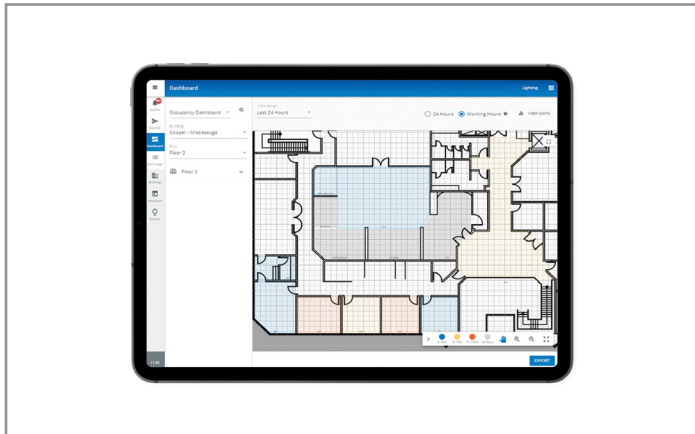


Project		Catalog #		Type	
Prepared by		Notes		Date	



WaveLinx

CORE - Lighting

Enterprise Lighting Management Application

Typical Applications

Office • Education • Healthcare • Industrial

Supported HTML 5/Javascript compatible browser:

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

Interactive Menu

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

Product Features



Compatibility



Overview

The CORE Lighting is an intuitive, web-based application that allows facility managers to remotely perform high-level lighting supervisory management tasks, with the power to configure and monitor their WaveLinx connected lighting system. CORE Lighting is hosted on WaveLinx CORE (Pro, Enterprise and Virtual) appliances.

Product Features & Benefits

- **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.
- **Central Configuration** – Perform all the WaveLinx PRO configuration tasks from WaveLinx CORE such as enabling/disabling pairing mode for a WAC, editing areas, zones, occupancy sets, daylight sets, scenes, demand response, and configuring wallstation button configurations. Multi-Area Switches and occupancy sharing require a CORE to configure and enable.
- **Floorplan** – Create and manage floorplans with areas/zones and devices using our patent-pending touch-based intuitive floorplan editor. 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.
- **Energy Dashboards** – The energy dashboard provides important information about how much energy is being used by the lighting system. The insights provided by our reporting tool helps to optimize energy usage and earn credits that ultimately helps in savings.

Order Information

The WaveLinx CORE (Pro, Enterprise, Virtual) platforms are preloaded with CORE Admin and Lighting. The WaveLinx CORE is shipped with a base software license which enables the Lighting application for up to 250 devices. After 250 devices, the customer should purchase CORE Lighting license adders. CORE Insights, BACnet/IP, API and OpenADR require a dedicate software license. Customers should purchase the appropriate software license adders for any additional features.

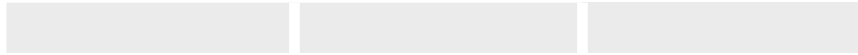
WaveLinx CORE Lighting Licenses



Catalog Number

Catalog Number	Description
TRX-LGT250	WaveLinx CORE Lighting license adder for additional 250 devices

Optional WaveLinx CORE Software Licenses



Catalog Number

Catalog Number

Catalog Number

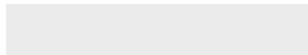
Catalog Number	Description
TRX-API	API license for unlimited devices
TRX-BACNET	BACnet License for unlimited devices
TRX-OPNADR	OpenADR Interface license for unlimited devices per site

Notes

Please refer to the respective datasheets to learn about the other features.

WaveLinx CORE Commissioning Services

The CORE Lighting application includes graphical floor plan and energy dashboard. Services to configure these items MUST BE INCLUDED in WaveLinx CORE and WaveLinx Basic License Addition 250 options for the number of nodes indicated with those products.



Catalog Number

Catalog Number	Description
TRX-CONFIG	Configuration Services - for WaveLinx CORE Energy and Graphical Floorplan, for 250 devices ¹

Notes

1. Device placement only available for PRO (wireless), CAT (wired) and WaveLinx Panel devices.

A device is an input/output wireless/wired device that is connected to the controller.

PRO Wireless, CAT wired and Panel Devices

Each PRO, CAT and Panel device listed counts as one: (integrated sensors, ceiling sensors, outdoor sensors, wall stations, switch packs, receptacles, wireless drivers).

Note: WaveLinx PRO Touchscreen and WaveLinx Area Hub are not counted as a device.

WaveLinx Wired

DAC & Field Relay Devices: Each device counts as one.

SCMH: 12 devices (A single SCMH counts as 12 devices)

SCMR: 0 devices (see below)

Note: As WaveLinx Wired does not support device level monitoring, the device count is limited to output devices only listed above, i.e. wallstations and sensors are not included in the device count. SCMR does not contribute to device count.

Product Specifications

Key Features

Managing the lighting system – From one central location, the CORE 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 data gathered by the lighting system. You can better understand how much the lighting control system is saving the company.
- 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 CORE Lighting allows you to easily configure and manage your connected WaveLinx wired and Pro wireless 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, WaveLinx CORE allows you to easily manage users and their access using CORE comprehensive user management console which allow you to control user roles, access to the various applications hosted on WaveLinx CORE and access to the spaces being controlled by WaveLinx CORE. You can also create custom roles using pre-defined permissions.
- Multi-Area Switches and occupancy sharing - Configured in CORE to allow wallstations, CCI and Occupancy to share data across and between WACs. Simple and powerful CORE UI enables seamless cross - WAC configurations.

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

- WaveLinx CORE Pro is an introductory physical edge/on-premises appliance designed for small to medium facilities.
- WaveLinx CORE Enterprise is a specialized physical edge/on-premises machine designed for medium to large facilities.
- WaveLinx CORE Virtual 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 WaveLinx CORE Pro, Enterprise and Virtual datasheets to learn more about our WaveLinx 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

Software Version: 16

Supported HTML 5/Javascript compatible browser:

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

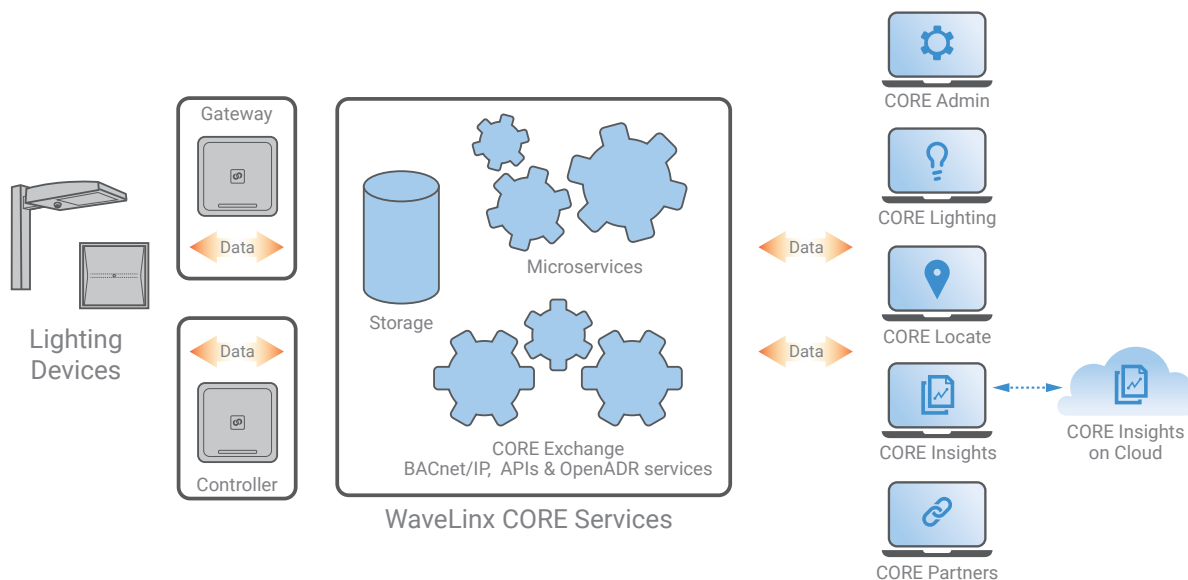
Supported Screen Resolution: 1024 x 768 or higher

Compatibility

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

Warranty

Five-year warranty standard



WaveLinx CORE Smart Spaces Overview

WaveLinx CORE is an on-premises smart spaces 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 CORE apps and partners apps.

The platform manages the trellis 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 WaveLinx CORE Services, a set of microservices required for fully functional smart spaces solutions, CORE Exchange, a set of interfaces to allow data exchange with third party apps and CORE Apps, a set of Cooper Lighting Solutions developed applications designed to serve the Connected Spaces.

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

As a supervisory manager, WaveLinx CORE 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 CORE Lighting application.

As a historian, WaveLinx CORE 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 CORE Dashboards.

As a system gateway, WaveLinx CORE aggregates the data received from the connected lighting system. It then handles the data exchange between the WaveLinx PRO 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, WaveLinx CORE 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.

WaveLinx CORE Services Overview

WaveLinx CORE Services consist of:

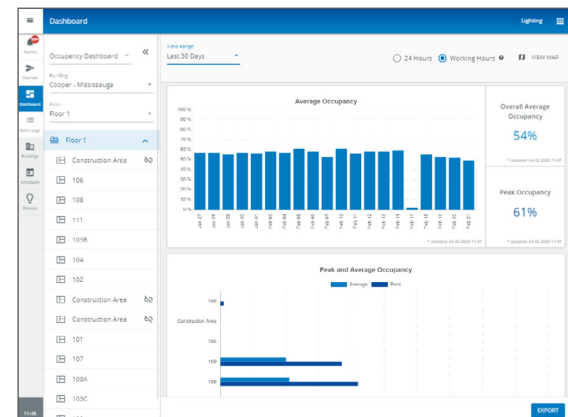
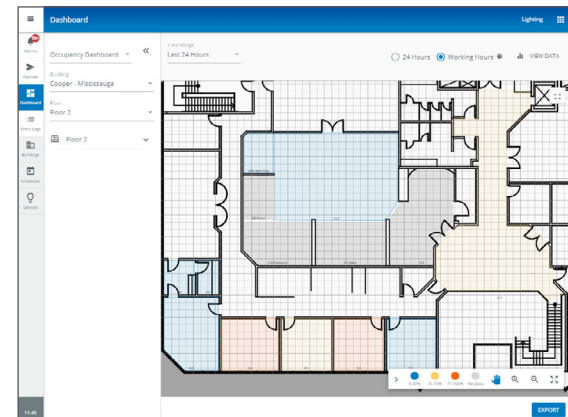
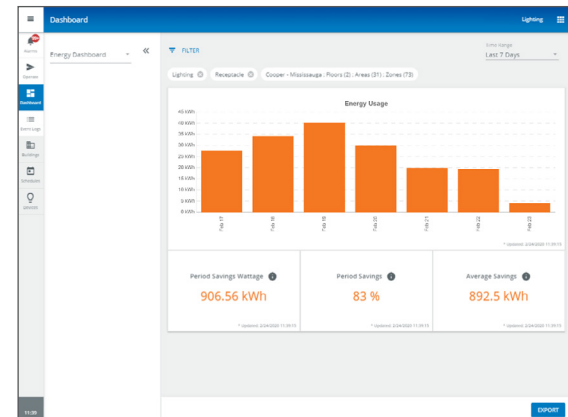
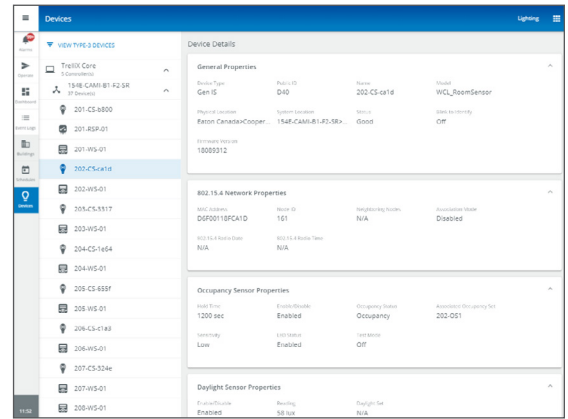
- **Connectivity service** – Manages data exchange with WaveLinx area controllers and gateways using Cooper Lighting Solutions API.
- **Message Routing service** – Manages the routing of the received data to the other WaveLinx CORE microservices.
- **Data Management service** – Manages the real-time 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 WaveLinx CORE 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 WaveLinx CORE platform.
- **Interfaces service** – Manages the various interfaces, REST API and BACnet/IP, OpenADR used for data exchange between the WaveLinx PRO system (energy, occupancy, daylight, location) and building automation systems, smart building and Cloud based IoT platforms.

Web Based User Interface

WaveLinx CORE 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 WaveLinx CORE, and expose the data to third party systems.

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

The **CORE 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.



WaveLinx CORE Lighting

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

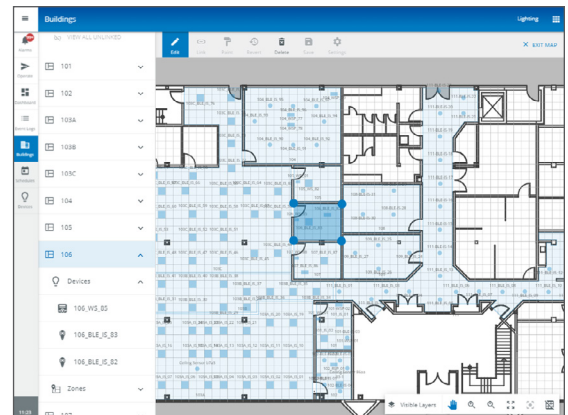
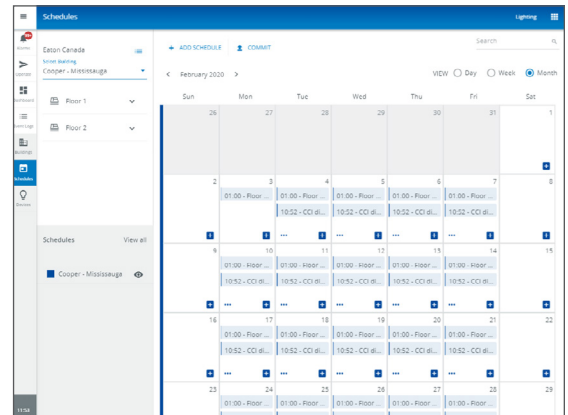
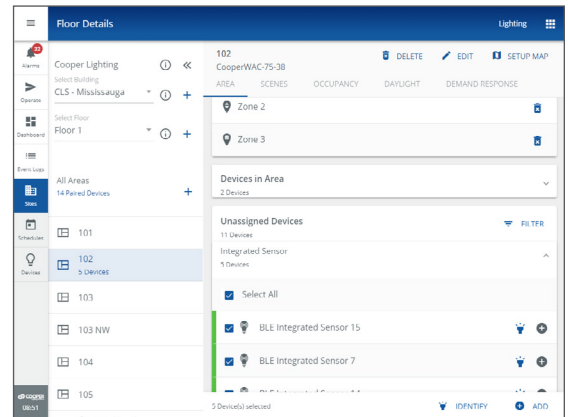
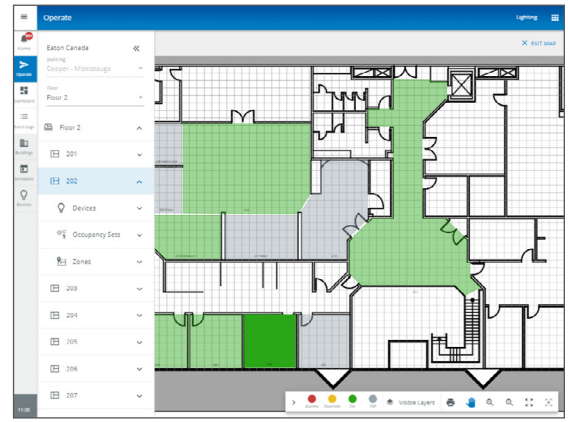
Using a toolbar, users can access the various programming and management modules. The toolbar is comprised of the following main modules:

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 PRO 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.
- **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 Controller (WAC), or WaveLinx Ethernet Gateways (EG2), on the network and import their configuration to the WaveLinx CORE platform.
- **Sites** – Configure the building hierarchy, i.e. client > Building > Floor > Areas as well as build the floor plan for each floor. Using WaveLinx CORE, 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 WaveLinx CORE 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 WaveLinx CORE Lighting application and pushed to the WaveLinx PRO wireless or WaveLinx wired system respectively.
- **Partitioned Area** – The WaveLinx Area Controller version 14.1.x.x and higher allows creation of two partitioned areas per WaveLinx Area Controller. A partitioned area is a space within the facility that may have moveable divider walls to allow creation of one large space or several smaller spaces called sub areas. Devices in the space may need to operate independently for a single sub area when divider walls are closed or may need to operate a combination of sub areas when walls are opened




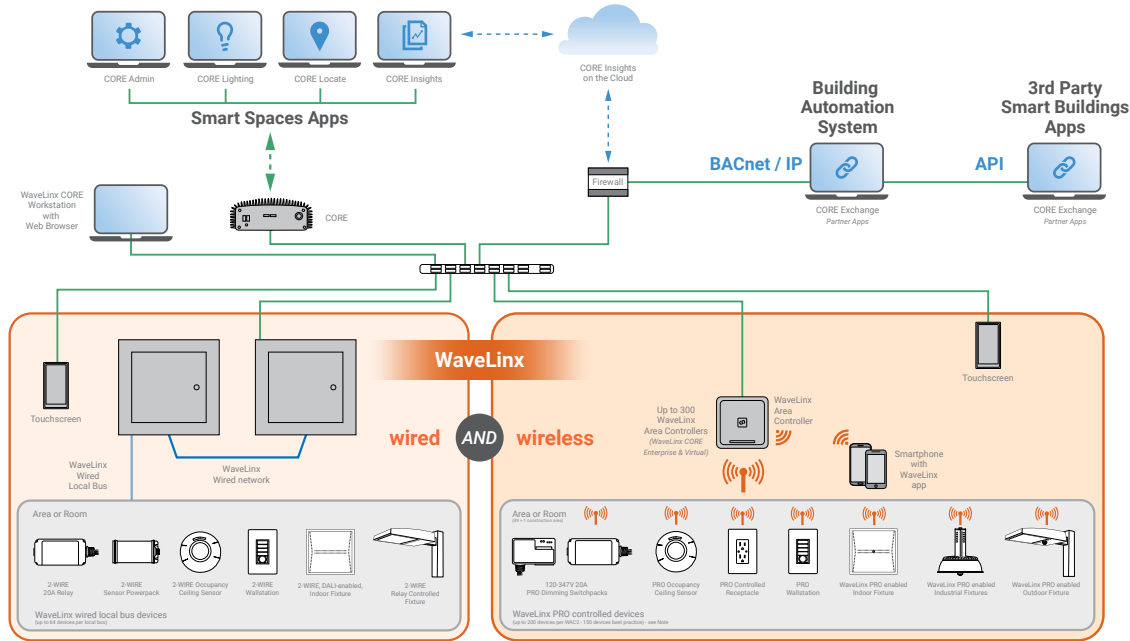
Sample System Topology:

This diagram shows the main components of the WaveLinx wired and PRO wireless connected lighting system.

The **WaveLinx PRO wireless system** communicates using wireless mesh technology based on the IEEE 802.15.4 standard. A PoE LAN connection for each WaveLinx 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 WaveLinx CORE over the Ethernet network. Please refer to the WaveLinx PRO Wireless Network and IT Guidance Technical Guide and WaveLinx Wired Network and IT Guidance Technical Guide for more information.

 [View WaveLinx PRO Network and IT Guidance Technical Guide](#)



Note: Performance based on current generation WaveLinx Area Controller (WAC2)

	WaveLinx wired	WaveLinx PRO/CAT/Panel
WaveLinx CORE		
Connects to WaveLinx CORE (Pro, Enterprise, Virtual)	●	●
# of WAC or EG2-SNA / # of devices per WaveLinx CORE Pro	2 / 3000	20 / 3000
# of WAC or EG2-SNA / # of devices per WaveLinx CORE Enterprise	10 / 32,500*	300 / 32,500*
# of WAC or EG2-SNA / # of devices per WaveLinx CORE Virtual Enterprise	10 / 32,500*	300 / 32,500*
Connecting device	EG2-SNA	WAC2-POE
CORE Lighting		
Alarms	○	●
Events	●	●
Operate (floorplan control)	●	●
Operate - area control	●	●
Operate - zone control	●	●
Operate - device control	●	●
Scheduling	○	●
Energy Dashboard	●	●
Occupancy Dashboard	●	●
CORE Exchange		
BACnet/IP	○	10,000 objects with WaveLinx CORE Pro up to 30,000 with Enterprise/Virtual
Public (REST) API	○	●
OpenADR	●	●
Demand Response	●	●
CORE Admin		
Manage Users	●	●
Manage roles	●	●
Manage clients	●	●
Manage licenses	●	●
System settings (backup/restore, network etc)	●	●
CORE Insights		
Occupancy Trends and Comparison	●	●
Average Occupancy	●	●
Occupancy on Floor Plan	●	●
Generate and Export Reports to pdf	●	●
Hierarchical Navigation	●	●
Quick Search	●	●
Department Filter	●	●
Historical View	●	●
Popular Spaces	●	●

* For larger number of gateways and devices, please contact Cooper Lighting Solutions Sales representatives. Recommend designing the system at 70-80% of maximum capacity. Specifications based on WAC2-POE. The number of gateways and devices mentioned above are the total for a single system or the combination (Wired + Wireless) that can be used with a server.
● = All features ○ = Subset of features

Control Systems

- WaveLinx
- Greengate