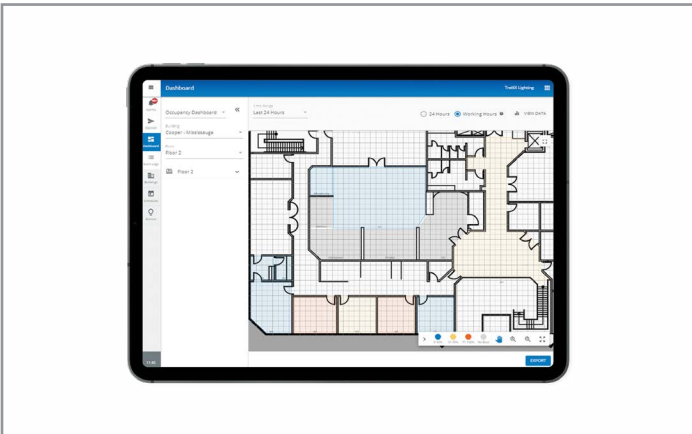


Project		Catalog #		Type	
Prepared by		Notes		Date	



Trellix

Trellix 8.0 - Lighting Application

Enterprise Lighting Management Application for On-premises Smart Spaces IoT Platform

Typical Applications

Office • Education • Healthcare • Industrial

Interactive Menu

- Order Information page 2
- Additional Resources page 3
- Connected Systems page 5
- Product Warranty

Product Certification

Supported HTML 5/Javascript compatible browser:

- Microsoft Edge 79+
- Google® Chrome 68+
- Safari 11+

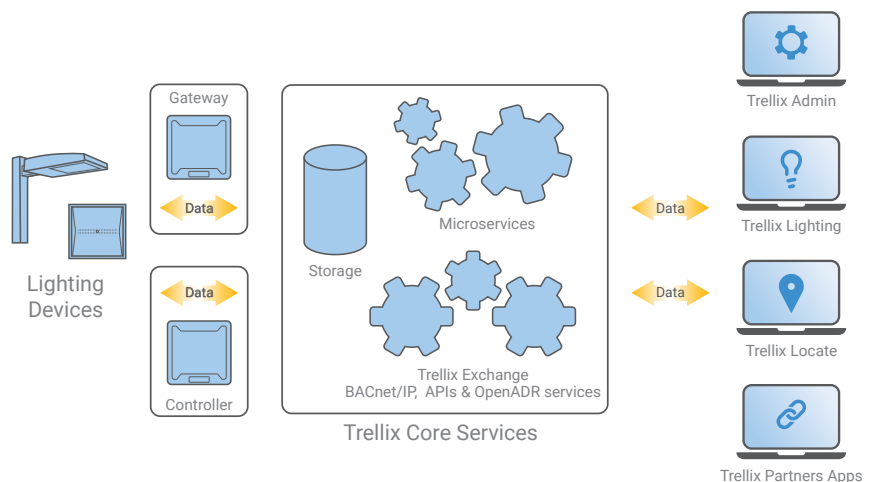
Product Features



- Central Configuration
- Alarms with Smart Tool Tips
- Floorplan Visualization
- Dashboards
- Designed for Touch

Top Product Features

- **Alarms with smart tool tips** – Monitor the health of your lighting system using the Alarm console and quickly troubleshoot faults using the interactive troubleshooting tips.
- **Operate** – Quickly navigate your facilities using the building navigator and/or the Floorplan View to make changes to the light levels.
- **Dashboards** – Our Energy and Occupancy dashboards provide important information about how much energy is being used by the lighting system and how your spaces are being used by your employees/tenants. The insights allows you to optimize your energy usage while delivering environments that fit their company culture—with no more space than is needed, but also no less.
- **Central Configuration** – Perform all the WaveLinx configuration tasks from Trellix such as enabling/disabling pairing mode for a WAC, editing areas, zones, occupancy sets, daylight sets, scenes, demand response, and configuring keypad button configurations. Using our patent pending touch-based floorplan editor easily create floorplans with areas/zones and devices hence eliminating your reliance on specialists to maintain your floorplan. You can create and manage time-based events (example: lights on, occupancy enabled) with different recurrences (once, daily, monthly, yearly) using our intuitive calendar editor.



Order Information

The Trellix Core (Pro, Enterprise, Virtual) platforms are preloaded with Trellix Lighting Application (refer note 4).

The features are enabled using license key. Cooper Lighting Solutions will provide a license key based on purchased software license.

The platform is shipped with a base software license that enables all Trellix Lighting features including Public API interface and BACnet IP for 250 nodes with the exception of Occupancy Dashboard (refer note 3).

A node is a device connected to the lighting system such as a ceiling or integrated sensor, wallstation, relay switchpacks, powerpack, connected driver or receptacle.

Customers should purchase the appropriate software license adders noted below for the Trellix Lighting application:

Catalog Number

Catalog Number	Description
TRX-LGT250	Trellix Lighting License Addition 250

Notes

- All Trellix Core platforms are shipped with a base software license which enables all the Lighting features with except of the Occupancy and OpenADR Dashboard for up to 250 nodes.
- Trellix Occupancy Dashboard Beta version is available at no charge for user testing/evaluation. Please note that a software license would be required once the final version is made available as part of the next release.
- Trellix Locate application is not available with the base software license.
- For a system with more than 250 nodes, the users must order software license adders for the applications and interfaces that they are planning to use. Please refer to Trellix Lighting, Trellix Locate, Trellix BACnet, Trellix Public API Trellix OpenADR datasheets to learn more about the software license catalog numbers.
- Please refer to the Trellix Core datasheet to learn more about the capability of each platform, i.e. Trellix Pro (TRX-TCPR02), Trellix Enterprise (TRX-TCENT2) and Virtual Trellix Enterprise (TRX-TCVRT2).

Commissioning Services

The services to configure Trellix must be included.

Catalog Number

Catalog Number	Description
TRX-CONFIG	Trellix Energy and Graphical Floorplan Setup Services for 250 nodes*

Notes

- Devices placement only available for wireless devices

Product Specifications

Key Features

Managing the lighting system – From one central location, the Trellix application allows you to configure and manage your connected lighting system.

- The intuitive Alarms console with Smart Tips allows you to monitor the health of your system in real-time with step by step troubleshooting steps to manage faults.
- The Operate console allows the user to control the light levels of a single device to an entire floor by easily navigating their facility or facilities using the building hierarchy and/or the floor plans. You can also quickly manage spaces with active alarms or override commands.
- The Dashboard console allows you to visualize and analyze the energy and occupancy data gathered by the lighting system. You can better understand how much the lighting control system is saving the company as well as the occupancy usage of your spaces.
- The Kiosk mode allows you to view floor plan in the Operate mode and continuously display your dashboard metrics without being logged out of the session.

Configuring your wireless and wired lighting system – The Trellix Lighting allows you to easily configure and manage your connected WaveLinX Wireless and Wired lighting system from a central application.

- Our patent pending floorplan editor allows you to create floorplans by draw areas/zones and place devices on a floorplan using your fingers. The floorplan editor eliminates your reliance on specialized specialists to maintain your floorplan.
- The schedule console allows you to create and manage the light schedules (once, weekly, monthly, yearly) for one or many buildings using an intuitive calendar view daily, weekly and monthly view options.
- Designed for single or multi-tenant buildings, Trellix allows you to easily manage users and their access using Trellix comprehensive user management console which allow you to control user roles, access to the various applications hosted on Trellix and access to the spaces being controlled by Trellix. You can also create custom roles using pre-defined permissions.

Freedom of choice – The Trellix platform can be delivered as physical or virtual machines.

- Trellix Core Pro is an introductory physical edge/on-premises appliance designed for small to medium facilities.
- Trellix Core Enterprise is a specialized physical edge/on-premises machine designed for medium to large facilities.
- Virtual Trellix Core Enterprise is a virtual edge/on-premises machine, leveraging VMWare® technology, designed for medium to large facilities. Users to run the platform on their VMWare server or on a VMWare® supported Cloud service provider.

Please refer to the Trellix Core Pro, Enterprise and Virtual datasheets to learn more about our Trellix Core options.

Designed for Touch and Mobility – You are no longer tied to your desktop to view and manage your connected lighting system. Our responsive applications are designed for touch. You can interact with the applications from any device with a web browser, i.e. smartphones, tablets and desktop computers.

Software Specifications

Supported HTML 5/Javascript compatible browser:

- Microsoft Edge 80+
- Google® Chrome 75+
- Safari 11+

Supported Screen Resolution: 1024 x 768 or higher

Compatibility

- Please refer to the Trellix Release Notes for firmware compatibility matrix.

Warranty

- Consult website for warranty information.

Trellix Smart Spaces IoT Overview

Trellix is an on-premises smart spaces IoT platform that moves real-time monitoring and processing to the edge to allow you gain faster insights of your buildings operations and business processes and drive efficiencies and effective decisions using Trellix apps and partners apps.

The platform manages the trellix of digital sensors embedded in your connected LED lighting, collects the data gathered by the sensors and analyzes the data to provide meaningful insights to users.

This on-premises platform hosts Trellix Core Services, a set of microservices required for fully functional IoT solutions, Trellix Exchange, a set of interfaces to allow data exchange with third party apps and Trellix Apps, a set of Cooper Lighting Solutions developed applications designed to serve the Connected Spaces.

Trellix IoT enterprise platform simplifies day-to-day operations as well as integrations with the other sub-systems operating a building. Once the Trellix Core is connected to the connected lighting system, Trellix platform assumes the roles of the system's supervisory manager, historian, gateway and security.

As a supervisory manager, Trellix allows users to perform high-level lighting supervisory management tasks, i.e. monitoring of the connected lighting system, making changes to the lighting schedule as well as issuing control commands such as changing a room's lighting level. User performs these tasks using the Trellix Lighting application.

As a historian, Trellix aggregates the data received from the connected lighting system and stores it in the time-series database. The data can then be visualized using the Trellix Dashboards.

As a system gateway, Trellix aggregates the data received from the connected lighting system. It then handles the data exchange between the WaveLinx system and third party systems such as Building Automation Systems, A/V systems, Shade control systems through the BACnet/IP and REST API services.

As a security system, Trellix manages and authenticates users and third-party clients that can access the applications and the data using OAuth2, the industry standard for authentication. Once authenticated, users and clients have access to specific features based on their permissions.

Trellix Core Services Overview

Trellix Core Services consist of:

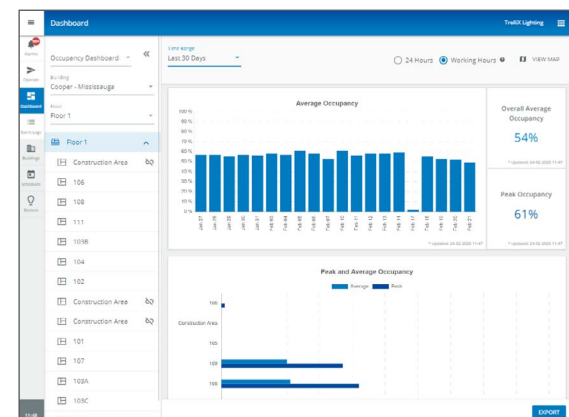
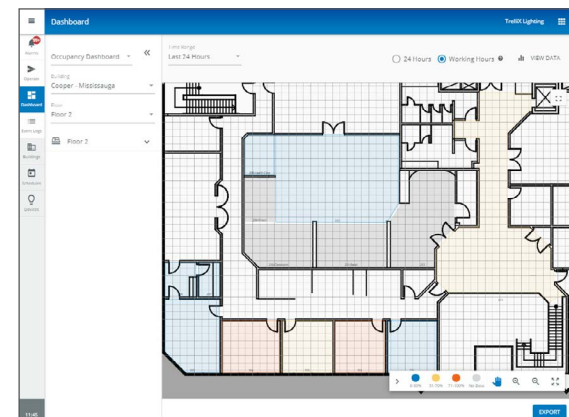
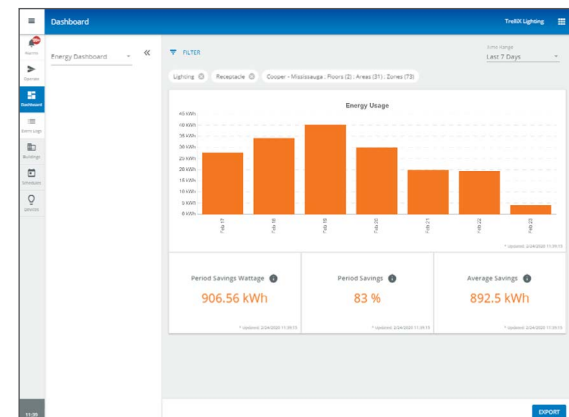
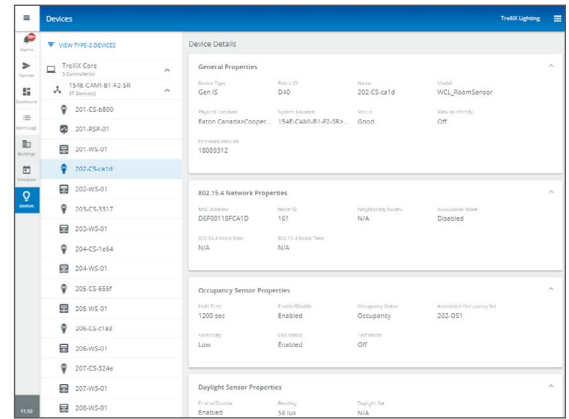
- **Connectivity service** – Manages data exchange with WaveLinx area controllers and gateways using Cooper Lighting Solutions API.
- **Message Routing service** – Manages the routing of the received data to the other Trellix Core microservices.
- **Data Management service** – Manages the real-time data received from the various sources as well as aggregated data for data analytics.
- **Device and Spatial Object Management service** – Manages (add, edit, remove) devices connecting the platform as well as spatial objects, such as clients, buildings, floors and areas, defined within the platform.
- **Event Management service** – Manages the events generated by the devices and spatial objects.
- **Location service** – Computes the location of the assets based on received BLE data.
- **Security service** – Ensure secure data exchanges between the various Core components/ microservices.
- **Authentication and Authorization service** – Manages the users that can safely connect to the Trellix platform and applications as well as the roles/permissions/areas of responsibility for each user.
- **OS and Applications Management service** – Manages the operating system and applications hosted on the Trellix platform.
- **Trellix Exchange service** – Manages the various interfaces, REST API and BACnet/IP, OpenADR used for data exchange between the WaveLinx system (energy, occupancy, daylight, location) and building automation systems, smart building and Cloud based IoT platforms.

Web Based User Interface

Trellix platform offers web-based applications that allow users to configure and manage the connected lighting system from any computing devices with one of the supported web browser (refer to specification section). The user interface has been designed to allow system integrators and facility managers to easily configure the connected lighting system, i.e. discover the area controller, import the real-time control logic data from the area controller, establish data exchange between the area controller and the Trellix Core, and expose the data to third party systems.

The user interface has been carefully divided into four sections: the Trellix bar, Navigation toolbar, the Explorer, the main panel and property panel.

The **Trellix App Selector** is how users switch between applications (i.e. Admin, Lighting and Locate). The **Navigation Toolbar** is how users navigate between the application's key modules. The **Explorer** allows users to navigate through the building's hierarchy (client, building, floor, area, zone) and system hierarchy (area controllers, devices). The **Property** panel allows users to view the properties of the various assets managed by the system such as floors, areas, sensors as well as initiate device specific actions.



Trellix Lighting

The Trellix Lighting allows users to perform high-level lighting supervisory management tasks, i.e. managing and configuring the connected lighting system.

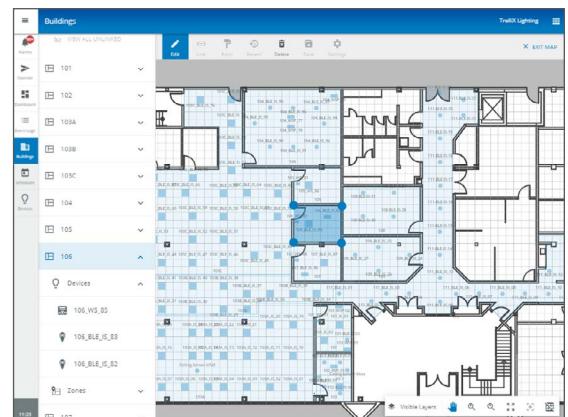
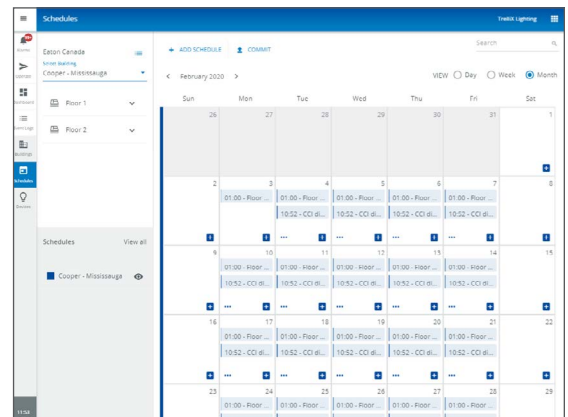
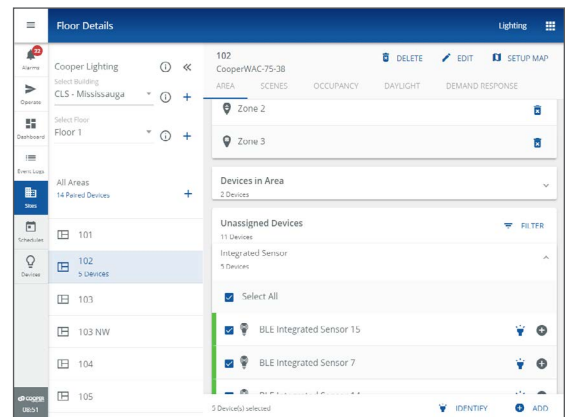
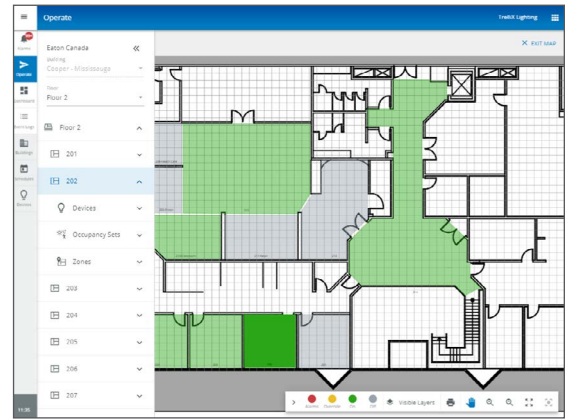
Using a toolbar, users can access the various programming and management modules. The toolbar is comprised of the following main modules:

Managing the lighting system – This section allows facility managers to manage the operation of their lighting system:

- **Alarms** – View the health of all their WaveLinx system. All faults are displayed as alarms. Each alarm comes with troubleshooting tips that allow the facility managers to troubleshoot the fault. The alarms can be exported as pdf report or csv output.
- **Operate** – Quickly respond to issues or requests to light level changes by using the floor plan view to quickly locate defective equipment or wiring issues or change the light level of a single device or an entire area. View the properties of each element of the building hierarchy (devices, zones, areas, occupancy sets, daylight sets, etc).
- **Dashboard** – Use the Energy dashboard to get better insights on your facilities energy usage and optimize your control strategy to reduce your overall energy usage. Similarly, use the Occupancy dashboard to better understand how your spaces are being used and optimize your space usage to improve your tenant experience.
- **Events Logs** – View all system's notifications as well as past alarms and export the data into a spreadsheet for sequence of events analysis.

Configuring the lighting system – This section will allow users to configure the system, i.e. define the system hierarchy, building hierarchy, user and system settings.

- **Devices** – Easily discover WaveLinx Area Controllers (WAC), or WaveLinx Ethernet Gateways (EG2), on the network and import their configuration to the Trellix platform.
- **Sites** – Configure the building hierarchy, i.e. client > Building > Floor > Areas as well as build the floor plan for each floor. Using Trellix, facility managers can fully configure wireless areas and perform tasks such as enabling/disabling pairing mode of wireless area controllers, edit areas and zones, configure occupancy and daylight sets, set scenes and the demand response and configure wall station buttons. Wired area controllers are configured using iLumin Plus Software Suite and imported into Trellix for control of areas and zones.
- **Schedule** – Manage the light schedules for all their buildings from a central location. A schedule can have many events with each event having its own recurrence pattern, i.e. once, weekly, monthly and yearly. Schedules are loaded into the Trellix Lighting application and pushed to the WaveLinx Wireless or WaveLinx Wired system respectively.




Sample System Topology:

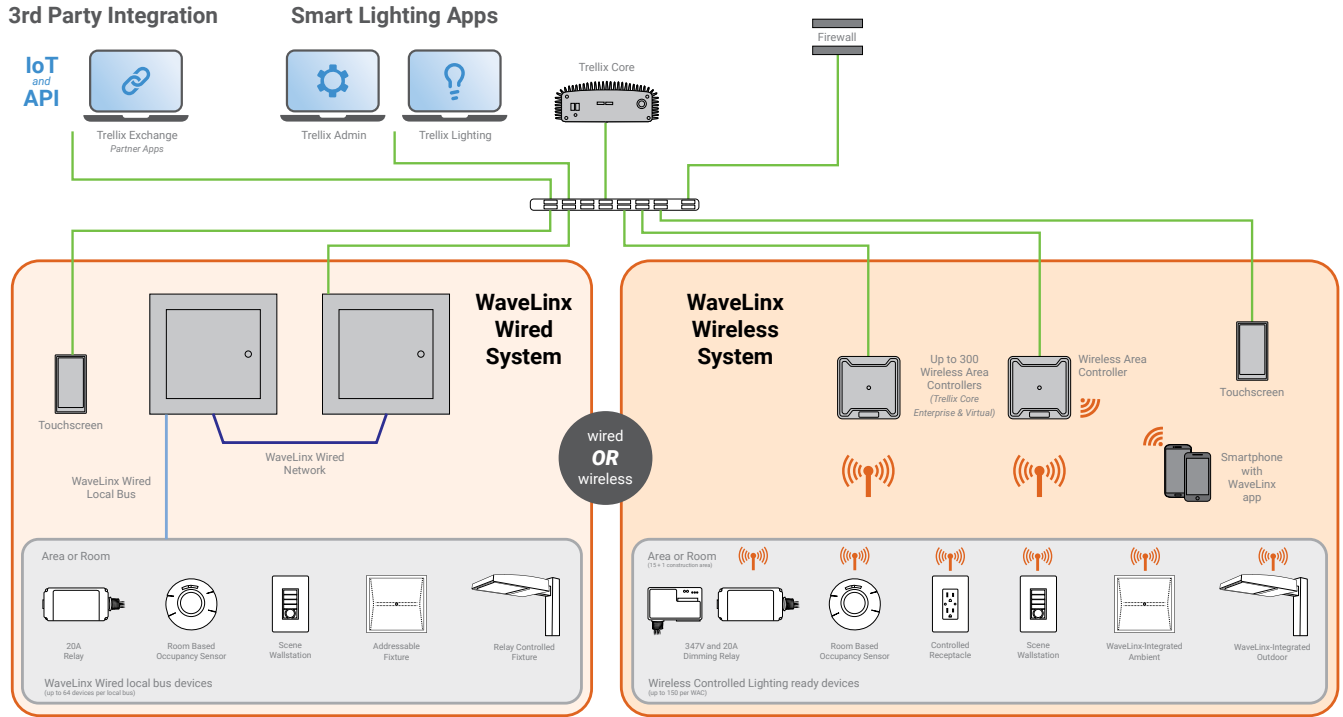
This diagram shows the main components of the WaveLinx Wireless and Wired Connected Lighting system.

The **WaveLinx wireless system** communicates using wireless mesh technology based on the IEEE 802.15.4 standard. A PoE LAN connection for each Wireless Area Controller (WAC) is required for power and data access to the building lighting network.

The **WaveLinx wired system** controls the devices using relay, 0-10V, DMX and the WaveLinx wired digital local bus. The WaveLinx wired system connects to the building LAN using the EG2 module. Each WaveLinx wired area controller communicates on the WaveLinx wired network.

WaveLinx Area Controllers (WAC) and WaveLinx Ethernet Gateways (EG2) communicate with Trellix over the Ethernet network. Please refer to the WaveLinx Wireless Network and IT Guidance Technical Guide and WaveLinx Wired Network and IT Guidance Technical Guide for more information.

 **View WaveLinx Network and IT Guidance Technical Guide**



		WaveLinx Wired	WaveLinx Wireless
Trellix	Connects to Trellix Core (Pro, Enterprise, Virtual)	●	●
	Trellix Core # of gateways/devices	20 / 2000	20 / 2000
	Trellix Enterprise # of gateways/devices	300 / 45,000*	300 / 45,000*
	Trellix Virtual Enterprise # of gateways/devices	300 / 45,000*	300 / 45,000*
	Connecting device	EG2/EG2-NA	WAC-POE
Trellix Lighting	Alarms	○	●
	Events	●	●
	Operate (floorplan control)	●	●
	Operate - area control	●	●
	Operate - zone control	●	●
	Operate - device control	●	●
	Scheduling	○	●
	Energy Dashboard		●
Trellix Exchange	BACnet/IP	○	●
	Public (REST) API	○	●
	OpenADR		●
Trellix Admin	Manage Users	●	●
	Manage roles	●	●
	Manage clients	●	●
	Manage licenses	●	●
	System settings (backup/restore, network etc)	●	●

* For larger number of gateways and devices, please contact Cooper Lighting Solutions Sales representatives. Recommend designing the system at 70-80% of maximum capacity.
 ● = All features ○ = Subset of features

 **Control Systems**

- Trellix
- WaveLinx Wireless
- WaveLinx Wired
- VividTune