

# Wireless Best Practices: Practical Design Lessons from the Field



<https://www.linkedin.com/pulse/wireless-best-practices-practical-design-lessons-from-de-oliveira-0fdee>

Good wireless design isn't about chasing the latest features. It's about understanding the environment, the devices, and the people using them. Whether it's a warehouse with autonomous

robots, a hotel with constant guest turnover, an office packed with video calls, or a retail space with tight margins, each setting needs a tailored approach. Here's what I've learned from the field across warehousing, hospitality, corporate, and retail deployments.

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## Warehousing and Logistics

Warehouses are some of the most difficult environments for Wi-Fi. You've got metal racking, forklifts, high ceilings, and old 2.4 GHz devices that still need support.

### What works:

- Use directional antennas to focus signal down aisles and reduce reflections.
  - Mount APs on racking or vertical supports instead of relying on high ceiling installs.
  - 2.4 GHz coverage is still important for scanners and older IoT devices.
  - Keep the number of SSIDs low to reduce beacon overhead and improve roaming.
  - Consider fixed 20 MHz channels unless the spectrum is clean enough for 40 or 80 MHz.
  - Validate your design with a proper survey, especially after racking and stock is in place.
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## Hospitality

Hotels present a unique challenge. The network has to be fast and seamless for roaming guests, while also blending into the space without disrupting the interior design.

### Key points:

- Make roaming smooth by enabling 802.11k, 802.11v, and 802.11r where supported.
  - Use private key options like DPSK for guest traffic isolation.
  - Limit the SSID count to three or four max. Any more just adds overhead.
  - Hide patch leads and clean up AP mounting. Loose cables get flagged on walkthroughs.
  - Don't just go for signal strength. Consider where people move and use devices.
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## Corporate Offices

Office Wi-Fi needs to support BYOD, heavy video traffic, and strong security. It also has to be resilient to changing occupancy and layout shifts.

### Recommendations:

- Use band steering to move modern clients to 5 GHz and 6 GHz.

- WPA3-Enterprise or EAP-TLS is ideal for authentication. Avoid open or PSK setups internally.
  - Avoid DFS channels in high-priority areas like meeting rooms to prevent unexpected channel changes.
  - Validate RRM decisions with spectrum analysis and client telemetry, not just what the controller reports.
  - Plan for quiet zones and high-density areas separately. One design won't fit both.
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## Retail

Retail Wi-Fi has to be stable, secure, and invisible to customers. From POS to handhelds, there's no room for downtime.

### Best practices:

- Separate guest and operational traffic using VLANs with QoS where needed.
  - Maintain reliable 2.4 GHz coverage for legacy devices. Don't push everything onto 5 GHz if clients can't support it.
  - Keep APs at mid-height, especially near checkouts where most device use happens.
  - Use directional antennas when layout permits to limit interference and better control coverage.
  - Analytics is useful, but make sure it's not draining airtime or client experience.
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## Final Thoughts

Every environment has its quirks, but good wireless design always comes down to fundamentals. Know your client devices, survey your space, keep SSIDs minimal, and build for real-world usage. Features like MLO, WPA3, and spectrum puncturing are powerful tools, but they work best when built on top of a strong design.

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