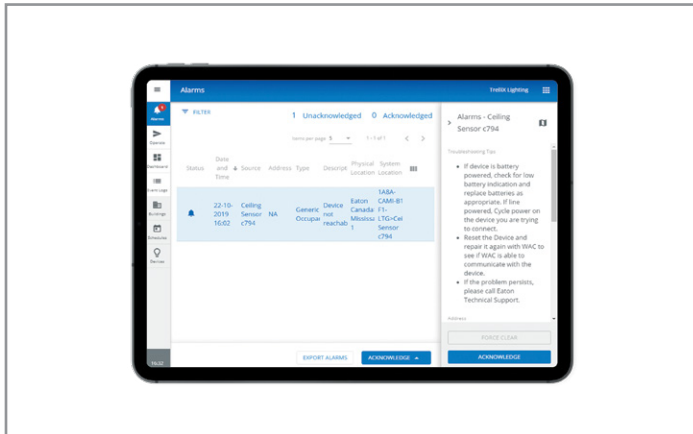


Project		Catalog #		Type	
Prepared by		Notes		Date	



# Trellix

## Trellix 6.3

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 Internet Explorer 11+ and Edge
- Google® Chrome 68+
- Safari 11+

### Product Features



Trellix  
Lighting



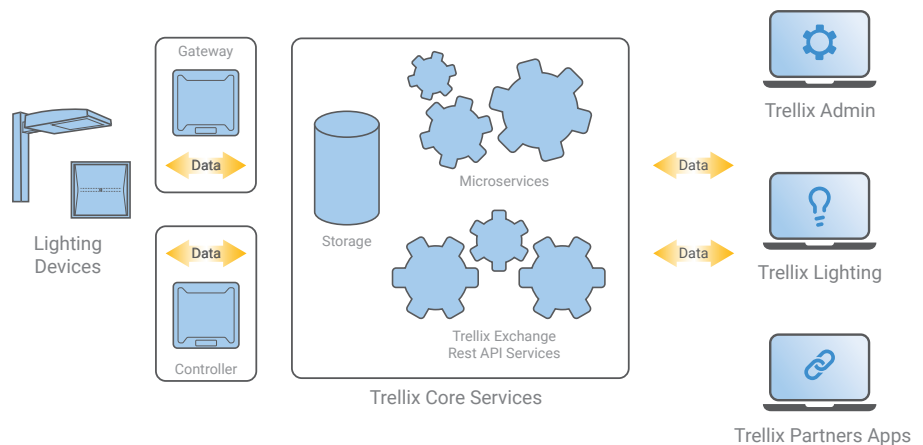
Trellix  
Exchange



Trellix  
Admin

## Top Product Features

- **Trellix Lighting** – A web-based application that allows you to configure a code-compliant and energy efficient connected lighting system. The intuitive application allows you to quickly perform your daily supervisory tasks such as making changes to the light levels, creating lighting schedules and viewing your lighting system's energy usage. Our patent-pending floorplan editor allows you to simply drag and drop areas and devices on a jpeg or svg background and based floorplan hence eliminating the traditional non-value added engineering associated with floorplans.
- **Trellix Exchange** – A set of standard based interfaces, BACnet/IP and REST APIs, enabling data exchange with third party applications and unlocking the value of the data being gathered by your connected lighting system. Trellix Exchange is the foundation for the sensing network and other advanced applications that leverage the data gathered by the system.
- **Trellix Admin** – A web-based application allowing users to perform the administrative tasks required to manage the platform such as enabling/disabling interfaces, creating/editing/deleting users and roles, backing up/restoring configuration databases and upgrading the platform.
- **Trellix Core Services** – Set of microservices handling device communication, device authentication, device management, data upload, data storage, data aggregation as well as robust security and user management.



## Order Information

The Trellix Core (Pro, Enterprise, Virtual) platforms are preloaded with the Trellix Core Services, Trellix Admin and Trellix Lighting apps. The platforms are shipped with a Base software license which enables all features for 250 nodes (except OpenADR sold separately). All Trellix Core platforms and Trellix Basic License Addition require floor plan and energy dashboard configuration services (TRX-CONFIG) - factory commissioning not included.

Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Operator Adder License	Description			
TRX-LGT250	Trellix Basic License Addition 250 (BACnet, API, and openADR sold separately)			
BACnet Object Adder License	Description			
TRX-BAC250	BACnet License Addition 250 nodes			
API Adder License	Description			
TRX-API250	API License Addition 250 nodes			
Open ADR Adder License	Description			
TRX-OPNADR	OpenADR License (unlimited nodes)			
Trellix Energy and Graphical Floorplan Setup Services	Description			
TRX-CONFIG	Trellix Energy and Graphical Floorplan Setup Services for 250 nodes			

### Notes

1. Trellix Core platforms are shipped with a Base software license which enables all features (except OpenADR sold separately).
2. The Trellix Basic License Addition 250 includes all the features offered as part of the Trellix Lighting and Trellix Admin applications (BACnet, API, and OpenADR sold separately).
3. Additional Trellix Basic Licenses, BACnet licenses, API licenses are offered for systems larger than the Trellix Core includes.
4. The Trellix application is preloaded on Trellix Core platforms, i.e. Trellix Pro (TRX-TCPRO2), Trellix Enterprise (TRX-TCENT2) and Virtual Trellix Enterprise (TRX-TCVRT2). Please refer to the Trellix Core datasheet to learn more about the capability of each platform.
5. Trellix utilizes IPKeys Technologies™, an expert in Smart Grid communications technology and provider of an OpenADR 2.0b compliant communication VEN client. As such the OpenADR certification will be found in the OpenADR product database under IPKeys Technologies EISS 2.0.

The Trellix Lighting application includes graphical floor plan and energy dashboard. Services to configure these items MUST BE INCLUDED in Trellix Core and Operator License options for the number of nodes indicated with those products. Factory startup commissioning is available separately as with all systems.

## Product Specifications

### Key Features

**Managing the lighting system** – The Trellix Lighting 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 you 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 your floor plans. You can also quickly visual spaces with active alarms or override commands.
- The Dashboard console provides important information about how much energy is being used by the lighting system and how much the lighting control system is saving the company.

**Configure the lighting system** – The Trellix Lighting allows you to easily configure and make changes to your lighting system programming 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 users 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.
- The Systems console allows you to configure the IoT platform general settings such as time, network address and email server, manage the various interfaces, enable/disable and test Demand Response, perform system upgrades, backups and restore for Trellix system manually or at a specified time.

**Open Standard based Interfaces** – Using BACnet/IP or our REST APIs, system integrators can easily exchange data between your connected lighting system and third party systems such as Building Automation Systems or Smart Building platform hence unlocking the value of the data gathered by your lighting system. Please refer to the Trellix's Published API and BACnet/IP Datasheet for more information as well as Trellix BACnet Protocol Implementation Conformance Statement (PICS).

- The OpenADR interface that allows system integrator to easily integrate a networked WaveLinx system with a utility company's OpenADR Demand Response Automation Server (DRAS) and retrieve live power demand information from that company. Please refer to the Trellix's OpenADR Datasheet for more information.

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

- Trellix Core Pro is an introductory physical edge/on-premises machine designed for small to medium facilities with up to 20 wireless area controllers or 2,000 connected devices.
- Trellix Core Enterprise is a specialized physical edge/on-premises machine designed for medium to larger facilities with up to 500 wireless area controllers or 500,000 connected devices.
- Virtual Trellix Core Enterprise is a virtual edge/on-premises machine, leveraging VMware® technology, designed for medium to large facilities with also up to 500 wireless area controllers. Virtual Trellix Core Enterprise allows 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
- Google® Chrome 75+
- Safari 11+

**Supported Screen Resolution:** 1024 x 768 or higher

### Compatibility

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

### Warranty

- Consult website for warranty information.

## Application 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 their 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 WACs, Trellix platform assumes the roles of the system's supervisory manager, historian, gateway and security.

Trellix Lighting App is the system's supervisory software application. It 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.

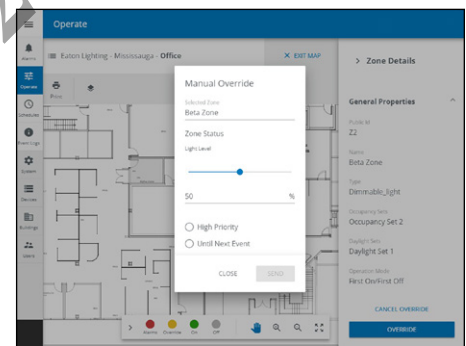
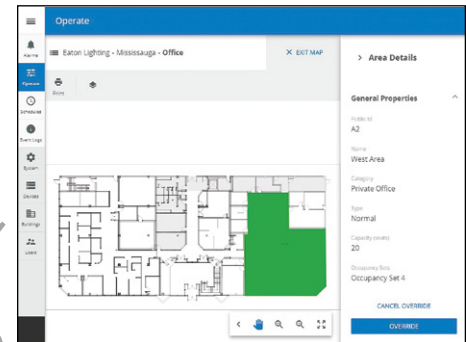
As a system gateway, Trellix IoT platform aggregates the data received from the WAC. It then handles the data exchange between the WaveLinX system and third-party systems such as Building Automation Systems, A/V systems, Shade control systems through the BACnet/IP and REST API services.

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

## Trellix Core Overview

Trellix Core is composed 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 & Applications Management service** – Manages the operating system and applications hosted on the Trellix platform.
- **Interfaces 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.

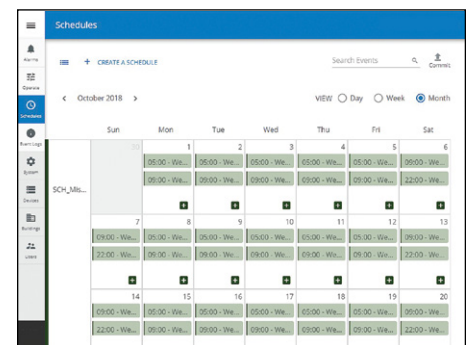


## Web Based User Interface

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 (Lighting, Admin). 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.

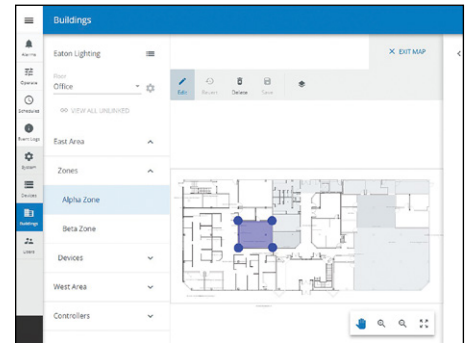
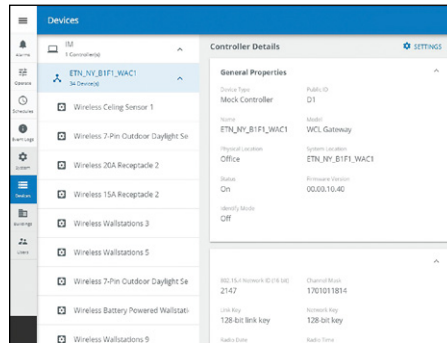
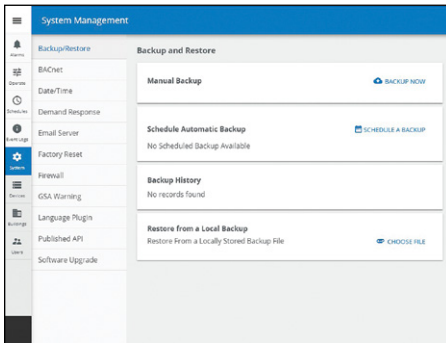


## Trellix Lighting

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

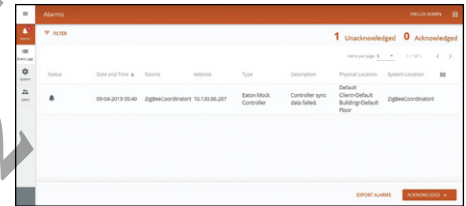
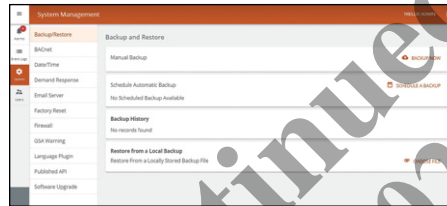
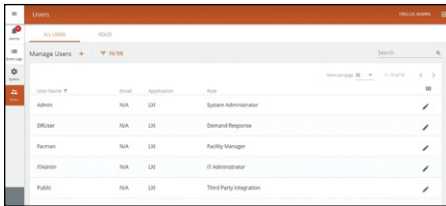
Using a toolbar, users can access the various programming and management modules. The toolbar is comprised of the following main modules:

- **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).
  - **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.
  - **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 users and system settings.
  - **Devices** – Easily discover WACs on the network and import their configuration to the Trellix platform.
  - **Building** – Configure the building hierarchy, i.e. client > Building > Floor > Areas as well as build the floor plan for each floor. The Facility Managers will use the mobile app to configure the area, i.e. group fixtures within a dimming zone, occupancy sensors within an occupancy set, daylight sensors within a daylight set as well as define scenes and wallstations' behavior.




## Trellix Admin

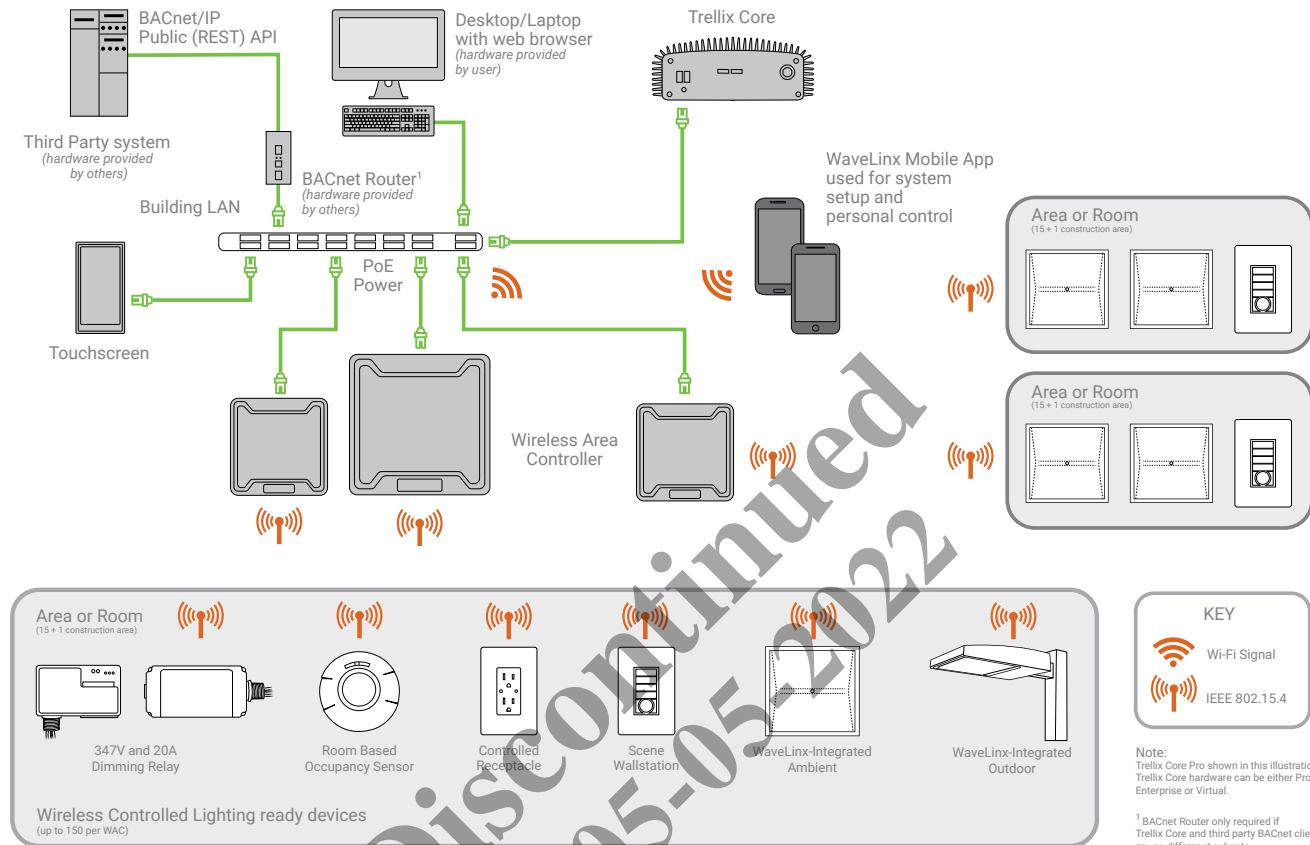
- **Alarms** – View the health of the platform, the devices connected to the platform and any notifications generated by the Trellix applications. All faults are displayed as alarms. Alarms come with troubleshooting tips that allow users to troubleshoot the fault. The alarms can be exported as a pdf report or csv output.
- **Event Logs** – View all system notifications (alarms and notifications) occurred in the past. The notifications can be exported for analysis as csv output.
- **System** – Configure the systems general settings such as time, network address and email server. They can also manage the various interfaces used by third party systems, i.e. BACnet/IP, Public API, OpenADR. They can also enable/disable and test Demand Response. Finally, they can backup/restore the Trellix Core database and upgrade the Trellix Core software and area controllers connected to it manually or at a specified time.
- **Users** - Manage users that can access the applications as well as roles with their associated permissions. Each user will have an area of responsibility, i.e. spaces that they have access to. Finally users can also create custom roles to meet their organization needs.



## Sample System Topology

This diagram shows the main components of the WaveLinX Wireless Connected Lighting (WCL) system. The WaveLinX 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 wireless network. The Trellix Core Enterprise and Wireless Area Controllers communicate with each other over the Ethernet network. Please refer to the WaveLinX Network and IT Guidance Technical Guide for more information.

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



### Control Systems

- Trellix
- WaveLinX