

Lunera and Aruba Secure Wi-Fi

Commercial LED Lamps with Integrated Networked Lighting Controls Use Wi-Fi to Connect to the Cloud for Energy Management Optimization

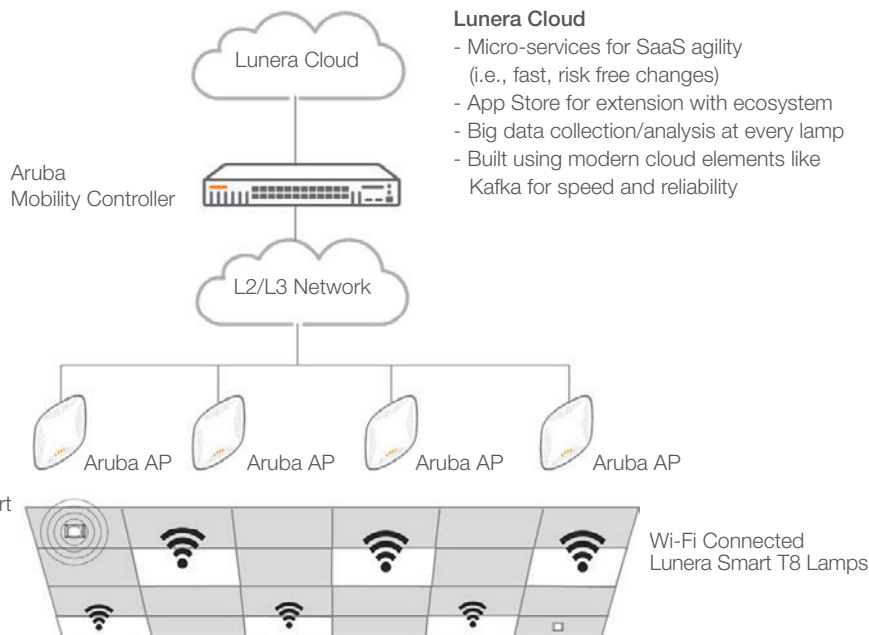
Retrofits of commercial and industrial real estate property are typically implemented to optimize energy management such as networked lighting controls or install an infrastructure that enables current and future high-value services within the facility. Selected approaches for each must be scalable, extensible and economical to deploy and operate. The Lunera Smart Lamp Platform accomplishes both.

The Lunera solution leverages Aruba, a Hewlett Packard Enterprise company's secure Wi-Fi infrastructure to connect to the cloud to deliver energy and building management enabling high-value contextually-aware capabilities such as real time location-based services. Installation is minimally disruptive, simultaneously retrofitting and transforming the building's existing lighting system and connecting it to the cloud. The lighting is retrofitted to energy-efficient, connected LED lamps with integrated networked lighting controls/sensors. The smart lamps are managed through cloud-based software which is accessed through Wi-Fi.

The Smart Lamps use an integrated Bluetooth radio to communicate with each other. This Bluetooth mesh is available as a contextually-aware IoT infrastructure, ready to enable a myriad of services through open APIs. The Wi-Fi connected cloud is home for the Lunera Cloud IoT Software used for control, management and reporting, data storage and the Lunera Applications Marketplace of software and APIs.

Lunera Smart Lamp

- Energy Savings
- Wi-Fi Uplink
- BLE



Lunera Cloud

- Micro-services for SaaS agility (i.e., fast, risk free changes)
- App Store for extension with ecosystem
- Big data collection/analysis at every lamp
- Built using modern cloud elements like Kafka for speed and reliability



a Hewlett Packard
Enterprise company

Why Lunera and Aruba

- Aruba provides a reliable wireless solution with guaranteed bandwidth for the secure delivery of critical information
- Easy network integration with Aruba's centralized architecture, no network reconfiguration is required
- Lunera's Smart Lamp Wi-Fi integration results in easier deployment and maintenance through the Smart Lamp Platform software
- The Lunera Smart Lighting Platform leverages existing investment in Aruba WLAN for a higher Return on Investment of the entire solution
- For more information visit Lunera at <https://www.lunera.com/smart-lighting-platform>

Features/Components/Benefits

The Smart Lamps seamlessly and securely connect to the Lunera Cloud over Wi-Fi through Aruba Access Points and Mobility Controller. The components of the Lunera Smart Lighting Platform work seamlessly

with the Aruba secure Wi-Fi infrastructure to deliver a connected lighting and energy management solution and establish an extensible, open IoT infrastructure network.

Smart T8

The Lunera Smart T8 is a connected IoT device that integrates a Wi-Fi radio, Bluetooth Radio, micro-processor and ambient light sensor in a popular T8 4FT LED tube. The lamp simply installs and is software configured through Wi-Fi. Lamp-to-lamp and lamp-to-device connections are established using the integrated Bluetooth radio.



Smart Lamp - Wi-Fi Radio

The Smart T8 has an integrated 2.4GHz Wi-Fi 802.11 b/g/n radio that connects the lamp to the cloud, eliminating the need for a dedicated lighting controls gateway. Wi-Fi is used to download policy updates, upload data, access Apps in the cloud, and control Wi-Fi connected devices.

Smart Lamp - Bluetooth Radio

The Smart T8 has an integrated 2.4GHz BLE 4.1 for easy WiFi configuration of lamps, wayfinding, asset tracking, proximity messages and IoT gateway functionality. Standards including Apple iBeacon and Google Eddystone supported.

Smart Lamp - Microprocessor

The microprocessor in the Smart T8 controls light levels based on events and policies communicated from the cloud via Wi-Fi and from sensor inputs. It also measures and verifies real-time energy usage, using Wi-Fi to send data to the cloud.

Smart Lamp - Ambient Light Sensor

The dimmable Smart T8 has an integrated ambient light sensor for daylight harvesting. The sensor distinguishes between artificial and natural ambient light.

Smart Switch

The Lunera Smart Switch is a battery-powered Bluetooth switch enabling the Smart T8 lighting element to be disabled while keeping the integrated smart electronics and radios active.



Smart Sensors

The Lunera Smart Passive Infrared Sensors are wall or ceiling mounted, battery-powered, Bluetooth and detect occupancy in software-defined zones. They communicate occupancy status to the Smart Lamps to trigger software-programmed lighting changes, executed by the integrated microprocessor.



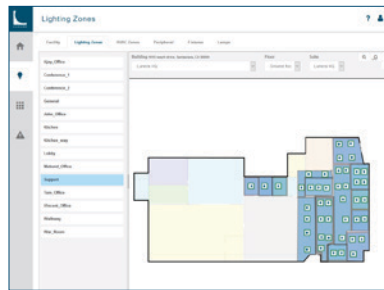
Cloud IoT Software – Dashboard

The Smart Lamps connect to cloud-based control center software via Wi-Fi. The Dashboard function provides the administrator with a system status report.



Cloud IoT Software - Facility Map and Software Commissioning

A virtual facility map, resident in the cloud, maps all Smart Lamps and accessories in the facility. Lamp and accessory commissioning is setup and updated in software at anytime and communicated through secure Wi-Fi to the connected devices.

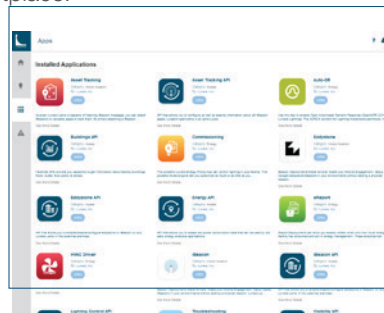


Cloud IoT Software - Alerts

The cloud software presents alerts to the administrator, either when an event occurs within the Smart Lighting Platform that is out of policy, or if there is an external event, such as a peak power usage adjustment request or temperature forecast, that affects energy consumption.

Cloud IoT Software - Marketplace Access

Third-party apps and APIs services using the Smart Lamp Platform infrastructure can be found in the cloud-based Lunera Applications Marketplace.



About Aruba

Aruba, a Hewlett Packard Enterprise company, is a leading provider of next-generation networking solutions for enterprises of all sizes worldwide. The company delivers IT solutions that empower organizations to serve the latest generation of mobile-savvy users who rely on cloud-based business apps for every aspect of their work and personal lives.

www.arubanetworks.com

About Lunera

Lunera is a lighting innovator focused on delivering simple, affordable and valuable networked command and control solutions for commercial and industrial buildings.

Our Smart Lighting Platform of connected LED lamps and cloud-based software applications, is a universal IoT gateway infrastructure, enabling indoor GPS and real-time location-based services while, delivering coordinated energy management of lighting, HVAC and plug loads throughout a facility.

The Smart Lighting Platform architecture is built on open standard and is highly scalable. A robust set of applications are available in the expanding, cloud-based Lunera Applications Marketplace.

The Smart T8 lamp is based on LED light bulbs due to its low cost of deployment, immediate energy savings, ubiquity, density and always-on power. Lunera is redefining traditional LED lighting to catalyze change and realize a vision for location/context aware connectivity and computing at the edge.

www.lunera.com