

FREE RESOURCE — BEST-PRACTICES GUIDE

WiFi Site Survey Guide

Wireless survey methodology, heat mapping, AP placement strategy and capacity planning — design reliable, high-performance WiFi coverage for your workspace.

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SURVEY
PHASES

-65dBm

MINIMUM
SIGNAL TARGET

25dB

SNR TARGET
VOICE / VIDEO

**15–
20%**

AP OVERLAP
FOR ROAMING

PRE-SURVEY

PREDICTIVE

ACTIVE WALK-TEST

HEAT-MAP

VALIDATION

PREPARED FOR

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Library

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01

Pre-survey planning

Deploying access points without a site survey is guesswork. Too few APs creates dead zones; too many creates co-channel interference. A professional survey ensures optimal placement, correct AP count and reliable coverage — gather the information below *before* you set foot on site. The biggest cause of WiFi complaints is wrong AP count or placement, not wrong hardware.

What to gather before the survey

Floor plans. Accurate CAD or PDF floor plans showing walls, doors, furniture and ceiling height. Predictive software is only as good as the plan — a missing internal wall can move an AP by 3 metres.

User density. Where users work, meet and congregate. Open plan, training rooms and canteens need more AP capacity than corridors or storage.

Application requirements. Minimum signal, max client count per AP, and supported apps (video, voice, data). Voice and Teams calls need **SNR $\geq$ 25 dB**, not just a strong signal.

Building materials. Wall construction (plasterboard, brick, glass, concrete) governs signal propagation. Concrete and metal break a design built on plasterboard assumptions.

Existing infrastructure. Ethernet drops, PoE switch availability, cable distances and ceiling type decide where you *can* mount APs, not just where you should.

Survey tools. Ekahau, NetSpot or Acrylic WiFi for heat-map output. Free smartphone apps are fine for triage, not for design.

Signal attenuation by building material

WALL MATERIAL	ATTENUATION	IMPACT ON DESIGN
Plasterboard (drywall)	3–5 dB	Low — signal passes easily
Glass (internal)	2–4 dB	Low — meeting-room glass is fine
Brick (single skin)	6–10 dB	Medium — plan extra AP if rooms are bricked
Concrete (reinforced)	10–20 dB	High — significant barrier
Metal (lift shafts, ducts)	15–25 dB	Very high — near-complete block

02

Conducting the survey

Walk the site systematically to measure RF characteristics and identify optimal AP locations. Use both survey types — predictive (modelled before the visit) to scope, active (measured on site) to validate.

Predictive vs. active surveys

Predictive survey. Using floor plans and material data, model AP placement in survey software (Ekahau, iBwave) before visiting. Gives you a starting point and lets you cost the project before walking in.

Active survey. Walk the entire floor plan with a survey device connected to a test AP. Measure signal, noise floor, SNR and throughput. Cover corridors, meeting rooms, kitchens, stairwells — not just desks.

Design targets and constraints

Signal targets. Primary work areas: ≥ -65 dBm. Secondary areas (corridors, kitchens): ≥ -70 dBm. VoIP & video areas: ≥ -60 dBm with SNR ≥ 25 dB. Below these and calls start dropping packets.

Channel planning. Design for a minimum 25 dB separation between co-channel APs. Use channels 1, 6, 11 on 2.4 GHz; use non-overlapping channels on 5 GHz (36, 40, 44, 48 and the UNII-2 band where available). Avoid channel re-use on adjacent APs at all costs.

Capacity planning. Modern enterprise APs typically support 30–50 concurrent clients comfortably. Plan for peak occupancy, not average — the all-hands meeting and the busiest morning of the month set the bar, not the quiet Friday afternoon.

AP mounting. Ceiling-mount is ideal at **2.5–3 m height** with the antenna pattern aimed at the floor. Avoid mounting near metal ducts, in enclosed plant rooms or above a dropped ceiling that has metal-backed tiles — you will lose 5–10 dB before the signal even leaves the AP.

TWO COMMON MISTAKES THAT BREAK THE DESIGN

Surveying empty space. People, furniture and equipment all absorb and reflect WiFi. Survey before fit-out and apply a **3–5 dB margin** — or day-one occupancy turns a -62 dBm desk into a -67 dBm desk that drops Teams calls.

Cranking TX power to maximum. Extends the cell but stops clients roaming — they cling to a distant AP instead of switching above them. Match AP power to client power (14–17 dBm on 5 GHz).

03

Heat map analysis & AP placement

Generate heat maps showing signal strength, signal-to-noise ratio and channel overlap across the floor plan. Identify areas below your minimum signal target and adjust AP placement accordingly — do not just add APs, because every additional AP also adds interference. Move first, add second.

Reading a coverage heat map

Green zones (≥ -65 dBm). Adequate coverage for general use including video conferencing. Document as the “known good” baseline for future re-surveys.

Yellow zones (-65 to -70 dBm). Marginal. Acceptable for low-demand areas (kitchens, corridors) but *not* for VoIP or video. Reposition the nearest AP, or downgrade the use case.

Red zones (< -70 dBm). Insufficient coverage. Add or reposition APs — but check whether a wall material change explains the drop first. A 1 m AP move can solve a whole zone.

Overlap zones. Ensure **15–20% overlap** between adjacent APs for seamless roaming. Too little drops calls at handover; too much causes co-channel interference.

AP count rule of thumb (UK SME workspaces)

ENVIRONMENT	AP DENSITY RULE	TYPICAL DRIVER
Open-plan office	1 AP per 30–40 m ²	1 device per person + BYOD
Meeting / training rooms	1 AP per large room (10+ people)	Concurrent Teams calls
Cellular office layout	1 AP per 4–6 small offices	Wall attenuation, not headcount
Warehouse / industrial	1 AP per 100–150 m ²	Racking, materials, scanners

HEAT-MAP DELIVERABLES THAT EARN THEIR FEE

A proper survey deliverable includes: predictive and post-install heat maps, channel plan, AP-to-switch port mapping, as-built power and cable map, and recommended TX power settings. If your vendor delivers only a screenshot of green-and-yellow blobs, you have not had a survey — you have had a sales pitch.

04

Post-deployment validation

After installation, conduct a validation survey to confirm the live deployment meets the design targets. Use this checklist on the floor with all APs powered on, all access switches in production configuration and the building in normal occupancy — not an empty out-of-hours visit.

Validation walk-test checklist

Validation walk-test conducted with all APs installed, powered and operational in the controller.

Signal strength meets the design target (≥ -65 dBm) in all primary work areas, measured at desk height.

Roaming tested between APs while on a Teams or Zoom call — no audio drops or re-authentication delays.

Throughput verified against requirement (50 Mbps per client general use; 100+ Mbps for video-heavy roles).

Co-channel interference checked across the floor and channels adjusted where APs step on each other.

Peak client load tested where possible — an all-hands meeting is the ideal load test.

Final heat maps generated post-install and included in the handover pack.

As-built documentation — final AP locations, channels, power levels, SSIDs, switch ports.

Validation results & sign-off

Site / floor surveyed: _____

Lowest measured signal & location: _____

SURVEYED BY

DATE

SIGNED OFF BY

Need a professional WiFi site survey?

Our network engineers conduct predictive and active wireless surveys, deliver heat-map evidence and deploy enterprise WiFi solutions across the UK — with as-built documentation you can hand to a successor.

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