



# Best Practices — Wi-Fi Cloud Discover

Jonas Spieckermann  
Senior Sales Engineer  
[Jonas.Spieckermann@watchguard.com](mailto:Jonas.Spieckermann@watchguard.com)

# Trusted Wireless Environment

## 1 MARKET-LEADING PERFORMANCE

You should never be forced to compromise security to achieve adequate performance to support your environment with speed, connections and device density that it needs.

## 2 SCALABLE MANAGEMENT

With easy set-up and management, you should be able control your entire wireless network from a single interface and execute key processes to safeguard the environment and its users.

## 3 VERIFIED COMPREHENSIVE SECURITY

You need proof that your security solution defends your business against Wi-Fi attacks and can deliver on the following benefits:

- Provide automatic protection from the six known Wi-Fi threat categories
- Allow legitimate external access points to operate in the same airspace
- Restrict users from connecting to unsanctioned Wi-Fi access points



# Discover

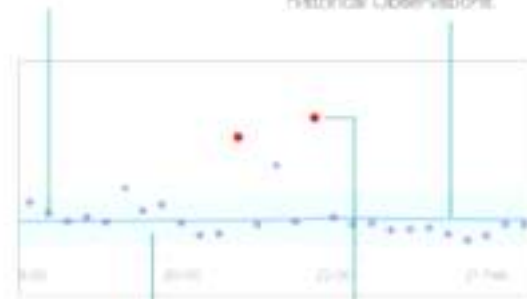


## Observation

The observed value for the metric at a given point in time

## Baseline

Establishes the normal behavioral trend based on historical Observations.



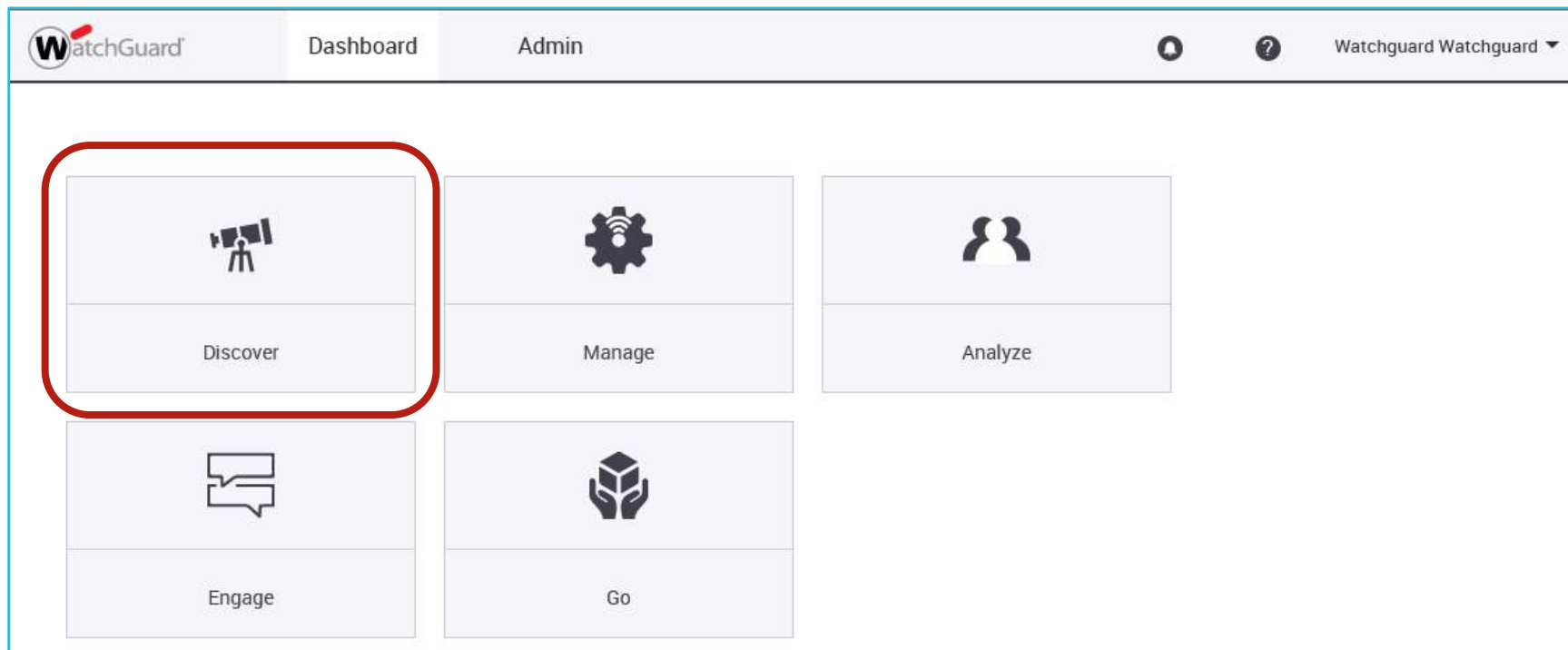
## Deviation Range

A narrower range indicates that the Observations tend to be closer to the Baseline.

## Anomaly

An Observation that has deviated significantly from the Baseline.

# Discover





# Discover Dashboard

# Discover Dashboard

Suchfenster      APs    Clients    Alarme

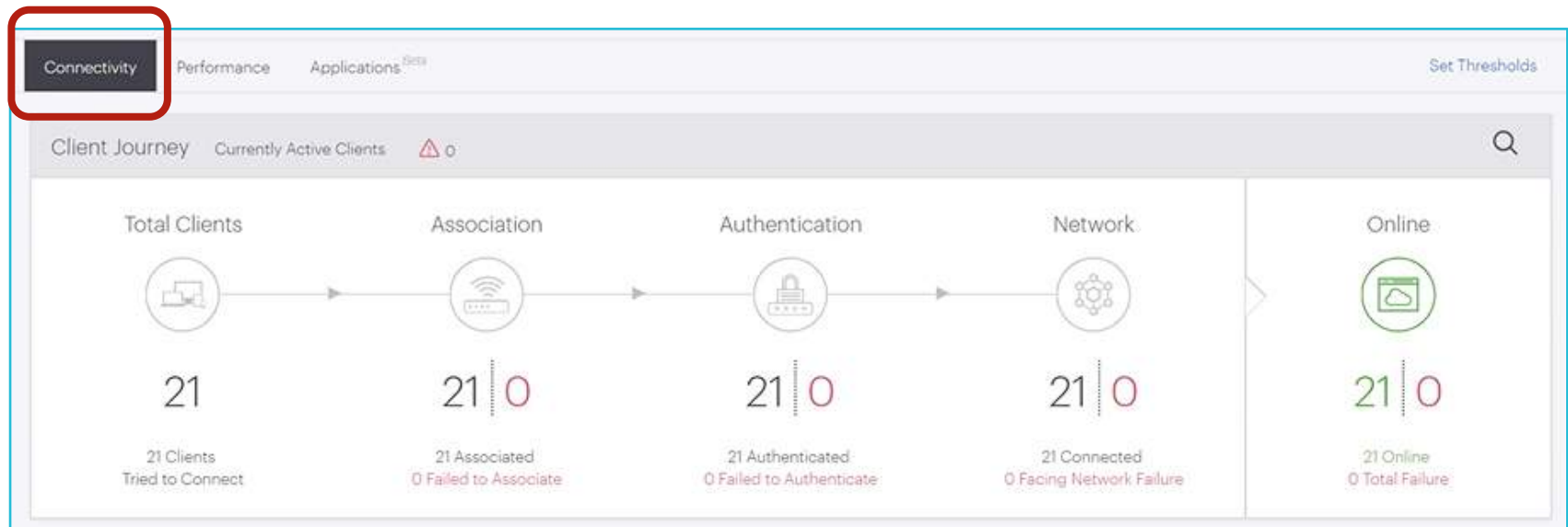
The screenshot displays the WatchGuard Discover Dashboard. The left sidebar contains navigation options: DASHBOARD (highlighted in red), MONITOR, TROUBLESHOOT, FLOOR PLANS, and SYSTEM. The main content area features a top navigation bar with 'Locations', a search bar labeled 'Suchfenster' (containing the text 'Search for MAC/ IP Address/ User Name/ Device Name.'), and three status indicators: '1' (APs), '0' (Clients), and '0' (Alarme). Below this is a secondary navigation bar with 'Connectivity', 'Performance', and 'Applications' tabs, where 'Connectivity' is selected and highlighted with a red box. The main section is titled 'Client Journey' and shows a flow of metrics: 'Total Clients' (0), 'Association' (0 Associated, 0 Failed to Associate), 'Authentication' (0 Authenticated, 0 Failed to Authenticate), 'Network' (0 Connected, 0 Pending Network Failure), and 'Online' (0 Online, 0 Total Failure). A 'Baseline - Clients Affected by Failures' section is visible at the bottom, with a filter for 'All SSIDs' and a time range of '2.4 & 5 GHz' over '12 hours'.

Darstellungen zum Status des Wi-Fi Netzes  
(Connectivity, Performance und Applikationsnutzung)

# Connectivity Dashboard

## ■ Client Journey

- Sofortige Darstellung von und Drill-Down zu Wi-Fi “Verbindungs-Problemen”
- Zeigt aktuell aktive Clients und den Status ihrer Verbindung



# Connectivity Dashboard

- Connectivity stages
  - **Total Clients** – Gesamtanzahl der Clients
  - **Association** – Clients mit Verbindungsfehlern durch Reichweite/Signalstärke oder auch Roaming
  - **Authentication** – Zeigt Clients mit Anmeldeproblemen durch falschen PSK oder Kennwörter und evtl. Problemen bei Anmeldeservern (Radius).
  - **Network** – Deutet auf Netzwerkfehler hin, wie z.B. DHCP oder DNS spezifische Probleme.
  - **Online** – Darstellung aller aktiven Clients.
- Per Drill-Down kann zu jedem Status die Detaillansicht geöffnet werden.

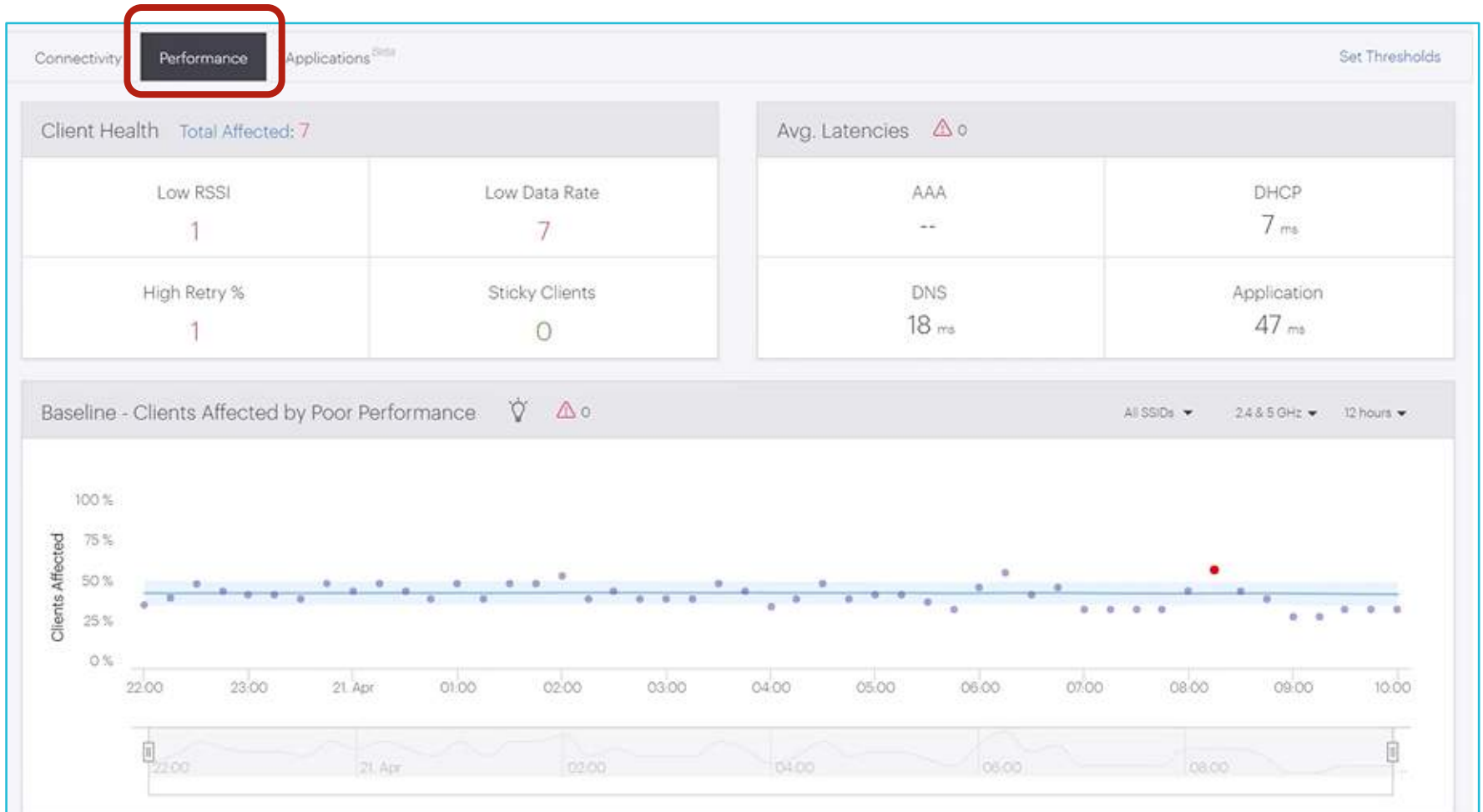


# Connectivity Dashboard

- Baseline (Clients Affected by Failures)
  - Zeigt das übliche Verhalten (Baseline) und stellt Abweichungen und Anomalien dar.
  - Filtermöglichkeiten: SSID, Frequenzband, Zeit



# Performance Dashboard

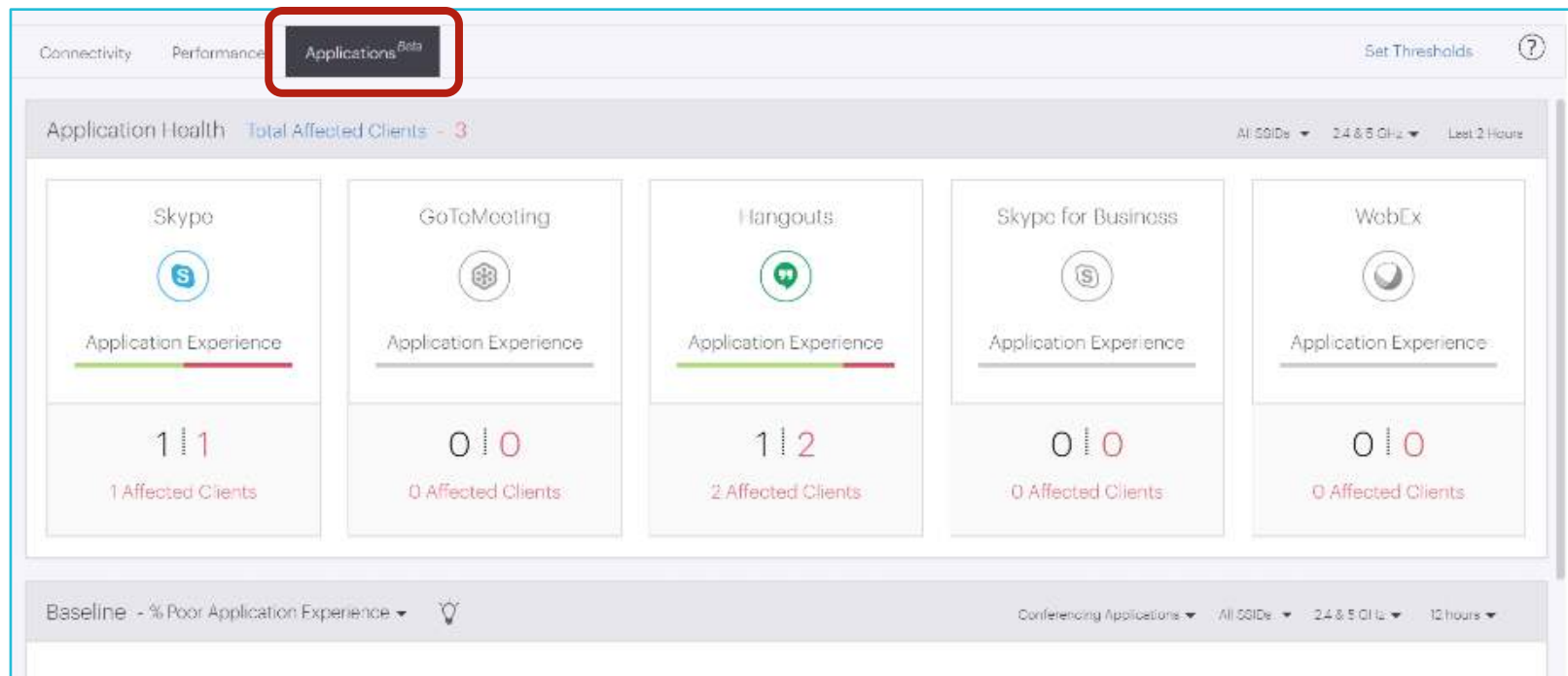


# Performance Dashboard

- Client Health
  - low RSSI, low data rate, high retry %, sticky clients (clients that stay associated with weak APs instead of roaming)
  - Drill-Down pro Kategorie ist möglich
- Avg. Latencies
  - Durchschnittliche Latenz bei Anfragen der Clients und APs zu Servern (DNS, DHCP, Radius) Baseline
  - Zeigt übersichtlich die Menge der Clients mit “schlechter Performance”
- Zusätzliche Informationen zu Datenrate, Datenmenge, etc. für die verbundenen Clients.

# Applications Dashboard

- Zeigt die Verbindungsqualität für ausgewählte und weit verbreitete Business Applikationen.
- Statistiken zu Skype, GoTo Meeting, Google Hangouts, Skype for Business, WebEx



# Applications Dashboard

- Drill-Down pro Applikation erlaubt genauere Analysen

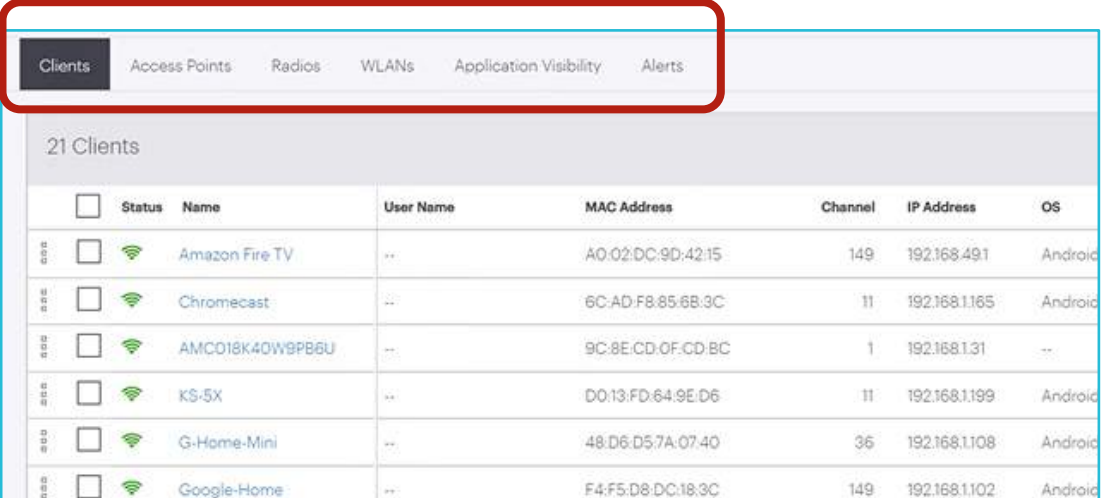




# Monitoring

# Discover Monitoring

- Detaillinformationen zu den aktiven Systemen.
- Monitoring ermöglicht Einsicht in:
  - Clients
  - Access Points
  - Radios
  - WLANS
  - Application Visibility
  - Alerts



<input type="checkbox"/>	Status	Name	User Name	MAC Address	Channel	IP Address	OS
<input type="checkbox"/>	📶	Amazon Fire TV	--	A0:02:DC:9D:42:15	149	192.168.491	Android
<input type="checkbox"/>	📶	Chromecast	--	6C:AD:F8:85:6B:3C	11	192.168.1.165	Android
<input type="checkbox"/>	📶	AMC018K40W9PB6U	--	9C:8E:CD:0F:CD:BC	1	192.168.1.31	--
<input type="checkbox"/>	📶	KS-5X	--	D0:13:FD:64:9E:D6	11	192.168.1.199	Android
<input type="checkbox"/>	📶	G-Home-Mini	--	48:D6:D5:7A:07:40	36	192.168.1.108	Android
<input type="checkbox"/>	📶	Google-Home	--	F4:F5:D8:DC:18:3C	149	192.168.1.102	Android

# Client Monitoring

- Zeigt statistische Informationen und ermöglicht weitere Aktionen für den gewählten Client.

The screenshot displays a network management interface with the 'Clients' tab selected. The interface shows a list of 21 clients. A context menu is open over the 'Amazon Fire TV' client, highlighting the 'Disconnect' option.

Status	Name	User Name	MAC Address	Channel	IP Address	OS	Associated Access Point	Associated SSID
<input type="checkbox"/>	Amazon Fire TV	..	A0:02:DC:9D:42:15	149	192.168.49.1	Android	BR7573_120	GBA_Corp
<input type="checkbox"/>	Chromecast	..	6C:AD:F8:85:6B:3C	11	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	AMCO18K40W9PB6U	..	9C:8E:CD:0F:CD:BC	1	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	KS-5X	..	D0:13:FD:64:9E:D6	11	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	G-Home-Mini	..	48:D6:D5:7A:07:40	36	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	Google-Home	..	F4:F5:D8:DC:18:3C	149	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	Ecobee [Upstairs]	..	44:61:32:FD:6F:D9	6	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	Google-Home	..	48:D6:D5:8D:08:65	36	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	Ecobee [Main Floor]	..	44:61:32:D8:4E:29	1	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	MS-5X	..	64:BC:0C:46:D3:FC	36	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	Seans-iPhone	..	80:ED:2C:D5:C3:97	1	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	AMCO18KW562956X	..	9C:8E:CD:0F:CD:D5	6	192.168.1.165	Android	RS-UP-C75	Vino
<input type="checkbox"/>	RS-PIXEL-2	..	40:4E:36:83:E7:25	149	192.168.1.165	Android	RS-UP-C75	Vino

The context menu for the 'Amazon Fire TV' client includes the following options:

- Rename
- Capture Packet Trace
- Packet Trace History
- Start Live Client Debugging
- Disconnect



# Client Monitoring

- Client Connection Logs sind einsehbar

The screenshot displays a network monitoring dashboard. At the top, a breadcrumb trail shows 'Monitor > Clients' followed by a dropdown menu for 'Chromecast (6C:AD:F8:85:68:3C)'. Below this, a client profile card for 'Chromecast (...)' shows a status of 'Successfully connected' and lists details: Name: Chromecast, User Name: --, and MAC Address: 6C:AD:F8:85:68:3C. The main section is titled 'Client Connection Logs' and includes a list view icon and a '1 week' time filter. The log entries are as follows:

Timestamp	Status	Average Latencies	AAA	DHCP	DNS	BSSID	AP Name	SSID	Channel	Location
Apr 22, 2018 8:54:06 PM	Successfully Connected	Average Latencies: AAA: --, DHCP: 11ms, DNS: 23ms	--	11ms	23ms	00:11:74:d5:95:60	RS-UP-C75	Vino	6	*/Harpers Ferry Offic...
Apr 22, 2018 8:48:52 PM	Successfully Connected	Average Latencies: AAA: --, DHCP: 2ms, DNS: 24ms	--	2ms	24ms	00:11:74:d5:8e:a0	RS-DOWN-C75	Vino	1	*/Harpers Ferry Offic...
	Successfully Connected					00:11:74:d5:95:60				

# Access Point Monitoring

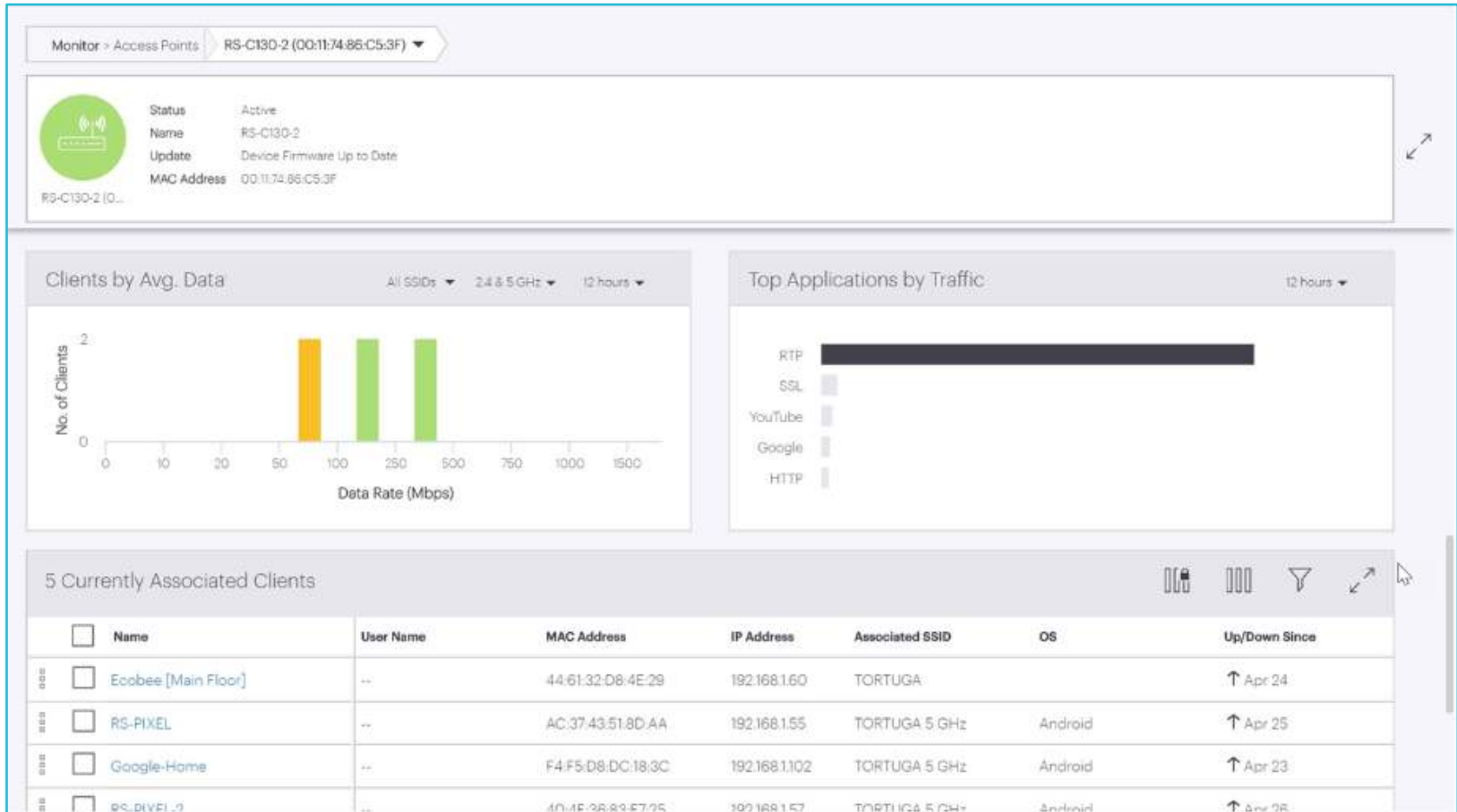
- Zeigt statistische Informationen und ermöglicht zusätzliche Aktionen für die Accesspoints.

The screenshot displays the 'Access Points' monitoring interface. At the top, there are navigation tabs: Clients, Access Points (highlighted with a red box), Radios, WLANs, Application Visibility, and Alerts. Below the tabs, a table lists 7 access points. The first access point, 'Mojo\_862A\_2F', is selected, and a context menu is open over it, listing various actions such as 'Customize Transmit Power or Channel', 'View on Floor Map', 'Configure Alert', 'Run Client Connectivity Test', 'Capture Packet Trace', 'Packet Trace History', 'Spectrum Analysis', 'Update Firmware', 'Access Point Event Logs', 'Reboot', 'Rename', 'Move', and 'Delete'.

<input type="checkbox"/>	Active	Name	Update	MAC Address	IP Address	Build	Device	Location
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mojo_862A_2F	✓	00:11:74:86:2A:2F	192.168.1.14	8.6.0-215	Sense	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RS-C130-2	✓	00:11:74:86:C5:3F	192.168.1.105	8.6.0-215	RS-AP	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RS-C130	✓	00:11:74:86:13:7F	192.168.1.54	8.6.0-215	RS-AP	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RS-UP-C75	✓	00:11:74:D5:95:7F	192.168.1.205	8.6.0-215	RS-VI	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RS-DOWN-C75	✓	00:11:74:D5:8E:BF	192.168.1.195	8.6.0-215	RS-VI	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	F2:40:DF	⬆	00:11:74:F2:40:DF	192.168.0.233	8.6.0-120	System	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	BR7573_120	✓	00:11:74:F2:2C:1F	192.168.1.70	8.6.0-215	Corp	

# Access Point Monitoring

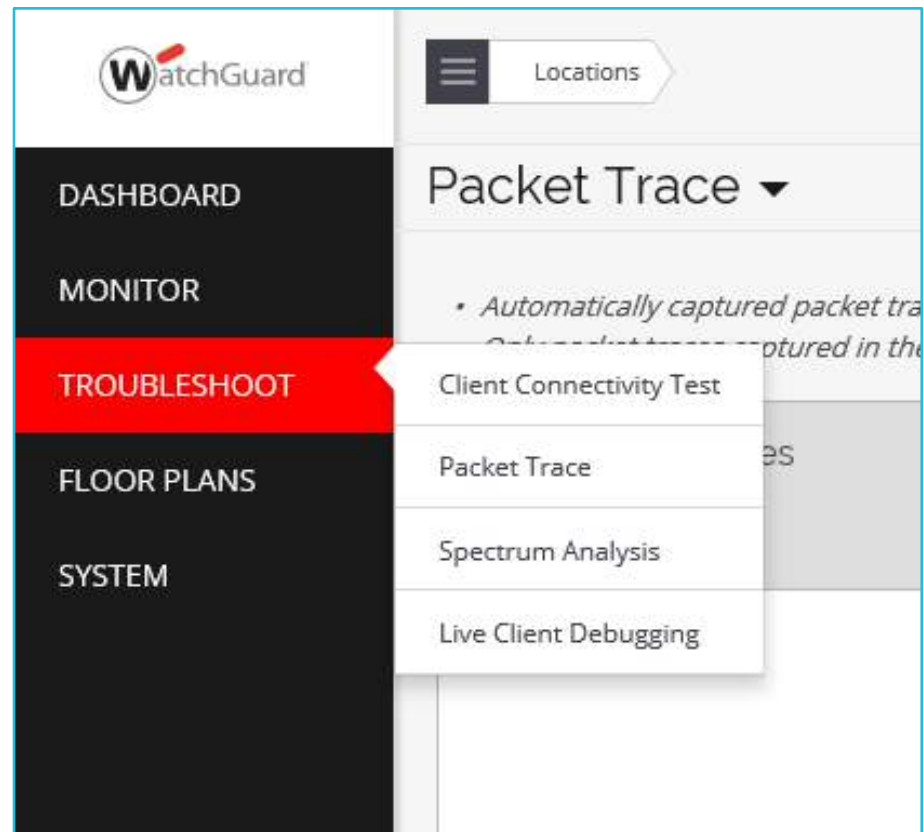
- Auswahl eines Accesspoints stellt weitere Details dar.



# Troubleshooting

# Troubleshooting

- Werkzeuge zum vereinfachten Troubleshooting
  - Client connectivity test
  - Packet trace
  - Spectrum Analysis
  - Live Client Debugging



# Client Connectivity Test

- Nutzt Accesspoints mit 3<sup>rd</sup> Radio Modul als "Client"
- Tests zur Verbindung zum Wi-Fi NETz aber auch für Applikationen.
- Manuelle oder auch regelmäßige Ausführung ist möglich

The image displays two overlapping screenshots of a web-based configuration interface for a Client Connectivity Test. The top-left screenshot shows the 'Basic Connectivity Test' section with the following fields:

- Test Profile Name: Connectivity Test
- Frequency: 5 GHz
- SSID: Enterprise
- Security Mode: WPA2

The bottom-right screenshot shows the 'Application Test' section, which is checked. It features four category buttons: PRODUCTIVITY, SOCIAL, COMMUNICATION, and CUSTOM. Below these is a section titled 'Select or deselect applications' with seven application icons and checkboxes:

- Office 365
- Salesforce
- Box
- Google Drive
- GitHub
- ZenDesk
- Jira

# Packet Trace

- Automatische und manuelle Packet Trace Funktion zur detaillierten Auswertung (z.B. in Wireshark)
- Automatische Packet Traces sind möglich, wenn “Fehler” für eine SSID festgestellt werden.

Packet Trace ▾

Auto Packet Trace Capture Packet Trace

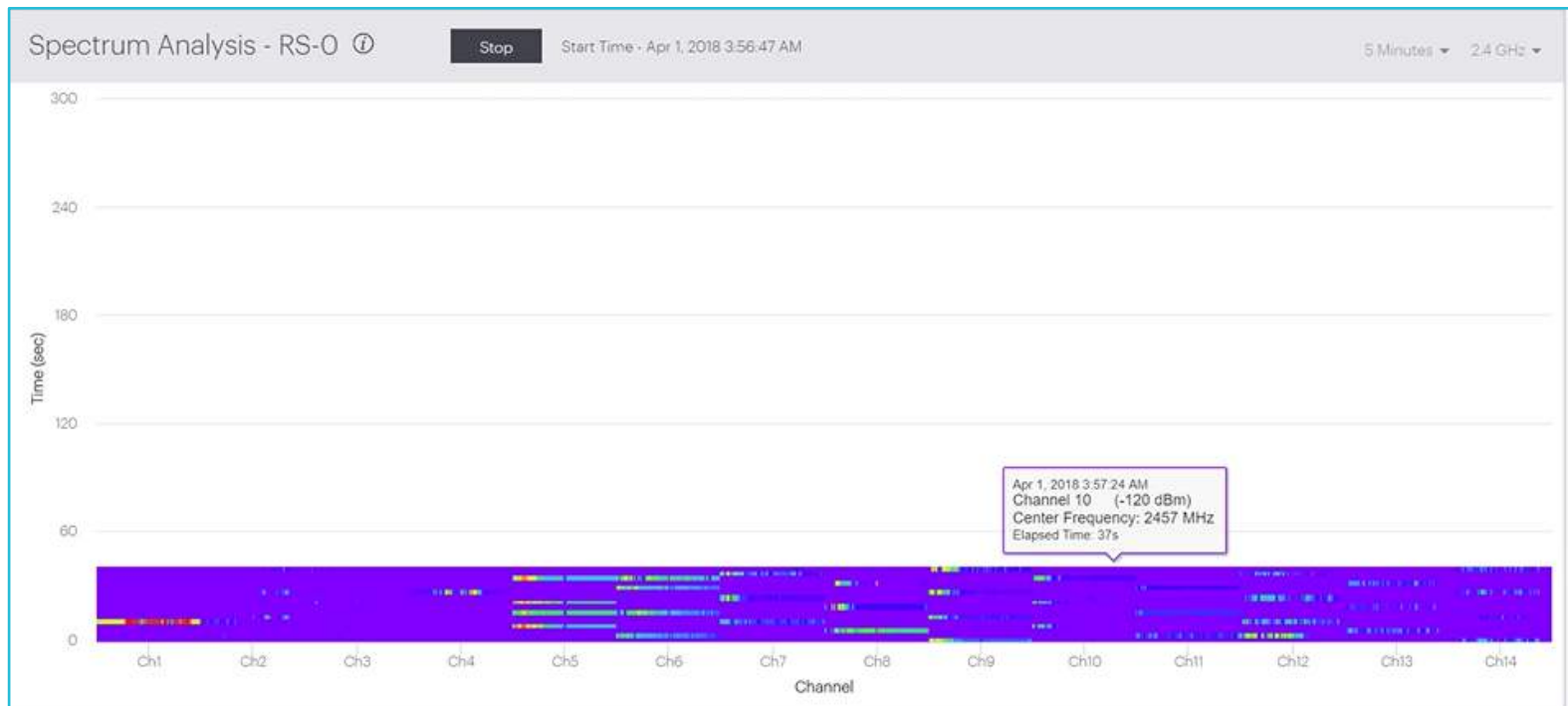
- Automatically captured packet traces are not shown in this table. See client connection logs for a specific client to view the list of automatically captured packet trace files.
- Only packet traces captured in the last 30 minutes are available.

4 Packet Trace Files

<input type="checkbox"/>	Filename	File Size	MAC Address	Capturing Device Mac Address	Device	Start Time	Stop Time ▾
<input type="checkbox"/>	Test2_wireless_1522577651.pcap	24 Bytes	00:11:74:86:C5:3F	00:11:74:86:C5:3F	Access Point	3:14 AM	3:15 AM
<input type="checkbox"/>	Test2_wired_1522577651.pcap	5.6 MB	00:11:74:86:C5:3F	00:11:74:86:C5:3F	Access Point	3:14 AM	3:15 AM
<input type="checkbox"/>	Test1_wireless_1522577082.pcap	107.7 KB	00:11:74:86:13:7F	00:11:74:86:13:7F	Access Point	3:04 AM	3:06 AM
<input type="checkbox"/>	Test1_wired_1522577082.pcap	2.6 MB	00:11:74:86:13:7F	00:11:74:86:13:7F	Access Point	3:04 AM	3:06 AM

# Spectrum Analysis

- Der ausgewählte AP führt eine Spektrumanalyse durch um “Störquellen” in den möglichen Frequenzbändern zu finden.





# Live Client Debugging

- Sehr detailliertes Troubleshooting für einen Client mit aktuellem “Fehler”

Live Client Debugging Start Live Client Debugging

2 Live Client Debugging

<input type="checkbox"/>	Filename	Started	Ended	MAC Address	S
<input type="checkbox"/>	c:\_A0:02:DC:9D:42:15_20180401122049884596.log	Apr 1, 2018 5:20:49 AM	Apr 1, 2018 5:23:01 AM	A0:02:DC:9D:42:15	C
<input type="checkbox"/>	c:\_6C:AD:F8:85:6B:3C_20180401122550283616.log	Apr 1, 2018 5:25:50 AM	Apr 1, 2018 5:28:59 AM	6C:AD:F8:85:6B:3C	C

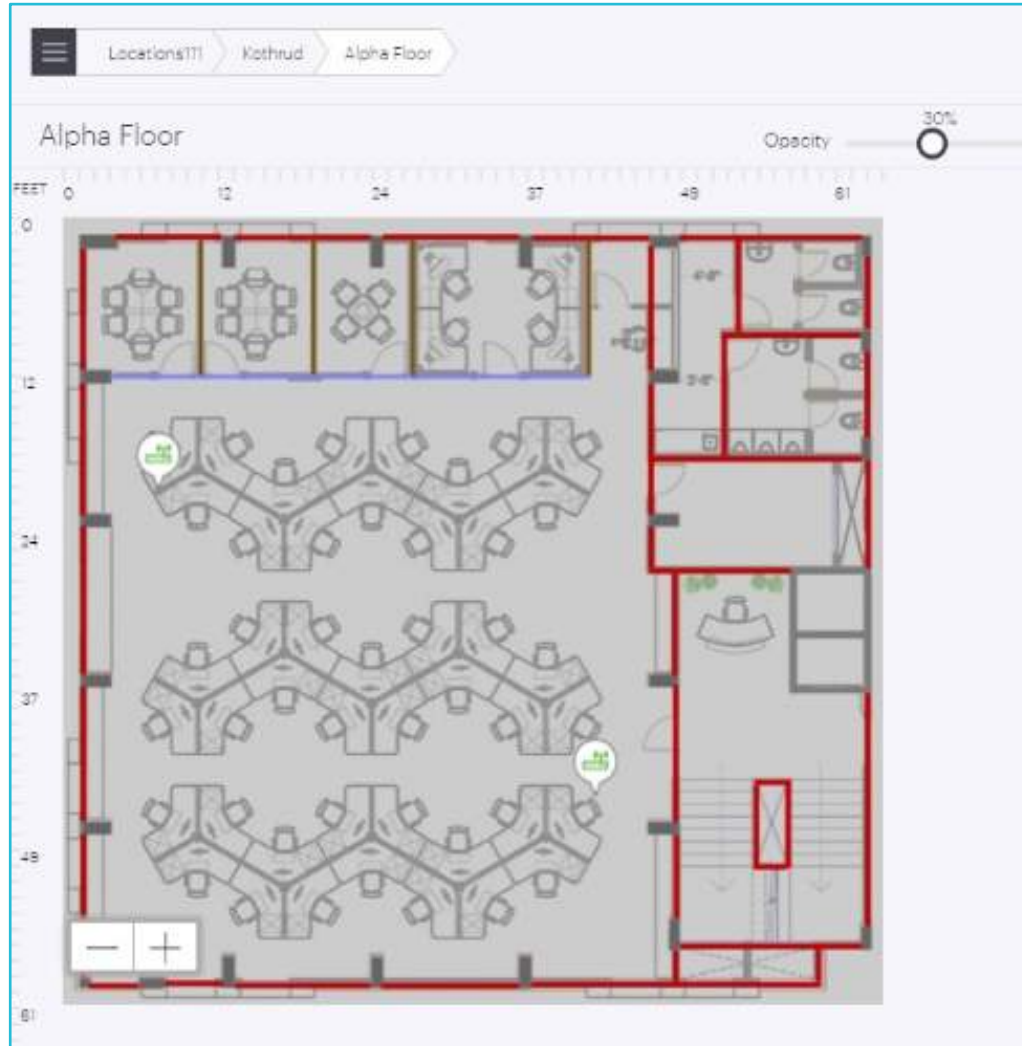
Live Client Debugging

*Download log file to view historical log entries from start time till now.*

```
1 SSID : GBA_Corp
2 BSSID : 00:11:74:F2:2C:00
3 AP NAME : BR7573_120
4 Chan : 157
5 Time : 2018.04.01 05:31:32 (US/Pacific)
6 Tdiff(msec) Timestamp Event
7 0 2018.04.01 05:31:32 Client has received IP [192.168.49.1]
8 1095 2018.04.01 05:31:33 Client has received IP [192.168.1.69]
9 1096 2018.04.01 05:31:33 Client has received IP [192.168.49.1]
10 1672 2018.04.01 05:31:34 Client has received IP [192.168.1.69]
11 2000 2018.04.01 05:31:34 Client has received IP [192.168.49.1]
12 3195 2018.04.01 05:31:35 Client has received IP [192.168.1.69]
13 3867 2018.04.01 05:31:36 Client has received IP [192.168.49.1]
14 10244 2018.04.01 05:31:42 Client has received IP [192.168.1.69]
15
```

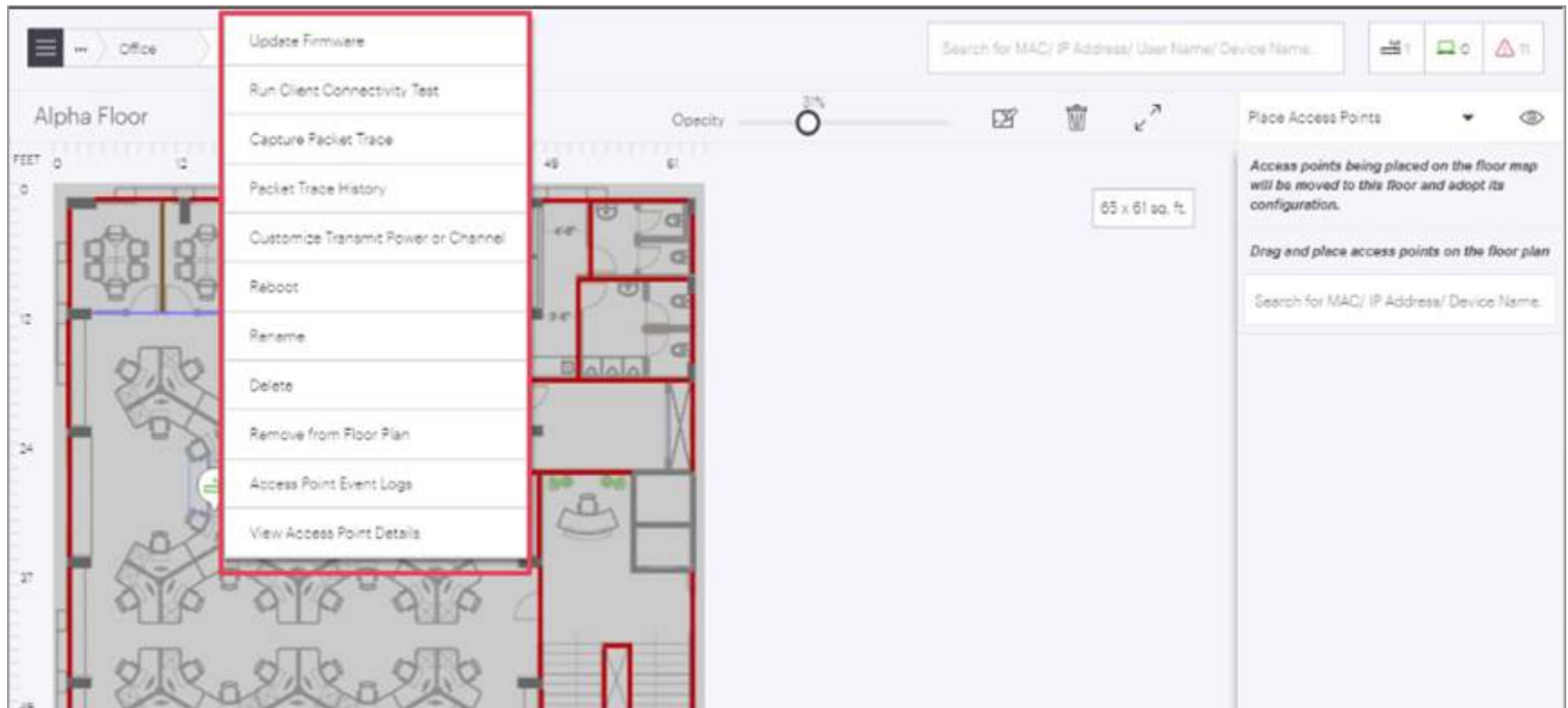
# Floor Plans

# Floor Plans



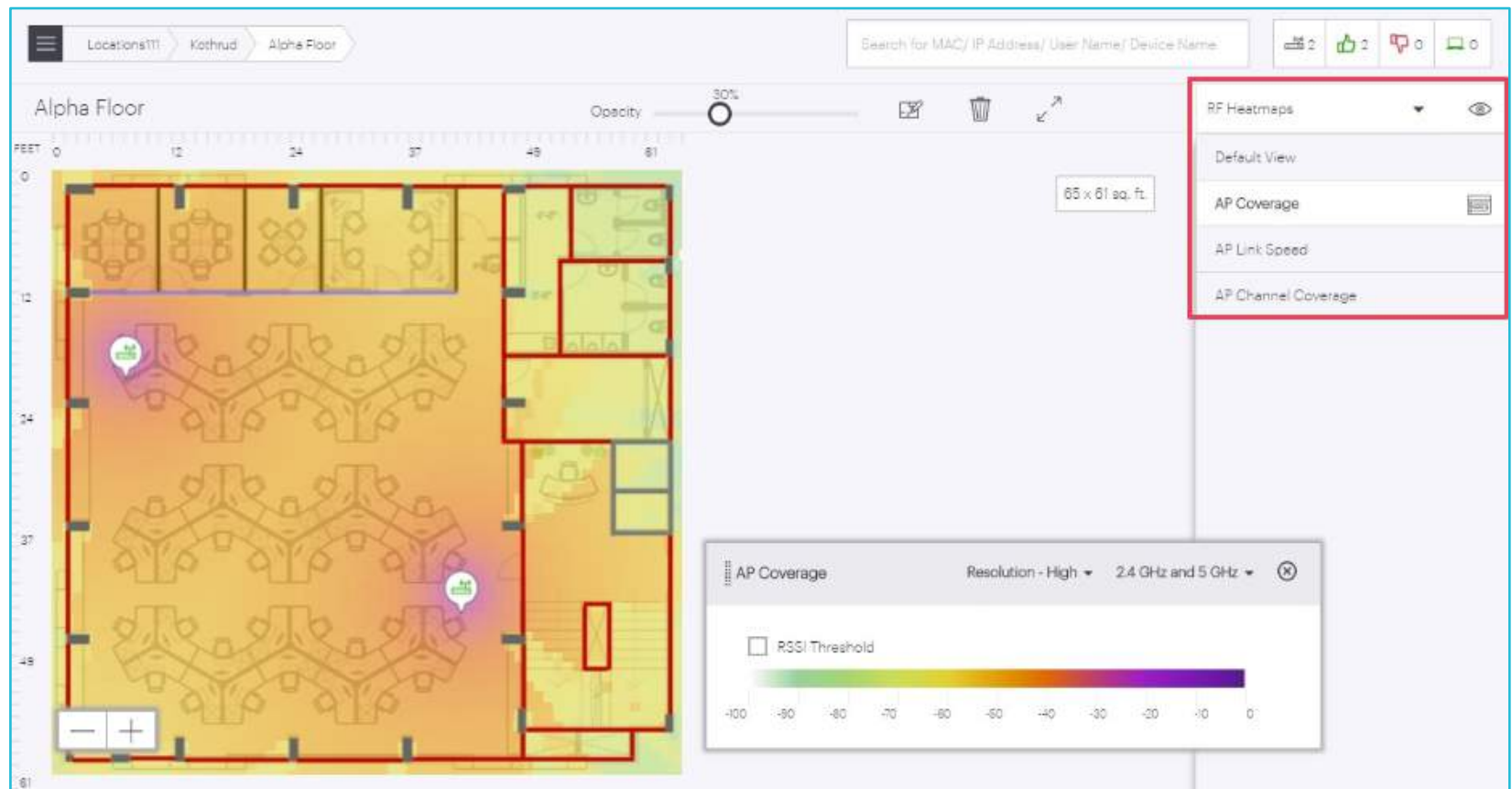
# Floor Plans

- Ausführen von Accesspoint Aktionen ist direkt über den Floor Plan möglich



# Floor Plans

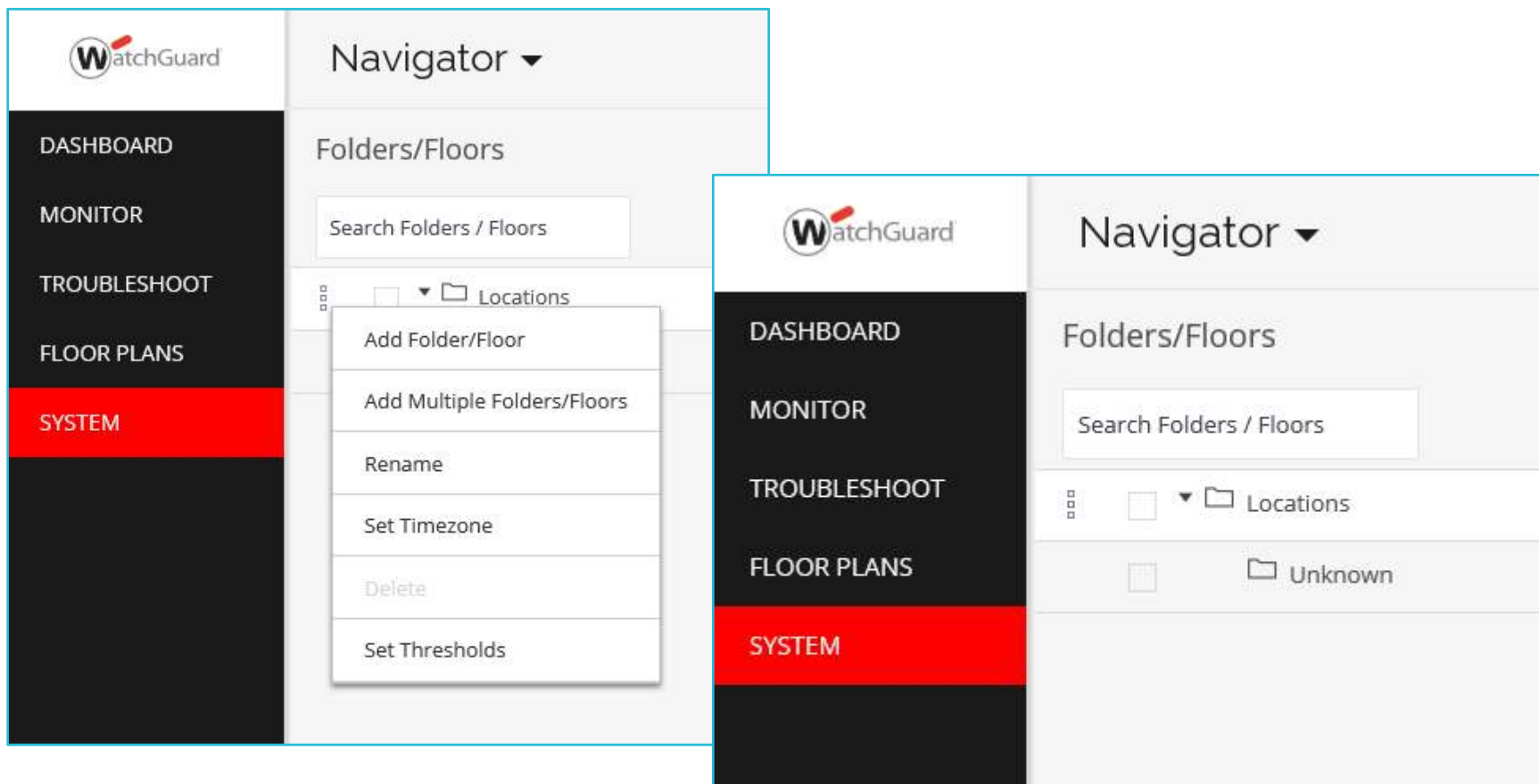
- Heat Maps stellen die AP coverage, link speed, und channel coverage visuell dar.



# System Configuration

# Location Navigator

- Vergleichbar zu den Location Tree Funktionen in Manage.



# Configure Alerts

- Flexible Konfiguration von Alarmen

The screenshot displays the WatchGuard web interface for configuring alerts. The top navigation bar includes the WatchGuard logo, a dropdown menu for 'Alerts', and tabs for 'Configure Alerts' (active) and 'Email Recipients'. A left sidebar contains navigation options: DASHBOARD, MONITOR, TROUBLESHOOT, FLOOR PLANS, and SYSTEM (highlighted in red). The main content area is divided into three sections: 'Select Location' with a search box and a tree view showing 'Locations' and 'Unknown'; 'Select Alert Type' with a search box and a list of categories including 'Wi-Fi', 'Connectivity', 'Connection Failure' (selected), 'Associated Clients', 'Performance', 'Baseline', 'Client Connectivity Test', 'System', 'Server', and 'Firmware'; and 'Configure Alerts' with a configuration rule: 'Number of clients experiencing Authentication failure exceeds 10 [0 - 100]'. A note above the rule states: 'Alerts configured at a folder will be applicable only at its child folders that have access points.' The rule configuration includes a dropdown for 'Authentication' and a numeric input for '10' with a range of '[0 - 100]'. Plus and minus icons are visible on the right side of the rule configuration box.





# Live Demo



**Danke**