# Artificial Intelligence driven Cloud Service Wi-Fi

## How machine learning, predictive analytics, and big data in the cloud are transforming enterprise network operation and management

An enterprise without a wireless network is nearly impossible to imagine today. Wireless LANs are becoming critical to businesses. They are needed to support employee productivity, customer responsiveness, guest relations, and tenant satisfaction. They enable everything from point-of-sale systems to enterprise applications, real-time communication, video conferencing, mobile devices, hospitality services, and more. They connect people at headquarters, satellite offices, and employees' homes.

Gone are the days of the nice-to-have-but-unreliable Wi-Fi network. Enterprise Wireless LAN penetration is growing exponentially and the Wireless LAN market is forecast to grow more than 70% to $6.7B by 2018 [i]. As business-critical systems, Wireless LANs now require flawless operation over extended hours and across multiple business locations. But, given the nature of these networks, they can be extremely challenging to maintain and operate.

For IT departments to adequately support Wireless LAN applications and users while remaining productive, advanced know-how of WLAN systems is required. KodaCloud offers the solution of applying machine intelligence and powerful analytics to enterprise Wireless LAN management and operations, and delivering this as a cloud-based service.

## Machine Learning in the Enterprise

Machine Learning (ML) – a type of artificial intelligence that enables computers to learn based on new data without being programmed – is now being applied to a wide range of enterprise applications, including solutions for sales, marketing, human resources, customer relationship management, and finance. It holds the ability to make these applications predictive and, in some cases, self-managing by capturing the power of machine learning and applying it to specific needs.

Computers can gather and analyze data in real time, correlate this information with other information from the cloud, identify patterns, "learn" to predict what will happen next, and act on that information. Actions may include optimizing the system, preventing failures, sending alarms, automatically healing breaches, and generating actionable information for human experts to base decisions upon.

KodaCloud is leading the application of machine learning to the enterprise network.

## The Enterprise Wireless LAN Challenge

In the enterprise network environments, Wireless LANs are probably the most dynamic that IT teams have ever had to manage. New users and devices are introduced constantly, with no signs of easing up. The growth and variety of Wi-Fi-enabled devices and applications is
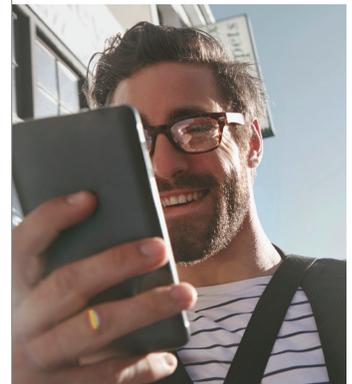
exponential (at the end of 2013 there were more mobile devices than people on Earth[ii], and there will be more than 7 billion new Wi-Fi enabled devices by 2017[iii]). From point-of-sale devices to scanners, RFID systems, video conferencing systems, VoIP systems, connected appliances and cars, the "Internet of Things" makes for exponentially more complex enterprise networking environments than ever before.

This constantly changing RF environment, coupled with typical end-user problems with Wi-Fi connectivity and performance, puts a heavy burden on IT teams. Small IT departments in particular feel the pain, as troubleshooting involves cryptic commands and hundreds or thousands of settings to navigate.

All told, current solutions require deep technical know-how to control access, prevent misuse, implement end-to-end security, optimize throughput and enable BYOD.

Another challenge for IT is the task of purchasing, owning, and managing all the hardware. Wireless LANs in particular require the up-front purchase of access points and, in some cases, also controllers. With these purchases come the risks of long-term ownership of these devices. KodaCloud envisioned a solution to release IT departments from day-to-day Wireless LAN management and ownership by delivering it "as-a-service" such that there is no hardware to buy, ever.

## The art of Intelligent Wi-Fi

At the core of the KodaCloud Cloud Service Wi-Fi solution is a machine learning-based engine that runs patent-pending predictive analytics technology. The engine learns the typical characteristics or behaviours of devices, environment and network that impact a Wireless LAN's performance. To access the same level of intelligence solely from a team of humans would be virtually impossible.

*Diagnosing and solving wireless network issues can quickly consume valuable IT resources while compromising end-user experience and impacting business outcomes.*
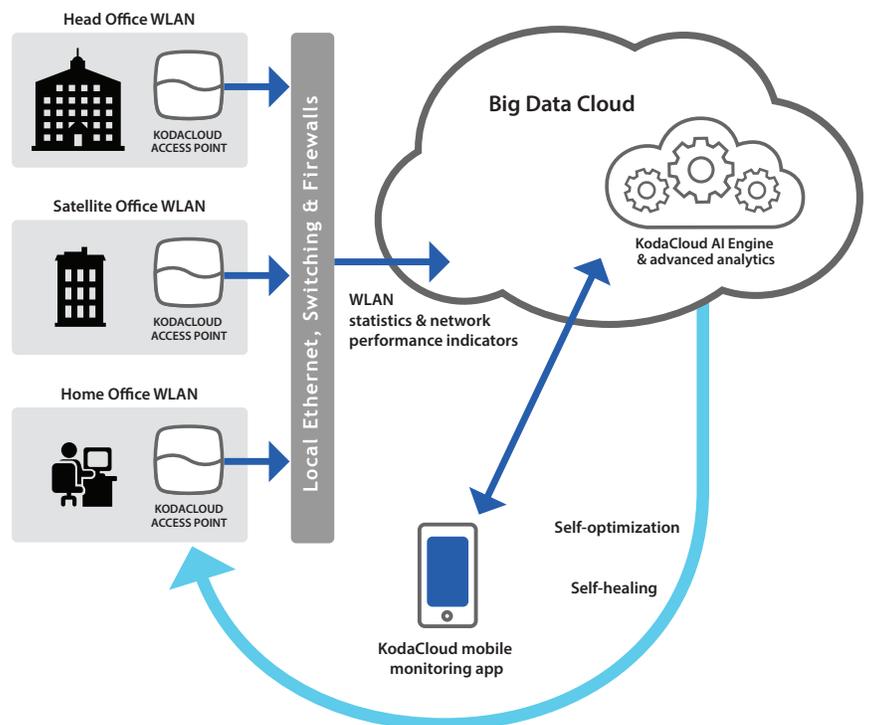
Statistical data or real-time information is communicated to the cloud, while the customer's data and content remain untouched. Once in the cloud, this information is processed in the ML Engine, in some cases in real-time as network performance indicators. The information is organized, processed, and translated into solutions that trigger specific actions or actionable alerts, or automatically optimize and heal the network.

By correlating the wide variety of data that can be gathered, the system quickly learns to identify issues with device compatibility, interoperability, access, use/misuse, and network security – as well as gaps in coverage or capacity in the network.

With this power at hand, even small IT organizations can give all users an exceptional wireless experience across multiple locations, with fewer headaches for IT personnel. There's no need to depend on deep RF knowledge or to undergo specialized training to run the Wireless LAN.

# Cloud-Delivered "No Worries" Wi-Fi

The KodaCloud Cloud Service Wi-Fi solution provides 24x7 machine-based real-time diagnosis and optimization, proactively monitoring all network services associated with a Wireless LAN. The service takes responsibility for the performance of the wireless network day and night across all of an enterprise's locations. When anomalies arise, it provides human-like decision making to raise actionable alerts, automatic correction of problems, and/or advise the customer how to address a problem even before it arises.

The KodaCloud ML Engine educates the cloud, too. It learns from all of an enterprises' gathered Wireless LAN data as well as the best human experts and discovers new correlations across multiple networks, leading to constant optimization and fast troubleshooting.
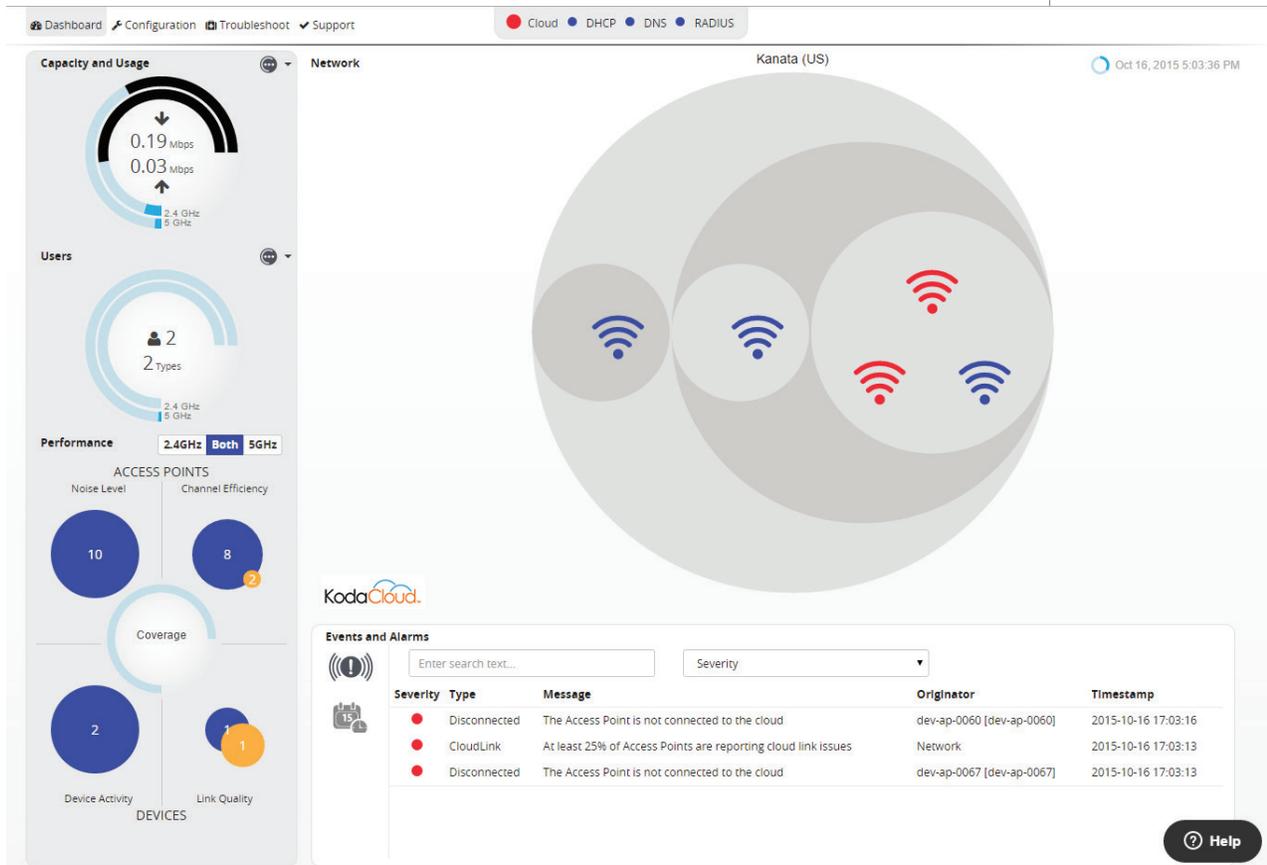


KodaCloud Administrator Interface

# How Cloud Service Wi-Fi Works

All that an organization needs to get up and running with KodaCloud is a broadband connection and power. After receiving an organization's subscription to the service, KodaCloud ships Access Points[iv] that the customer automatically provisions to the KodaCloud cloud. Using the convenient user interface, the IT department specifies the services and interfaces that are to be enabled, and the security policies to be implemented.

From that point, the KodaCloud service takes over Wireless LAN management, proactively monitoring and managing the health of all Access Points and network operations.
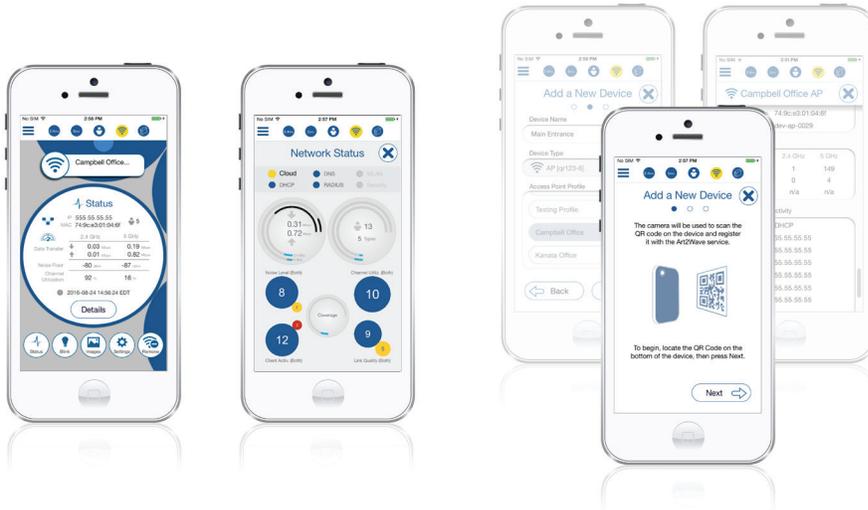
IT managers can easily access their network data through the user interface. It gives insight into what's happening in the network environment, and the mix of iOS, Android and other devices accessing an organization's system.

## Customer Data is Untouched

All of the customer's proprietary data remains untouched by the KodaCloud service. All data traffic for the users remains within the local network. Only key statistical parameters are forwarded on to the cloud for processing by the Machine Learning Engine.

The service isolates each customer's individual network data – and can also isolate data from multiple networks within a single customer if desired.

## The Result: A Fantastic User Experience

The KodaCloud Cloud Service Wi-Fi solution is the first of its kind. It provides, above all things, an exceptional Wi-Fi user experience, no matter how large or multi-faceted the network is. With Machine Intelligence-based operational management of the network, the enterprise can deliver the following, without burden on the IT department:

- Consistent network throughput, speed, and performance when and where it's needed, 24x7
- Fast user authentication and network access, no matter what device is connecting
- Seamless application experiences for VOIP and video conferencing, among others
- Rapid, accurate troubleshooting and fast network recovery in the case of failures.

The result is a fantastic experience for both network end-users and for IT personnel.

## About KodaCloud

KodaCloud is reinventing wireless networking for businesses. Founded by accomplished Wireless and Networking experts with a history of innovation, our solution – which consists of a patent pending ML Engine, big-data architecture, powerful analytics, Cloud Service Wi-Fi consumption model, and Mobile App – is revolutionizing how IT departments deploy and manage wireless network infrastructure.

To become a customer or to trial the service, simply go to www.KodaCloud.com and click on "Start Your Free Trial" to get started right away.

[i] Dell'Oro Group. "Enterprise Wireless LAN Marketing to Expand 70 Percent by 2018". Press release, July 23, 2014. And "Wireless LAN Market Grows 5 Percent Year-over-Year in 2Q2015, According to Dell'Oro Group. Press release, August 26, 2015.

[ii] SAP, via http://www.huffingtonpost.com/vala-afshar/50-incredible-wifi-techs_b_4775837.html

[iii] Sys-Con, via http://www.huffingtonpost.com/vala-afshar/50-incredible-wifi-techs_b_4775837.html

[iv] KodaCloud provides guidelines to ensure the correct number of access points will be shipped for each client's unique environment.

### About KodaCloud Inc.

KodaCloud, formerly Art2Wave, is the first company to offer enterprise customers with Cloud Service Wi-Fi that's powered by patented Artificial Intelligence (AI). KodaCloud is a privately held company with Series A investments from Comcast Ventures, Celtic House Venture Partners and Voyager Capital. KodaCloud is based in Silicon Valley, California with offices in Ottawa, Canada. Find out more at www.kodacloud.com and follow the company on Twitter @KodaCloud and on LinkedIn. ©2016 KodaCloud Inc.