Wi-Fi Optimization Enhances the Mobile Experience for Cisco Employees by 83%

After implementing the Wi-Fi optimization solutions on iOS 10 devices, tests conducted by a UK-based Cisco IT team revealed:

- A **42% reduction in reported incidents** when making Cisco Spark™ calls using the iPhone over a Cisco Wi-Fi network.
- An **83% decrease in significant quality issues.**

The team unlocked this value through a 30-minute software upgrade to the Cisco wireless infrastructure— no hardware changes required. Apple and Cisco worked closely on this upgrade to create an optimal app, voice, and video experience for iOS devices on Cisco networks.

Businesses are embracing mobility as they empower their workforces to be more efficient and innovative. An increasing number of employees, for example, are using iPhone to collaborate through video and voice while roaming. However, in buildings with many access points and wirelessly connected devices, network traffic congestion can create frustrating latencies, data loss, and dropped calls.

Apple and Cisco are working together to meet the challenge to deliver optimal, high-performing, reliable wireless connections to iOS devices in the enterprise. A software upgrade to existing Cisco wireless infrastructure optimizes the roaming experience for employees using iOS devices. This upgrade enables a unique handshake that allows an iPhone or iPad device to determine the best Cisco access point to connect to. It also helps the device make quick and efficient transitions between access points.

To measure the improvement delivered by the upgrade, the UK-based Cisco IT team conducted a series of tests in a real-world office environment floor containing 20 Wi-Fi access points distributed over 250,000 square feet and serving approximately 140 employees.

The test bed was a Cisco Spark voice and video call between a roaming employee on an iPhone connected to a local Wi-Fi network and an employee running the Cisco Spark application on a desktop computer. The team chose a stationary desktop device to record all results.

The employee walked the same path 20 times during a period of several days. The IT team measured the number of incidents—degradation in user experience—before and after the software upgrade was installed. The team wanted to better understand the issues the mobile user experienced, from degradation of audio and video to complete disconnection of calls.

The team developed the following three-level scale to rate the incidents:

- **Level 0 (Productivity Crusher):** Call completely disconnected
- **Level 1 (Productivity Inhibitor):** Temporary moments of video and audio loss, with the call remaining connected or automatically reconnected
- **Level 2 (Minor Annoyance):** Occasional video pixilation, but no loss of audio

Benefits

- 83% decrease in significant quality issues
- 100% reduction in disconnected calls
- Benefits achieved by doing a 30 minute software upgrade

Increasing Reliability and Trust in Collaborative, Mobile Calls

Though the quality of mobile calls has improved in recent years, video calls on Wi-Fi networks can experience degradation ranging from minor video pixilation to completely disconnected calls. Minor pixilation may go unnoticed or cause a slight annoyance, but completely disconnected calls can be frustrating and can crush productivity. If these incidents occur more than a few times, the quality of a collaboration solution can be called into question, ultimately leading users to find other methods for collaborating.

"These unique solutions will allow Cisco and other businesses to accelerate how we use the most advanced mobile capabilities to change and simplify our daily work, operational models, and most importantly our customer value exchange."

– Guillermo Diaz,
Cisco Senior Vice President and CIO
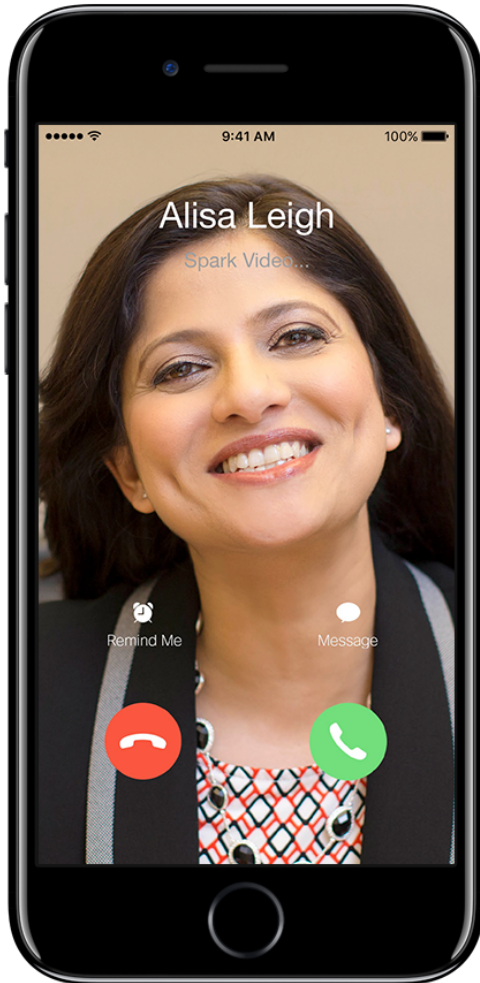
Quantifying the Results

Table 1 shows the number of each type of incident experienced both before and after the upgrade.

Table 1 Incident Comparison

Incident Level	Number of Incidents Before Software Upgrade	Number of Incidents After Software Upgrade	Percentage Decrease in Quality Issues
Level 0 (Productivity Crusher)	13	0	100%
Level 1 (Productivity Inhibitor)	36	8	78%
Level 2 (Minor Annoyance)	131	96	27%
Total	**180**	**104**	**42%**

Before the Software Upgrade

Before the software upgrade, as Table 1 shows, 180 incidents occurred, including 13 dropped calls (Level 0 incidents). A closer look at dropped-call locations revealed that the incidents typically occurred when the iPhone was switching access points.

Performing the Software Upgrade

The site's existing wireless network consists of the Cisco Wireless Services Module 2 (WiSM2) wireless LAN controller (WS-SVC-WISM2-K9) and 168 Cisco AIR-CAP3702I-E-K9 access points.

The team upgraded the wireless controller software, which took approximately 30 minutes, to AireOS 8.3. In addition, the team conducted verification testing that consumed about 2 hours. Note that verification testing times vary from site to site depending on the complexity of the wireless network.

"The Cisco test results were astounding. Implementing Wi-Fi optimization across Cisco will make all the difference for our employees."

– Ileana Rivera,
Sr. Director, Cisco IT

After the Software Upgrade

Table 1 also shows the number of incidents experienced after the software upgrade, when the tests were rerun. The result was a 42 percent reduction in the number of incidents: from 180 to 104. In addition, the upgrade completely eliminated productivity–crushing incidents. When considering both productivity–crushing and productivity–inhibiting incidents, tests showed an 83 percent reduction: from 49 to 8.

Worth noting is the additional feature delivered with the partnership, which prioritizes business apps, such as Cisco Spark. However, because the workplace in which the tests were conducted had an abundance of Wi-Fi capacity, this particular feature was not tested during this set of experiments.

Enhanced User Experience

Clearly, eliminating dropped calls increases service reliability and improves the overall user experience, as does significantly reducing audio disconnection during calls.

And the best news is that this value was unlocked simply by upgrading the software on the existing Cisco wireless controller.

Before the Software Upgrade

Level 0
Level 1
Level 2
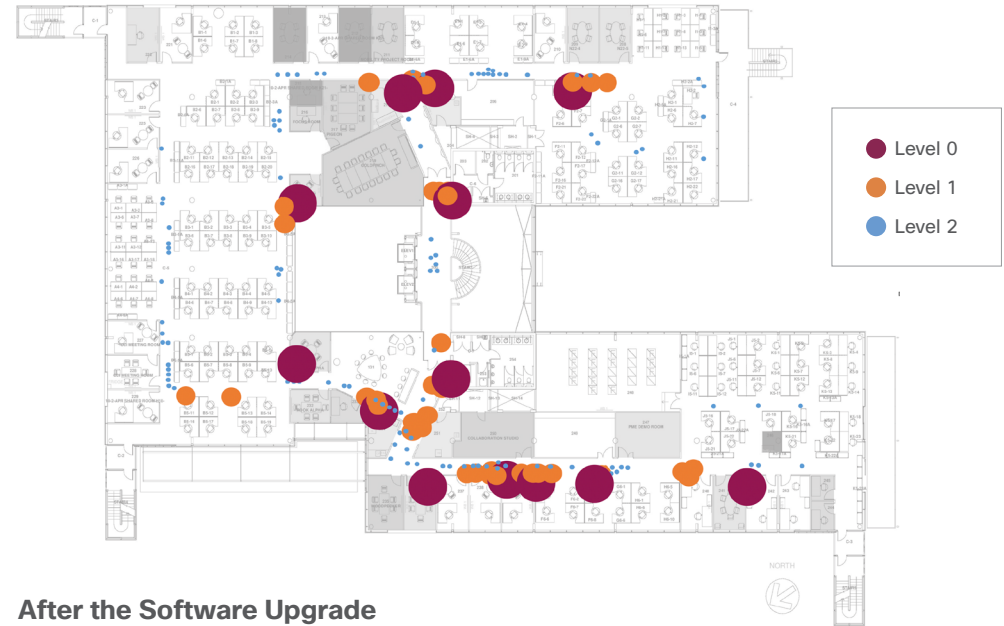
After the Software Upgrade

Real time applications, such as collaboration apps, can challenge the network because they involve both voice and video traffic. Although the tests reported here measured only the impact of a software upgrade on the experience of users running the Cisco Spark app, note that the performance of any third-party business apps could potentially benefit from the solution to create an optimal app and voice experience for iPhone and iPad users on corporate networks.

Alliance Advantage

Apple and Cisco are helping enterprise customers everywhere use their network infrastructure in completely new ways by creating engaging and reliable experiences for iPhone and iPad users. By combining new features in iOS 10 with Cisco's advanced networking and collaboration technologies, the companies together are delivering optimal application, calling, and collaboration experiences to companies everywhere, across all vertical markets.

Next Steps

Would you like to know more about how companies like yours are taking advantage of their networks to improve employee efficiency and productivity through mobile collaboration—and other—apps? For more information, go to www.cisco.com/go/apple or contact your Cisco sales representative to discuss how Cisco and iOS 10 solutions can benefit your business.

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