes the reporting AP and its neighboring APs (affected band only — the only scenario supporting per-band independent optimization).
- f) Changes are applied using CSA. Events and results are logged in **Optimization History**.
- g) New AP triggers bypass both Time Window and probability-based frequency control. Only Strong Interference triggers are subject to these controls.
- h) Note: DFS radar events and ACS events are handled autonomously by the AP itself and do not trigger Adaptive Optimization or appear in the controller's Optimization History.

3.4 Typical Problems and Troubleshooting

3.4.1 Optimization is running, but Wi-Fi performance hasn't improved

- Check if problem APs are in the Excluded AP List.
- Verify the EAP firmware supports WLAN Optimization (check **Incompatible List**).
- Review **Optimization History** to confirm changes were actually applied.
- High interference from external (non-Omada) sources cannot be resolved by channel optimization alone. Consider a physical site survey.

3.4.2 Adaptive Optimization triggers too frequently

- This may indicate a persistent interference source (e.g., neighboring network, non-Wi-Fi device).
- Configure **Time Window** to limit optimization to off-peak hours.
- Check the CCI chart for consistently high-interference APs. These may need physical relocation.
- The system uses probability-based frequency control to prevent excessive changes, but persistent interference will trigger repeated responses.

3.4.3 Clients temporarily disconnect during optimization

- EAPs use CSA for seamless channel switching, but some older clients may not support CSA.
- Enable **Scheduled** mode instead of **Adaptive** to run during off-hours.
- Configure **Time Window** to avoid optimization during business-critical periods.
- Add sensitive APs to the **Excluded AP List**.

3.4.4 Optimization History shows "No Data" for some APs

- The AP may not support reporting (check **Incompatible List**).
- The AP may not be participating in optimization (check **Excluded AP List**).
- The AP has not yet participated in any optimization. It will appear in **History** after its first optimization event.

3.4.5 CCI/AP Density charts show "No Data"

- Verify WLAN Optimization has been performed at least one time.
- Check that the EAPs are connected and running compatible firmware.
- Allow up to 30 minutes for initial data collection after enabling.
- Confirm the correct frequency band tab is selected.

4 Application Scenarios & Solutions

4.1 Specifications & Limitations

4.1.1 System Requirements

a) **Controller Types:**

Platform	Support
Linux/Windows Controller	✓
OC200/220/300/400	✓
Omada Cloud-Based Controller (CBC Standard)	✓
Omada Cloud-Based Controller (CBC Essential)	✗
ER7212PC	✓
Fusion Gateway	✓

Alt text: RRM Support Across Different Controller Platforms

b) **Supported EAP Models:**

- All Wi-Fi 6 (802.11ax) and newer EAP models with firmware 6.2+.
- Older models may appear in **Incompatible List** when Adaptive mode is enabled.

c) **Minimum Versions:**

- Controller: v6.2.0 or later
- EAP Firmware: Model-specific 6.2-compatible version
- Omada App: v5.1 or later (for mobile monitoring)

4.1.2 Configuration Limits

Parameter	Limit	Notes
Optimization History Retention	Last 20 records	Detailed chart view; full history in table.
Dashboard Data Window	24 hours	CCI and AP Density trend charts.
Dashboard Sampling Interval	30 minutes	Minimum granularity for trend charts.
History Table Time Filter	1 day / 1 week / 1 month / Custom	Configurable date range.
Frequency Bands	3 (2.4 GHz / 5 GHz / 6 GHz)	Independent monitoring per band; independent optimization per band is partially supported (only Adaptive Optimization is triggered by Strong Interference; supports per-band independent optimization; all other modes optimize all bands simultaneously).

Alt text: Configuration Restrictions

4.2 Typical Configuration

4.2.1 Pre-Deployment Checklist

Network Readiness:

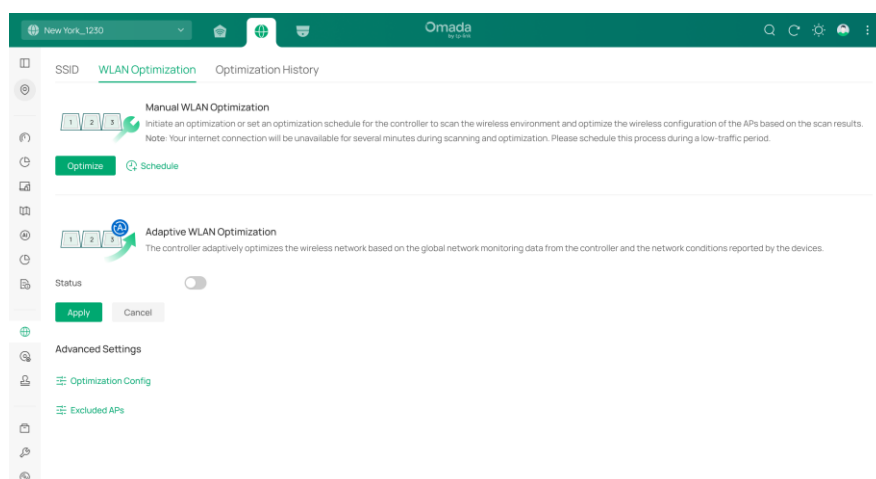
- Verify all EAP firmware is updated to 6.2+.
- Confirm the controller is running v6.2.0 or later.
- Ensure adequate AP coverage with proper overlap (minimum -67 dBm for 5 GHz/6 GHz and -73 dBm for 2.4 GHz at cell boundaries).
- Review current channel assignments and identify known interference sources
- Document current RF configuration as baseline.

Initial Configuration:

- Start with Manual Optimization to establish a baseline.
- Review initial optimization results and scoring.
- If results are satisfactory, enable **Scheduled Optimization** (e.g., nightly at 2:00 AM)
- After validating scheduled results for 1-2 weeks, consider enabling **Adaptive Optimization**.
- Configure **Time Window** to protect peak business hours if using Adaptive mode.
- Add any special-purpose APs to the **Excluded AP List** if they should not be automatically adjusted.

4.2.2 Configuration Objectives

Location: **Network Config > Network Settings > WLAN > WLAN Optimization**



Alt text: WLAN Optimization Configuration Interface

The **WLAN Optimization** page is organized into three main sections:

4.2.2.1 Manual WLAN Optimization

Optimize Now button: Triggers immediate Manual Optimization. Choose Global or Partial optimization type:

- **Global Optimization:** Full scan + full optimization. All APs scan and participate. Calculates the optimal RF configuration for the entire network. Larger configuration changes but better overall optimization results.
- **Partial Optimization:** Full scan + full optimization. All APs scan and participate, only making necessary adjustments. An AP's configuration is changed only when the expected improvement exceeds a certain threshold, resulting in smaller configuration changes and less user experience disruption, but requiring a prior Global optimization record.

Enabling **Adaptive WLAN Optimization** also triggers an immediate Manual Optimization (Global).

Schedule button: Configure recurring automatic optimization (Manual Schedule mode)

- Frequency: Daily / Weekly / Monthly
- Day selection: Weekday picker (weekly) or day-of-month picker (monthly)
- Time: HH:mm (24-hour format, system timezone)
- The optimization type is determined automatically and cannot be manually selected: if a prior Global optimization record exists → Partial; otherwise → Global.

4.2.2.2 Adaptive WLAN Optimization

Toggle to enable/disable real-time Adaptive Optimization. When enabled:

- Immediately performs a Manual Optimization (Global).
- Begins continuous monitoring for two trigger conditions:
 - **New AP:** Site gains a new AP (detected by the controller) → triggers local scan + local optimization of the new AP and its neighbors (all bands).
 - **Strong Interference:** The AP reports strong interference (based on RSSI + channel load) → triggers local scan + local optimization of the affected AP and its neighbors (affected band only).
- Shows an **Incompatible List** for devices that don't support Adaptive mode.

Time Window (optional):

- Actions: **Enable during this period** or **Disable during this period**.
- Integrates with site-level Time Range Profiles.
- New AP triggers bypass both Time Window and probability-based frequency control. Only Strong Interference triggers are subject to these controls.

- DFS radar events and ACS events are handled by the AP autonomously and are not affected by **Time Window**.

4.2.2.3 Advanced Settings

- **Excluded AP List:** APs excluded from controller-initiated optimization (Manual and Adaptive).
- **Optimization Config:** Parameters for which RF settings can be adjusted (channel, bandwidth, power, band deployment).

4.2.3 Scenario-Based Configuration Recommendations

The scenarios are divided into four categories based on the number of APs:

Category 1: Small office scenarios — fewer than 10 APs.

Category 2: Medium-sized enterprise scenarios — 10 to 50 APs.

Category 3: High-density scenarios (e.g., campuses, transportation hubs) — more than 50 APs.

Category 4: MSP multi-site scenario (e.g., chain retail) — typically deployed across multiple sites, with varying AP scale at each site.

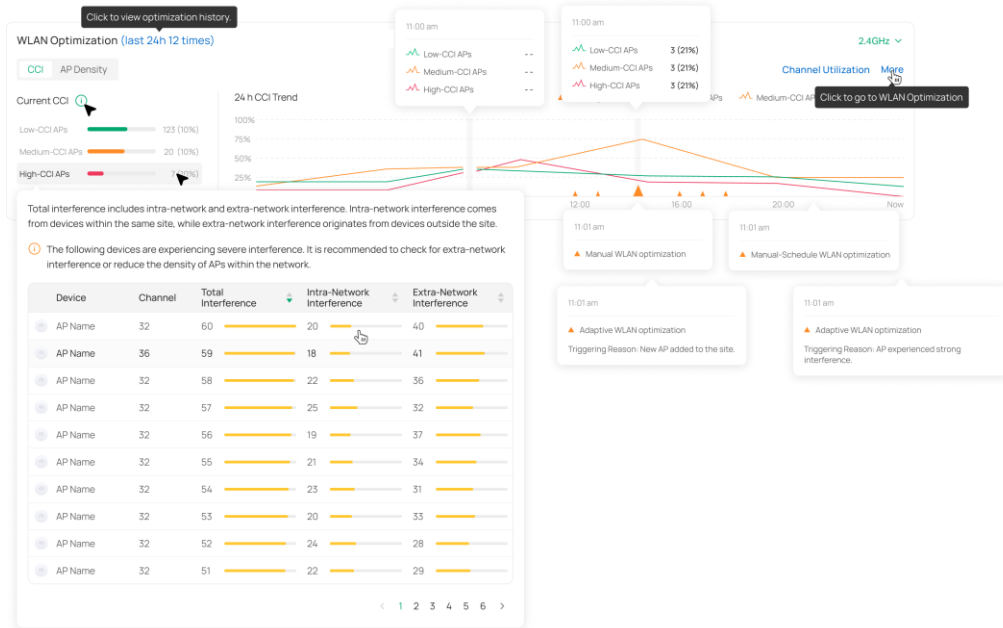
Scenario	Scheduled Task	Adaptive	Optimization Time Window
Small office	Recommended once a week (early Sunday morning)	Optional (enable in high-interference environments)	Optional.
Medium-sized enterprise	Recommended once per day (2:00)	Enabled	Disable during business hours (8:00–18:00) (Recommended).
High-density	Recommended once per day (2:00)	Enabled	Disable during business hours (7:00–22:00) (Recommended).
Multi-site	Recommended once per day (2:00)	Enabled	Disable the Adaptive function during business hours for each site (Recommended).

Alt text: Recommended Configuration for Typical Scenarios

4.3 Operations and Maintenance

4.3.1 Dashboard Monitoring

Location: **Dashboard > Wi-Fi**



Alt text: Dashboard Panel View

a) WLAN Optimization Status Card

- Optimization count in the last 24 hours
- Number and percentage of high-CCI APs
- Number and percentage of high-density APs
- Frequency band selector (2.4 GHz / 5 GHz / 6 GHz)
- Anomalous values highlighted in red with hover tips




b) CCI Chart:

- Combined bar chart (latest snapshot) + line chart (24-hour trend)
- Three severity levels:
 - ● High CCI: $CCI \geq 70$
 - ● Medium CCI: $40 \leq CCI < 70$
 - ● Low CCI: $CCI < 40$
- High CCI vs. Strong Interference — Key Distinction:
 - CCI is calculated based on RSSI only (not chLoad). It reflects potential long-term interference — high CCI means many neighboring APs, high neighbor RSSI, and significant channel overlap. However, high CCI does not mean the AP is experiencing real-time interference at this moment. If neighboring APs have low traffic (low chLoad), actual impact may be minimal. Therefore, HIGH CCI ($CCI \geq 70$) does not trigger Adaptive Optimization.
 - Strong Interference considers both RSSI and chLoad, reflecting real-time interference. The AP is actively impacted by neighbors with both strong signal and high channel utilization. Only Strong Interference triggers Adaptive Optimization.
- Bar chart: Hover to see device list with name, channel, and internal/external

interference values.

- Line chart: Shows AP count trend by severity over 24 hours.
- Optimization events marked with triangle indicators on the timeline.
- Click any device to open its details.




c) AP Density Chart

- Combined bar chart + line chart, same layout as CCI
- Three density levels:
 -  Dense deployment: Neighboring APs > 10
 -  Normal deployment: 5 <= Neighboring APs <= 10
 -  Sparse deployment: Neighboring APs < 5

Note: "Neighboring APs" refers to nearby APs that are managed by the current site.

- Bar chart: Hover to see device list with name and neighbor AP count.
- Line chart: Shows density classification trend over 24 hours.

d) Channel Utilization Chart (Dashboard > Overview):

- Bar chart showing AP distribution across all channels.
- Hovering reveals device list with per-AP channel utilization.
- Three channel utilization levels:
 -  Congested: 71–100%
 -  Moderate: 31–70%
 -  Healthy: 0–30%

4.3.2 App Monitoring

Location (App): **Insights > Wireless** tab

a) WLAN Optimization Overview

- Optimization count badge (X times in 24 hours)
- Tab switcher: 2.4 GHz / 5 GHz / 6 GHz
- Subtabs: CCI / AP Density

b) Top-CCI 5 APs List

- Ranked by CCI value (high to low).
- Per-item display: Device name, channel, interference level (color-coded).
- Tap to navigate to device detail.

c) Last 24h CCI Trend

- Three-line chart: High-CCI / Medium-CCI / Low-CCI AP count over time.
- Optimization event markers on timeline.
- Long-press for detailed tooltips (separate bubbles for trend data and optimization events).

d) Top-AP Density 5 APs

- Ranked by neighbor AP count (high to low).
- Per-item display: Device name, density status, neighbor count (color-coded).

e) Last 24h AP Density Trend

- Three-line chart: Dense / Normal / Sparse deployment AP count over time.

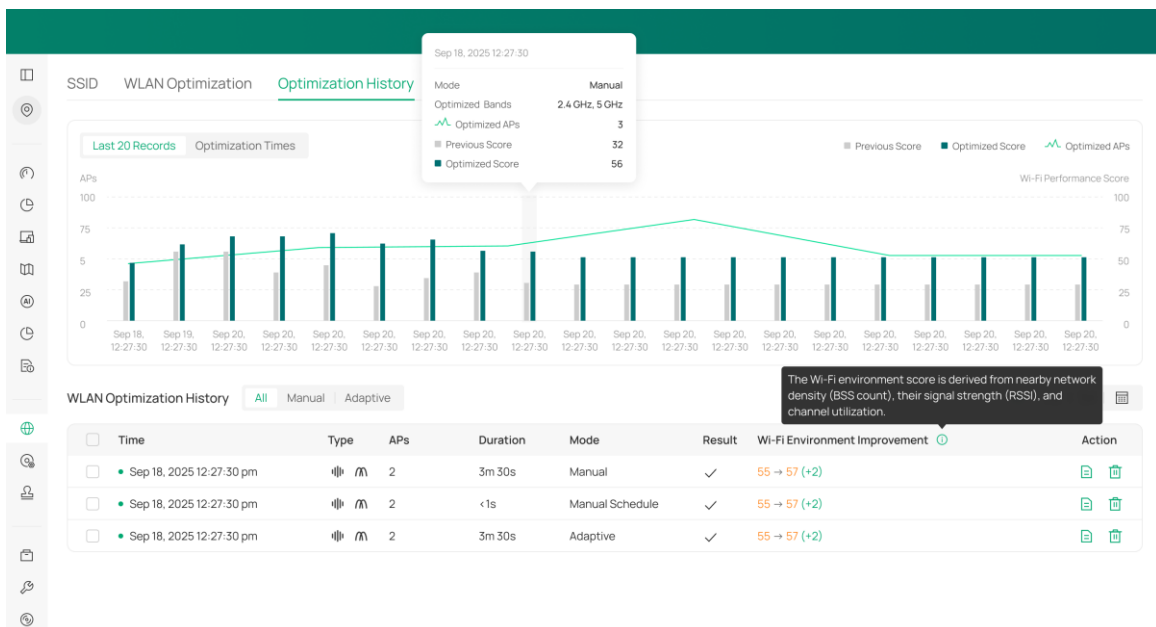
f) Optimization History

- Last 20 records chart with score comparison.
- History list with mode indicator (Manual / Manual Schedule / RRM Adaptive).
- Score improvement displayed inline: e.g., 52 (+10).

4.3.3 Optimization History

Location: **Network Config** → **WLAN** → **Optimization History**

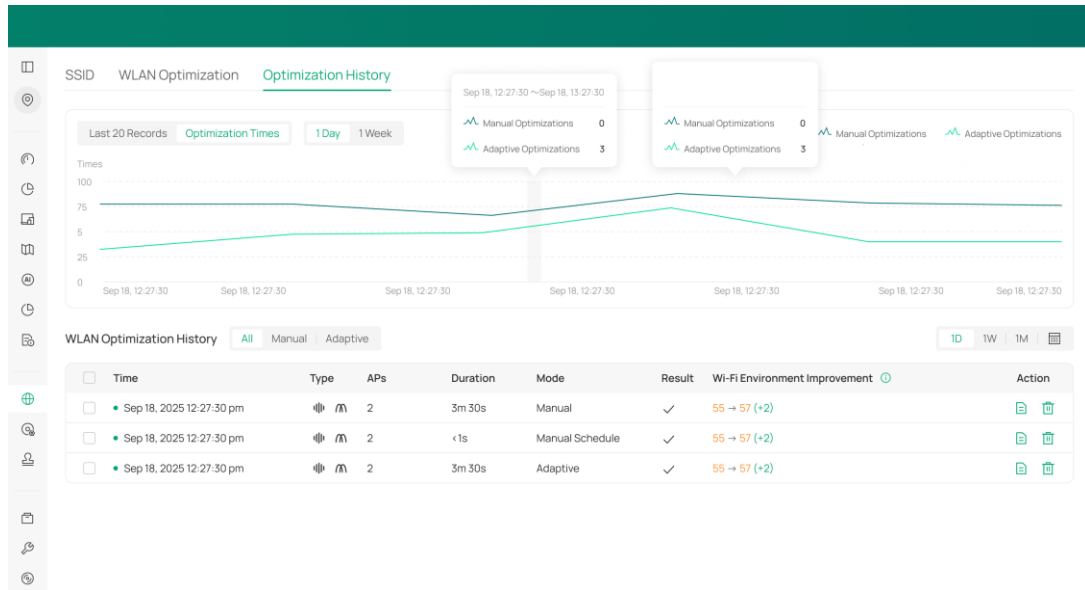
4.3.3.1 Last 20 Records Chart



Alt text: Last 20 records of Optimization History

- Combined visualization:
 - Line chart: Number of affected APs per optimization
 - Bar chart: Before/after Wi-Fi environment scores
- Hover on data points to see optimization mode, affected bands, AP count, and score improvement.
- Click a data point to filter the history table below to that specific record.

4.3.3.2 Optimization Times Chart



Alt text: Optimization Times

- Line chart showing optimization frequency over time.
- Two lines: Manual vs. Adaptive
- Time window: 1 day (1-hour intervals) or 1 week (6-hour intervals)
- Click on a data point to filter history records to that time period.

4.3.3.3 History Table

The modal window displays details for the optimization event on Sep 18, 2025 12:27:30 pm.

Device Name	IP Address	Triggering Reason	Band	Channel	Width
Device A	172.28.119	Strong Interference	2.4 GHz: Disabled → Disabled 5 GHz: Enabled → Enabled	- → - 12 → 28	- → - 80 MHz → 160 MHz
Device B	172.28.46	Strong Interference	2.4 GHz: Disabled → Enabled 5 GHz: Enabled → Enabled	- → 12 12 → 28	- → 40 MHz 40 MHz → 80 MHz
Device C	172.28.92	Strong Interference	5 GHz: Enabled → Disabled 2.4 GHz: Enabled → Enabled	12 → - 6 → 12	40 MHz → - 20 MHz → 20 MHz

Alt text: Optimization History Table

- **Filterable by tab:** All / Manual / Adaptive
- **Columns:** Time, Type (Channel / Bandwidth / Power / Band Deployment), APs (number of APs participating in optimization), Duration, Mode (Manual / Manual Schedule / Adaptive), Result (Success / Failure), Wi-Fi Environment Improvement
- **Duration precision:** seconds (less than one second shown as < 1s)
- **Score improvement:** Shown as 52 (+10)
- **Export:** Single record or batch export to CSV/XLSX
- **Expanded details:**
 - Per-AP before → after comparison for Channel, Width, Band, Tx-power
 - Option to apply previous or recommended configuration
 - Trigger reason column: Manual and Manual Schedule records have no trigger reason; Adaptive records show **New AP** or **Strong Interference**

4.3.4 CCI-Guided Manual Optimization Recommendations:

When the proportion of HIGH CCI APs is excessively large, the network faces significant potential interference. Follow these steps:

- Run Manual WLAN Optimization — prefer Partial first (smaller configuration changes, less user disruption). If Partial shows no significant improvement, try Global (larger configuration changes but better overall optimization results).
- If repeated optimization still shows no improvement and the HIGH CCI AP ratio remains high, investigate root causes:
 - Check in-network AP deployment density (AP Density): If too many APs are deployed in a small area, WLAN Optimization alone cannot reduce the HIGH CCI ratio to an acceptable level. Recommendation: Reduce AP density in overprovisioned areas, then rerun Manual WLAN Optimization.
 - Check extra-network interference: Examine the extra-network interference component of CCI. If there are too many external (non-Omada) APs in the vicinity, WLAN Optimization alone cannot resolve the interference. Recommendation: Identify and remove or relocate external interference sources where possible, then rerun Manual WLAN Optimization.

5 Appendix

Term	Description
RRM	Radio Resource Management
CCI	Co-Channel Interference
CSA	Channel Switch Announcement
RSSI	Received Signal Strength Indicator
DFS	Dynamic Frequency Selection
ACS	Automatic Channel Selection