High Access Point Density Hiding Network Gaps

Komodo Systems – Revealing Network Issues Only Visible to End Users

Wi-Fi is often a mission critical necessity and when end users complain, it can be very difficult to recreate an issue and perform root cause analysis. Komodo Systems addresses this by deploying small, inexpensive devices – Komodo Eyes – that simulate a user on the network by performing the same workflow as any mobile phone or laptop. The results of this workflow are documented and reported back to the Komodo Dashboard and provide otherwise hidden information about network performance. The Komodo Eyes allow network administrators to be aware of issues before end users experience them, from anywhere in the world.

Background

The client is a AAA Five Diamond mountainside retreat with access to year-round outdoor sports, including ski-in/ski-out access to a world class Utah resort. The hotel is situated just down the road from many of the sites of the 2002 Winter Olympics. The hotel was built with a robust technical infrastructure and a foresight into high device connectivity, both wired and wireless. Access point density is very high with high overlap in radio strength. Because the resort is on a mountain top, ISP options are limited. Two 50Mbps circuits service the hotel; one wired connection through a local ISP, the other ISP via microwave. Few Wi-Fi issues were reported by guests; however exceptionally high uptime was imperative to avoid revenue loss for both the hotel and MSP.

Deployment

During the project, Komodo deployed five Eyes in the guest rooms, two in conference rooms, and two in the server room to test the wired LAN connections. Initial deployment covered no more than 20% of the hotel floor space, but provided an invaluable insight into the network's health.

The larger of the two conference rooms had four Ruckus access points – one placed in each corner. The smaller of the two had one access point in the ceiling. It was expected that both areas had great AP coverage. In order to test the large conference room, the Komodo Eye was placed just inside the staff workroom on a shared wall; the Eye in the small conference room was placed near an outlet under a small table.

The MSP and hotel engineering staff selected guest rooms that were vertically dispersed among floors 1 through 6 in one wing of the hotel. Each Eye would 'see' access points in the adjacent rooms on the same floor, as well as those on the floors above and below. Each guest room was unique, and required a new evaluation for placement. In most cases, power outlets were available behind entertainment centers, bedside tables, or entry area tables. In each case, Velcro or double-sided tape was used to place the Eyes behind furniture, out of sight but still able to sufficiently simulate an end user's device.

Discovery

Generally, in the first 1-2 weeks following any initial deployment, the Komodo Eyes can uncover various areas for network improvement and optimization. The hotel network was robust and provided a great experience for their users. However, Komodo was able to uncover various areas in which the MSP could optimize performance and enhance network infrastructure without additional capital expenditure.

Incorrect SSID

Using the airspace report, the Eye in the large conference room identified an unknown SSID in close proximity – a default name given to a Ruckus AP prior to configuration. With that, the team concluded that one of the four access points in the large conference room was not communicating with the network management system.

Rogue AP

Once more, using the airspace reports, one of the Eyes in the guest rooms was able to identify an access point that was not transmitting a known SSID, and whose MAC address was not part of the known set within the network management system. Using triangulation of multiple Eyes, the Komodo team was able to pinpoint where the device was broadcasting from.

Poor Performing AP

All Eyes placed in guest rooms were able to see many APs within testable range. During initial setup, the Komodo team selected the three closest APs to target for testing. The test battery iterates through each assigned AP/SSID combination and simulates an end user browsing the Internet. In one of the guest rooms, one of the APs was found to deliver 40% slower per-user download speeds than other test APs, all else being equal. This prompted the MSP to examine the configurations of the poor performing AP to ensure that it was performing optimally within its specific environment.

ISP Injecting Latency

Using the Eye placed in the MDF closet and the associated Wired LAN test, Komodo identified a significant latency injection on the third hop from the hotel to www.google.com. The Wired LAN test runs every 30 minutes, and documents the results of a tracert command, among other tests. In each case, the third hop injected around 20 ms of latency in the baseline 30 ms. Using a reverse IP lookup, the MSP was able to confirm that the host server was within the ISP and work to improve the latency.

Confirmed SLA

The MSP was excited to have Komodo Systems independently verify the terms of their SLA with the hotel. One key SLA term; the MSP is required deliver -65dBm or better signal strength to every guest.   Any guest in the hotel should be able to connect to the network at -65dBm or better. Using Komodo Eyes dispersed throughout the guest areas, Komodo verified the MSP's success in meeting this SLA requirement.

Looking Forward

After deploying Komodo, the hotel and Managed Service Provider filled the gaps and optimized the network. Komodo delivered great short-term value and continues to deliver value in perpetuity, as the Eyes remain in the environment, performing tests every 5 minutes to alert network engineers of issues in real time.