

Why WLAN Planning is Important

Planning is part of many projects undertaken in a business, but planning is ingrained in the fabric of IT. Technology rollouts of any scale are always planned, regardless of how mundane the technology. And wireless LAN (WLAN) planning is no exception. It is just as vital as planning an Ethernet switch deployment or router backbone upgrade.

Planning allows the number of access points (APs) required for a new WLAN to be determined with unmatched precision, something that guesswork cannot achieve. Sophisticated planning tools – like Trapeze RingMaster software – allow coverage to be tailored to the exact building requirements, regardless of the shape of the building, and allow RF obstacles and attenuation to be factored into the plan. As a result, AP usage is maximized and coverage holes are eliminated.

“Our building doesn’t have a single right corner,” said Rene Lopez, manager of IT operations at the Experience Music Project (EMP), a massive interactive pop-music museum in Seattle. “RingMaster was instrumental in helping me in the deployment phase, letting me tweak the WLAN design after it’s done, and then managing the WLAN visually.” The EMP building has an outer “skin” made entirely of steel and aluminum with irregular, oddly shaped contours.

Power-level settings need to be determined as part of a WLAN rollout. In 802.11b/g WLANs, eliminating co-channel interference is a tricky proposition (with more channels, 802.11a is easier). Although 802.11k will help in the future, client transmit power currently cannot be controlled and beacons go out at 1 Mbps. So they travel much farther than data packets, even if everyone is associated at 11 Mbps.

Dense AP deployments, such as microcells, only make things worse. As it is with capacity, accurately determining the power setting without a planning tool is impossible. Trapeze RingMaster provides an opportunity to see the expected coverage at different association rates, 1 Mbps versus 11 Mbps for example, for the chosen power level settings. It also offers a better understanding of the effects of client density.

“RingMaster can plan coverage before a single AP is fitted, thanks to a database of building materials,” said Andy Dornan, senior editor at Network Magazine and author of *The Essential Guide to Wireless Communications Applications*. “Load in a map, tell it what your walls are made of, how many users you will support, and at what data rate, and it’ll suggest AP locations.”

Wireless capacity must also be planned. Guessing doesn’t work when planning for capacity. It is impossible to visualize the many layers of interaction between multiple overlapping RF signals, with their concentric bandwidth rings, emanating from every AP. RingMaster was specifically designed to make capacity planning fast, reliable, simple and more cost effective than any alternative, including guesswork.

Dual radio APs present another interesting planning problem. They can either be placed optimally for 802.11b/g or 802.11a. Because they are in one physical unit, you cannot do both. A plan makes it easier to understand the tradeoffs between the two and place them in such a way that the system is optimized to meet underlying requirements for capacity and coverage. Sentry APs or “air monitors” present a similar issue although to a lesser degree.

Customers should be cautious and wary of any vendor who suggests that planning is not needed for WLANs. Even if guesstimates, or marginal tools, are used prior to an actual WLAN installation, ultimately an installer still needs to be told exactly where to place APs and switches. This is another place where the real beauty of an excellent planning tool shines through.

RingMaster, unlike any other tool today, automatically creates a work order showing the exact location of APs and switches. "The deployment tool, part of the RingMaster application, was able to generate precise work orders, including diagrams and measurements, that showed exactly where to position our mobility APs," said Cameron Sturdevant, senior analyst at eWeek.

Planning has other value as well. Remember that planning is pervasive throughout any business and is ingrained in the fabric of IT. What better way for WLAN deployment teams to prove their competence than to show management – technical and non-technical – their detailed WLAN plans? "Trapeze offers the slickest planning and deployment tool, a major selling point in winning over non-technical management," notes David Newman of the Network World Global Test Alliance.

Imagine how well an IT status meeting, at any level, would go if the deployment team pulled out a detailed floor plan showing RF modeling, capacity vs. coverage, detailed network diagrams and installation work orders. Subsequent disclosure that this remarkable planning capability is part of a complete lifecycle management tool would further characterize IT's efforts as heroic.

"RingMaster is a silver bullet," said Coy Thorp, network systems architect at MDL Information Systems. "We can manage our wireless network with the same tool we use to plan and deploy it. How cool is that?"

Dynamic RF techniques are sometimes touted as an alternative to WLAN planning. They entail estimating AP placement, installing them and letting dynamic RF algorithms take over. In truth, dynamic RF is marginal without a well-defined plan and should be treated as a supplement to – not a substitute for – planning. A well thought-out plan must consider coverage, capacity, client transmit-power, client density, interference and AP density. A seasoned network architect wouldn't allow unknown algorithms do this work before establishing a baseline with a proper plan. Dynamic RF can subsequently be used to intelligently adjust power levels and channels in response to changing conditions.

For a few hours of work, IT can justify the modest cost of WLAN planning using the RingMaster tools suite. Fast deployment with no second-guessing on AP locations, automatically generated work orders, no RF coverage holes, simple troubleshooting, predictable performance and smoother migration for subsequent network upgrades. All these benefits improve the total return on investment of a RingMaster-derived WLAN plan.

"Site surveys, RF allocation and AP power management all require manual approaches," said John Morency, president of Momenta Research. "Automating these tasks leads to major reductions in the cost of WLAN ownership. Trapeze addresses the issue head on by combining these features with integrated roaming, which merits serious IT consideration."



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