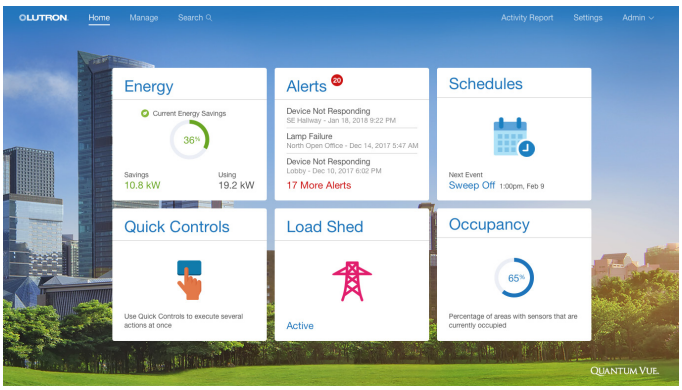
## System Overview

The Quantum Total Light Management Suite is a facility management solution that creates a flexible, productive, and energy-efficient environment for a room, floor, building, or campus. The system brings switching, dimming, motorized window shades, digital ballasts, digital LED drivers, and smart sensors together under one software umbrella. Quantum is ideal for new construction or retrofit applications and can easily scale from a single room to an entire campus.

Quantum Vue User Interface




## Quantum License Model Numbers

These licenses and the features and capabilities discussed in this specification submittal pertain to Quantum System Version 3.0 and above.

- A Quantum license must be purchased for each Quantum processor in the system.
- Quantum licenses do not include start-up labor costs.
- Available licenses:

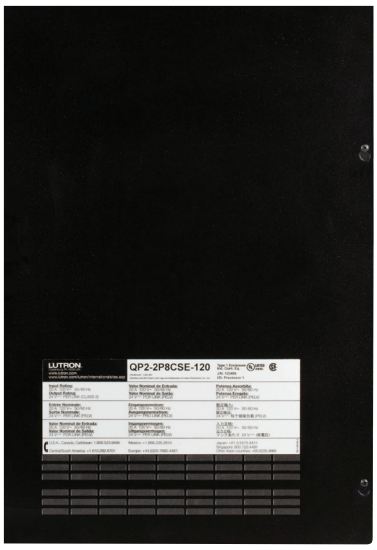
**QSW-QVS-L**: Lighting Control Only
**QSW-QVS-S**: Shade Control Only
**QSW-QVS-LS**: Lighting and Shade Control

## Compatible Lighting Hubs

The processors are mounted inside the lighting hubs. The processor licenses are compatible with the following Quantum lighting hubs (to view online, click on the individual model numbers below):

- **QP2-xPxCSE-120**
- **QP2-xPxCSE-240**
- **QP2-xP0CSE-230**
- **QP3-1PL-100-240**

Quantum Lighting Hubs







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# Features

## Navigation

- Navigate through buildings, floors, and areas using customized graphical floor plans

## User Access

- Username and password required for user access
- Supports multiple user accounts with configurable permission levels per user
- Supports up to 20 concurrent users and up to 10,000 user accounts

## System Adjustments

- Group areas together by type and make changes (such as high-end tuning) to all areas in a group at one time[1]
- Create quick controls to allow for simple activation of common lighting/shading preset settings[1]

## Lighting Control[2]

- Monitor current status of areas, scenes, and zones
- Activate lighting scenes
- Adjust lighting zone levels
- Modify lighting zone levels in area scenes[3]
- Rename areas, scenes, and zones
- Adjust daylight harvesting functionality
- Tune and trim both high-end and low-end[1] output of lights
- Configure and enable load shedding to respond to demand response events[1]
- Control individual fixtures on the graphical floorplan[4]
- Control both the intensity and color of tunable white fixtures[5]

## Shade Control[6]

- Monitor current status of shade groups and motors
- Activate shade presets
- Adjust shade motor levels
- Modify shade motor levels in shade group presets
- Rename shade groups and presets
- Adjust Hyperion solar adaptive shade functionality
- Remotely adjust shade open/close limits[1]

## Occupancy

- View the real-time occupancy status of areas that contain occupancy sensors
- Modify area occupancy functionality
- Record/analyze occupancy sensor data and view trends using space utilization reports[7]

## Scheduling

- Create and edit scheduled events
- Events can be scheduled to occur at fixed times or relative to sunrise/sunset and can be programmed to occur once or to be reoccurring

## Energy Management[8]

- View energy and power usage graphs by system, floor, or area

## Reports

- System activity
- Diagnostic
- Energy savings by strategy[8]
- Energy and power usage[8]

## Alerts

- Locate system alerts on the graphical floor plan
- Manage lamp, ballast, and driver failures of digitally controlled fixtures
- Manage communication failures to digital devices in the system
- Receive low-disk space alerts and manage reporting service outages[1]
- Configure which alerts are generated as well as the frequency/timing of alert messages[1]

1 Available only with Quantum System Version 3.1 and above.
2 Quantum Vue cannot control non-lighting zones or DMX 3-channel lighting zones.
3 For areas controlled by a GRAFIK Eye QS system, scene changes can be made only by using the GRAFIK Eye QS device; Quantum Vue cannot modify scenes in areas controlled by a GRAFIK Eye QS system.
4 Requires the Fixtures on the Floorplan software license (model number QSW-RPT-FOFP). For more information, see www.lutron.com/TechnicalDocumentLibrary/Fixtures_on_the_Floorplan_3691022.pdf
5 Available with Quantum system version 3.3 or later. Requires fixtures with built-in CCT control. For more details, see www.lutron.com/en-US/Education-Training/Pages/LCE/ColorTuning.aspx
6 For Lutron QS Wired Roller Shades only.
7 Requires the Space Utilization software license (model number QSW-RPT-SU) and the Quantum Reporting software license (model number QSW-RPT-PP-A).
8 Energy features in Quantum Vue require Quantum reporting software licenses per processor (model number QSW-RPT-PP-A).



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## System Requirements

- The Quantum System Software Suite version 3.0 or later is required for Quantum Vue.
- Access to the Quantum Vue software from multiple devices (e.g., laptops, desktops, tablets) on the network requires a Windows® physical or virtual server called the Q-Manager. See the following specifications for Q-Manager server requirements (to view online, click on the individual model numbers below):
  - **QS-A-CMP-S-0**: Lutron provided standard server
  - **QS-A-CMP-R-0**: Lutron provided high reliability server
  - **QS-A-CMP-SBO-0**: Customer provided server
  - **QS-A-CMP-VSBO-0**: Customer provided virtual server
- A Windows® physical or virtual server-based Q-Manager is recommended for all Quantum systems to maximize all of the features of the system. Alternatively, the Q-Manager can be a laptop or desktop with the specified limitations. If using a laptop or desktop PC instead of a Windows® server to run the Quantum System Software Suite, certain features will not be available:
  - Quantum Vue will not be available unless the PC is connected to the system, powered, and logged in.
  - Historical System Activity Information will not be stored over time when the PC is not powered and connected to the system.
  - Power and Energy Data will not be stored over time so power and energy reports may not be accurate.
  - Alerts cannot be automatically emailed without a server.

  See the following specifications for Q-Manager laptop and desktop requirements (to view online, click on the individual model numbers below):
  - **QS-A-CMP-D-0**: Lutron provided desktop
  - **QS-A-CMP-L-0**: Lutron provided laptop
  - **QS-A-CMP-DBO-0**: Customer provided desktop
  - **QS-A-CMP-LBO-0**: Customer provided laptop
- A Q-Manager Windows® computer running the Quantum System Software Suite must be able to communicate with the Quantum processors over an Ethernet network. See the following specifications for network requirements (to view online, click on the individual model numbers below):
  - **QS-EO**: Indicates that the Quantum processors and server system will be interconnected using the building network
  - **QS-LO**: Indicates that the Quantum processors and server system will be interconnected using an isolated network dedicated to the Quantum system
- See the Quantum IT Implementation guide for all Quantum computer and networking requirements and best practices at www.lutron.com/ITGuide



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## Optional Features

- Additional software licenses are required to enable specific Quantum features (to view online, click on the individual model numbers below):
  - **QSW-RPT-PP-A**: Quantum reporting licenses enable the processors in the Quantum system to store historical information on the Q-Manager server so that the information can be displayed in Quantum Vue. The information stored includes power, energy, runtime hours, system activity, and alerts
  - **QSW-RPT-FOFP**: The Fixtures on the Floorplan software license enables individual Lutron addressable fixture/switchleg control using fixture icons within the Quantum Vue software
  - **QSW-RPT-SU**: The Space Utilization license enables Quantum Vue to record/analyze occupancy sensor data and report on occupancy trends within the system[1]
  - **QSW-BAC-PP-A**: Quantum BACnet licenses enable the processors in the Quantum system to integrate with building management systems using BACnet IP
  - **QSW-MC-PS-A**: Q-Control+ is a software user license that allows the user to control, monitor, and tweak the scene levels of lights and shades in the Quantum system using an *iPad* app over the building network. Q-Control+ is only available when a single instance of Quantum is installed on a server. If more than one instance is installed on a server, Q-Control+ will work with the first instance only
  - **QSW-DEM-PP-A**: DALI® Emergency is a software license that enables the processors of a Quantum system to monitor, manage, and schedule DALI® emergency device testing for compatible DALI® emergency devices connected to Energi Savr Node modules in the Quantum system
  - **ENTERPRISE-VUE**: Allows multiple Quantum systems to be accessed through a single Quantum Vue web page.
  - **QSW-API**: Enables integration to a Quantum system using a RESTful Web Service.
- The Q-Manager does not require a connection to the Internet in order to use Quantum Vue.
- To more quickly respond to service requests, Lutron highly recommends configuring remote access to the Q-Manager. This will allow a Lutron service engineer to readily access the system. Contact your Lutron service team for more information on how to configure remote access.
- All system programming such as timeclocks, keypad button presses, occupancy sensor control, daylight sensor control, and integration will function without a Quantum Server or PC connected to the system. Quantum Vue and Q-Reporting will not function without a Quantum Server or PC connected to the system.

[1] Requires a server.



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## Additional System Components

- Q-Design is a Windows® application that is part of the Quantum System Software Suite. The application is used by the Lutron service team for startup and to make major hardware additions and reconfigurations to a Quantum system. This application runs locally on the Quantum server.

## Floor Plan Requirements

- Lutron requires one electronic drawing per floor of the system (provided by the customer) 8 weeks prior to software installation to create the Quantum Vue navigation images. Drawings are required to be in a CAD format such as .dxf or .dwg. Adobe .pdf files are acceptable but may require additional time to remove unnecessary information. If additional time is required, additional fees may be incurred. **The quality of the images in the Quantum Vue software is dependant on the quality of the images Lutron receives. FF&E (Fixtures, Floorplans and Equipment) style drawings are recommended as they are generally cleaner and will deliver a more aesthetically pleasing result.** If the drawings are provided after the deadline, additional fees will apply for the additional services needed to add the drawings into the system at a later time. An example of a Quantum Vue navigation image using the background layout is shown in Figure 1 (on the following page).
- Lutron may configure the navigation images using the perimeter layout (see Figure 2 on the following page) if requested or if the background images provided contain too much information or have poor resolution.
- Lutron will provide a default layout for each floor of the system if drawings are not made available. An example of a default layout is shown in Figure 3 (on the following page).
- Lutron recommends providing one drawing per floor. Drawings sets provided that have multiple drawings per floor, will not be combined unless requested. Additional fees and time will be required to combine drawings. CAD files (.dxf or .dwg files) are required to combine drawings.
- Lutron requires contact information of an authorized owner representative to make decisions regarding the design and functionality of the images shown in the Quantum Vue software. This contact may be used to answer questions regarding the software appearance.
- Customizations or modifications to the layout or appearance of the floorplan are subject to approval by Lutron. Additional fees and time will apply.



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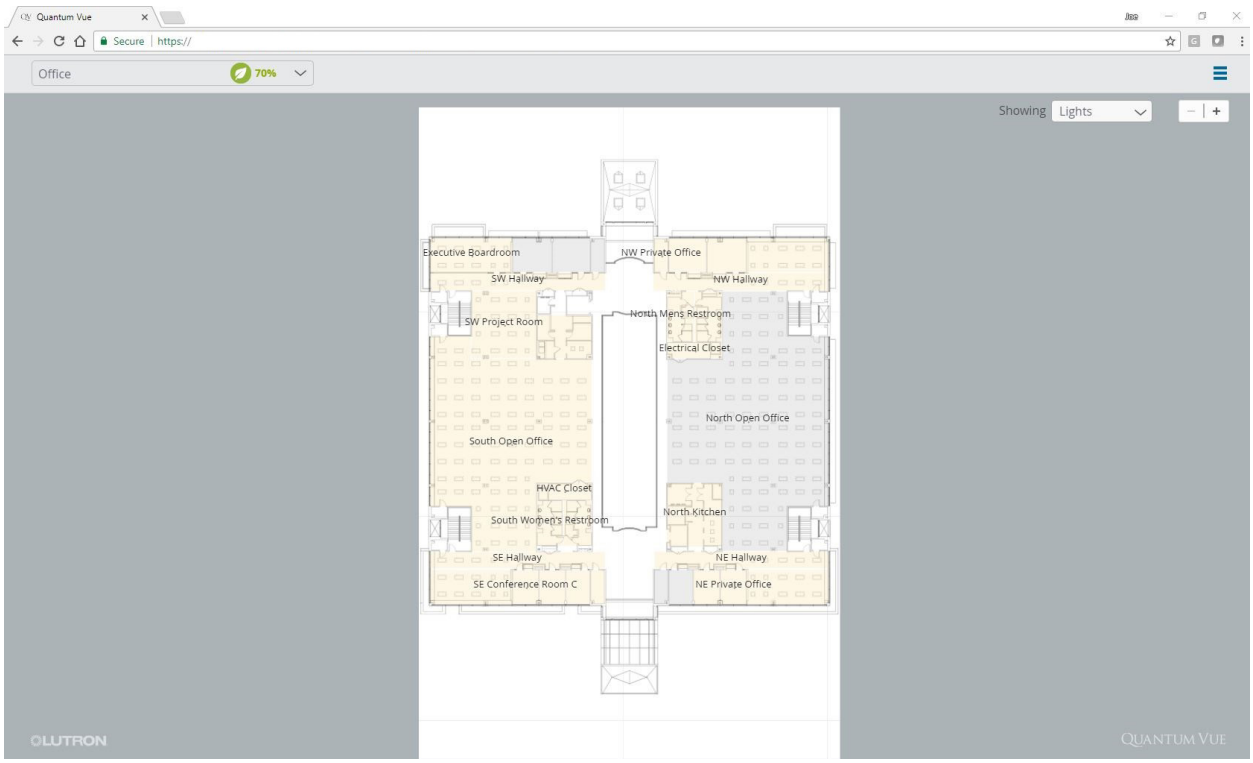
## Figure 1 - Quantum Vue Background Layout




This is an example of a Quantum Vue floor plan that was created using customer supplied FF&E (Fixtures, Furniture and Equipment) drawings in a CAD format (such as .dwg or .dxf).





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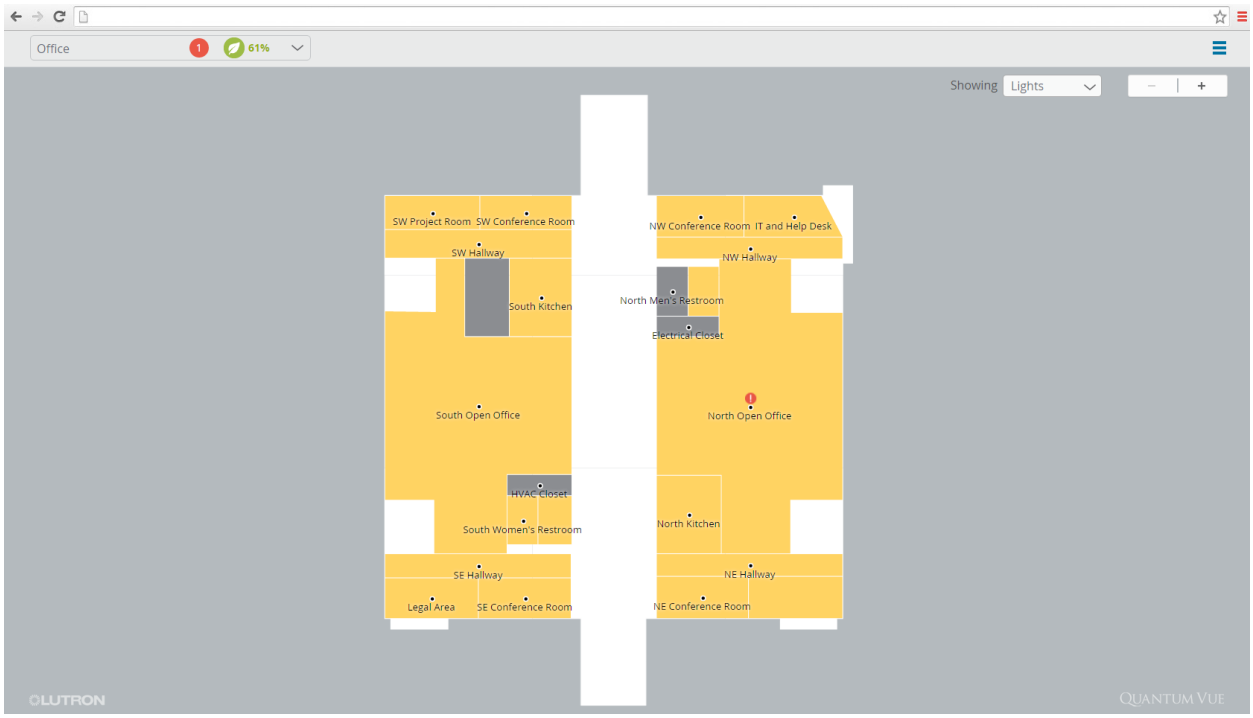
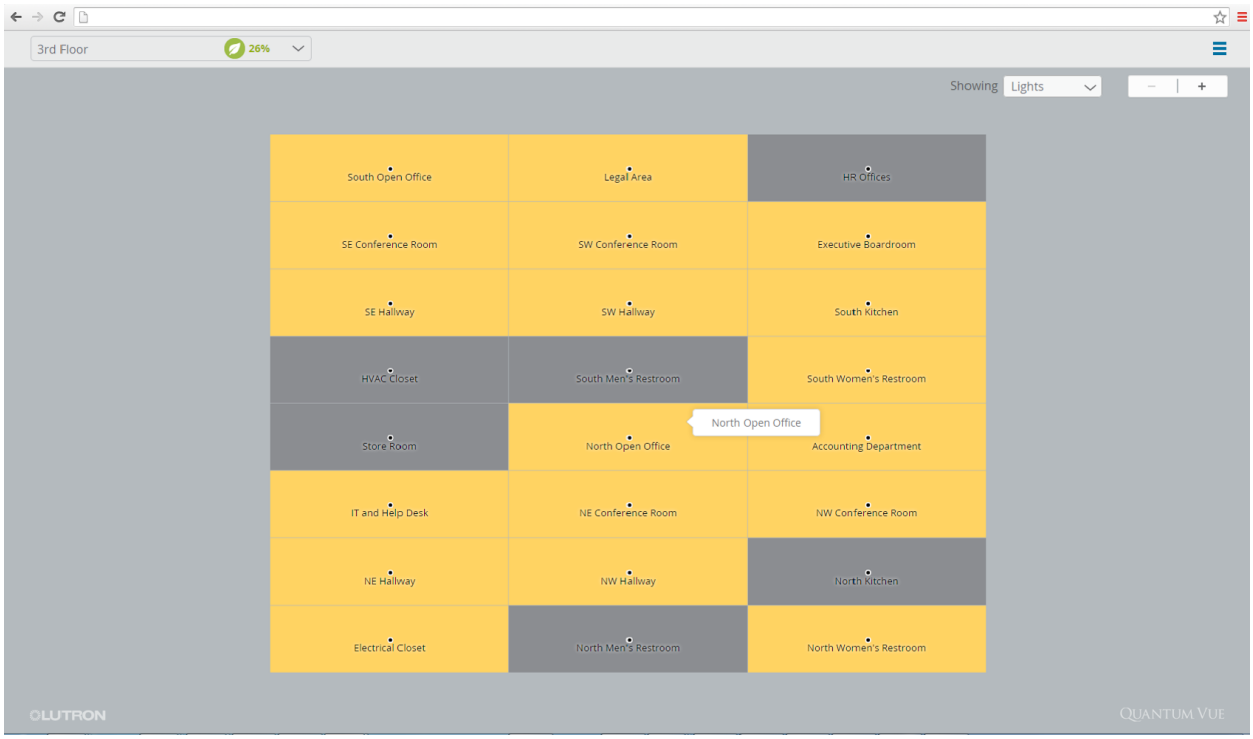
## Figure 2 - Quantum Vue Perimeter Layout




This is an example of a Quantum Vue floor plan that was created using customer supplied as-built drawings in an uneditable format (such as .pdf). The drawings contained information that cluttered the drawing and made it less intuitive so an outline of the image was used.

## Figure 3 - Quantum Vue Default Layout




This is an example of a Quantum Vue floor plan that was created with no customer supplied drawings. Since no drawings were available, the software generated a default grid containing one square for each area.



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