

Legrand OCP 2U Power Shelf - SHF3-3316G2R

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Power Shelf

SHF3-3316G2R



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Safety and Warnings

	WARNING: ELECTRIC SHOCK HAZARD. To reduce the risk of electric shock, disconnect all power cords at the safety disconnect to completely remove power.	AVERTISSEMENT : RISQUE D'ÉLECTROCUTION. Afin de réduire le risque de choc électrique, débranchez tous les cordons d'alimentation sur le dispositif de sûreté afin de couper complètement le courant.	WARNUNG: STROMSCHLAGGEFAHR! Um Stromschläge zu vermeiden, trennen Sie alle Netzkabel vom Stromnetz, um das System stromlos zu machen.
	WARNING: ELECTRIC SHOCK HAZARD. The mains inlet and interconnecting cable plug are not rated for current interruption or disconnection under load. Always disconnect the power supply cord before servicing to avoid electrical shock.	AVERTISSEMENT : RISQUE D'ÉLECTROCUTION. La fiche secteur et la fiche du câble de raccordement ne sont pas prévues pour sectionner ou interrompre le courant lorsque le produit est sous tension. Débranchez toujours le cordon d'alimentation avant de réaliser toute opération d'entretien afin d'éviter une électrocution.	WARNUNG: STROMSCHLAGGEFAHR! Die Stromeingangsbuchse und der Verbindungsstecker sind nicht für eine Stromunterbrechung beziehungsweise eine Netztrennung unter Last geeignet. Trennen Sie vor der Durchführung von Reparatur- und Wartungsarbeiten stets das Netzkabel vom Stromnetz, um Stromschläge zu vermeiden.
	Installation of this product should only be performed by a person who has knowledge and experience with electric power.	L'installation de ce produit ne doit être réalisée que par une personne qui possède des compétences et de l'expérience dans le domaine de l'électricité.	Dieses Produkt darf nur von Personen aufgestellt und installiert werden, die ausreichende Kenntnisse und Erfahrung mit elektrischem Strom haben.

	Only for installation and use in a Restricted Access Location in accordance with the following installation and use instructions. This equipment should only be installed by trained personnel.	Destiné à l'installation et l'utilisation dans le cadre de Restricted Access Location selon les instructions d'installation et d'utilisation. Cet équipement est uniquement destiné à être installé par personnel qualifié.	Nur für Installation und Gebrauch in eingeschränkten Betriebszonen gemäß der folgenden Installations- und Gebrauchsanweisungen. Dieses Gerät ist nur für den Einbau durch Personal vorgesehen.
 	WARNING: Only use this product to power information technology equipment that has a UL/ IEC 62368-1 or equivalent rating. Attempting to power non-rated devices may result in electric shock, fire, personal injury, and death.	AVERTISSEMENT : n'utilisez ce produit que pour alimenter des appareils informatiques conformes à la norme UL/CEI 62368-1 ou une norme équivalente. En essayant d'alimenter des appareils non conformes à cette norme, vous vous exposez à des risques d'électrocution et de blessures corporelles pouvant être mortelles.	WARNUNG: Sie dürfen dieses Produkt nur zur Stromversorgung von Geräten benutzen, die gemäß UL/IEC 62368-1 oder einem äquivalenten Prüfsiegel zertifiziert sind. Wenn Sie nicht zertifizierte Geräte anschließen, können Stromschläge, Verletzungen oder Tod die Folge sein.
 	WARNING: Connect this product to an AC power source that is current limited by a suitably rated fuse or circuit breaker in accordance with national and local electrical codes. Operating this product without proper current limiting may result in electric shock, fire, personal injury, and death.	AVERTISSEMENT : branchez ce produit sur une source d'alimentation secteur dont le courant est limité par un fusible ou un disjoncteur dont le courant d'emploi assigné est adapté conformément aux normes électriques locales et nationales. L'utilisation de ce produit sans dispositif de limitation du courant peut provoquer une électrocution, un incendie ou des blessures corporelles pouvant entraîner la mort.	WARNING: Das Gerät darf nur an einen elektrischen Stromkreis angeschlossen werden, der mit einer Schmelzsicherung oder einem Sicherungsautomaten gemäß der geltenden elektrotechnischen Sicherheitsbestimmungen ausgestattet ist. Wenn Sie das Produkt an einem nicht abgesicherten Stromkreis betreiben, besteht die Gefahr von Stromschlägen, Brand und Verletzungen sowie Lebensgefahr.
 	WARNING: Connect this product to an AC power source whose voltage is within the range specified on the product's nameplate. Operating this product outside the nameplate voltage range may result in electric shock, fire, personal injury, and death.	AVERTISSEMENT : branchez ce produit sur une source d'alimentation secteur dont la tension est située dans la plage indiquée sur la plaque signalétique du produit. L'utilisation de ce produit en dehors de la plage de tension indiquée sur la plaque signalétique peut provoquer une électrocution, un incendie ou des blessures corporelles pouvant entraîner la mort.	WARNING: Schließen Sie das Produkt nur an eine Wechselstromsteckdose an, die eine Spannung gemäß der Angaben auf dem Typenschild des Gerätes liefert. Wenn Sie das Produkt außerhalb des auf dem Typenschild angegebenen Spannungsbereichs betreiben, besteht die Gefahr von Stromschlägen, Brand und Verletzungen sowie Lebensgefahr.
 	WARNING: Always disconnect the power supply cords before servicing to avoid electrical shock.	ATTENTION! Toujours débrancher les cordons d'alimentation avant de l'ouverture pour éviter un choc électrique.	ACHTUNG! Trennen Sie das Netzkabel vom Stromnetz, bevor Sie Wartungsarbeiten durchführen, um Stromschläge zu vermeiden.

  	WARNING: Connect this product to a protective earth ground. Never use a "ground lift adapter" between the product's plug and the receptacle. Failure to connect to a protective earth ground may result in electric shock, fire, personal injury, and death.	AVERTISSEMENT : veuillez raccorder ce produit à la terre. N'utilisez jamais une barrette de coupure de terre entre la fiche du produit et la prise de courant. Si vous omettez de relier le produit à la terre, vous vous exposez à un risque d'électrocution, d'incendie et de blessures corporelles pouvant entraîner la mort.	WARNING: Dieses Gerät darf nur an eine Steckdose mit Erdleiter angeschlossen werden. Verwenden Sie keine Adapterstecker ohne Erdleiter, wenn Sie das Produkt mit dem Stromnetz verbinden. Wenn Sie das Gerät nicht ordnungsgemäß mit einer Steckdose mit Erdleiter verbinden, besteht die Gefahr von Stromschlägen, Brand und Verletzungen sowie Lebensgefahr.
 	WARNING: Use this product in a dry location. Failure to use this product in a dry location may result in electric shock, personal injury, and death.	AVERTISSEMENT : veuillez utiliser ce produit dans un endroit sec. La non-prise en compte de cet avertissement peut entraîner un risque d'électrocution et de blessures corporelles pouvant être mortelles.	WARNING: Dieses Produkt darf nur an trockenen Standorten betrieben werden. Anderenfalls können Stromschläge, Verletzungen oder Tod die Folge sein.
 	WARNING: With the exception of the controller module and the power supplies, this product contains no user serviceable parts. Do not open, alter, or disassemble this product. All servicing must be performed by qualified personnel. Disconnect power before servicing this product. Failure to comply with this warning may result in electric shock, personal injury, and death.	AVERTISSEMENT : à l'exception du module du contrôleur, le produit ne comprend aucune pièce réparable par l'utilisateur. Évitez d'ouvrir, de modifier ou de désassembler le produit. Toutes les opérations d'entretien doivent être effectuées par des personnes qualifiées. Débranchez le courant avant de procéder à l'entretien de ce produit. La non-prise en compte de cet avertissement peut entraîner un risque d'électrocution et de blessures corporelles pouvant être mortelles.	WARNING: Mit Ausnahme des Steuermoduls enthält dieses Produkt keine durch den Benutzer zu wartenden Bauteile. Versuchen Sie nicht, das Produkt zu öffnen, umzubauen oder auseinander zu bauen. Wartungsarbeiten dürfen nur durch qualifizierte Techniker durchgeführt werden. Trennen Sie das Gerät vor der Durchführung von Wartungsarbeiten vom Stromnetz. Anderenfalls können Stromschläge, Verletzungen oder Tod die Folge sein.
	This equipment is designed to be installed on a dedicated circuit. The power supply cord shall be a minimum of 1.5m (4.9ft) and a maximum of 4.5m (15ft). If using an extension power cord, the total length shall also be no more than the maximum allowed. The plug is considered the disconnect device and must be easily accessible.	Cet équipement a été conçu pour être installé que un circuit dédié. Le cordon d'alimentation doit être d'au moins 1,5M et un maximum de 4,5m. Si vous utilisez un cordon de rallonge, la longueur totale est également plus que le maximum autorise. La prise est considérée comme un dispositif de coupure et doit être facilement accessible.	Die Geräte sind für eine Installation an einer fest zugeordneten Leitung ausgelegt. Die Stromzuleitung hat eine Mindestlänge von 1,5m, und höchstens 4,5m. Bei Verwendung eines Verlängerungskabels darf die zulässige Gesamtlänge ebenfalls nicht überschritten werden. Der Stecker dient zur Trennung vom Netz und muss einfach erreichbar sein.

	Products rated for 240/415VAC may be fitted with a plug that is rated for a higher voltage. Caution must be taken to assure that the rating of the unit and the supply voltage match.	Les produits prévus pour 240/415VAC peut être équipé d'un bouchon qui est conçu pour une tension plus élevée. Des précautions doivent être prises pour assurer que la cote de l'unité et la tension d'alimentation correspond.	Produkte, die für 240/415V Wechselstrom zugelassen sind, können mit einem Stecker, der für eine höhere Spannung zugelassen ist, ausgestattet sein. Vorsicht ist geboten, um sicherzustellen, dass die erlaubten Betriebswerte des Gerätes und der Versorgungsspannung zueinander passen.
	Installation Orientation: Horizontal units are designed to be installed in horizontal orientation.	Installation Orientation: Les unités horizontales sont conçues pour être installées dans une orientation horizontale.	Installationsausrichtung: "Horizontal" Geräte sind zur horizontaler Installation vorgesehen.
	Do not block venting holes when installing this product. Allow for maximum airflow at all times.	Ne bloquez pas les orifices d'aération lors de l'installation de ce produit. Permettre une circulation d'air maximale à tout moment.	Achten Sie darauf, dass bei der Installation dieses Produkts keine Belüftungslöcher blockiert werden. Stellen Sie zu jeder Zeit eine maximale Luftzirkulation sicher.
	This product is designed to be used within an electronic equipment rack. The metal case of this product is electrically bonded to the line cord ground wire. A threaded grounding point on the case may be used as an additional means of protectively grounding this product and the rack.	Ce produit est conçu pour être utilisé dans une baie pour appareils électroniques. Le boîtier métallique de ce produit est raccordé électriquement au fil de terre du cordon d'alimentation. Il est possible d'utiliser en plus un point de mise à la terre fileté placé sur le boîtier pour relier ce produit et la baie à la terre.	Dieses Produkt muss in einem Einbauschrank für elektronische Geräte installiert werden. Das Metallgehäuse dieses Produkts ist elektrisch mit dem Erdleiter des Netzkabels verbunden. Als zusätzliche Sicherheitsmaßnahme empfehlen wir die weitere Erdung über einen Erdungsanschluss am Gehäuse des Produktes und des Einbauschranks.
	Models with unterminated power cords: Input connector must be installed by qualified service personnel. Input connector rating must meet all applicable codes and regulations.	Modèles avec cordons d'alimentation non terminées: Le connecteur d'entrée doit être installé par un personnel qualifié. Entrée cote de raccordement doit respecter tous les codes et règlements électriques applicables.	Modelle mit unfertigem Netzkabel: Der Eingangsstecker darf nur von qualifiziertem Wartungspersonal installiert werden. Der Eingangsstecker muss für alle geltenden und verbindlichen Normen und Vorschriften zugelassen sein.
	WARNING: CHINA NOTIFICATION: For use at altitude 2,000 meters or lower.	AVERTISSEMENT : AVIS CONCERNANT LA CHINE : conçu pour être utilisé à une altitude maximale de 2 000 mètres.	WARNUNG: EINSATZLAND CHINA: nur für den Betrieb auf Höhen bis maximal 2000 m.

	The manufacturer is not responsible for damage to this product resulting from accident, disaster, misuse, abuse, modification of the product, or other events outside of the manufacturer's reasonable control or not arising under normal operating conditions.	Le fabricant décline toute responsabilité concernant les dommages subis par ce produit qui résulteraient d'un accident, d'une catastrophe naturelle, d'une mauvaise utilisation, d'une utilisation abusive, de la modification du produit ou d'autres événements indépendants de la volonté raisonnable du fabricant ou qui ne se seraient pas produits dans des conditions normales d'utilisation.	Der Hersteller haftet nicht für Produktschäden, die durch Unfälle, Naturkatastrophen, falsche Bedienung, mutwillige Beschädigung, Änderungen am Produkt oder andere Umstände außerhalb des Verantwortungsbereichs des Herstellers entstanden sind beziehungsweise durch Betrieb außerhalb der normalen Arbeitsbedingungen verursacht wurden.
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Features

The key components of the Legrand Power Shelf include:

- Power Shelf Unit
- Power Supply Units
- DC Output

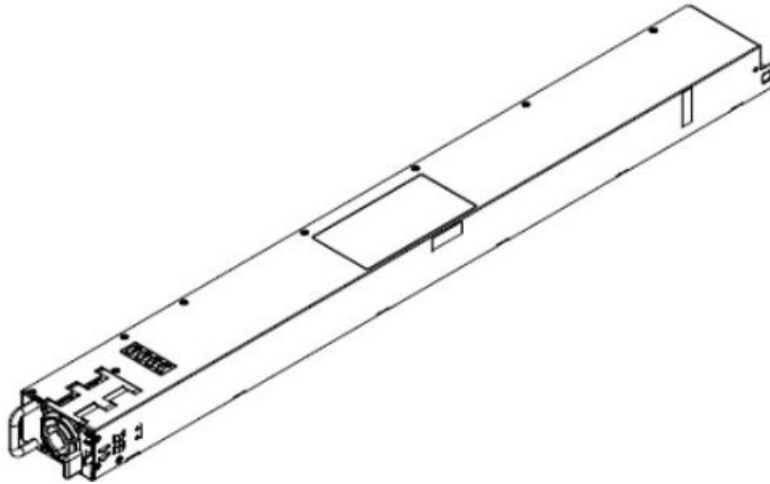
Power Shelf



Legrand's 33kW ORv3 2RU HPR Power Shelf provides centralized, high-efficiency AC-to-DC power conversion for OCP racks, delivering reliable 50V DC power to busbars and IT equipment. Its standardized ORv3 architecture simplifies integration in OCP Open Rack environments. Modular, front-serviceable designs, a blind mate quick connector, and built-in redundancy improve uptime and reduce operational complexity in ORv3 deployments.

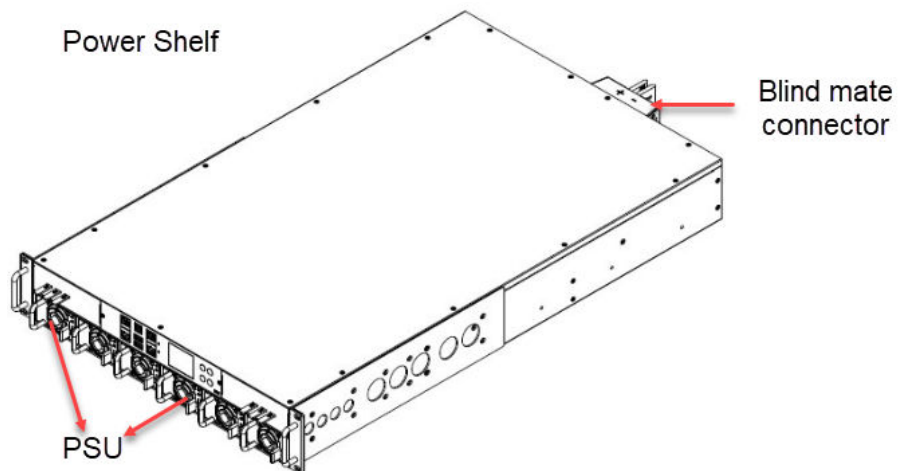
Power Supply Units (PSU)

The power shelf houses six power supply units (PSUs) that convert AC power to DC and deliver it to the busbar system. Each Legrand PSU provides a 5.5 kW output (112 A at 50 VDC) with an impressive 97.5% power conversion efficiency. The PSUs are hot-swappable, ensuring uninterrupted operation during maintenance or replacement. The Power Management Controller (PMC) oversees PSU performance and power delivery. Communication and control are managed via an I²C-based interface, enabling real-time monitoring and management through the PMC.



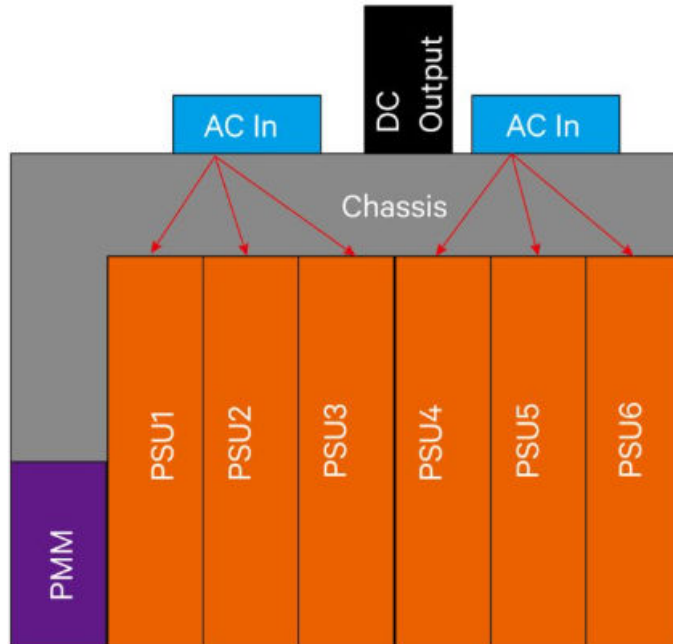
DC Output

Legrand power shelves utilize rectangular blind-mate compact connectors, which feature a snap-in mechanism that enables quick, tool-free installation. This connector distributes DC power to the busbar.



Additional Features

- Rear-mounted mating connector for streamlined integration
- Internal cooling via variable-speed fans for thermal efficiency
- Seamless operation without affecting other PSUs during hot-swap events

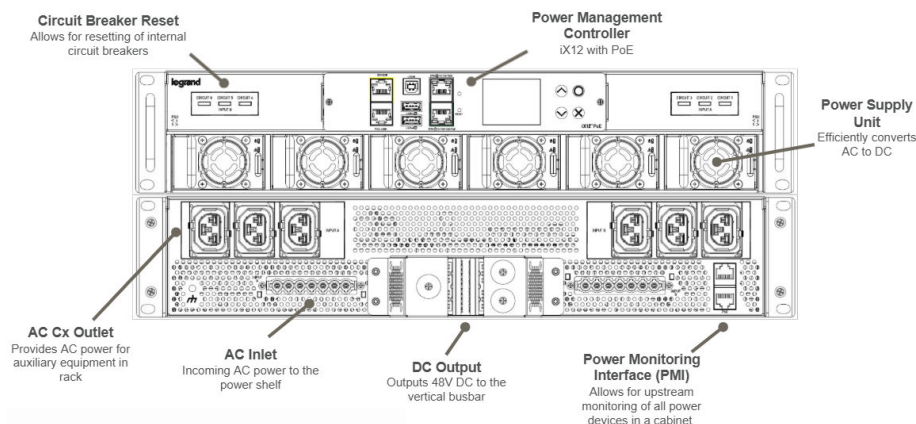


Initialization Process for Power Supply Units

- 1) Insert the Power Supply Unit (PSU).
- 2) Once detected, the PSU automatically begins its internal startup sequence, performs a self-check and enable its output power.
- 3) The sub-controller firmware communicates with the PSU using a predefined I2C address and reads the manufacturer information. If the information does not match the authorized PSU, validation will fail and the management and reporting function will stop.

Using the Hardware - PowerShelf

2U Power Shelf Overview



Inlets

The Legrand Power Shelf contains two inlets, I1 and I2.

Power Supply Units

Legrand Power Shelf contains six power supplies.

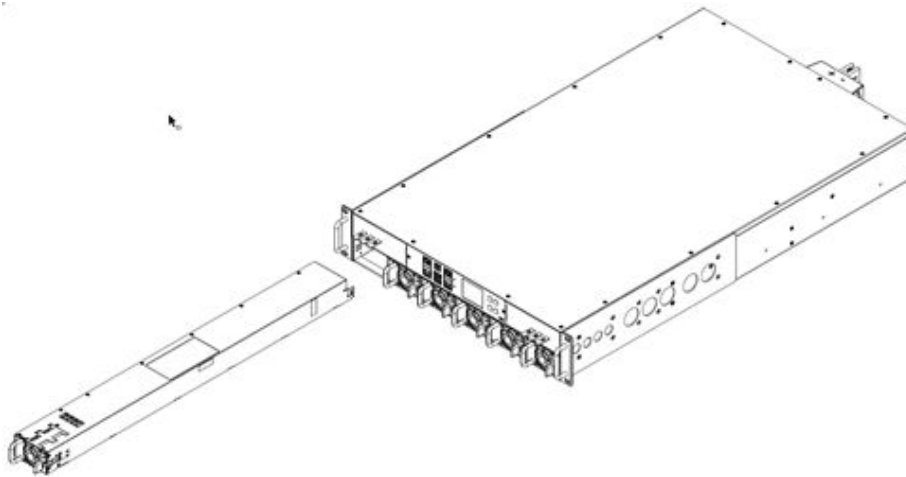
Important: Use only the power supply units included with the kit.

The power supplies are hot swappable.

If a power supply is removed, install a Blanking Panel in the empty section.

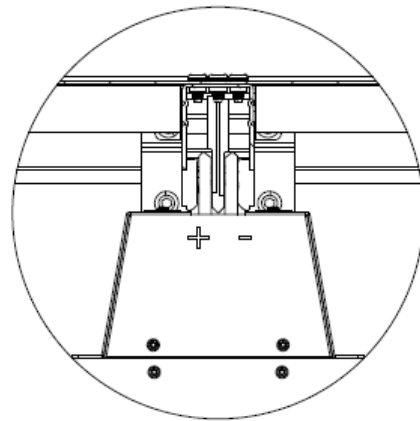
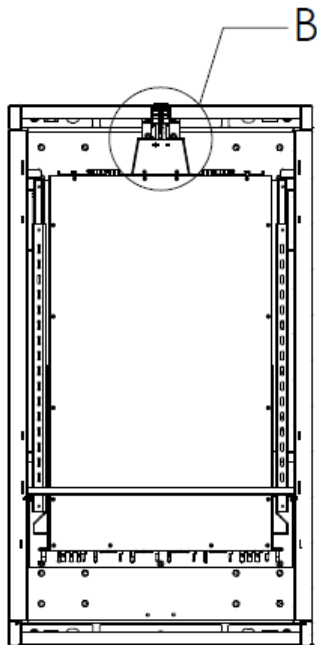
► To service a power supply in the Legrand Power Shelf:

- 1) Locate the power supply that needs to be removed, and use the lever to release it.
- 2) Use the handle to pull out the power supply.
- 3) Add the power supply or blanking panel to the empty section.



DC Output - Busbar Connector

Legrand Power Shelf contains one busbar connector. The busbar connector is rated for 50 mating cycles; move sparingly to maximize connection endurance.



DETAIL B
Busbar Connection

Outlets and Outlet LEDs

The total number and type of outlets varies from model to model.

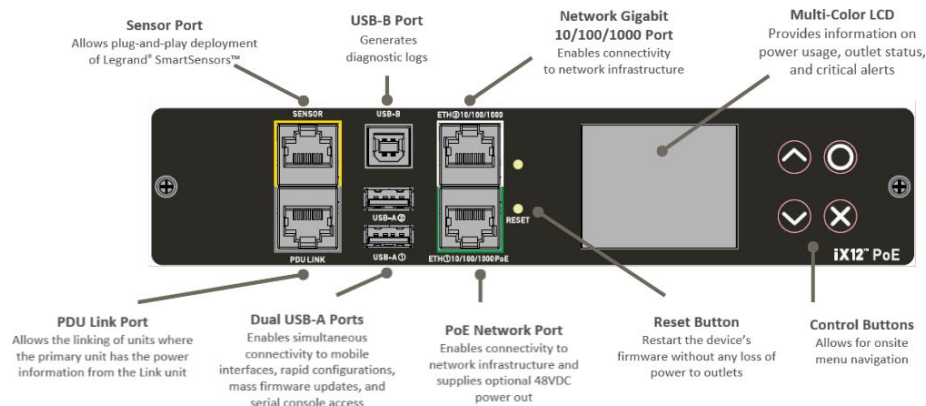
Outlets that are metered and/or switched have an LED that indicates their state.

Legrand Power Shelf Series Outlets and LEDs

Both metered and un-metered models have outlet LEDs that change color as per the outlet state.

Color	What it means...
Green	Outlet powered ON
Unlit	Outlet powered OFF
Amber blinking	Any outlet sensor above or below warning threshold
White/Green blinking	Outlet service mode: Outlet ON
White blinking	Outlet service mode: Outlet OFF
Red	Outlet OFF and suspended after OCP trip
Red blinking	OCP tripped: Outlet OFF
Red/Green blinking	OCP tripped: Outlet ON
Red/Yellow/Green blinking	Boot Up Sequence: Firmware is loading

2U Power Management Controller (PMC)



Power over Ethernet (PoE) and the PMC

The PMC will be either powered using the power supplies, or if the power supplies are not available, using the PoE. If the main controller is powered via PoE for redundancy, please note that it requires up to 30 W using IEEE 802.3at hardware (2-event) classification only. Some PoE+ switches do not grant full power based on hardware classification alone and instead expect additional LLDP power negotiation. On such switches, the device may receive only 15 W unless 2-event (hardware) PoE is explicitly enabled on the switch port.

► To verify the negotiated power level:

- 1) After connecting the device to the network switch, please verify the negotiated power level using the network switch's CLI.
 - Cisco: `show power inline`
 - Juniper: `show poe interface`
 - Alcatel/Lucent: `show lanpower ...`
- 2) If only 15 W (or a lower class than 4) is negotiated, check whether 2-event classification can be enabled on the switch.
 - On Cisco switches, this can be enabled on the corresponding interface using: `power inline port 2-event`

Front Panel Display

The front panel display will vary by model.

Use the front panel display to view information and even administer features on supported models. It consists of:

- LCD display
- Four control buttons

Displays may differ slightly by model and on 1U and 2U models.

Automatic and Manual Modes

After powering on or resetting, the front panel display first shows some dots, then logo and finally enters the automatic mode.

► *Automatic mode without alerts available:*

In this mode, the display cycles through information as long as there are no alerts.

► *Manual mode:*

To view more information or control outlets, enter manual mode.

Press  or  to enter the manual mode, where the Main Menu is first displayed.

To return to the automatic mode, press  until you return to the main display.

► *Alerts:*

- In the automatic mode, when an alert occurs, the display stops cycling through information, and warns you by showing the alerts notice in a yellow or red background.

To enter the manual mode, press  .

- In the manual mode, both the top and bottom bars will turn yellow or red to indicate the presence of any alert.

Control Buttons

Use the control buttons to navigate to the menu in the manual mode.

Button	Function
	Up
	Down
	OK

Button	Function
	Back -- OR -- Switch between automatic and manual modes

Operating the Front Panel Display

Enter manual mode when you want to operate the front panel display.

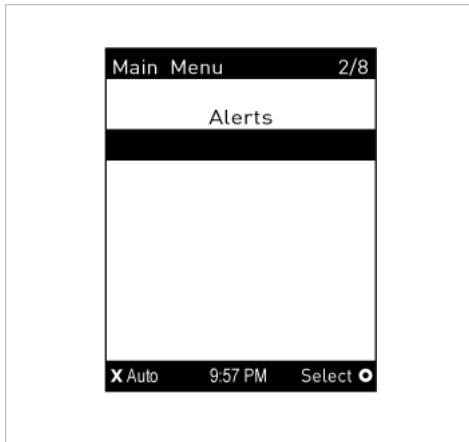
► *Color changes of the display's top and bottom bars:*

- In manual mode, both the top and bottom bars will turn yellow or red to indicate the presence of any alert.
- These examples are generic model samples. Information categories vary by model.

Screen with yellow bars	Screen with red bars
All alerts enter the warning level only.	Partial or all alerts enter the critical level.
	

- Both bars turn black when there are NO alerts.

Screen with black bars



Main Menu

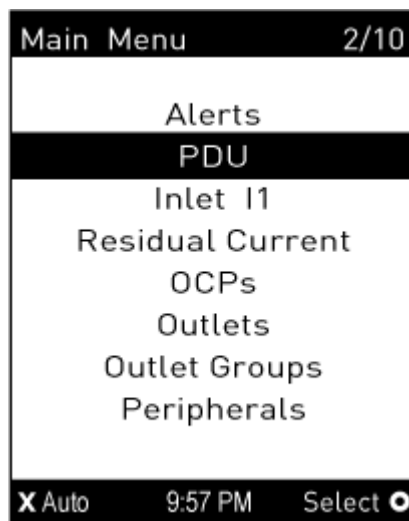
Main Menu

The Main Menu commands depend on the model.

The system time and the X and O buttons and their action on each page are shown at the bottom of the display.

For example, "X Auto" means you can press the X button to enter automatic mode. "Select O" means you can press O to select an option. Always use the arrow buttons to navigate lists and options.

The currently-selected item's number and total of menu items are indicated in the top-right corner of the display.



Alerts

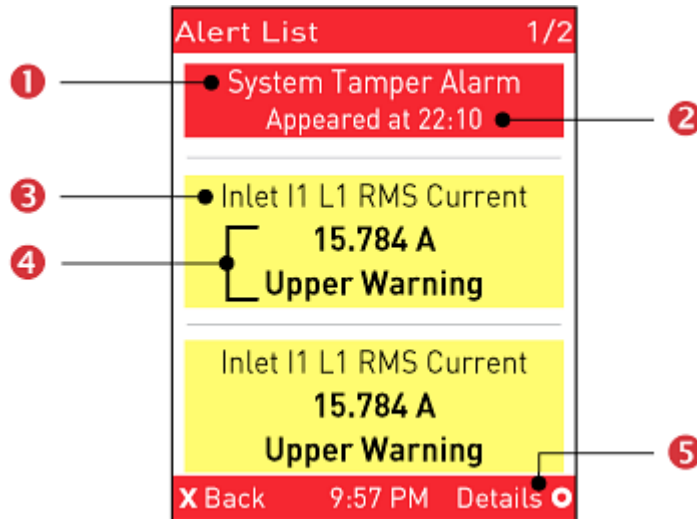
Select Alerts in the Main Menu to view a list of alerted sensors, including both internal and external sensors.

- Numeric sensors in the warning or critical range of an enabled threshold.
- Alarmed state sensors
- Tripped circuit breakers or blown fuses

If there are no alerted sensors, the display shows the message "No Alerts."

► *Alerted sensors:*

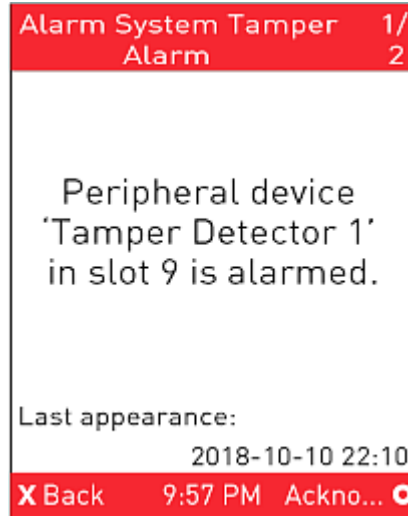
- The top and bottom bars on the LCD display may be yellow or red, depending on the type(s) of available alerts.



Number	Description
1	Alarm names.
2	The time the alarm occurred. If the alarm occurred at least two times, then more information is shown. • Number of alarms • The first occurrence time • The last occurrence time
3	Alerted sensor names.

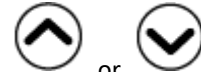
Number	Description
4	Sensor readings and/or states. A numeric sensor shows both the reading and state. A state sensor or actuator shows the state only. Available states: • Alarmed • Lower Critical = below lower critical • Lower Warning = below lower warning • Upper Warning = above upper warning • Upper Critical = above upper critical • Open (only available for overcurrent protectors)
5	The 'Details' command appears for alarms only.

- 1) Press  or  to view additional pages. When there are multiple pages, page numbers appear in the top-right corner of the display.
- 2) (Optional) If there are alarms in the Alert List, you can perform the following operations.
 - a. Press  to view detailed information of the alarm.



b. (Optional) If the alarm occurred more than one time, the numbers of current page and total

pages are shown in the top-right corner, similar to the above diagram. Press to view the information of other occurrences.



c. To acknowledge all alarms now, press



Inlet

Inlet details display over multiple pages.

► To show the inlet information:



1) Select "Inlet I1" in the Main Menu, and press

- Models with more than one inlet, use the arrow buttons to select the inlet you want to view, then press Select.

► Single Phase Inlet Details:

A single phase inlets shows the following readings over multiple pages. Use the arrow keys to go to each page.

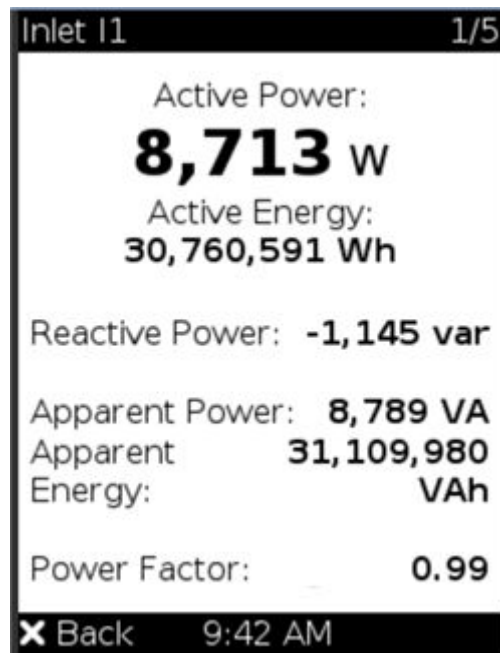
- RMS voltage
- Line frequency
- RMS current
- Active power
- Reactive power

- Apparent power
- Power factor
- Active energy
- Apparent energy
- Phase angle
- Crest factor
- Voltage/current total harmonic distortion

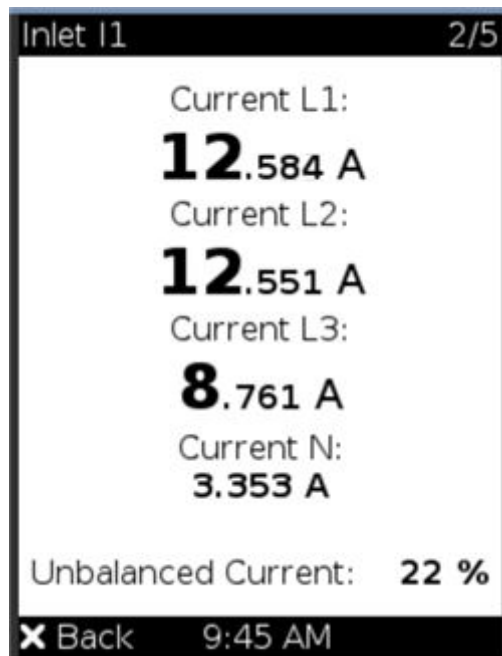
► *Three Phase Inlet Details:*

A three phase inlets shows the following readings over multiple pages. Use the arrow keys to go to each page. Use the arrow buttons to scroll between the pages.

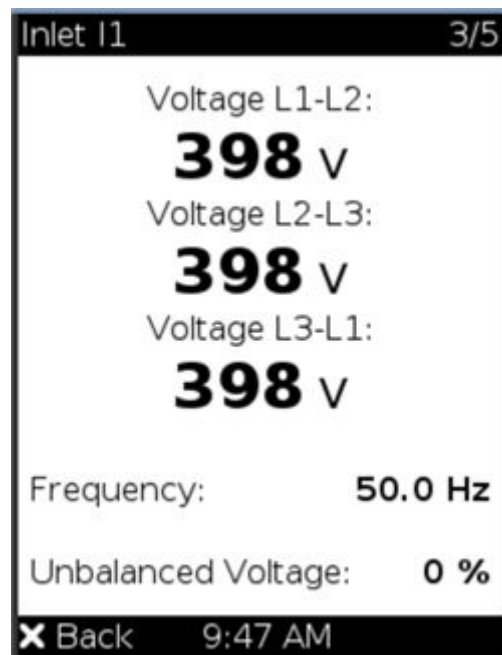
- Active Power
- Active Energy
- Reactive Power
- Apparent Power
- Apparent Energy
- Power Factor



- Current L1
- Current L2
- Current L3
- Current N
- Unbalanced Current

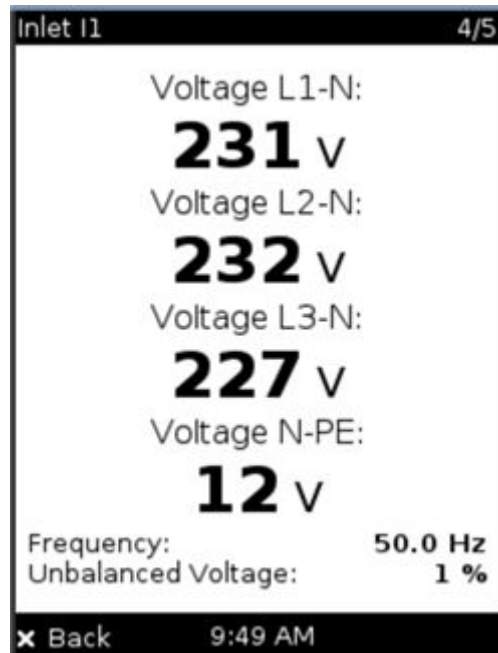


- Voltage L1-L2
- Voltage L2-L3
- Voltage L3-L1
- Frequency
- Unbalanced Voltage



- Voltage L1-N

- Voltage L2-N
- Voltage L3-N
- Frequency
- Unbalanced Voltage



- L1, L2, and L3:
 - Crest Factor
 - Current THD (total harmonic distortion)
 - Voltage THD (total harmonic distortion)

Inlet I1		5/5
L1		
Crest Factor:		1.53
Current THD:		0.0 %
Voltage THD:		0.0 %
L2		
Crest Factor:		1.52
Current THD:		0.0 %
Voltage THD:		0.0 %
L3		
Crest Factor:		1.47
Current THD:		0.0 %
Voltage THD:		0.0 %
X Back		9:49 AM

Outlets

With the front panel display, you can:

- Show each outlet's information.
- Turn on, off or power cycle an individual outlet on models that support switching. Front panel outlet control must be enabled in the Front Panel Settings.

Multiple outlet information can be shown on the display. Check the bottom of the display for control buttons and their actions.

► To show an outlet's information:



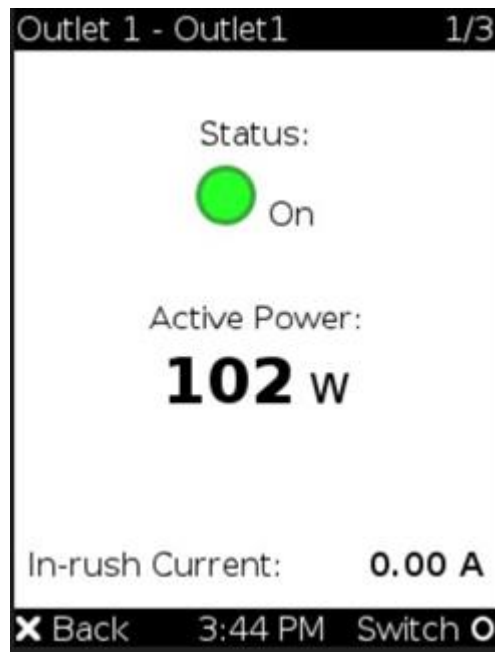
- 1) Select "Outlets" in the Main Menu, and press .
- 2) The list of outlets is shown with their receptacle types, current values (A), and power states which are indicated by the colors of circles.

The currently-selected outlet number and total of outlets are indicated in the top-right corner of the display.

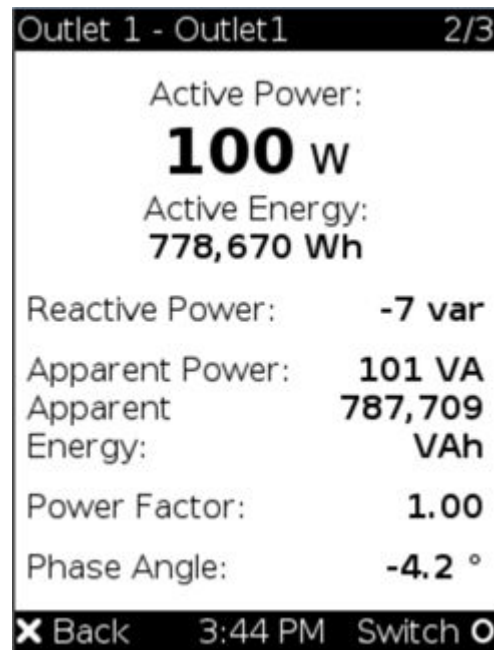
- A green circle indicates that this outlet is powered on.
- A gray circle indicates that this outlet is powered off.
If so, the word "Off" replaces the current value.



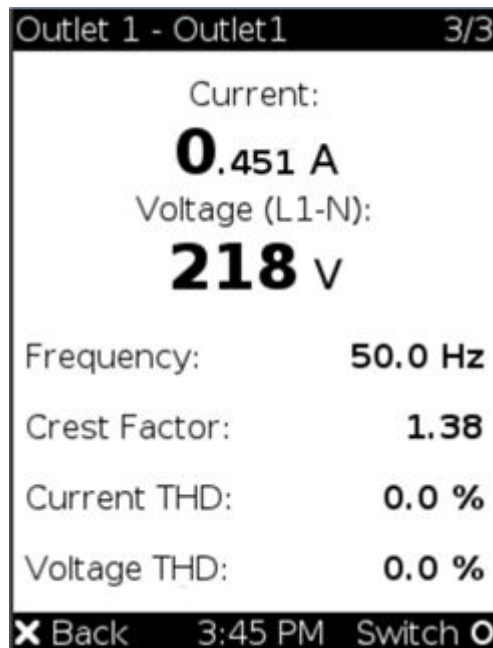
- 3) Press  or  to select an outlet, and press .
- 4) Each outlet has several pages of details. Use the arrow buttons to scroll between the pages.
- outlet power state,
 - active power (W)
 - inrush current



- Active Power
- Active Energy
- Reactive Power
- Apparent Power
- Apparent Energy
- Power Factor
- Phase Angle



- Current
- Voltage
- Frequency
- Crest Factor
- Current THD (total harmonic distortion)
- Voltage THD (total harmonic distortion)



► *Power Control*

This section applies to outlet-switching capable models only.

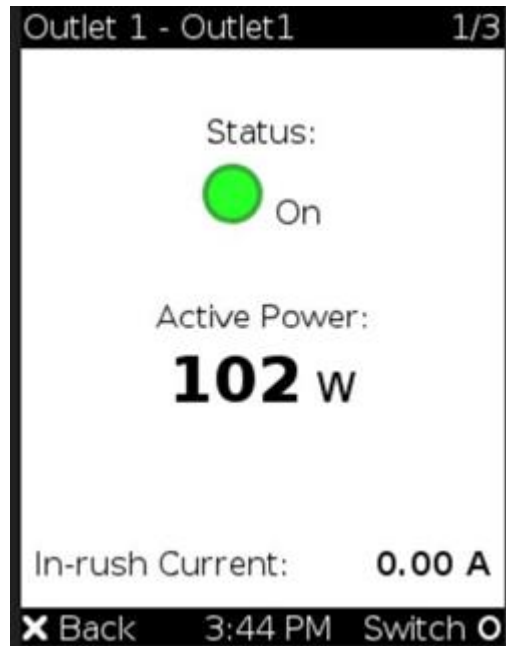
The front panel outlet control must be enabled for performing this power control function. The default is to disable this function.

Available options for power control vary, based on the power state of the selected outlet.

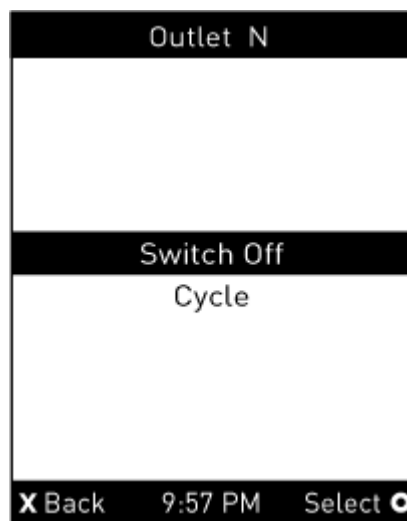
► *To power on, off or cycle an outlet:*

1) Select "Outlets" in the Main Menu, and press .

2) Use the arrow buttons to select an outlet, and press .



- In the individual page for the outlet, press  for Switch to go to the power control page. In this example, the outlet is On, so the available options are 'Switch Off' and 'Cycle'.



- 3) Use the arrow buttons to select the desired option, and press .

- Switch Off: Turn off the outlet.
- Switch On: Turn on the outlet.
- Cycle: Power cycle the outlet. The outlet is turned off and then on.

4) A confirmation message appears. Select Yes or No, and then press .

5) Verify that the selected outlet is switched on or off.

- Check the outlet state shown on the LCD display.
- Check the outlet LED for the correct Off or On color. Not all models have outlet LEDs.

► *Outlet Groups*

Only units with outlet-switching and/or outlet-metering feature show this menu item.

If any outlet group has been created, the front panel then shows a list of these groups and their status.

► *To show an outlet group's information:*

- 1) Select "Outlet Groups" in the Main Menu, and press .
- 2) The LCD display shows a list of outlet groups with the information below:
 - The total number of outlets in the group
 - Power states which are indicated by the colors of circles
 - Each group's active power value

Outlet Groups		
Group 1 36 outlets	8179 W	
Group 2 3 outlets	905 W	
Group 3 10 outlets	1918 W	
 Back 5:45 PM Details 		

The currently-selected outlet group's number and total of outlet groups are indicated in the top-right corner of the display.

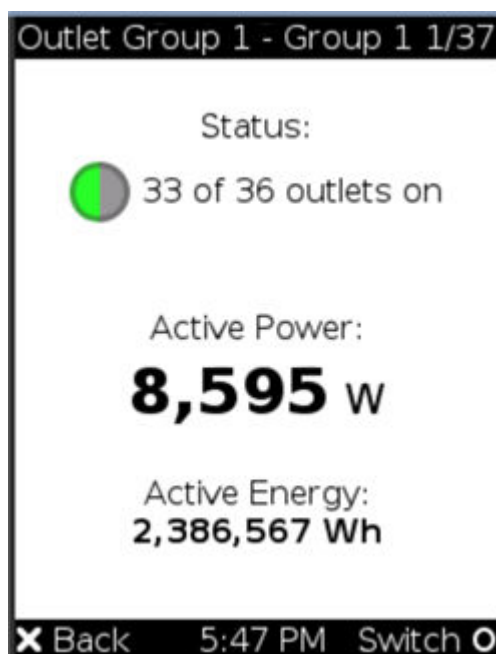
- Gray circle: All outlets are OFF
- Green circle: All outlets are ON
- Half Green/Half Gray circle: Some outlets are ON, and some outlets are OFF.



3) Select an outlet group, and press .

4) Outlet Group details display:

- group power state
- active power (W)
- active energy (Wh).



5) To check the status of each member outlet of the group, use the arrow buttons to scroll through the outlet pages.

► *Outlet Group Power Control:*

This section applies to outlet-switching capable models only.

The front panel outlet control must be enabled for performing this power control function. The default is to disable this function.

Check the bottom of the display for control buttons and their actions.

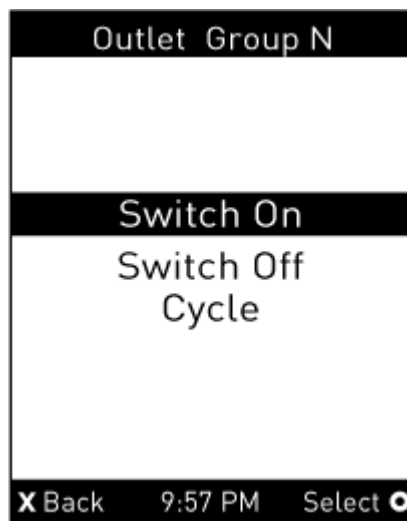
► *To power on, off or cycle an outlet group:*

1) Select "Outlet Groups" in the Main Menu, and press .

- The LCD display shows a list of outlet groups.

2) Select an outlet group, and press  to go to the Outlet Group's details page.

- Press  for the Switch command. The power control page opens.



1) Select the desired option, and press .

- Switch On: Turn on the outlet group.
- Switch Off: Turn off the outlet group.
- Cycle: Power cycle the outlet group.

2) A confirmation message appears. Select Yes or No, and then press .

3) Verify that the selected outlet group is switched:

- Check the outlet group state shown on the LCD display.
- Check each member outlet's LED of the group.

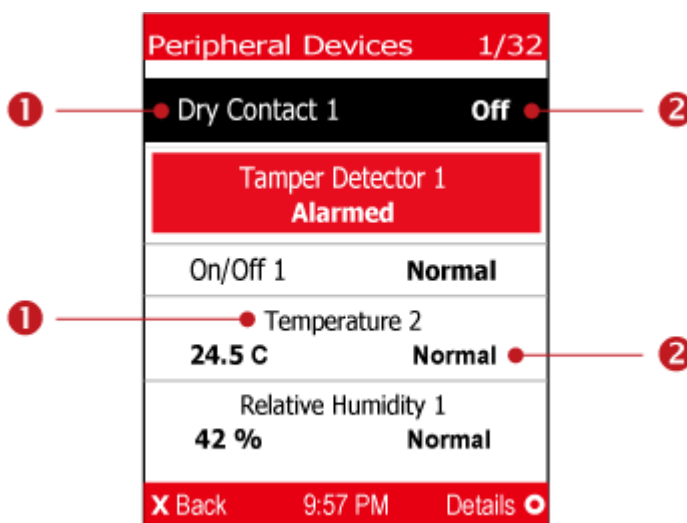
Peripherals

If there are no environmental sensor packages connected, the display shows the message "*No managed devices*" for the "Peripherals" menu command.

► To show environmental sensor or actuator information:



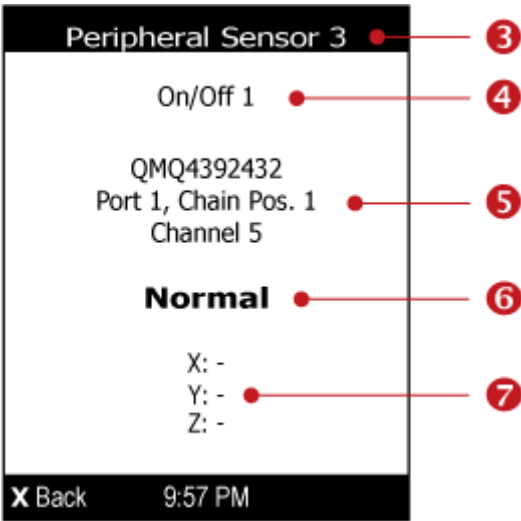
- 1) Select "Peripherals" in the Main Menu, and press .
 - 2) The display shows a list of environmental sensors/actuators.
 - When the list exceeds one page, the currently-selected sensor/actuator's ID number and total of managed sensors/actuators are indicated in the top-right corner of the display.
 - If any sensor enters warning, critical, or alarmed state, like 'Tamper Detector 1' shown below, it is highlighted in yellow or red.
- The top and bottom bars also turn yellow or red.



Number	Description
1	Sensor or actuator names.

Number	Description
2	Sensor or actuator states: • <i>n/a</i> = unavailable • <i>Normal</i> • <i>Alarmed</i> • <i>Lower Critical</i> = below lower critical • <i>Lower Warning</i> = below lower warning • <i>Upper Warning</i> = above upper warning • <i>Upper Critical</i> = above upper critical • <i>On</i> • <i>Off</i> • <i>Open</i> • <i>Closed</i> A numeric sensor shows both the reading and state. A state sensor or actuator shows the state only.

3) To view an environmental sensor or actuator's detailed information, select it, and press . A screen similar to the following is shown.



Number	Description
3	The ID number assigned to this sensor or actuator. • A sensor shows "Peripheral Sensor x" (x is the ID number) • An actuator shows "Peripheral Actuator x"
4	Sensor or actuator name.

Number	Description
5	The following information is listed. - Serial number - Chain position, which involves the following information: <i>Port <N></i>: <N> is the number of the sensor port where this sensor or actuator is connected. <i>Chain Pos. <n></i>: <n> is the sensor or actuator's position in a sensor daisy chain. - If this sensor or actuator is on a sensor package with multiple channels, its channel number is indicated.
6	Depending on the sensor type, any of the following information is displayed: - State of a state sensor: <i>Normal, Alarmed, Open or Closed</i>. - State of an actuator: <i>On or Off</i>. - Reading of a numeric sensor.
7	X, Y, and Z coordinates which you specify for this sensor or actuator.

► *To switch on or off an actuator:*

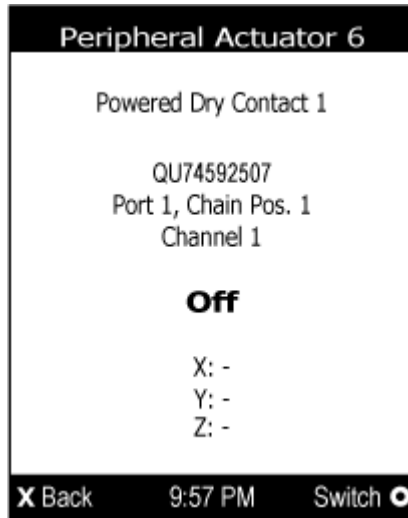
By default peripheral actuator control is disabled. You have to enable it in the web interface.
See: [Peripherals](#) (on page 96)

1) Select "Peripherals" in the Main Menu, and press

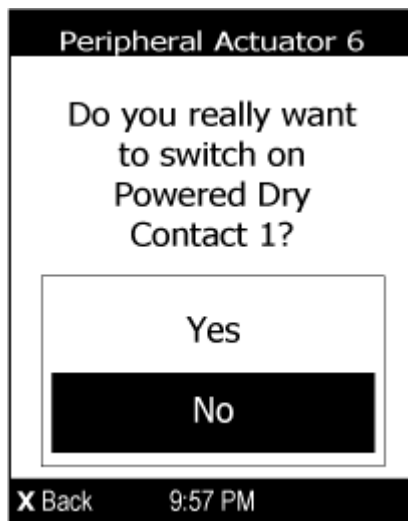


. Select an actuator to switch and press





- 2) Press  to turn on or off the actuator. A confirmation message similar to the following is shown.



- 3) Use the arrow buttons to select Yes or No, and then press  .
- 4) Verify that the actuator status shown has been changed.

Device Info

The display shows the device's information, network and IPv4/IPv6 settings through various pages. Page numbers are indicated in the top-right corner of the LCD display.

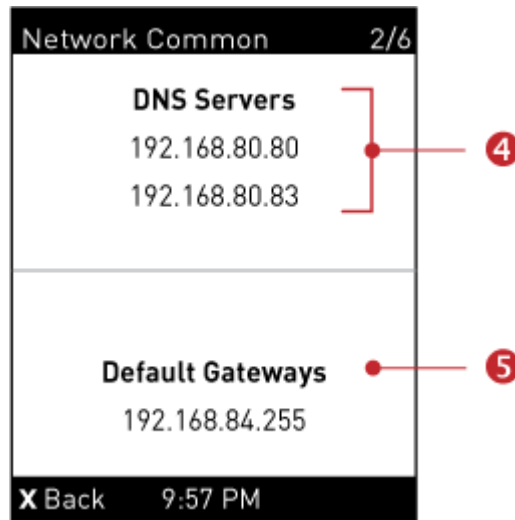
► *To show the device information:*

1) Use the arrow buttons to select "Device Info" in the Main Menu, and press .

2) Device information for your model displays.

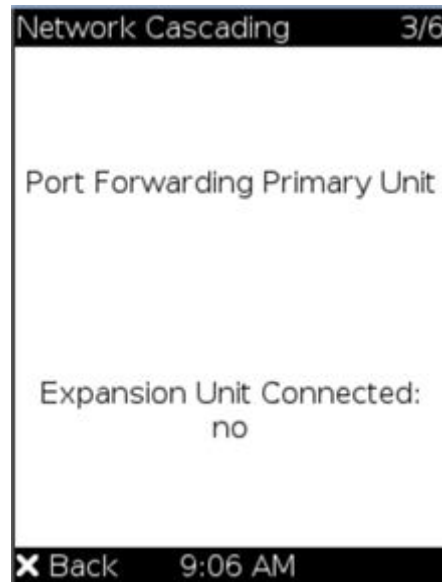
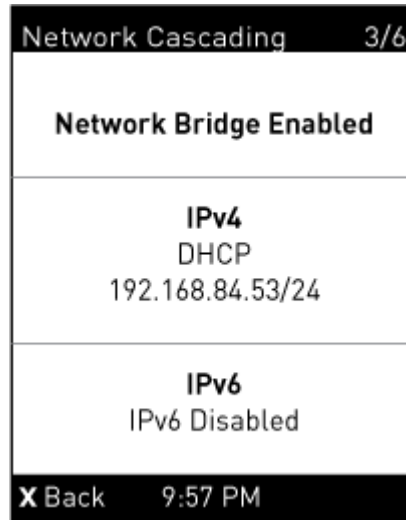
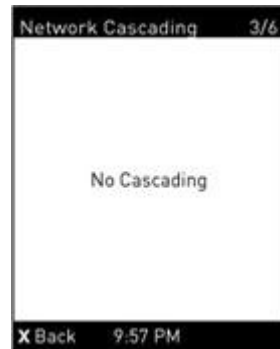
- Device name.
- Firmware version, model name and serial number.
- Device ratings, including rated voltage, frequency, current and power.

3) Press  to show the Network Common page.



Number	Description
	DNS servers.
	Default gateways.

4) Press  to show the Network Cascading page. Display shows details on your cascading mode, as shown in these examples.



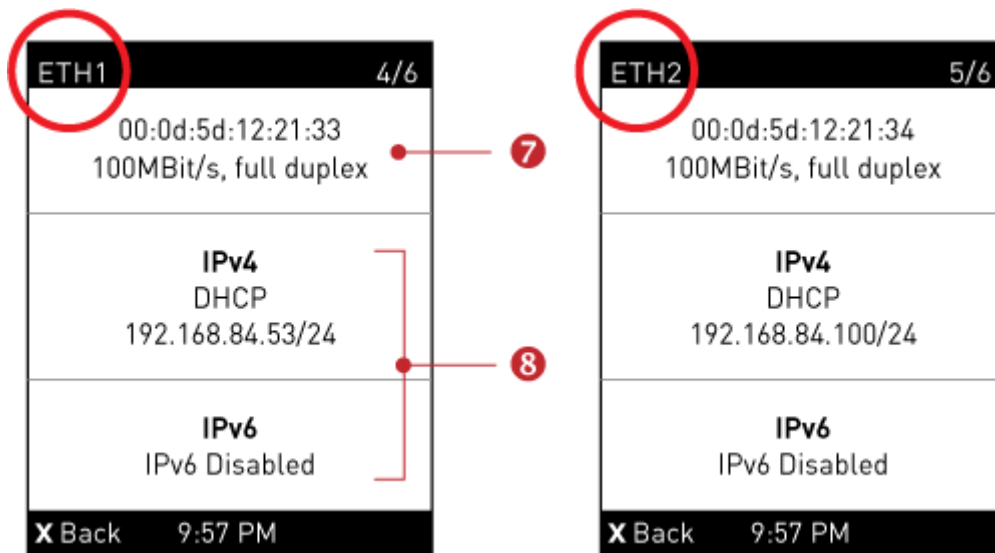
Description

Cascading status, which can be one of the following:

- No Cascading: This device's cascading mode is set to None.
- Network Bridge Enabled: This device's cascading mode is set to Bridging. Its IP address is also displayed on this page.
- Port Forwarding Primary: This device's cascading mode is set to Port Forwarding, and it is a primary device.
 - Expansion unit Connected: Indicates whether the presence of a expansion unit device is detected - *yes* or *no*.
- Port Forwarding Expansion unit: This device's cascading mode is set to Port Forwarding, and it is a expansion unit device.
 - Expansion unit Connected: Indicates whether the presence of a expansion unit device is detected - *yes* or *no*.
- Cascade Position: Indicates the position of a expansion unit device in the Port Forwarding mode. 1 represents Expansion unit 1, 2 represents Expansion unit 2, and so on.
- A port forwarding expansion unit device will also display the primary device's IP address on this page.



5) Press to show the Ethernet pages.
There can be one or two pages: ETH1 and ETH2.



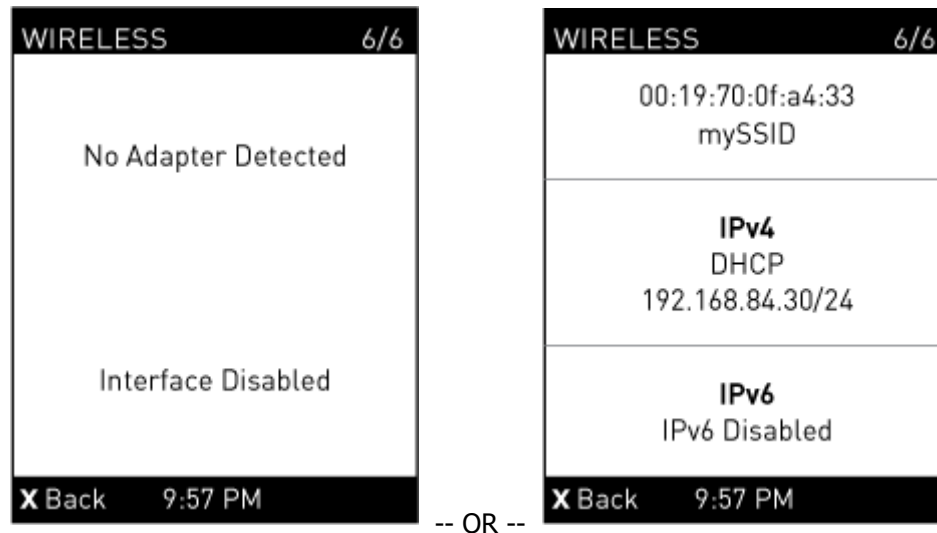
Number	Description
7	Ethernet interface information, including: • MAC address. • Speed. • Full or half duplex.
8	IPv4/IPv6 network information, including: • Network configuration: DHCP (or Automatic), or Static. Static represents Static IP. • IP address. • Prefix length, such as "/24". <i>Note: If you disable any Ethernet interface, a message 'Interface Disabled' is shown. See Ethernet Interface Settings.</i>

If you do not enable IPv4/IPv6 settings, an 'IPv4 (or IPv6) Disabled' message is displayed.



6) Press to show the WIRELESS page.

- If NO supported WLAN adapter is plugged or detected, the message "No Adapter Detected" is shown.
- If a supported WLAN adapter is detected and configured properly, wireless network information is shown instead, including:
 - MAC address
 - SSID
 - IPv4/IPv6 network information



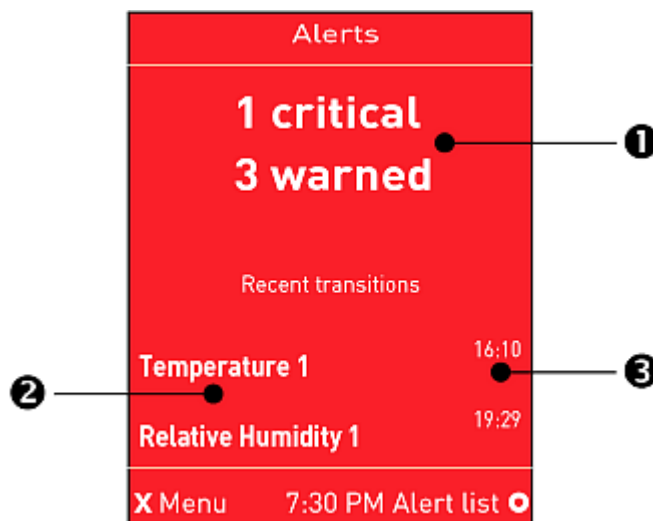
Alerts Notice in a Yellow or Red Screen

In automatic mode, if an alert occurs, the LCD display automatically switches to either a yellow or red screen. This screen displays the total number of alerted sensors along with information about the latest transitions.

- When all alerted sensors are at warning levels, the screen's background turns yellow.
- When at least one alerted sensor reaches a critical level or if there is any "alarm," the background turns red.

The following illustrates the alerts notices in red.

- When there are only alerted sensors -- NO ALARMS are present:



Number	Description
①	The total of alerted sensors in critical and warning levels.
②	A list of alerted sensors.
③	The latest reading/status time related to each alerted sensor.

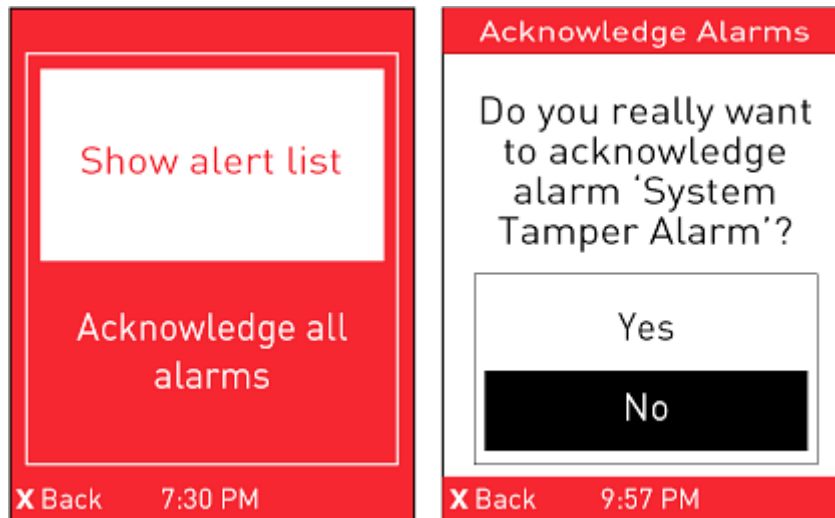
- When there is any alarm present:

The display shows the alarm(s) and the available command in the bottom-right corner is 'Actions'.



► *Available operations:*

- For alerted sensors only, press  to view a list of all alerted sensors. You do not have to acknowledge alerted sensors.
- When an alarm is present, press  to view the options. Use the arrow buttons to select an option, and press  .
 - Show alert list: View a list of alerted sensors and alarms. You still can choose to acknowledge alarms after viewing the list.
 - Acknowledge all alarms: This option immediately acknowledges all existing alarms, without showing the list of alarms. When you select this option, you must next select Yes to confirm.



Port Overload - Reset Fuse

If an overload condition is detected on an external port, the front panel displays an alert notification. This notification includes a detailed list of ports that might have contributed to the overload.

The alert cannot be dismissed until the overload condition is resolved and the fuse has been reset.

► To resolve a Port Overload condition:

- 1) Remove all attached devices from the ports listed in the alert.
- 2) Press the Select button on the front panel to reset the fuse.



Showing the Firmware Upgrade Progress

When upgrading the Legrand Power Shelf, the firmware upgrade progress will be displayed as a percentage on the LCD display, similar to the following diagram.

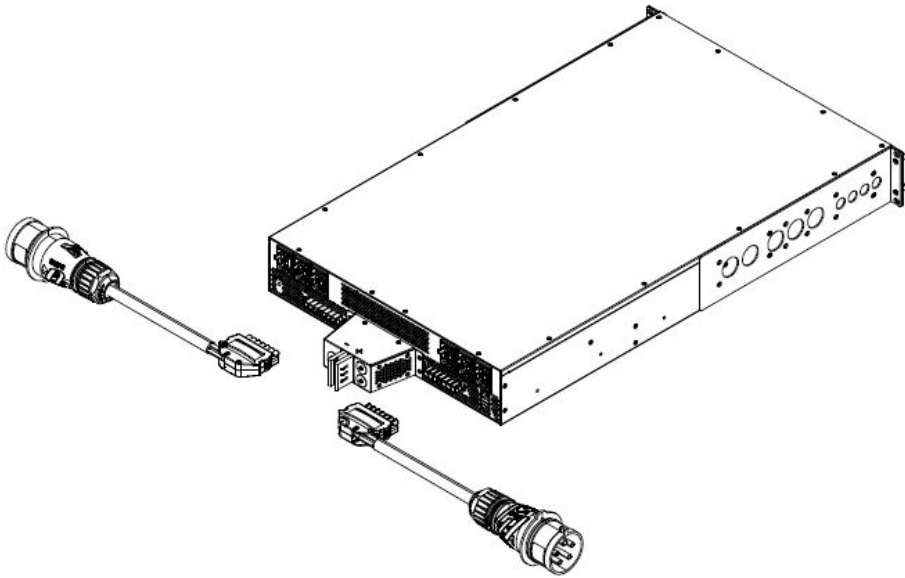


In the end, a message appears, indicating whether the firmware upgrade succeeds or fails.

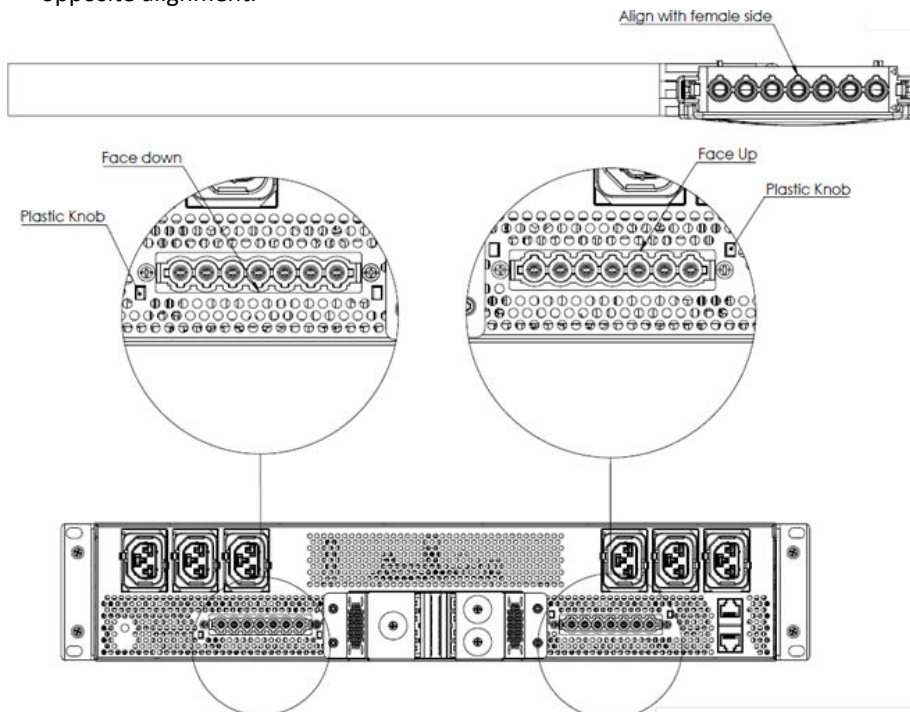
Power Cord Kit Installation

► To install the cord kit:

- The cord kit contains two cords, left and right.



- See Warnings sections for important information. The mains inlet is not rated for current interruption or disconnection under load. Do not energize the mains inlet until the connection to the powershell has been completed and appropriate strain relief provided.
- Align the cords as shown in the diagram and plug in securely. Note that the left and right cords have opposite alignment.



Reset Button

The reset button is located inside the small hole labeled RESET near the display panel.

Pressing this reset button restarts the Xerus software without any loss of power to outlets.

Beeper

The Legrand Power Shelf includes an internal beeper to issue an audible alarm for an overcurrent protector which is open.

- The beeper sounds an alarm within 3 seconds of a circuit breaker trip.
- The beeper stops as soon as all circuit breakers have been reset.

You can also set the internal beeper to sound for specific events.

Tip: You can remotely check this beeper's state in the web interface on the unit page.

Replaceable Controller

The Legrand Power Shelf is designed for flexibility, and utilizes a hot-swappable, replaceable controller.

If the controller is broken, you can send the controller only back for repair, or purchase a new controller.

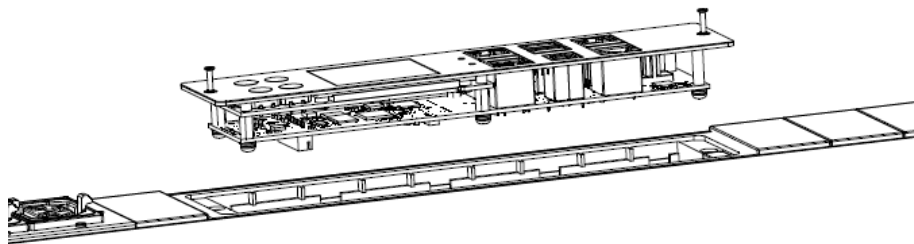
► *To request a new controller:*

Contact Technical Support to request a new controller.

► *To replace a controller:*

- 1) The unit is NOT required to be powered off.
- 2) Loosen the screws at two sides of the controller, and lift it up.

Note: Loosen the screws instead of removing them.



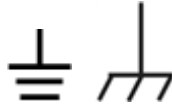
- 3) Get a new controller and install it back into the unit in the reverse order.

Fan

You can configure the Power Shelf fan using Thresholds. See [Power Supply Sensors](#) (on page 65).

Threaded Grounding Point

Some models have a threaded grounding point. Identify it via the grounding symbol. Symbols may vary:



Wire this point to an electrical system to protectively ground the Legrand Power Shelf.

Using the Web Interface

This chapter explains how to use the product web interface for administration.

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Supported Web Browsers and Mobile Devices

- Firefox® 100 and later
- Safari® (Mac)
- Google® Chrome® 100 and later
- Android 8.1 and later
- iOS 12.5 and later
- Edge (Windows 10, 11 (chrome-based versions))

Login, Logout and Password Change

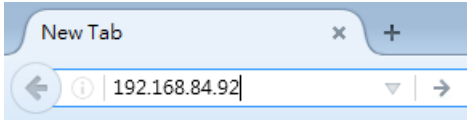
The first time you log in, use the factory default user credentials. For details, refer to the Quick Setup Guide accompanying the product. Password change is forced upon first login.

Login and Logout

You must enable JavaScript in the web browser for proper operation.

► *To log in to the web interface:*

- 1) In a supported browser go to the IP address of your Legrand Power Shelf
 - If the link-local addressing has been enabled, you can type *pdu.local* instead of an IP address.



- 2) If any security alert message appears, accept it.
- 3) You can set contrast polarity by clicking on Dark and Light icon  Dark or  Light on bottom left of the login screen.
- 4) Enter your user name and password, accept any security agreement displayed, and click Login.

Note: To configure the security agreement, go to Device Settings > Security > Service Agreement.

- 5) The web interface opens.

After finishing your tasks, you should log out to prevent others from accessing the web interface.

- Click Logout in the top right corner, or close the tab or browser.

Changing Your Password

You need appropriate permissions to change your password or others' passwords.

► *Password requirements:*

- Case sensitive.
- 4 to 64 characters.

► *Password change required on first login:*

- On *first login*, password change is forced and strong passwords are enabled by default. The new password must be at least 8 characters and contain at least one upper case letter, one lower case letter, and one digit.
- Change the default password and click OK.

► *To change your password via the Change Password command:*

You must have the Change Own Password permission to change your own password.

- Choose User Management > Change Password. Change the password and click Save.

Change Password - admin

Old password	required
New password	required
Confirm password	required

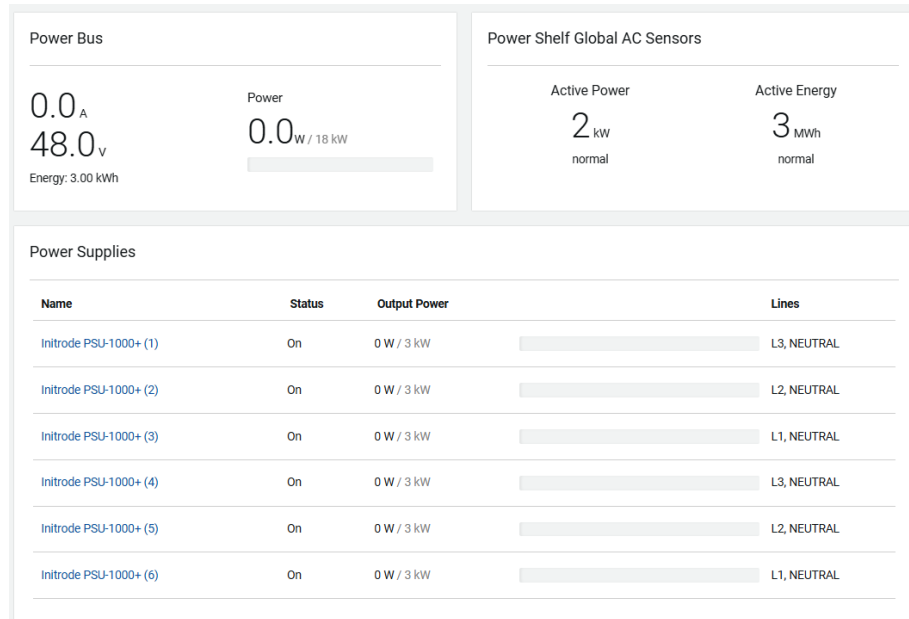
✓ Save

Dashboard - Legrand Power Shelf

- The Dashboard page gives you an overview of your Power Supplies and Power Bus.
- Click any blue hyperlink to go to the main page for that information.

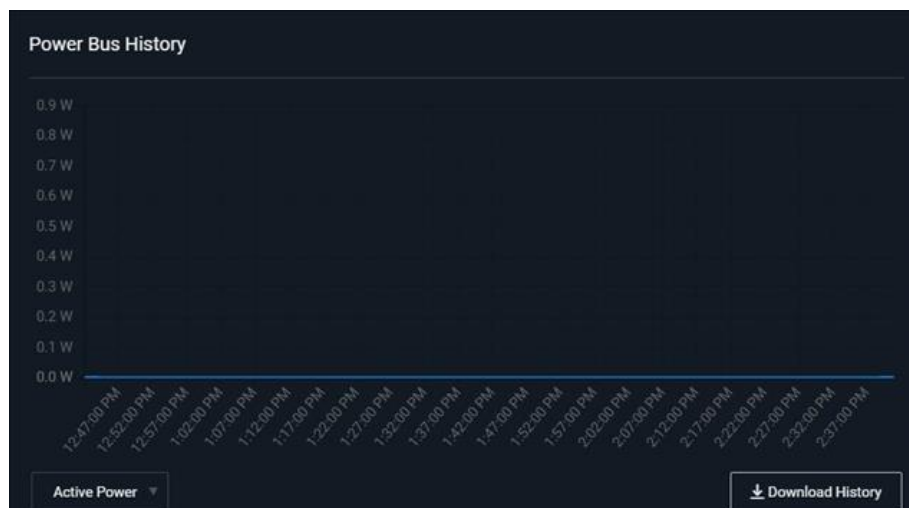
► *What to look for:*

- All green status bars indicate performance in normal ranges.
- Red or yellow status bars indicate alerts or alarms.
- Check the Alerted Sensors and Alarms sections for any issues that need attention.
- Alarms are listed if there are events that must be acknowledged according to your configurations.
- Alerts are listed when sensor thresholds are entered according to your configurations.



► *What can be customized on the Dashboard?*

- The Power Bus History chart at the bottom of the Dashboard shows active power by default.
- Select a different data type to change the chart view temporarily.



Dashboard - Power Bus

Power Bus

The Power Bus section displays Current, Voltage, and Power for the power bus.

Dashboard - Power Supplies

The Power Supplies section of the dashboard contains information on all the power supply units (PSU) in the shelf. For each PSU, it shows operational status, output power, and associated line connection.

- Name: Click the Name hyperlink to go to Power Supplies main page.
- PDU: Click the PDU hyperlink to go to the Power Shelf main page.
- Status: Absent, On, Off
- Active Power reading
- Lines

Dashboard - Power Shelf Global AC Sensors

The Power Shelf Global AC Sensors section provides aggregated AC input information for the power shelf. It reports active power and cumulative active energy consumption.

Dashboard - Alerted Sensors

When any internal sensors or environmental sensor packages connected to the Legrand Power Shelf enter an abnormal state, the Alerted Sensors section in the Dashboard shows them for alerting users. This section also lists tripped circuit breakers or blown fuses, if available.

To view detailed information or configure each alerted sensor, click each sensor's name to go to individual sensor pages. See [Individual Sensor/Actuator Pages](#) (on page 107).

Alerted Sensors (1 Critical, 0 Warned)			Alarms
Sensor	Value	State ▲	No Alarms
Temperature 1	25.0 °C	▲ above upper critical	

► Summary in the section title:

Information in parentheses adjacent to the title is the total number of alerted sensors.

For example:

- 1 Critical: 1 sensor enters the critical or alarmed state. 1 Warned: 1 'numeric' sensor enters the warning state.
 - Numeric sensors enter warning or critical states, as their values enter the threshold ranges.
 - State sensors enter an alarmed state.

See [Sensor/Actuator States](#) (on page 102) for more details.

	Numeric sensors: • Warning
---	--

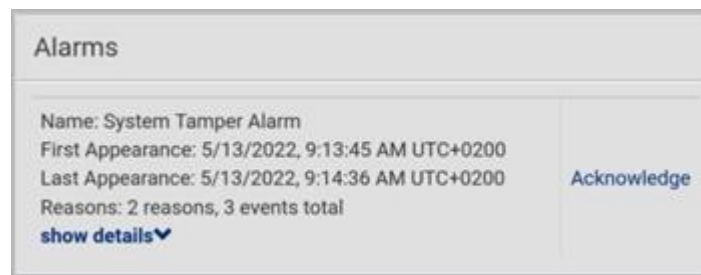
	Numeric sensors:
	Critical
	State sensors:
	Alarmed state

Dashboard - Alarms

If configuring any event rules which create or emit device alarms, the Alarms section will list any event that hasn't been acknowledged yet.

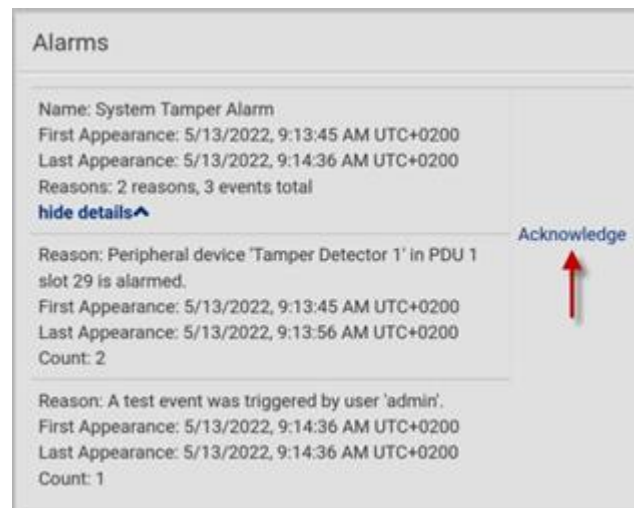
Note: For information on event rules, see [Event Rules and Actions](#) (on page 188).

You must have the 'Acknowledge Alarms' permission to manually acknowledge an alarm.



► To acknowledge an alarm:

- Click Acknowledge, and that alarm then disappears from the Alarms section.



This table explains each field of the alarms list.

Field	Description
Name	Custom name of the Alarm action.
Reason	Shows the log message if the alarm was only triggered by one specific event.
Reasons	Short summary if there were multiple different events.
First Appearance	Date and time when the event indicated in the Reason column occurred for the first time.
Last Appearance	Date and time when the event indicated in the Reason column occurred for the last time.
Count	Number of times the event indicated in the Reason column has occurred.
Show details	This field appears only when there are multiple types of events triggering the same alert. If there are other types of events (that is, other reasons) triggering the same alert, the total number of additional reasons is displayed. You can click it to view a list of all events.

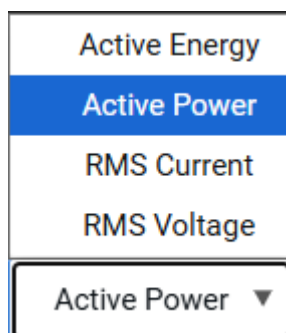
The date and time shown on the web interface are automatically converted to your computer's time zone. To avoid time confusion, it is suggested to apply the same time zone settings to your computer or mobile device.

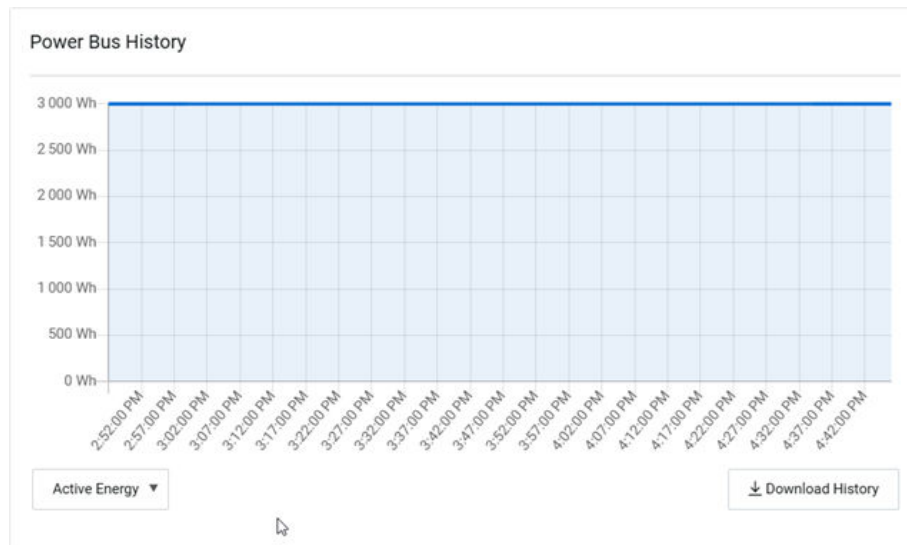
Tip: You can also acknowledge all alarms in the front panel display.

Dashboard - Power Bus History

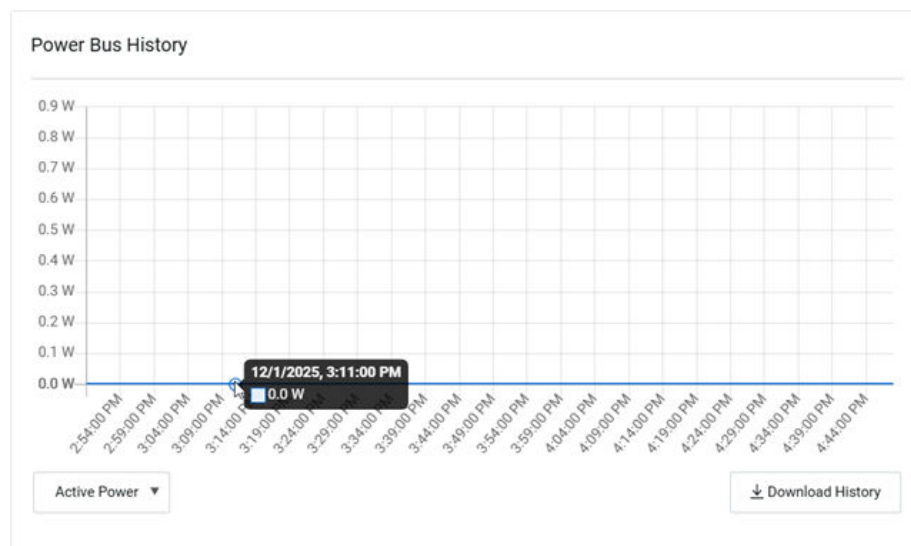
The Power Bus History graph displays the history of the sensor values. Select a different data type by

clicking the selector  below the diagram.





- To retrieve the exact data at a particular time, hover your mouse over the data line in the chart. Both the time and data are displayed as illustrated below.



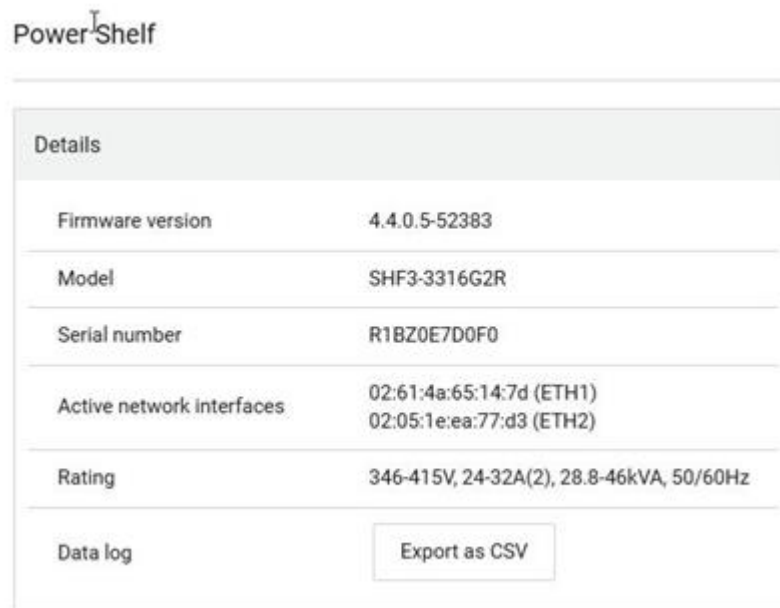
System

To open the System page, click System in the Menu.

The System page opens on the Details pane

► *Use the Details pane to:*

- Review device hardware and firmware details
- Verify model and serial number
- Check active network interfaces
- Confirm electrical rating information
- Download data logs for analysis using the “Export as CSV” button



The screenshot shows the 'PowerShelf' interface with a 'Details' pane. The pane contains a table with the following information:

Details	
Firmware version	4.4.0.5-52383
Model	SHF3-3316G2R
Serial number	R1BZ0E7D0F0
Active network interfaces	02:61:4a:65:14:7d (ETH1) 02:05:1e:ea:77:d3 (ETH2)
Rating	346-415V, 24-32A(2), 28.8-46kVA, 50/60Hz
Data log	<button>Export as CSV</button>

► *Link Units:*

In the Link Units section, you can view and configure linked Power Shelves. See [Linking Units](#) (on page 293).

► *Settings:*

The Settings page allows you to view and configure operational behaviors for your Power Shelf device.

The Settings area is divided into two functional categories: First, device configuration settings define how the power shelf behaves during power-up, power loss, and fault conditions. Second, reset actions allow you to reset energy counters and minimum/maximum recorded values.

- Name: Displays the user-assigned name of the power shelf.
 - This name appears in dashboards and lists, helping you distinguish between multiple units.
- Relay behavior on power loss: Indicates how the relay behaves when the device loses power. Example: “Non-latching” — the relay will return to a safe default state when power is restored.
- Outlet state on power-up: Determines the outlet’s state (on/off) when the device powers up. There are several options.

- Last known — restores the previous outlet state.
- On — forces all outlets on at startup.
- Off — forces all outlets off at startup.
- Outlet initialization delay on power-up: Specifies the delay time between device power-up and the moment outlets become active. Use this setting for staggering startup.
- Power off period during power cycle: Defines how long the outlet remains off during a power-cycle operation.
- Inrush guard delay: Sets a delay to protect equipment from simultaneous current spikes. During this delay, outlets activate in a controlled sequence.
- Trip cause outlet handling: Determines how the system handles outlet behavior after a fault or trip event.
 - Example: “Keep outlet state unchanged” — outlets resume the same state once the trip condition clears.

► *How to Edit Settings*

- 1) Click Edit Settings at the top-right of the Settings pane.
- 2) Adjust the available fields.
- 3) Save your changes to apply them to the device.

Settings

Edit Settings

Name	Power Shelf1
Relay behavior on power loss	Non-latching
Outlet state on power-up	last known
Outlet initialization delay on power-up	3 s
Power off period during power cycle	10 s
Inrush guard delay	200 ms
Trip cause outlet handling	Keep outlet state unchanged

X Cancel

✓ Save

- Reset all energy counters:
 - An energy reading is a value of total accumulated energy, which is never reset, even if the power fails or the Legrand Power Shelf is rebooted. However, you can manually reset this reading to restart the energy accumulation process. Only users with the "Admin" role assigned can reset energy readings. All energy readings are reset to zero.

Note: This reset button does not reset the energy values of outlet groups. Go to the Outlet Groups page to reset that value.

- Reset all minimum / maximum values:
 - For readings that record a maximum and minimum numeric value, you can reset these values as needed to clear the previous highs and lows.

► **Internal Beeper:**

The internal beeper can be set to buzz as part of an event. You can check the internal beeper status on the Power Shelf Details page.

Internal Beeper

State

Off

Power Shelf

Click Power Shelf in the Menu to open the Power Shelf page. The Power Shelf page contains several sections:

- Power Supplies
- Power Bus sensors
- Power Shelf Global AC Sensors
- Power Supply Sensor History chart

Power Supplies Overview

The Power Supplies page provides status and measurement data for all Power Supplies connected to the Legrand Power Shelf. It is divided into two main sections: Power Supplies and Power Bus.

Use this screen to:

- Verify that all power supplies are functioning correctly.
- Identify missing or non-operational power supplies.
- Monitor voltage, current, power, and energy usage.
- Track performance over time through min/max data.
- Access to individual power supply's details and power control functions.

Power Supplies

This section lists each power supply unit (PSU) and displays its operational status and electrical readings.

Power Supplies									
☐	#▲	Name	PDU	Status	RMS Voltage	RMS Current	Active Power	Active Energy	Lines
	1	Delta ECD1702004 (1)	My Power Shelf (1)	On	48.00 V	0.000 A	0 W	1.00 kWh	L3, NEUTRAL
	2	Delta ECD1702004 (2)	My Power Shelf (1)	On	48.00 V	0.000 A	0 W	1.00 kWh	L2, NEUTRAL
	3	Delta ECD1702004 (3)	My Power Shelf (1)	On	48.00 V	0.000 A	0 W	1.00 kWh	L1, NEUTRAL
	4	— (4)	My Power Shelf (1)	Absent	48.00 V	0.000 A	0 W	0 Wh	L3, NEUTRAL
	5	— (5)	My Power Shelf (1)	Absent	48.00 V	0.000 A	0 W	0 Wh	L2, NEUTRAL
	6	— (6)	My Power Shelf (1)	Absent	48.00 V	0.000 A	0 W	0 Wh	L1, NEUTRAL

► Column Descriptions:

- #: The numerical index for each power supply entry.
- Name: The model or identifier of the power supply unit. Click the link to open details and tasks for the PSU.
- PDU: Shows which Power Shelf the power supply is associated with.
- Status: Indicates whether the unit is On, Off or Absent.

- On means the Power Shelf is detecting the module and it is ON.
- Absent (highlighted in red) means the module is not detected.
- Off means the Power Shelf is detecting the PSU and it is OFF.
- RMS Voltage: Displays the measured voltage from the power supply.
- RMS Current: Shows the measured electrical current.
- Active Power: Indicates how many watts the module is delivering.
- Active Energy: Displays cumulative energy consumption (kWh).
- Lines: Shows which electrical phases (L1, L2, L3) the power supply is connected to, including Neutral.

Power Bus

The Power Bus section summarizes measurements at the Busbar level, showing the combined DC output of the Power Supplies. Each row represents a different sensor reading.

Power Bus								
Power Bus								
	Actual		Minimum		Maximum		Minimum / Maximum	
☐ Sensor ▲	Value	State	Value	Unchanged Since	Value	Unchanged Since	Last Reset	
RMS Current	0.000 A	normal	0.000 A	12/1/2025, 5:06:41 PM EST	0.000 A	12/1/2025, 5:06:41 PM EST	12/1/2025, 5:06:41 PM EST	
RMS Voltage	48.00 V	normal	48.00 V	3/25/2025, 11:37:16 AM EDT	48.00 V	3/25/2025, 11:37:16 AM EDT	3/25/2025, 11:37:14 AM EDT	
Active Power	0 W	normal	0 W	12/1/2025, 5:06:41 PM EST	0 W	12/1/2025, 5:06:41 PM EST	12/1/2025, 5:06:41 PM EST	
Active Energy	3 000 Wh	normal	3 000 Wh	12/1/2025, 5:06:41 PM EST	3 000 Wh	12/1/2025, 5:06:41 PM EST	12/1/2025, 5:06:41 PM EST	

► Column Descriptions:

- Sensor: The type of measurement. These include RMS Current, RMS Voltage, Active Power, Active Energy.
- Actual: Current real-time value and its status. Status example: normal.
- Minimum: The lowest recorded value since the last reset, with timestamp.
- Maximum: The highest recorded value, with timestamp.
- Minimum / Maximum: The time and value of the most recent reset for min/max tracking.

Power Supply Details, Settings, and Operation

Clicking on any power supply in the Power Supplies page opens a details page.

This page provides detailed information and basic controls for an individual power supply unit (PSU) within a power shelf. Use this page to view key device attributes, check operational status, and turn the PSU on or off. You can also access the PSU's inlet details page, using the Inlet hyperlink. See [Inlets - Legrand Power Shelf](#) (on page 69).

My Power Shelf (1) Power Supply 1 - Initrode PSU-1000+ On Off	
Details	
Label	1
Status	On
Model	Initrode PSU-1000+
Serial Number	2.1.42
Firmware Version	
Lines	L3, NEUTRAL
Inlet	My Power Shelf (1) Inlet B

- **Label:** Indicates the unit's assigned identifier within the power shelf.
- **Status:** Shows whether the power supply is currently operating: On, Off, Absent
- **Model:** Displays the hardware model of the power supply.
- **Serial Number:** Provides the serial number for this specific PSU.
- **Firmware Version:** Shows the firmware version installed on this specific PSU. This PSU firmware is separate from the Power Shelf's Xerus firmware, and can be upgraded independently.
- **Lines:** Lists the electrical line connections used by the PSU. For example: L3, Neutral.
- **Inlet:** Provides a clickable link to the inlet the PSU is connected to for tracing power sources.

► *Turn the Power Supply On or Off:*

If you have the appropriate permissions, you can control the PSU's power.

- Click On to power up the PSU.
- Click Off to shut it down.
- Check the Status in the Details pane to verify operation.

► **Settings:**

You can customize the Power Supplies' fan speed in the Settings. You can also reset both the energy counter and the minimum/maximum readings for the Power Supply sensors.

- 1) Click Edit Settings to make changes.
- 2) Fan Speed: the default setting is Automatic. Choose "Override minimum speed" to increase fan speed, then enter a number for the increase in speed.

The screenshot shows a 'Settings' window with a title bar. In the top right corner, there is a blue link 'Edit Settings'. The main content area has a light gray background. Under the heading 'Fan speed', there are two radio button options: 'Automatic' (which is selected) and 'Override minimum speed'. Below these options is a horizontal slider bar with the number '100' on the left and a '%' symbol on the right. Below the slider, there are two rows of controls: 'Reset energy counter' and 'Reset minimum / maximum', each followed by a 'Reset' button. At the bottom right of the window, there are two buttons: 'Cancel' with an 'X' icon and 'Save' with a checkmark icon.

Power Supply Sensors

The Power Supply Sensors information contains 3 sections: Input, Output, and Device Sensors.

For all sections, you can expand the information shown for each sensor by adding additional reading types. This allows you to view historical, minimum, maximum, or last-reset values alongside the current measurement

Input Sensors

The Input Sensors section shows the readings for:

- RMS Current
- RMS Voltage
- Active Power
- Active Energy

Input Sensors									
	Actual		Minimum		Maximum		Minimum / Maximum		
☐ Sensor ▲	Value	State	Value	Unchanged Since	Value	Unchanged Since	Last Reset		
RMS Current	0.000 A	normal	0.000 A	12/1/2025, 5:06:41 PM EST	0.000 A	12/1/2025, 5:06:41 PM EST	☒ Minimum Value		
RMS Voltage	230 V	normal	196 V	12/1/2025, 5:06:41 PM EST	230 V	1/22/2025, 5:06:41 AM EST	☒ Minimum Value Unchanged Since		
Active Power	0 W	normal	0 W	12/1/2025, 5:06:41 PM EST	0 W	12/1/2025, 5:06:41 PM EST	☒ Maximum Value		
Active Energy	1 000 Wh	normal	1 000 Wh	12/1/2025, 5:06:41 PM EST	1 000 Wh	12/1/2025, 5:06:41 PM EST	☒ Maximum Value Unchanged Since		
							☒ Minimum / Maximum Last Reset		
Output Sensors									

Output Sensors

The Output Sensors section shows the readings for:

- Current
- Voltage
- Power
- Energy

Output Sensors				
	Actual		Minimum	Maximum
☐ Sensor ▲	Value	State	Value	Value
Current	0.000 A	normal	0.000 A	0.000 A
Voltage	48.00 V	normal	48.00 V	48.00 V
Power	0 W	normal	0 W	0 W
Energy	1 000 Wh	normal	1 000 Wh	1 000 Wh

Device Sensors

The Device Sensors section shows the readings for:

- Hotspot Temperature
- Inlet Temperature
- Outlet Temperature
- Fan

Device Sensors				
☐ Sensor ▲	Actual		Maximum	⋮
	Value	State	Value	
Hotspot Temperature	0 °C	normal	0 °C	
Inlet Temperature	0 °C	normal	0 °C	
Outlet Temperature	0 °C	normal	0 °C	
Fan	0 rpm	normal	0 rpm	

Power Bus - Sensors

The Power Bus section shows live sensor readings from the power shelf, including Current, Voltage, Power and Energy.

Power Bus			⤴
☐ Sensor ▲	Actual		⋮
	Value	State	📄
Current	0.000 A	normal	
Voltage	48.00 V	normal	
Power	0 W	normal	
Energy	3 000 Wh	normal	

► Customizing the sensor readings:

You can expand the information shown for each sensor by adding additional reading types. This allows you to view historical, minimum, maximum, or last-reset values alongside the current measurement

Power Bus				⤴
☐ Sensor ▲	Actual		Minimum	⋮
	Value	State	Value	📄
Current	0.000 A	normal		
Voltage	48.00 V	normal		
Power	0 W	normal		
Energy	3 000 Wh	normal		

☒ Minimum Value ←
☐ Minimum Value Unchanged Since
☐ Maximum Value
☐ Maximum Value Unchanged Since
☐ Minimum / Maximum Last Reset

Power Shelf Global AC Sensors	

► *Thresholds:*

Sensors can be configured with Thresholds. Click a sensor to open its details page. The Thresholds section allows you to define limit values for each sensor so the system can warn you when readings fall outside expected ranges. This helps detect abnormal conditions and ensures the power shelf is operating within safe limits.

The following threshold types for each sensor are available:

- Lower Critical
- Lower Warning
- Upper Warning
- Upper Critical

Each threshold can be set independently, depending on the behavior you want to monitor.

► *How to Set Thresholds:*

- 1) Open the Thresholds section for the device.
- 2) Select a sensor name, such as Active Power or Apparent Energy.
- 3) Enter values for one or more threshold fields:
 - Lower Critical – the reading is dangerously low
 - Lower Warning – the reading is lower than normal
 - Upper Warning – the reading is higher than normal
 - Upper Critical – the reading is dangerously high
- 4) Save your changes.

► *How Thresholds Affect the Display:*

When sensor readings exceed a threshold, the display automatically highlights them to draw your attention. For example:

- Readings that exceed warning thresholds show Yellow highlighting.
- Readings that exceed critical thresholds are shown with Red highlighting to indicate urgent attention is required.

Setting Thresholds for Total Active Energy or Power

This section applies only to multi-inlet models.

Thresholds for total active energy and total active power are disabled by default. You can enable and set them so that you are alerted when the total active energy or total active power hits a certain level.

For a power shelf model with multiple inlets:

- Total active energy = sum of all inlets' active energy values
- Total active power = sum of all inlets' active power values

► *To configure thresholds for total active energy and/or power:*

- 1) Click Power Shelf.
- 2) Click the Thresholds title bar at the bottom of the page to display thresholds.
- 3) Click a sensor to edit the thresholds.
- 4) Make changes as needed.
 - To enable any threshold, select the corresponding checkbox.
 - Type a new value in the accompanying text box.

The image shows a 'Thresholds' configuration window. It has a title bar 'Thresholds' and a sub-header 'Active Energy'. Below this, there are six rows of settings. Each row has a checkbox, a text input field, and a unit label. The 'Lower critical' row has its checkbox checked and the value '0'. The other rows have their checkboxes unchecked and the value '0'. The units are 'Wh' for the first four rows and 'Samples' for the last two. At the bottom right, there are 'Cancel' and 'Save' buttons.

Threshold Type	Enabled	Value	Unit
Lower critical	☒	0	Wh
Lower warning	☐	0	Wh
Upper warning	☐	0	Wh
Upper critical	☐	0	Wh
Deassertion hysteresis		0	Wh
Assertion timeout		0	Samples

- 5) Click Save.

Inlets - Legrand Power Shelf

You can view all inlet information, configure inlet-related settings, or reset the inlet active energy and min/max sensor values on the Inlet page. To open this page, click 'Inlet' in the Menu. The Inlets page contains information on both the Power Shelf level, and for the inlets of each Power Supply

Inlet thresholds help you identify when your inlet enters warning or critical level. In addition, you can automatically generate alert notifications for any warning or critical status. See [Event Rules and Actions](#) (on page 188).

Note: For multi-inlet models, see [Configuring a Multi-Inlet Model](#) (on page 70).

► *Sensors:*

The sensors section contains a list of inlet sensors with more details. Available inlet sensors depends on the model. Sensors show both readings and states. Sensors in warning or critical states are highlighted in yellow or red. The inlet power chart shows the selected sensor.

- Complete list of inlet power sensors:
 - RMS Current
 - Unbalanced Current
 - RMS Voltage
 - Unbalanced Voltage
 - Unbalanced L-L Voltage
 - Active Power
 - Active Energy

► *Settings--Name the inlet:*

Scroll down past the Sensor list to the Settings.

- Click Edit Settings, enter a name for the inlet, then click Save. For example, name the inlet after the power source.
- The inlet's custom name is displayed on the Inlet page, followed by its label in parentheses.
- Status: Enable or disable the inlet. When you select Disable this inlet, Legrand Power Shelf suppresses all measurements and warnings.

Label	Name
I1	Power Shelf Inlet 1

Status ☐ Disable this inlet (suppresses all measurements and warnings)

Cancel Save

Configuring a Multi-Inlet Model

If the Legrand Power Shelf has more than one inlet, the Inlets page lists all inlets.

► *To view or configure each inlet:*

- 1) Click the desired inlet.



2) Now you can configure the selected inlet, such as enabling thresholds or resetting its energy.

- To disable the inlet, see the following instructions.

► *To disable one or multiple inlets:*

1) On the individual inlet's data page, click Edit Settings.

Settings	
	Edit Settings
Label	A
Name	
Status	Enabled
Reset energy counter	<button>Reset</button>
Reset minimum / maximum	<button>Reset</button>

2) Select the "Disable this inlet" checkbox.

3) Click Save.

4) The inlet status now shows "Disabled."

Settings	
Label	A
Name	
Status	Disabled
Reset energy counter	Reset
Reset minimum / maximum	Reset

- 5) To disable additional inlets, repeat the above steps. If disabling one inlet causes all inlets to be disabled, a confirmation message will appear.
- 6) Click "Yes" to confirm or "No" to cancel the operation.

After disabling any inlet, several critical monitoring and control functions are affected:

- Electrical components powered by the disabled inlet will not report any events or alarms.
- Any remote switching capability for connected outlets will be deactivated.
- Power metering functions will also stop operating.
- Sensors continue accumulating data, even though control functions are disabled.
- Threshold-based alerts (for example, high power consumption) will not trigger warnings or notifications. The system does not flag abnormal conditions associated with the disabled inlet.

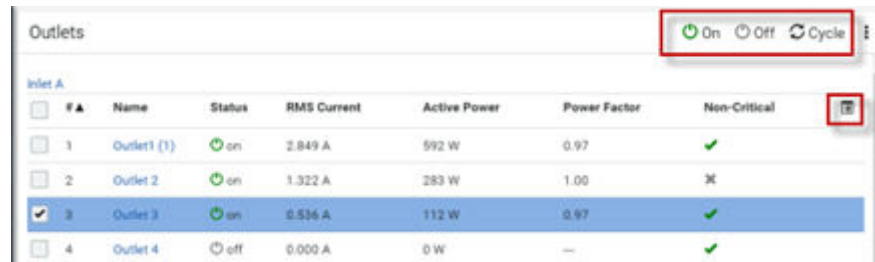
Warning: A disabled inlet, if remaining connected to a power source, continues to receive power from the connected power source and supplies power to the associated outlets and overcurrent protectors.

Outlets

The Outlets page shows a list of all outlets and the overview of outlet status and data. To open this page, click 'Outlets' in the *Menu*.

On this page, you can:

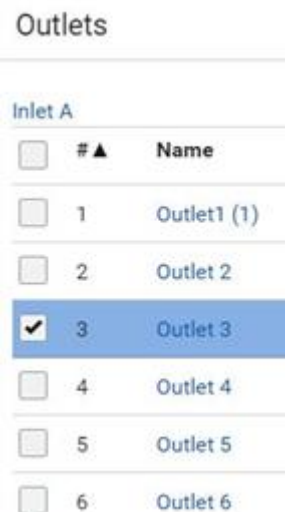
- View all outlets' status.
Outlets above or below thresholds are highlighted in yellow or red.
- Perform actions on all or multiple outlets simultaneously with setup/power-control commands on the top-right corner.
Only outlet-switching capable models show the power-control buttons, and you must have the Switch Outlet permission to perform outlet-switching operations.
Select an outlet checkbox to enable the power control commands.



The screenshot shows a web interface titled "Outlets". At the top right, there are three buttons: "On" (with a green power icon), "Off" (with a grey power icon), and "Cycle" (with a circular arrow icon). Below these is a table with columns: #, Name, Status, RMS Current, Active Power, Power Factor, and Non-Critical. The table lists four outlets. Outlet 3 is selected, highlighted in blue, and its status is "on". A small red box highlights a button in the top right corner of the table.

#	Name	Status	RMS Current	Active Power	Power Factor	Non-Critical
1	Outlet1 (1)	on	2.849 A	592 W	0.97	✓
2	Outlet 2	on	1.322 A	283 W	1.00	✗
3	Outlet 3	on	0.536 A	112 W	0.97	✓
4	Outlet 4	off	0.000 A	0 W	—	✓

- Go to an individual outlet's data/setup page by clicking an outlet's name.



The screenshot shows a web interface titled "Outlets". Below the title, there is a section labeled "Inlet A". Below this, there is a list of outlets with checkboxes and names. Outlet 3 is selected, highlighted in blue.

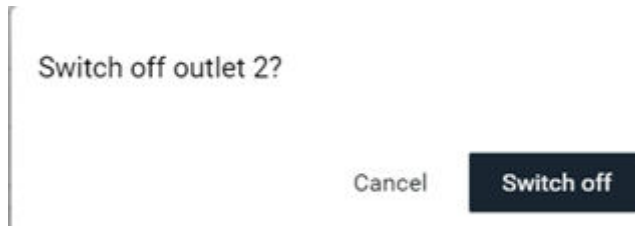
#	Name
1	Outlet1 (1)
2	Outlet 2
3	Outlet 3
4	Outlet 4
5	Outlet 5
6	Outlet 6

► *To power control:*

- 1) Select the checkboxes of the outlets you want to control.
- 2) Click the power control command.



- On: Power ON
 - Off: Power OFF
 - Cycle: Power cycle turns outlet OFF then back ON
- 3) A confirmation message appears. Click to confirm, or cancel



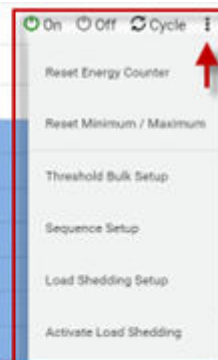
- 4) A 'Sequence running' message may appear while the outlet-switching process finishes. Click Cancel to interrupt the process if needed.



► To reset Energy Counter or Minimum/Maximum Readings:

- Available on models with outlet-metering

Outlets						
Inlet A						
☒	#	Name	Status	RMS Current	Active Power	Power Factor
☒	1	Outlet 1 (1)	on	2.227 A	460 W	0.97
☒	2	Outlet 2	on	1.265 A	264 W	0.98
☒	3	Outlet 3	on	0.740 A	157 W	1.00
☒	4	Outlet 4	on	0.774 A	166 W	1.00
☒	5	Outlet 5	on	1.151 A	248 W	1.00
☒	6	Outlet 6	on	0.559 A	119 W	0.99
☒	7	Outlet 7	on	0.422 A	89 W	0.98
☒	8	Outlet 8	on	0.546 A	117 W	1.00
☒	9	Outlet 9	on	0.157 A	34 W	0.99
☒	10	Outlet 10	on	0.219 A	47 W	0.99



- 1) Select the checkboxes of the outlets you want to reset.
- 2) Click the Three Dots options icon, then select a reset option:
 - Reset Energy Counter: You must have the Admin role. Resets the active energy readings for the selected outlets.
 - Reset Minimum/Maximum: Resets the minimum and maximum recorded values for power sensors for the selected outlets.
- 3) Confirm the operation when prompted.

- To configure global outlet settings or perform the load-shedding command:

- 1) Click  to show a list of commands.
- 2) Select the desired command.

Only outlet-switching capable models have the commands marked with * in the table.

Command	Refer to
Threshold Bulk Setup	Threshold Bulk Setup (on page 76)
*Sequence Setup	Sequence Setup (on page 79)
*Load Shedding Setup	Load Shedding Setup: Setting Non-Critical Outlets (on page 81)
*Activate Load Shedding -- OR -- Deactivate Load Shedding	Load Shedding Mode: Activate or Deactivate (on page 81)

Important: In power control operations, even if the outlet is off, there may still be live voltage present. To avoid electrical shock, never touch the metal contacts of an outlet, regardless of whether it is on or off.

Delta models only cut off one of the two power phases. So there can still be a dangerous voltage present between the other phase and the protective earth (PE) connection.

In Wye or single-phase PX3 models, switching off an outlet disconnects the neutral line. However, a live voltage can still exist between the phase and protective earth (PE) connections.

See Safety Instructions for more details.

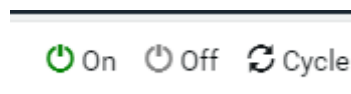
Available Data of the Outlets Overview Page

To show or hide outlet data columns, click the columns icon.



#	Name	Status	RMS Current	Active Power	Power Factor	Crest Factor	Non-Critical
1	Outlet 1	off	0.000 A	0 W	---	1.00	✓
2	Outlet 2	on	0.059 A	13 W	0.99	1.66	✗
3	Outlet 3	on	0.394 A	84 W	1.00	1.42	✗

- Status: Outlet status, shown with color icon. Available on outlet-switching capable models only.



- RMS current (A)
- Active power (W)

- Power Factor
- Crest Factor
- Non-Critical: Outlet-switching capable models only. Non-Critical outlets display a green checkmark. Critical outlets display a gray X.

Non-Critical
✓
✓
✗
✗

- Lines
- Outlet Groups: if the outlet is part of a group, the outlet group name appears as a link.

Threshold Bulk Setup

Enable outlet thresholds to monitor if an outlet reaches warning or critical levels. You can set up automatic alerts for these conditions. The Outlets page lets you configure thresholds for multiple or all outlets at once. By default, RMS voltage and current threshold values are already pre-set in the related fields. See [Default Voltage and Current Thresholds](#) (on page 77).

Available on models with outlet-metering.

► *To configure thresholds-related settings for multiple outlets:*

- 1) On the Outlets page, click  > Threshold Bulk Setup.
- 2) In the "Show Outlet Sensors of Type" field, select a sensor type.
- 3) In the "For Outlets of Receptacle Type" field, select an outlet type.
- 4) Select the checkboxes of the outlets you want to configure.
- 5) Click the Edit Thresholds link.
- 6) Make changes as needed.
 - To enable any threshold, select the corresponding checkbox.
 - Type a new value in the accompanying text box.

Outlet Thresholds

2 selected sensors

Lower critical	☐ 0	A
Lower warning	☐ 0	A
Upper warning	☒ 6.5	A
Upper critical	☒ 8	A
Deassertion hysteresis	1	A
Assertion timeout	0	Samples

7) Click Save.

Default Voltage and Current Thresholds

The following are factory-default voltage and current thresholds. There are no default values set for *lower* current thresholds because lower thresholds are not useful.

Availability of diverse thresholds depends on the capability of the model you purchased.

► *Single-phase inlets or outlets:*

- RMS voltage:

Threshold	Default value
Lower critical	-6% of minimum rating
Lower warning	-3% of minimum rating
Upper warning	+3% of maximum rating
Upper critical	+6% of maximum rating
Hysteresis	2V

- RMS current:

Threshold	Default value
Upper warning	65% of rating
Upper critical	80% of rating

Threshold	Default value
Hysteresis	1A

► *Multi-phase inlets or outlets:*

- Line-Line RMS voltage:

Threshold	Default value
Lower critical	-6% of minimum rating
Lower warning	-3% of minimum rating
Upper warning	+3% of maximum rating
Upper critical	+6% of maximum rating
Hysteresis	2V

- Line RMS current:

Threshold	Default value
Upper warning	65% of rating
Upper critical	80% of rating
Hysteresis	1A

- Unbalanced current:

Threshold	Default value
Upper critical	10% -- disabled by default
Upper warning	5% -- disabled by default
Hysteresis	2%

► *Overcurrent protectors which aims to protect the PDU's outlets:*

- OCP RMS current:

Threshold	Default value
Upper critical	80% of OCP rating
Upper warning	65% of OCP rating

Threshold	Default value
Hysteresis	1A

► *Total residual current:*

Threshold	Default value
Upper critical	30mA
Hysteresis	15mA

Sequence Setup

By default, outlets power on sequentially from outlet 1 to the last when turning on or cycling power for all outlets. You can customize the order to prioritize specific IT equipment that needs to start up first.

You can set a delay between outlets when they are turned on consecutively. For instance, if outlets power on from 1 to 8, and you want a 5-second pause before turning on Outlet 4 after Outlet 3, just assign a 5-second delay to Outlet 3.

► *To set the outlet power-on sequence and delay:*

- 1) On the Outlets page, click  > Sequence Setup.
- 2) Select one or multiple outlets by clicking them one by one in the 'Outlet' column.
- 3) Click the arrow buttons to change the outlet positions.
- 4) Click the 'Delay' column of the outlet that requires a wait after it is turned on.
- 5) Type a new value in seconds.
- 6) Click Save.

Outlet Sequence

Restore Sequence

Outlet Sequence: 1-36

☐	Sequence Order	Delay
☐	Outlet 1	0 s
☒	Outlet 2	0 s
☐	Outlet 3	0 s

☐	Outlet 8	0 s
☐	Outlet 9	0 s
☐	Outlet 10	0 s
☐	Outlet 11	0 s
☐	Outlet 12	0 s
☐	Outlet 13	0 s

↕

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To change the order of outlets in the sequence, select the outlet and then click the up or down arrow buttons to reorder them as needed. If you need to reset the order click on Restore sequence.

Outlet Sequence

Restore Sequence

Outlet Sequence: 2, 4, 3, 1 and 5-36

☐	Sequence Order	Delay
☐	Outlet 2	0 s
☒	Outlet 4	0 s
☐	Outlet 3	0 s
☒	Outlet 1	0 s
☐	Outlet 5	0 s

☐	Outlet 8	0 s
☐	Outlet 9	0 s
☐	Outlet 10	0 s
☐	Outlet 11	0 s
☐	Outlet 12	0 s

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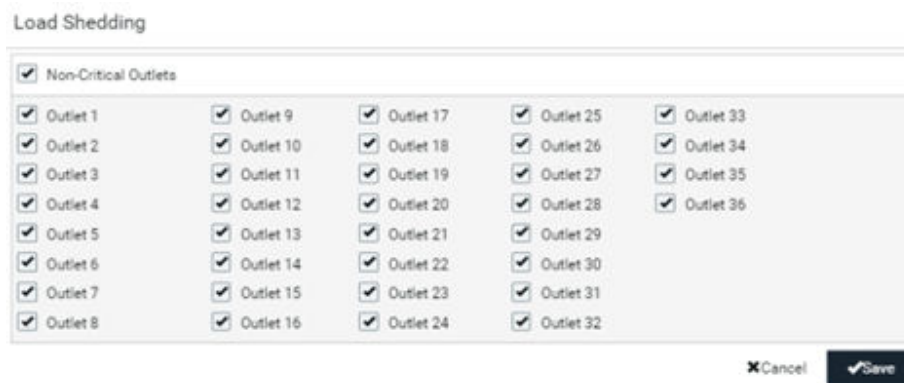
Load Shedding Setup: Setting Non-Critical Outlets

Outlets that are turned off when load shedding is activated are called non-critical outlets. Outlets that are not affected by load shedding are called critical outlets.

Per default, all outlets are configured as critical.

► *To determine critical and non-critical outlets:*

- 1) On the Outlets page, click  > Load Shedding Setup.
- 2) To set non-critical outlets, select the checkboxes of those you want. Or, select the Non-Critical Outlets checkbox to set all outlets as non-critical.
- 3) To turn non-critical outlets into critical ones, deselect their checkboxes.
- 4) Click Save.



Load Shedding

☒ Non-Critical Outlets

☒ Outlet 1	☒ Outlet 9	☒ Outlet 17	☒ Outlet 25	☒ Outlet 33
☒ Outlet 2	☒ Outlet 10	☒ Outlet 18	☒ Outlet 26	☒ Outlet 34
☒ Outlet 3	☒ Outlet 11	☒ Outlet 19	☒ Outlet 27	☒ Outlet 35
☒ Outlet 4	☒ Outlet 12	☒ Outlet 20	☒ Outlet 28	☒ Outlet 36
☒ Outlet 5	☒ Outlet 13	☒ Outlet 21	☒ Outlet 29	
☒ Outlet 6	☒ Outlet 14	☒ Outlet 22	☒ Outlet 30	
☒ Outlet 7	☒ Outlet 15	☒ Outlet 23	☒ Outlet 31	
☒ Outlet 8	☒ Outlet 16	☒ Outlet 24	☒ Outlet 32	

Load Shedding Mode: Activate or Deactivate

Load shedding isn't available on all models. When a UPS supplying power to Legrand Power Shelf switches to battery backup, you can save battery life by turning off non-critical outlets. This process is called load shedding.

During load shedding, non-critical outlets are turned off while critical outlets remain unaffected. By default, all outlets are considered critical. When load shedding starts, Legrand Power Shelf switches off non-critical outlets, and when it stops, Legrand Power Shelf turns back on the non-critical outlets that were previously on.

Exception: If you once manually perform switch-off operation on any non-critical outlets during the load shedding mode, those outlets will NOT be turned back on when exiting the load shedding mode.

Activation of load shedding can be accomplished using the web interface, SNMP or CLI, or triggered by the contact closure sensors.

Tip: It is better to check non-critical outlets prior to manually entering the load shedding mode. The non-critical information can be retrieved from the Outlets page.

You must have one of the following permissions to perform the load shedding commands.

- 'Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration'
- 'Switch Outlet' permission for all non-critical outlets
- Administrative privileges

► *To activate load shedding mode:*

- 1) On the Outlets page, click  > Activate Load Shedding.

Note: If the command is not available, check your permissions, especially whether you have the Switch Outlet permission for ALL noncritical outlets.

- 2) Click Activate on the confirmation message.

Activate the load shedding mode? This will turn off outlets 1-2 and 4.

Cancel

Activate

In the load shedding mode:

- You CANNOT power on any "non-critical" outlets. Note the Lock icon displays for these outlets.

⌵ My PDU (1) Outlets Load shedding active			
☐	# ▲	Name	Status
	1	Outlet 1	 off
	2	Outlet 2	 off
	3	Outlet 3	 off
	4	Outlet 4	 off
	5	Outlet 5	 on

- The lock icon appears for "non-critical" outlets that WILL be automatically powered on when deactivating the load shedding mode.
- The off icon appears for outlets, critical or non-critical, that WILL NOT be automatically powered on when deactivating the load shedding mode.

Tip: If you manually perform any power operations on non-critical outlets during the load shedding mode, the icons vary. See [Off and Lock Icons for Outlets](#) (on page 83).

- The message "Load shedding active" appears next to the 'Outlets' title.
- If the Non-Critical column was hidden, it automatically is shown when load shedding mode is activated.

► *To deactivate load shedding mode:*

- 1) On the Outlets page, click  > Deactivate Load Shedding.
- 2) Click Deactivate on the confirmation message.

Now you can turn on/off any outlets.

► *TIP -- automatic load shedding via contact closure sensors:*

If you have connected a contact closure sensor, you can set up an event rule in a manner that this sensor's status change automatically activates or deactivates the load shedding mode. See [Sample Environmental-Sensor-Level Event Rule](#) (on page 238).

Off and Lock Icons for Outlets

This section further explains the following two icons for outlets, which display in the load shedding mode.

- Lock icon  : It means the outlet WILL be automatically powered on after deactivating the load shedding mode.
- Off icon  : It means the outlet will remain powered OFF when deactivating the load shedding mode.

► *Which outlets show the lock icon :*

- Non-critical outlets that were powered ON prior to the load shedding mode
- Non-critical outlets that you manually switch on during the load shedding mode

Note: The switching-on operation does not power on the selected non-critical outlets while the load shedding mode is active, but will cause those outlets to be automatically turned on after disabling the load shedding mode.

► Which outlets show the Off icon  :

- Any outlets, critical or non-critical, that were powered OFF prior to the load shedding mode
- Any outlets, critical or non-critical, that you manually switch off during the load shedding mode

Individual Outlet Pages

An outlet's data/setup page is opened after clicking the outlet's name on the Outlets overview page.

☐	#▲	Name
☐	1	Outlet 1
☐	2	Outlet 2
☐	3	Outlet 3
☐	4	Outlet 4
☐	5	Outlet 5
☐	6	Outlet 6

The individual outlet's page shows this outlet's detailed information. See Detailed Information on Outlet Pages.

► *To control power:*

On outlet-switching capable models, you can control power on the individual outlet page using power control buttons just like the main Outlets page. You must have the Switch Outlet permission to perform outlet-switching operations.

► *To configure this outlet:*

- 1) Click Edit Settings.

Settings	
Edit Settings	
Name	
State on power-up	PDU defined (last known)
Power off period during power cycle	PDU defined (10 seconds)
Non-critical	☒
Reset energy counter	Reset
Reset minimum / maximum	Reset

- 2) Configure available fields. Note that the fields marked with * are only available on outlet-switching capable models.

Field	Description
Name	Type an outlet name up to 64 characters long.
*State on device startup	Click this field to select this outlet's initial power state. - Options: <i>on</i>, <i>off</i>, <i>last known</i> and <i>PDU defined</i>. - Note that any option other than "PDU defined" will override the global outlet state setting on this particular outlet.
*Power off period during power cycle	Select an option to determine how long this outlet is turned off before turning back on. - Options: <i>PDU defined</i> or customized time. See Power-Off Period Options for Individual Outlets (on page 90). - Note that any time setting other than "PDU defined" will override the global power-off period setting on this particular outlet.
*Non-critical	Select this checkbox only when you want this outlet to turn off in the load shedding mode. See Load Shedding Mode: Activate or Deactivate (on page 81).

- 3) Click Save.
- 4) The outlet's custom name, if available, is displayed in the outlets list, following by its label in parentheses.

Note for 'State on device startup': This setting works only when 'Relay behavior on power loss' is set to *Non-latching*. This is because all relays keep their states unchanged in the latching mode regardless of the power supply status.

- To reset this outlet's energy counter or minimum/maximum values:

Energy counter is stored for each outlet. All outlet sensors with numeric readings store their minimum and maximum recorded reading. You can reset these values for an individual outlet as desired. Only users with the "Admin" role assigned can reset these readings.

- 1) On the individual outlet page, scroll down to Settings.
- 2) Click the Reset button to either "Reset energy counter" or Reset minimum/maximum.
- 3) Click to confirm the reset.

Settings	
Edit Settings	
Name	
State on power-up	PDU defined (last known)
Power off period during power cycle	PDU defined (10 seconds)
Non-critical	✓
Reset energy counter	Reset
Reset minimum / maximum	Reset

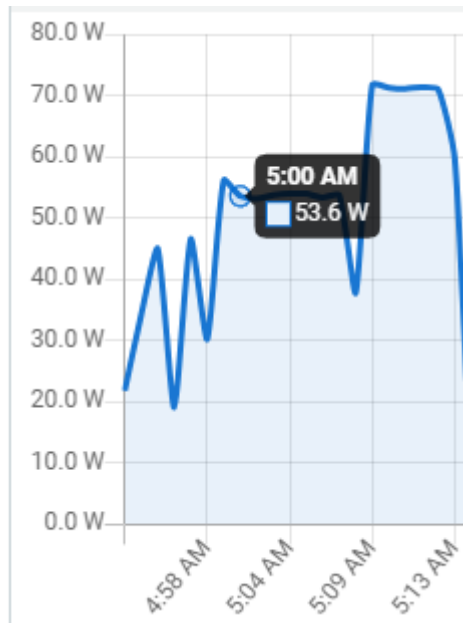
► *To view this outlet's Outlet History power chart:*

By default this outlet's active power data within the past two hours is shown in the power chart.

- Click the selector under the chart to view any other power sensor reading for this outlet.



- To retrieve the exact data at a particular time, hover your mouse over the data line in the chart. Both the time and data are displayed.



► *To configure this outlet's threshold settings:*

Per default, there are predefined RMS voltage and current threshold values in related fields. See Default Voltage and Current Thresholds. You can modify the defaults as needed.

These threshold settings apply to a single outlet. You can also configure thresholds for multiple outlets at once. See [Threshold Bulk Setup](#) (on page 76).

- 1) If the outlet's threshold data is invisible, click the Thresholds title bar to display it.



- 2) Click the desired sensor to edit.
- 3) Make changes as needed.
 - To enable any threshold, select the corresponding checkbox.
 - Type a new value in the accompanying text box.

Lower critical	☐ 188	V
Lower warning	☐ 194	V
Upper warning	☐ 247	V
Upper critical	☐ 254	V
Deassertion hysteresis	2	V
Assertion timeout	0	Samples

4) Click Save.

Detailed Information on Outlet Pages

Each outlet's data page has the Details section for showing general outlet information and Sensors section for showing the outlet sensor status.

► *Details section:*

Field	Description
Label	The physical outlet number
Outlet status	Available on outlet-switching capable models. - On or Off - Inrush details: Click this link to view the inrush details waveform.
Receptacle type	This outlet's receptacle type
Lines	Lines associated with this outlet
Inlet	Inlet associated with this outlet
Overcurrent protector	Overcurrent protector associated with this outlet, if present.
Outlet Groups	Groups associated with this outlet.

► *Sensors section:*

- RMS current (A)
- Peak Current
- Inrush Current
- Current Total Harmonic Distortion
- RMS voltage (V)
- Voltage Total Harmonic Distortion
- Line Frequency (depends on model)
- Active Power (W)
- Active Energy (Wh)
- Reactive Power
- Apparent Power (VA)
- Apparent Energy
- Power Factor
- Crest Factor
- Displacement Power Factor
- Phase Angle

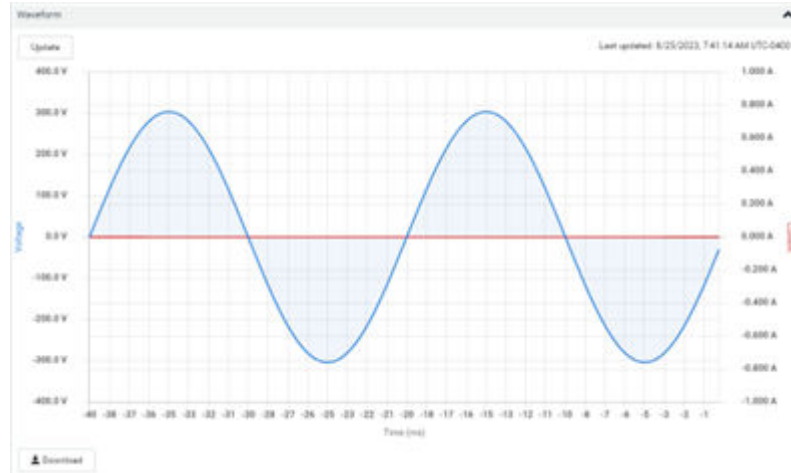
Waveforms for Outlets

► *Waveform:*

In addition to the waveforms captured automatically on OCP trip events, dip/swell events, and relay switch-on events, you can generate a waveform capture whenever you require for an individual outlet. Waveforms created manually represent only the moment in which they are created. Refreshing the browser removes the waveform image.

► *To manually capture a waveform:*

- 1) On the Outlets page, click an outlet to go to the details page.
- 2) Scroll down to the Waveform section.
- 3) Click Update to generate the waveform.
 - Hover your mouse over the waveform to view individual data points.



Power-Off Period Options for Individual Outlets

The 'Power off period during power cycle' setting determines how long an outlet stays off during a power cycle. By default, outlets remain off for 10 seconds before turning back on.

► *Power-Off Period Settings:*

The following items are settings that are present during the Power Cycle of a Power-Off Period:

- The value is between 1 second and 1 hour, or PDU-defined
- The default is to use the PDU-global setting (10 seconds)
- This is only applicable for switched outlets
- The longest power off period configured is used for all outlets when multiple outlets are power cycled. This setting (Cycle Delay) can be displayed as an optional column on the Outlets list page.

► *Power-Off Period Options*

There are two options for setting the power-off period during the power cycle on each individual outlet's page.

Option	Function
PDU defined (configured value)	Follows the global power-off period setting, which is set on the <i>PDU page</i> . The value in parentheses is the current global value.
Customized time	• Select an existing time option, or type a new value <i>with an appropriate time unit added, such as s for seconds</i>.

► *View the Cycle Delay for All Outlets:*

When power cycling multiple outlets, view this column to check for the longest power off delay set. This setting is a Cycle Delay.

Outlets									
On Off Cycle									
#▲	Name	Status	RMS Current	Maximum Active Power	Minimum Active Power	Active Power	Power Factor	Cycle Delay	
1	Outlet 1	on	0.375 A	383 W	0 W	81 W	0.99	10 s	
2	Outlet 2	on	0.491 A	259 W	0 W	104 W	0.98	30 s	
3	Outlet 3	on	0.318 A	337 W	0 W	68 W	0.99	10 s	
4	Outlet 4	on	0.463 A	351 W	0 W	100 W	1.00	10 s	
5	Outlet 5	on	0.647 A	282 W	0 W	139 W	0.99	10 s	
6	Outlet 6	on	0.413 A	271 W	0 W	88 W	0.98	10 s	
7	Outlet 7	on	0.171 A	345 W	0 W	37 W	1.00	10 s	
8	Outlet 8	on	2.784 A	638 W	0 W	602 W	1.00	10 s	
9	Outlet 9	on	0.996 A	287 W	0 W	229 W	0.98	10 s	
10	Outlet 10	on	0.138 A	430 W	0 W	32 W	0.99	10 s	
11	Outlet 11	on	0.204 A	232 W	0 W	47 W	0.99	10 s	
12	Outlet 12	on	1.016 A	305 W	0 W	238 W	1.00	10 s	
13	Outlet 13	on	0.376 A	447 W	0 W	88 W	0.99	10 s	

Outlet Groups

Only PDUs with outlet-switching and/or outlet-metering feature show this menu item.

Choose Outlet Groups in the *Menu*.

► Required permissions:

You must have one of the permissions below to be able to operate all or some of the outlet group features.

- Administrator Privileges -- *all operations*
- Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration -- *creating, editing and deleting outlet groups*
- Switch Outlet Group -- *powering on, off or cycle outlet groups*

► Outlet group data:

The Outlet Groups page will list all outlet groups you create.

Outlet Groups						+ New Group		On	Off	Cycle	
	#▲	Name	Status	Outlets	Active Power						
	1	Test	🟢 on x 3, 🟡 off x 2	PDU 1: 1-2 PDU 2: 11-13	297 W						
	2	Zone1	🟢 on x 3, 🟡 off x 2	PDU 1: 1, 4, 6, 8 and 10	261 W						

- For each group, you can view the following data on the Outlet Groups page:
 - Group number
 - Name: the outlet group name displays as a link. Click to go to the details page for the group.
 - Status: number of outlets with status ON, number of outlets with status OFF.
 - Active Power: The active power for the group. A sum of all member outlets' active power values.
 - Maximum Active Power: Hidden by default. Click the columns icon to add this data. The highest recorded active power for the group.
 - Outlets: A list of the outlet numbers who are members of the group. The PDU(s) of the outlets displays as links.

Creating an Outlet Group

You can create an outlet group if you often have to perform the same action on the same outlets at a regular interval.

For example, create an outlet group when you need to:

- Power cycle specific outlets every week.
- Sum up and track specific outlets' active power values every month.
- Sum up the increased values of specific outlet's active energy values every month.

Note that an outlet can be a member of one or multiple groups.

To create an outlet group, you must have either permission below.

- Administrator Privileges
- Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration

► To create an outlet group:

- 1) In the Outlet Groups page, click Add Group.
- 2) Enter a Group name.

Tip: Outlet group names do not have to be unique. Different groups with the same group name can be identified through their unique index numbers.

New Outlet Group

Group name

Member outlets My PDU (1): 2, 4 and 22

My PDU (1)				
☐ Outlet 1	☐ Outlet 9	☐ Outlet 17	☐ Outlet 25	☐ Outlet 33
☒ Outlet 2	☐ Outlet 10	☐ Outlet 18	☐ Outlet 26	☐ Outlet 34
☐ Outlet 3	☐ Outlet 11	☐ Outlet 19	☐ Outlet 27	☐ Outlet 35
☒ Outlet 4	☐ Outlet 12	☐ Outlet 20	☐ Outlet 28	☐ Outlet 36
☐ Outlet 5	☐ Outlet 13	☐ Outlet 21	☐ Outlet 29	
☐ Outlet 6	☐ Outlet 14	☒ Outlet 22	☐ Outlet 30	
☐ Outlet 7	☐ Outlet 15	☐ Outlet 23	☐ Outlet 31	
☐ Outlet 8	☐ Outlet 16	☐ Outlet 24	☐ Outlet 32	
☐ My PDU (2)				

✕ Cancel

3) Click Save.

Outlet Group Power Control

To control outlet groups, you need one of the following permissions

- Administrator Privileges
- Switch Outlet Group

Power control commands are accessible on the Outlet Groups main page, where you can manage multiple groups, or on individual outlet group pages, where you can control a single group while viewing its details.

► *To switch one or multiple groups on the Outlet Groups page:*

- 1) On the Outlet Groups page, select the group or groups you want to control.
- 2) The power control commands appear in the top right corner.
- 3) Click a power control command.

+ New Group  On  Off  Cycle

- On: Power ON
 - Off: Power OFF
 - Cycle: Power cycle turns outlet OFF then back ON
- 4) Confirm the operation when prompted.

► *To switch one group on a specific outlet group's page:*

- 1) In the Outlet Groups page, click a group name to go to its details page.
- 2) Click a power control command on the top-right corner.

Outlet Groups						+ New Group		On	Off	Cycle	
☐	#▲	Name	Status	Outlets	Active Power						
☒	1	Test	On x 3, Off x 2	PDU 1: 1-2 PDU 2: 11-13	217 W						
☐	2	Zone1	On x 3, Off x 2	PDU 1: 1, 4, 6, 8 and 10	204 W						

3) Confirm the operation when prompted.

If Switchable Outlet Groups are Limited

If a user is assigned the 'Switch Outlet Group' permission for specific outlet groups rather than all groups, certain switching issues might occur.

► Issue:

- When an outlet group that the user originally can switch is deleted, and then re-created with the same group name, the user will not be able to switch the "new" outlet group with the same group name.

► Solution:

- Edit the role assigned to the user. See [Editing or Deleting Users](#) (on page 117).
- Find the Switch Outlet Group permission, and re-select that newly-created outlet group in its outlet group list.

Note: The above issue does not occur for any role which has "All Outlet Groups" selected for its Switch Outlet Group permission.

Resetting a Group's Energy Counter and Minimum/Maximum Values

An outlet group's active energy is calculated by adding up the energy increments from all its member outlets. The group's active energy starts at zero when outlets are grouped together. Subsequent energy changes are calculated based on the increments from the time they joined the group, not their absolute values.

For example:

- Take outlet 1 which has 200 kWh of active energy, and outlet 2 has 300 kWh.
- Add these two outlets in a group. After grouping, the group's energy starts at 0.
- If outlet 1's energy increases to 205 kWh and outlet 2's energy rises to 310 kWh: The increment for outlet1 is (205 - 200 = 5) kWh.- The increment for outlet2 is (310 - 300 = 10) kWh.- The group's total energy becomes (5 + 10 = 15) kWh.

The focus is on the energy changes (increments) rather than the absolute energy values.

Note: A group's active energy is calculated differently; it is NOT simply the total of the active energy values of all its member outlets.

You must have the Administrator Privileges to reset these values and it is available on models with outlet-metering.

- You can reset the energy counter and minimum/maximum values of other readings for one or more outlet groups at a time on the Outlet Groups page.
- To reset these values for a single outlet group, there are two methods -- either Outlet Groups page or individual group page.
- Resetting an outlet group's energy counter has NO impact on any member outlet's energy counter.

► *To reset values on the Outlet Groups page:*

- 1) On the Outlet Groups page, select one or more outlet groups to reset.
- 2) Click  > Reset Energy Counter, or Reset Minimum/Maximum, then confirm the operation when prompted.

► *To reset values on a specific outlet group's page:*

- 1) On the Outlet Groups page, click a group name to open its page.
- 2) Scroll down to the Settings section.
- 3) Click the Reset button to either "Reset energy counter" or Reset minimum/maximum.
- 4) Click to confirm the reset.

Modifying an Outlet Group

To modify an outlet group, you must have either permission below.

- Administrator Privileges
- Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration

► *To modify the member outlets:*

- 1) On the Outlet Groups page, click a group name to go to its details page.
- 2) Click Edit Members.
- 3) Add or remove outlets of this group by selecting or clearing checkboxes.
- 4) Click Save.

► *To change the group name:*

- 1) Scroll down to the Settings section, then click Edit Settings.
- 2) Type a new name.
- 3) Click Save.

► *To configure the thresholds of group sensors:*

- 1) Click the Thresholds title bar at the bottom of the page to display thresholds.
- 2) Click the desired sensor (required), and then click Edit Thresholds.
- 3) Make changes as needed.
 - To enable any threshold, select the corresponding checkbox.
 - Type a new value in the accompanying text box.
- 4) Click Save.

Deleting an Outlet Group

To delete an outlet group, you must have either permission below.

- Administrator Privileges
- Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration

You can delete one or multiple outlet groups at a time.

To delete a single outlet group only, there are two methods -- either Outlet Groups page or individual group page.

► *To delete one or multiple groups on the Outlet Groups page:*

- 1) On the Outlet Groups page, select one or more outlet groups.
- 2) Click  > Delete, then confirm the operation when prompted.

► *To delete a group on a specific outlet group's page:*

- 1) Open a specific outlet group's page by clicking on its name.
- 2) Click  > Delete, then confirm the operation when prompted.

Peripherals

If there are environmental sensor packages connected, they are listed on the Peripherals page.

An environmental sensor package may contain:

- Numeric sensors: Detectors that show both readings and states, such as temperature sensors.
- State sensors: Detectors that show states only, such as contact closure sensors.
- Actuators: An actuator controls a system or mechanism so it shows states only.

Legrand Power Shelf communicates with *managed* sensors/actuators only and retrieves their data. One Legrand Power Shelf can manage a maximum of 64 sensors/actuators.

Open the Peripheral Devices page by clicking Peripherals in the *Menu*. Then you can:

- Perform actions on multiple sensors/actuators by using the control/action icons on the top-right corner.
- Go to an individual sensor's or actuator's data/setup page by clicking its name.

► *Sensor/actuator overview on this page:*

If any sensor enters an alarmed state, it is highlighted in yellow or red. An actuator is never highlighted.

Column	Description
Name	By default, the name assigned contains: • Sensor/actuator type, such as "Temperature" or "Dry Contact." • Sequential number of the same sensor/actuator type, like 1, 2, 3 and so on. You can customize the name. Customize names on the individual sensor page.
Reading	Numeric sensors, such as temperature and humidity, show the reading.
Maximum	Maximum reading of all previously seen values since last reset.
Minimum	Minimum reading of all previously seen values since last reset.
State	Available for all sensors and actuators. Sensor/Actuator States (on page 102)
Type	Sensor or actuator type.
Serial Number	This is the serial number printed on the sensor package's label.
Position	Position indicates where this sensor or actuator is located in the sensor chain. Identifying the Sensor Position and Channel (on page 105)
Actuator	Indicates whether this sensor package is an actuator or not. If yes, the checkmark symbol  is shown.

► *To release or manage sensors/actuators:*

You can multi-select sensors to release or manage them. Releasing is necessary when the maximum number of managed sensors are in use, and you need to make a change, such as replacing old sensors with new ones, or making space by removing an unneeded type and adding a different type. When you manage sensors individually, you can manually select ID numbers--this allows you to simultaneously

release an old sensor if you select to reuse its assigned ID: [Managing One Sensor or Actuator](#) (on page 106). When you manage multiple sensors at once, ID numbers are automatically assigned, and nothing else is changed or released.

1) Select the sensors/actuators that you want to manage/release from management.

2) Click  to view options and select Manage or Release.

- Release: The items are automatically released, and you return to the list. Newly released sensors show at the end of the list as "Manage Device" if they are still physically connected, otherwise they disappear.
- Manage: "Manage Peripheral Device" dialog opens. Click Manage to accept automatic sensor numbers. If a single item was selected, you can choose the ID number by selecting "Manually select a sensor number." Click Manage and you return to the list. Newly managed sensors appear and will show a status in the State column. They can now be renamed and configured.



#	Name	Reading	State	Type	Serial Number	Position
1	Hall Effect 1		normal	Magnetic Contact	QLL0000001	Port 1, Chain position 1
2	On/Off 1		normal	Contact Closure	QLL0000001	Port 1, Chain position 1
3	On/Off 2		normal	Contact Closure	QLL0000001	Port 1, Chain position 2
4	On/Off 3		normal	Contact Closure	QLL0000001	Port 1, Chain position 3
5	On/Off 4		normal	Contact Closure	QLL0000001	Port 1, Chain position 4
6	On/Off 5		normal	Contact Closure	QLL0000001	Port 1, Chain position 5

Manage Peripheral Device

☒ Automatically assign a sensor number
 ☐ Manually select a sensor number

Sensor 1 (unused)

Cancel
 Manage

► *To configure sensor/actuator-related settings:*

1) Click  > Peripheral Device Setup.

Field	Function	Note
Peripheral device Z coordinate format	Options to describe the vertical locations (Z coordinates) of environmental sensor packages. • <i>Rack units or Free-form</i> See Z Coordinate Format (on page 112).	Every sensor has a Z Coordinate field. The format setting specifies whether those coordinates are required to be rack unit numbers or can contain arbitrary text.
Peripheral device auto management	Enables or disables the automatic management feature for Legrand environmental sensor packages. • <i>Default is Enabled.</i>	Automatic Management of Sensors (on page 106)
Mute other door handle	• If selected, one door handle will be completely powered down (including any attached card reader or keypad) before opening the other lock of the same DX2-DH2C2.	• This option helps to avoid overload in power-limited setups with two door handles.
Altitude	Specify the altitude of Legrand Power Shelf above sea level when a differential air pressure sensor is attached. • <i>Range: -425 to 3000 meters (-1394 to 9842 feet)</i> • <i>Negative numbers indicate locations below sea level.</i>	• The device's altitude is associated with the altitude correction factor. • The default altitude measurement unit is meter. • Your user preference for measurements will take effect here.
Active powered dry contact limit	Determines the maximum number of "active" powered dry contact actuators that is permitted concurrently. • <i>Range: 0 to 24</i> • <i>Default: 1</i>	• An "active" actuator is turned ON, or, for a door handle, door is OPENED. • This setting only applies to "powered dry contact" (PD) actuators rather than normal "dry contact" actuators. • You need either 'Change Peripheral Device Configuration' privilege or 'Administrator Privileges' to change the setting.

2) Click Save.

► *To configure default threshold settings:*

Note that default threshold settings affect all sensors already being managed, and establish the initial settings for any sensor added from now on. To customize the threshold settings on a per-sensor basis, go to [Individual Sensor/Actuator Pages](#) (on page 107).

- 1) Click  > Default Threshold Setup.
- 2) Click a sensor to open the threshold settings.
- 3) Make changes as needed.
 - To enable any threshold, select the corresponding checkbox.
 - Type a new value in the accompanying text box.

Lower critical	☒	2	g/m ³
Lower warning	☒	4	g/m ³
Upper warning	☒	20	g/m ³
Upper critical	☒	22	g/m ³
Deassertion hysteresis		1	g/m ³
Assertion timeout		0	Samples

✕ Cancel
✓ Save

- 4) Deassertion hysteresis: An alarm is cleared when the sensor reading normalizes the specified amount away from the threshold. In the screenshot example above, if temperature normalizes by more than 1 degree of the threshold, the alarm is cleared. When the reading is within 1°C from the threshold, the alarm will remain active. For example: A warning is raised when the temperature exceeds 30°C. It has to drop to 29°C to clear the warning.
- 5) Assertion timeout: An alarm is raised when the sensor reading exceeds a threshold for more than the specified number of samples. In the screenshot example above, timeout is set to Zero. An alarm would be raised immediately when the reading exceeds the threshold. If the timeout were set for 20, the sensor reading would have to persist in exceeding a threshold for 20 data samples before an alarm would be raised.
- 6) Click Save.

► *To turn on or off any actuator:*

- 1) Select one or multiple actuators . This activates the power buttons at the top right corner in the web interface.
- 2) Click On or Off. For Door Handles, click Open or Close.

Note: Per default you can turn on as many dry contact actuators as you want, but only one "powered dry contact" actuator can be turned on at the same time. Change this setting in  > Peripheral Device Setup.

- 3) Confirm the operation when prompted.

Yellow- or Red-Highlighted Sensors

The Legrand Power Shelf highlights those sensors that enter the abnormal state with a yellow or red color. Note that numeric sensors can change colors when thresholds are enabled.

Tip: When an actuator is turned ON, it is also highlighted in red for drawing attention.

Name ▼	Reading	State	Type	Serial Number	Position	Actuator
Temperature 2	24.0 °C	normal	Temperature	QMT0000005	Port 1, Chain position 5	
Temperature 1	25.0 °C	above upper warning	Temperature	QMS0000004	Port 1, Chain position 4	
Relative Humidity 1	40 %	above upper critical	Humidity	QMS0000004	Port 1, Chain position 4	
Powered Dry Contact 2		off	Powered Dry Contact	QU7000003	Port 1, Chain position 3, Channel 2	✓

In the following table, "R" represents any numeric sensor's reading. The symbol <= means "smaller than" or "equal to."

Sensor status	Color	States shown in the interface	Description
Unknown		unavailable	Sensor state or readings cannot be detected.
		unmanaged	Sensors are not being managed.
Normal		normal	- Numeric or state sensors are within the normal range. -- OR -- - No thresholds have been enabled for numeric sensors.
Warning		above upper warning	Upper Warning threshold < "R" <= Upper Critical threshold
		below lower warning	Lower Critical threshold <= "R" < Lower Warning threshold
Critical		above upper critical	Upper Critical threshold < "R"
		below lower critical	"R" < Lower Critical threshold
Alarmed		alarmed	State sensors enter the abnormal state.
OCP alarm		Open	- Circuit breaker trips. -- OR -- - Fuse blown.

Managed vs Unmanaged Sensors/Actuators

► Managed sensors/actuators:

- Legrand Power Shelf communicates with managed sensors/actuators and retrieves their data.
- Managed sensors/actuators are always listed on the Peripheral Devices page whether they are physically connected or not.

☐ Name	Reading	State	Type ▼
☐ Temperature 2	24.0 °C	normal	Temperature
☐ Temperature 1	25.0 °C	normal	Temperature
☐ Powered Dry Contact 2		off	Powered Dry Contact
☐ Powered Dry Contact 1		off	Powered Dry Contact

- They show one of the managed states.
- For managed 'numeric' sensors, their readings are retrieved and displayed. If any numeric sensor is disconnected or its reading cannot be retrieved, it shows "unavailable" for its reading.

► *Unmanaged sensors/actuators:*

- Legrand Power Shelf does NOT communicate with unmanaged sensors/actuators.
- Unmanaged sensors/actuators are listed only when they are physically connected to Legrand Power Shelf. They disappear from the web interface when they are no longer connected.
- They do *not* have an ID number.
- They show the "unmanaged" state.

Sensor/Actuator States

An environmental sensor or actuator shows its real-time state after being managed.

Available sensor states depend on the sensor type -- numeric or state sensors. For example, a contact closure sensor is a state sensor so it switches between three states only -- *unavailable*, *alarmed* and *normal*.

Sensors will be highlighted in yellow or red when they enter abnormal states.

An actuator's state is marked in red when it is turned on.

► *Managed sensor states:*

In the following table, "R" represents any numeric sensor's reading. The symbol <= means "smaller than" or "equal to."

State	Description
normal	• For numeric sensors, it means the readings are within the normal range. • For state sensors, it means they enter the normal state.
below lower critical	"R" < Lower Critical threshold
below lower warning	Lower Critical threshold <= "R" < Lower Warning threshold

State	Description
above upper warning	Upper Warning threshold < "R" <= Upper Critical threshold
above upper critical	Upper Critical threshold < "R"
alarmed	The state sensor enters the abnormal state.
unavailable	• Communication with the managed sensor is lost. -- OR -- • Sensor packages are upgrading their sensor firmware.

Note that for a contact closure sensor, the normal state depends on the normal setting you have configured.

► *Managed actuator states:*

State	Description
on	<i>The actuator is turned on.</i>
off	<i>The actuator is turned off.</i>
unavailable	• <i>Communication with the managed actuator is lost.</i> -- OR -- • <i>Sensor packages are upgrading their sensor firmware.</i>

► *Unmanaged sensor/actuator states:*

State	Description
unmanaged	<i>Sensors or actuators are physically connected to the Legrand Power Shelf but not managed yet.</i>

Note: Unmanaged sensors or actuators will disappear from the web interface after they are no longer physically connected.

Finding the Sensor's Serial Number

A sensor package has a serial number tag attached to its rear side.

The serial number for each sensor or actuator appears listed in the web interface when it is detected. Match the serial number from the tag to those listed in the sensor table.



#	Name	Reading	State	Type	Serial Number
1	Hall Effect 1		normal	Magnetic Contact	QLL0000001
2	On/Off 1		normal	Contact Closure	QLL0000001
3	On/Off 2		normal	Contact Closure	QLL0000001

Group Peripheral Sensors

You can group peripheral sensors by their physical packages. Each physical package can contain many logical sensors.

► *To group peripheral sensors:*

- 1) On menu page of Peripheral Devices click on Serial number.

#	Name	Reading	State	Type	Serial Number	Position
1	Hall Effect 1		normal	Magnetic Contact	QLL0000001	Port 1, Chain position 1
2	On/Off 1		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 1
3	On/Off 2		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 2
4	On/Off 3		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 3
5	On/Off 4		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 4
6	On/Off 5		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 5

2) Sensors are grouped by the physical package.

#	Name	Reading	State	Type	Serial Number	Position	Actuator
DX2-DH2C2 (1GE0000001)							
21	Door State 1		closed	Door State	1GE0000001	Port 1, Chain position 6, Channel 1	
22	Door Handle 1		closed	Door Handle	1GE0000001	Port 1, Chain position 6, Channel 1	
23	Door Lock 1		closed	Door Lock	1GE0000001	Port 1, Chain position 6, Channel 1	✓
24	Door State 2		closed	Door State	1GE0000001	Port 1, Chain position 6, Channel 2	
25	Door Handle 2		unavailable	Door Handle	1GE0000001	Port 1, Chain position 6, Channel 2	
26	Door Lock 2		unavailable	Door Lock	1GE0000001	Port 1, Chain position 6, Channel 2	✓
DX-D2C6 (QLL0000001)							
1	Hall Effect 1		normal	Magnetic Contact	QLL0000001	Port 1, Chain position 1	
2	On/Off 1		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 1	
3	On/Off 2		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 2	
4	On/Off 3		normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 3	

Identifying the Sensor Position and Channel

The Peripheral Devices page shows where each sensor or actuator is connected.

Name	Reading	Serial Number	Position	Actuator
Temperature 2	24.0 °C	QMT0000005	Port 1, Chain position 5	
Temperature 1	25.0 °C	QMS0000004	Port 1, Chain position 4	
Powered Dry Contact 2		QU70000003	Port 1, Chain position 3, Channel 2	✓
Powered Dry Contact 1		QU70000003	Port 1, Chain position 3, Channel 1	✓

- The position information includes the port name and the sensor's position in a sensor chain.
For example: *Port 'Sensor', Chain Position 3*
- If a sensor hub is involved, the hub port information is also indicated for most sensors.
For example: *Port 'Sensor', Hub port 2, Chain Position 3*
- If a sensor/actuator contains channels, such as a contact closure sensor or dry contact actuator, the channel information is included.
For example, *Port 'Sensor', Hub port 2, Chain Position 3, Channel 1*

Automatic Management of Sensors



To configure automatic management, go to Peripherals > > Peripheral Device Setup.

► After enabling the automatic management function:

When the maximum number of sensors are not yet managed, newly-connected environmental sensors and actuators are automatically managed upon detection.

► After disabling the automatic management function:

You must manually manage all sensors to start communications. Until you do this, they will not have ID numbers or show sensor readings or states.

Managing One Sensor or Actuator

If you are managing only one sensor or actuator, you can assign the desired ID number to it. When managing multiple sensors/actuators at a time, the IDs are automatically assigned.

Tip: When the total of managed sensors/actuators reaches the maximum value, you cannot manage additional ones. The only way to manage any sensor/actuator is to release or replace the managed ones. To replace a managed one, assign an ID number to it by following the procedure below.

► To manage only one sensor/actuator:

- 1) Click Peripherals in the Menu.
- 2) Unmanaged sensors/actuators appear at the end of the list as "Manage Device". You can identify the sensor/actuator by the Type, Serial Number, and Position columns.

☐	Name	Reading	State ▼	Type	Serial Number
	Manage Device		unmanaged	Absolute Humidity	QMS0000004
	Manage Device		unmanaged	Door Handle	1GE0000001
	Door Lock 2		unavailable	Door Lock	1GE0000001
	Door Lock 1		unavailable	Door Lock	1GE0000001

- 3) Click the Manage Device link, and the Manage Peripheral Device dialog appears.

Manage Peripheral Device

☒ Automatically assign a sensor number

☐ Manually select a sensor number

Sensor 31 (unused) ▼

Cancel

Manage

- Select "Automatically assign a sensor number" to assign an unused ID number. This method does not release any managed sensor or actuator.
- Select "Manually select a sensor number" to select a desired ID number from the list. Selecting an ID already in use will release the sensor currently managed with that ID. IDs already in use show the sensor package's serial number. Available IDs show "unused."

4) Click Manage.

► *Special note for Legrand humidity sensors:*

A Legrand humidity sensor is able to provide three measurements - relative and absolute, and humidity values.

- A relative humidity value is measured in percentage (%).
- An absolute humidity value is measured in grams per cubic meter (g/m³).
- A dew point is measured in degree celsius (°C).

However, only relative humidity sensors are "automatically" managed if the automatic management function is enabled. You must "manually" manage absolute humidity sensors as needed.

Note: Relative and absolute values of the same humidity sensor do NOT share the same ID number though they share the same serial number and position.

Individual Sensor/Actuator Pages

A sensor's or actuator's data/setup page is opened after clicking any sensor or actuator name on the Peripheral Devices page.

Note that only a numeric sensor has threshold settings, while a state sensor or actuator has no thresholds.

Threshold settings, if enabled, help you identify whether any numeric sensor enters the warning or critical level. In addition, you can have Legrand Power Shelf automatically generate alert notifications for any warning or critical status.

► To configure a numeric sensor's threshold settings:

- 1) Click Edit Thresholds.

Sensor		
		Edit Thresholds
	Value	Last time changed or reset
Actual	24.0 °C	
State	normal	
Minimum	24.0 °C	8/16/2021, 10:52:55 AM UTC-0400
Maximum	24.0 °C	7/29/2023, 3:27:09 AM UTC-0400
Reset Minimum / Maximum	Reset	8/16/2021, 10:52:55 AM UTC-0400

Tip: The date and time shown on the Legrand Power Shelf web interface are automatically converted to your computer's time zone. To avoid time confusion, it is suggested to apply the same time zone to your computer or mobile device.

- 2) Select or deselect 'Use default thresholds' according to your needs.

Sensor		
		Edit Thresholds
Use default thresholds	☒	
Lower critical	☒	10 °C
Lower warning	☒	15 °C
Upper warning	☒	30 °C
Upper critical	☒	35 °C
Deassertion hysteresis		1 °C
Assertion timeout		0 Samples
		Cancel Save

- To have this sensor follow the default threshold settings configured for its own sensor type, select the 'Use default thresholds' checkbox.
The default threshold settings are configured on the page of *Peripherals*.
- To customize the threshold settings for this particular sensor, deselect the 'Use default thresholds' checkbox, and then modify the threshold fields below it.

Note: For concepts of thresholds, deassertion hysteresis and assertion timeout, see Sensor Threshold Settings.

3) Click Save.

► To set up a sensor's or actuator's physical location and additional settings:

1) Click Edit Settings.

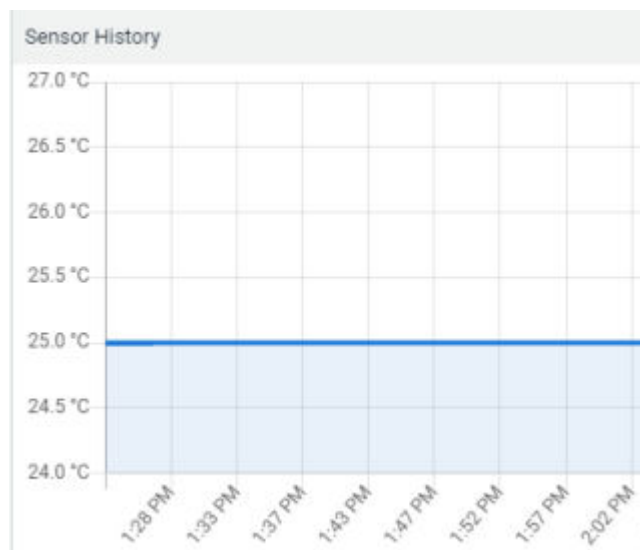
2) Make changes to available fields, and then click Save.

Fields	Description
Name	A name for the sensor or actuator.
Description	Any descriptive text you want.
Location (X, Y and Z)	Describe the sensor's or actuator's location in the data center by typing alphanumeric values for the X, Y and Z coordinates. See Sensor/Actuator Location Example: X, Y, Z Coordinates (on page 112) If the term "Rack Units" appears in parentheses in the Z location, you must type an integer number. The Z coordinate's format is determined on the page of <i>Peripherals</i> .
Alarmed to Normal Delay	This field is available for the DX2-PIR presence detector only. It determines the wait time before the Legrand Power Shelf announces that the presence detector is back to normal after it already returns to normal. Adjust the value in seconds.

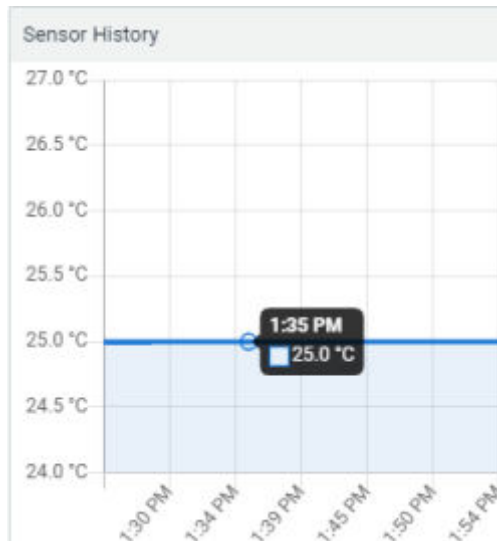
Fields	Description
Binary Sensor Subtype	This field is available for any Legrand contact closure sensor except for DX2-DH2C2's contact closure sensors. Determine the sensor type of your contact closure detector. • <i>Contact Closure</i> detects the door lock or door open/closed status. • <i>Smoke Detection</i> detects the appearance of smoke. • <i>Water Detection</i> detects the appearance of water on the floor. • <i>Vibration</i> detects the vibration of the floor.
Sensor Polarity	This field is available for DX2-CC2 contact closure sensors only. Determine the normal state of your DX2-CC2. • <i>Normal Open</i>: The open status of the connected detector/switch is considered normal. An alarm is triggered when the detector/switch turns closed. • <i>Normal Closed</i>: The closed status of the connected detector/switch is considered normal. An alarm is triggered when the detector/switch turns opened.

► *To view a numeric sensor's chart*

This sensor's data within the past tens of minutes is shown in the chart. Note that only a numeric sensor has this diagram. State sensors and actuators do not have such data.



- To retrieve the exact data at a particular time, hover your mouse over the data line in the chart. Both the time and data are displayed as illustrated below.



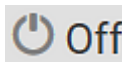
► To turn on or off an actuator:

- 1) Click the desired control button.

My PDU (1) Peripheral Devices							On	Off
Name	Reading	State	Type	Serial Number	Position	Actuator		
Manage Device		unmanaged	Door Handle	10E0000001	Port 1, Chain position 5, Channel 2			
Manage Device		unmanaged	Absolute Humidity	0MS0000004	Port 1, Chain position 4			
Door Handle 1		unavailable	Door Handle	10E0000001	Port 1, Chain position 5, Channel 1			
Door Lock 1		unavailable	Door Lock	10E0000001	Port 1, Chain position 5, Channel 1	✓		
Door Lock 2		unavailable	Door Lock	10E0000001	Port 1, Chain position 5, Channel 2	✓		
Door State 1		closed	Door State	10E0000001	Port 1, Chain position 5, Channel 1			
Door State 2		closed	Door State	10E0000001	Port 1, Chain position 5, Channel 2			
Dry Contact 1		off	Dry Contact	QLL0000001	Port 1, Chain position 1, Channel 1	✓		
Dry Contact 2		off	Dry Contact	QLL0000001	Port 1, Chain position 1, Channel 2	✓		
☒ Dry Contact 3		off	Dry Contact	QLL0000002	Port 1, Chain position 2, Channel 1	✓		
Dry Contact 4		off	Dry Contact	QLL0000002	Port 1, Chain position 2, Channel 2	✓		
South Ethernet 1		normal	Manufacturer Product	Port 1, Chain position 1	Blue 1, Chain position 1			



: Turn ON.



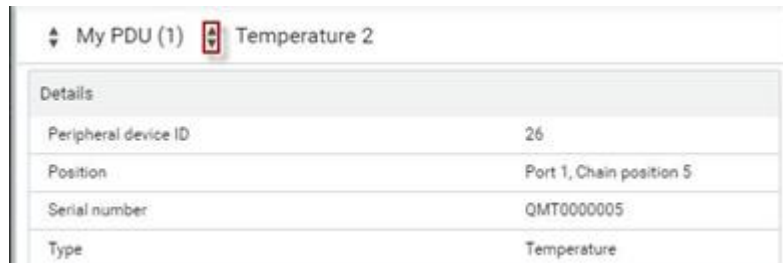
: Turn OFF.

- 2) Confirm the operation on the confirmation message.

Note: Per default you can turn on as many dry contact actuators as you want, but only one "powered dry contact" actuator can be turned on at the same time. To change this limitation of "powered dry contact" actuators, modify the active powered dry contact setting on the Peripherals page.

► *Other operations:*

You can go to another sensor's or actuator's data/setup page by clicking the selector  on the top-left corner.



Details	
Peripheral device ID	26
Position	Port 1, Chain position 5
Serial number	QMT0000005
Type	Temperature

Z Coordinate Format

Z coordinates refer to vertical locations of environmental sensor packages. You can use either the number of rack units or a descriptive text to describe Z coordinates.

► *To configure Z coordinates:*

- 1) Determine the Z coordinate format in the main Peripheral Device Setup page. Available Z coordinate formats include:
 - Rack Units: Measurement of the height is in standard rack units. Number from 0-60.
 - Free-form: Enter any alphanumeric string to describe the Z coordinate. Up to 24 characters.
Example, "Top of Rack", "Bottom of Rack".
- 2) Enter the Z coordinates in the individual sensor settings.

Sensor/Actuator Location Example: X, Y, Z Coordinates

Use the X, Y and Z coordinates to describe each sensor's or actuator's physical location in the data center.

The X, Y and Z values act as additional attributes and are not tied to any specific measurement scheme. Therefore, you can use non-measurement values.

► *Example:*

X = *Brown Cabinet Row*

Y = *Third Rack*

Z = *Top of Cabinet*

► *Values of the X, Y and Z coordinates:*

- X and Y: They can be any alphanumeric values comprising 0 to 24 characters.
- Z: When the Z coordinate format is set to *Rack units*, it can be any number ranging from 0 to 60. When its format is set to *Free-form*, it can be any alphanumeric value comprising 0 to 24 characters.

User Management

User Management deals with user accounts, permissions, and preferred measurement units on a per-user basis.

Legrand Power Shelf includes a built-in administrator account by default. While this account's roles cannot be changed or deleted, it can be renamed. In addition to the default administrator account, you can create an extra administrative user, which can be disabled, renamed, or removed.

The Admin role is a system-defined role with full privileges. You also have the flexibility to create additional users and roles. These roles define the tasks and actions each user is authorized to perform, so assigning one or more roles to every user is essential.

If you are using remote authentication, you do not have to create users accounts locally. Settings are in Device Settings > Security > Authentication. See [Setting Up External Authentication](#) (on page 171).

Creating Users

All local users must have a user account, containing the login name and password. Multiple users can log in simultaneously using the same login name.

To add users, choose User Management > Users > then click the Add User icon  **New User** .

Users  New User  Delete

	User Name	Full Name	Roles	Enabled 
	admin	Administrator	Admin	
	tom	Tom Smith	Alarm Management	

► **User information:**

Field/setting	Description
User name	The name the user enters to log in. • 1 to 32 characters • Case sensitive • Colon character :, forward slash /, and spaces are NOT permitted.
Full name	The user's first and last names.
Password, Confirm password	• 4 to 64 characters • Case sensitive • Spaces are permitted.
Telephone number	The user's telephone number
Email address	The user's email address • Up to 128 characters • Case sensitive
Enable	When selected, the user can log in.
Force password change on next login	When selected, a password change request automatically appears the next time the user logs in.

► **SSH:**

You need to enter the SSH public key only if public key authentication for SSH is enabled.

- 1) Open the SSH public key with a text editor.
- 2) Copy and paste all content in the text editor into the SSH Public Key field.

► **SNMPv3:**

The SNMPv3 access permission is disabled by default.

Field/ setting	Description
Enable SNMPv3	Select this checkbox when intending to permit the SNMPv3 access by this user. Note: The SNMPv3 protocol must be enabled for SNMPv3 access.

Field/ setting	Description
Security level	Click the field to select a preferred security level from the list: • None • Authentication: Authentication and no privacy. • Authentication & Privacy: Authentication protocol SHA-1, privacy protocol AES-128. Default.

- **Authentication Password:** This section is configurable only when 'Authentication' or 'Authentication & Privacy' is selected.

Field/setting	Description
Same as user password	Select this checkbox if the authentication password is identical to the user's password. To specify a different authentication password, disable the checkbox.
Password, Confirm password	Type the authentication password if the 'Same as User Password' checkbox is deselected. The password must consist of 8 to 32 ASCII printable characters.

- **Privacy Password:** This section is configurable only when 'Authentication & Privacy' is selected.

Field/setting	Description
Same as authentication password	Select this checkbox if the privacy password is identical to the authentication password. To specify a different privacy password, disable the checkbox.
Password, Confirm password	Type the privacy password if the 'Same as Authentication Password' checkbox is deselected. The password must consist of 8 to 32 ASCII printable characters.

- **Protocol:** This section is configurable only when 'Authentication' or 'Authentication & Privacy' is selected.

Field/setting	Description
Authentication	Click this field to select the desired authentication protocol. Two protocols are available: • MD5 • SHA-1 (default) • SHA-224 • SHA-256 • SHA-384 • SHA-512

Field/setting	Description
Privacy	Click this field to select the desired privacy protocol. Two protocols are available: • DES • AES-128 (default) • AES-192 • AES-256 • AES-192 (3DES key extension) • AES-256 (3DES key extension)

► *Preferences:*

This section determines the measurement units displayed in the web interface and CLI for this user. The user can also change these in the User Management > User Preferences page. SNMP uses the defaults set in User Management > Default Preferences.

Field	Description
Temperature unit	Preferred units for temperatures --  (Celsius) or  (Fahrenheit).
Length unit	Preferred units for length or height -- Meter or Feet.
Pressure unit	Preferred units for pressure -- Pascal or Psi. • Pascal = one newton per square meter • Psi = pounds per square inch

► *Roles:*

Select one or multiple roles to determine the user's permissions. A user can have a maximum of 32 roles. Note: With multiple roles selected, a user has the union of all roles' permissions.

If the built-in roles do not satisfy your needs, add new roles by clicking New Role. This newly-created role will be then automatically assigned to the user account currently being created.

Built-in role	Description
Admin	Provide full permissions.

Built-in role	Description
Operator	Provide frequently-used permissions, including: • Acknowledge Alarms • Change Own Password • Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration (if your model is a PDU) • Switch Outlet (if your model supports it) • Switch Outlet Group (if your model supports it) • Change PMC, PMB, & PMM Configuration (if your model is a branch circuit monitor) • View Event Settings • View Local Event Log

Editing or Deleting Users

To edit or delete users, choose User Management > Users to open the Users page.

Users				+ New User	Delete
☐	User Name	Full Name	Roles	Enabled ▲	
	test		Operator	✖	
	admin	Administrator	Admin	✔	
	tom	Tom Smith	Alarm Management	✔	

In the Enabled column:

- : The user is enabled.
- : The user is disabled.
- Sort the list by clicking the header.

► To edit or delete a user account:

- 1) On the Users page, click the desired user. The Edit User page for that user opens.
 - You can rename the user. This action is logged.
 - To change the password, type a new password in the Password and Confirm Password fields. If the password field is left blank, the password remains unchanged.
 - To delete this user, click **Delete**, and confirm the operation.

Edit User - tom  Delete

User

User name

Full name

Password

Confirm password

Telephone number

Email address

Enable ☒

Force password change on next login  ☒

2) Click Save for changes.

► *To delete multiple user accounts:*

1) On the Users page, select users by clicking the checkboxes.

2) Click the Delete icon  Delete then click to confirm.

Note: You cannot delete the original factory-default Administrator account, but you can disable it.

Users + New User 				
☒	User Name	Full Name	Roles	Enabled ▲
☒	test		Operator	
	admin	Administrator	Admin	
☒	tom	Tom Smith	Alarm Management	

Creating Roles

A role is a combination of permissions. Each user must have at least one role.

The Legrand Power Shelf provides two built-in roles.

Built-in role	Description
Admin	Provide full permissions.

Built-in role	Description
Operator	Provide frequently-used permissions, including: • Acknowledge Alarms • Change Own Password • Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration • Switch Outlet (for supported models) • Switch Outlet Group (for supported models) • View Event Settings • View Local Event Log

If the two roles do not satisfy your needs, add new roles. Up to 64 roles are supported.

► *To create a role:*

- 1) Choose User Management > Roles > New icon  **New Role** .



- 2) Assign a role name.
 - 1 to 32 characters long
 - Case sensitive
 - Spaces are permitted
- 3) Type a description for the role in the Description field.
- 4) Select the desired privilege(s).
 - The 'Administrator Privileges' includes all privileges.
 - The 'Unrestricted View Privileges' includes all 'View' privileges.
- 5) Some privileges have additional selections. These rows contain a blue hyperlink and expand arrow. Click either to view options.
 - For example, in the Switch Actuator and Switch Outlet privileges, you can specify the actuators and outlets that users can switch on/off.

6) Click Save. The role is created and you can assign it to any user.

Editing or Deleting Roles

Roles cannot be renamed, but you can delete them or change their included privileges.

Choose User Management > Roles to open the Roles page, which lists all roles.

The built-in Admin role displays the lock icon . You cannot delete it or change it.

Roles + New Role Delete	
☐ Role Name ▲	Description
 Admin	System defined administrator role including all privileges.
☐ Alarm Management	
☒ Operator	Predefined operator role.

► To edit a role:

1) On the Roles page, click the desired role. The Edit Role page opens.

- You can edit the description or change the privileges.
- To delete this role, click  Delete, and confirm the operation.

2) Click Save.

► *To delete any roles:*

- 1) On the Roles page, select the checkboxes for roles you want to delete.
- 2) Click the Delete icon  **Delete** then click Delete in the confirmation message.

Privileges

Change Power Shelf Configuration

Setting Your Preferred Measurement Units

You can change the measurement units shown in the user interface according to your own preferences regardless of the permissions you have.

Measurement unit changes apply to the web interface and CLI. SNMP uses the default measurement units. See [Setting Default Measurement Units](#) (on page 122).

Setting your own preferences does not change the default measurement units.

► *To set user preferences:*

- 1) Choose User Management > User Preferences.
- 2) Make changes as needed.

Field	Description
Temperature unit	Preferred units for temperatures --  (Celsius) or  (Fahrenheit).
Length unit	Preferred units for length or height -- Meter or Feet.

Field	Description
Pressure unit	Preferred units for pressure -- Pascal or Psi. • Pascal = one newton per square meter • Psi = pounds per square inch

3) Click Save.

Setting Default Measurement Units

User preferences apply to displays in the GUI and CLI for locally authenticated users. Default preferences apply to the front panel and SNMP, and to remote-authenticated users.

► *To set up default user preferences:*

- 1) Click User Management > Default Preferences.
- 2) Make changes as needed.

Field	Description
Temperature unit	Preferred units for temperatures -- Celsius or Fahrenheit.
Length unit	Preferred units for length or height -- Meter or Feet.
Pressure unit	Preferred units for pressure -- Pascal or Psi. • Pascal = one newton per square meter • Psi = pounds per square inch

3) Click Save.

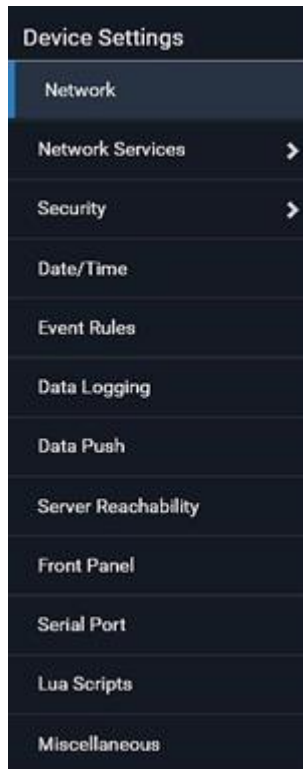
User Interfaces Showing Default Units

Default measurement units will apply to the following user interfaces or data:

- Web interface for "newly-created" local users when they have not configured their own preferred measurement units.
- Web interface for users who are remotely authenticated.
- The sensor report triggered by the "Send Sensor Report" action.
- Front panel LCD display.

Device Settings

Click 'Device Settings' in the *Menu*.



Network Settings

Configure wired, wireless, and Internet protocol-related settings on the Network page after connecting the Legrand Power Shelf to your network.

You can enable both wired and wireless networking to assign multiple IP addresses—one for wired and one for wireless connections. For example, enabling an Ethernet interface allows you to obtain an IPv4 and/or IPv6 address, while configuring the wireless interface provides an additional IPv4 and/or IPv6 address. This setup also supports port forwarding mode, enabling Legrand Power Shelf to handle more than one IPv4 or IPv6 address simultaneously.

However, in the BRIDGING mode, there is only one IP address for wired networking. Wireless networking is NOT supported in this mode.

Default gateways are configured per interface.

Important: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.

- *After enabling either or both Internet protocols:*

After enabling IPv4 and/or IPv6, all but not limited to the following protocols will be compliant with the selected Internet protocol(s):

- LDAP
- NTP
- SMTP
- SSH
- Telnet
- FTP
- SSL/TLS
- SNMP
- SysLog

Note: Legrand Power Shelf disables TLS 1.0 and 1.1 by default. It enables only TLS 1.2 and 1.3.

Common Network Settings

Common Network Settings are OPTIONAL, not required. Therefore, leave them unchanged if there are no specific local networking requirements.

Field	Description
Cascading mode	Leave it to the default "None" unless you are establishing a cascading chain. • Setting the Cascading Mode (on page 138)
DNS resolver preference	Determine which IP address is used when the DNS resolver returns both IPv4 and IPv6 addresses. • IPv4 address: Use the IPv4 addresses. • IPv6 address: Use the IPv6 addresses.
DNS suffixes (optional)	Specify a DNS suffix name if needed.

Field	Description
First/Second/ Third DNS server	Manually specify static DNS server(s). • If any static DNS server is specified in these fields, it will override the DHCP-assigned DNS server. • If DHCP (or Automatic) is selected for IPv4/IPv6 settings, and there are NO static DNS servers specified, DHCP-assigned DNS servers are used.

You can manually configure or the route information using IPv4 and IPv6 static routes. See [Static Route Examples](#) (on page 135) and [Static Route Interface Names](#) (on page 137).

The screenshot displays two sections for configuring static routes. The top section is titled 'IPv4 routes' and contains a table with columns '#', 'Destination', and 'Next Hop / Interface'. Below the table, it states 'no routes defined' and includes an 'Add Route' button. The bottom section is titled 'IPv6 routes' and follows the same layout with a table, 'no routes defined' text, and an 'Add Route' button.

802.1x Security Overview

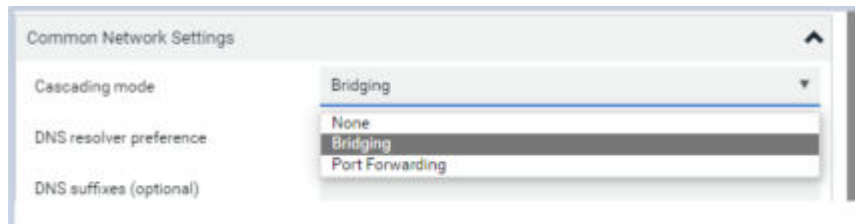
You can configure IEEE 802.1X authentication individually on each LAN port to ensure secure access for Legrand Power Shelf on both LAN and WLAN networks. This authentication protocol verifies a user's identity using their credentials or a certificate, which is validated by a RADIUS authentication server. IEEE 802.1X relies on the uploaded certificate from the Certificate Repository to perform identity verification. Legrand Power Shelf supports EAP_TLS and EAP_PEAP as authentication methods to securely exchange information. See [Setting Up a TLS Certificate](#) (on page 161) to configure and upload the proper certificate.

Ethernet (Wired) Interface Settings

On the Network page, click the ETHERNET section if the Legrand Power Shelf has one port or click ETH1 and ETH2 sections respectively to configure each port. By default, both ETH1 and ETH2 interfaces are enabled.

► *Bridging Cascading mode:*

If the device's cascading mode is set to 'Bridging', the BRIDGE section appears. Then you must click the BRIDGE section for IPv4/IPv6 settings.



► *IPv4 settings:*

Field/setting	Description
Enable IPv4	Enable or disable the IPv4 protocol.
IP auto configuration	Select the method to configure IPv4 settings. • DHCP: Auto-configure IPv4 settings via DHCP servers. • Static: Manually configure the IPv4 settings.
Preferred hostname	Enter the hostname you prefer for IPv4 connectivity

- DHCP settings: Optionally specify the preferred hostname, which must meet the following requirements:
 - Consists of alphanumeric characters and/or hyphens
 - Cannot begin or end with a hyphen
 - Cannot contain more than 63 characters
 - Cannot contain punctuation marks, spaces, and other symbols
- Static settings:
 - Assign a static IPv4 address, which follows this syntax "IP address/prefix length".
Example: *192.168.84.99/24*
 - Assign a Default Gateway.

► *IPv6 settings:*

Field/setting	Description
Enable IPv6	Enable or disable the IPv6 protocol.
IP auto configuration	Select the method to configure IPv6 settings. • Automatic: Auto-configure IPv6 settings via DHCPv6. • Static: Manually configure the IPv6 settings.
Preferred hostname	• Enter the hostname you prefer for IPv6 connectivity

- Automatic settings: Optionally specify the preferred hostname, which must meet the above requirements.
- Static settings:
 - Assign a static IPv6 address, which follows this syntax "IP address/prefix length".

Example: `fd07:2fa:6cff:1111::0/128`

- Assign a Default Gateway.

Note: IPv6 configuration is based on MAC address.

► **Enable Interface:**

Make sure the Ethernet interface is enabled, or all networking through this interface fails. This setting is available in the ETH1/ETH2 or ETHERNET section, but not available in the BRIDGE section.

Enable interface



► **Other Ethernet settings:**

Field	Description
Speed	Select a LAN speed. • <i>Auto</i>: System determines the optimum LAN speed through auto-negotiation. • <i>10 MBit/s</i>: Speed is always 10 Mbps. • <i>100 MBit/s</i>: Speed is always 100 Mbps. • <i>1 GBit/s</i>: Speed is always 1 Gbps (1000 Mbps).
Duplex	Select a duplex mode. • <i>Auto</i>: Selects the optimum transmission mode through auto-negotiation. • <i>Full</i>: Data is transmitted in both directions simultaneously. • <i>Half</i>: Data is transmitted in one direction at a time.
Current state	Show the LAN's current status, including the current speed and duplex mode.
MTU	• Set the MTU from 1280 to 1500.
Enable LLDP	• Default is enabled. When LLDP is enabled, device discovery is possible with LLDP management software that is often present in network switches.

Field	Description
Authentication	Select an authentication method. • <i>No Authentication</i>: No authentication data is required. • <i>EAP</i>: Legrand Power Shelf supports 802.1X (EAP) Network Authentication. You must have a client-side certificate to communicate with the authentication server. Enter required authentication data in the fields that appear.
Outer authentication	This field appears when 'EAP' is selected. There are two authentication methods for EAP. • <i>PEAP</i>: A TLS tunnel is established, and an inner authentication method can be specified for this tunnel. • <i>TLS</i>: Authentication between the client and authentication server is performed using TLS certificates.
Inner authentication	This field appears when both 'EAP' and 'PEAP' are selected. • <i>MS-CHAPv2</i>: Authentication based on the given password using MS-CHAPv2 protocol. • <i>TLS</i>: Authentication between the client and authentication server is performed using TLS certificates.
Identity	This field appears when 'EAP' is selected. Type your user name.
Password	This field appears only when 'EAP', 'PEAP' and 'MS-CHAPv2' are all selected. Type your password.

Field	Description
Client certificate, Client private key, Client private key password	A client certificate is required for two scenarios: (1) EAP+TLS, (2) EAP+PEAP+TLS . PEM encoded X.509 certificate and PEM encoded private key are required for certification-based authentication methods. Private key password is optional. • Private keys in PKCS#1 and PKCS#8 formats are supported. • Client Private Key Password should be entered only when your private key is encrypted with a password. • To view the uploaded certificate, click Show Client Certificate. • To remove the uploaded certificate and private key, click 'Clear Key/Certificate selection'.
CA certificate	This field appears when 'EAP' is selected. CA certificate is required when "Enable verification of TLS certificate chain" is selected by default; and strongly recommended
RADIUS authentication server name	This field appears when 'EAP' is selected. Type the name of the RADIUS server if it is present in the TLS certificate. • The name must match the fully qualified domain name (FQDN) of the host shown in the certificate Do not leave this field blank as it reduces security.

Note: Auto-negotiation is disabled after setting both the speed and duplex settings to NON-Auto values, which may result in a duplex mismatch.

- Available settings for the CA Certificate:

If the required certificate file is a chain of certificates, and you are not sure about the requirements of a certificate chain, see TLS Certificate Chain.

Field/setting	Description
Enable verification of TLS certificate chain	Select this checkbox to verify the certificate of the EAP authentication server. Then you must upload the certificate of the issuing CA in the next field.

Field/setting	Description
Browse button	Click this button to import the certificate of the issuing CA. Then you can: - Click Show to view the certificate's content. - Click Remove to delete the installed certificate if it is inappropriate.
Allow expired and not yet valid certificates	- Select this checkbox to make the authentication succeed regardless of the certificate's validity period. - After deselecting this checkbox, the authentication fails whenever any certificate in the selected certificate chain is outdated or not valid yet.
Allow connection if system clock is incorrect	If powered off for a long time, the system time may be incorrect. When this checkbox is deselected, and if the system time is incorrect, the installed TLS certificate is considered not valid yet and will cause the network connection to fail. When this checkbox is selected, it will make the network connection successful when the system time is earlier than the firmware build before synchronizing with any NTP server.

Wireless Network Settings

Wireless network is not supported for Bridging mode or for Expansion units in port forwarding mode.

Wireless interface is disabled by default. Enable it to use wireless networking.

On the Network page, click the WIRELESS section to configure wireless and IPv4/IPv6 settings.

► *Interface Settings:*

Field/setting	Description
Enable interface	Enable or disable the wireless interface. When disabled, the wireless networking fails.
Hardware state	Check this field to ensure that a wireless USB LAN adapter is detected. If not, verify that the USB LAN adapter is firmly connected or that it is supported.
SSID	Type the name of the wireless access point (AP).
Force AP BSSID	If the BSSID is available, select this checkbox.
BSSID	Type the MAC address of an access point.

Field/setting	Description
MTU	Set the Maximum Transmission Unit from 1280 to 1500.
Enable High Throughput (802.11n)	Enable or disable 802.11n protocol.
Authentication	Select an authentication method. • <i>No Authentication</i>: No authentication data is required. • <i>PSK</i>: A Pre-Shared Key is required. • <i>EAP</i>: Legrand Power Shelf supports 802.1X (EAP) Network Authentication. Enter required authentication data in the fields that appear.
Pre-Shared Key	This field appears only when PSK is selected. Type the PSK string.
Outer authentication	This field appears when 'EAP' is selected. There are two authentication methods for EAP. • <i>PEAP</i>: A TLS tunnel is established, and an inner authentication method can be specified for this tunnel. • <i>TLS</i>: Authentication between the client and authentication server is performed using TLS certificates.
Inner authentication	This field appears when both 'EAP' and 'PEAP' are selected. • <i>MS-CHAPv2</i>: Authentication based on the given password using MS-CHAPv2 protocol. • <i>TLS</i>: Authentication between the client and authentication server is performed using TLS certificates.
Identity	This field appears when 'EAP' is selected. Type your user name.
Password	This field appears only when 'EAP', 'PEAP' and 'MS-CHAPv2' are all selected. Type your password.

Field/setting	Description
Client certificate, Client private key, Client private key password	This field appears when 'EAP', 'PEAP' and 'TLS' are all selected. PEM encoded X.509 certificate and PEM encoded private key are required for certification-based authentication methods. Private key password is optional. - Private keys of PKCS#1 and PKCS#8 formats are supported. - Client Private Key Password should be entered only when your private key is encrypted with a password. - To view the uploaded certificate, click Show Client Certificate. - To remove the uploaded certificate and private key, click 'Clear Key/Certificate selection'.
CA certificate	This field appears when 'EAP' is selected. A third-party CA certificate may or may not be needed. If needed, follow the steps below.
RADIUS authentication server name	This field appears when 'EAP' is selected. Type the name of the RADIUS server if it is present in the TLS certificate. The name must match the fully qualified domain name (FQDN) of the host shown in the certificate.

- Available settings for the CA Certificate:

If the required certificate file is a chain of certificates, and you are not sure about the requirements of a certificate chain, see TLS Certificate Chain.

Field/setting	Description
Enable verification of TLS certificate chain	Select this checkbox for the Legrand Power Shelf to verify the validity of the TLS certificate that will be installed. For example, the certificate's validity period against the system time is checked.
Browse button	Click Browse to import a certificate file. Then you can: - Click Show to view the certificate's content. - Click Remove to delete the installed certificate if it is inappropriate.

Field/setting	Description
Allow expired and not yet valid certificates	- Select this checkbox to make the authentication succeed regardless of the certificate's validity period. - After deselecting this checkbox, the authentication fails whenever any certificate in the selected certificate chain is outdated or not valid yet.
Allow connection if system clock is incorrect	When this checkbox is deselected, and if the system time is incorrect, the installed TLS certificate is considered not valid yet and will cause the wireless network connection to fail. When this checkbox is selected, it will make the wireless network connection successful when the Legrand Power Shelf system time is earlier than the firmware build before synchronizing with any NTP server.

► *IPv4 settings:*

Field/setting	Description
Enable IPv4	Enable or disable the IPv4 protocol.
IP auto configuration	Select the method to configure IPv4 settings. DHCP: Auto-configure IPv4 settings via DHCP servers. Static: Manually configure the IPv4 settings.
Preferred hostname	Enter the hostname you prefer for IPv4 connectivity

- DHCP settings: Optionally specify the preferred hostname, which must meet the following requirements:
 - Consists of alphanumeric characters and/or hyphens
 - Cannot begin or end with a hyphen
 - Cannot contain more than 63 characters
 - Cannot contain punctuation marks, spaces, and other symbols
- Static settings: Assign a static IPv4 address, which follows this syntax "IP address/prefix length".
Example: *192.168.84.99/24*

► *IPv6 settings:*

Field/setting	Description
Enable IPv6	Enable or disable the IPv6 protocol.
IP auto configuration	Select the method to configure IPv6 settings. Automatic: Auto-configure IPv6 settings via DHCPv6. Static: Manually configure the IPv6 settings.

Field/setting	Description
Preferred hostname	• Enter the hostname you prefer for IPv6 connectivity

- Automatic settings: Optionally specify the preferred hostname, which must meet the above requirements.
- Static settings: Assign a static IPv6 address, which follows this syntax "IP address/prefix length".
Example: *fd07:2fa:6cff:1111::0/128*

Note: IPv6 configuration is based on MAC address.

► (Optional) To view the wireless LAN diagnostic log:

- Click Show WLAN Diagnostic Log. See [Diagnostic Log for Network Connections](#) (on page 134)



Diagnostic Log for Network Connections

A diagnostic log for inspecting connection errors that occurred during the EAP authentication or the wireless network connection is provided. The information is useful for technical support.

The diagnostic log shows data only after connection errors are detected.

Each entry in the log consists of:

- ID number
- Date and time
- Description

► *To view the log:*

- 1) Access the diagnostic log with either method below.
 - Choose Device Settings > Network > ETH1/ETH2 > Show EAP Authentication Log.
 - Choose Device Settings > Network > WIRELESS > Show WLAN Diagnostic Log.
- 2) The log is refreshed automatically at a regular interval of five seconds.
 - To avoid any new events' interruption during data browsing, you can suspend the automatic update by clicking Pause.
 - To restore automatic update, click Resume. Those new events that have not been listed yet due to suspension will be displayed in the log now.

► *To clear the diagnostic log:*

- 1) On the top-right corner of the log, click  >  Clear Log .
- 2) Click Clear Log on the confirmation message.

Static Route Examples

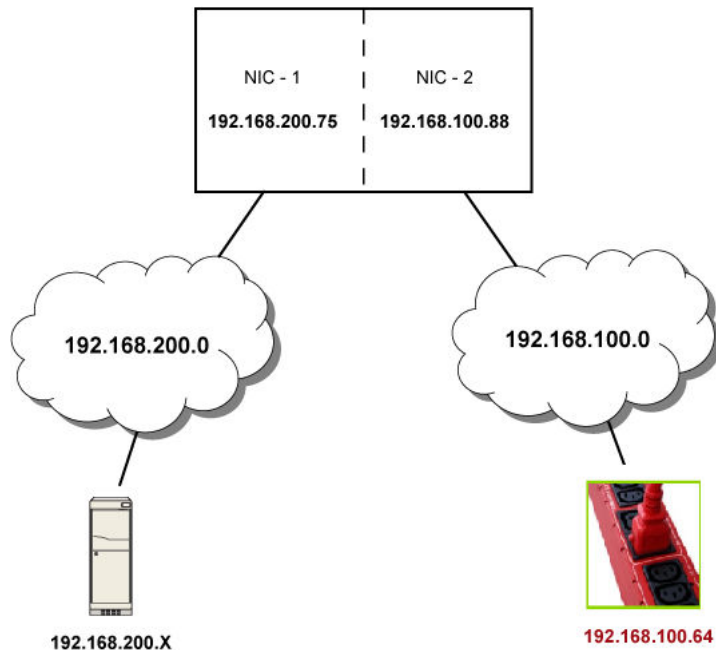
This section describes two static route examples: IPv4 and IPv6. Both examples assume that two network interface controllers (NIC) have been installed in one network server, leading to two available subnets, and IP forwarding has been enabled. All of the NICs and Legrand Power Shelf devices in the examples use static IP addresses.

Most of local multiple networks are not directly reachable and require the use of a gateway. Therefore, we will select Gateway in the following examples. If your local multiple networks are directly reachable, you should select Interface rather than Gateway.

Note: If Interface is selected, you should select an interface name instead of entering an IP address.

► *IPv4 example:*

- Your Legrand Power Shelf: *192.168.100.64*
- Two NICs: *192.168.200.75* and *192.168.100.88*
- Two networks: *192.168.200.0* and *192.168.100.0*
- Prefix length: 24



In this example, NIC-2 (192.168.100.88) is the next hop router for your Legrand Power Shelf to communicate with any device in the other subnet 192.168.200.0.

In the IPv4 "Static Routes" section, you should enter the data as shown below. Note that the address in the first field must be of the Classless Inter-Domain Routing (CIDR) notation.

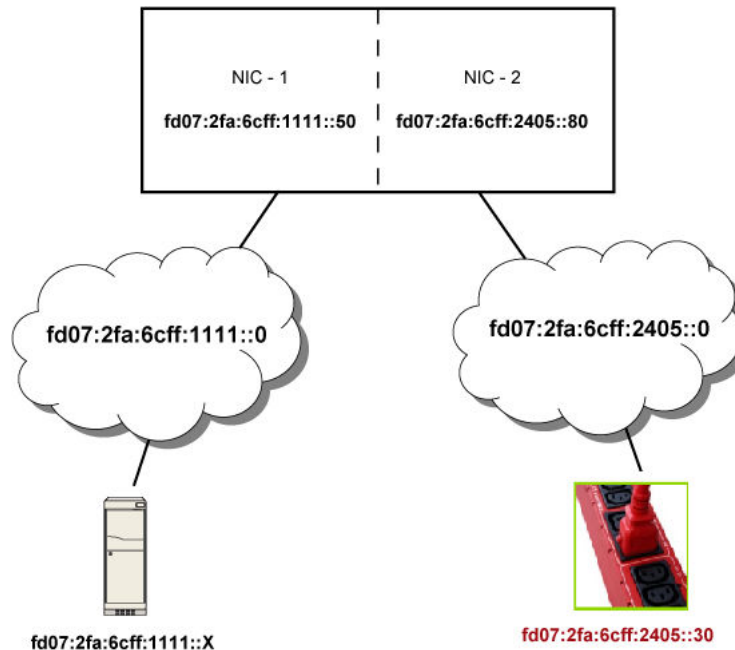
1	192.168.200.0/24	Gateway	192.168.100.88	↑	↓	🗑️
---	------------------	---------	----------------	---	---	----

Tip: If you have configured multiple static routes, you can click on any route and then make changes,

use  or  to re-sort the priority, or click  to delete it.

► *IPv6 example:*

- Your Legrand Power Shelf: *fd07:2fa:6cff:2405::30*
- Two NICs: *fd07:2fa:6cff:1111::50* and *fd07:2fa:6cff:2405::80*
- Two networks: *fd07:2fa:6cff:1111::0* and *fd07:2fa:6cff:2405::0*
- Prefix length: 64



In this example, NIC-2 (fd07:2fa:6cff:2405::80) is the next hop router for your Legrand Power Shelf to communicate with any device in the other subnet fd07:2fa:6cff:1111::0.

In the IPv6 "Static Routes" section, you should enter the data as shown below. Note that the address in the first field must be of the Classless Inter-Domain Routing (CIDR) notation.

1	fd07:2fa:6cff:2405::0/64	Gateway	fd07:2fa:6cff:2405::80	↑	↓	🗑️
---	--------------------------	---------	------------------------	---	---	----

Tip: If you have configured multiple static routes, use the arrow buttons to sort the priority, or click



to delete it.

Static Route Interface Names

When your local multiple networks are "directly reachable", you should select Interface for static routes. Then choose the interface where another network is connected.

192.168.200.0/24	Interface		↑	↓	🗑️
		BRIDGE ETH1 ETH2 WIRELESS			

► *Interface list:*

Interface name	Description
BRIDGE	<i>When another wired network is connected to the Ethernet port of your Legrand Power Shelf, and your Legrand Power Shelf has been set to the bridging mode, select this interface name instead of the Ethernet interface.</i>
ETH1	<i>When another wired network is connected to the ETH1 port of your Legrand Power Shelf, select this interface name.</i>
ETH2	<i>When another wired network is connected to the ETH2 port of your Legrand Power Shelf, select this interface name.</i>
WIRELESS	<i>When another wireless network is connected to your Legrand Power Shelf, select this interface name.</i>

Setting the Cascading Mode

See the Cascading Solution Guide for full details on network setup, physical setup, and supported configurations for all cascades across products. The sections documented here are a brief overview.

The cascading mode configured on the primary device determines the Ethernet sharing method, which is either network bridging or port forwarding. The cascading mode of all devices in the chain must be the same.

You must have the Change Network Settings permission to configure the cascading mode.

Note: Port Forwarding mode does not support APIPA.

► *To configure the cascading mode:*

- 1) Choose Device Settings > Network > Common Network Settings section.
- 2) Select the preferred mode in the Cascading Mode field.

Mode	Description
None	No cascading mode is enabled. This is the default.
Bridging	Each device in the cascading chain is accessed with a different IP address.
Port Forwarding	Each device in the cascading chain is accessed with the same IP address(es) but with a different port number assigned.

Tip: If selecting Port Forwarding, the Device Information page will show a list of port numbers for all cascaded devices. Choose Maintenance > Device Information > Port Forwarding.

- 1) For the Port Forwarding mode, you must also configure the following settings.

Note that if either setting below is incorrectly configured, a networking issue occurs.

Field	Description
Port forwarding role (available on all cascaded devices)	<i>Primary or Expansion.</i> This is to determine which device is the primary and which ones are expansion devices.
Downstream interface (available on the primary device only)	<i>USB or ETH1/ETH2.</i> This is to determine which port on the primary device is connected to Expansion 1. If ETH1 or ETH2 is selected as the downstream interface, make sure the selected Ethernet interface is enabled.

- 2) (Optional) Configure the network settings by clicking the BRIDGE, ETH1/ETH2, or WIRELESS section on the same page.
- In the Bridging mode, each cascaded device can have different network settings. You may need to configure each device's network settings in the BRIDGE section.
 - In the Port Forwarding mode, all cascaded devices share the primary device's network settings. You only need to configure the primary device's network settings in the ETH1/ETH2 and/or WIRELESS section.

Tip: You can enable/configure multiple network interfaces in the Port Forwarding mode so that the cascading chain has multiple IP addresses.

- 3) Click Save.

► **Recommendations for cascade loops:**

You can connect both the first and the last device to your network (cascade loop) under the following conditions:

- Bridging mode only.
 - The remaining network MUST use R/STP to avoid network loops.
- AND
- Both the first and the last devices MUST either attach to the same switch or, if they are attached to two separate switches, you must configure both ports of these switches so that the STP costs are high. This prevents the STP protocol from sending unrelated traffic through the cascade, which can cause bottlenecks that lead to connectivity issues in the whole network.

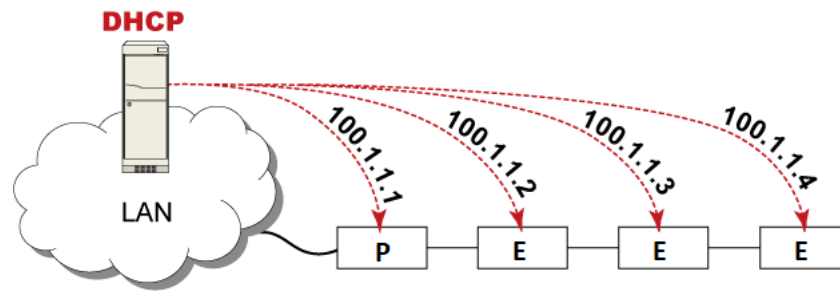
Cascading Modes Overview

The cascading mode is a network configuration setting that determines how each device in the chain is accessed.

There are two cascading modes: Bridging and Port Forwarding.

In the following illustration, it is assumed that users enable the DHCP networking for the cascading chain comprising four devices. In the diagrams, "P" is the primary device and "E" is an expansion device.

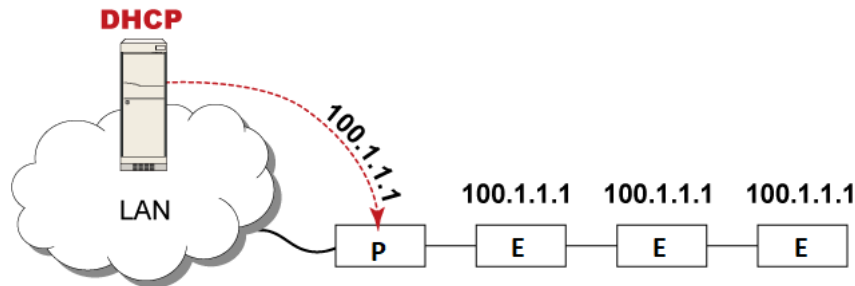
► "Bridging" mode:



In this mode, the DHCP server communicates with every cascaded device respectively and assigns four different IP addresses. Each device has its own IP address.

The way to remotely access each cascaded device is completely the same as accessing a standalone device in the network.

► "Port Forwarding" mode:



In this mode, the DHCP server communicates with the primary device alone and assigns one IP address to the primary device. All expansion devices share the same IP address as the primary device.

You must specify a 5XXXX port number (where X is a number) when remotely accessing any expansion device with the shared IP address. See [Port Number Syntax](#) (on page 141).

► Comparison between cascading modes:

- The Bridging mode supports the wired network only, while the Port Forwarding mode supports both wired and wireless networks.
- Both cascading modes support a maximum of 32 devices in a chain.
- Both cascading modes support both DHCP and static IP addressing.
- In the Bridging mode, each cascaded device has a unique IP address.
In the Port Forwarding mode, all cascaded devices share the same IP address(es) as the primary device.
- In the Bridging mode, each cascaded device has only one IP address.
In the Port Forwarding mode, each cascaded device can have multiple IP addresses as long as the primary device has multiple network interfaces enabled/configured properly.
For example:
 - When the primary device has two Ethernet ports (ETH1/ETH2), you can enable ETH1, ETH2 and WIRELESS interfaces so that the Port-Forwarding chain has two wired IP addresses and one wireless IP address.

Port Number Syntax

In the Port Forwarding mode, all devices in the cascading chain share the same IP address(es). To access any cascaded device, you must assign an appropriate port number to it.

- Primary device: The port number is either 5NNXX or the standard TCP/UDP port.
- Expansion device: The port number is 5NNXX.

► 5NNXX port number syntax:

- NN is a two-digit number representing the network protocol as shown below:

Protocols	NN
HTTPS	00
HTTP	01
SSH	02
TELNET	03
SNMP	05
MODBUS	06

- XX is a two-digit number representing the device position as shown below.

Position	XX	Position	XX
Primary device	00	Expansion 8	08
Expansion 1	01	Expansion 9	09
Expansion 2	02	Expansion 10	10
Expansion 3	03	Expansion 11	11
Expansion 4	04	Expansion 12	12
Expansion 5	05	Expansion 13	13
Expansion 6	06	Expansion 14	14
Expansion 7	07	Expansion 15	15

For example, to access the Expansion 4 device via Modbus/TCP, the port number is 50604.

Tip: The full list of each cascaded device's port numbers can be retrieved from the web interface. Choose Maintenance > Device Information > Port Forwarding.

► *Standard TCP/UDP ports:*

The primary device can be also accessed through standard TCP/UDP ports as listed in the following table.

Protocols	Port Numbers
HTTPS	443
HTTP	80
SSH	22
TELNET	23
SNMP	161

Protocols	Port Numbers
MODBUS	502

In the Port Forwarding mode, the cascaded device does NOT allow you to modify the standard TCP/UDP port configuration, including HTTP, HTTPS, SSH, Telnet and Modbus/TCP.

Port Forwarding Examples

In this example, Port Forwarding mode is applied to a cascading chain comprising three devices. The IP address is 192.168.84.77.

► Primary device:

Position code for the primary device is '00' so each port number is 5NN00 as listed below.

Protocols	Port numbers
HTTPS	50000
HTTP	50100
SSH	50200
TELNET	50300
SNMP	50500
MODBUS	50600

Examples using "5NN00" ports:

- To access the primary device via HTTPS, the IP address is:
https://192.168.84.77:50000/
- To access the primary device via HTTP, the IP address is:
http://192.168.84.77:50100/
- To access the primary device via SSH, the command is:
ssh -p 50200 192.168.84.77

Examples using standard TCP/UDP ports:

- To access the primary device via HTTPS, the IP address is:
https://192.168.84.77:443/
- To access the primary device via HTTP, the IP address is:
http://192.168.84.77:80/
- To access the primary device via SSH, the command is:
ssh -p 22 192.168.84.77

► Expansion 1 device:

Position code for Expansion 1 is '01' so each port number is 5NN01 as shown below.

Protocols	Port numbers
HTTPS	50001
HTTP	50101
SSH	50201
TELNET	50301
SNMP	50501
MODBUS	50601

Examples:

- To access Expansion 1 via HTTPS, the IP address is:
https://192.168.84.77:50001/
- To access Expansion 1 via HTTP, the IP address is:
http://192.168.84.77:50101/
- To access Expansion 1 via SSH, the command is:
ssh -p 50201 192.168.84.77

► *Expansion 2 device:*

Position code for Expansion 2 is '02' so each port number is 5NN02 as shown below.

Protocols	Port numbers
HTTPS	50002
HTTP	50102
SSH	50202
TELNET	50302
SNMP	50502
MODBUS	50602

Examples:

- To access Expansion 2 via HTTPS, the IP address is:
https://192.168.84.77:50002/
- To access Expansion 2 via HTTP, the IP address is:
http://192.168.84.77:50102/
- To access Expansion 2 via SSH, the command is:
ssh -p 50202 192.168.84.77

Adding, Removing or Swapping Cascaded Devices

Change a device's cascading mode first before adding that device to a cascading chain, or before disconnecting that device from the chain.

If you only want to change the cascading mode of an existing chain, or swap the primary and expansion device, always start from the expansion device.

Note: If the following procedures are not followed, a networking issue occurs. When a networking issue occurs, check the cascading connection and/or software settings of all devices in the chain.

► *To add a device to an existing chain:*

- 1) Connect the device you will cascade to the LAN and find its IP address, or connect it to a computer.
- 2) Log in to this device and set its cascading mode to be the same as the existing chain's cascading mode.
- 3) (Optional) If this device will function as an expansion device, disconnect it from the LAN after configuring the cascading mode.
- 4) Connect this device to the chain, using either a USB or Ethernet cable.

► *To remove a device from the chain:*

- 1) Log in to the desired cascaded device, and change its cascading mode to None.

Exception: If you are going to connect the removed device to another cascading chain, set its cascading mode to be the same as the mode of another chain.

- 2) Now disconnect it from the cascading chain.

► *To swap the primary and expansion device:*

- In the Bridging mode, you can swap the primary and expansion devices by disconnecting ALL cascading cables from them, and then reconnecting cascading cables. No changes to software settings are required.
- In the Port Forwarding mode, you must follow the procedure below:

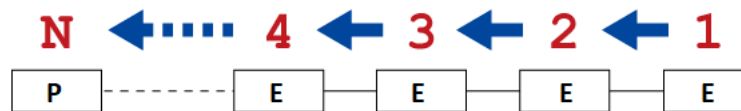
- a. Access the expansion device that will replace the primary device, and set its role to 'Primary', and correctly set the downstream interface.
- b. Access the primary device, set its role to 'Expansion'.
- c. Swap the primary and expansion device now.
 - You must disconnect the LAN cable and ALL cascading cables connected to the two devices first before swapping them, and then reconnecting all cables.

► *To change the cascading mode applied to a chain:*

- 1) Access the last expansion device, and change its cascading mode.
 - If the new cascading mode is 'Port Forwarding', you must also set its role to 'Expansion'.
- 2) Access the second to last, third to last and so on until the first expansion device to change their cascading modes one by one.
- 3) Access the primary device, and change its cascading mode.
 - If the new cascading mode is 'Port Forwarding', you must also set its role to 'Primary', and correctly select the downstream interface.

The following diagram indicates the correct sequence. 'N' is the final one.

- P = Primary device
- E = Expansion device



Configuring Network Services

Legrand Power Shelf supports the following network communication services.

Network Services
HTTP
SNMP
SMTP Server
SSH
Telnet
Modbus
Redfish
Service Advertising

HTTPS and HTTP enable the access to the web interface. Telnet and SSH enable the access to the command line interface.

By default, SSH is enabled, Telnet is disabled, and all TCP ports for supported services are set to standard ports. You can change default settings if necessary.

Important: Legrand Power Shelf uses TLS rather than SSL.

Changing HTTP(S) Settings

HTTPS uses Transport Layer Security (TLS) technology to encrypt all traffic to and from the Legrand Power Shelf so it is a more secure protocol than HTTP. Legrand Power Shelf disables TLS 1.0 and 1.1 by default. It enables only TLS 1.2 and 1.3.

By default, any access to the Legrand Power Shelf via HTTP is automatically redirected to HTTPS. You can disable this redirection if needed.

► *HTTP and HTTPS settings:*

- 1) Choose Device Settings > Network Services > HTTP.
- 2) HTTP settings:
 - Enable or disable HTTP access.
 - Default port is 80. You can enter a custom port.
 - Enforce use of HTTPS: Select the checkbox to Redirect HTTP connections to HTTPS.
- 3) HTTPS settings:

- Enable or disable HTTPS access.
- Enable HSTS: Default is enabled.
- Default port is 443. You can enter a custom port.

Warning: Different network services cannot share the same TCP port.

► *Special note for AES ciphers:*

The Legrand Power Shelf device's TLS-based protocols support AES 128- and 256-bit ciphers. The exact cipher to use is negotiated between Legrand Power Shelf and the client (such as a web browser), which is impacted by the cipher priority of Legrand Power Shelf and the client's cipher availability/settings.

Tip: To force Legrand Power Shelf to use a specific AES cipher, refer to your client's user documentation for information on configuring AES settings. For example, you can enable a cipher and disable the other in the browser via the "about:config" command.

Regaining Access with HSTS and Expired Certificate

HSTS is enabled by default in the Device Settings > Security > HTTP settings. When HSTS is enabled, you can only access Legrand Power Shelf via web browser when a valid, unexpired certificate is installed. HSTS removes the ability for users to click through warnings about invalid certificates.

If access is lost due to HSTS restrictions, there are 2 methods to regain access.

► *Replace the certificate locally on the Legrand Power Shelf:*

- 1) Save the new key and certificate to a USB drive.
- 2) Use one of the USB configuration methods to upload the new certificate to the device.

► *Replace the certificate over an insecure connection:*

- 1) Disable the client web browser HSTS security, and then access the Legrand Power Shelf "insecurely."
- 2) Replace the certificate in Device Settings > Security > TLS Certificates, then enable the HSTS security.

Configuring SNMP Settings

You can enable or disable SNMP communication between an SNMP manager and the Legrand Power Shelf. Enabling SNMP communication allows the manager to retrieve and even control the power status of each outlet.

You may also need to configure the SNMP destination(s) if the built-in "System SNMP Notification Rule" is enabled and the SNMP destination has not been set yet. See [Event Rules and Actions](#) (on page 188).

► *To configure SNMP communication:*

- 1) Choose Device Settings > Network Services > SNMP.

The screenshot displays a configuration window for SNMP settings, organized into three main sections:

- SNMP Agent:**
 - Enable SNMP v1 / v2c:** An unchecked checkbox.
 - Read community string:** A text field containing the value "public".
 - Write community string:** An empty text field.
 - Enable SNMP v3:** An unchecked checkbox.
- MIB-II System Group:**
 - sysContact:** An empty text field.
 - sysName:** An empty text field.
 - sysLocation:** An empty text field.
- SNMP Notifications:**
 - Enable SNMP notifications:** A checked checkbox.
 - Notification type:** A dropdown menu set to "SNMPv3 trap".
 - Engine ID:** A text field containing the hexadecimal value "0x800035ae808172c7c4e307523e5f3d3503ed99dcd3bec366a324c5d9c9e163a3".
 - Host:** A text field with the placeholder "required".
 - Port:** A text field containing the value "162".
 - User ID:** A text field with the placeholder "required".
 - Security level:** A dropdown menu set to "authPriv".
 - Authentication protocol:** A dropdown menu set to "SHA-1".
 - Authentication passphrase:** A text field with the placeholder "required".
 - Confirm authentication passphrase:** A text field with the placeholder "required".
 - Privacy protocol:** A dropdown menu set to "AES-128".
 - Privacy passphrase:** A text field with the placeholder "required".
 - Confirm privacy passphrase:** A text field with the placeholder "required".

At the bottom of the window, there is a section labeled "Download MIBs" with a dropdown arrow.

- 2) Enable or disable "SNMP v1 / v2c" and/or "SNMP v3" by clicking the corresponding checkbox.
 - The SNMP v1/v2c read-only access is enabled by default. The default 'Read community string' is "public."
 - To enable read-write access, type the 'Write community string.' Usually the string is "private."
- 3) Enter the MIB-II system group information, if applicable.
 - sysContact - the contact person in charge of the system
 - sysName - the name assigned to the system
 - sysLocation - the location of the system
- 4) To configure SNMP notifications:
 - a. Select the 'Enable SNMP notifications' checkbox.
 - b. Select a notification type -- SNMPv2c trap, SNMPv2c inform, SNMPv3 trap, and SNMPv3 inform.
 - c. Specify the SNMP notification destinations and enter necessary information. For details, refer to:
 - SNMPv2c Notifications
 - SNMPv3 Notifications

Note: Any changes made to the 'SNMP Notifications' section on the SNMP page will update the settings of the System SNMP Notification Action, and vice versa. To add more than three SNMP destinations, you can create new SNMP notification actions.

- 5) You must download the SNMP MIB for your Legrand Power Shelf to use with your SNMP manager.
 - a. Click the Download MIBs title bar to show the download links.



- b. Click the PDU2-MIB download link. See Downloading SNMP MIB.
- 6) Click Save.

Configuring SMTP Settings

The Legrand Power Shelf can be configured to send alerts or event messages to a specific administrator by email. To send emails, you have to configure the SMTP settings and enter an IP address for your SMTP server and a sender's email address.

If any email messages fail to be sent successfully, the failure event and reason are available in the event log.

► To set SMTP server settings:

- 1) Choose Device Settings > Network Services > SMTP Server.
- 2) Enter the information needed.

Field	Description
IP address/host name	Type the name or IP address of the mail server.
Port	Type the port number. • Default is 25
Sender email address	Type an email address for the sender.
Number of sending retries	Type the number of email retries. • Default is 2 retries
Time between sending retries	Type the interval between email retries in minutes. • Default is 2 minutes.
Server requires authentication	Select this checkbox if your SMTP server requires password authentication.

Field	Description
User name, Password	Type a user name and password for authentication after selecting the above checkbox. - The length of user name and password ranges between 4 and 64. Case sensitive. - Spaces are not allowed for the user name, but allowed for the password.
Enable SMTP over TLS (StartTLS)	If your SMTP server supports the Transport Layer Security (TLS), select this checkbox.

- Settings for the CA Certificate:

If the required certificate file is a chain of certificates, and you are not sure about the requirements of a certificate chain, see TLS Certificate Chain.

Field/setting	Description
	Click this button to import a certificate file. Then you can: - Click Show to view the certificate's content. - Click Remove to delete the installed certificate if it is inappropriate.
Allow expired and not yet valid certificates	- Select this checkbox to make the authentication succeed regardless of the certificate's validity period. - After deselecting this checkbox, the authentication fails whenever any certificate in the selected certificate chain is outdated or not valid yet.

- 3) Now that you have set the SMTP settings, you can test it to ensure it works properly.
 - a. Type the recipient's email address in the 'Recipient email addresses' field. Use a comma to separate multiple email addresses.
 - b. Click Send Test Email.
 - c. Check if the recipient(s) receives the email successfully.
- 4) Click Save.

► *Special note for AES ciphers:*

The Legrand Power Shelf device's TLS-based protocols support AES 128- and 256-bit ciphers. The exact cipher to use is negotiated between Legrand Power Shelf and the client (such as a web browser), which is impacted by the cipher priority of Legrand Power Shelf and the client's cipher availability/settings.

Tip: To force Legrand Power Shelf to use a specific AES cipher, refer to your client's user documentation for information on configuring AES settings.

Changing SSH Settings

You can enable or disable the SSH access to the command line interface, change the TCP port, or set a password or public key for login over the SSH connection.

► *To change SSH settings:*

- 1) Choose Device Settings > Network Services > SSH.
- 2) To enable or disable the SSH access, select or deselect the checkbox.
- 3) To use a different port, type a port number.
- 4) Select one of the authentication methods.
 - *Password authentication only*: Enables the password-based login only.
 - *Public key authentication only*: Enables the public key-based login only. You must enter a valid SSH public key for each user profile to log in over the SSH connection.
 - *Password and public key authentication*: Enables both the password- and public key-based login. This is the default.
- 5) Click Save.

Changing Telnet Settings

You can enable or disable the Telnet access to the command line interface, or change the TCP port.

► *To change Telnet settings:*

- 1) Choose Device Settings > Network Services > Telnet.
- 2) To enable the Telnet access, select the checkbox.
- 3) To use a different port, type a new port number.
- 4) Click Save.

Changing Modbus Settings

The Legrand Power Shelf supports both the Modbus/TCP and Modbus Gateway features. Enable either or both Modbus features according to your needs.

► *Modbus/TCP Access:*

You can enable or disable the Modbus/TCP access to Legrand Power Shelf, set it to the read-only mode, or change the TCP port.

- 1) Choose Device Settings > Network Services > Modbus.
- 2) To enable the Modbus/TCP access, select the Enable Modbus/TCP access checkbox.
- 3) To use a different port, type a new port number.
- 4) To enable the Modbus read-only mode, select the "Enable read-only mode" checkbox. To enable the read-write mode, deselect it.

► *Modbus Gateway:*

You can connect the USB-MOD-DONGLE to the USB-A Port of the Legrand Power Shelf and the green connector to an external third-party device terminal. The gateway service runs on a dedicated TCP port and forwards incoming requests to the Modbus/RTU bus. Enable the Modbus Gateway feature and configure the Modbus gateway service independent of the Modbus/TCP service. The Modbus TCP clients on your network will be able to communicate with the Modbus RTU devices connected to Legrand Power Shelf.

Once configured, connected devices appear in the Peripherals page.



- 1) To allow the Modbus TCP clients on the network to communicate with the Modbus RTU devices connected to the Legrand Power Shelf, select the 'Enable Modbus gateway' checkbox.

Modbus Gateway

Enable Modbus gateway

☐

TCP port

503

Parity

Even

▼

Line speed

19200

▼

Default address

1

Save

- 2) Now configure the fields shown.

Field	Description
TCP port	Use the default port 503, or assign a different port. Valid range is 1 to 65535.

Field	Description
	Note: Port 502 is the default Modbus/TCP port for Legrand Power Shelf, so you cannot use that port for the Modbus Gateway.
Parity, Line speed	Use the default values, or update if the Modbus RTU devices are using different communication parameters.
Default address	If the Modbus TCP client does not support Modbus RTU unit identifier addressing, enter a Default Address. If you must provide a unit identifier address: - Only one Modbus RTU device is supported. - The unit identifier address you provide is applied to the Modbus RTU device connected to Legrand Power Shelf. Note that each Modbus RTU device's unit identifier address must be unique. Warning: If the connected Modbus RTU device's address does not match the address entered in this field, communications between the Modbus TCP clients and Modbus RTU device fail.

Enabling Redfish Services

You can enable or disable the Redfish services to manage the device through the Redfish API. By default, this service is enabled.

Enabling Redfish services allows you to retrieve the following details.

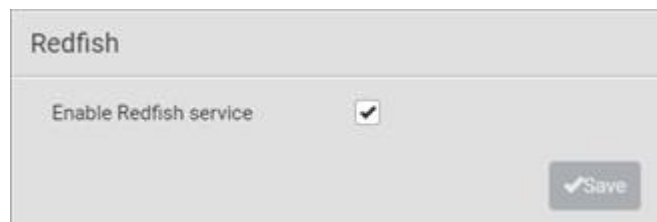
- configuration details, such as thresholds, names, etc.
- metric readings

You can perform power actions once you enable Redfish services.

Note: Go to the online Support page for your product to find full documentation of the Redfish API.

► To enable or disable Redfish:

Choose Device Settings > Network Services > Redfish.



Enabling Service Advertising

The Legrand Power Shelf advertises all enabled services that are reachable using the IP network. This feature uses DNS-SD (Domain Name System-Service Discovery) and MDNS (Multicast DNS). The advertised services are discovered by clients that have implemented DNS-SD and MDNS.

The advertised services include the following:

- HTTP
- HTTPS
- Telnet
- SSH
- Modbus
- JSON-RPC
- SNMP

By default, this feature is enabled.

Enabling this feature also enables Link-Local Multicast Name Resolution (LLMNR) and/or MDNS, which are required for resolving APIPA host names. See APIPA and Link-Local Addressing.

The service advertisement feature supports both IPv4 and IPv6 protocols.

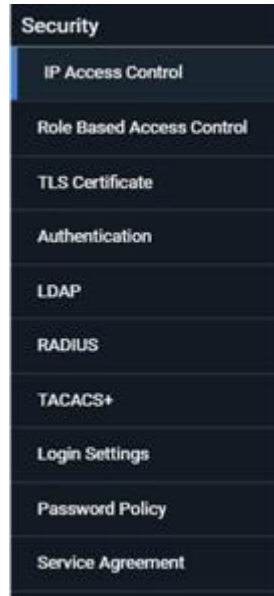
If you have set a preferred host name for IPv4 and/or IPv6, that host name can be used as the zero configuration .local host name, that is, *<preferred_host_name>.local*, where *<preferred_host_name>* is the preferred host name you have specified for Legrand Power Shelf. The IPv4 host name is the first priority. If an IPv4 host name is not available, then use the IPv6 host name.

► *To enable or disable service advertising:*

- 1) Choose Device Settings > Network Services > Service Advertising.
- 2) To enable the service advertising, select either or both checkboxes.
 - To advertise via MDNS, select the Multicast DNS checkbox.
 - To advertise via LLMNR, select the Link-Local Multicast Name Resolution checkbox.
- 3) Click Save.

Configuring Security Settings

The Legrand Power Shelf provides tools to control access. You can enable the internal firewall, create firewall rules, and set login limitations. In addition, you can create and install the certificate or set up external authentication servers for access control. This product supports SHA-2 TLS certificates.



Creating IP Access Control Rules

IP access control rules (firewall rules) determine whether to accept or discard traffic to/from the Legrand Power Shelf, based on the IP address of the host sending or receiving the traffic. When creating rules, keep these principles in mind:

- Rule order is important.
When traffic reaches or is sent from the Legrand Power Shelf, the rules are executed in numerical order. Only the first rule that matches the IP address determines whether the traffic is accepted or discarded. Any subsequent rules matching the IP address are ignored.
- Prefix length is required.
When typing the IP address, you must specify it in the CIDR notation. That is, BOTH the address and the prefix length are included. For example, to specify a single address with the 24-bit prefix length, use this format:
`x.x.x.x/24`
`/24` = the prefix length.

Note: Valid IPv4 addresses range from 0.0.0.0 through 255.255.255.255.

► To configure IPv4 or IPv6 access control rules:

- 1) Choose Device Settings > Security > IP Access Control.
- 2) Select the 'Enable IPv4 access control' or "Enable IPv6 access control" checkboxes to enable the access control rules.
- 3) For either type, determine the default policy.

- *Accept*: Accepts traffic from all IPv4 OR IPv6 addresses.
 - *Drop*: Discards traffic from all IPv4 OR IPv6 addresses, without sending any failure notification to the source host.
 - *Reject*: Discards traffic from all IPv4 OR IPv6 addresses, and an ICMP message is sent to the source host for failure notification.
- 4) Go to the Inbound Rules section or the Outbound Rules section according to your needs.
 - Inbound rules control the data sent to the Legrand Power Shelf.
 - Outbound rules control the data sent from the Legrand Power Shelf.
 - 5) Create rules.
 - Click Append to add a row, then add the IP address and subnet mask. Select Policy. For each rule, the policy affects only the specified IP address.
 - Click Insert Above to add a rule above another rule.
 - The system automatically numbers the rules.
 - Use the arrow buttons to sort the priority order.
 - 6) Click Save. The rules are applied. Make sure to click Save in each section if changes are made.

IPv4

Enable IPv4 access control ☒

Inbound Rules

Default policy

Drop ▼

#	IP/Mask	Policy	
1	192.168.8.8/32	Accept	
2	192.168.28.33/24	Drop	
3	192.168.53.38/24	Reject	

Append

Insert Above

Outbound Rules

Default policy

Accept ▼

#	IP/Mask	Policy	
1	192.168.89.100/24	Drop	

Append

Insert Above

Save

Editing or Deleting IP Access Control Rules

When an existing IP access control rule requires updates of IP address range and/or policy, modify them accordingly. Or you can delete any unnecessary rules.

► *To modify or delete a rule:*

- 1) Choose Device Settings > Security > IP Access Control.
- 2) Go to the IPv4 or IPv6 section.
- 3) Select the desired rule in the list.
 - Ensure the IPv4 or IPv6 checkbox has been selected, or you may not edit or delete any rule.
- 4) Perform the desired action.
 - Make changes to the selected rule, and then click Save.
 - Click  to remove it.
 - To re-sort its order, click  or .
- 5) Click Save.
 - IPv4 rules: Make sure you click the Save button in the IPv4 section, or the changes made to IPv4 rules are not saved.
 - IPv6 rules: Make sure you click the Save button in the IPv6 section, or the changes made to IPv6 rules are not saved.

Creating Role Based Access Control Rules

Role-based access control rules are similar to IP access control rules, except that they are applied to members of a specific role. This enables you to grant system permissions to a specific role, based on their IP addresses.

Same as IP access control rules, the order of role-based access control rules is important, since the rules are executed in numerical order.

► *To create IPv4 role-based access control rules:*

- 1) Choose Device Settings > Security > Role Based Access Control.
- 2) Select the 'Enable role based access control for IPv4' checkbox to enable IPv4 access control rules.
- 3) Determine the IPv4 default policy.
 - *Accept*: Accepts traffic when no matching rules are present.
 - *Deny*: Rejects any user's login attempt when no matching rules are present.
- 4) Create rules. Refer to the tables below for different operations.

ADD a rule to the end of the list

- Click Append.
- Type a starting IP address in the Start IP field.
- Type an ending IP address in the End IP field.
- Select a role in the Role field. This rule applies to members of this role only.
- Select an option in the Policy field.
 - *Accept*: Accepts traffic from the specified IP address range when the user is a member of the specified role.
 - *Deny*: Rejects the login attempt of a user from the specified IP address range when that user is a member of the specified role.

INSERT a rule between two rules

- Select the rule above which you want to insert a new rule. For example, to insert a rule between rules #3 and #4, select #4.
- Click Insert Above.
- Type a starting IP address in the Start IP field.
- Type an ending IP address in the End IP field.
- Select a role in the Role field. This rule applies to members of this role only.
- Select *Accept* or *Deny* in the Policy field. Refer to the above table for details.

The system automatically numbers the rule.

5) When finished, the rules are listed on this page.

- You can select any existing rule and then click  or  to change its priority.

IPv4

Enable IPv4 access control ☒

Inbound Rules

Default policy: Drop

#	IP/Mask	Policy	
1	192.168.8.34/24	Drop	↑ ↓ 🗑️
2	192.168.28.33/32	Accept	

Append Insert Above

Outbound Rules

Default policy: Accept

#	IP/Mask	Policy
no rules defined		

Append Insert Above

Save

6) Click Save. The rules are applied.

► *To configure IPv6 access control rules:*

- 1) On the same page, select the 'Enable role based access control for IPv6' checkbox to enable IPv6 access control rules.
- 2) Follow the same procedure as the above IPv4 rule setup to create IPv6 rules.
- 3) Make sure you click the Save button in the IPv6 section, or the changes made to IPv6 rules are not saved.

Editing or Deleting Role Based Access Control Rules

You can modify existing rules to update their roles/IP addresses, or delete them when they are no longer needed.

► *To modify a role-based access control rule:*

- 1) Choose Device Settings > Security > Role Based Access Control.
- 2) Go to the IPv4 or IPv6 section.
- 3) Select the desired rule in the list.
 - Ensure the IPv4 or IPv6 checkbox has been selected, or you may not edit or delete any rule.
- 4) Perform the desired action.

- Make changes to the selected rule, and then click Save.



- Click  to remove it.



- To resort its order, click  or .

5) Click Save.

- IPv4 rules: Make sure you click the Save button in the IPv4 section, or the changes made to IPv4 rules are not saved.
- IPv6 rules: Make sure you click the Save button in the IPv6 section, or the changes made to IPv6 rules are not saved.

Setting Up a TLS Certificate

► To obtain a CA-signed certificate:

- 1) Create a Certificate Signing Request (CSR) in Device Settings > TLS Certificates.
- 2) Submit it to a certificate authority (CA). After the CA processes the information in the CSR, it provides you with a certificate.
- 3) Install the CA-signed certificate onto the Legrand Power Shelf.

Note: If you are using a certificate that is part of a chain of certificates, each part of the chain is signed during the validation process. You can upload active and pending certificates and private keys saved in PEM format on a flash drive.

► A CSR is not required in either scenario below:

- Make the Legrand Power Shelf create a *self-signed* certificate.
- Appropriate, valid certificate and key files are already available, and you only need to import them.

Creating a TLS Certificate or CSR

Follow this procedure to create the CSR.

Note: If SCEP is enabled, manual management of the TLS certificate via GUI is disabled. To disable SCEP see: [Discard SCEP Settings](#) (on page 170)

► To create a CSR:

- 1) Choose Device Settings > Security > TLS Certificate.
- 2) In the New CSR section, provide the information requested.
 - Subject:

Field	Description
Country	The country where your company is located. Use the standard ISO country code, which comprises two uppercase letters. For a list of ISO codes, google ISO 3166 country codes.
State or province	The full name of the state or province where your company is located.
Locality	The city where your company is located.
Organization	The registered name of your company.
Organizational unit	The name of your department.
Common name	The fully qualified domain name (FQDN) of your Legrand Power Shelf.
Email address	An email address where you or another administrative user can be reached.

Warning: If you generate a CSR without values entered in the required fields, you cannot obtain third-party certificates.

- Subject Alternative Names:

If you want a certificate to secure multiple hosts across different domains or subdomains, you can add additional DNS host names or IP addresses of the wanted hosts to this CSR so that a single certificate will be valid for all of them.

Click Add Name when there are more than one additional hosts to add.

- Examples of subject alternative names: *support.legrand.com*, *help.legrand.com*, and *192.168.77.50*.

- Key Creation Parameters:

Field	Description
Key Type/Key Length	Key type RSA requires you to select Key Length: • 2048 bits • 3072 bits
Key Type/Elliptic Curve	Key type ECDSA requires you to select the elliptic curve: • NIST-P-256 • NIST P-384 • NIST P-521
Self-sign	For requesting a certificate signed by the CA, ensure this checkbox is NOT selected.

Field	Description
Challenge, Confirm challenge	Type a password. The password is used to protect the certificate or CSR. The value should be 4 to 64 characters long. Case sensitive.

- 1) Click Create CSR to create both the CSR and private key. This may take several minutes to complete.
- 2) Click Download Certificate Signing Request to download the CSR to your computer.
 - a. You are prompted to open or save the file. Click Save to save it onto your computer.
 - b. Submit it to a CA to obtain the digital certificate.
 - c. If the CSR contains incorrect data, click Delete Certificate Signing Request to remove it, and then repeat the above steps to re-create it.
- 1) To store the newly-created private key on your computer, click Download Key in the New TLS Certificate or CSR section.

Note: The Download Key button in the Active TLS Certificate section is for downloading the private key of the currently-installed certificate rather than the newly-created one.

- You are prompted to open or save the file. Click Save to save it onto your computer.

Installing a CA-Signed Certificate

To get a certificate from a certificate authority (CA), first create a CSR and send it to the CA. See [Creating a TLS Certificate or CSR](#) (on page 161).

After receiving the CA-signed certificate, install it onto the Legrand Power Shelf.

► To install the CA-signed certificate:

- 1) Choose Device Settings > Security > TLS Certificate.
- 2) Click Browse to navigate to the CA-signed certificate file in the New TLS Certificate or CSR section.
- 3) Click Upload to upload the certificate.
- 4) Once complete, do the following:
 - a. Double check the data shown in the New TLS Certificate or CSR section.
 - b. If correct, click "Install Key and Certificate" to install the CA-signed certificate and private key.

Tip: To verify whether the certificate has been installed successfully, check the data shown in the Active TLS Certificate section.

If incorrect, click "Delete Key and Certificate" to remove the CA-signed certificate and private key, and then repeat the above steps to re-create them.

- 5) (Optional) To download the CA-signed certificate and/or private key, click Download Certificate or Download Key in the New TLS Certificate section.
 - You are prompted to open or save the file. Click Save to save it onto your computer.

Note: The Download Key button in the Active TLS Certificate section is for downloading the private key of the currently-installed certificate rather than the newly-created one.

- 6) To verify whether the certificate has been installed successfully, check the data shown in the Active TLS Certificate section.

Creating a Self-Signed Certificate

When appropriate certificate and key files for Legrand Power Shelf are unavailable, the alternative, other than submitting a CSR to the CA, is to generate a self-signed certificate.

► *To create and install a self-signed certificate:*

- 1) Choose Device Settings > Security > TLS Certificate.
- 2) Enter information.

Field	Description
Country	The country where your company is located. Use the standard ISO country code, which comprises two uppercase letters. For a list of ISO codes, google ISO 3166 country codes.
State or province	The full name of the state or province where your company is located.
Locality	The city where your company is located.
Organization	The registered name of your company.
Organizational unit	The name of your department.
Common name	The fully qualified domain name (FQDN) of your Legrand Power Shelf.
Email address	An email address where you or another administrative user can be reached.
Generate Key in Secure Element	• This field appears for supported hardware only. Select this checkbox to allow the key to be generated within the Secure Element of the controller.
Key Type/Key Length	Key type RSA requires you to select Key Length: • 2048 bits • 3072 bits
Key Type/Elliptic Curve	Key type ECDSA requires you to select the elliptic curve: • NIST-P-256 • NIST P-384 • NIST P-521
Self-sign	Ensure this checkbox is selected, which indicates that you are creating a self-signed certificate.
Validity in days	This field appears after the Self-sign checkbox is selected. Type the number of days for which the self-signed certificate will be valid.

A password is not required for a self-signed certificate so the Challenge and Confirm Challenge fields disappear.

- 3) Click Create Self-Signed Certificate to create both the self-signed certificate and private key. This may take several minutes to complete and saved.
- 4) Once complete, do the following:
 - a. Double check the data shown in the New TLS Certificate or CSR section.
 - b. If correct, click "Install Key and Certificate" to install the self-signed certificate and private key.

Tip: To verify whether the certificate has been installed successfully, check the data shown in the Active TLS Certificate section.

If incorrect, click "Delete Key and Certificate" to remove the self-signed certificate and private key, and then repeat the above steps to re-create them.

- 5) (Optional) To download the self-signed certificate and/or private key, click Download Certificate or Download Key in the New TLS Certificate section.
 - You are prompted to open or save the file. Click Save to save it onto your computer.

Note: The Download Key button in the Active TLS Certificate section is for downloading the private key of the currently-installed certificate rather than the newly-created one.

Installing or Downloading Existing Certificate and Key

You can download the already-installed certificate and private key from any Legrand Power Shelf for backup or file transfer. For example, you can install the files onto a replacement Legrand Power Shelf, add the certificate to your browser and so on.

If valid certificate and private key files are already available, you can install them on the Legrand Power Shelf without going through the process of creating a CSR or a self-signed certificate.

Note: If you are using a certificate that is part of a chain of certificates, each part of the chain is signed during the validation process.

► To download active key and certificate files from Legrand Power Shelf:

- 1) Choose Device Settings > Security > TLS Certificate.
- 2) In the *Active TLS Certificate* section, click Download Key and Download Certificate respectively.

Note: The Download Key button in the New TLS Certificate section, if present, is for downloading the newly-created private key rather than the one of the currently-installed certificate.

- 3) You are prompted to open or save the file. Click Save to save it onto your computer.

► *To install available key and certificate files onto Legrand Power Shelf:*

- 1) Choose Device Settings > Security > TLS Certificate.
- 2) Select the "Upload key and certificate" checkbox at the bottom of the page.
- 3) The 'Key File' and 'Certificate file' buttons appear. Click each button to select the key and/or certificate file.
- 4) Click Upload. The selected files are installed.
- 5) To verify whether the certificate has been installed successfully, check the data shown in the Active TLS Certificate section.

SCEP

The Legrand Power Shelf supports automated certificate enrollment using the Simple Certificate Enrollment Protocol (SCEP). During the initial enrollment process, the device authenticates to the SCEP Certificate Authority (CA) server with a shared secret. To enable certificate issuance, you must configure the SCEP server and the associated gateway so the Legrand Power Shelf can submit enrollment requests securely.

As part of the enrollment workflow, SCEP uses the GetCACert operation to retrieve the CA's certificate. The Legrand Power Shelf downloads this certificate and validates it using the certificate fingerprint to ensure that the CA is trusted before proceeding with enrollment.

► *Setup of Linked Units:*

You should first configure SCEP on all devices and allow them to complete their enrollment. After enrollment is finished, configure the CA certificate linking and enable certificate linking as required. The root CA certificate for any client certificate issued through SCEP must be installed on all primary units.

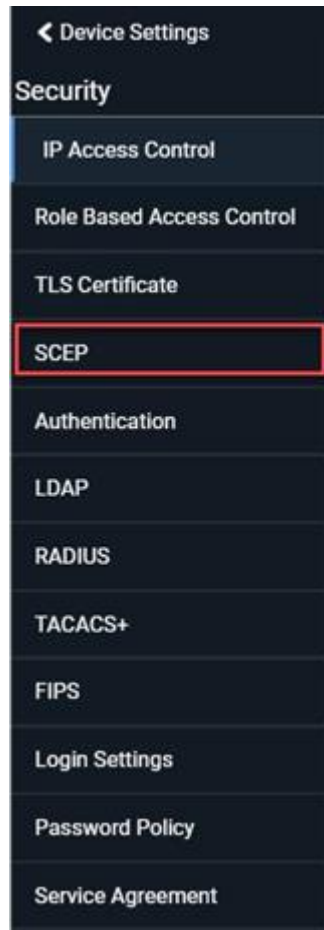
► *FIPS mode:*

When FIPS mode is enabled, certain cryptographic restrictions apply. MD5 is not permitted, and the CA certificate fingerprint must be supplied using either SHA-1 or SHA-256. In addition, HTTP cannot be used in a FIPS-compliant configuration.

Configure SCEP Settings

Choose Device Settings > Security > SCEP to configure certificate data and SCEP settings.

Note: Admin user or user with "change security settings" permission can change, enable or discard SCEP settings.

**Certificate Enrollment:**

- Enrollment Status: shows whether SCEP is enabled, the outcome of the initial enrollment, and the current status of the latest enrollment attempt.

Certificate Enrollment

Enrollment Status

General

Enabled

Yes

Time of Last Successful Enrollment

never

Last Enrollment

Status

Last enrollment has failed

Started

1/16/2026, 6:38:07 AM EST

Ended

1/16/2026, 6:38:07 AM EST

Failure Reason

Hostname does not exist

Error: Last enrollment has failed

SCEP Settings:

- Initial enrollment is done using following settings.

SCEP Settings

Edit Settings

URL ⓘ	http://scepserver.local/certsrv/mscep
CA certificate fingerprint ⓘ	8E:CB:83:54:3C:B3:6D:09:32:BE:96:7C:10:C3:EC:99:B8:32:36:1B
Pending retries ⓘ	360
Pending wait time seconds ⓘ	10
Renew days before expiry ⓘ	30

Field/setting	Description
URL	The URL to reach the SCEP server.
CA certificate fingerprint	Specifies the fingerprint of the trusted SCEP CA certificate. <i>Note: The value must follow the format 12:34:AB:DE:... and may be generated using MD5, SHA-1, or SHA-256.</i>
Pending retries	Number of retry attempts allowed while in the pending state before the operation ultimately fails.

Field/setting	Description
Pending wait time seconds	Specifies the number of seconds to wait between polling requests when the process is in the pending state.
Renew days before expiry	The number of days before the certificate expires when renewal process should begun.

Certificate Data:

Configure Certificate Profile

Follow this procedure to create the SCEP certificate profile. This defines the certificate attributes (Subject, SANs, RSA key length) and the challenge password for the Certificate Signing Request.

Note: These settings cannot be modified after SCEP is enabled. To request a certificate with different attributes, you must discard the existing SCEP configuration and perform a new enrollment.

► To create a new certificate profile:

- 1) Choose Device Settings > Security > SCEP.
- 2) In the Certificate Data section, provide the information requested.

- Subject:

Field	Description
Country	The country where your company is located. Use the standard ISO country code, which comprises two uppercase letters. For a list of ISO codes, google ISO 3166 country codes.
State or province	The full name of the state or province where your company is located.
Locality	The city where your company is located.
Organization	The registered name of your company.
Organizational unit	The name of your department.

Field	Description
Common name	The fully qualified domain name (FQDN) of your Legrand Power Shelf.
Email address	An email address where you or another administrative user can be reached.

- Subject Alternative Names:

If you want a certificate to secure multiple hosts across different domains or sub-domains, you can add additional DNS host names or IP addresses of the wanted hosts to this CSR so that a single certificate will be valid for all of them.

Click Add Name when there are more than one additional hosts to add.

- Examples of subject alternative names: *support.legrand.com*, *help.legrand.com*, and *192.168.77.50*.

- Key Creation Parameters:

Field	Description
Key Type/Key Length	Key type RSA requires you to select Key Length: • 2048 bits • 3072 bits
Challenge	Type a password. The password is used to protect the certificate or CSR. The value should be 4 to 64 characters long. Case sensitive.
Confirm challenge	Retype the same password to confirm.

3) Click Enable SCEP.

Edit SCEP Settings

You can update the SCEP server URL and timeout settings without re-enabling SCEP. However, if any SCEP operations, such as certificate enrollment or renewal are currently in progress, they will be canceled when the changes are applied.

Discard SCEP Settings

If you need to manually manage the TLS certificate or replace the client certificate, you must first remove the existing SCEP configuration.

► To Discard certificate profile:

- 1) Choose Device Settings > Security > SCEP.
- 2) In the Certificate Data section, click Discard SCEP.

Enrollment Data

Certificate Data

Subject		Subject Alternative Names	
Country	US	192.168.123.123	
State or province	New Jersey	my-host-name	
Locality	Somerset	Key Parameters	
Organization	not set	Key type	RSA
Organizational unit	not set	Key length	2048
Common name	Test Name		
Email address	not set		

Discard SCEP

SCEP Enrollment & Renewal

Legrand Power Shelf regularly checks (about once every hour) to see if it needs to request a new certificate from the certificate server (CA). A new certificate is needed when:

- The device never successfully got a certificate before, or
- The current certificate is close to expiring.

During a new enrollment, the Legrand Power Shelf requests the server's certificates and identifies the trusted root certificate, which can be used to send encrypted message. It relies on SCEP Standard or on post public key infrastructure (PKI) Operation with supported algorithms such as SHA-512 or SHA-256 and AES or 3DES, whether performing a first-time enrollment or a renewal.

- For initial enrollment, the Legrand Power Shelf signs its request with a temporary self-generated certificate and authenticates using a shared secret.
- For renewal requests are signed using the device's existing certificate.

Once the request is sent, the device waits for the server's response, which may indicate success, pending, or failure. A successful response results in the device validating the returned certificate and completing enrollment if it is trusted; however, if the server remains in a pending state beyond the allowed time, or returns a failure, the process stops and reports an error.

Setting Up External Authentication

Important: Make sure your network infrastructure uses TLS rather than SSL.

Legrand Power Shelf supports the following authentication mechanisms:

- Local user database
- LDAP
- RADIUS
- TACACS+

Local authentication is the default method. If you use this method, you only need to create user accounts. See [User Management](#) (on page 113).

If you prefer external authentication, you must provide information about the external Authentication and Authorization (AA) server.

If both local and external authentication is needed, create user accounts on the Legrand Power Shelf in addition to providing the external AA server data.

When configured for external authentication, all users must have an account on the external AA server. Local-authentication-only users will have no access to the Legrand Power Shelf except for the admin, who always can access.

If the external authentication fails, an "Authentication failed" message is displayed. Details regarding the authentication failure are available in the event log.

You must have the "Change Authentication Settings" permission to configure or modify the authentication settings.

Adding LDAP/LDAPS Servers

To use LDAP authentication, enable it in the Device Settings > Authentication page, and enter the information about the LDAP server in the LDAP page.

Note: If the Legrand Power Shelf clock and the LDAP server clock are out of sync, the installed TLS certificates, if any, may be considered expired. To ensure proper synchronization, administrators should configure the Legrand Power Shelf and the LDAP server to use the same NTP server(s).

► To add LDAP/LDAPS servers:

- 1) Choose Device Settings > Security > LDAP.
- 2) Click New.
- 3) Enter information.

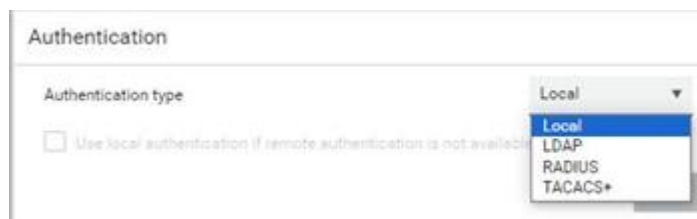
Field/setting	Description
IP address / hostname	The IP address or hostname of your LDAP/LDAPS server. • Without the encryption enabled, you can type either the domain name or IP address in this field, but you must type the fully qualified domain name if the encryption is enabled.
Copy settings from existing LDAP server	This checkbox appears only when there are existing AA server settings on the Legrand Power Shelf. To duplicate any existing AA server's settings, refer to the duplicating procedure below.

Field/setting	Description
Type of LDAP server	Choose one of the following options: • OpenLDAP • Microsoft Active Directory.
Security	Determine whether you would like to use Transport Layer Security (TLS) encryption, which allows the Legrand Power Shelf to communicate securely with the LDAPS server. Three options are available: • StartTLS • TLS • None
Port (None/StartTLS)	• The default Port is 389. Either use the standard LDAP TCP port or specify another port.
Port (TLS)	Configurable only when "TLS" is selected in the Security field. The default is 636. Either use the default port or specify another one.
Enable verification of LDAP server certificate	Select this checkbox if it is required to validate the LDAP server's certificate by the Legrand Power Shelf prior to the connection. If the certificate validation fails, the connection is refused.
CA certificate	Consult your AA server administrator to get the CA certificate file for the LDAPS server. Click Browse to select and install the certificate file. • Click Show to view the installed certificate's content. • Click Remove to delete the installed certificate if it is inappropriate. <i>Note: If the required certificate file is a chain of certificates, and you are not sure about the requirements of a certificate chain, see TLS Certificate Chain.</i>
Allow expired and not yet valid certificates	• Select this checkbox to make the authentication succeed regardless of the certificate's validity period. • After deselecting this checkbox, the authentication fails whenever any certificate in the selected certificate chain is outdated or not valid yet.
Anonymous bind	Use this checkbox to enable or disable anonymous bind. • To use anonymous bind, select this checkbox. • When a Bind DN and password are required to bind to the external LDAP/LDAPS server, deselect this checkbox.
Bind DN	Required after deselecting the Anonymous Bind checkbox. Distinguished Name (DN) of the user who is permitted to search the LDAP directory in the defined search base.
Bind password, Confirm bind password	Required after deselecting the Anonymous Bind checkbox. Enter the Bind password.

Field/setting	Description
Base DN for search	Distinguished Name (DN) of the search base, which is the starting point of the LDAP search. Example: <code>ou=dev,dc=example,dc=com</code>
Login Name Attribute	The attribute of the LDAP user class which denotes the login name. Usually it is the <code>uid</code>.
User entry object class	The object class for user entries. Usually it is <code>inetOrgPerson</code>.
User search subfilter	Search criteria for finding LDAP user objects within the directory tree.
Group lookup using memberOf attribute	- Select this checkbox to determine group membership by consulting the user's <code>memberOf</code> attribute(s). - Deselect this checkbox to determine group membership by doing a non-recursive search for groups containing the user's DN as member.
Group member attribute	- Required only when "Group lookup using memberOf attribute" is not selected. - Required for OpenLDAP only.
Support nested groups	- Select this checkbox to support the Active Directory LDAP nested groups. - Deselect this checkbox means no support.
Group entry object class	- Required only when "Group lookup using memberOf attribute" is not selected. - Required for OpenLDAP only.
Group search subfilter	- Required only when "Group lookup using memberOf attribute" is not selected. - Required for OpenLDAP only.
Active Directory domain	The name of the Active Directory Domain. Example: <code>testradius.com</code>

- Click Add Server. The new LDAP server is listed. To verify, click Test Connection to check whether the Legrand Power Shelf can connect to the new server successfully.

- 5) To add more servers, repeat the same steps.
- 6) In the LDAP page, use the arrow buttons to arrange the servers in the order they should be accessed, then click Save.
- 7) Make sure LDAP is enabled: Go to Device Settings > Security > Authentication, and select LDAP as the Authentication Type.



► *To duplicate LDAP/LDAPS server settings:*

If you have added any LDAP/LDAPS server to the Legrand Power Shelf, and the server you will add shares identical settings with an existing one, the most convenient way is to duplicate that LDAP/LDAPS server's data and then revise the IP address/hostname.

- 1) Choose Device Settings > Security > LDAP, then click New.
- 2) Select the "Copy settings from existing LDAP server" checkbox.
- 3) Select the LDAP/LDAPS server whose settings you want to copy.
- 4) Modify the IP Address/Hostname field.
- 5) Click Add Server.

Adding Radius Servers

To use Radius authentication, enable it and enter the information you have gathered.

Note: The RADIUS NAS Identifier is "DPC PDU SN:<device serial number>".

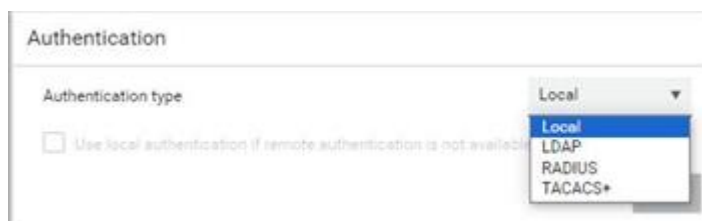
► *To add Radius servers:*

- 1) Choose Device Settings > Security > RADIUS.
- 2) Click New.
- 3) Enter information.

Field/setting	Description
IP address / hostname	The IP address or hostname of your Radius server.

Field/setting	Description
Type of RADIUS authentication	Select an authentication protocol. • PAP (Password Authentication Protocol) • CHAP (Challenge Handshake Authentication Protocol) • MS-CHAPv2 (Microsoft Challenge Handshake Authentication Protocol) CHAP is generally considered more secure because the user name and password are encrypted, while in PAP they are transmitted in the clear. MS-CHAPv2 provides stronger security than the above two. Selecting this option will support both MS-CHAPv1 and MS-CHAPv2. <i>Note: All authentication methods are insecure. It is strongly recommended to use RADIUS only in a secure networking environment. A warning displays for all methods.</i>
Authentication port, Accounting port	The defaults are standard ports -- 1812 and 1813. To use non-standard ports, type a new port number.
Accounting Enabled?	Default is enabled. Accounting allows you to log activity executed on the RADIUS server. When RADIUS accounting is enabled and the RADIUS server does not support accounting, then authentication will fail.
Timeout	This sets the maximum amount of time to establish contact with the Radius server before timing out. Type the timeout period in seconds.
Retries	Type the number of retries.
Shared secret, Confirm shared secret	The shared secret is necessary to protect communication with the Radius server.

- 4) To verify settings, click Test Connection to check if you can connect to the new server successfully.
- 5) Click Add Server. The new Radius server is listed on the RADIUS page.
- 6) To add more servers, repeat the same steps.
- 7) In the RADIUS page, use the arrow buttons to arrange the servers in the order they should be accessed, then click Save.
- 8) Make sure RADIUS is enabled: Go to Device Settings > Security > Authentication, and select RADIUS as the Authentication Type.



Adding TACACS+ Servers

To use TACACS+ authentication, add the server information and enable TACACS+.

Note: You need to create a new custom service attribute called Xerus on the TACACS+ server. This attribute value will match the role name (case sensitive) on the Legrand Power Shelf. In the authorization request to the TACACS+ server, the Legrand Power Shelf will send a request for Xerus as a custom service attribute. TACACS+ server then returns the roles of the authenticated user in the Xerus: roles attribute. Returning multiple roles separated by a slash, for example, role1/role2, is supported. See Cisco ISE Xerus TACACS+ Authentication for configuration.

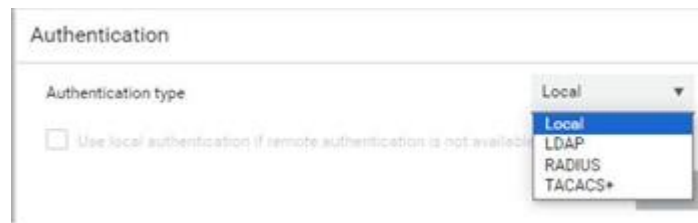
► To add TACACS+ servers:

- 1) Choose Device Settings > Security > TACACS+.
- 2) Click New.
- 3) Enter information.

Field/setting	Description
IP address / hostname	The IP address or hostname of your TACACS+ server.
Type of TACACS+ authentication	Select an authentication protocol. • ASCII • PAP (Password Authentication Protocol) • CHAP (Challenge Handshake Authentication Protocol) • MS-CHAP (Microsoft Challenge Handshake Authentication Protocol) CHAP is generally considered more secure because the user name and password are encrypted, while in PAP they are transmitted in the clear. MS-CHAP provides stronger security than the other options. <i>Note: All authentication methods are insecure. It is strongly recommended to use TACACS+ only in a secure networking environment. A warning displays for all methods.</i>
Port	The default port is 49 To use non-standard port, type a new port number.
Enable Accounting?	Default is enabled. Accounting allows you to log activity executed on the TACACS+ server.
Timeout	Default is 10 seconds. Maximum amount of time to establish contact with the server before timing out. Enter the timeout period in seconds.
Retries	Default is 3. Enter the number of retries.

Field/setting	Description
Shared secret, Confirm shared secret	The shared secret is necessary to protect communication with the server.

- 1) Click Add Server or Test Connection to verify the settings.
- 2) To add more servers, repeat the same steps.
- 3) In the TACACS+ page, use the arrow buttons to arrange the servers in the order they should be accessed, then click Save.
- 4) To begin using the configuration, make sure TACACS+ is enabled: Go to Device Settings > Security > Authentication, and select TACACS+ as the Authentication Type.



Enabling the FIPS Mode

The Legrand Power Shelf optionally uses a FIPS 140-2 encryption module that supports the Security Requirements for Cryptographic Modules of the Federal Information Processing Standards (FIPS), which is defined in the [FIPS PUB 140-2, Annex A: Approved Security Functions](#). These standards are used to protect the Federal government's sensitive information with the cryptographic-based security systems in the U.S. and Canada.

► To enable the FIPS mode:

- 1) Click Device Settings > Security > FIPS.
- 2) Select the 'Enable FIPS Mode' checkbox.

FIPS Settings

FIPS Mode (current)	Disabled
FIPS Mode (after reboot)	Disabled

Enable FIPS Mode
☐

The following features will become unavailable when FIPS mode is active:

- RADIUS and TACACS+ authentication
- Telnet
- Modbus
- HTTP (unencrypted)
- MQTT
- TFTP and FTP
- SNMPv2 (agent and traps)
- SNMPv3 (agent and traps) with MD5 and/or DES
- SNMPv3 security level without privacy
- TLS connections must check the certificate
- LDAP, Syslog and SMTP without TLS

All changes only become effective after a reboot.

✓ Save

3) Once FIPS is enabled, message appears to install the CA certificate on the link unit.

FIPS Mode (after reboot)	Disabled
--------------------------	----------

Enable FIPS Mode
☒

The following features will become unavailable when FIPS mode is active:

- RADIUS and TACACS+ authentication
- Telnet
- Modbus
- HTTP (unencrypted)
- MQTT
- TFTP and FTP
- SNMPv2 (agent and traps)
- SNMPv3 (agent and traps) with MD5 and/or DES
- SNMPv3 security level without privacy
- TLS connections must check the certificate
- LDAP, Syslog and SMTP without TLS

All changes only become effective after a reboot.

Please note that FIPS mode is enabled. Before linking, a custom certificate must be installed on the link unit and its issuing CA certificate stored on the primary unit. Otherwise cascading will not be supported in FIPS mode.

✓ Save

4) Click Save.

5) Reboot the Legrand Power Shelf

When FIPS mode is enabled, you will find following features will not be available.

The following features will become unavailable when FIPS mode is active:

- RADIUS and TACACS+ authentication
- Telnet
- Modbus
- HTTP (unencrypted)
- MQTT
- TFTP and FTP
- SNMPv2 (agent and traps)
- SNMPv3 (agent and traps) with MD5 and/or DES
- SNMPv3 security level without privacy
- TLS connections must check the certificate
- LDAP, Syslog and SMTP without TLS

All changes only become effective after a reboot.

Configuring Login Settings

Choose Device Settings > Security > Login Settings to open the Login Settings page, where you can:

- Configure the user blocking feature.

Note: The user blocking function applies only to local authentication instead of external authentication through AA servers.

- Determine the timeout period for any inactive user.
- Prevent simultaneous logins using the same login name.

► To configure user blocking:

- 1) To enable the user blocking feature, select the 'Block user on login failure' checkbox.
- 2) In the 'Block timeout' field, select a time option. This setting determines how long the user is blocked.
 - If you type a value, the value must be followed by a time unit, such as '4 min.'
- 3) In the 'Maximum number of failed logins' field, type a number. This is the maximum number of login failures the user is permitted before the user is blocked from accessing the Legrand Power Shelf.
- 4) Timeout for Failed Login Attempts: select a time option after which a failed attempt no longer counts against the user. For example, if "Maximum number of failed logins" is 3, but the "Timeout for Failed Login Attempts" has passed since the last failed attempt, the counter of failed logins restarts.
- 5) Click Save.

Tip: If any user blocking event occurs, you can unblock that user manually by using the "unblock" CLI command over a local connection. See Unblocking a User.

► *To set limitations for login timeout and use of identical login names:*

- 1) In the "Idle timeout period" field, type a value or click  to select a time option. This setting determines how long users are permitted to stay idle before being forced to log out.
 - If you type a value, the value must be followed by a time unit, such as '4 min.' See Time Units.
 - Keep the idle timeout to 20 minutes or less if possible. This reduces the number of idle sessions connected, and the number of simultaneous commands sent to the Legrand Power Shelf.
- 2) Select the 'Prevent concurrent login with same username' checkbox to prevent multiple users from using the same login name simultaneously.
- 3) Click Save.

Configuring Password Policy

Choose Device Settings > Security > Password Policy to open the Password Policy page, where you can:

- Force users to use strong passwords.
- Force users to change passwords at a regular interval -- that is, password aging.

► *To configure password aging:*

- 1) Select the 'Enabled' checkbox of Password Aging.
- 2) In the 'Password aging interval' field, type a value or select a time option. This setting determines how often users are requested to change their passwords.
 - If you type a value, the value must be followed by a time unit, such as '10 d.'
- 3) Click Save.

► *To force users to create strong passwords:*

- 1) Select the 'Enabled' checkbox of Strong Passwords to activate the strong password feature. The following are the default settings:

Minimum length	= 8 characters
Maximum length	= 32 characters
At least one lowercase character	= Required
At least one uppercase character	= Required
At least one numeric character	= Required
At least one special character	= Required

Number of forbidden previous passwords = 5

- 2) Make changes to the default settings as needed.
- 3) Click Save.

Enabling the Restricted Service Agreement

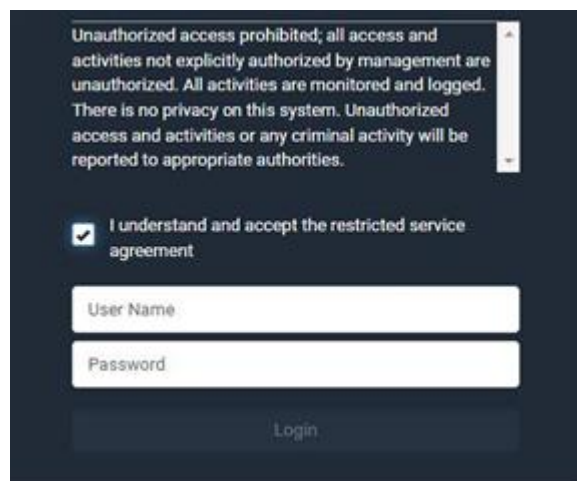
The restricted service agreement feature, if enabled, forces users to read a security agreement when they log in to the Legrand Power Shelf. Users must accept the agreement, or they cannot log in. You can configure an event notifying you if a user has accepted or declined the agreement.

► *To enable the service agreement:*

- 1) Click Device Settings > Security > Service Agreement.
- 2) Select the 'Enforce restricted service agreement' checkbox.
- 3) Edit or paste the content as needed.
 - A maximum of 10,000 characters can be entered.
- 4) Click Save.

► *Login manner after enabling the service agreement:*

After the Restricted Service Agreement feature is enabled, the agreement's content is displayed on the login screen.



The screenshot shows a login interface with a dark background. At the top, a scrollable text box contains the following text: "Unauthorized access prohibited; all access and activities not explicitly authorized by management are unauthorized. All activities are monitored and logged. There is no privacy on this system. Unauthorized access and activities or any criminal activity will be reported to appropriate authorities." Below this text box is a checkbox labeled "I understand and accept the restricted service agreement", which is checked. Underneath the checkbox are two input fields: "User Name" and "Password". At the bottom of the form is a "Login" button.

To log in when a restricted service agreement appears:

- In the web interface, select the checkbox labeled "I understand and accept the restricted service agreement."
- In the CLI, type `y` when the confirmation message "I understand and accept the restricted service agreement" is displayed.

Setting the Date and Time

Set the internal clock manually, or link to a Network Time Protocol (NTP) server.

Legrand Power Shelf follows the NTP server sanity check per the IETF RFC.

Note: If you are using Sunbird's® Power IQ®, you must configure Power IQ and the Legrand Power Shelf to have the same date/time or NTP settings.

► To set the date and time:

- 1) Choose Device Settings > Date/Time.
- 2) Click the 'Time zone' field to select your time zone from the list.
- 3) If the daylight saving time applies to your time zone, verify the 'Automatic daylight saving time adjustment' checkbox is selected.
- 4) Select the method for setting the date and time. Choose settings and click Save.

Customize the date and time

- Select 'User specified time'.
- Enter the date or click the calendar icon to select a date.
- Click 12H/24H button to toggle time formats.
- Click the AM/PM button to toggle.
- Enter the time or click the arrows to set it.

User Specified Time

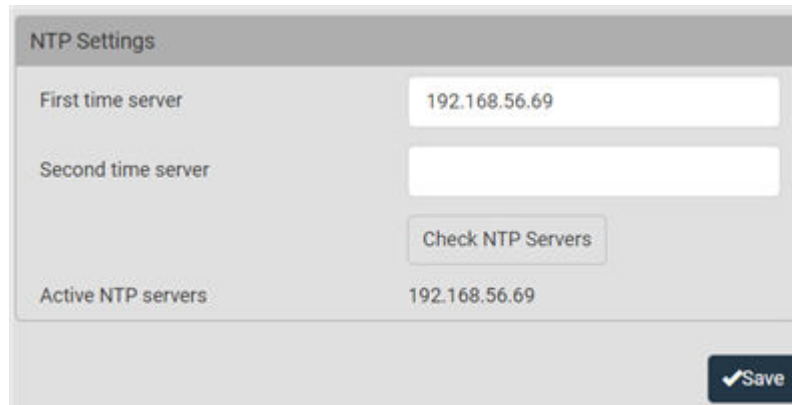
Date (M/D/YYYY) 9/17/2021

Time (hh:mm:ss) 2 18 23 AM 12H

Save

Use the NTP server

- Select "Synchronize with NTP server."
 - The DHCP-assigned NTP servers are available when DHCP is enabled. The IP address appears as Active NTP Server. To use this server, leave the primary and secondary server fields blank.
 - To specify NTP servers, enter the primary NTP server in the "First time server" field. A secondary NTP server is optional.
- Click Check NTP Servers to verify accessibility.



Windows NTP Server Synchronization Solution

The NTP client on the Legrand Power Shelf follows the NTP RFC so the Legrand Power Shelf rejects any NTP servers whose root dispersion is more than one second. An NTP server with a dispersion of more than one second is considered an inaccurate NTP server by the Legrand Power Shelf.

Note: For information on NTP RFC, visit <http://tools.ietf.org/html/rfc4330> - <http://tools.ietf.org/html/rfc4330> to refer to section 5.

Windows NTP servers may have a root dispersion of more than one second, and therefore cannot synchronize with the Legrand Power Shelf. When the NTP synchronization issue occurs, change the dispersion settings to resolve it.

► To change the Windows NTP's root dispersion settings:

- 1) Access the registry settings associated with the root dispersion on the Windows NTP server.
`HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\W32Time\Config`
- 2) `AnnounceFlags` must be set to 0x05 or 0x06.
 - 0x05 = 0x01 (Always time server) and 0x04 (Always reliable time server)
 - 0x06 = 0x02 (Automatic time server) and 0x04 (Always reliable time server)

Note: Do NOT use 0x08 (Automatic reliable time server) because its dispersion starts at a high value and then gradually decreases to one second or lower.

- 3) *LocalClockDispersion* must be set to 0.

Door Access

SmartLock enabled cabinets integrated with PowerIQ or other third party systems authorize door access remotely. In the event that the remote authorization is not accessible, local rules can be configured as an alternative or in addition to PIQ rules.

A door access rule can contain the following components:

- Selected door locks: must be configured in advance.
- Authorization via card: specify which card ID and card reader must be used
- Authorization via keypad: specify the PIN and keypad that must be used
- Two-factor authorization: a timeout that requires both card and keypad conditions to be met. For example: when a certain card is inserted, the correct PIN must be entered in the next 10 seconds.
- Absolute time conditions: grant access for a specific date and time
- Periodic time conditions: grant access on certain days of the week and certain times

Note: In one access rule you can set 2 card IDs as 2-factor authorization.

► To create a door access rule:

- 1) Choose Device Settings > Door Access.
- 2) Click New Access Rule.



- 3) The New Door Access Rule page opens. Enter a name for the rule. 128 characters maximum.
- 4) Select the door locks this rule applies to in the Available Door Handle Locks list. Each selected door lock appears in the Selected Locks section.

New Door Access Rule

Name: Access Rule 1

Door Lock Information

Selected Locks: My PDU (1) Door Lock 1 3%, My PDU (1) Door Lock 2 3%

Available Locks: -- Select an item --

Select All Deselect All

- 5) To allow authorization via card reader, select the Card Access checkbox, then select the correct Card Reader and click Read Card to retrieve the Card ID. Card IDs are hidden for security. Click the eyeball icon to reveal and verify the Card ID.

Authorization via Card

Card Access: ☒

Card Reader: -- Select a Card Reader --

Card ID: Read Card (with eyeball icon)

- 6) To allow Authorization via Keypad, select the Keypad Access checkbox, then select the correct keypad and enter the PIN. PINs are hidden for security. Click the eyeball icon to reveal and verify the PIN. PIN length varies by keypad, and a minimum PIN length of 4 is required.

Authorization via Keypad

Keypad Access: ☒

Keypad: -- Select a Keypad --

PIN: (with eyeball icon)

- 7) When both Card and Keypad authorization are required, the Two-Factor Configuration controls are required. Enter a Timeout in seconds during which both Card and Keypad authorization must occur.

Two-Factor Configuration

Timeout s

Info: Timeout for matching a card and a keypad authorization in seconds.

- 8) To allow authorization with an Absolute Time Condition, select the Absolute Time checkbox, then use the calendar tool to set the start and end dates, and the clock tools to set the start and end times during which access is granted. Note: Click the 12H/24H icon to toggle between clock styles.

Absolute Time Condition

Absolute Time ☒

From Date (M/D/YYYY) : : AM 12H

To Date (M/D/YYYY) : : PM 12H

Info: Times are in device local time (UTC-05:00) Eastern Time (US & Canada)

- 9) To allow authorization with a Periodic Time Condition, select the Periodic Time checkbox, then select the Days of Week and range of hours on which access is granted. Note: Click the 12H/24H icon to toggle between clock styles.

Periodic Time Condition

Periodic Time ☒

Days of Week ☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

From Time (hh:mm) : AM 12H

To Time (hh:mm) : PM 12H

Info: If the end time is less than or equal to the start time, this applies until the following day. Times are in device local time (UTC-05:00) Eastern Time (US & Canada)

- 10) Click Create to save the rule. All rules appear on the main Door Access Rule page.

Door Access Rules					
		Delete		Show Card ID	New Access Rule
☐	Name	Door Locks	Card ID	Card Reader	Periodic Time
☐	3/5/21 Daniel access cab1 (1)	My SRC (1) Door Handle Lock 1 My SRC (1) Door Handle Lock 2	*****	My SRC (1) Southco H3-EM - 10E0000007-1	Mon, Tue, Wed, Thu, Fri From: 9:49 AM UTC-0500 To: 10:49 AM UTC-0500
☐	Derek access (2)	My SRC (1) Door Handle Lock 1	*****	My SRC (1) Southco H3-EM - 10E0000007-1	From: 4/11/2021, 9:49:43 AM UTC-0500 To: 4/15/2021, 7:49:43 PM UTC-0500

Event Rules and Actions

Create event rules and actions to notify you of or react to a change in conditions.

An event rule consists of two parts:

- **Event:** This is the situation where the Legrand Power Shelf or a device connected to it meets a certain condition. For example, the inlet's voltage reaches the warning level.
- **Action:** This is the response to the event. For example, the system administrator is notified of the event via email.

Some actions can be scheduled at regular intervals instead of occurring in reaction to an event. For example, you can schedule the emailing of the temperature report every hour.

You must have the Administrator Privileges to configure event rules.

► To create an event rule:

- 1) Choose Device Settings > Event Rules.
- 2) If the needed action is not available yet, click New Action to create it.
 - a. Assign a name to this action.
 - b. Select the desired action and configure it as needed.
 - c. Click Create.
- 3) Click New Rule to create a new rule.
 - a. Assign a name to this rule.
 - b. Make sure the Enabled checkbox is selected, to make the new rule active.
 - c. In the Event field, select the event to react to.
 - d. In the 'Available actions' field, select the desired action(s) to respond to the selected event.
 - e. Click Create.

► To create a scheduled action:

- 1) Click New Scheduled Action to schedule the desired action.

- a. Assign a name to this scheduled action.
- b. Make sure the Enabled checkbox is selected to make the scheduled action active.
- c. Set the interval time, which ranges from every minute to yearly.
- d. In the 'Available actions' field, select the desired action(s).
- e. Click Create.

Built-in Rules and Rule Configuration

There are several built-in event rules, which cannot be deleted. If the built-in event rules do not satisfy your needs, create new rules.

► Built-in rules:

- *System Event Log Rule:*

This causes ANY event occurred to the Legrand Power Shelf to be recorded in the internal log. It is enabled by default.

Note: Default log messages are generated for each event.

- *System SNMP Notification Rule:*

This causes SNMP traps or informs to be sent to specified IP addresses or hosts when ANY event occurs to the Legrand Power Shelf. It is disabled by default.

- *System Tamper Detection Alarmed:*

This causes alarm notifications if a connected tamper sensor is detected to be in an alarmed state. It is enabled by default.

- *System Tamper Detection Unavailable:*

This causes alarm notifications if a previously available tamper sensor is not detected. It is enabled by default.

► Event rule configuration illustration:

- 1) Choose Device Settings > Event Rules > New Rule.
- 2) Click the Event field to select an event type.
 - <Any sub-event> means all events shown on the list.
 - <Any Numeric Sensor> means all numeric sensors, including internal and environmental sensors. <Any Numeric Sensor> is especially useful if you want to receive the notifications when any numeric sensor's readings pass through a specific threshold.
- 3) In this example, the Peripheral Device Slot is selected, which is related to the environmental sensor packages. Then a sensor ID field for this event type appears. Click this additional field to specify which sensor should be the subject of this event.
- 4) In this example, sensor ID 3 (Slot 3) is selected, which is a temperature sensor. Then a new field for this sensor appears. Click this field to specify the type of event(s) you want.
- 5) In this example, Numeric Sensor is selected because we want to select numeric-sensor-related event(s). Then a field for numeric-sensor-related events appears. Click this field to select one of the numeric-sensor-related events from the list.

- 6) In this example, 'Above upper critical threshold' is selected because we want the Legrand Power Shelf to react only when the selected temperature sensor's reading enters the upper critical range. A "Trigger condition" field appears, requiring you to define the "exact" condition related to the "upper critical" event.
- 7) Select the desired radio button to finish the event configuration. Refer to the following table for different types of radio buttons.
 - See [Sample Event Rules](#) (on page 235).
- 8) Add and/or remove actions to configure the rule. Select actions from the 'Available actions' list to create the Select actions list.

► *Radio buttons for different events:*

Some events require you to configure the "Trigger condition".

Event types	Radio buttons
Numeric sensor threshold-crossing events, or the occurrence of the selected event -- true or false	- Asserted: action occurs only when the selected event occurs. That is, the status of the event transits from FALSE to TRUE. - Deasserted: action occurs only when the selected event disappears or stops. That is, the status of the selected event transits from TRUE to FALSE. - Both: action occurs both when the event occurs (asserts) and when the event stops/disappears (deasserts).
State sensor state change	- Alarmed/Open/On: action occurs only when the chosen sensor enters the alarmed, open or on state. - No longer alarmed/Closed/Off: action occurs only when the chosen sensor returns to the normal, closed, or off state. - Both: action occurs whenever the chosen sensor switches its state.

Event types	Radio buttons
Sensor availability	- Unavailable: action occurs only when the chosen sensor is NOT detected and becomes unavailable. - Available: action occurs only when the chosen sensor is detected and becomes available. - Both: action occurs both when the chosen sensor becomes unavailable or available.
Network interface link state	- Link state is up: action occurs only when the network link state changes from down to up. - Link state is down: action occurs only when the network link state changes from up to down. - Both: action occurs whenever the network link state changes.
Function enabled or disabled	- Enabled: action occurs only when the chosen function is enabled. - Disabled: action occurs only when the chosen function is disabled. - Both: action occurs when the chosen function is either enabled or disabled.
Restricted service agreement	- Accepted: action occurs only when the specified user accepts the restricted service agreement. - Declined: action occurs only when the specified user rejects the restricted service agreement. - Both: action occurs both when the specified user accepts or rejects the restricted service agreement.
Server monitoring event	- Monitoring started: action occurs only when the monitoring of any specified server starts. - Monitoring stopped: action occurs only when the monitoring of any specified server stops. - Both: action occurs when the monitoring of any specified server starts or stops.
Server reachability	- Unreachable: action occurs only when any specified server becomes inaccessible. - Reachable: action occurs only when any specified server becomes accessible. - Both: action occurs when any specified server becomes either inaccessible or accessible.

Event types	Radio buttons
Device connection or disconnection, such as a USB-cascaded device	- Connected: action occurs only when the selected device is physically connected to it. - Disconnected: action occurs only when the selected device is physically disconnected from it. - Both: action occurs both when the selected device is physically connected to it and when it is disconnected.
+12V Supply 1 Status	Available radio buttons include "Fault," "OK" and "Both." - Fault: action occurs only when the selected 12V power supply to the controller enters the fault state. - OK: action occurs only when the selected 12V power supply to the controller enters the OK state. - Both: action occurs whenever the selected 12 power supply's status changes.

Xerus Default Log Messages for All Products

Listed here are all default messages for all Xerus events, including all supported products. Not all products support all events, and events are marked here with the supported model type.

Event/context	Default message on event assertion	Default message on event deassertion	Model Type
Asset Management > Blade Extension Overflow	Blade extension overflow occurred on strip [AMSNUMBER] ('[AMSNAME]').	Blade extension overflow cleared for strip [AMSNUMBER] ('[AMSNAME]').	
Asset Management > Composite Asset Strip Composition Changed	Composition changed on composite asset strip [AMSNUMBER] ('[AMSNAME]').		
Asset Management > Device Config Changed	Config parameter '[CONFIGPARAM]' of asset strip [AMSNUMBER] ('[AMSNAME]') changed to '[CONFIGVALUE]' by user '[USERNAME]'.		
Asset Management > Firmware Update	Firmware update for asset strip [AMSNUMBER] ('[AMSNAME]'): status changed to '[AMSSTATE]'.		
Asset Management > Rack Unit > Blade Extension Connected	Blade extension with ID '[AMSTAGID]' connected at rack unit [AMSRACKUNITPOSITION] of asset strip [AMSNUMBER] ('[AMSNAME]').	Blade extension with ID '[AMSTAGID]' disconnected at rack unit [AMSRACKUNITPOSITION] of asset strip [AMSNUMBER] ('[AMSNAME]').	
Asset Management > Rack Unit > Tag Connected	Asset tag with ID '[AMSTAGID]' connected at rack unit [AMSRACKUNITPOSITION], slot [AMSBLADESLOTPOSITION] of asset strip [AMSNUMBER] ('[AMSNAME]').	Asset tag with ID '[AMSTAGID]' disconnected at rack unit [AMSRACKUNITPOSITION], slot [AMSBLADESLOTPOSITION] of asset strip [AMSNUMBER] ('[AMSNAME]').	

Asset Management > Rack Unit Config Changed	Config of rack unit [AMSRACKUNITPOSITION] of asset strip [AMSNUMBER] ('[AMSNAME]') changed by user '[USERNAME]' to: Name '[AMSRACKUNITNAME]', LED Operation Mode '[AMSLEDOPMODE]', LED Color '[AMSLEDCOLOR]', LED Mode '[AMSLEDMODE]'		
Asset Management > State	State of asset strip [AMSNUMBER] ('[AMSNAME]') changed to '[AMSSTATE]'.		
Card Reader Management > Card Reader > Card inserted	Card of type '[SMARTCARDTYPE]' inserted at Card Reader '[FORMATTEDCARDREADERPATH]'.		
Card Reader Management > Card Reader > Card removed	Card of type '[SMARTCARDTYPE]' removed at Card Reader '[FORMATTEDCARDREADERPATH]'.		
Card Reader Management > Card Reader attached	Card Reader '[FORMATTEDCARDREADERPATH]' connected.		
Card Reader Management > Card Reader detached	Card Reader '[FORMATTEDCARDREADERPATH]' disconnected.		
Card Reader Management > Card Reader settings changed	Settings with name '[CARDREADERNAME]' and description '[CARDREADERDESCRIPTION]' set at Card Reader '[FORMATTEDCARDREADERPATH]' by user '[USERNAME]' from host '[USERIP]'.		
Device > Event log cleared	Event log cleared by user '[USERNAME]' from host '[USERIP]'.		
Device > Bulk configuration copied	[LINKIDTAG]Bulk configuration copied by user '[USERNAME]' from host '[USERIP]'.		
Device > Bulk configuration saved	[LINKIDTAG]Bulk configuration saved by user '[USERNAME]' from host '[USERIP]'.		
Device > Device clock changed	The device clock was changed from [OLDDATETIME] to [DATETIME].		
Device > Data push failed	Data push to URL [DATAPUSHURL] failed. [ERRORDESC]		
Device > Device settings restored	[LINKIDTAG]Device settings restored by user '[USERNAME]' from host '[USERIP]'.		
Device > Device settings saved	[LINKIDTAG]Device settings saved by user '[USERNAME]' from host '[USERIP]'.		

Device > Firmware update completed	[LINKIDTAG]Firmware upgraded successfully from version '[OLDVERSION]' to version '[VERSION]' by user '[USERNAME]' from host '[USERIP]'.		
Device > Firmware update failed	[LINKIDTAG]Firmware upgrade failed from version '[OLDVERSION]' to version '[VERSION]' by user '[USERNAME]' from host '[USERIP]'.		
Device > Firmware update started	[LINKIDTAG]Firmware upgrade started from version '[OLDVERSION]' to version '[VERSION]' by user '[USERNAME]' from host '[USERIP]'.		
Device > Firmware validation failed	[LINKIDTAG]Firmware validation failed by user '[USERNAME]' from host '[USERIP]'.		
Device > Hardware failure present	[LINKIDTAG]Failure '[FAILURETYPESTR]' asserted for component '[COMPONENTID]'.	[LINKIDTAG]Failure '[FAILURETYPESTR]' deasserted for component '[COMPONENTID]'.	
Device > Device identification changed	Config parameter '[CONFIGPARAM]' changed to '[CONFIGVALUE]' by user '[USERNAME]' from host '[USERIP]'.		
Device > An LDAP error occurred	An LDAP error occurred: [ERRORDESC].		
Device > Network interface link state is up	The [IFNAME] network interface link is now up.	The [IFNAME] network interface link is now down.	
Device > Peripheral Device Firmware Update	Firmware update for peripheral device [EXTSENSORSERIAL] from [OLDVERSION] to [VERSION] [SENSORSTATENAME].		
Device > A Radius error occurred	A Radius error occurred: [ERRORDESC].		
Device > Raw configuration downloaded	[LINKIDTAG]Raw configuration downloaded by user '[USERNAME]' from host '[USERIP]'.		
Device > Raw configuration updated	[LINKIDTAG]Raw configuration updated by user '[USERNAME]' from host '[USERIP]'.		
Device > Sending SMS message failed	Sending SMS message to '[PHONENUMBER]' failed. [ERRORDESC]		
Device > Sending SMTP message failed	Sending SMTP message to '[SMTPRECIPIENTS]' using server '[SMTPSERVER]' failed. [ERRORDESC]		
Device > Sending SNMP inform failed or no response	Sending SNMP inform to manager [SNMPMANAGER]:[SNMPMANAGERPORT] failed or no response. [ERRORDESC]		

Device > Sending Syslog message failed	Sending Syslog message to server [SYSLOGSERVER]:[SYSLOGPORT] ([SYSLOGTRANSPORTPROTO]) failed. [ERRORDESC]		
Device > System reset	[LINKIDTAG]System reset performed by user '[USERNAME]' from host '[USERIP]'.		
Device > System started	[LINKIDTAG]System started.		
Device > A TACACS+ error occurred	A TACACS+ error occurred: [ERRORDESC].		
Device > Unknown peripheral device attached	An unknown peripheral device with rom code '[ROMCODE]' was attached at position '[PERIPHDEVPOSITION]'.		
Device > Expansion unit connected	Expansion unit connected.	Expansion unit disconnected.	
Device > Wired network authentication result	The network authentication on interface [IFNAME] [NETAUTHRESULTSTR].		
Door Access Control > Door access denied	Door access was denied: [DOORACCESSDENIALREASON]		
Door Access Control > Door access granted	Door access was granted, rule '[DOORACCESSRULENAME]' ([DOORACCESSRULEID])		
Door Access Control > Door access rule added	Door access rule '[DOORACCESSRULENAME]' ([DOORACCESSRULEID]) was added by user '[USERNAME]' from host '[USERIP]'		
Door Access Control > Door access rule changed	Door access rule '[DOORACCESSRULENAME]' ([DOORACCESSRULEID]) was changed by user '[USERNAME]' from host '[USERIP]'		
Door Access Control > Door access deleted	Door access rule '[DOORACCESSRULENAME]' ([DOORACCESSRULEID]) was deleted by user '[USERNAME]' from host '[USERIP]'		
Door Access Control > Door Handle > (handle name) > Door Forced Open	[LINKIDTAG]Door '[DOORSTATENAME]' was opened without unlocking the door handle.		
Door Access Control > Door Handle > (handle name) > Mechanically Unlocked	[LINKIDTAG]Door handle '[DOORHANDLENAME]' was opened without being electronically unlocked.		

Peripheral Device Slot > Numeric Sensor > Above upper critical threshold	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Peripheral Device Slot > Numeric Sensor > Above upper warning threshold	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Peripheral Device Slot > Numeric Sensor > Below lower critical threshold	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Peripheral Device Slot > Numeric Sensor > Below lower warning threshold	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Peripheral Device Slot > Numeric Sensor > Unavailable	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] has become unavailable.	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] is no longer unavailable; it is now [SENSORSTATENAME].	
Peripheral Device Slot > State Sensor / Actuator > Alarmed	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] is [SENSORSTATENAME].	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] is [SENSORSTATENAME].	
Peripheral Device Slot > State Sensor / Actuator > Switched by user	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] has been switched to [SENSORSTATENAME] by user '[USERNAME]' from host '[USERIP]'.		
Peripheral Device Slot > State Sensor / Actuator > Unavailable	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] has become unavailable.	Peripheral device '[EXTSENSORNAME]' in [FORMATEDEXTSENSORSLOT] is no longer unavailable; it is now [SENSORSTATENAME].	
Keypad Management > Keypad > PIN entered	PIN entered at Keypad '[FORMATEDEXTKEYPADPATH]'.		

Keypad Management > Keypad attached	Keypad '[FORMATTEDKEYPADPATH]' connected.		
Keypad Management > Keypad detached	Keypad '[FORMATTEDKEYPADPATH]' disconnected.		
Keypad Management > Keypad settings changed	Settings with name '[KEYPADNAME]' and description '[KEYPADDESCRIPTION]' set at Keypad '[FORMATTEDKEYPADPATH]' by user '[USERNAME]' from host '[USERIP]'.		
Linking > Link unit added	Link unit [LINKID] ([LINKUNITHOST]) has been added by user '[USERNAME]' from '[USERIP]'.		
Linking > Link unit communication failed	Communication with link unit [LINKID] ([LINKUNITHOST]) failed.	Communication with link unit [LINKID] ([LINKUNITHOST]) is OK.	
Linking > Link unit released	Link unit [LINKID] ([LINKUNITHOST]) has been released by user '[USERNAME]' from '[USERIP]'.		
Outlet Grouping > Outlet Group > Outlet Group Modified	Outlet group '[OUTLETGROUPID]' was modified.		
Outlet Grouping > Outlet Group > Power control > Power cycled	Outlet group '[OUTLETGROUPID]' power cycle initiated by user '[USERNAME]' from host '[USERIP]'.		
Outlet Grouping > Outlet Group > Power control > Powered off	Outlet group '[OUTLETGROUPID]' has been powered off by user '[USERNAME]' from host '[USERIP]'.		
Outlet Grouping > Outlet Group > Power control > Powered on	Outlet group '[OUTLETGROUPID]' has been powered on by user '[USERNAME]' from host '[USERIP]'.		
Outlet Grouping > Outlet Group > Sensor > Above upper critical threshold	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPID]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPID]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Outlet Grouping > Outlet Group > Sensor > Above upper warning threshold	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPID]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPID]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Outlet Grouping > Outlet Group > Sensor > Below lower critical threshold	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPID]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPID]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	

Outlet Grouping > Outlet Group > Sensor > Below lower warning threshold	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPIP]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPIP]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
Outlet Grouping > Outlet Group > Sensor > Reset	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPIP]' has been reset by user '[USERNAME]' from host '[USERIP]'.		
Outlet Grouping > Outlet Group > Sensor > Unavailable	Sensor '[OUTLETGROUPSENSOR]' of outlet group '[OUTLETGROUPIP]' has become unavailable.	Sensor '[OUTLETGROUPSENSOR]' on outlet group '[OUTLETGROUPIP]' is no longer unavailable; it is now [SENSORSTATENAME].	
Outlet Grouping > Outlet Group Created	Outlet group '[OUTLETGROUPIP]' was created.		
Outlet Grouping > Outlet Group Deleted	Outlet group '[OUTLETGROUPIP]' was deleted.		
PDU > Controller > Communication failed	Communication with PDU [PDUNUMBER] controller '[CONTROLLER]' (board ID [BOARDID]) failed	Communication with PDU [PDUNUMBER] controller '[CONTROLLER]' (board ID [BOARDID]) restored	
PDU > Controller > Firmware update	PDU [PDUNUMBER] controller '[CONTROLLER]' with board ID [BOARDID] has started firmware update	PDU [PDUNUMBER] controller '[CONTROLLER]' with board ID [BOARDID] has completed firmware update	
PDU > Controller > Incompatible	PDU [PDUNUMBER] controller '[CONTROLLER]' with board ID [BOARDID] is incompatible	PDU [PDUNUMBER] controller '[CONTROLLER]' with board ID [BOARDID] is no longer incompatible	
PDU > Controller > OK	PDU [PDUNUMBER] controller '[CONTROLLER]' with board ID [BOARDID] is OK	PDU [PDUNUMBER] controller '[CONTROLLER]' with board ID [BOARDID] is no longer OK	
PDU > Inlet > Dip	A dip event occurred on PDU [PDUNUMBER] inlet '[INLET]' for [DIPSWELLDURATION] s with a minimum voltage of [DIPSWELLVOLTAGE] V.		PX4 or PRO4X
PDU > Inlet > Dip/swell event list cleared	The dip/swell event list for PDU [PDUNUMBER] inlet '[INLET]' was cleared by user '[USERNAME]' from host '[USERIP]'.		PX4 or PRO4X
PDU > Inlet > Enabled	PDU [PDUNUMBER] inlet '[INLET]' has been enabled by user '[USERNAME]' from host '[USERIP]'.	PDU [PDUNUMBER] inlet '[INLET]' has been disabled by user '[USERNAME]' from host '[USERIP]'.	

PDU > Inlet > Line Pair > Sensor > Above upper critical threshold	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Line Pair > Sensor > Above upper warning threshold	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Line Pair > Sensor > Below lower critical threshold	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Line Pair > Sensor > Below lower warning threshold	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Line Pair > Sensor > Unavailable	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' has become unavailable.	Sensor '[PDULINEPAIRSENSOR]' on line '[INLETLINEPAIR]' of PDU [PDUNUMBER] inlet '[INLET]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Dip	A dip event occurred on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' for [DIPSWELLDURATION] s with a minimum voltage of [DIPSWELLVOLTAGE] V.		PX4 or PRO4X
PDU > Inlet > Pole > Dip/swell event list cleared	The dip/swell event list for pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' was cleared by user '[USERNAME]' from host '[USERIP]'.		PX4 or PRO4X
PDU > Inlet > Pole > Sensor > Above upper critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	

PDU > Inlet > Pole > Sensor > Above upper warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Below lower critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Below lower warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Critical	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' entered critical state.	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' exited critical state; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Failed	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' entered failed state.	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' exited failed state; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Normal	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' entered normal state.	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' exited normal state; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Self-Test	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' started self test.	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' finished self test; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Unavailable	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' has become unavailable.	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Sensor > Warning	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' entered warning state.	Sensor '[PDUPOLESENSOR]' on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' exited warning state; it is now [SENSORSTATENAME].	
PDU > Inlet > Pole > Swell	A swell event occurred on pole '[INLETPOLE]' of PDU [PDUNUMBER] inlet '[INLET]' for [DIPSWELLDURATION] s with a maximum voltage of [DIPSWELLVOLTAGE] V.		PX4 or PRO4X

PDU > Inlet > Sensor > Above upper critical threshold	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Above upper warning threshold	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Below lower critical threshold	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Below lower warning threshold	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Critical	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' entered critical state.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' exited critical state; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Failed	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' entered failed state.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' exited failed state; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Fault	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' entered fault state.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' exited fault state; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Normal	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' entered normal state.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' exited normal state; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > OK	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' entered OK state.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' exited OK state; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Reset	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' has been reset by user '[USERNAME]' from host '[USERIP]'. [SENSORSTATENAME]		

PDU > Inlet > Sensor > Self-Test	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' started self test.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' finished self test; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Unavailable	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' has become unavailable.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Inlet > Sensor > Warning	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' entered warning state.	Sensor '[INLETSensor]' on PDU [PDUNUMBER] inlet '[INLET]' exited warning state; it is now [SENSORSTATENAME].	
PDU > Inlet > Swell	A swell event occurred on PDU [PDUNUMBER] inlet '[INLET]' for [DIPSWELLDURATION] s with a maximum voltage of [DIPSWELLVOLTAGE] V.		PX4 or PRO4X
PDU > Load Shedding > Started	PDU [PDUNUMBER] placed in Load Shedding Mode by user '[USERNAME]' from host '[USERIP]'.	PDU [PDUNUMBER] removed from Load Shedding Mode by user '[USERNAME]' from host '[USERIP]'.	
PDU > Outlet > Pole > Sensor > Above upper critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Pole > Sensor > Above upper warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Pole > Sensor > Below lower critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Pole > Sensor > Below lower warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	

PDU > Outlet > Pole > Sensor > Unavailable	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' has become unavailable.	Sensor '[PDUPOLESENSOR]' on pole '[OUTLETPOLE]' of PDU [PDUNUMBER] outlet '[OUTLET]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Outlet > Power control > Power cycled	PDU [PDUNUMBER] outlet '[OUTLET]' power cycle initiated by user '[USERNAME]' from host '[USERIP]'.		
PDU > Outlet > Power control > Powered off	PDU [PDUNUMBER] outlet '[OUTLET]' has been powered off by user '[USERNAME]' from host '[USERIP]'.		
PDU > Outlet > Power control > Powered on	PDU [PDUNUMBER] outlet '[OUTLET]' has been powered on by user '[USERNAME]' from host '[USERIP]'.		
PDU > Outlet > Sensor > Above upper critical threshold	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Sensor > Above upper warning threshold	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Sensor > Below lower critical threshold	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Sensor > Below lower warning threshold	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Outlet > Sensor > On	PDU [PDUNUMBER] outlet '[OUTLET]' state sensor changed to on.	PDU [PDUNUMBER] outlet '[OUTLET]' state sensor is no longer on; it is now [SENSORSTATENAME].	
PDU > Outlet > Sensor > Reset	Sensor '[OUTLETSENSOR]' on outlet '[OUTLET]' has been reset by user '[USERNAME]' from host '[USERIP]'.		

PDU > Outlet > Sensor > Unavailable	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' has become unavailable.	Sensor '[OUTLETSENSOR]' on PDU [PDUNUMBER] outlet '[OUTLET]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Outlet > Suspended	PDU [PDUNUMBER] outlet '[OUTLET]' was suspended after being suspected of having caused an OCP trip event.		
PDU > Overcurrent Protector > Sensor > Above upper critical threshold	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Above upper warning threshold	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Below lower critical threshold	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Below lower warning threshold	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Critical	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' entered critical state.	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' exited critical state; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Failed	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' entered failed state.	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' exited failed state; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Normal	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' entered normal state.	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' exited normal state; it is now [SENSORSTATENAME].	

PDU > Overcurrent Protector > Sensor > Open	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' is open. [OCPTRIPCAUSEINFO]	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' is no longer open; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Self-Test	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' started self test.	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' finished self test; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Unavailable	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' has become unavailable.	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Overcurrent Protector > Sensor > Warning	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' entered warning state.	Sensor '[OCPSENSOR]' on PDU [PDUNUMBER] overcurrent protector '[OCP]' exited warning state; it is now [SENSORSTATENAME].	
PDU > Sensor > Above upper critical threshold	PDU [PDUNUMBER] sensor '[PDUSENSOR]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	PDU [PDUNUMBER] sensor '[PDUSENSOR]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Sensor > Above upper warning threshold	PDU [PDUNUMBER] sensor '[PDUSENSOR]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	PDU [PDUNUMBER] sensor '[PDUSENSOR]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Sensor > Below lower critical threshold	PDU [PDUNUMBER] sensor '[PDUSENSOR]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	PDU [PDUNUMBER] sensor '[PDUSENSOR]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Sensor > Below lower warning threshold	PDU [PDUNUMBER] sensor '[PDUSENSOR]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	PDU [PDUNUMBER] sensor '[PDUSENSOR]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	
PDU > Sensor > Fault	PDU [PDUNUMBER] sensor '[PDUSENSOR]' entered fault state.	PDU [PDUNUMBER] sensor '[PDUSENSOR]' exited fault state; it is now [SENSORSTATENAME].	
PDU > Sensor > Reset	PDU [PDUNUMBER] sensor '[PDUSENSOR]' has been reset by user '[USERNAME]' from host '[USERIP]'.		

PDU > Sensor > Unavailable	PDU [PDUNUMBER] sensor '[PDUSENSOR]' has become unavailable.	PDU [PDUNUMBER] sensor '[PDUSENSOR]' is no longer unavailable; it is now [SENSORSTATENAME].	
PDU > Transfer Switch > Active inlet changed	Active inlet on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' changed to '[ACTIVEINLET]' due to [TRANSFERSWITCHREASON].		Transfer switch
PDU > Transfer Switch > Sensor > Above upper critical threshold	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Above upper warning threshold	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Below lower critical threshold	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Below lower warning threshold	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Fault	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is [SENSORSTATENAME].	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Non-redundant	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is now non-redundant.	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is no longer non-redundant; it is now [SENSORSTATENAME].	Transfer switch

PDU > Transfer Switch > Sensor > Normal	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is now normal.	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is no longer normal; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Off	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is now off.	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is no longer off; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Out of sync	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is out of sync.	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is no longer out of sync; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Standby	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is now standby.	Operational state of PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is no longer standby; it is now [SENSORSTATENAME].	Transfer switch
PDU > Transfer Switch > Sensor > Unavailable	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' has become unavailable.	Sensor '[TRANSFERSWITCHSENSOR]' on PDU [PDUNUMBER] transfer switch '[TRANSFERSWITCH]' is no longer unavailable; it is now [SENSORSTATENAME].	Transfer switch
Port Fuse > Tripped	Fuse of [FORMATEDEXTPORT] is [FUSESTATENAME].	Fuse of [FORMATEDEXTPORT] is [FUSESTATENAME].	
Power Metering Controller > Power Meter > Circuit > Pole > Sensor > Above upper critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Pole > Sensor > Above upper warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Pole > Sensor > Below lower critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC

Power Metering Controller > Power Meter > Circuit > Pole > Sensor > Below lower warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Pole > Sensor > Unavailable	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' has become unavailable.	Sensor '[PDUPOLESENSOR]' on pole '[CIRCUITPOLE]' of panel '[POWERMETER]' circuit '[CIRCUIT]' is no longer unavailable; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Sensor > Above upper critical threshold	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Sensor > Above upper warning threshold	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Sensor > Below lower critical threshold	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Sensor > Below lower warning threshold	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Sensor > Reset	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' has been reset by user '[USERNAME]' from host '[USERIP]'.		BCM2 / PMC
Power Metering Controller > Power Meter > Circuit > Sensor > Unavailable	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' has become unavailable.	Sensor '[CIRCUITSENSOR]' on panel '[POWERMETER]' circuit '[CIRCUIT]' is no longer unavailable; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Circuit Created	Circuit '[CIRCUIT]' on panel '[POWERMETER]' was created.		BCM2 / PMC

Power Metering Controller > Power Meter > Circuit Deleted	Circuit '[CIRCUIT]' on panel '[POWERMETER]' was deleted.		BCM2 / PMC
Power Metering Controller > Power Meter > Circuit Modified	Circuit '[CIRCUIT]' on panel '[POWERMETER]' was modified.		BCM2 / PMC
Power Metering Controller > Power Meter > Pole > Sensor > Above upper critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Pole > Sensor > Above upper warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Pole > Sensor > Below lower critical threshold	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Pole > Sensor > Below lower warning threshold	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Pole > Sensor > Unavailable	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' has become unavailable.	Sensor '[PDUPOLESENSOR]' on pole '[POWERMETERPOLE]' of power meter '[POWERMETER]' is no longer unavailable; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Sensor > Above upper critical threshold	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' asserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' deasserted 'above upper critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC

Power Metering Controller > Power Meter > Sensor > Above upper warning threshold	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' asserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' deasserted 'above upper warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Sensor > Below lower critical threshold	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' asserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' deasserted 'below lower critical' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Sensor > Below lower warning threshold	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' asserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT].	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' deasserted 'below lower warning' at [SENSORREADING] [SENSORREADINGUNIT]; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter > Sensor > Reset	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' has been reset by user '[USERNAME]' from host '[USERIP]'. [SENSORREADINGUNIT].		BCM2 / PMC
Power Metering Controller > Power Meter > Sensor > Unavailable	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' has become unavailable.	Sensor '[POWERMETERSENSOR]' on power meter '[POWERMETER]' is no longer unavailable; it is now [SENSORSTATENAME].	BCM2 / PMC
Power Metering Controller > Power Meter Created	Power meter '[POWERMETER]' was created.		BCM2 / PMC
Power Metering Controller > Power Meter Deleted	Power meter '[POWERMETER]' was deleted.		BCM2 / PMC
Power Metering Controller > Power Meter Modified	Power meter '[POWERMETER]' was modified.		BCM2 / PMC
Server Monitoring > Error	Error monitoring server '[MONITOREDHOST]': [ERRORDESC]		BCM2 / PMC
Server Monitoring > Monitored	Server '[MONITOREDHOST]' is now being monitored.	Server '[MONITOREDHOST]' is no longer being monitored.	BCM2 / PMC
Server Monitoring > Power control completed	Power control operation for '[MONITOREDHOST]' finished with result: [SERVERPOWERRESULT]		BCM2 / PMC
Server Monitoring > Power control initiated	User '[USERNAME]' initiated a power control operation for '[MONITOREDHOST]': [SERVERPOWEROPERATION]		BCM2 / PMC

Server Monitoring > Unreachable	Server '[MONITOREDHOST]' is unreachable.	Server '[MONITOREDHOST]' is reachable.	BCM2 / PMC
Server Monitoring > Unrecoverable	Connection to server '[MONITOREDHOST]' could not be restored.		BCM2 / PMC
Test > Test Event	A test event was triggered by user '[USERNAME]'.		
Timer Event > Occurred	Timer event '[EVENTRULENAME]' occurred.		
User Activity > User accepted the Restricted Service Agreement	User '[USERNAME]' from host '[USERIP]' accepted the Restricted Service Agreement.	User '[USERNAME]' from host '[USERIP]' declined the Restricted Service Agreement.	
User Activity > Authentication failure	Authentication failed for user '[USERNAME]' from host '[USERIP]'.		
User Activity > User logon state	User '[USERNAME]' from host '[USERIP]' logged in.	User '[USERNAME]' from host '[USERIP]' logged out.	
User Activity > Session timeout	Session of user '[USERNAME]' from host '[USERIP]' timed out.		
User Activity > User blocked	User '[USERNAME]' from host '[USERIP]' was blocked.		
User Administration > Password changed	Password of user '[UMTARGETUSER]' changed by user '[USERNAME]' from host '[USERIP]'.		
User Administration > Password settings changed	Password settings changed by user '[USERNAME]' from host '[USERIP]'.		
User Administration > Role added	Role '[UMTARGETROLE]' added by user '[USERNAME]' from host '[USERIP]'.		
User Administration > Role deleted	Role '[UMTARGETROLE]' deleted by user '[USERNAME]' from host '[USERIP]'.		
User Administration > Role modified	Role '[UMTARGETROLE]' modified by user '[USERNAME]' from host '[USERIP]'.		
User Administration > User added	User '[UMTARGETUSER]' added by user '[USERNAME]' from host '[USERIP]'.		
User Administration > User deleted	User '[UMTARGETUSER]' deleted by user '[USERNAME]' from host '[USERIP]'.		
User Administration > User modified	User '[UMTARGETUSER]' modified by user '[USERNAME]' from host '[USERIP]'.		
User Administration > User renamed	User '[UMTARGETUSER]' renamed to '[NEWUMTARGETUSER]' by user '[USERNAME]' from host '[USERIP]'.		

Webcam Management > Image upload started	A snapshot upload of webcam '[WEBCAMNAME]' to folder [WEBCAMSNAPOSHOTFOLDERURL] was started.		
Webcam Management > Webcam attached	Webcam '[WEBCAMNAME]' ('[WEBCAMMODEL]') added to port '[WEBCAMUSBPORT]'.		
Webcam Management > Webcam detached	Webcam '[WEBCAMNAME]' ('[WEBCAMMODEL]') removed from port '[WEBCAMUSBPORT]'.		
Webcam Management > Webcam settings changed	Webcam '[WEBCAMNAME]' settings changed by user '[USERNAME]'		

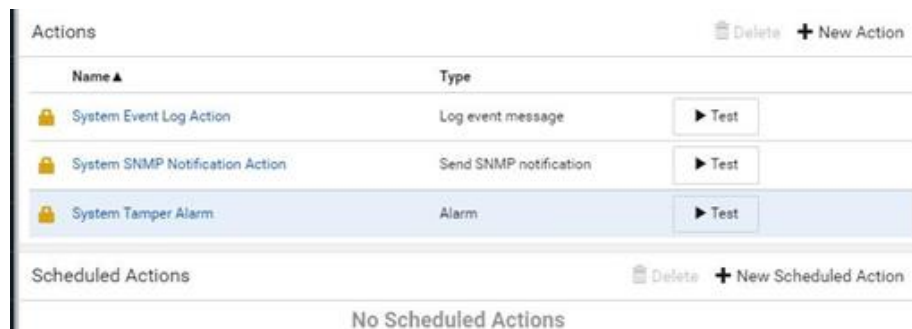
Available Actions

There are several built-in actions, which cannot be deleted. You can create additional actions for responding to different events.

Some actions have messages that you can customize using placeholders that will populate with specific information when the message is generated. Custom messages with placeholders can be used in these actions: Log event message, Send SMS, Send email (subject+body), Send webcam image (subject+body).

► To test an action:

- Click the Test button next to the Action. The action is triggered and you can verify it.



► Built-in actions:

- System Event Log Action:**
This action records the selected event in the internal log when the event occurs.
- System SNMP Notification Action:**
This action sends SNMP notifications to one or multiple IP addresses after the selected event occurs.

Note: No IP addresses are specified for this notification action by default so you must enter IP addresses before applying this action to any event rule. Any changes made to the 'SNMP Notifications' section on the SNMP page will update the settings of the System SNMP Notification Action, and vice versa.

- **System Tamper Alarm:**

This action causes the Legrand Power Shelf to show the alarm for the tamper sensor, if any, on the Dashboard page until a person acknowledges it. By default, this action has been assigned to the built-in tamper detection event rules.

► **Actions you can create:**

- 1) Choose Device Settings > Event Rules > New Action.
- 2) Click the Action field to select an action type from the list.



- 3) Available actions depend on your model. See next sections for details on each action you can configure.
- 4) Click Create to save an action, then you can include it in an event rule.

Alarm

The Alarm is an action that requires users to acknowledge an alert. This helps ensure that the user is aware of the alert.

If the Alarm action has been included in a specific event rule and no one acknowledges that alert after it occurs, the Legrand Power Shelf resends or regenerates an alert notification regularly until the alert is acknowledged or the maximum number of alert notifications is sent. You can acknowledge an alert in the Dashboard.

► **Operation:**

- 1) Choose Device Settings > Event Rules >  **New Action**.
- 2) Select Alarm from the Action list.
- 3) In the Alarm Notifications list box, specify one or multiple ways to issue the alert notifications. Available methods vary, depending on how many notification-based actions have been created. Notification-based action types include:

- External beeper
- Syslog message
- Send email
- Send SMS message
- Internal beeper

If no appropriate actions are available, create them first.

- a. To select any methods, select them one by one in the Available field.
To add all available methods, simply click Select All.

- b. To delete any methods, click a method's  in the Selected field.
To remove all methods, simply click Deselect All.

- 4) To enable the notification-resending feature, select the 'Enable re-scheduling of alarm notifications' checkbox.
- 5) In the 'Re-scheduling period' field, specify the time interval (in minutes) at which the alert notification is resent or regenerated regularly.
- 6) In the 'Re-scheduling limit' field, specify the maximum number of times the alert notification is resent. Values range from 1 to infinite.
- 7) (Optional) You can instruct the Legrand Power Shelf to send the acknowledgment notification after the alarm is acknowledged in the 'Acknowledgment notifications' field. Available methods are identical to those for generating alarm notifications.
 - a. In the Available field, select desired methods, or click Select All.
 - b. In the Selected field, click any method's  to remove unnecessary ones, or click Deselect All.

Action Group

You can create an action group that performs up to 32 actions. After creating such an action group, you can easily assign this set of actions to any event rule rather than selecting all needed actions one by one per rule.

If the needed action is not available yet, create it first.

► Operation:

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Execute an action group' from the Action list.
- 3) Select the actions to include in group from the 'Available actions' list, or click Select All.
- 4) To remove any action(s) from the 'Selected actions' field, click its X.
- 5) Click Create to save the action.

Change Load Shedding State

The "Change load shedding state" action is available only when your Legrand Power Shelf is able to control outlet power. Use this action to activate or deactivate the load shedding mode for responding to a specific event.

► *Operation:*

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Change load shedding state' from the Action list.
- 3) In the Operation field, select either one below:
 - Start load shedding: Enters the load shedding mode when the specified event occurs.
 - Stop load shedding: Quits the load shedding mode when the specified event occurs.

External Beeper

If an external beeper is connected, you can change the beeper's behavior or status to respond to a certain event.

► *To control the connected external beeper:*

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'External beeper' from the Action list.
- 3) In the 'Beeper port' field, select the port where the external beeper is connected.
- 4) In the 'Beeper action' field, select an action for the external beeper to carry out.
 - Alarm: Causes the external beeper to sound an alarm cycle every 20 seconds - stays on for 0.7 seconds and then off for 19.3 seconds.
 - On: Turns on the external beeper so that it buzzes continuously.
 - Off: Turns off the external beeper so that it stops buzzing.

Warning: If you create an event rule for the external beeper but disconnect it when an event causes it to beep, the beeper no longer beeps after it is re-connected even though the event triggering the beeping action remains asserted.

Internal Beeper

You can have the built-in beeper of the Legrand Power Shelf turned on or off when a certain event occurs.

► Operation:

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Internal beeper' from the Action list.
- 3) Select an option from the Operation field.
 - Turn beeper on: Turns on the internal beeper to make it buzz.
 - Turn beeper off: Turns off the internal beeper to make it stop buzzing.

Log an Event Message

The option 'Log event message' records the selected events in the internal log.

A default log message will be generated for each type of event, or you can create a custom log message.

► Operation:

- 1) Choose Device Settings > Event Rules > New Action.
- 2) Select 'Log an event message' from the Action list.
- 3) Select the 'Use custom log message' checkbox, and then create a custom message in the provided text box.
 - To automatically insert message placeholders, open the Custom Log Message Help section. Search for placeholders and click to include them in your message.
- 4) Click Create.

Shut down a Server and Control its Power

The "Power control server" action is available only when your Legrand Power Shelf is outlet-switching capable.

You can configure the Legrand Power Shelf to shut down a specific server and then turn off its outlet(s), or turn on that server's outlet(s) after a certain event occurs.

The server must be one of the servers being monitored by your Legrand Power Shelf and the same Legrand Power Shelf supplies power to it. See [Monitoring Server Accessibility](#) (on page 247) .

Tip: If the server has multiple power cords, make sure all of its power cords are connected to the same Legrand Power Shelf and you have created an outlet group for controlling all outlets simultaneously.

► *Operation:*

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Power control server' from the Action list.
- 3) In the Operation field, select an action for the server.
 - Power up: Turns on the outlet or outlet group associated with the selected server.
 - Graceful shutdown: Shuts down the selected server first and then turn off its associated outlet or outlet group.
- 4) Select the server you want in the Server field.
 - If Legrand Power Shelf cannot power control any server, a message 'Power control not configured' is shown in the end of the server's host name or IP address.

Push Out Sensor Readings

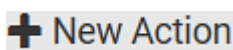
You can configure the Legrand Power Shelf to push sensor log to a remote server after a certain event occurs, including logs of internal sensors, environmental sensors and actuators.

If you have connected asset strips, you can also configure the Legrand Power Shelf to push the data to a server.

Before creating this action, make sure that you have properly defined the destination servers and the data to be sent on the Data Push page.

Tip: To send the data at a regular interval, schedule this action. Note that the "Asset management log" is generated only when there are changes made to any asset strips or asset tags, such as connection or disconnection events.

► *Operation:*

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Push out sensor readings' from the Action list.
- 3) Select a server or host which receives the data in the Destination field.
 - If the desired destination is not available yet, go to the Data Push page to specify it.

Record Snapshots to Webcam Storage

This option allows you to define an action that starts or stops a specific webcam from taking snapshots.

Per default the snapshots are stored on the Legrand Power Shelf. It is recommended to specify a remote server to store as many snapshots as possible.

► **Operation:**

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Record snapshots to webcam storage' from the Action list.
- 3) Select a webcam in the Webcam field.
- 4) Select the action to perform - 'Start recording' or 'Stop recording.'

If 'Start recording' is selected, adjust the values of the following:

- Number of snapshots - the number of snapshots to be taken when the event occurs.
The maximum amount of snapshots that can be stored on the Legrand Power Shelf is 10. If you set it for a number greater than 10 and the storage location is on the Legrand Power Shelf, after the 10th snapshot is taken and stored, the oldest snapshots are overwritten. Storing snapshots on a remote server does not have such a limitation.
- Time before first snapshot - the amount of time in seconds between when the event is triggered and the webcam begins taking snapshots.
- Time between snapshots - the amount of time in seconds between when each snapshot is taken.
- Folder - names of the folders that will be automatically created to store webcam snapshots after the recording action is triggered by the rule you will configure.

Note that the Folder field is available only when the selected webcam has been configured to store its snapshots on an "FTP" server.

Folder name options	Definition
Serial number / Webcam name	Two folders will be created. • The parent folder's name is the serial number of Legrand Power Shelf. • The subfolder's name is the selected webcam's name.
Serial number / Webcam name / Rule name	Three folders will be created. • Definitions of the parent folder and first subfolder are the same as the first row. • The final subfolder's name is the name of event rule that triggers this recording action.
Serial number / Webcam name / Timestamp	Three folders will be created. • Definitions of the parent folder and first subfolder are the same as the first row. • The final subfolder's name is the time when the recording event occurs, which is the accumulated time in seconds since 1970/1/1.
Serial number / Webcam name / Rule name / Timestamp	Four folders will be created. • Definitions of the parent folder and first subfolder are the same as the first row. • The second subfolder's name is the name of event rule that triggers this recording action. • The final subfolder's name is the time when the recording event occurs, which is the accumulated time in seconds since 1970/1/1.
Serial number / Webcam name / Formatted timestamp	Three folders will be created. • Definitions of the parent folder and first subfolder are the same as the first row. • The final subfolder's name is the time when the recording event occurs, which is a format comprising year, month, date, hour, minute, second and timezone.

Folder name options	Definition
Serial number / Webcam name / Rule name / Formatted timestamp	Four folders will be created. • Definitions of the parent folder and first subfolder are the same as the first row. • The second subfolder's name is the name of event rule that triggers this recording action. • The final subfolder's name is the time when the recording event occurs, which is a format comprising year, month, date, hour, minute, second and timezone.

The timestamp is based on the time you have configured on the Legrand Power Shelf.

To find the serial number of your Legrand Power Shelf, go to Maintenance > *Device Information*.

Send Email

You can configure emails to be sent when an event occurs and can customize the message.

Messages consist of a combination of free text and placeholders. The placeholders represent information which is pulled from the Legrand Power Shelf and inserted into the message.

For example:

[USERNAME] logged into the device on [DATETIME]

translates to

Mary logged into the device on 2022-January-30 21:00

► Operation:

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Send email' from the Action list.
- 3) In the 'Recipient email addresses' field, specify the email address(es) of the recipient(s). Use a comma to separate multiple email addresses.
- 4) By default, the SMTP server specified on the SMTP Server page will be the SMTP server for performing this action.

To use a different SMTP server, select the 'Use custom settings' radio button.

Default messages are sent based on the event.

- 5) If needed, you can customize the subject and messages sent via this email.
 - Select the 'Custom subject' checkbox, and enter the text you prefer as this email's subject.
 - Select the 'Use custom log message' checkbox, and then create a custom message up to 1024 characters in the provided field.
 - To automatically insert message placeholders, open the Custom Log Message Help section. Search for placeholders and click to include them in your message.
- 6) Click Create.

Send Sensor Report

You may set the Legrand Power Shelf so that it automatically reports the latest readings or states of one or multiple sensors by sending a message or email or simply recording the report in a log. These sensors can be either internal or environmental sensors listed below.

- Inlet sensors, including RMS current, RMS voltage, active power, apparent power, power factor and active energy.
- Outlet sensors, including RMS current, RMS voltage, active power, apparent power, power factor, active energy and outlet state (for outlet-switching capable models only).
- Overcurrent protector sensors, including RMS current and tripping state.
- Peripheral device sensors, which can be any environmental sensor packages connected to the Legrand Power Shelf, such as temperature or humidity sensors.

See [Send Sensor Report Example](#) (on page 227).

► Operation:

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Send sensor report' from the Action list.
- 3) In the 'Destination actions' section, select the method(s) to report sensor readings or states. The number of available methods varies, depending on how many messaging actions have been created.

The messaging action types include:

- Log event message
 - Syslog message
 - Send email
 - Send SMS message
- 4) If no messaging actions are available, create them now.
 - 5) In the 'Available sensors' field, select the desired target's sensor.

- a. Click the first  to select a target component from the list.



- b. Click the second  to select the specific sensor for the target from the list.



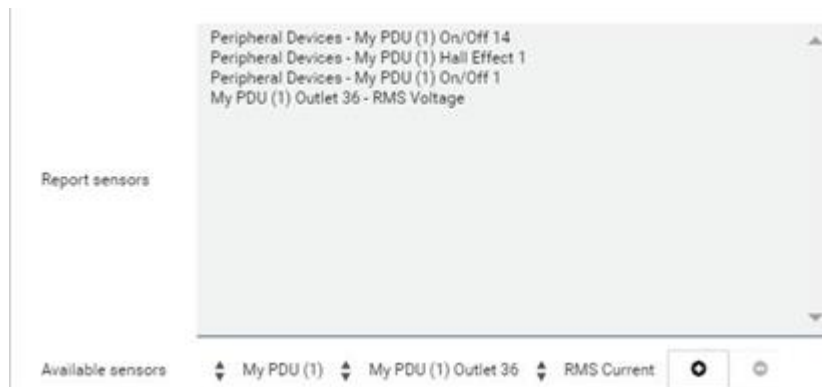
C. Click to add the selected sensor to the Report Sensors list box.

For example, to monitor the current reading of the Inlet 1, select Inlet 1 from the left field, and then select RMS Current from the right field.

6) To report additional sensors simultaneously, repeat the above step to add more sensors.



- To remove any sensor from the 'Report sensors' list box, select it and click . To make multiple selections, press Ctrl+click or Shift+click to highlight multiple ones.



7) To immediately send out the sensor report, click Send Report Now.

Tip: When intending to send a sensor report using custom messages, use the placeholder [SENSORREPORT] to report sensor readings.

Send SMS Message

You can configure SMS messages to be sent when an event occurs and can customize the message.

A supported modem, such as the Cinterion[®] GSM MC52i modem, must be plugged into the Legrand Power Shelf in order to send SMS messages.

Note: The Legrand Power Shelf cannot receive SMS messages.

Only the 7-bit ASCII charset is supported for SMS messages. Messages consist of a combination of free text and placeholders. The placeholders represent information retrieved from the device and inserted into the message. For example:

```
[USERNAME] logged into the device on [TIMESTAMP]
```

translates to

Mary logged into the device on 2012-January-30 21:00

► **Operation:**

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Send SMS message' from the Action list.
- 3) In the 'Recipient phone number' field, specify the phone number of the recipient.
- 4) Select the 'Use custom log message' checkbox, and then create a custom message in the provided text box.
 - To automatically insert message placeholders, open the Custom Log Message Help section. Search for placeholders and click to include them in your message.
- 5) Click Create.

Send Snapshots via Email

This option notifies one or multiple persons for the selected events by emailing snapshots or videos captured by a connected Logitech® webcam.

► **Operation:**

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Send snapshots via email' from the Action list.
- 3) In the 'Recipient email addresses' field, specify the email address(es) of the recipient(s). Use a comma to separate multiple email addresses.
- 4) By default, the SMTP server specified on the SMTP Server page will be the SMTP server for performing this action.

To use a different SMTP server, select the 'Use custom SMTP server' checkbox. The fields for customized SMTP settings appear.
- 5) Select the webcam that is capturing the images you want sent in the email.
- 6) Adjust the values of the following:
 - Number of snapshots - the number of snapshots to be taken when the event occurs. For example, you can specify 10 images be taken once the event triggers the action.
 - Snapshots per mail - the number of snapshots to be sent at one time in the email.
 - Time before first snapshot - the amount of time in seconds between when the event is triggered and the webcam begins taking snapshots.
 - Time between snapshots - the amount of time in seconds between when each snapshot is taken.
- 7) If needed, you can customize the subject and messages sent via this email.

- Select the 'Custom subject' checkbox, and enter the text you prefer as this email's subject.
- Select the 'Use custom log message' checkbox, and then create a custom message up to 1024 characters in the provided field.
- To automatically insert message placeholders, open the Custom Log Message Help section. Search for placeholders and click to include them in your message.

8) Click Create.

Send an SNMP Notification

This option sends an SNMP notification to one or multiple SNMP destinations.

► *Operation:*

- 1) Choose Device Settings > Event Rules >  .
- 2) Select 'Send SNMP notification' from the Action list.
- 3) Select the type of SNMP notification. See either procedure below according to your selection.

► *To send SNMP v2c notifications:*

- 1) In the 'Notification type' field, select 'SNMPv2c trap' or 'SNMPv2c inform.'
- 2) For SNMP INFORM communications, leave the resend settings at their default or do the following:
 - a. In the Timeout field, specify the interval of time, in seconds, after which a new inform communication is resent if the first is not received. For example, resend a new inform communication once every 3 seconds.
 - b. In the 'Number of retries' field, specify the number of times you want to re-send the inform communication if it fails. For example, inform communications are re-sent up to 5 times when the initial communication fails.
- 3) In the Host fields, enter the IP address of the device(s) you want to access. This is the address to which notifications are sent by the SNMP system agent.
- 4) In the Port fields, enter the port number used to access the device(s).
- 5) In the Community fields, enter the SNMP community string to access the device(s). The community is the group representing the Legrand Power Shelf and all SNMP management stations.

Tip: An SNMP v2c notification action permits only a maximum of three SNMP destinations. To assign more than three SNMP destinations to a specific rule, first create several SNMP v2c notification actions, each of which contains completely different SNMP destinations, and then add all of these SNMP v2c notification actions to the same rule.

► *To send SNMP v3 notifications:*

- 1) In the 'Notification type' field, select 'SNMPv3 trap' or 'SNMPv3 inform.'
- 2) For SNMP TRAPS, the engine ID is prepopulated.
- 3) For SNMP INFORM communications, leave the resend settings at their default or do the following:
 - a. In the Timeout field, specify the interval of time, in seconds, after which a new inform communication is resent if the first is not received. For example, resend a new inform communication once every 3 seconds.
 - b. In the 'Number of retries' field, specify the number of times you want to re-send the inform communication if it fails. For example, inform communications are re-sent up to 5 times when the initial communication fails.
- 4) For both SNMP TRAPS and INFORMS, enter the following as needed and then click OK to apply the settings:
 - a. Host name
 - b. Port number
 - c. User ID for accessing the host -- make sure the User ID has the SNMPv3 permission.
 - d. Select the host security level

Security level	Description
"noAuthNoPriv"	Select this if no authorization or privacy protocols are needed.
"authNoPriv"	Select this if authorization is required but no privacy protocols are required. • Select the authentication protocol - MD5 or SHA • Enter the authentication passphrase and then confirm the authentication passphrase
"authPriv"	Select this if authentication and privacy protocols are required. • Select the authentication protocol - MD5 or SHA • Enter the authentication passphrase and confirm the authentication passphrase • Select the Privacy Protocol - DES or AES • Enter the privacy passphrase and then confirm the privacy passphrase

Start or Stop a Lua Script

If you have created or loaded a Lua script file into the Legrand Power Shelf, you can have that script automatically run or stop in response to a specific event.

See [Lua Scripts](#) (on page 255).

► *To automatically start or stop a Lua script:*

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Start/stop Lua script' from the Action list.
- 3) In the Operation field, select 'Start script' or 'Stop script.'
- 4) In the Script field, select the script that you want it to be started or stopped when an event occurs. Scripts must be pre-loaded.
- 5) To apply different arguments than the default, do the following. Note that the newly-added arguments will override this script's default arguments.
 - a. Click Add Argument.
 - b. Type the key and value.

- To remove any existing argument, click  adjacent to it.

Switch Outlet Group

The "Switch outlet group" action is available only when your Legrand Power Shelf is outlet-switching capable. This action turns on, off or power cycles a specific outlet group.

► *Operation:*

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Switch outlet group' from the Action list.
- 3) To specify the outlet group where this action will be applied, select it from the 'Group to switch' list.
- 4) In the Operation field, select an operation for the selected outlet group.
 - Turn on all outlets in group: Turns on the selected outlet group.
 - Turn off all outlets in group: Turns off the selected outlet group.
 - Cycle all outlets in group: Cycles power to the selected outlet group.

Switch Outlets

The "Switch outlets" action is available only when your Legrand Power Shelf is outlet-switching capable. This action turns on, off or power cycles a specific outlet.

► *Operation:*

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Switch outlets' from the Action list.
- 3) In the Operation field, select an operation for the selected outlet(s).
 - Turn outlet on: Turns on the selected outlet(s).
 - Turn outlet off: Turns off the selected outlet(s).
 - Cycle outlet: Cycles power to the selected outlet(s).

- 4) To specify the outlet(s) where this action will be applied, select them one by one from the 'Available outlets' list.
 - To add all outlets, click Select All.
- 5) To remove any outlets from the 'Selected outlets' field, click that outlet's .
- 6) If 'Turn outlet on' or 'Cycle outlet' is selected, choose to select the 'Use sequence order and delays' checkbox so that all selected outlets will follow the power-on sequence defined on the Outlets page.

Switch Peripheral Actuator

If you have any actuator connected to the Legrand Power Shelf, you can set up the Legrand Power Shelf so it automatically turns on or off the system controlled by the actuator when a specific event occurs.

► Operation:

- 1) Choose Device Settings > Event Rules > .
- 2) Select 'Switch peripheral actuator' from the Action list.
- 3) In the Operation field, select an operation for the selected actuator(s).
 - Turn on: Turns on the selected actuator(s).
 - Turn off: Turns off the selected actuator(s).
- 4) To select the actuator(s) where this action will be applied, select them one by one from the 'Available actuators' list.
 - To add all actuators, click Select All.
- 5) To remove any selected actuator from the 'Selected actuators' field, click that actuator's .

Syslog Message

Use this action to automatically forward event messages to the specified syslog server. Determine the syslog transmission mechanism you prefer when setting it up - UDP, TCP or TLS over TCP.

Legrand Power Shelf may or may not detect the syslog message transmission failure. If yes, it will log this syslog failure as well as the failure reason in the event log.

► Operation:

- 1) Choose Device Settings > Event Rules > New Action.
- 2) Select 'Syslog message' from the Action list.
- 3) In the 'Syslog server' field, specify the IP address to which the syslog is forwarded.
- 4) In the 'Transport protocol' field, select one of the syslog protocols: TCP, UDP or TCP+TLS. The default is UDP.

Transport protocols	Next steps
UDP	• In the 'UDP port' field, type an appropriate port number. Default is 514. • Select the 'Legacy BSD syslog protocol' checkbox if applicable.
TCP	NO TLS certificate is required. Type an appropriate port number in the 'TCP port' field.

Transport protocols	Next steps
TCP+TLS	A TLS certificate is required. Do the following: - Type an appropriate port number in the 'TCP port' field. Default is 6514. - In the 'CA certificate' field, click Browse to select a TLS certificate. After importing the certificate, you may: - Click Show to view its contents. - Click Remove to delete it if it is inappropriate. - Determine whether to select the 'Allow expired and not yet valid certificates' checkbox. - To always send the event message to the specified syslog server as long as a TLS certificate is available, select this checkbox. - To prevent the event message from being sent to the specified syslog server when any TLS certificate in the selected certificate chain is outdated or not valid yet, deselect this checkbox.

Scheduling an Action

An action can be regularly performed at a preset time interval instead of being triggered by a specific event. For example, you can make the Legrand Power Shelf report the reading or state of a specific sensor regularly by scheduling the "Send sensor report" action.

When scheduling an action, make sure you have a minimum of 1-minute buffer between this action's creation and first execution time. Otherwise, the scheduled action will NOT be performed at the specified time when the buffer time is too short. For example, if you want an action to be performed at 11:00 am, you should finish scheduling it at 10:59 am or earlier.

► Operation:

- Choose Device Settings > Event Rules >  **New Scheduled Action** .
- To select any action(s), select them one by one from the 'Available actions' list.
 - To select all available actions, click Select All.
- To remove any action(s) from the 'Selected actions' field, click that action's  .
 - To remove all actions, click Deselect All.
- Select the desired frequency in the 'Execution time' field, and then specify the time interval or a specific date and time in the field(s) that appear. Use the clock and calendar tools to choose the schedule. Use the AM/PM button to toggle time settings.

Send Sensor Report Example

To create a scheduled action for emailing a temperature sensor report hourly, it requires:

- A 'Send email' action
- A 'Send sensor report' action
- A timer - that is, the scheduled action

► Steps:

- 1) Click **+ New Action** to create a 'Send email' action that sends an email to the desired recipient(s).
- In this example, this action is named *Email a Sensor Report*.
 - The subject and content of this email can be customized.

The screenshot shows the 'New Action' configuration window. The 'Action name' is 'Email a Sensor Report' and the 'Action' is 'Send email'. The 'Recipient email addresses' field contains 'user@nritan.c'. Under 'SMTP server', 'Use default settings' is selected, with a note that server and sender email addresses are not configured and settings can be changed in SMTP Server settings. 'Use custom settings' is also an option. The 'Custom subject' field contains 'Custom Log Message Help'. The 'Use custom log message' checkbox is checked. The 'Custom log message' text area contains 'The following is the complete sensor report.' followed by '[SENSORREPORT]'. A character count shows '954 characters remaining'. At the bottom, there are 'Cancel' and 'Create' buttons.

Click **+ New Action** to create a 'Send sensor report' action that includes the 'Email a Sensor Report' action as its destination action.

- In this example, this action is named *Send Temperature Sensor Readings*.
- You can specify more than one temperature sensor as needed in this action.

New Action

Action name: Send Temperature Sensor Readings

Action: Send sensor report

Destination actions: Selected: System Event Log Action X Available: -- Select an item --

Select All Deselect All

Report sensors: Peripheral Devices - My PDU (1) Temperature 1
Peripheral Devices - My PDU (1) Hall Effect 1
Peripheral Devices - My PDU (1) On/Off 1

Available sensors: My PDU (1) Peripheral Devices My PDU (1) On/Off 2

Send Report Now

Note: Reported sensor units can be changed in the [Default Preferences](#)

Cancel Create

- 1) Click **+ New Scheduled Action** to create a timer for performing the 'Send Temperature Sensor Readings' action hourly.
 - In this example, the timer is named *Hourly Temperature Sensor Reports*.
 - To perform the specified action at 12:30 pm, 01:30 pm, 02:30 pm, and so on, select Hourly, and set the Minute to 30.

New Scheduled Action

Timer name: Hourly Temperature Sensor Reports

Enabled: ☒

Execution time: Hourly

Minute: 30

Selected actions: Send Temperature Sensor Readings

Available actions: - Select an item -

Select All Deselect All

Cancel Create

- An email containing the specified temperature sensor readings will be sent hourly every day. If you no longer need the report, you can disable the timer by clearing the Enabled checkbox.

Placeholders for Custom Messages

Actions that include messages allow you to customize text and include placeholders that retrieve system information and include it in the message.

Supported actions:

- Send email
- Send snapshots via email
- Send SMS
- Log event message

The following are placeholders that can be used in custom messages. Because the placeholders employ square brackets, you must precede with a backslash any other square brackets that must be included in your message. For example, \[\].

If a placeholder is used in a situation where the information cannot be retrieved, it will be shown as "unknown" in the message.

Placeholder	Definition
[AMSBLADESLOTPOSITION]	The (horizontal) slot position inside a blade extension
[AMSLEDCOLOR]	The RGB LED color
[AMSLEDMODE]	The LED indication mode
[AMSLEDOPMODE]	The LED operating mode
[AMSNAME]	The name of an asset strip
[AMSNUMBER]	The numeric ID of an asset strip

Placeholder	Definition
[AMSRACKUNITPOSITION]	The (vertical) rack unit position
[AMSSTATE]	The human-readable state of an asset strip
[AMSTAGID]	The asset tag ID
[CARDREADERCHANNEL]	The channel number of a card reader
[CARDREADERDESCRIPTION]	The custom description of a card reader
[CARDREADERID]	The id of a card reader
[CARDREADERMANUFACTURER]	The manufacturer of a card reader
[CARDREADERNAME]	The custom name of a card reader
[CARDREADERPRODUCT]	The product name of a card reader
[CARDREADERSERIALNUMBER]	The serial number of a card reader
[COMPONENTID]	The ID of a hardware component
[CONFIGPARAM]	The name of a configuration parameter
[CONFIGVALUE]	The new value of a parameter
[DATETIME]	The human readable timestamp of the event occurrence
[DEVICEIP]	The IP address of the device the event occurred on
[DEVICENAME]	The name of the device the event occurred on
[DEVICESERIAL]	The unit serial number of the device the event occurred on
[DIPSWELLDURATION]	The formatted duration of the dip/swell event in seconds
[DIPSWELLVOLTAGE]	The formatted minimum/maximum voltage during the dip/swell event in volts
[DOORACCESSDENIALREASON]	The reason for the door access being denied
[DOORACCESSRULEID]	The id of a door access rule
[DOORACCESSRULENAME]	The name of a door access rule
[ERRORDESC]	The error message
[EVENTRULENAME]	The name of the matching event rule
[EXTPORTNAME]	The name of an external port
[EXTSENSOR]	The peripheral device identifier
[EXTSENSORNAME]	The name of a peripheral device
[EXTSENSORSLOT]	The ID of a peripheral device slot

Placeholder	Definition
[FAILURETYPE]	The numeric hardware failure type
[FAILURETYPESTR]	The textual hardware failure type
[FUSESTATENAME]	The human readable state of a fuse
[IFNAME]	The human readable name of a network interface
[INLET]	The inlet label
[INLETLINEPAIR]	The inlet line pair identifier
[INLETPOLE]	The inlet power line identifier
[INLETSENSOR]	The inlet sensor name
[ISASSERTED]	Boolean flag whether an event condition became true (1) or false (0)
[KEYPADCHANNEL]	The channel number of a keypad
[KEYPADDESCRIPTION]	The custom description of a keypad
[KEYPADID]	The id of a keypad
[KEYPADMANUFACTURER]	The manufacturer of a keypad
[KEYPADNAME]	The custom name of a keypad
[KEYPADPIN]	The PIN entered at a keypad
[KEYPADPRODUCT]	The product name of a keypad
[KEYPADSERIALNUMBER]	The serial number of a keypad
[LINKIDTAG]	Link ID prefix for link unit events, empty otherwise
[LINKID]	The link ID of a link unit
[LINKUNITHOST]	The host name or IP address of a link unit
[LOGMESSAGE]	The original log message
[MONITOREDHOST]	The name or IP address of a monitored host
[NETAUTHRESULTSTR]	The network authentication result string ('succeeded' or 'failed')
[NEWUMTARGETUSER]	The new target user of a user rename operation
[OCP]	The overcurrent protector label
[OCPSENSOR]	The overcurrent protector sensor name
[OCPTRIPCAUSELABEL]	The label of the outlet that likely caused the OCP trip
[OCPTRIPCURRENT]	The current flow before the trip event

Placeholder	Definition
[OLDDATETIME]	The device date and time before a clock change
[OLDVERSION]	The firmware version the device is being upgraded from
[OUTLET]	The outlet label
[OUTLETGROUPID]	The outlet group ID
[OUTLETGROUPNAME]	The outlet group name
[OUTLETGROUPSENSOR]	The outlet group sensor name
[OUTLETNAME]	The outlet name Note: If any outlet does not have a name, neither an outlet name nor an outlet number will be shown in the custom message for it. Therefore, it is recommended to check the availability of all outlet names if intending to use this placeholder.
[OUTLETPOLE]	The outlet power line identifier
[OUTLETSENSOR]	The outlet sensor name
[PDULINEPAIRSENSOR]	The sensor name for a certain line pair
[PDUNUMBER]	The PDU number in a cascade
[PDUPOLESENSOR]	The sensor name for a certain power line
[PDUSENSOR]	The PDU sensor name
[PERIPHDEVPOSITION]	The position of an attached peripheral device
[PHONENUMBER]	The destination phone number of an outgoing SMS message
[PORTID]	The label of the external port the event-triggering device is connected to
[PORTTYPE]	The type of the external port (e.g. 'feature' or 'auxiliary') the event-triggering device is connected to
[RADIUSERRORDESC]	The Radius error message
[ROMCODE]	The romcode of an attached peripheral device
[SENSORREADING]	The value of a sensor reading
[SENSORREADINGUNIT]	The unit of a sensor reading
[SENSORREPORT]	The formatted sensor report contents
[SENSORSTATENAME]	The human readable state of a sensor
[SENSORTHRESHOLDNAME]	The name of the threshold being crossed

Placeholder	Definition
[SENSORTHRESHOLDVALUE]	The value of the threshold being crossed
[SERVERPOWEROPERATION]	The power control operation that was initiated on a server (on/off)
[SERVERPOWERRESULT]	The result of a power control operation
[SMARTCARDID]	The id of a smart card
[SMARTCARDTYPE]	The type of a smart card
[SMTPRECIPIENTS]	The list of recipients of an outgoing mail
[SMTPSERVER]	The name or IP address of an SMTP server
[SYSCONTACT]	SNMP MIB-II sysContact field
[SYSLOCATION]	SNMP MIB-II sysLocation field
[SYSNAME]	SNMP MIB-II sysName field
[TIMEREVENTID]	The id of a timer event
[TIMESTAMP]	The timestamp of the event occurrence
[UMTARGETROLE]	The target role of a user management operation
[UMTARGETUSER]	The target user of a user management operation
[USERIP]	The IP address a user connected from
[USERNAME]	The user who performed an operation
[VERSION]	The firmware version the device is upgrading to

Editing or Deleting a Rule/Action

You can change the settings of an event rule, action or scheduled action, or delete them.

Exception: Some settings of the built-in event rules or actions are not user-configurable. You cannot delete built-in rules and actions.

► *To edit or delete an event rule, action or scheduled action:*

- 1) Choose Device Settings > Event Rules.
- 2) Click an item in the list of rules, actions or scheduled actions to open its page.
 - To modify settings, make changes and then click Save.
 - To delete it, click the Delete icon then confirm.

Sample Event Rules

Sample Device-Level Event Rule

In this example, we want the Legrand Power Shelf to record the firmware upgrade failure in the internal log when it happens.

The event rule involves:

- Event: Device > Firmware update failed
- Action: System Event Log Action

► *To create this Device-level event rule:*

- 1) For an event at the Device level, select "Device" in the Event field.
- 2) Select "Firmware update failed" so that the Legrand Power Shelf responds to the event related to firmware upgrade failure.
- 3) To make Legrand Power Shelf record the firmware update failure event in the internal log, select "System Event Log Action" in the 'Available actions' field.

The screenshot shows the 'New Rule' configuration form. It includes the following fields and options:

- Rule name:** A text input field containing 'New Rule 1'.
- Enabled:** A checkbox that is checked.
- Event:** A dropdown menu with two levels. The first level is 'Device' (marked with a circled 1), and the second level is 'Firmware update failed' (marked with a circled 2).
- Selected actions:** A dropdown menu showing 'System Event Log Action' (marked with a circled 3).
- Available actions:** A dropdown menu showing '- Select an item -'.
- Buttons:** 'Select All' and 'Deselect All' buttons are located below the 'Available actions' dropdown. At the bottom right, there are 'Cancel' and 'Create' buttons.

Sample Outlet-Level Event Rule

In this example, we want the Legrand Power Shelf to send SNMP notifications to the SNMP manager for any sensor change event of outlet 3.

The event rule involves:

- Event: Outlet > Outlet 3 > Sensor > Any sub-event
- Action: System SNMP Notification Action

► *To create this outlet-level event rule:*

- 1) For an event at the outlet level, select "Outlet" in the Event field.
- 2) Select "Outlet 3" because that is the desired outlet.
- 3) Select "Sensor" to refer to sensor-related events.
- 4) Select "Any sub-event" to include all events related to all sensors of this outlet and all thresholds, such as current, voltage, upper critical threshold, upper warning threshold, lower critical threshold, lower warning threshold, and so on.
- 5) To make Legrand Power Shelf send SNMP notifications, select "System SNMP Notification Action" in the 'Available actions' field.

Note: The SNMP notifications may be SNMP v2c or SNMP v3 traps/informs, depending on the settings for the System SNMP Notification Action. See Enabling and Configuring SNMP.

The screenshot shows a configuration window for an event rule. On the left, under the 'Event' label, there are four stacked dropdown menus. The first is 'Outlet' with a red '1' next to it. The second is 'Outlet 3' with a red '2'. The third is 'Sensor' with a red '3'. The fourth is '<Any sub-event>' with a red '4'. Below these, under 'Selected actions', there is a red '5' and the text 'System SNMP Notification Action' followed by a small 'X' icon. Under 'Available actions', there is a dropdown menu showing '-- Select an item --'. At the bottom of the window are two buttons: 'Select All' and 'Deselect All'. At the very bottom right are two buttons: 'Cancel' (with an 'X' icon) and 'Create' (with a checkmark icon).

Then the SNMP notifications are sent when:

- Any numeric sensor's reading enters the warning or critical range.
- Any sensor reading or state returns to normal.
- Any sensor becomes unavailable.
- The active energy sensor is reset.
- Any state sensor changes its state.

For example, when the outlet 3's voltage exceeds the upper warning threshold, the SNMP notifications are sent, and when the voltage drops below the upper warning threshold, the SNMP notifications are sent again.

Sample Inlet-Level Event Rule

In this example, we want the Legrand Power Shelf to send SNMP notifications to the SNMP manager for any sensor change event of the Inlet I1.

The event rule involves:

- Event: Inlet > Sensor > Any sub-event
- Action: System SNMP Notification Action

► *To create the above event rule:*

- 1) For an event at the inlet level, select "Inlet" in the Event field.
- 2) Select "Sensor" to refer to sensor-related events.
- 3) Select "Any sub-event" to include all events related to all sensors of this inlet and all thresholds, such as current, voltage, upper critical threshold, upper warning threshold, lower critical threshold, lower warning threshold, and so on.
- 4) To make the Legrand Power Shelf send SNMP notifications, select "System SNMP Notification Action" in the 'Available actions' box.

Note: The SNMP notifications may be SNMP v2c or SNMP v3 traps/informs, depending on the settings for the System SNMP Notification Action. See [Enabling and Configuring SNMP](#).

The screenshot shows a configuration window for an event rule. On the left, under the 'Event' heading, there are three stacked dropdown menus. The first is labeled '1' and contains 'Inlet'. The second is labeled '2' and contains 'Sensor'. The third is labeled '3' and contains '<Any sub-event>'. Below these, under 'Selected actions', there is a red '4' next to 'System SNMP Notification Action'. Under 'Available actions', there is a dropdown menu showing '- Select an item -'. At the bottom of the window are four buttons: 'Select All', 'Deselect All', 'Cancel', and 'Create'.

Then the SNMP notifications are sent when:

- Any numeric sensor's reading enters the warning or critical range.
- Any sensor reading or state returns to normal.
- Any sensor becomes unavailable.
- The active energy sensor is reset.

For example, when the Inlet I1's voltage exceeds the upper warning threshold, the SNMP notifications are sent, and when the voltage drops below the upper warning threshold, the SNMP notifications are sent again.

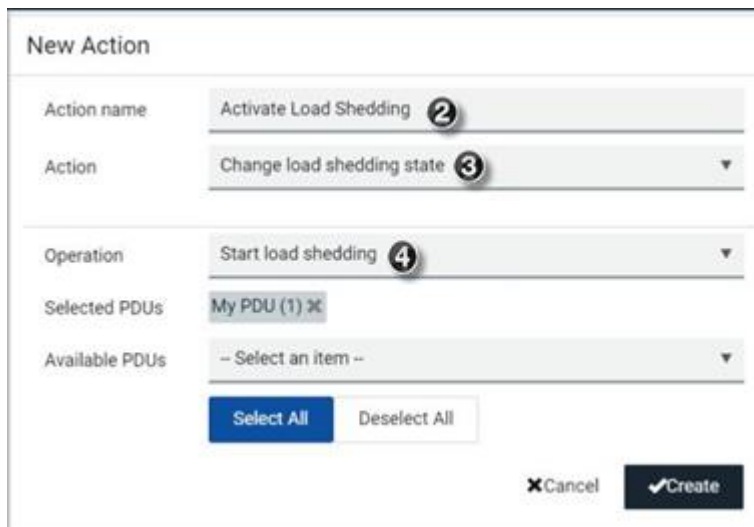
Sample Environmental-Sensor-Level Event Rule

This section applies to outlet-switching capable models only.

In this example, we want Legrand Power Shelf to activate the load shedding function when a contact closure sensor enters the alarmed state. This event rule requires creating a new action before creating the rule.

► *Step 1: create a new action for activating the load shedding*

- 1) Choose Device Settings > Event Rules > .
- 2) In this illustration, assign the name "Activate Load Shedding" to the new action.
- 3) In the Action field, select "Change load shedding state."
- 4) In the Operation field, select "Start load shedding."

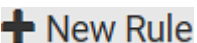


- 5) Click Create.

After the new action is created, follow the procedure below to create an event rule that triggers the load shedding mode when the contact closure sensor enters the alarmed state. This event rule involves the following:

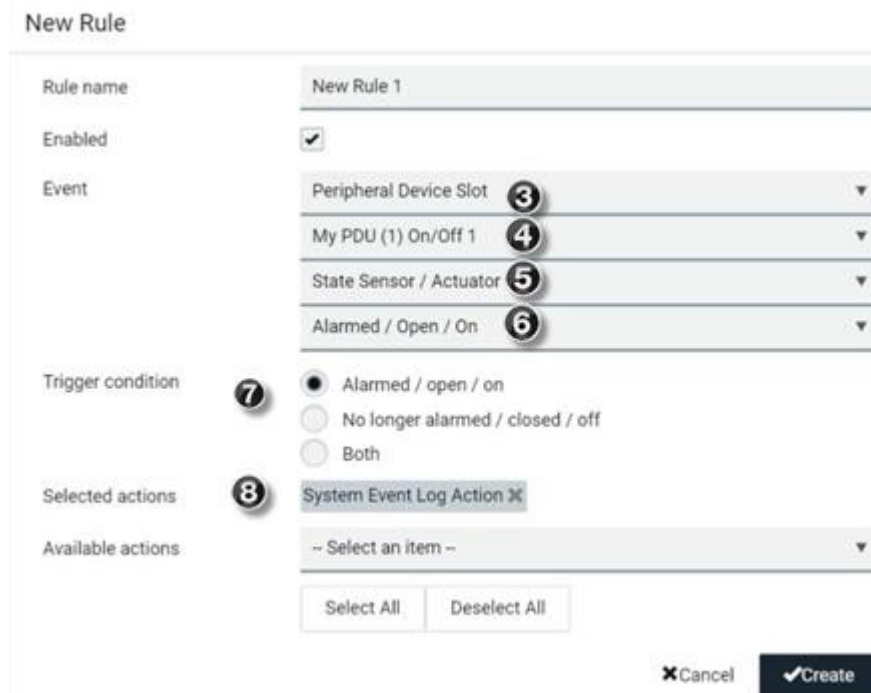
- Event: Peripheral Device Slot > Slot 1 > State Sensor/Actuator > Alarmed/Open/On
- Trigger condition: Alarmed
- Action: Activate Load Shedding

► *Step 2: create the contact closure-triggered load shedding event rule*

- 1) Click  on the Event Rules page.
- 2) In this illustration, assign the name "Contact Closure Triggered Load Shedding" to the new rule.
- 3) In the Event field, select "Peripheral Device Slot" to indicate we are specifying an event related to the environmental sensor package.
- 4) Select the ID number of the desired contact closure sensor. In this illustration, the ID number of the desired contact closure sensor is 1, so select Slot 1.

Note: ID numbers of all sensors/actuators are available on the Peripherals page.

- 5) Select "State Sensor/Actuator" because the contact closure sensor is a state sensor.
- 6) Select "Alarmed" since we want the Legrand Power Shelf to respond when the selected contact closure sensor changes its state related to the "alarmed" state.
- 7) In the 'Trigger condition' field, select the Alarmed/Open/On radio button so that the action is taken only when the contact closure sensor enters the alarmed state.
- 8) Select "System Event log Action" from the 'Available actions' list.



New Rule

Rule name	New Rule 1
Enabled	☒
Event	Peripheral Device Slot 3
	My PDU (1) On/Off 1 4
	State Sensor / Actuator 5
	Alarmed / Open / On 6
Trigger condition	7 ☒ Alarmed / open / on ☐ No longer alarmed / closed / off ☐ Both
Selected actions	8 System Event Log Action X
Available actions	-- Select an item --
	Select All Deselect All
	X Cancel ✓ Create

A Note about Infinite Loop

You should avoid building an infinite loop when creating event rules.

The infinite loop refers to a condition where the Legrand Power Shelf keeps busy because the action or one of the actions taken for a certain event triggers an identical or similar event which will result in an action triggering one more event.

► *Example 1*

This example illustrates an event rule which continuously causes the Legrand Power Shelf to send out email messages.

Event selected	Action included
Device > Sending SMTP message failed	Send email

► *Example 2*

This example illustrates an event rule which continuously causes the Legrand Power Shelf to send out SMTP messages when one of the selected events listed on the Device menu occurs. Note that <Any sub-event> under the Device menu includes the event "Sending SMTP message failed."

Event selected	Action included
Device > Any sub-event	Send email

► *Example 3*

This example illustrates a situation where two event rules combined regarding the outlet state changes causes the Legrand Power Shelf to continuously power cycle outlets 1 and 2 in turn.

Event selected	Action included
Outlet > Outlet 1 > Sensor > Outlet State > On/Off > Both (trigger condition)	Cycle Outlet 2 (Switch outlets --> Cycle Outlet --> Outlet 2)
Outlet > Outlet 2 > Sensor > Outlet State > On/Off > Both (trigger condition)	Cycle Outlet 1 (Switch outlets --> Cycle Outlet --> Outlet 1)

A Note about Untriggered Rules

In some cases, a measurement exceeds a threshold causing an alert. The measurement then returns to a value within the threshold, but the Legrand Power Shelf does not generate an alert message for the Deassertion event. Such scenarios can occur due to the hysteresis tracking the Legrand Power Shelf uses. See "To De-assert" and Deassertion Hysteresis.

Setting Data Logging

The data log stores records of each internal sensor's readings. You can configure the log capacity and the frequency that measurements are taken and stored. The total size of the data log is limited due to memory constraints. For example, for a unit with 500 sensors, the effective log size cannot be more than 200 records. A log capacity warning appears if the desired log capacity is higher than the effective log capacity.

You can configure how often measurements are written into the data log using the Measurements Per Log Entry field. Since the internal sensors are measured every second, specifying a value of 60, for example, would cause measurements to be written to the data log once every minute. Whenever measurements are written to the log, three values for each sensor are written: the average, minimum and maximum values. For example, if measurements are written every minute, the average of all measurements that occurred during the preceding 60 seconds along with the minimum and maximum measurement values are written to the log.

The device's SNMP agent must be enabled. In addition, using an NTP time server ensures accurately time-stamped measurements.

By default, data logging is enabled. You must have the "Administrator Privileges" or "Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration" permissions to change the setting.

Important: The third-party management solutions like PowerIQ rely on the data logging feature, and the settings should be changed only in accordance with those systems' requirements.

► *To configure the data logging feature:*

- 1) Choose Device Settings > Data Logging.
- 2) To enable the data logging feature, select the "Enable" checkbox in the General Settings section.
- 3) Measurements Per Log Entry: Valid range is from 1 to 600. The default is 60.
- 4) Log capacity: Valid range varies, from 60 to 20,000.
- 5) Enable data log backup: Select this checkbox to enable an automatic USB backup of your data log. USB stick with specially configured file required, see procedure below.
- 6) Verify that all sensor logging is enabled. If not, click Enable All at the bottom of the page to have all sensors selected.
- 7) Click Save.

Data Logging

Enable data logging

☒

Measurements per log entry

Desired log capacity

Enable data log backup

☒

My PDU (1) Logged Sensors

☒ Enable All
 ☒ Disable All

Unit Sensors (1 of 1 enabled)

Inlet Sensors (15 of 15 enabled)

Outlet Sensors (612 of 612 enabled)

Outlet Group Sensors (8 of 8 enabled)

Overcurrent Protector Sensors (4 of 4 enabled)

Peripheral Device Sensors (64 of 64 enabled)

► *Enable Data Log Backup:*

This feature allows backup of the data log on a USB drive. When the Legrand Power Shelf reboots, e.g because of a power outage, it will repopulate the data log from the backup on the USB Stick.

To Prepare USB:

Before connecting a USB drive to the Legrand Power Shelf, configure a file with these details:

- 1) Create a text file containing:
 - user=<admin_username>
 - password=<admin_user_password>
 - destroy_and_format_for_storage=true
- 2) Save the file as "fwupdate.cfg" on the USB drive.
- 3) Make sure the Enable Data log backup checkbox is selected in Device Settings > Data Logging.
- 4) Connect the USB drive to the device.

On the console of the Legrand Power Shelf, you will see the USB drive is reformatted and existing contents are removed. Once formatting is done, data is started to be backed up on the USB.

Note: Backed up data on the USB is in encrypted form.

Configuring Data Push Settings

You can push the sensor or asset strip data to a remote server for data synchronization. The destination and authentication for data push have to be configured properly on the Legrand Power Shelf.

HTTP/HTTPS Destinations: The data will be sent in JSON format using HTTP POST when you select HTTP or HTTPS as the destination URL. Each push message contains exactly one JSON object. The data format is formally defined in IDL files, sharing several definitions from the JSON-RPC data model. IDL files are available by launching *JSON-RPC online help*, which is available on the Support site for your product.

MQTT Destinations: If MQTT is selected as the protocol, only data of the latest log row will be sent. The records of this log row are published under multiple topic names, one for each logged sensor.

After configuring the destination and authentication settings, do either or both of the following:

- To perform the data push after the occurrence of a certain event, create the data push action and assign it to an event rule.
- To push the data at a regular interval, schedule the data push action.

► To configure data push settings:

- 1) Choose Device Settings > Data Push.
- 2) To specify a destination, click New Destination.
- 3) Set up the URL field.
 - a. Select *http*, *https*, or *MQTT*.
 - b. Type the URL or host name in the accompanying text box.
- 4) If selecting *https*, a CA certificate is required for making the connection. Click Browse to install it. Then you can:
 - Click Show to view the certificate's content.
 - Click Remove to delete the installed certificate if it is inappropriate.
- 5) If the destination server requires authentication, select the 'Use authentication' checkbox, and enter the following data.
 - User name comprising up to 64 characters
 - Password comprising up to 128 characters
- 6) In the 'Entry type' field, determine the data that will be transmitted.

- *Asset management tag list*: Transmit the information of the specified asset strip(s), including the general status of the specified strip(s) and a list of asset tags. The asset tags list also includes the tags on blade extension strips, if any.
 - *Asset management tag log*: Transmit the log of all asset strips, which is generated when there are changes made to asset tags and asset strips, including asset tag connection or disconnection events.
 - *Sensor log*: Transmit the record of all logged sensors, including their sensor readings and/or status. Logged sensors refer to all internal and/or environmental sensors/actuators that you have selected on the Data Logging page.
- 7) If 'Asset management tag list' is selected in the above step, specify the asset strip(s) whose information to send. Depending on your model, only one strip may be available.
 - To specify the asset strip(s), select them one by one from the Available AMS Ports list. Or click Select All to add all.
 - To remove the asset strip(s), click that asset strip's  in the Selected AMS Ports field. Or click Deselect All to remove all.
 - 8) Click Create.
 - 9) Repeat the same steps for additional destinations. Up to 64 destinations are supported.

► *To immediately push out the data:*

- 1) On the Data Push page, choose the data source you want to push out.
- 2) Click the Push Now button.

► *To cancel a data push:*

- You can cancel the push in progress: Click Cancel.

► *To modify or delete data push settings:*

- 1) On the Data Push page, click the one you want in the list.
- 2) Perform either action below.
 - To modify settings, make necessary changes and then click Save.
 - To delete it, click Delete, and then confirm it on the confirmation message.

Data Push Format Examples

Sensor Log

The root object of the message is a `SensorLogPushMessage` structure. It comprises a list of sensor descriptors and a list of log rows.

► *Sensor descriptors:*

The sensor descriptor vector contains static information of all logged sensors, including:

- The electrical component a sensor is associated with. For example, an inlet pole or an overcurrent protector.
- The sensor's type. For example, RMS current or active energy.
- Unit and range of the sensor's readings.

► Log rows:

Each log row consists of a time stamp (accumulated seconds since 1/1/1970) and a list of log records -- one for each logged sensor.

The length and order of the record list is the same as the sensor descriptor vector.

Sensor Descriptors for Inlet Active Power

The following illustrates a descriptor for an inlet active power sensor.

The `metadata` field is relevant only to numeric sensors so the `readingtype` field is displayed twice in the illustration.

The comment beginning with `//` in each line, is added to the following illustration to help explain it.

```
{
  "device": {
    "type": 0,           // Inlet sensor (see DeviceType enumeration)
    "label": "I1",      // Inlet label: I1
    "line": 0           // Power line; not applicable for inlet sensors
  },
  "id": "activePower",  // Sensor identification
  "readingtype": 0,     // Reading type: numeric
  "metadata": {
    "type": {
      "readingtype": 0, // Reading type: numeric
      "type": 5,        // Sensor type: Active power
      "unit": 3         // Reading unit: Watt
    },
    "decdigits": 0,     // No decimal digits
    "accuracy": 1.0,    // Accuracy: 1 percent
    "resolution": 1.0,  // Reading resolution: 1 W
    "tolerance": 1.5,   // Reading tolerance: +/- 1.5 W
    "range": {
      "lower": 0.0,     // Minimum reading: 0 W
      "upper": 30000.0  // Maximum reading: 30 kW
    }
  }
}
```

Log Rows

The following illustrates log rows with only one sensor record shown.

The actual length and order of log rows will be the same as those of sensors descriptors.

The comment beginning with `//` in each line, is added to the following illustration to help explain it.

```

{
  "timestamp": 1334052852,          // Time stamp (seconds since 1/1/1970)
  "records": [
    {
      "available": true,            // This record is available
      "takenValidSamples": 60,      // Number of valid samples in this log period
      "state": 5,                  // Sensor was in normal range
      "minValue": 5800.0,          // Minimum sensor value: 5.8 kW
      "avgValue": 5900.0,          // Average sensor value: 5.9 kW
      "maxValue": 6100.0           // Maximum sensor value: 6.1 kW
    },
    {
      // [...] record for next sensor
    }
  ]
}

```

Asset Management Tag List

The root object of the asset management tag list message is an `AssetStripsMessage` structure. It contains current data about all connected asset management strips and tags, which is similar to the illustration below.

```

{
  "assetStrips": [
    {
      "stripInfo": {
        "bladeOverflow": false,
        "bladeTagCount": 0,
        "cascadeState": 0,
        "componentCount": 1,
        "mainTagCount": 2,
        "maxBladeTagCount": 128,
        "maxMainTagCount": 64,
        "rackUnitCount": 48
      },
      "deviceInfo": {
        "appVersion": 24,
        "bootVersion": 6,
        "deviceId": 48,
        "hardwareId": 2,
        "isCascadable": false,
        "orientationSensAvailable": true,
        "protocolVersion": 257,
        "rackUnitCountConfigurable": true
      },
      "settings": {
        "rackUnitCount": 48,
        "name": "Asset Strip 1",
        "scanMode": 0,
        "defaultColorConnected": { "r": 0, "g": 255, "b": 0 },
        "defaultColorDisconnected": { "r": 255, "g": 0, "b": 0 },
        "numberingMode": 1,
        "numberingOffset": 1,
        "orientation": 0
      }
    }
  ]
}

```

(Continued)

```
    "tags": [
      {
        "rackUnitNumber": 4,
        "slotNumber": 0,
        "familyDesc": "Unknown",
        "rawId": "DEADBEEF0000",
        "programmable": 0
      },
      {
        "rackUnitNumber": 5,
        "slotNumber": 0,
        "familyDesc": "Unknown",
        "rawId": "DEADBEEF0500",
        "programmable": 0
      }
    ]
  }
}
```

Asset Management Tag Log

The root object of the asset management log message is an `AssetLogPushMessage` structure. It contains a list of tag or strip events since the last successful push.

The comment beginning with `//` in each line, is added to the following illustration to help explain it.

```
{
  "records": [
    {
      "timestamp": 1334052852, // Time stamp (seconds since 1/1/1970)
      "type": 1, // 0: empty, 1: tag connected, 2: tag disconnected,
      // 3: asset strip state changed
      "assetStripNumber": 0, // Asset strip number
      "rackUnitNumber": 10, // Rack unit number
      "rackUnitPosition": 12, // Rack unit position
      "slotNumber", // Blade extension slot number
      "tagId", // The ID of the asset management tag
      "state": 5, // Sensor was in normal range
      "parentBladeId", // ID of the parent blade extension tag
      "state": 0 // 0: disconnected, 1: firmware update,
      // 2: unsupported, 3: available
    },
    {
      // [...] next record
    }
  ]
}
```

Monitoring Server Accessibility

You can monitor whether specific IT devices are alive by having the Legrand Power Shelf continuously ping them. An IT device's successful response to the ping commands indicates that the IT device is still alive and can be remotely accessed.

This function is especially useful when you are not located in an area with Internet connectivity.

Legrand Power Shelf can monitor any IT device, such as database servers, remote authentication servers, power distribution units (PDUs), and so on. It supports monitoring a maximum of 64 IT devices.

To perform this feature, you need the Administrator Privileges.

The default ping settings may not be suitable for monitoring devices that require high connection reliability so it is strongly recommended that you should adjust the ping settings for optimal results.

In addition, if your Legrand Power Shelf is outlet switching capable, you can even connect a monitored IT device to one or multiple outlets of Legrand Power Shelf and then have Legrand Power Shelf perform the following two actions as needed, in addition to monitoring its status:

- First shut down the monitored IT device.
- After the IT device is shut down, power off the outlet(s) where that device is connected.

Important: Not every IT device can be shut down by Legrand Power Shelf so it is suggested to verify whether the device can be shut down using a shutdown command. For example, Legrand Power Shelf cannot shut down a PDU with a shutdown command.

► *To add IT equipment for ping monitoring:*

- 1) Choose Device Settings > Server Reachability.
- 2) Click  **Monitor New Server**.
- 3) By default, the "Enable ping monitoring for this server" checkbox is selected. If not, select it to enable this feature.
- 4) Configure the following.

Field	Description
IP address/hostname	IP address or host name of the IT equipment which you want to monitor.
Number of successful pings to enable feature	The number of successful pings required to declare that the monitored equipment is "Reachable." Valid range is 0 to 200.
Wait time after successful ping	The wait time before sending the next ping if the previous ping was successfully responded. Valid range is 5 to 600 (seconds).
Wait time after unsuccessful ping	The wait time before sending the next ping if the previous ping was not responded. Valid range is 3 to 600 (seconds).
Number of consecutive unsuccessful pings for failure	The number of consecutive pings without any response before the monitored equipment is declared "Unreachable." Valid range is 1 to 100.

Field	Description
Wait time before resuming pinging after failure	The wait time before the Legrand Power Shelf resumes pinging after the monitored equipment is declared "Unreachable." Valid range is 1 to 1200 (seconds).
Number of consecutive failures before disabling feature (0 = unlimited)	The number of times the monitored equipment is declared "Unreachable" consecutively before the Legrand Power Shelf disables the ping monitoring feature for it and shows "Waiting for reliable connection." Valid range is 0 to 100.

5) On a unit with outlet switching capability, there is one more checkbox available -- *Power control enabled*.

To be able to shut down and power control the monitored IT device via the Server Reachability page, enable this checkbox and configure related settings, which are explained in the following table.

6) Click Create.

7) To add more IT devices, repeat the same steps.

► *To configure the shutdown and power control settings:*

Restriction: To make the power control feature work properly, the power cord(s) of the monitored IT device must be connected to the same unit which is monitoring the IT device.

Field	Description
Shutdown command	This is the command which is sent to the monitored IT device via SSH for shutting it down after you press the Shutdown button on Legrand Power Shelf. • <i>GNU/Linux:</i> This option sends the GNU/Linux shutdown command. • <i>Windows:</i> This option sends the Windows shutdown command. • <i>Custom:</i> If the monitored device's system is neither GNU/Linux nor Windows, choose this option to specify a proper shutdown command, which can comprise a maximum of 1024 ASCII characters.
User name, Password	Specify user credentials for logging in to the monitored device via SSH. • <i>User name:</i> The name comprises up to 128 non-empty ASCII characters. • <i>Password:</i> The password comprises up to 128 ASCII characters.
SSH port	The monitored device's SSH port. • Default is 22.

Field	Description
Power target to switch	Select the outlet or outlet group that is powering the monitored device.
Method of checking successful shutdown	This field determines when Legrand Power Shelf will power off the outlet(s) that supplies power to the monitored device, after Legrand Power Shelf issues the shutdown command to that device. • <i>Timer:</i> • Legrand Power Shelf will power off the selected outlet or outlet group after the time specified in the 'Timer delay' field expires.<i>Active power drop:</i> Legrand Power Shelf will power off the selected outlet(s) after the active power value of the selected outlet or outlet group drops below the value specified in the 'Active power threshold' field. Note: Number of available methods is model dependent. The 'Active power drop' method is available only on models with outlet metering capability.
Timer delay	This field appears for the 'Timer' method. Valid values range between 5 and 10,000 seconds.
Active power threshold	The field appears for the 'Active power drop' method. Valid values range between 0 and 21,000 W.
Timeout for shutdown check	This field appears for the 'Active power drop' method. Valid values range between 5 and 10,000 seconds. The power-off operation is performed only when the active power value of the selected outlet or outlet group drops below the 'Active power threshold' within the period of time specified in this field. If the active power value drops below the 'Active power threshold' after the specified time expires, the power-off operation will NOT be performed.

Server Status Checking or Power Control

Not all models supports the shutdown and power control features via the Server Reachability page.

After adding IT equipment for monitoring, all IT devices are listed on the Server Reachability page.

Server Reachability			
Power Up Shutdown Delete + Monitor New Server			
☐ IP Address/Hostname ▲	Ping Enabled	Status	Power Control
☐ 192.168.3.55	yes	Waiting for reliable connection	(disabled)
☒ www.legrand.com	yes	Error	Server power is off

In the beginning, the status of the added IT equipment shows "Waiting for reliable connection," which means the requested number of consecutive successful or unsuccessful pings has not reached before Legrand Power Shelf can declare that the monitored device is reachable or unreachable.

► *To check the server monitoring states and results:*

- 1) The column labeled "Ping Enabled" indicates whether the monitoring for the corresponding IT device is activated or not.
- 2) The column labeled "Status" indicates the accessibility of monitored equipment.

Status	Description
Reachable	The monitored equipment is accessible.
Unreachable	The monitored equipment is inaccessible.
Waiting for reliable connection	The connection between the device and the monitored equipment is not reliably established yet.

- 3) If your model supports outlet switching, one more column displays -- *Power Control*.

Power control status	Description
(disabled)	Power control is not enabled for the monitored equipment.
Server power is on	The outlet or outlet group associated with the monitored equipment is being powered on. • In the scenario where an 'outlet group' is associated with the equipment, the message 'Server power is on' is shown as long as one of the outlets in the outlet group remains powered on.
Server power is off	The outlet or all outlets of the outlet group associated with the monitored equipment are being powered off.
Server is shutting down	The shutdown command was sent to the monitored equipment, but the shutdown operation has not completed or succeeded yet.
Power state unknown	Cannot determine the power state of the outlet(s) associated with the monitored device. For example, maybe the outlet group associated with the monitored device has been deleted.

► *To shut down a monitored device:*

- 1) Select the IT device that you want to shut down.
- 2) Click Shutdown.
- 3) Confirm the operation when prompted.
- 4) Observe the Power Control status of the monitored device to make sure the shutdown operation succeeds.

► *To power on a monitored device:*

- 1) Select the IT device that you want to turn on.
- 2) Click Power Up.
- 3) Confirm the operation when prompted.
- 4) Observe the Power Control status of the monitored device to make sure the power-on operation succeeds.

Editing or Deleting Ping Monitoring Settings

You can edit the ping monitoring settings of any IT device or simply delete it if no longer needed.

► *To modify or delete any monitored IT device:*

- 1) Choose Device Settings > Server Reachability.
- 2) Click the desired one in the list.
- 3) Perform the desired action.

- To modify settings, make necessary changes and then click Save. To delete it, click



Front Panel Settings

You can set up the default mode of the front panel display, and front panel functions for outlet switching, actuator control, beeper mute or RCM self-test.

Note that available front panel settings are model dependent.

- Outlet switching -- available on outlet-switching capable models only.
- Actuator control -- available on all models.
- Internal beeper's mute function -- available on all models
- Default front panel mode setup.
- RCM self-test -- available on those models which support residual current monitoring.

► *To configure the front panel settings:*

- 1) Choose Device Settings > Front Panel.
- 2) Configure the following:

- To configure the default view of the LCD display, select one mode below.

Note: The default view is shown in the automatic mode.

Mode	Data entered
Automatic mode	The LCD display cycles through both the inlet and overcurrent protector information. This is the default. Overcurrent protector information is available only when your Legrand Power Shelf has overcurrent protectors.
Transfer switch overview	Shows the "Transfer Switch" page.
Inlet overview	The LCD display cycles through the inlet information only.

- To enable the front panel outlet-switching function, select the 'Outlet switching' checkbox.
- To enable the front panel actuator-control function, select the 'Peripheral actuator control' checkbox.
- The built-in beeper's mute control function is enabled per default. To disable it, deselect the 'Mute beeper' checkbox.
- By default the front panel RCM self-test function, if available, is enabled.

3) Click Save.

If the 'Mute beeper' feature is enabled, you can operate the front panel to mute it whenever it beeps.

Or you can turn on or off outlets/actuators by operating the front panel.

Configuring the Serial Port

You can change the bit rate of the serial port labeled CONSOLE / MODEM that is present on some models. The default bit rate for console and modem operation is 115200 bps.

The following devices are supported via the serial interface:

- A computer for console management.
- A Raritan KVM product.
- An analog modem for remote dial-in and access to the CLI.
- A GSM modem for sending out SMS messages to a cellular phone.

Bit-rate adjustment may be necessary. Change the bit rate before connecting the supported device to the Legrand Power Shelf through the serial port, or there are communication problems.

You can set diverse bit-rate settings for console and modem operations. Usually the Legrand Power Shelf can detect the device type, and automatically apply the preset bit rate.

The Legrand Power Shelf will indicate the detected device in the Port State section of the Serial Port page.

To configure serial port and modem settings, choose Device Settings > Serial Port.

► *To change the serial port's baud rate settings:*

- 1) Click the 'Connected device' field to make the serial port enter an appropriate state.

Options	Description
Automatic detection	The Legrand Power Shelf automatically detects the type of the device connected to the serial port. Select this option unless your Legrand Power Shelf cannot correctly detect the device type.
Force console	The Legrand Power Shelf attempts to recognize that the connected device is set for the console mode.
Force analog modem	The Legrand Power Shelf attempts to recognize that the connected device is an analog modem.
Force GSM modem	The Legrand Power Shelf attempts to recognize that the connected device is a GSM modem.

- 2) Click the 'Console baud rate' field to select the baud rate intended for console management.

Note: For a serial RS-232 or USB connection between a computer and the Legrand Power Shelf, leave it at the default (115200 bps).

- 3) Click the 'Modem baud rate' field to select the baud rate for the modem connected to the Legrand Power Shelf.

The following modem settings/fields appear in the web interface after the Legrand Power Shelf detects the connection of an analog or GSM modem.

► *To configure the analog modem:*

- 1) Select the 'Answer incoming calls' checkbox to enable the remote access via a modem. Otherwise, deselect it.
- 2) Type a value in the 'Number of rings before answering' field to determine the number of rings the Legrand Power Shelf must wait before answering the call.

► *To configure the GSM modem:*

- 1) Enter the SIM PIN code.
- 2) Select the 'Use custom SMS center number' checkbox if a custom SMS center will be used.
 - Enter the SMS center number in the 'SMS center' field.
- 3) If needed, click Advanced Information to view detailed information about the modem, SIM and mobile network.
- 4) To test whether the Legrand Power Shelf can successfully send out SMS messages with the modem settings:
 - a. Enter the number of the recipient's phone in the Recipient Phone field.
 - b. Click Send SMS Test to send a test SMS message.

Lua Scripts

If you can write or obtain any Lua scripts, you can create or load them into the Legrand Power Shelf to control its behaviors.

Some Lua scripts examples are provided, which you can load as needed.

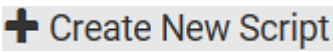
Note: Not all Lua script examples can apply to your Legrand Power Shelf model. You should read each example's introduction before applying them.

You must have the Administrator Privileges to manage Lua scripts.

Writing or Loading a Lua Script

You can enter or load up to 4 scripts.

► *To write or load a Lua script:*

- 1) Choose Device Settings > Lua Scripts >  .
- 2) Type a name for this script. Its length ranges between 1 to 63 characters.

The name must contain the following characters only.

- Alphanumeric characters
- Underscore (_)
- Minus (-)

Note: Spaces are NOT permitted.

- 3) Determine whether and when to automatically execute the loaded script.

Checkbox	Behavior when selected
Start automatically at system boot	Whenever the Legrand Power Shelf reboots, the script is automatically executed.
Restart after termination	The script is automatically executed each time after 10 seconds since the script execution finishes.

- 4) (Optional) Determine the arguments that will be executed by default.

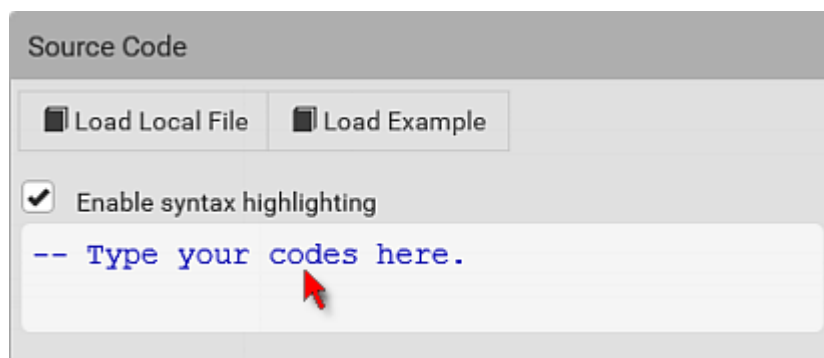
 + Add argument

- Click .
- Type the key and value.
- Repeat the same steps to enter more arguments as needed.

- To remove any existing argument, click  adjacent to it.

Note: The above default arguments will be overridden by new arguments specified with the "Start with Arguments" command or with any Lua-script-related event rule.

- 5) In the Source Code section, do one of the following. It is recommended to leave the Enable Syntax Highlighting checkbox selected unless you do not need different text colors to identify diverse code syntaxes.
- To write a Lua script, type the codes in the Source Code section.



The image shows a 'Source Code' section with a header bar. Below the header are two buttons: 'Load Local File' and 'Load Example'. Below these buttons is a checkbox labeled 'Enable syntax highlighting' which is checked. Below the checkbox is a text area containing the text '-- Type your codes here.' with a red mouse cursor pointing at it.

- To load an existing Lua script file, click Load Local File.
- To use one of the default Lua script examples, click Load Example.

Warning: The newly-loaded script will overwrite all existing codes in the Source Code section. Therefore, do not load a new script if the current script meets your needs.

- 6) If you chose to load a script or the example in the previous step, its codes are then displayed in the Source Code section. Double check the codes. If needed, modify the codes to meet your needs.
- 7) Click Create.

Manually Starting or Stopping a Script

You can manually start or stop an existing Lua script at any time.

When starting a script, you can choose to start it either with its default arguments or with new arguments.

Tip: To have the Legrand Power Shelf automatically start or stop a script in response to an event, create an event rule.

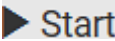
► To manually start a script:

- 1) Choose Device Settings > Lua Scripts. The Lua scripts list displays.



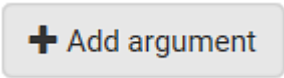
☐	Name	State	Autostart	Restart
☐	script-1	New	yes	no
☐	script-2	New	no	yes
☐	test	New	no	no

- 2) Click the desired script whose state is either 'Terminated' or 'New.'

- 3) To start with default arguments, click .

To start with new arguments, click  > Start With Arguments. Newly-assigned arguments will override default ones.

- 4) If you chose "Start With Arguments" in the above step, enter the key and value in the Start Lua Script dialog.

- Click  if needing additional arguments.

← Lua Scripts | New Script

Settings

Name

required

Start options

☐ Start automatically at system boot
☐ Restart after termination

Default arguments

Key	Value	
required	required	-

+ Add Argument

- 5) Click Start.
- 6) The script output will be shown in the Script Output section.

- If needed, click  Clear to delete the existing output data.

► *To manually stop a script:*

- 1) Choose Device Settings > Lua Scripts.
- 2) Click the desired script whose state is either 'Running' or 'Restarting.'
- 3) Click  Stop on the top-right corner.
- 4) Click Stop on the confirmation message.

Checking Lua Scripts States

Choose Device Settings > Lua Scripts to show the scripts list, which indicates the current state and settings of each script.

Lua Scripts Delete + Create New Script				
☐	Name	State	Autostart	Restart
	script-1	Terminated	yes	no
	script-2	Terminated	no	yes
	test	New	no	no

► *State:*

State	Description
New	The script is never executed since the device boot.
Running	The script is currently being executed.

State	Description
Terminated	The script was once executed, but stops now.
Restarting	The script will be executed. Only the scripts with the "Restart" column set to "yes" will show this state.

► *Autostart:*

This column indicates whether the checkbox labeled "Start automatically at system boot" is enabled. .

► *Restart:*

This column indicates whether the checkbox labeled "Restart after termination" is enabled.

Modifying or Deleting a Script

► *To modify or replace a script:*

- 1) Choose Device Settings > Lua Scripts.
- 2) Click the desired one in the scripts list.
- 3) Click  > Edit Script.
- 4) Make changes to the information shown, except for the script's name, which cannot be revised.
 - To replace the current script, click Load Local File or Load Example to select a new script.

► *To delete a script:*

- 1) Choose Device Settings > Lua Scripts.
- 2) Click the desired one in the scripts list.
- 3) Click  > Delete.
- 4) Click Delete on the confirmation message.

Miscellaneous

The Miscellaneous page contains some assorted settings.

► *Enable USB Host Ports:*

- If you want to enable/disable your Legrand Power Shelf USB host ports, use this checkbox.

When disabled, the following features are unavailable:

- Wireless networking
- USB cascading
- USB configuration and firmware update
- Webcam support
- USB card reader support
- PDView mobile app for iOS

► *Enable Crestron XiO Connection:*

- If the Crestron XiO connection is part of your configuration, you can enable/disable it here.

The screenshot shows a web interface titled 'Miscellaneous'. It contains two main sections:

- USB Host Ports:** This section has a header 'USB Host Ports'. Below it is a checkbox labeled 'Enable USB Host Ports' which is checked. A warning message states: 'The following features will become unavailable when disabling the USB host ports:'. Below this message is a list of features:
 - Wireless networking
 - USB cascading
 - USB configuration and firmware update
 - Webcam support
 - USB card reader support
 - PDView mobile app for iOS
 At the bottom right of this section is a 'Save' button.
- Crestron XiO Connection:** This section has a header 'Crestron XiO Connection'. Below it is a checkbox labeled 'Enable Crestron XiO Connection' which is unchecked. At the bottom right of this section is a 'Save' button.

Using Prometheus and Grafana

You can use the open-source tools Prometheus and Grafana to collect sensor data and visualize it. In Prometheus, the sensor readings are stored locally as time series data, which can be visualized in graphs created by Grafana or similar tools. This information is displayed on dashboards, and you can create multiple dashboards as needed.

Requirements for Prometheus and Grafana

► *Prometheus Requirements:*

- Prometheus v2.0 or higher
- Install on a computer in the Legrand Power Shelf network.
- Reference: https://prometheus.io/docs/introduction/first_steps/

► *Grafana requirements:*

- Grafana v8.1.5 or higher
- Install on a computer in the network of the Prometheus instance.
- Reference: <https://grafana.com/grafana/download?pg=get&plcmt=selfmanaged-box1-cta1>

Collected Data

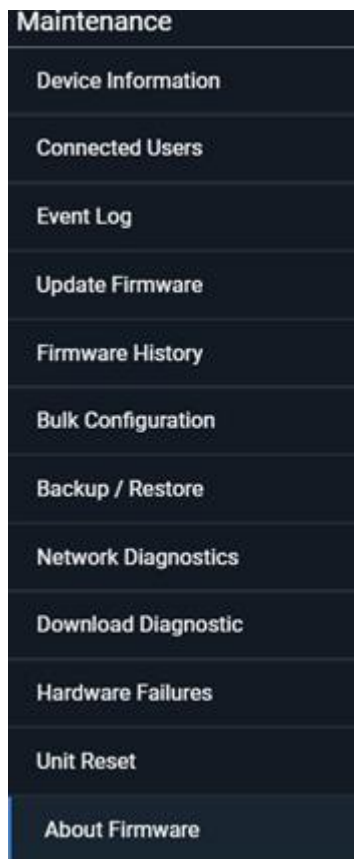
For integration into a Prometheus system, the PDU can output all measurements in a Prometheus-compatible format that can be queried from the URL: 'https://<PDU_IP>/cgi-bin/dump_prometheus.cgi'. The URL has one optional parameter, "include_names=1", to include PDU, names for Inlet, Outlet, OCP, TransferSwitch, and Sensors as metric labels.

You can use cURL as follows to retrieve the data:

1. `curl -k https://username:password@[PDU_IP]/cgi-bin/dump_prometheus.cgi`
2. `curl -k https://username:password@[PDU_IP]/cgi-bin/dump_prometheus.cgi?include_names=1`

Maintenance

Click 'Maintenance' in the *Menu* to view the options.



Device Information

The Device Information page displays hardware and software information of components or connected peripheral devices.

Tip: If the information shown on this page does not match the latest status, press F5 to reload it.

► *To display device information:*

- 1) Choose Maintenance > Device Information. Click any header to expand the information. Available sections depend on your model.

Section title	Information shown
Information	General device information, such as model name, serial number, firmware version, board ID and revision, MIB download link(s) and so on. iX7-G1 hardware or newer shows both Board ID and revision.
Network	The network information, such as the current networking mode, IPv4 and/or IPv6 addresses and so on. Information on cascading configurations also shows here.
Port Forwarding	If the port forwarding mode is activated, this section shows a list of port numbers for all cascaded devices.
Outlets	Each outlet's receptacle type, operating voltage and rated current.
Overcurrent Protectors	Each overcurrent protector's type, rated current and the outlets that it protects.
Controllers	Each inlet or outlet controller's serial number, Device ID, Hardware ID, Firmware Version and Status.
Peripheral Devices	Serial numbers, model names, position and firmware-related information of connected environmental sensor packages. <i>Note: Serial number when clicked provides the detail information of the peripheral device.</i>
Asset Management	Each asset strip's ID, boot version, application version and protocol version.
Security	SSH host keys.

Viewing Connected Users

You can check which users are logged in and their status. If you have administrator privileges, you can terminate any user's connection.

► *To view and manage connected users:*

- 1) Choose Maintenance > Connected Users. A list of logged-in users displays.



User Name ▲	IP Address	Client Type	Idle Time
admin	192.168.49.50	Web GUI	0 min

Column	Description
User Name	The login name of each connected user.
IP Address	The IP address of each user's host. For the login via a local connection (serial RS-232 or USB), <local> is displayed instead of an IP address.
Client Type	The interface through which the user is being connected to the Legrand Power Shelf. - Web GUI: Refers to the web interface. - CLI: Refers to the command line interface (CLI). The information in parentheses following "CLI" indicates how this user is connected to the CLI. - Serial: The local connection, such as the serial RS-232 or USB connection. - SSH: The SSH connection. - Telnet: The Telnet connection. - Webcam Live Preview: Refers to the live webcam image sessions. See below.
Idle Time	The length of time for which a user remains idle.

Disconnect

- 2) To disconnect any user, click the corresponding
 - a. Click Disconnect on the confirmation message.
 - b. The disconnected user is forced to log out.

► *If there are live webcam sessions:*

All Live Preview window sessions sharing the same URL, including one Primary Standalone Live Preview window and multiple Secondary Standalone Live Preview windows, are identified as one single "<webcam>" user in the Connected Users list. You can disconnect a "<webcam>" user to terminate all sessions sharing the same URL.



User Name ▲	IP Address	Client Type	Idle Time
<webcam>	192.168.84.22	Webcam Live Preview	0 min

The IP address refers to the IP address of the host where the Primary Standalone Live Preview window exists, NOT the IP address of the other two associated sessions.

Viewing, Pausing, Resuming or Clearing the Local Event Log

By default, certain system events are captured and saved in a local event log.

You can view historical events in the local event log. until the log size reaches 384KB. Event IDs are assigned in a continuous sequence as new events are recorded. When the log is full and old entries are removed, their event IDs are not used again. When the device restarts, it does not keep the previous event IDs. The first new event after a reboot is always numbered 0. If you clear the event log, the event ID counter resets to 0 as well.

► To display the local event log:

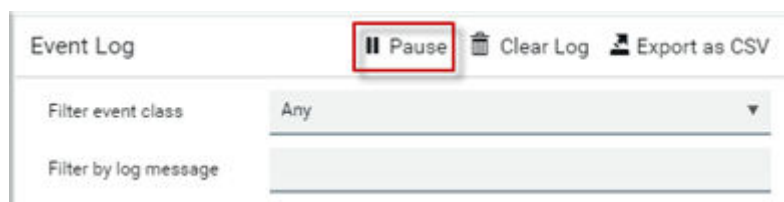
- 1) Choose Maintenance > Event Log.

Each event entry consists of:

- ID number of the event
 - Date and time of the event
 - Event type
 - A description of the event
- 2) To filter the list, select the desired event type in the 'Filter event class' field, or enter keywords in the 'Filter by log message' field.
 - 3) The log is refreshed automatically at a regular interval of five seconds. To avoid any new events' interruption during data browsing, you can suspend the automatic update by clicking Pause.
 - To restore automatic update, click Resume. Those new events that have not been listed yet due to suspension will be displayed in the log now.

► To Pause & Resume the local log:

- 1) Click Pause on the top right corner.



GUI temporarily stops displaying Event Log updates and button label shows 'Resume'.

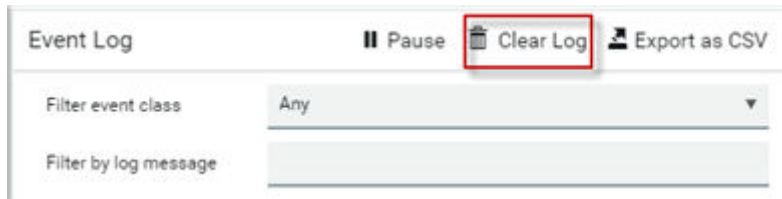
- 2) Click Resume on the top right corner.

GUI continues displaying Event Log updates and shows also messages which were skipped when paused. The Button label shows 'Pause'.

Note: After page change, Event Log list is automatically in 'Resumed' state again.

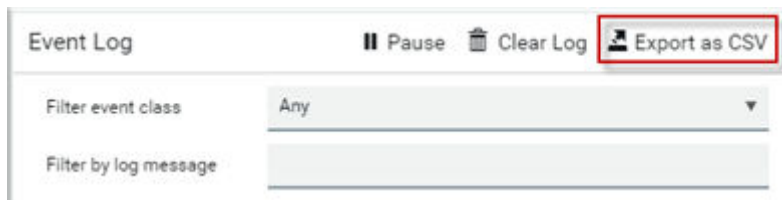
► *To clear the local log:*

- 1) Click Clear Log on the top-right corner.
- 2) Click Clear Log on the confirmation message.



► *To export the log:*

- 1) Click Export as CSV on top right corner.
- 2) CSV file gets downloaded to local machine.



Updating the Firmware

When performing the firmware update, the Legrand Power Shelf keeps each outlet's power status unchanged so no server operation is interrupted. During and after the firmware update, outlets that have been powered on prior to the update remain powered ON and outlets that have been powered off remain powered OFF.

You must be the administrator or a user with the Firmware Update permission to update the firmware.

Before starting, read the release notes. If you have any questions or concerns, contact Technical Support BEFORE updating.

On a multi-inlet unit, all inlets must be connected to power for the unit to successfully update its firmware.

Note that firmware update via iOS mobile devices, such as iPad, requires the use of iCloud Drive or a file manager app.

Firmware update can also be completed using methods other than the web interface. See Special Configuration and Upgrade Methods.

Warning: Do NOT perform the firmware update over a wireless network connection.

► *To update the firmware:*

- 1) Choose Maintenance > Update Firmware.
- 2) Click Browse to select an appropriate firmware file.
- 3) Click Upload. A progress bar appears to indicate the upload process.
- 4) Select Free memory before upload to clear up the memory.
- 5) Once complete, information of both installed and uploaded firmware versions as well as compatibility and signature-checking results are displayed.
 - The expected firmware platform and product category is displayed in case the uploaded file is incorrect.
 - If anything is incorrect, click Discard Upload.
- 6) To proceed with the update, click Update Firmware.

Warning: Do NOT power off the Legrand Power Shelf during the update.

- 7) During the firmware update:
 - A progress bar appears on the web interface, indicating the update status.
 - The front panel display shows the firmware upgrade message.
 - The outlet LEDs flash if the relay boards are being updated. If the firmware update does not include the update of the relay board firmware, outlet LEDs do NOT flash.
 - No users can log in.
 - Other users' operation, if any, is forced to suspend.
- 8) When the update is complete, the unit resets, and the Login page re-appears.

Important: If you are using the Legrand Power Shelf with an SNMP manager, download its MIB again after the firmware update to ensure your SNMP manager has the correct MIB for the latest release you are using.

Upgrade Matrix

In Xerus 4.0.x, the following upgrade paths must be followed:

Firmware Version	Upgrade Steps
4.0.x (x<40)	⇒ 4.2.11 (cannot use combo image)
4.0.x (x≥40)	⇒4.2.11
4.1.x	⇒ 4.2.11
4.2.x	⇒4.3.x

Note: Due to file system changes in Xerus 4.0.x, the upgrade paths must be followed, or the Xerus-based device may become inoperable and require manual recovery.

Upgrade Guidelines for Existing Cascading Chains

There are additional concerns when upgrading devices in a cascading chain. See Firmware Upgrade for Cascading Chains

A Note about Firmware Upgrade Time

The firmware upgrade time varies from unit to unit, depending on various external and internal factors.

External factors include, but are not limited to: network throughput, firmware file size, and speed at which the firmware is retrieved from the storage location. Internal factors include: the necessity of upgrading the firmware on the microcontroller and the number of microcontrollers that require upgrade (which depends on the number of outlets). The microcontroller is upgraded only when required. Therefore, the length of firmware upgrade time ranges from approximately 3 minutes (without any microcontroller updated) to almost 7 minutes (with all microcontrollers for 48 outlets updated). Take the above factors into account when estimating the firmware upgrade time.

The time indicated in this note is for Legrand Power Shelf web-interface-based upgrades. Upgrades through other management systems, such as Sunbird's Power IQ, may take additional time beyond the control of the unit itself. This note does not address the upgrades using other management systems.

Full Disaster Recovery

If the firmware upgrade fails, causing the Legrand Power Shelf to stop working, you can recover it by using a special utility rather than returning the device.

Contact Technical Support for the recovery utility. You will also need an appropriate firmware file in the recovery procedure.

Viewing Firmware Update History

The firmware upgrade history is permanently stored. It remains available even though you perform a device reboot or any firmware update.

► To view the *firmware update history*:

- 1) Choose Maintenance > Firmware History.

Each firmware update event consists of:

- The update date and time
- Previous firmware version
- Update firmware version
- Product

- Platform the update was for
- Update result
- Details

Bulk Configuration

The Bulk Configuration feature lets you save generic settings of a configured Legrand Power Shelf device to your computer. You can use this configuration file to copy settings to other devices of the same model and firmware version.

A source device is the Legrand Power Shelf device where the configuration file is downloaded/saved. A target device is the Legrand Power Shelf device that loads the configuration file.

By default the configuration file downloaded from the source device contains settings based on the built-in bulk profile. The built-in bulk profile defines that all settings should be saved except for device-specific settings, such as IP address or environmental sensor settings. If you need to load these device-specific settings, you should use the Backup/Restore feature instead.

You can decide which settings are downloaded by creating your own bulk configuration profile.

When the date and time settings are included in the bulk configuration file, exercise caution when distributing that file to target devices located in a different time zone than the source device.

This bulk configuration method can be employed through the web interface, USB, or SCP. See Special Configuration and Upgrade Methods.

► *Bulk configuration overview:*

- 1) A built-in configuration profile is available, or you can customize your own bulk configuration profile.
- 2) Select and download the file from the source device.
- 3) Upload the file to perform the configuration on the target device.

Bulk Configuration Restrictions

Before performing bulk configuration, make sure your source and target devices are compatible devices for sharing general settings.

► *Restrictions for bulk configuration:*

- The target device must be running the same firmware version as the source device.
- The target device must be of the same model type as the source device.
- Bulk configuration is permitted if the differences between the target and source devices are only "mechanical" designs which are indicated in the model name's suffix.
For example, you can perform bulk configuration between PX3-4724-E2N1K2 and PX3-4724-E2N1K9 since the only difference between the two models is their chassis colors represented by K2 (blue) and K9 (gray).

► *Mechanical design codes in model numbers:*

These mechanical designs are represented by suffixes added to the model name. In the table, x represents a number. For example, Ax can be A1, A2, A3, and so on.

Suffix	Mechanical design	Example
Ax	The line cord's length in meters Note: For an inline monitor, it is likely two Ax's are added to the model name for indicating the lengths of its inlets' and outlets' line cords. 	A20 = 3.3 meters
Bx	The line cord's color	B501 = bright red orange
Cx	Cord types or options	C4 = power cord with the standard gauge
Dx	Plug types or options	D1 = IP67 watertight plug
Ex	Outlet types or options	E2 = <i>Locking</i> C13 or <i>Locking</i> C19
Gx	Controller options	G0 = no controller
Kx	Chassis colors	K6 = yellow
Lx	The line cord's length in centimeters	
Nx	Chassis dimensions or other mechanical changes	
Ox	OCP brand options	
Px	Special requests for device painting or printing	
Qx	Special requests for physical placement arrangements	
Rx	Custom logo	
Ux	Different power plug brands	

Customizing Bulk Configuration Profiles

A bulk profile defines which settings are downloaded/saved from the source device and which are not. The default is to apply the built-in bulk profile, which downloads all settings from the source device except for device-specific data.

If the built-in profile does not meet your needs, you can create your own profiles.

► *To create new bulk configurations profiles:*

- 1) Log in to the source device whose settings you want to download.
- 2) Choose Maintenance > Bulk Configuration.
- 3) Click New Profile, then enter a Profile name and Description.
- 4) To make this new profile the default one for future bulk configuration operations, select the 'Select as default profile' checkbox.
- 5) Now decide which settings to include or exclude.



- a. Click of the setting which you want to configure.
- b. When the pop-up menu appears, select one of the options.

Note that the two options 'Inherited' and 'Built-in' are mutually exclusive.

Option	Description
Excluded	The setting will <i>not</i> be downloaded.
Included	The setting will be downloaded.
Inherited	The setting will follow its parent setting (that is, the upper-level setting). • If you select 'Excluded' for its upper-level setting, this setting will be also excluded. • If you select 'Included' for its upper-level setting, this setting will be also included. The option inherited from its parent setting will be enclosed in parentheses.
Built-in	The setting will follow the same setting of the built-in profile. • If 'Excluded' is selected in the built-in profile, this setting will be also excluded. • If 'Included' is selected in the built-in profile, this setting will be also included. The option inherited from the built-in profile will be enclosed in parentheses. <i>Note: The option 'Built-in' is available in those settings whose corresponding settings in the built in profile have been set to a non-inherited option -- Excluded or Included.</i>

- 6) Click Save.

Performing Bulk Configuration

To perform the bulk configuration using the web interface, first select and download the bulk configuration file, then upload it to the target device to configure it.

► *Step 1: Save a bulk configuration file*

You must have the Administrator Privileges or "Unrestricted View Privileges" to download the configuration.

- 1) Log in to the source device.
- 2) Choose Maintenance > Bulk Configuration.
- 3) Select the profile of the configuration you want to use in the Bulk Profile field.
- 4) In the 'Bulk format' field select Encrypted or Cleartext, to specify the security of the file.

Option	Description
Encrypted	• Partial content is base64 encoded. • Its content is encrypted using the AES-128 encryption algorithm. • The file is saved to the TXT format
Cleartext	• Content is displayed in clear text. • The file is saved to the TXT format.

- 5) In Encrypted mode, you can password protect the file. Select the Use Password checkbox, then enter a password. A password will be required when the file is uploaded on the target device.
- 6) Click Download Bulk Configuration. The file is named "bulk_config" with the source device serial number and a creation date/time stamp, such as "bulk_config_1BZ31B603C_20210927". Your browser's file download method determines download location. Save the file so that it's available to be uploaded to the target device.

► *Step 2: Upload the file to configure the target*

You must have the Administrator Privileges to upload the configuration.

- 1) Log in to the target device, which is of the same model and runs the same firmware as the source device.
- 2) Choose Maintenance > Bulk Configuration.
- 3) In the Restore Bulk Configuration section, click Browse to select the configuration file.
- 4) Click 'Upload & Restore Bulk Configuration'.
- 5) Confirm the operation and enter the administrator password, then click Restore.
- 6) Wait until the login page reappears.

Modifying or Deleting Bulk Configuration Profiles

You can modify or delete any bulk profile except for the built-in one.

Note that a profile that has been set as the default cannot be deleted. To remove it, you have to remove its default setting first.

Choose Maintenance > Bulk Configuration. A list of profiles displays and then do one of the following.

► *To modify an existing profile:*

- 1) Click on the row of the wanted profile in the list.
- 2) Change the settings you want.
- 3) Click Save.

► *To delete profiles*

- 1) Select one or multiple profiles, then click the Delete icon .
- 2) Click Delete in the confirmation message.

Backup and Restore of Device Settings

Unlike the bulk configuration file, the backup file contains ALL device settings, including device-specific data like device names and all network settings. To back up or restore the device settings, you should use the Backup/Restore feature. To perform bulk configuration among multiple Legrand Power Shelf devices, use the Bulk Configuration feature instead.

All Legrand Power Shelf information is captured in the plain-TEXT-formatted backup file except for the device logs and TLS certificate.

Backup/Restore can also be completed using other methods. See Special Configuration and Upgrade Methods.

► *To download a backup file:*

You must have the Administrator Privileges or "Unrestricted View Privileges" to download a backup file.

- 1) Choose Maintenance > Backup/Restore.
- 2) Check the 'Backup format' field. If the chosen value does not match your need, change it.

Option	Description
Encrypted	• Partial content is base64 encoded. • Its content is encrypted using the AES-128 encryption algorithm. • The file is saved to the TXT format
Cleartext	• Content is displayed in clear text. • The file is saved to the TXT format.

- 3) Click Download Device Settings. Save the file onto your computer.

► *To restore using a backup file:*

You must have the Administrator Privileges to restore the device settings.

- 1) Choose Maintenance > Backup/Restore.
- 2) Click Browse to select the backup file.
- 3) Click 'Upload & Restore Device Settings' to upload the file.
 - A message appears, prompting you to confirm the operation and enter an administrator password.
- 4) Enter the password, then click Restore.
- 5) Wait until the Legrand Power Shelf resets and the Login page re-appears, indicating that the restore is complete.

Network Diagnostics

Legrand Power Shelf provides the following tools in the web interface for diagnosing potential networking issues.

- Ping: The tool is useful for checking whether a host is accessible through the network or Internet.
- Trace Route: The tool lets you find out the route over the network between two hosts or systems.
- List TCP Connections: You can use this function to display a list of TCP connections.

Tip: These network diagnostic tools are also available through the CLI.

Choose Maintenance > Network Diagnostics, and then perform any function below.

► Ping:

- 1) Type values in the following fields.

Field	Description
Network host	The name or IP address of the host that you want to check.
Number of requests	A number up to 20. This determines how many packets are sent for pinging the host.

- 2) Click Run Ping to ping the host. The Ping results are then displayed.

► Trace Route:

- 1) Type values in the following fields.

Field/setting	Description
Hostname	The IP address or name of the host whose route you want to check.
Timeout(s)	A timeout value in seconds to end the trace route operation.

Field/setting	Description
Use ICMP packets	To use the Internet Control Message Protocol (ICMP) packets to perform the trace route command, select this checkbox.

2) Click Run. The Trace Route results are then displayed.

► *List TCP Connections:*

1) Click the List TCP Connections title bar to show the list.

Downloading Diagnostic Information

Important: Use this function only when you are directed by Technical Support.

You can download the diagnostic file to a client machine. The file is compressed into a .tgz file and should be sent to Technical Support.

This feature is accessible only by users with Administrative Privileges or Unrestricted View Privileges.

► *To retrieve a diagnostic file:*

1) Choose Maintenance > Download Diagnostic > Download Diagnostic.

2) The system prompts you to save or open the file. Save the file.

Hardware Issue Detection

This page lists any internal hardware issues Legrand Power Shelf has detected, including current events and historical records.

Choose Maintenance > Hardware Failures, and the page similar to either of the following diagrams opens.

Current hardware failure events, if any, will also display on the Dashboard.

► *NO hardware failures detected:*



► *Hardware failure(s) detected:*

Hardware Failures			
Current Hardware Failures			
Failure Message	Last Asserted ▲	Last Deasserted	Number of Occurrences
I2C bus 0 is stuck.	1/1/2018, 1:18:24 AM UTC+0100	1/1/2018, 1:00:00 AM UTC+0100	17
Past Hardware Failures			
Failure Message	Last Asserted ▲	Last Deasserted	Number of Occurrences
Network device ETH2 was not detected.	8/3/2018, 3:06:46 PM UTC+0200	8/3/2018, 3:13:10 PM UTC+0200	7

► *Hardware failure types:*

Hardware issues	Description
Network device not detected	A specific networking interface is NOT detected.
I2C Bus stuck	A specific I2C bus is stuck, which affects the communication with sensors.
Sub controller not reachable	Communication with a specific sub unit controller fails.
Sub controller malfunction	A specific sub unit controller does not work properly.
Outlet power state inconsistent	The physical power state of a specific outlet is different from the chosen power state set by the software.
Sub controller incompatible	A specific sub unit controller is incompatible with the firmware.

Rebooting

You can remotely reboot the Legrand Power Shelf via the web interface.

Resetting/rebooting does not interrupt the operation of connected servers because there is no loss of power to outlets. During and after the reboot, outlets that have been powered on prior to the reboot remain powered on, and outlets that have been powered off remain powered off.

Warning: Rebooting deletes all webcam snapshots that are saved locally. If needed, download important snapshots before rebooting the device.

► *To reboot the device:*

- 1) Choose Maintenance > Unit Reset > Reboot Unit.



- 2) Click Reboot.
- 3) A message appears, with a countdown timer showing the remaining time of the operation. It takes about one minute to complete.
- 4) When the restart is complete, the login page opens.

Tip: If you are not redirected to the login page after the restart is complete, click the text "this link" in the countdown message.

Note: Device reset will cause CLI communications over an "USB" connection to be lost. Therefore, re-connect the USB cable after the reset is complete.

Resetting All Settings to Factory Defaults

You must have the Administrator Privileges to reset all settings to factory defaults.

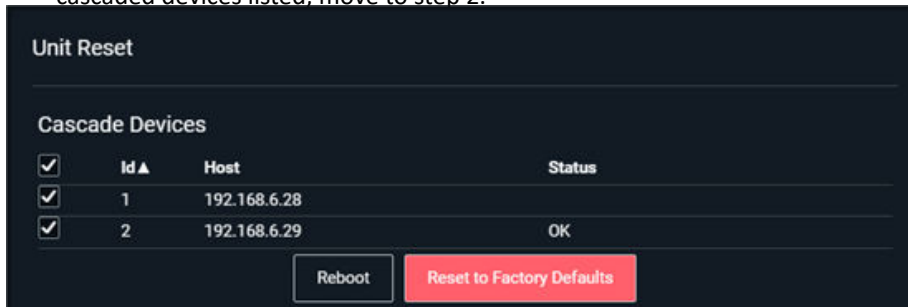
Resetting to factory default can also be completed in the CLI or with a Reset button on the unit. See [Resetting to Factory Defaults](#)

Important: Exercise caution before resetting to factory defaults. This erases existing information and customized settings, such as user profiles, threshold values, and so on. Only active energy data and firmware upgrade history are retained.

If your unit is in a Linking configuration, you can reset expansion units through the primary unit.

► *To reset the device to factory defaults:*

- 1) Choose Maintenance > Unit Reset
 - If your unit is in a cascaded configuration, select the units you want to reset. If you do not have cascaded devices listed, move to step 2.



Unit Reset

Cascade Devices

☒	Id ▲	Host	Status
☒	1	192.168.6.28	
☒	2	192.168.6.29	OK

- 2) Click Reset to Factory Defaults.



Reset to Factory Defaults

Do you really want to reset the selected devices to factory defaults?

Saying yes will clear all settings, including the network setup.

Please confirm with your password:

Password:

- 3) Type your password and then click Factory Reset.
- 4) A message appears, with a countdown timer showing the remaining time of the operation. It takes about two minutes to complete.
- 5) When the reset is complete, the login page opens.

Tip: If you are not redirected to the login page after the reset is complete, click the text "this link" in the countdown message.

Note: Device reset will cause CLI communications over an "USB" connection to be lost. Therefore, re-connect the USB cable after the reset is complete.

About Firmware

You can check the current firmware version and the information of all open source packages embedded in the Legrand Power Shelf through the web interface.

Raritan®

A brand of  **legrand**

Raritan Power Shelf
Firmware version: 4.4.0.5-52205
Copyright © Raritan, Inc.

The product includes software modified from third party programs licensed as free software: you can redistribute it and/or modify them under the terms of the GNU General Public Licenses as published by the Free Software Foundation. The table below lists all the packages having such modified third party programs, and the appropriate open source license under which that package has been released, including the GNU General Public License('GPL 3.0'), the 'GPL 2.0', the GNU Lesser General Public License('LGPL 3.0'), the 'LGPL 2.1' and the GNU Library General Public License('LGPL 2.0'). The original and modified versions of the source code of the relevant programs are available at <https://www.raritan.com/about/legal-statements/open-source-software-statement>.

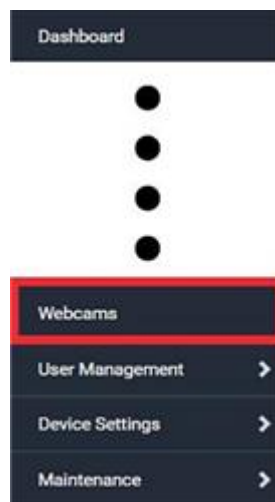
Open Source Packages:

Package ▲	Version	License
angular	19.2.14	Various Licenses
azure-c-shared-utility	51d6f3f7246876051f713c7ab ed28f909bf604e3	MIT
azure-iot-sdk-c	08.2024	MIT
azure-macro-utils-c	4cbcec60757b904e47bff4aa5 e2e5addae5bcf57	MIT

Webcam Management

With a Logitech® webcam connected, you can visually monitor the environment around the Legrand Power Shelf via snapshots or videos captured by the webcam.

The 'Webcams' menu item appears when there is any webcam connected to the Legrand Power Shelf, or when there are snapshots saved onto already.



► *Permissions required:*

To do...	Permission(s) required
View snapshots and videos	Either permission below: • Change Webcam Configuration • View Webcam Snapshots and Configuration
Configure webcam settings	Change Webcam Configuration

Configuring Webcams and Viewing Live Images

To configure a webcam or view live snapshot/video sessions, choose Webcams in the *Menu*. Then click the desired webcam to open that webcam's page.

Note that default webcam names are determined by the detection order. The one that is detected first is named *Webcam*, and a second webcam detected later is named *Webcam 2*.

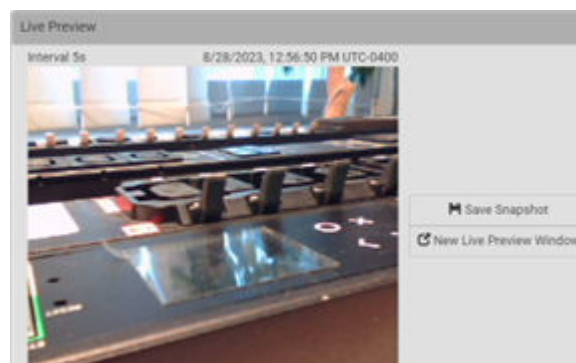


Webcams			
Name ▲	Location	Resolution	Mode
Webcam		352x288	Snapshot

The Webcam page consists of three sections -- *Live Preview*, *Image Controls* and *Settings*.

► *Live Preview:*

- 1) By default the Live Preview section is opened, displaying the live snapshot/video session captured by the webcam.
 - The default is to show live snapshots. Interval time and capture date/time of the image are displayed on the top of the image. In video mode, the number of frames per second (fps) and the video capture date/time are displayed.



Tip: The date and time shown on the Legrand Power Shelf web interface are automatically converted to your computer's time zone.

- 2) To save the current image onto Legrand Power Shelf or a remote server, click Save Snapshot.
 - The default storage location for snapshots is the Legrand Power Shelf device. To save them onto a remote server, you can change the storage settings.
 - To download an image onto your computer, you can right-click it and save.
- 3) To have the same live session displayed in a separate window, click New Live Preview Window.
 - A separate window appears, which is called the Primary Standalone Live Preview window in this User Guide.
 - You can send out this window's URL to share the live image with others.
 - Note that your browser may block the pop-up window

► **Image Controls:**



- 1) Adjust the brightness, contrast, saturation and gain by modifying their values or adjusting the corresponding slide bar.
 - To customize the gain value, you must deselect the Auto Gain checkbox first.
 - To restore all settings to this webcam's factory defaults, click Set to Webcam Defaults.

► **Settings:**

- 1) Click Edit Settings.
- 2) Enter a name for the webcam. Up to 64 ASCII printable characters are supported.
 - If configured to store snapshots on a *remote* server, the webcam's name determines the name of the folder where snapshots are stored.
 - It is suggested to customize a webcam's name before saving snapshots on the remote server. In case you change the webcam's name after saving any snapshots, Legrand Power Shelf will create a new folder with the new webcam name while keeping the old folder with the old name.
- 3) Type the location information in each location field as needed. Up to 63 ASCII printable characters are supported.
 - Note that the location data you enter is not available in those snapshots stored on remote servers.

Tip: If the webcam's location is important, you can customize the webcam's name based on its location.

- 4) Select a resolution for the webcam.
 - If you connect two webcams to one USB-A port using a powered USB hub, set the resolution to 352x288 or lower for optimal performance.
- 5) Select the webcam mode.

Mode	Description
Video	The webcam enters the video mode. • Set the 'Framerate' (frames per second) as needed.
Snapshot	The webcam shows static images captured by the webcam at a regular interval. • To determine the interval, set the 'Time Between Snapshots' (seconds).

- 6) Click Save. The changes made to the settings are applied to the live session in the above *Live Preview* section immediately.

Sending Links to Snapshots or Videos

When opening a Primary Standalone Live Preview window, a unique URL is generated for this window session. You can email or instant message this URL to as many people as possible as long as your system resources permit. Recipients can then click on the provided link and view live snapshots or videos simultaneously in the Secondary Standalone Live Preview window(s).

Tip: All Live Preview window sessions sharing the same URL, including one Primary Standalone Live Preview window and multiple Secondary Standalone Live Preview windows, are identified as one single "<webcam>" user in the Connected Users list. You can disconnect a "<webcam>" user to terminate all sessions sharing the same URL.

► *Best practice:*

- 1) The sender opens the Primary Standalone Live Preview window, and sends the link to one or multiple recipients.
- 2) The sender must wait until at least one recipient opens the Secondary Standalone Live Preview window.
- 3) The recipient(s) should inform the sender that the link has been opened.
- 4) Now the sender can close the Primary Standalone Live Preview window.

► *To send a snapshot or video link via email or instant message:*

- 1) Choose Webcams in the *Menu*.
- 2) Click the desired webcam to open the Webcam page.
- 3) Click New Live Preview Window in the Live Preview section. The live snapshot or video in a standalone window opens.
- 4) Copy the URL from that live preview window.
 - a. Select the URL shown on the top of the image.



- b. Right click to copy the URL, or press CTRL+ C.
- 5) Send the URL link through an email or instant message application to one or multiple persons.
- 6) Leave the live preview window open until the recipient(s) opens the snapshot or video via the link.

How Long a Link Remains Accessible

For documentation purposes, the one who opens and sends the URL of the Primary Standalone Live Preview window is called *User A* and the two recipients of the same URL link are called *User B* and *C*.

User C is able to access the snapshot or video image via the link when the URL link remains valid, which can be one of these scenarios:

- The Primary Standalone Live Preview window remains open on User A's computer. If so, even though User A logs out of the Legrand Power Shelf or the login session times out, the link remains accessible.
- User B's Secondary Standalone Live Preview window remains open. If so, even though User A already closes the Primary Standalone Live Preview window, the link remains accessible.
- Neither User A's Primary Standalone Live Preview window nor User B's Secondary Standalone Live Preview window remains open, but it has not exceeded two minutes yet after the final live preview window session was closed.

Note: The link is no longer valid after two minutes since the final live preview window is closed.

Viewing, Downloading, Deleting Locally-Saved Snapshots

This section describes the operation for snapshots saved onto the Legrand Power Shelf device only.

When saving a snapshot, it is stored locally on the Legrand Power Shelf device by default. Up to 10 snapshots can be stored locally. The oldest snapshot is automatically overridden by the newest one when the total of snapshots exceeds 10, if no snapshots are deleted manually.

When there is more than one webcam connected, then the oldest snapshot of the webcam with the most snapshots is overwritten.

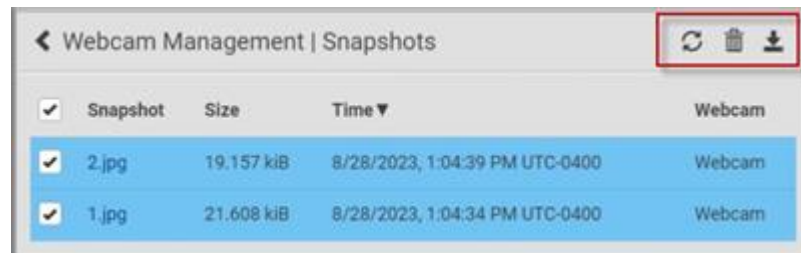
Snapshots are saved as JPG files, and named with sequential numbers, such as *1.jpg*, *2.jpg*, *3.jpg*.

Warning: Rebooting the Legrand Power Shelf deletes all webcam snapshots that are saved locally. If needed, download important snapshots before rebooting the device.

► *To view, refresh, download or delete saved snapshots:*

1) Choose Webcams > Browse Snapshots. The Snapshots page opens.

- To view a snapshot, click the link in the list. The image, capture time and resolution is displayed on the same page.
- To refresh the list, click the Refresh icon.
- To download an image file, click the Download icon.
- To delete an image, select the checkbox of the image and click the Delete icon.



Changing Storage Settings

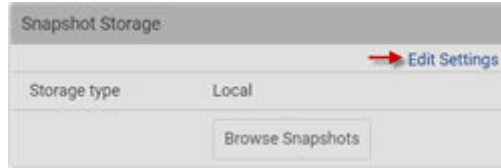
Important: The Legrand Power Shelf web interface only lists the snapshots stored locally on the Legrand Power Shelf device, but does NOT list those saved onto remote servers. You must launch appropriate third-party applications, such as an FTP client, to access and manage the snapshots stored on remote servers.

The default is to store snapshots locally on the device, which has a limitation of 10 snapshots. Note that any operation involving device reboot, such as firmware upgrade, will remove the locally saved snapshots.

If you need to keep more than 10 images or need to keep them permanently, configure the settings to move images onto a remote FTP server.

► *To configure the storage settings:*

1) Choose Webcams > Edit Settings.



2) Click the Storage Type field to select the desired storage location and configure as needed.

Note: When entering user credentials for remote servers, make sure the user credentials you enter have the write permission, or NO snapshots can be successfully saved onto remote servers.

Storage location	Description
Local	'Local' means the Legrand Power Shelf. This is the default. - It can store a maximum of 10 snapshots only. - The web interface can list and display all snapshots stored on the Legrand Power Shelf. - All snapshots are CLEARED when the Legrand Power Shelf is rebooted.
FTP	Snapshots are saved onto a FTP server. - Total number of saved snapshots depends on the server's capacity. - Saved snapshots are not affected by reboots of the Legrand Power Shelf. - Configure the following fields: * <i>Server URL</i> - the FTP server's path * <i>Username</i> - for server access * <i>Password</i> - for server access

1) Click Save.

Warning: Before disconnecting or powering off any remote server where the webcam snapshots are being stored, you must first change the storage settings, or the connectivity issue of the remote server may degrade the performance of the Legrand Power Shelf web interface. If this issue occurs, first restore the connectivity of the remote server and then change the storage settings of the webcam snapshots.

► *Tip for notifications showing the snapshots path on FTP:*

If you are using SNMP to retrieve data, you can make Legrand Power Shelf automatically send a notification containing the full path or URL to the snapshots saved onto FTP with this SNMP code: `webcamStorageUploadStarted`.

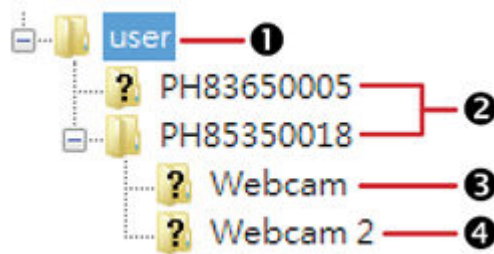
Identifying Snapshots Folders on Remote Servers

If saving snapshots onto a remote server, you can access those snapshots via an appropriate third-party application, such as an FTP client.

All snapshots are saved as JPEG and named according to the date and time when saving the snapshots. Note that the date and time of the filename are based on the time zone of the Legrand Power Shelf rather than that of the computer or mobile device you are operating.

Tip: To check the time zone, choose Device Settings > Date/Time.

The structure of a snapshots folder looks similar to the diagram below.



Number	Folder name description
①	User-defined parent directory, whose name depends your server settings, such as your FTP configuration.
②	Serial number of your Legrand Power Shelf device where the webcam is connected. For example, <i>PH85350018</i> . View your serial number in Device Information.
③	The name of the webcam that your Legrand Power Shelf detects first. This is the folder where the snapshots captured by the first webcam are stored. - The first webcam's default name is "Webcam". - You can customize the webcam's name, which will change the snapshots folder's name. - If the webcam's location is important, you can customize the webcam's name based on its location when configuring Legrand Power Shelf to save snapshots onto a remote server.
④	The name of the webcam that your Legrand Power Shelf detects later, if an additional webcam is connected. This is the folder where the snapshots captured by the second webcam are stored. - The second webcam's default name is "Webcam 2". - Changing this webcam's name also changes the second snapshots folder's name. - If the webcam's location is important, you can customize the webcam's name based on its location when configuring Legrand Power Shelf to save snapshots onto a remote server.

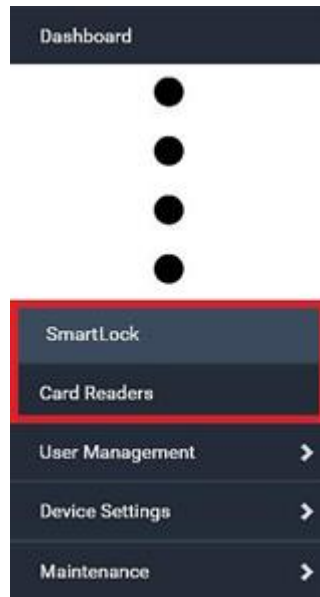
Note: It is suggested to customize a webcam's name "prior to" saving snapshots on the remote server. In case you change the webcam's name after saving any snapshots, Legrand Power Shelf will create a new folder with the new webcam name while keeping the old folder with the old name.

SmartLock and Card Reader

Legrand's SmartLock kits provide several cabinet access control solutions.

If you have purchased a SmartLock kit with the door handle controller "DX2-DH2C2", both menu items "SmartLock" and "Card Readers" will appear in the menu after connecting and configuring properly DX2-DH2C2 and the door handles included in the kit.

Note that "SmartLock" appears only when your door handles are connected via DX2-DH2C2, but "Card Readers" appears as long as any card reader is detected, whether standalone USB card reader or a card reader integrated with the door handles.



SmartLock

To open the SmartLock page, choose SmartLock in the *Menu*.

The page shows information of all DX2-DH2C2 modules connected, including its serial number, position and its door configuration. When primary units and/or link units have SmartLock controllers connected, this page includes all door information for both.

SmartLock Controller (16000000) Managed Door Access

Details
Position: Port 1: Chain position 0
Serial number: 16000000

Door 1

Open Close

Status

Name	State	Type
Door State 1	closed	Door State
Door Handle 1	closed	Door Handle
Door Lock 1	closed	Door Lock

Card Reader

Settings

Door handle type	EMKA Agent-E
Auto relock time	10 minutes
Door sensor polarity	Normally closed
Relock on handle close	Always
Connected device	SNL 40x100H-1

Edit Settings

Door 2

Open Close

Status

Name	State	Type
Door State 2	closed	Door State
Door Handle 2	closed	Door Handle
Door Lock 2	closed	Door Lock

Card Reader

Settings

Door handle type	SouthCo H3-EM
Auto relock time	10 minutes
Door sensor polarity	Normally closed
Relock on handle close	Always
Connected device	Senufay SK400

Edit Settings

On this page you can:

- View the status of the cabinet door and card reader.

Note: Data of "external" USB card readers is shown on the Card Readers page.

- Configure the doors connected to DX2-DH2C2. You must set this because the types of connected door handles are not automatically detected.
- Control the doors connected to DX2-DH2C2.
- Manage the door access.

► *To configure the doors:*

There are two door sections per DX2-DH2C2 because a DX2-DH2C2 has two door handle ports.

Door 1

Open Close

Status

Name	State	Type
Door Contact Front	closed	Door State
Door Lock 1	closed	Door Handle
Door Handle Lock 1	closed	Door Lock

Card Reader

Settings

Door handle type	SouthCo H3-EM
Auto relock time	30 s
Door sensor polarity	Normally closed
Relock on handle close	Only if door closed
Connected device	None

Edit Settings

Cancel Done

Door 2

Open Close

Status

Name	State	Type
Door 2	closed	Door State
Door Lock 2	closed	Door Handle
Door Handle Lock 2	closed	Door Lock

Card Reader

Settings

Door handle type	EMKA Agent-E
Auto relock time	10 minutes
Door sensor polarity	Normally closed
Relock on handle close	Always
Connected device	None

Edit Settings

- 1) Click Edit Settings in the Settings section.
- 2) In the 'Door handle type' field, select the door handle type you are using.
 - If your specific Southco H3-EM model is listed, select it. For all other supported Southco H3-EM models, select "Southco H3-EM".

- 3) Make changes to the remaining fields as needed, then click Save.

Section	Description
Auto Relock Time	Specify how long the lock can remain open after someone opens the door handle lock via smart card or remote control without the handle being opened during that period. When the timeout expires, the lock will be automatically closed. Default is 600 seconds (that is, 10 minutes).
Door sensor polarity	- Choose the correct setting based on the type of contact closure sensors used to monitor the door: - Normally closed: The contact is closed (conducting) when the door is closed and open (not conducting) when the door is open. Default. - Normally open: The contact is not conducting when the door is closed and is conducting when the door is open. - Note: For both normally closed and normally open sensors, the reported state is "open" when the door is open and "closed" when the door is closed.

Section	Description
Relock on Handle Close	This setting controls auto-locking. Select "Only if door closed" to delay auto-locking until "Door State" and "Door Handle State" are both verified as "Closed". Select "Always" to relock automatically.
Connected Device	If your door handle has a connected device, such as a keypad, select it from the list.

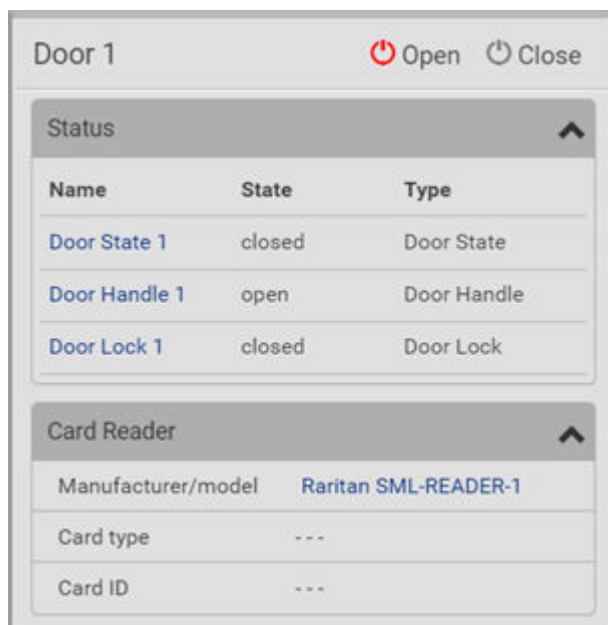
► *To manage the door access:*

"Managed Door Access" link provides access to "Door Access Rules" where you can create new rules.
[Door Access](#) (on page 185)



Door Status and Control

After configuring the door handle type properly, you can see the Status and Card Reader sections.



► *To view the status of the door and card reader:*

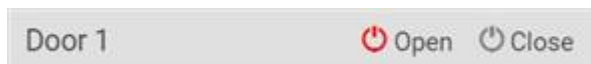
Section	Description
Status	Shows all sensor states detected by DX2-DH2C2, including: • <i>Door State</i>: States of contact closure sensors connected to DX2-DH2C2. Contact closure sensors detect whether the door is physically opened or closed. • <i>Door Handle</i>: States of door locks integrated with the door handles. • <i>Door Lock</i>: States of the door handle locks. Door locks and door handle locks are interrelated so their states are changed one after another. The door handle lock is opened first and then the door lock. Exception: If you manually open the door lock with the key shipped with your door handle, the Door Lock state will enter the open state while the Door Handle Lock state remains closed.
Card Reader	Shows the data of the smart card scanned by the internal or external card reader accompanying each door handle connected to DX2-DH2C2.

Tip: All sensors of the connected door handles are also listed on the Peripherals page. The same Card Reader information is also available on the Card Reader page.

► *To control the door:*

Per default, only one door handle can be opened at the same time so you must close one door before opening another. To increase the upper limit of concurrently opened doors, go to the Peripherals page.

- 1) Go to the proper door section, and click Open or Close.



- 2) Confirm the operation when prompted.
- 3) Now you can physically open or close the door.

► *Door Terms:*

The following terms and definitions are helpful when discussing doors, door handles, and locks. Note that all door sensors also display in the Peripherals page.

- SmartLock Controllers: DX2-DH2C2
- Door Handle Assembly: Door Handle and Door Lock which are connected to the SmartLock controller 8 pin connector, for example "door handle 1".
- Door: Door is the same as "Door Handle Assembly", but with optional contact closure sensor that is connected to the SmartLock controller connector. The contact closure sensor status describes whether the cabinet door is open or closed.
- Door Handle: The small grip on the front of the Door Handle Assembly, which is used to mechanically open the door by hand if it's unlocked. Sensor status describes if the Door Handle is pulled out (open) or closed.
- Door Lock: The small lock actuator inside of the Door Handle Assembly which locks or unlock the Door Handle. Sensor status describes if the Door Handle is unlocked or locked.

Card Readers

To open the Card Readers page, choose Card Readers in the *Menu*.

This page lists all card readers connected, including:

- Standalone USB card readers
- Card readers integrated with door handles

Card Readers					
# ▲	Manufacturer/Model	Serial Number	Channel	Card Type	Card ID
1	EMKA Agent-E	1GE8200098	1	---	---
2	EMKA Agent-E	1GE8200098	2	---	---

When a user scans a smart card with the card reader, the card's type and ID are retrieved and shown in the corresponding Card Type and Card ID column. If no data is shown in the two columns, it means the scanned card may not be supported by the card reader.

Tip: You can use a third-party application, such as Power IQ, to retrieve the card's data to perform security features like cabinet access control. Refer to that application's user documentation for more information.

► *Door handle-integrated card readers:*

- This type of card reader is integrated in the door handle, which is any series below:
 - Emka Agent E
 - SouthCo H3-EM
 - Dirak eLine MLR 2500

Note: Not every SouthCo H3-EM door handle has a card reader integrated.

- It is connected via the DX2-DH2C2 module.
- The Channel column indicates which door handle port (channel) it is connected to.
- Note that the serial number displayed for this card reader is the same as DX2-DH2C2's serial number.

Each DX2-DH2C2 module can show two card readers because they have two ports for connecting two door handles with card readers integrated.

► *Standalone USB card readers:*

- It is directly connected to Legrand Power Shelf.
- The Channel column does not show any data.

Linking Units

The Linking feature makes it easy to connect one Primary unit with multiple Link units, so you can keep track of everything in one place. The Primary unit knows all about the location, power status, and environmental details of the Link units. You can manage both the Primary and Link units through the GUI, SNMP, or CLI.

Communication between the Primary and Link units happens over HTTPS, and you'll need HTTPS enabled on the default port (443). For added security, certificates are checked during the setup.

- Certificates: Each Link unit needs either the demo certificate or custom certificates installed. If you're using custom certificates, the CA certificate has to be installed on the Primary unit. To configure certificates, go to System> Link Units and click the "TLS Certificate" button

You can use all network modes, but make sure network and physical configurations are set before starting. Administrator privileges are required for tasks like adding, configuring, or removing units. Once everything is set up, you can monitor and manage each unit remotely using these protocols:

- HTTP(S)
- SNMP
- SSH
- Telnet

Keep in mind that all units in the linked chain need to be the same model and run the same firmware version. If needed, you can upgrade the firmware for each unit individually.

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FAQs

- *What's the difference between a "primary unit" and a "link unit"?*

Primary and link units are the same model Legrand Power Shelf and are equal to each other, and each has its own IP address. You designate a Legrand Power Shelf as the primary unit by logging into it and then adding a link unit.

- The first unit becomes the primary.
- When the first link unit is added, the primary unit is automatically assigned ID "1", which is reserved to identify a primary unit only, and the ID "1" cannot be edited.
- A connection between the primary and the link unit has now occurred and the chain is formed.

As you continue to add link units to the chain (up to seven link units), you select Link ID "2" through "8" for the Link ID numbers. Note that the Link ID "2-8" is the sequential number of each link unit that you select as you add the unit to the chain. Once selected, the Link ID cannot be edited.

When the chain is established with a single primary unit, and one or more link units, communication occurs with the primary unit through its IP address. The primary unit, in turn, communicates to the other link units in the chain through their individual IP addresses, which optimizes monitoring and management.

► *Which models can be linked?*

Linking is supported on various products, but all devices in the chain should be the same models, running the same firmware version. The main controller must have 128 MiB RAM or more to support this feature.

► *Which network setup modes are supported?*

For the underlying network, the Linking feature can use the typical network setup modes:

Independent Setup: All units have their own regular IP address. They don't need to be in a physical chain to be logically chained. You communicate only to the primary using its normal IP address. Configure networking of the units, and then add link units using the Web GUI, CLI, or USB.

Bridged Setup: Same as Independent Setup, but the units are physically connected as a chain, either by ethernet or USB. The configuration steps are the same as with Independent Setup.

Port Forwarding Cascade: The units are physically connected as a chain (either by Ethernet or USB). Only the first primary unit is connected to your network with the IP address you assigned. The other units will get automatically-assigned private IP addresses. When a Cascading in Port Forwarding mode configuration is detected, you can automatically convert the cascaded units into Link Units using the GUI in the primary unit, or add link units with the other methods in the Web GUI, CLI, or USB.

► *Can primary units be linked together?*

No. Once a unit is designated as the primary unit in a chain, it cannot be linked to a primary unit in another chain. A primary unit can only be linked to one or more link units in a chain.

► *How many units can be linked?*

Including the primary, a full chain can include a total of eight units. The first unit added is designated as the primary unit with the ID "1". Each unit you then add to the chain is designated as a link unit, beginning with ID "2" and ending with ID "8".

► *What user credentials are used for my Primary and Linked Units?*

When Linking is used, the primary unit's admin password will be synced to the link units.

► *What is re-linking?*

Re-linking is a required function when a link unit no longer recognizes or responds to the primary unit, most likely caused by the link unit being reset to factory defaults. The status of the disassociated link unit will be displayed as "Access Denied". Selecting the link unit when in this status displays the Re-link button that allows reconnection of the link unit in the chain for regaining device control.

Note: Re-linking uses the same Link Unit ID and hostname, but you will need to reauthenticate with your login credentials.

► *What user privileges are required for managing the Linking configuration?*

Administrative privileges are required for both the primary unit and link unit. To add a link, your administrative login account is required, but after that you only log in to the primary to manage the chain, as all link units in the chain are visible in the user interface from the primary unit view.

► *What happens if the connection is lost between the primary and link units?*

The primary unit's dashboard displays information about unreachable link units in the Link Unit Failures section.



#	Host	Status
2	10.0.42.3	Unreachable

If the network connection is lost, these link unit functions will still work:

- 1) Front panel display
- 2) Energy accumulation and outlet states

and these link unit functions will stop working:

- 1) Event log entries are lost
- 2) Event rules, actions and alarms
- 3) Remote access to the link unit
- 4) Synchronization of primary settings and time when not using NTP

► *Which system areas of the primary and link units are automatically synchronized?*

The primary unit periodically checks link unit reachability. You can define rules to be alerted when communication with a link unit fails, such as a system alarm. Some link unit settings are automatically synchronized with the primary:

- 1) Peripheral device settings
- 2) Front panel privileges and default view
- 3) USB host port lockdown
- 4) Time and date settings
- 5) General data logging settings

► *How are firmware updates handled?*

Uploaded firmware images in the GUI are automatically distributed to all link units at the same time. Starting a firmware update requires the automatic image upload on the link units to be finished first.

Firmware version must match between primary units and link units to function normally. If the primary unit is updated before the link units, for example, you will see a "Firmware version mismatch" message in the Link Units section. When this occurs, link unit data will not display. You will not be able to switch to the mismatched link unit. Upon update of the linked unit to the matching firmware version, normal data displays will resume.

► *Does Linking support mass deployment?*

Yes, mass deployment has been extended to support a setup for the Linking feature (multi-IP or single-IP) via the Mass Deployment Utility, which provides the Excel spreadsheet process used for bulk configuration. For information about using the utility, see Configuration or Firmware Upgrade with a USB Drive.

PDU Linking at the Rack

Power Shelves with the iX12 controller have a Link port that supports directly connecting two same model, same firmware version units in a primary-link configuration. This connection also allows for power-sharing between the two units. If you're working at the rack, to allow linking of the wired power shelves, complete the configuration using the front panel display of the Primary unit. You do not have to say Yes to Linking to use power sharing. OR, to complete the configuration remotely, you can use CLI commands. See [Linking in the CLI](#) (on page 321).

► *Requirements*

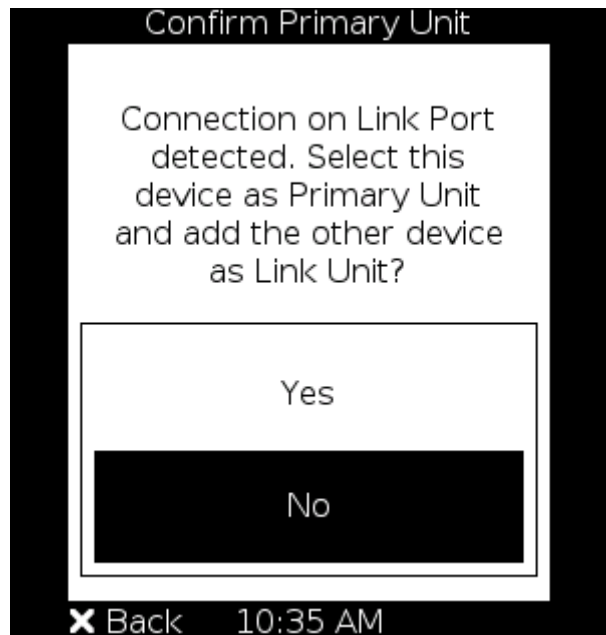
- 2 Power Shelves with iX12 controllers
- Units are set to default password. If the Link unit's password doesn't match the Primary unit's password, the connection won't work.
- Ethernet cable

► *To configure Linking at the rack:*

- 1) Connect the Link port of the first controller to the Link Port of the second controller using a standard network patch cable.



- 2) The units will detect the connection and display messages on the front panels.
- 3) On the front panel display of the Power Shelf you want to designate as Primary, select Yes to confirm the Primary Unit setting. OR: Use the CLI command "linkport link" now to complete the configuration with CLI.



- Select No to deny Linking for these 2 power shelves. The message will not appear again.

Note: For units without display: Use JSON-RPC function "addLinkPortLinkUnit" to acknowledge the connection on the link port.

- 4) Upon selecting Yes, the units will be linked as Primary and Link units, and will operate as a Linking configuration.

Linking in the Web Interface

The following topics describe how to configure and use Linking in the web interface.

Viewing the Primary Unit

To view and manage Linking, log in to the unit designated as the primary unit, and go to the System page.

When you add a link unit, a chain is established between the primary and the new link, and the primary becomes ID "1".

My Power Shelf 1 (1)

Details

Firmware version	4.4.0.5-52561
Model	SHF3-3316G2R
Serial number	R1BZ0E7D0F0
Active network interfaces	02:61:4a:65:14:7d (ETH1) 02:05:1e:ea:77:d3 (ETH2)
Rating	346-415V, 24-32A(2), 28.8-46kVA, 50/60Hz
Data log	<button>Export as CSV</button>

Link Units

☐	#▲	Name	Host	Model	Status	Firmware
	2	My Power Shelf - 2 (2)	192.168.6.40	SHF3-3316G2R	OK	4.4.0.5-52561

TLS CertificateAdd Link UnitRelease Link Unit

The Power Shelf page displays the following information about the primary unit:

- 1) Firmware version
- 2) Model
- 3) Serial number
- 4) MAC address
- 5) Rating
- 6) Link to Data Log

The ID of the primary unit is automatically assigned the ID "1", as shown in the example as "My Power Shelf (1)". The ID cannot be edited.

Options for Adding Link Units

To start configuring the Primary Unit with Link Units, your options in the web interface depend on the network and physical configuration of units.

- If you configured units in Independent or Bridging Mode, where they may or may not be physically cascaded, and each one is assigned its own IP address, you can manually add each link unit. You can use this manual function anytime to add link units. See [Adding a Link Unit](#).
- If you configured units in a Port-Forwarding Cascade Mode configuration, in which they are physically cascaded and only the first unit is connected to the network, you can automatically link the cascaded units. See [Linking Cascaded Units](#) (on page 301)

TLS Certificates for Linking

To enhance security, you can upload a TLS certificate to your primary unit to be verified for communication with the link units. The built-in demo CA certificate is used to verify link units until you upload your own. You will need a CA certificate for the primary unit, and certificates for each link unit that have been signed by the same CA. Before creating the cascade, CA-signed TLS certificates must be installed to designated link units. See [Setting Up a TLS Certificate](#) (on page 161).

If you are using the Link Port for setup at the rack, or if you are in Port Forwarding mode, certificates for link-local addresses and/or internal wildcard domain (*.pf-cascade) are required. Note that Link Port is not available on all models.

► *To add the CA Certificate to the Primary Unit:*

- 1) Login to the designated primary unit.
- 2) On the PDU page, click TLS Certificates.
- 3) Click Browse, then select the CA certificate file and click OK to upload it.
- 4) Select the "Allow Expired and Not Yet Valid certificates" checkbox to skip time verification when certificates are validated.
- 5) Click Save.

Adding a Link Unit

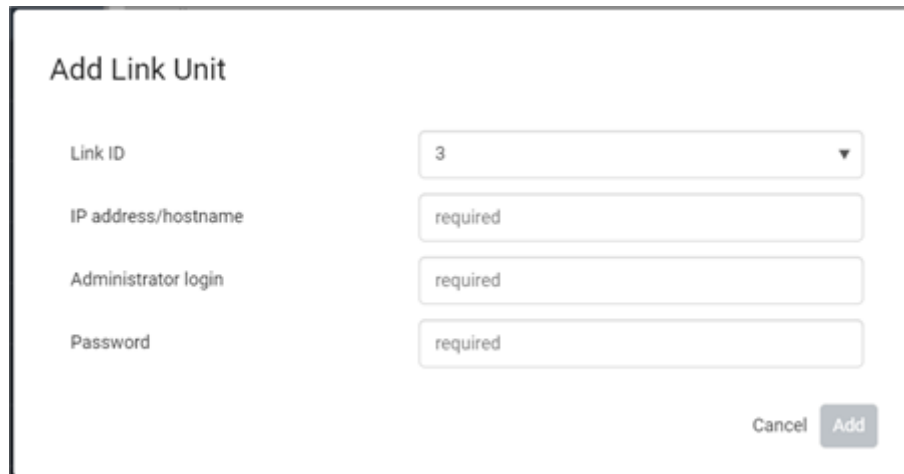
A link unit (up to seven units) can be added to a single primary unit.

On the System page, the Link Units section will contain all link units. The Add Link Unit button, highlighted in the screen example, also displays in the Link Units section.

Link Units						
☐	#▲	Name	Host	Model	Status	Firmware
	2	My Power Shelf - 2 (2)	192.168.6.40	SHF3-3316G2R	OK	4.4.0.5-52561

► *To add a link unit:*

- Primary and link units must be the same model, running the same firmware versions.
- 1) Log in to the primary unit and go to the PDU page.
 - 2) Click Add Link Unit. The following add box displays:



Add Link Unit

Link ID: 3 ▼

IP address/hostname: required

Administrator login: required

Password: required

Cancel Add

- 3) The Link ID is populated as the next available ID number (2-8), assigned sequentially as each link unit is added to the chain to identify the link unit in the user interfaces. Note: From the drop-down, you can manually select the desired Link ID to order the link units in the chain as desired. Once associated with a link unit, the Link ID cannot be edited.
- 4) Provide the IP address of the link unit.
- 5) Provide the login credentials for the link unit. Note: If the link unit has factory settings, you will be prompted to set the new password.
- 6) Click Add.
 - The link unit's firmware version is checked to ensure it matches the primary unit. If a mismatch is found, a message appears and the link unit is not added.
- 7) When the firmware matches, the new link unit is added in a list in the Link Units section. All link units added to the chain are now managed by the single primary unit.

The Power Shelf page displays the following information about the link unit:

- Link ID
- Host/IP address
- Communication status
- Firmware version

About the Link ID

The Link ID "1" is automated and reserved internally for the primary unit. The primary unit's ID "1" cannot be edited.

The Link ID "2-8" is available for you to select as the ID for each of the link units you add to the chain. From the Link ID drop-down, you can select the desired Link ID to manage the link units in the chain. Once selected, the Link ID cannot be edited.

The screenshot shows a web interface titled "Add Link Unit". It features four input fields: "Link ID" (a dropdown menu with options 3, 4, 5, 6, 7, 8, where 3 is selected), "IP address/hostname", "Administrator login", and "Password" (with a "required" label below it). At the bottom right, there are "Cancel" and "Add" buttons.

Linking Cascaded Units

When units are physically connected in a cascade and set to Port Forwarding mode, Legrand Power Shelf can automatically detect expansion units through the primary unit and link the cascaded units.

While a cascaded chain can support up to 32 units and may include various products and models, the Linking feature is limited to a maximum of 8 linked units. Additionally, all linked units must be the same model and run the same firmware version.

Link units can be added using various methods, but keep in mind that the total number of linked units cannot exceed 8.

You can link cascaded units in two ways:

- **Link All Cascaded Units (Automatic Method):** This method is ideal when your cascade includes 1 to 8 expansion units of the same product, model, and firmware. It allows you to seamlessly and efficiently convert this configuration into a Linked setup.

The automatic linking option simplifies the process by assigning each cascaded unit either a link-local IPv6 address or a node-index-dependent URL as it is discovered and linked. The process starts with the first expansion unit connected to the Primary unit and continues sequentially through the cascade. The linking process concludes either when all 8 Link unit IDs are assigned or when a link attempt fails.

- **Custom Method:** Choose this method if you want to selectively add specific expansion units from the cascade or customize the linking process, including the order in which the units are linked.

With this option, you manually select each cascaded unit by its node number and assign it to a Link ID. Additionally, you'll need to choose a hostname type for each link. The linking process follows your customized list and attempts to add all the selected expansion units accordingly.

► *To link all cascaded units (Automatic method):*

- 1) On the PDU page, click the Link Cascaded Units button. The Link Cascaded Units dialog opens.
- 2) Enter the administrator user name and password assigned to all designated link units. Must be the same credentials for all units.
- 3) Select "Link all Cascaded Units" for automatic linking.
- 4) Select the Hostname type to be assigned to all link units:
 - Link-local IPv6 address: Units are assigned IPv6 addresses that are accessible from the primary unit.
 - Dependent on node index: Units are assigned a URL that includes their node index number, for example "expansion-1.pf-cascade", "expansion-2.pf-cascade", "expansion-3.pf-cascade", where the node number indicates the expansion unit's position in the chain related to the primary unit.
- 5) The table shows the process that will run: Node Index indicates the expansion unit number to be linked, Link ID shows the link ID to be assigned, and Hostname shows the hostname type for all, as specified.

Link Cascaded Units

Administrator login:

Password:

☒ Link all cascaded Units

Cascade: Hostname:

☐ Custom settings

Node Index	Link ID	Hostname
1	2	Link-local IPv6 addresses
2	3	Link-local IPv6 addresses
3	4	Link-local IPv6 addresses
4	5	Link-local IPv6 addresses
5	6	Link-local IPv6 addresses
6	7	Link-local IPv6 addresses

Cancel

- 6) Click Link to start the linking process. The table shows progress and then final results. In the example below, expansion unit 1 was linked successfully. Expansion unit 2 failed--the connection may have failed, or this result may also indicate there was no unit at that position. Expansion units 3-7 were skipped because the process stops upon first failure.

Node Index	Link ID	Hostname	Link State	
1	2	Link-local IPv6 addresses	✓ Linked	
2	3	Link-local IPv6 addresses	✗ Connection to the link unit failed.	
3	4	Link-local IPv6 addresses	✗ Skipped	
4	5	Link-local IPv6 addresses	✗ Skipped	
5	6	Link-local IPv6 addresses	✗ Skipped	
6	7	Link-local IPv6 addresses	✗ Skipped	
7	8	Link-local IPv6 addresses	✗ Skipped	

► *To link cascaded units (Custom method):*

- 1) On the PDU page, click the Link Cascaded Units button. The Link Cascaded Units dialog opens.
- 2) Enter the Primary Unit's administrator user name and password.
- 3) Select Custom Settings.
- 4) Click Append Node to add a row to the table, then complete each field in the row to describe how the expansion unit should be linked. Repeat this step as needed to create a table of all nodes to link.
 - Node Index: Select the node index for the expansion unit you want to add. Node index 1 indicates the first expansion unit connected to the primary unit, then expansion units are numbers sequentially as you go down the cascaded chain.
 - Link ID: Select the Link ID that this expansion unit will be mapped to once linked.
 - Hostname: Select the hostname type to be assigned to this link unit.
 - Link-local IPv6 address: Units are assigned IPv6 addresses that are accessible from the primary unit.
 - Dependent on node index: Units are assigned a URL that includes their node index number, for example "expansion-1.pf-cascade", "expansion-2.pf-cascade", "expansion-3.pf-cascade", where the node number indicates the expansion unit's position in the chain related to the primary unit.

Link Cascaded Units

Administrator login

Password

Cascade ☐ Link all cascaded Units ☒ Custom settings

Node Index	Link ID	Hostname	
1	3	Link-local IPv6 addresses	
8	8	Dependent on node index	
3	5	Link-local IPv6 addresses	

- 5) The completed table you create shows the process that will run.
- 6) Click Link to start the linking process. The table shows progress and then final results.

Link Cascaded Units

Administrator login

Password

Cascade ☐ Link all cascaded units ☒ Custom settings

Node Index	Link ID	Hostname	Link State	
1	2	Link-local IPv6 addresses	✓ Linked	

Note: If a unit is removed from a linked cascade, a reset to defaults is necessary to access the unit.

Primary Units Manage Link Units

The primary unit manages the following functions for the entire chain of linked units:

- User management and authentication – configured only on the primary.
- Date and time – the primary synchronizes its date and time settings to link units. If NTP is not used, then the synchronization interval is every 10 minutes.
- Device settings – only the primary device settings are configurable, except for Network Settings. Some settings will be synced to link units. The serial port is configurable for the primary only; link units use the console.
- Data model settings – such as outlet names, thresholds, peripherals, etc., are configured on the primary and stored on link units. Features vary by model.
- Lua scripts – Communication with link units in a Lua script is possible.

Releasing a Link Unit

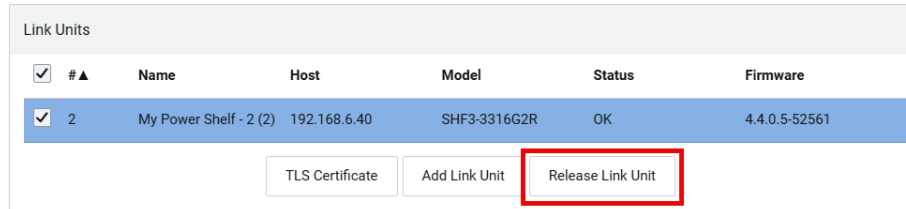
Releasing a link unit means the unit is separated from the chain and the unit then becomes standalone. The primary unit no longer has access to the released link unit.

► To release a link unit from the Primary Unit's web interface:

Note: If a release action is attempted on a link unit when the unit is an unreachable state, a warning message displays, and the primary will not recognize the link unit.

- 1) From the Power Shelf page, in the Link Units section, click a link unit to select it.
- 2) Click Release Link Unit.
- 3) A confirmation prompts to cancel or release.

If released, the link unit is removed from the page.

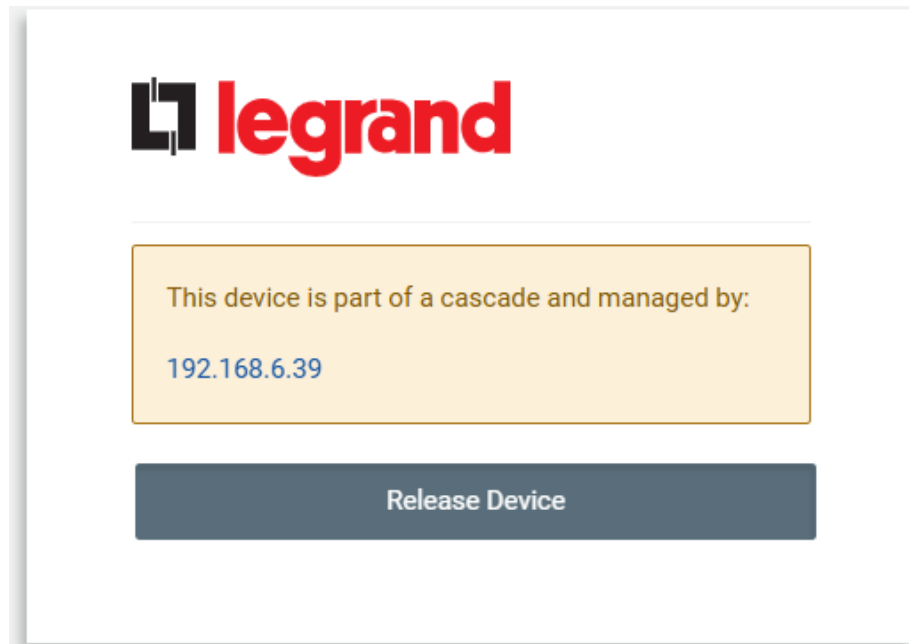


► To release a link unit directly:

Caution: Should be used only in an emergency situation.

If you navigate to a link unit directly, in a web browser, a Release Link option is available instead of a login option.

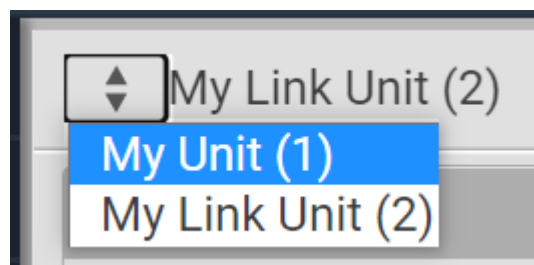
- Enter the username and password, then click Release Device.



Switching to a Different Unit

Switching your view to a different unit is a control function noted by the Switch control in the upper left corner of the pages that display primary and link unit information.

Displayed data in the GUI defaults to the primary unit. The Switch control allows you to switch from a primary page to a link unit page, and back again to the primary.



► To switch to a different unit:

- 1) Click the Switch  control.
- 2) Select one of the link units from the drop-down list. Link number "2-8" appears in parentheses.
- 3) The page displays data for the selected link unit.
- 4) To return to the page for the primary, select the primary unit. Primary number "1" appears in parentheses.

► *Configure load shedding on linked units*

You can switch between units in the GUI and setup / activate load shedding separately for every link unit. Activating load shedding on the primary unit will not activate load shedding for the whole cascade.

Re-linking a Link Unit

Re-link function is necessary when a Link unit stops recognizing or responding to the Primary unit, which often happens if the Link unit has been reset to factory defaults. Resetting to factory defaults renders the Link unit in the chain unreachable, requiring its removal from the chain manually before re-establishing the link.

If reset to factory defaults, the status of the disassociated link unit will be displayed as "Access Denied", shown below.



✓	#▲	Name	Host	Model	Status	Firmware
✓	2	My Link Unit (2)	unknown	unknown	Access Denied	unknown

TLS Certificate Release Link Unit Re-Link Unit

► *To re-link a link unit:*

- 1) When you select the link unit in the "Access Denied" status, the Re-Link Unit button displays, as noted above.
- 2) To reconnect the link unit in the chain, and to regain full control of the unit, click Re-Link Unit.
- 3) Although re-linking uses the same Link Unit ID and hostname of the unreachable unit, you will need to reauthenticate with your login credentials.
- 4) Click the Re-link button.
- 5) The status of the link unit changes to "OK".

View Link Unit Information

When a link unit is added to the chain, the primary unit view (through the GUI) allows full access to the operational data of the link unit. For example, using the navigation tabs of the GUI, link unit data is displayed in several pages: the Dashboard, Power Shelf, Power Supply Inlets, Outlets, Outlet Groups, OCPs, Peripherals, and Feature Ports.

► *Dashboard*

The Dashboard of a Primary and Link Unit Power Shelf has several sections to give you an overview of operation.

Power Busses

The Power Busses section displays Current, Voltage, and Power for each power bus of both Primary and Link.

Power Shelf Global AC Sensors

The Power Shelf Global AC Sensors section provides aggregated AC input information for each power shelf. It reports active power and cumulative active energy consumption.

Power Supplies

The Power Supplies section lists all individual power supply units (PSUs) within each power shelf. For each PSU, it shows operational status, output power, and associated line connection.

Alerted Sensors

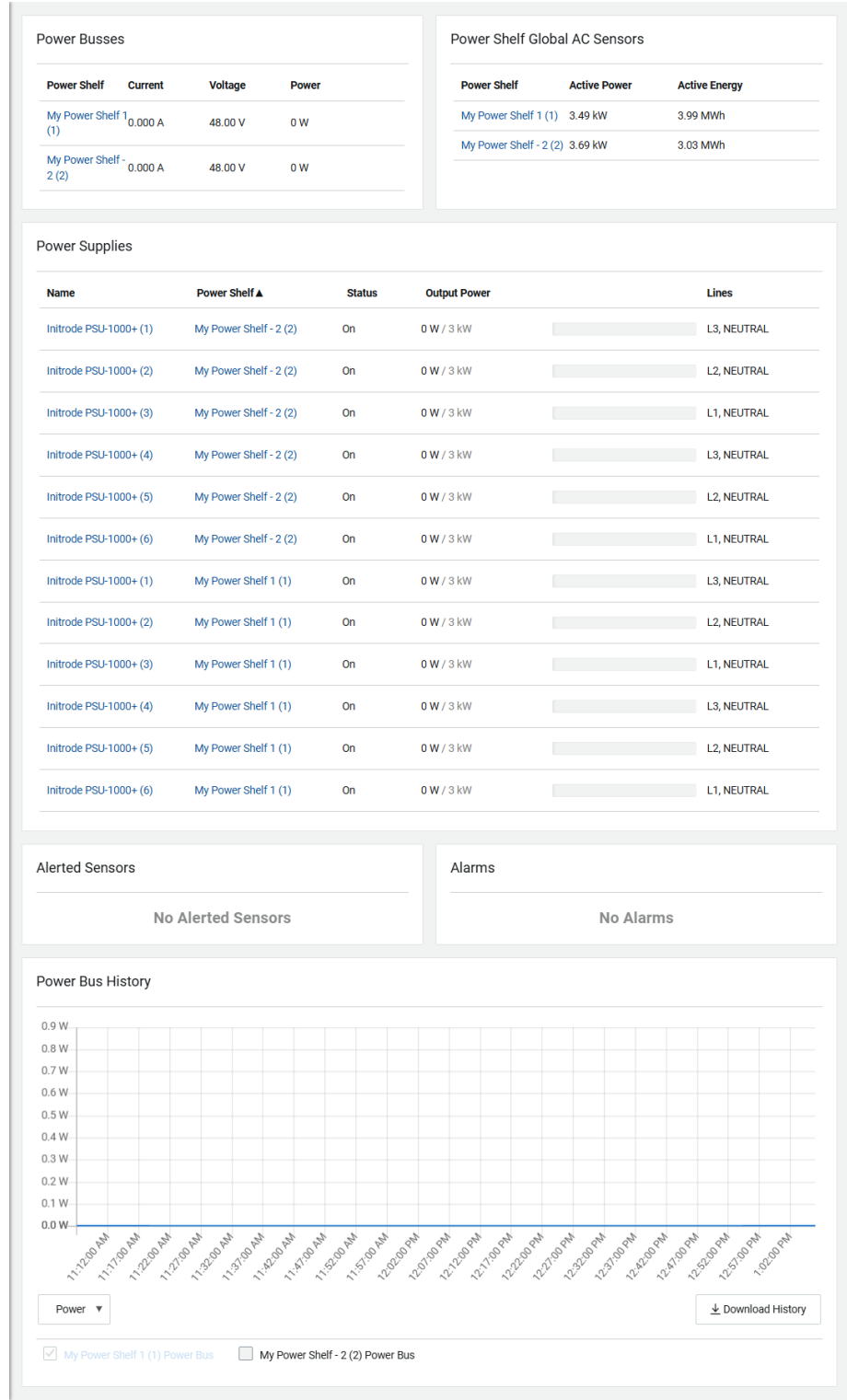
The Alerted Sensors area displays sensors currently reporting warning or critical states. If the section is empty, no sensor-level issues require operator attention.

Alarms

The Alarms section lists active system alarms. When empty, the system is operating without reported faults.

Power Bus History

The Power Bus History chart provides historical power usage data for selected power busses. Click [Download History](#) to export a CSV file of readings.



► System page

The System page displays the details and settings for the selected unit (primary) and the other linked units are displayed under Link Units section.

My Power Shelf 1 (1)

Details

Firmware version	4.4.0.5-52561
Model	SHF3-3316G2R
Serial number	R1BZ0E7D0F0
Active network interfaces	02:61:4a:65:14:7d (ETH1) 02:05:1e:ea:77:d3 (ETH2)
Rating	346-415V, 24-32A(2), 28.8-46kVA, 50/60Hz
Data log	<button>Export as CSV</button>

Link Units

☐	#▲	Name	Host	Model	Status	Firmware
	2	My Power Shelf - 2 (2)	192.168.6.40	SHF3-3316G2R	OK	4.4.0.5-52561

TLS CertificateAdd Link UnitRelease Link Unit

► Power Shelf page:

On the Power Shelf page, you will see the Primary unit first. Use the page control to change the view to the Link unit. For example, you can swap between My Power Shelf 1 and My Power Shelf 2, as shown. All sections and information are the same as when viewed using the Dashboard.

My Power Shelf 1 (1)

Power Supplies

☐	#	Name	Status	Output Power	Lines
	1	Initrode PSU-1000+ (1)	On	0 W / 3 kW	L3, NEUTRAL
	2	Initrode PSU-1000+ (2)	On	0 W / 3 kW	L2, NEUTRAL
	3	Initrode PSU-1000+ (3)	On	0 W / 3 kW	L1, NEUTRAL
	4	Initrode PSU-1000+ (4)	On	0 W / 3 kW	L3, NEUTRAL
	5	Initrode PSU-1000+ (5)	On	0 W / 3 kW	L2, NEUTRAL
	6	Initrode PSU-1000+ (6)	On	0 W / 3 kW	L1, NEUTRAL

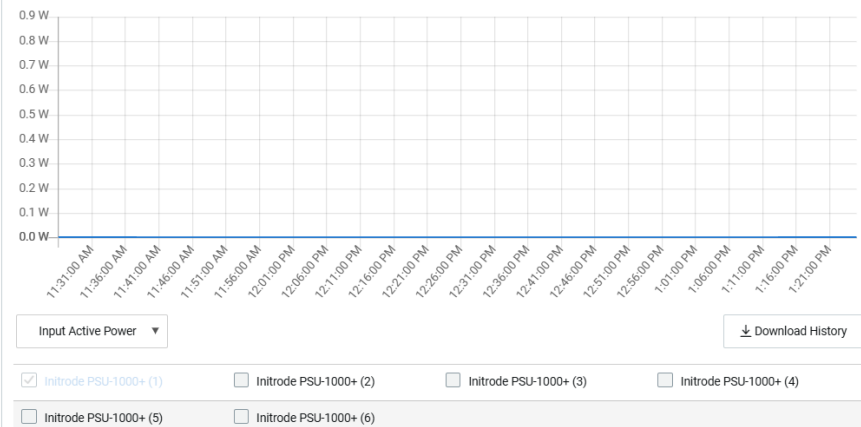
Power Bus

		Actual	⋮
	Sensor ▲	Value	State
	Current	0.000 A	normal
	Voltage	48.00 V	normal
	Power	0 W	normal
	Energy	3 000 Wh	normal

Power Shelf Global AC Sensors

		Actual	:
	Sensor ▲	Value	State
Active Power		2 922 W	normal
Active Energy		3 988 914 Wh	normal
Apparent Power		2 880 VA	normal
Apparent Energy		4 032 765 VAh	normal

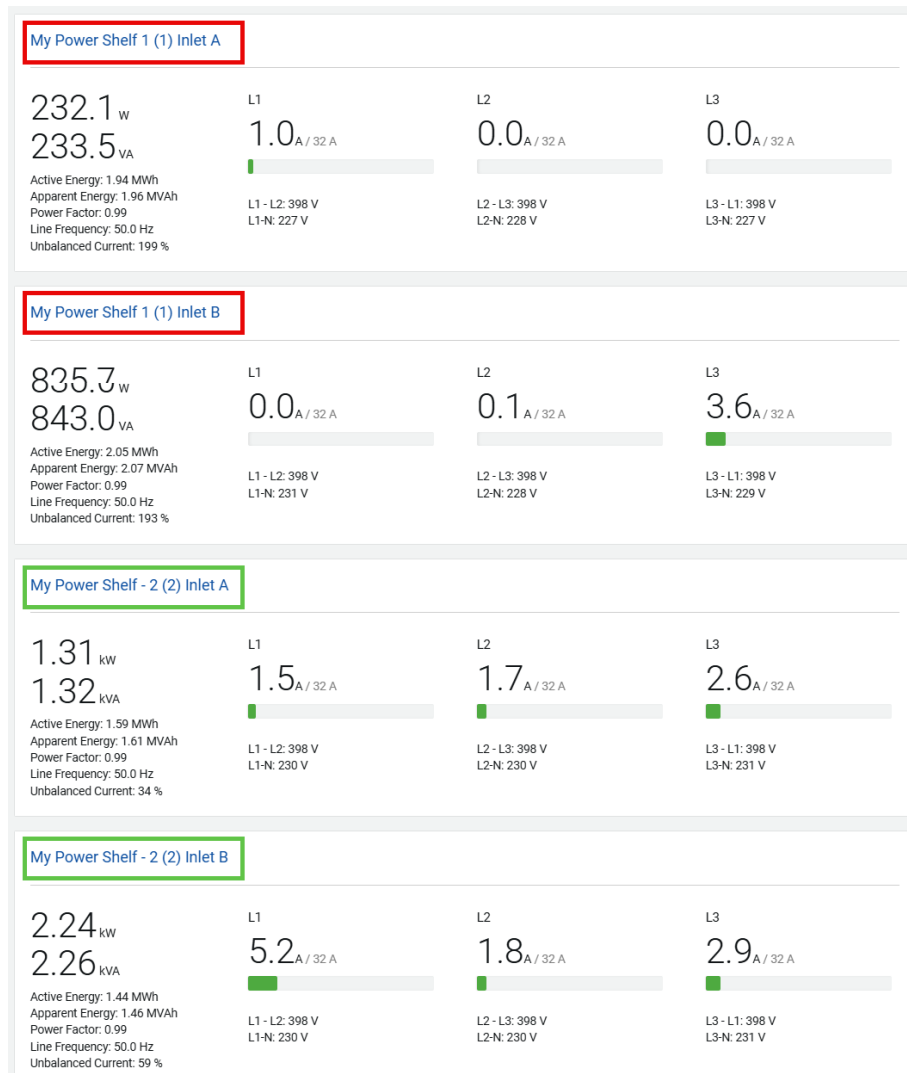
Power Supply Sensor History



► Inlets Page

On the Inlets page, the primary unit and link units are displayed together on the same page.

In this example, data for the single inlet of the primary "My PowerShelf (1)" Inlet A, and the inlet of the link unit "PSU2 (2)" Inlet B, are shown together on the Inlets page.



Viewing Outlets of Primary and Link Units

► Outlets

The Outlets page defaults to display only the outlets of the primary unit.

My Power Shelf 1 (1) Outlets

On Off Cycle

My Power Shelf 1 (1) Inlet A

#▲	Name	Status	RMS Current	Active Power	Power Factor	Crest Factor
1	Outlet 1	on	6.760 A	1 464 W	0.99	1.63
2	Outlet 2	off	0.000 A	0 W	—	1.00
3	Outlet 3	on	1.282 A	304 W	1.00	1.35

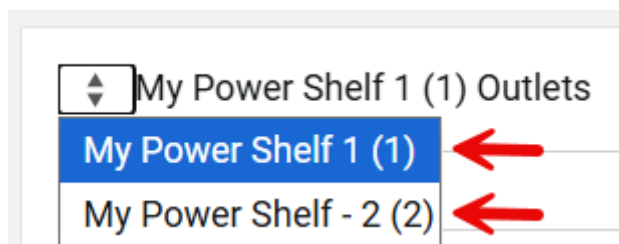
My Power Shelf 1 (1) Inlet B

#▲	Name	Status	RMS Current	Active Power	Power Factor	Crest Factor
4	Outlet 4	off	0.000 A	0 W	—	1.00
5	Outlet 5	on	2.540 A	571 W	0.96	1.48
6	Outlet 6	on	0.557 A	131 W	1.00	1.40

► Viewing Outlets for Link Units

On the Outlets page, use the page control to swap from the primary to the link.

- 1) From the Outlets page drop-down, select the link unit. In this example, "My Power Shelf - 2 (2)" is the link unit. Once selected, the page view updates.



All outlets of the link unit display for viewing and access exactly like the outlets of the primary unit.

My Power Shelf - 2 (2) Outlets

On Off Cycle

My Power Shelf - 2 (2) Inlet A

#▲	Name	Status	RMS Current	Active Power	Power Factor	Crest Factor
1	Outlet 1	on	3.155 A	674 W	0.99	1.56
2	Outlet 2	on	5.879 A	1 346 W	0.98	1.66
3	Outlet 3	on	2.792 A	653 W	1.00	1.50

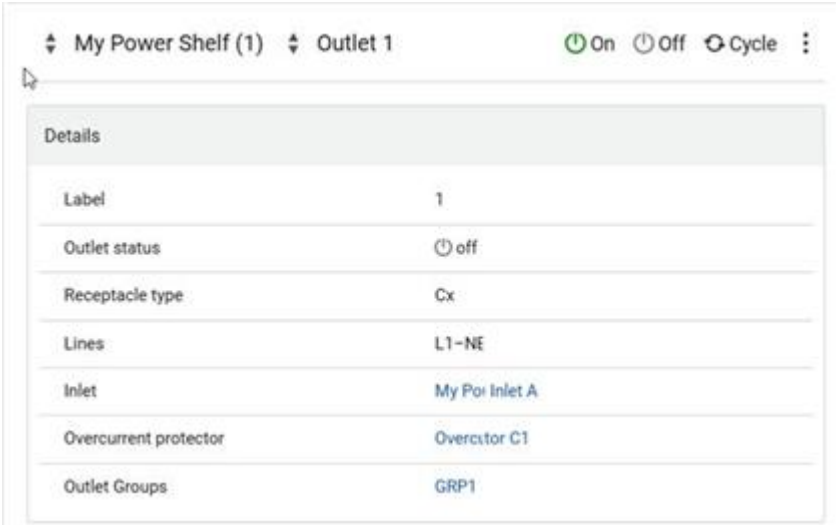
My Power Shelf - 2 (2) Inlet B

#▲	Name	Status	RMS Current	Active Power	Power Factor	Crest Factor
4	Outlet 4	on	3.448 A	747 W	1.00	1.44
5	Outlet 5	on	1.603 A	375 W	0.98	1.51
6	Outlet 6	on	3.991 A	937 W	1.00	1.42

- 2) You can switch back to the primary unit by selecting "My Power Shelf (1)".

Note: The page control is only available when there is at least one link unit in the chain; otherwise, the page defaults to displaying only the outlets of the primary.

- 3) From the Outlets page (either primary or link), select an outlet in the list to view operational details for the specific outlet and to configure outlet settings.



Pairwise Outlet Groups

The Linking feature includes a "pairwise" outlet grouping functionality. This feature automatically creates pairs of outlet groups with matching outlet labels, spanning both primary and link units. Each pair is auto-named and forms an outlet group, enabling centralized control of paired outlets across linked power shelves.

Example: Chain with primary and a single link unit

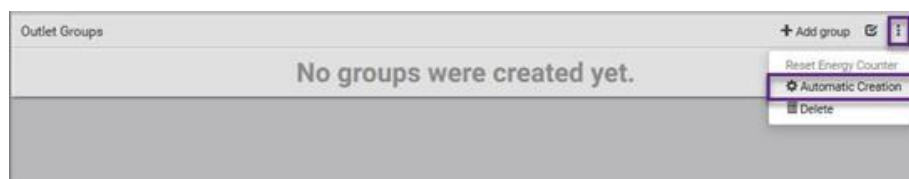
PDU 1 (Primary Unit)	Server Load	PDU 2 (Link Unit)
Outlet 1	Server 1	Outlet 1
Outlet 2	Server 2	Outlet 2
Outlet 3	Server 3	Outlet 3
...	...	...
Outlet 20	Server 20	Outlet 20

In the given scenario, controlling power to a server usually involves switching one outlet on Power Shelf 1 and another on Power Shelf 2. With the pairwise feature, you can streamline this by auto-creating an outlet group named "Outlet Pair 3." This group will automatically include Outlet 1 from Power Shelf 1 (primary) and Outlet 1 from Power Shelf 2 (link), allowing you to manage them as a single unit.

Outlet Groups						+ New Group		On	Off	Cycle	
	#▲	Name	Status	Outlets	Active Power						
☐	1	GRP1	2 x off	PDU 1: 1-2	0 W						
☒	2	Pairwise outletgrp	2 x off	PDU 1: 1 PDU 2: 1	0 W						

Automatically Create Pairwise Outlet Groups

- 1) From the Outlet Groups page, from the drop-down menu  select Automatic Creation.



- 2) Confirm the pairwise creation.

Pairwise Outlet Group Creation

Create outlet groups that contain pairs of outlets with the same label.

Pairwise outlet groups will be created for My PDU (1) and My PDU (2).

Cancel

Create

Pairwise outlet groups are created and named automatically for all outlets on the primary and link unit, such as "Pairwise outletgrp", "Pairwise outletgrp2", etc.

Outlet Groups						+ New Group		On	Off	Cycle	
	#▲	Name	Status	Outlets	Active Power						
	1	GRP1	1 x on 1 x off	PDU 1: 1-2	821 W						
	2	Pairwise outletgrp	2 x on	PDU 1: 1 PDU 2: 1	1 079 W						
	3	Pairwise outletgrp2	1 x on 1 x off	PDU 1: 2 PDU 2: 2	1 600 W						

OCPs Page

Overcurrent protectors from both primary and link units are displayed together on the same Overcurrent Protectors page. If sensors are present on the units, sensor data for both primary and link units will also appear on the page.

#	Name	PDU	Inlet	Status	RMS Current	Protected Outlets	Lines
1	Overcurrent Protector C1	My Power Shelf 1 (1)	My Power Shelf 1 (1) Inlet A	closed	2.074 A / 20A	1	L1, NEUTRAL
2	Overcurrent Protector C2	My Power Shelf 1 (1)	My Power Shelf 1 (1) Inlet A	closed	0.000 A / 20A	2	L2, NEUTRAL
3	Overcurrent Protector C3	My Power Shelf 1 (1)	My Power Shelf 1 (1) Inlet A	closed	1.207 A / 20A	3	L3, NEUTRAL
4	Overcurrent Protector C4	My Power Shelf 1 (1)	My Power Shelf 1 (1) Inlet B	closed	0.000 A / 20A	4	L1, NEUTRAL
5	Overcurrent Protector C5	My Power Shelf 1 (1)	My Power Shelf 1 (1) Inlet B	closed	0.009 A / 20A	5	L2, NEUTRAL
6	Overcurrent Protector C6	My Power Shelf 1 (1)	My Power Shelf 1 (1) Inlet B	closed	1.576 A / 20A	6	L3, NEUTRAL
7	Overcurrent Protector C1	My Power Shelf - 2 (2)	My Power Shelf - 2 (2) Inlet A	closed	3.133 A / 20A	1	L1, NEUTRAL
8	Overcurrent Protector C2	My Power Shelf - 2 (2)	My Power Shelf - 2 (2) Inlet A	closed	5.953 A / 20A	2	L2, NEUTRAL
9	Overcurrent Protector C3	My Power Shelf - 2 (2)	My Power Shelf - 2 (2) Inlet A	closed	2.717 A / 20A	3	L3, NEUTRAL
10	Overcurrent Protector C4	My Power Shelf - 2 (2)	My Power Shelf - 2 (2) Inlet B	closed	3.198 A / 20A	4	L1, NEUTRAL
11	Overcurrent Protector C5	My Power Shelf - 2 (2)	My Power Shelf - 2 (2) Inlet B	closed	1.663 A / 20A	5	L2, NEUTRAL
12	Overcurrent Protector C6	My Power Shelf - 2 (2)	My Power Shelf - 2 (2) Inlet B	closed	0.097 A / 20A	6	L3, NEUTRAL

Peripherals Page - OCP

The Peripherals Page defaults to show the peripheral devices connected to the primary unit. Use the page control to swap to the link unit.

	Reading	Minimum	Maximum	State	Type	Serial Number	Position	Actuator
☐ 1	Hall Effect 1			normal	Magnetic Contact	QLL0000001	Port 1, Chain position 1	
☐ 2	On/Off 1			normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 1	
☐ 3	On/Off 2			normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 2	
☐ 4	On/Off 3			normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 3	
☐ 5	On/Off 4			normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 4	
☐ 6	On/Off 5			normal	Contact Closure	QLL0000001	Port 1, Chain position 1, Channel 5	

Device Information Page

The Device Information page shows the information about connected devices on the Link port. You can see the primary and link units, link port information, and the link port status.

► *To display link port information:*

- 1) Log in to the primary link unit.
- 2) Click Maintenance > Device Information.
- 3) Expand Network section.

Information	
Model	SHF3-3316G2R
Serial number	R1BZ0E7D0F0
Rating	346-415V, 24-32A(2), 28.8-46kVA, 50/60Hz
Firmware version	4.4.0.5-52383
Board ID	1BZ501E923
Board revision	0x00
PDU2-MIB	download
ASSETMANAGEMENT-MIB	download

Network

Outlet Groups

An outlet group is a named collection of selected outlets that can be user-defined. These groups can include outlets from multiple units, such as both primary and link units. Outlet groups enable fast and efficient control actions (On, Off, Power Cycle) across multiple units.

With Linking, outlets from both the primary unit and its link units can be grouped together into the same outlet group. These groups are managed by the primary unit, allowing simultaneous control of multiple outlet groups. Additionally, summary and power energy readings are available for each outlet group, offering centralized and streamlined management.

The Outlet Groups page provides a comprehensive overview of user-defined outlet groups. It displays information such as the group name, outlet state, active power readings, and the outlet labels selected for the group. In the Outlets column, you'll notice that outlets from both primary and link units appear together within a single named group. This demonstrates the "pairwise" functionality, which is explained in greater detail in the following section.

Note: Outlet groups can contain multiple pairs of outlets; the next screen example shows only two outlet pairs in the sample groups.

Click the control arrow  to toggle the outlet group list in ascending or descending order by group number.



Outlet Groups						+ New Group	On	Off	Cycle	
☐	# ▲	Name	Status	Outlets	Active Power					
	1	GRP1	1 x on 1 x off	PDU 1: 1-2	4104V					

► Viewing Outlet Group Details

Click an outlet group name in the list to display operations details for the outlet group. From this page, you can issue the outlet control actions On, Off, and Cycle (power cycling to restore the outlet) for all member outlets in the outlet group. The page also allows editing of the outlet group members and its outlet settings.

Outlet Group 1 - GRP1

On

Off

Cycle

Outlets

Edit Members

#▲	PDU	Outlet	Status	Active Power	
1	My Power Shelf (1)	Outlet 1	Off	0 W	
2	My Power Shelf (1)	Outlet 2	On	326 W	

Sensors

Actual

☐ Sensor▲	Value	State	
Active Power	326 W	normal	
Active Energy	23 Wh	normal	
Apparent Power	338 VA	normal	
Apparent Energy	24 Wh	normal	

► To add an outlet group:

- 1) On the Outlet Groups page, click Add Group. The New Outlet Group page displays, defaulting to the outlets in the primary unit.

New Outlet Group

Group name:

Member outlets: PSU2 (2): 1-6

☐ My Power Shelf (1) ^

☐ Outlet 1 ☐ Outlet 3 ☐ Outlet 5
☐ Outlet 2 ☐ Outlet 4 ☐ Outlet 6

☒ PSU2 (2) ^

☒ Outlet 1 ☒ Outlet 3 ☒ Outlet 5
☒ Outlet 2 ☒ Outlet 4 ☒ Outlet 6

- 2) Type a name for the new outlet group.
- 3) Select individual member outlets for the primary as shown in the default page, or to select all outlets for the primary, select My PowerShell (1).
- 4) To select individual member outlets for the link unit PSU2 (2), click Add Outlets. To select all outlets for the link unit, select PSU2 (2). Note: Link units have to be selected by name to display their outlets.
- 5) Click Save.

The following example shows the outlet group named "TEST 1" with all outlet members 1-6 selected for the link unit.

Controlling OUTlets in Groups

- 1) From the Outlet Groups page, select an outlet group by name.
- 2) Click the desired control: On, Off, or Cycle. This example shows two outlets, one with status On, and one with status Off. When Off is clicked, a prompt appears to confirm applying the action to all outlets in the group.
- 3) Click the Switch button.

Outlet Groups + New Group On Off Cycle ⋮

☒	#▲	Name	Status	Outlets	Active Power
☒	1	GRP1	1 x on 1 x off	PDU 1: 1-2	420 W

- 4) The status of the outlets in the group appears on the Outlets Group page as Off.

Outlet Groups						+ New Group		On	Off	Cycle	
☒	#▲	Name	Status	Outlets	Active Power						
☒	1	GRP1	🕒 2 x off	PDU 1: 1-2	0 W						

Front Panel Displays for Primary and Link Units

Each unit in a Linking chain displays its own data.

► *Primary unit:*

From the following example of the primary unit display, navigate the options for displaying Link unit identification and status, and to confirm the primary unit that is controlling the link unit in the chain.

- Can show alarms, which may be triggered by link units.
- The primary unit information shows a list of link units with host name/IP address, model, device name, serial number, firmware version, and communication status.

► *Link units:*

- No display of alarms/events.
- The display information shows the primary unit's IP address



Linking in the CLI

The CLI is disabled on link units. Access to the link unit via the CLI is available only through the primary CLI. If any link units are configured, the CLI prompt includes the currently selected unit and Link ID, such as My Unit (1) or My Unit (2).

Some commands are not available for link units:

- Authentication settings
- Security settings (login, role-based access control, user blocking, and strong passwords.)
- Server monitor
- User management
- Data logging

Linking CLI Commands

Commands for Linking begin with *pdu*.

► *List the Units in the Linked Chain*

Displays the following information for each unit:

- Link ID
- Communication status (for link unit only)
- Device name
- Model name
- Serial number
- Firmware version

```
# pdu list
```

► *Switch Unit*

Switch between the primary and link units. The Link ID must be 1 (primary) or 2-8 (link units).

```
# pdu [id]
```

► *Add a New Link Unit*

Add a link unit to a primary unit. Only available when ID 1 (primary) is selected. The command can be used to re-establish a connection to an existing link unit if the Link ID and host match exactly. The command requires admin privileges and prompts for the user's password.

```
# pdu link [id] [host] [login]
```

- id: New link ID (IDs 2-8)
- host: Host name or IP address
- login: Name of user with admin privileges

► *Release a Link Unit*

Release a link unit from a chain until the unit becomes standalone. The primary unit does not have access to a released link unit. The command is only available when ID 1 (primary) is selected. The command requires admin privileges, and prompts for confirmation unless the "/y" is specified.

```
# pdu release [id] {/y}
```

- id: Link ID of the unit to be released (IDs 2-8).

► *Setup Linking with a Connected Link Port Neighbor:*

Supported only on models with Link Port.

After physically connecting a Primary and Expansion Units at the Link Port, use this command to automatically create a linked configuration. This command can be used instead of the front panel display when connecting supported PDUs at the Link Port.

```
# linkport link
```

► *Show Link Port Status*

Supported only on models with Link Port.

Show the status of the link port. This command shows whether or not the link port is up, and if so, shows the neighbor address and whether it's linked.

```
# show linkport
```

► *Reset to Factory Defaults:*

You can reset the primary and all expansion units to factory default settings with a CLI command.

```
# reset factorydefaults all
```

Using SNMP

This SNMP section guides you in configuring Legrand Power Shelf for integration with an SNMP manager. Legrand Power Shelf can be set up to send traps or informs to the SNMP manager, enabling real-time notifications. Additionally, it can receive GET and SET commands to retrieve status updates and adjust basic settings efficiently.

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Enabling and Configuring SNMP

To enable communication with an SNMP manager, you must activate SNMP protocols on Legrand Power Shelf. By default, SNMP functionality is disabled.

SNMP v3 protocol supports encrypted communication to enhance security. To utilize this feature, configure users with SNMP v3 access permissions and specify both an Authentication Pass Phrase and a Privacy Pass Phrase. These pass phrases serve as shared secrets between SNMP and Legrand Power Shelf, ensuring secure communication.

Important: You must download the SNMP MIB for your Legrand Power Shelf to use with your SNMP manager.

► *To enable SNMP v1/v2c and/or v3 protocols:*

- 1) Choose Device Settings > Network Services > SNMP.
- 2) In the SNMP Agent section, enable SNMP v1/v2c or SNMP v3, and configure related fields, such as the community strings.
 - If SNMP v3 is enabled, you must determine which users shall have the SNMP v3 access permission.

► *To configure users for SNMP v3 access:*

- 1) Choose User Management > Users.
- 2) Create or modify users to enable their SNMP v3 access permission.
 - If authentication and privacy is enabled, configure the SNMP password(s) in the user settings.

SNMPv3 Notifications

- 1) Choose Device Settings > Network Services > SNMP.
- 2) In the SNMP Agent, make sure the Enable SNMP v1/v2c checkbox is selected.
- 3) In the SNMP Notifications section, make sure the 'Enable SNMP notifications' checkbox is selected.

SNMP Notifications

Enable SNMP notifications

☒

Notification type

SNMPv3 inform ▼

Host

required

Port

162

User ID

required

Timeout

3

s

Number of retries

5

Security level

authPriv ▼

Authentication protocol

SHA ▼

Authentication passphrase

required

Confirm authentication passphrase

Privacy protocol

AES ▼

Privacy passphrase

required

Confirm privacy passphrase

- 4) Select 'SNMPv3 trap' or 'SNMPv3 inform' as the notification type.
- 5) For SNMP TRAPs, the engine ID is prepopulated.
- 6) Type values in the following fields.

Field	Description
Host	The IP address of the device(s) you want to access. This is the address to which notifications are sent by the SNMP agent.
Port	The port number used to access the device(s).
User ID	User name for accessing the device. Make sure the user has the SNMP v3 access permission.
Timeout	The interval of time, in seconds, after which a new inform communication is resent if the first is not received. For example, resend a new inform communication once every 3 seconds.
Number of retries	Specify the number of times you want to resend the inform communication if it fails. For example, inform communications are resent up to 5 times when the initial communication fails.

Field	Description
Security level	Three types are available. • noAuthNoPriv - neither authentication nor privacy protocols are needed. • authNoPriv - only authentication is required. • authPriv - both authentication and privacy protocols are required.
Authentication protocol, Authentication passphrase, Confirm authentication passphrase	The three fields are available when the security level is set to AuthNoPriv or authPriv. • Select the authentication protocol - MD5 or SHA • Enter the authentication passphrase
Privacy protocol, Privacy passphrase, Confirm privacy passphrase	The three fields are available when the security level is set to authPriv. • Select the Privacy Protocol - DES or AES • Enter the privacy passphrase and then confirm the privacy passphrase

7) Click Save.

SNMPv2c Notifications

- 1) Choose Device Settings > Network Services > SNMP.
- 2) In the SNMP Agent, make sure the Enable SNMP v1/v2c checkbox is selected.
- 3) In the SNMP Notifications section, make sure the 'Enable SNMP notifications' checkbox is selected.

SNMP Notifications

Enable SNMP notifications ☒

Notification type: SNMPv2c inform

Timeout: 3 s

Number of retries: 5

#	Host	Port	Community
1		162	
2		162	
3		162	

- 4) Select 'SNMPv2c trap' or 'SNMPv2c inform' as the notification type.
- 5) Type values in the following fields.

Field	Description
Timeout	The interval of time, in seconds, after which a new inform communication is resent if the first is not received. For example, resend a new inform communication once every 3 seconds.
Number of retries	The number of times you want to resend the inform communication if it fails. For example, inform communications are resent up to 5 times when the initial communication fails.
Host	The IP address of the device(s) you want to access. This is the address to which notifications are sent by the SNMP agent. You can specify up to 3 SNMP destinations.
Port	The port number used to access the device(s).
Community	The SNMP community string to access the device(s). The community is the group representing the Legrand Power Shelf and all SNMP management stations.

6) Click Save.

Downloading SNMP MIB

You must download an appropriate SNMP MIB file for successful SNMP communications. Always use the latest SNMP MIB downloaded from the current firmware of your Legrand Power Shelf.

You can download the MIBs from two different pages of the web interface.

► *MIB download via the SNMP page:*

- 1) Choose Device Settings > Network Services > SNMP.
- 2) Click the Download MIBs title bar.



- 3) Select the desired MIB file to download.
 - PDU2-MIB: The SNMP MIB file for Legrand Power Shelf management.
 - ASSETMANAGEMENT-MIB: The SNMP MIB file for asset management.
- 4) Click Save to save the file onto your computer.

► *MIB download via the Device Information page:*

- 1) Choose Maintenance > Device Information.
- 2) In the Information section, click the desired download link:
 - PDU2-MIB
 - ASSETMANAGEMENT-MIB
- 3) Click Save to save the file onto your computer.

SNMP Gets and Sets

In addition to sending notifications, the Legrand Power Shelf is able to receive SNMP get and set requests from third-party SNMP managers.

- Get requests are used to retrieve information about the Legrand Power Shelf, such as the system location, and the current on a specific outlet.
- Set requests are used to configure a subset of the information, such as the SNMP system name.

Note: The SNMP system name is the Legrand Power Shelf device name. When you change the SNMP system name, the device name shown in the web interface is also changed.

The Legrand Power Shelf does NOT support configuring IPv6-related parameters using the SNMP set requests.

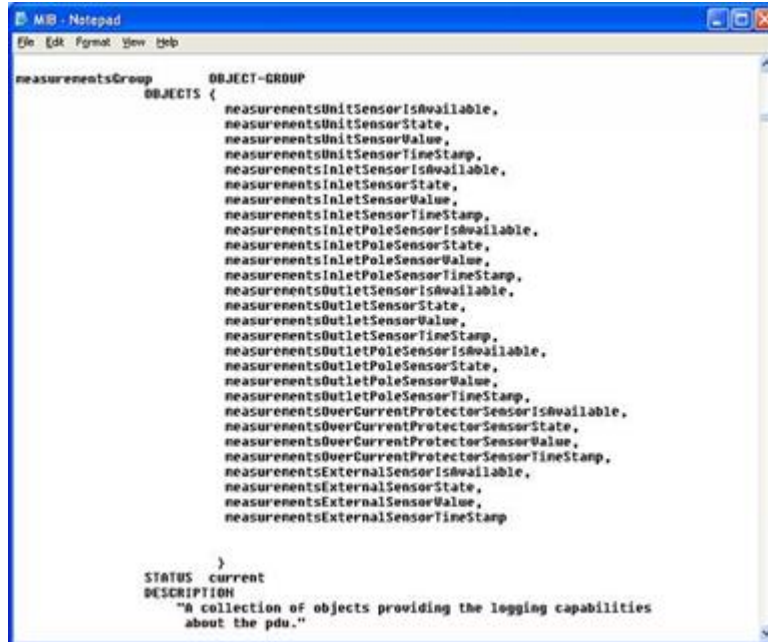
Valid objects for these requests are limited to those found in the SNMP MIB-II System Group and the custom Legrand Power Shelf MIB.

The MIB File

An SNMP MIB file describes the SNMP functions.

Opening the MIB reveals the custom objects that describe the Legrand Power Shelf system at the unit level as well as at the individual-outlet level.

As standard, these objects are first presented at the beginning of the file, listed under their parent group. The objects then appear again individually, defined and described in detail.



For example, the measurementsGroup group contains objects for sensor readings of Legrand Power Shelf as a whole. One object listed under this group, measurementsUnitSensorValue, is described later in the MIB as "The sensor value". pduRatedCurrent, part of the configGroup group, describes the PDU current rating.

SNMP Sets and Thresholds

Some objects can be configured from the SNMP manager using SNMP set commands. Objects that can be configured have a MAX-ACCESS level of "read-write" in the MIB.

These objects include threshold objects, which cause the Legrand Power Shelf to generate a warning and send an SNMP notification when certain parameters are exceeded. See Sensor Threshold Settings for a description of how thresholds work.

Note: When configuring the thresholds via SNMP set commands, ensure the value of upper critical threshold is higher than that of upper warning threshold.

Configuring NTP Server Settings

Using SNMP, you can change the following NTP server-related settings in the unitConfigurationTable:

- Enable or disable synchronization of the device's date and time with NTP servers (synchronizeWithNTPServer)
- Enable or disable the use of DHCP-assigned NTP servers if synchronization with NTP servers is enabled (useDHCPProvidedNTPServer)
- Manually assign the primary NTP server if the use of DHCP-assigned NTP servers is disabled (firstNTPServerAddressType and firstNTPServerAddress)
- Manually assign the secondary NTP server (optional) (secondNTPServerAddressType and secondNTPServerAddress)

Tip: To specify the time zone, use the CLI or web interface instead.

When using the SNMP SET command to specify or change NTP servers, it is required that both the NTP server's address type and address be set in the command line simultaneously.

For example, the SNMP command to change the primary NTP server's address from IPv4 (192.168.84.84) to host name looks similar to the following:

```
snmpset -v2c -c private 192.168.84.84 firstNTPServerAddressType = dns  
firstNTPServerAddress = "angu.pep.com"
```

Retrieving Energy Usage

You can discover how much energy an IT device consumes by retrieving the Active Energy for the outlet this IT device is plugged into. The Active Energy values are included in the outletSensorMeasurementsTable, along with other outlet sensor readings.

Using the Command Line Interface

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Logging into CLI

With HyperTerminal

You can use any terminal emulation programs for local access to the command line interface.

This section illustrates HyperTerminal, which is part of Windows operating systems prior to Windows Vista.

► To log in using HyperTerminal:

- 1) Connect your computer to the product via a local connection.
- 2) Launch HyperTerminal on your computer and open a console window. When the window first opens, it is blank.

Make sure the COM port settings use this configuration:

- Bits per second = 115200 (115.2Kbps)
- Data bits = 8
- Stop bits = 1
- Parity = None
- Flow control = None

Tip: For a USB connection, you can determine the COM port by choosing Control Panel > System > Hardware > Device Manager, and locating the "Device Serial Console" under the Ports group.

- 3) In the communications program, press Enter to send a carriage return to the Legrand Power Shelf. The Username prompt appears.
- 4) Type a name and press Enter. The name is case sensitive. Then you are prompted to enter a password.
- 5) Type a password and press Enter. The password is case sensitive.

After properly entering the password, the Legrand Power Shelf name appears at the prompt.

Tip: The 'Last login' information, including the date and time, is also displayed if the same user account was used to log in to this product's web interface or CLI.

6) You are now logged in to the command line interface and can begin using commands.

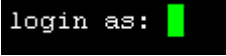
With SSH or Telnet

You can remotely log in to the command line interface (CLI) using an SSH or Telnet client, such as PuTTY.

Note: PuTTY is a free program you can download from the Internet. Refer to PuTTY's documentation for details on configuration.

► To log in using SSH or Telnet:

- 1) Ensure SSH or Telnet has been enabled.
- 2) Launch an SSH or Telnet client and open a console window. A login prompt appears.

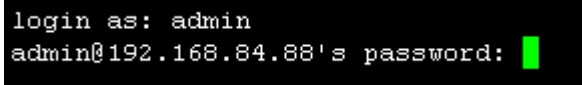


```
login as: █
```

- 3) Type a name and press Enter. The name is case sensitive.

Note: If using the SSH client, the name must NOT exceed 25 characters. Otherwise, the login fails.

Then you are prompted to enter a password.



```
login as: admin
admin@192.168.84.88's password: █
```

- 4) Type a password and press Enter. The password is case sensitive.
- 5) After properly entering the password, the Legrand Power Shelf name appears at the prompt.

Tip: The 'Last login' information, including the date and time, is also displayed if the same user account was used to log in to this product's web interface or CLI.

6) You are now logged in to the command line interface and can begin administering this product.

Different CLI Modes and Prompts

Depending on the login name you use and the mode you enter, the system prompt in the CLI varies. The device name appears with the prompt.

- **User Mode:** When you log in as a normal user, who may not have full permissions to configure the Legrand Power Shelf, the > prompt appears.
- **Administrator Mode:** When you log in as an administrator, who has full permissions to configure the Legrand Power Shelf, the # prompt appears.
- **Configuration Mode:** You can enter the configuration mode from the administrator or user mode. In this mode, the prompt changes to config:# or config:> and you can change Legrand Power Shelf device and network configurations. See *Configuring the Device and Network*.
- **Diagnostic Mode:** You can enter the diagnostic mode from the administrator or user mode. In this mode, the prompt changes to diag:# or diag:> and you can perform the network troubleshooting commands, such as the ping command. See *Network Troubleshooting in Diagnostic Mode*.

Closing a Local Connection

Close the window or terminal emulation program when you finish accessing the Legrand Power Shelf over the local connection.

When accessing or upgrading multiple Legrand Power Shelf devices, do not transfer the local connection cable from one device to another without closing the local connection window first.

Logging out of CLI

After completing your tasks using the CLI, always log out of the CLI to prevent others from accessing the CLI.

► *To log out of the CLI:*

- 1) Ensure you have entered administrator mode and the # prompt is displayed.
- 2) Type `exit` and press Enter.

Unblocking User

Once user is blocked, you can unblock the user via command line interface (CLI).

► *To Unblock User:*

- 1) Ensure you are logged in as administrator and the # prompt is displayed.
- 2) Type `unblock admin` and press Enter.

```
[My PDU] # unblock tester
User 'tester' was unblocked successfully.
[My PDU] #
```

Tips for Using the CLI

The ? Command for Showing Available Commands

When you are not familiar with CLI commands, you can press the ? key at anytime for one of the following purposes.

- Show a list of main CLI commands available in the current mode.
- Show a list of available commands or parameters for the command you type.

► In the administrator mode:

```
# ?
```

► In the configuration mode:

```
config:# ?
```

► In the diagnostic mode:

```
diag:# ?
```

Press Enter after pressing the ? command, and a list of main commands for the current mode is displayed.

Querying Available Parameters for a Command

If you are not sure what commands or parameters are available for a particular type of CLI command or its syntax, you can have the CLI show them by adding a space and the help command (?) or list command (ls) to the end of that command. A list of available parameters and their descriptions will be displayed.

The following shows a few query examples.

► To query available parameters for the "show" command:

```
# show ?
```

- *To query available parameters for the "show user" command:*

```
# show user ?
```

- *To query available role configuration parameters:*

```
config:# role ?
```

- *To query available parameters for the "role create" command:*

```
config:# role create ?
```

Retrieving Previous Commands

If you would like to retrieve any command that was previously typed in the same connection session, press the Up arrow () on the keyboard several times until the desired command is displayed.

Automatically Completing a Command

A CLI command always consists of several words. You can easily enter a command by typing first word(s) or letter(s) and then pressing Tab or Ctrl+i instead of typing the whole command word by word.

- *To have a command completed automatically:*

- 1) Type initial letters or words of the desired command. Make sure the letters or words you typed are unique so that the CLI can identify the command you want.
- 2) Press Tab or Ctrl+i until the complete command appears.
- 3) If there are more than one possible commands, a list of these commands is displayed. Then type the full command.

- *Examples:*

- Example 1 (only one possible command):
 - a. Type the first word and the first letter of the second word of the "reset factorydefaults" command -- that is, reset f.
 - b. Then press Tab or Ctrl+i to complete the second word.
- Example 2 (only one possible command):
 - a. Type the first word and initial letters of the second word of the "security strongPasswords" command -- that is, security str.
 - b. Then press Tab or Ctrl+i to complete the second word.
- Example 3 (more than one possible commands):

- a. Type only the first two words of the "network ipv4 gateway xxx.xxx.xxx.xxx" command -- that is, network ipv4.
 - b. Then press Tab or Ctrl+i one or two times, a list of possible commands displays as shown below.
- ```
gateway interface staticRoutes
```
- c. Type the full command "network ipv4 gateway xxx.xxx.xxx.xxx", according to the onscreen command list.

## Multi-Command Syntax

To shorten the configuration time, you can combine various configuration commands in one command to perform all of them at a time. All combined commands must belong to the same configuration type, such as commands prefixed with *network*, *user modify*, *sensor externalsensor* and so on.

A multi-command syntax looks like this:

```
<configuration type> <setting 1> <value 1> <setting 2> <value 2>
<setting 3> <value 3> ...
```

### ► Example 1 - Combination of ETH1's Activation, Configuration Method and IP

The following multi-command syntax configures IPv4 address, configuration method and activation status for ETH1's network connectivity simultaneously.

```
config:# network ipv4 interface eth1 enabled true configMethod static
 address 192.168.84.225/24
```

*Results:*

- The ETH1 interface is enabled.
- ETH1's configuration method is set to static IP address.
- ETH1's IPv4 address is set to 192.168.84.225/24.

### ► Example 2 - Combination of Upper Critical and Upper Warning Settings

The following multi-command syntax simultaneously configures Upper Critical and Upper Warning thresholds for the RMS current of the 2nd overcurrent protector.

```
config:# sensor ocp 2 current upperCritical disable upperWarning 15
```

*Results:*

- The Upper Critical threshold of the 2nd overcurrent protector's RMS current is disabled.
- The Upper Warning threshold of the 2nd overcurrent protector's RMS current is set to 15A and enabled at the same time.

► *Example 3 - Combination of SSID and PSK Parameters*

This multi-command syntax configures both SSID and PSK parameters simultaneously for the wireless feature.

```
config:# network wireless SSID myssid PSK encryp_key
```

*Results:*

- The SSID value is set to myssid.
- The PSK value is set to encryp\_key.

► *Example 4 - Combination of Upper Critical, Upper Warning and Lower Warning Settings*

The following multi-command syntax configures Upper Critical, Upper Warning and Lower Warning thresholds for the outlet 5 RMS current simultaneously.

```
config:# sensor outlet 5 current upperCritical disable upperWarning enable
 lowerWarning 1.0
```

*Results:*

- The Upper Critical threshold of outlet 5 RMS current is disabled.
- The Upper Warning threshold of outlet 5 RMS current is enabled.
- The Lower Warning threshold of outlet 5 RMS current is set to 1.0A and enabled at the same time.

## Showing Information

You can use the show commands to view current settings or the status of the Legrand Power Shelf device or part of it, such as the IP address, networking mode, firmware version, states or readings of internal or external sensors, user profiles, and so on.

Some "show" commands have two formats: one with the parameter "details" and the other without. The difference is that the command without the parameter "details" displays a shortened version of information while the other displays in-depth information.

## Actuator Information

This command syntax shows an actuator's information.

```
show actuators <n>
```

To show detailed information, add the parameter "details" to the end of the command.

```
show actuators <n> details
```

Variables:

- <n> is one of the options: *all*, or a number.

| Option                      | Description                                                                                                                                                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| all                         | Displays the information for all actuators.<br><hr/> <b>Tip:</b> You can also type the command without adding this option "all" to get the same data. <hr/> |
| A specific actuator number* | Displays the information for the specified actuator only.                                                                                                   |

\* The actuator number is the ID number assigned to the actuator. The ID number can be found using the Legrand Power Shelf web interface or CLI. It is an integer starting at 1.

*Displayed information:*

- Without the parameter "details," only the actuator ID, type and state are displayed.
- With the parameter "details," more information is displayed in addition to the ID number and actuator state, such as the serial number and X, Y, and Z coordinates.

## Asset Strip Settings

This command shows the asset strip settings, such as the total number of rack units (tag ports), asset strip state, numbering mode, orientation, available tags and LED color settings.

```
show assetStrip <n>
```

Variables:

- <n> is one of the options: *all*, or a number.

| Option | Description                                                                                                                                           |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| all    | Displays all asset strip information.<br><hr/> <b>Tip:</b> You can also type the command without adding this option "all" to get the same data. <hr/> |

| Option                        | Description                                                                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A specific asset strip number | Displays the settings of the asset strip connected to the specified FEATURE port number.<br><br>For the Legrand Power Shelf device with only one FEATURE port, the valid number is always 1. |

## Authentication Settings

### ► *General authentication settings:*

This command displays the authentication settings of the Legrand Power Shelf, including LDAP, Radius, and TACACS+ settings.

```
show authentication
```

### ► *One LDAP server's settings:*

To show the configuration of a specific LDAP server, assign the desired LDAP server with its sequential number in the command. To get detailed information, add "details" to the end of the command.

```
show authentication ldapServer <server_num>
```

-- OR --

```
show authentication ldapServer <server_num> details
```

### ► *One Radius server's settings:*

To show the configuration of a specific Radius server, assign the desired Radius server with its sequential number in the command. To get detailed information, add "details" to the end of the command.

```
show authentication radiusServer <server_num>
```

-- OR --

```
show authentication radiusServer <server_num> details
```

► *One TACACS+ server's settings:*

To show the configuration of a specific TACACS+ server, assign the desired TACACS+ server with its sequential number in the command. To get detailed information, add "details" to the end of the command.

```
show authentication tacplusServer <server_num>
```

-- OR--

```
show authentication tacplusServer <server_num> details
```

*Variables:*

- <server\_num> is the sequential number of the specified authentication server on the LDAP or Radius or TACACS+ server list.

*Displayed information:*

- Without specifying any server, Legrand Power Shelf shows the authentication type and a list of LDAP, Radius, and TACACS+ servers that have been configured.
- When specifying a server, only that server's configuration is displayed. For LDAP server IP address/hostname, server type, security, and port number are displayed, whereas Radius or TACACS+ servers show their IP address/host name Authentication type and Port/s.

With the parameter "details" added, detailed information of the specified server is displayed, such as an LDAP server's bind DN and the login name attribute. Whereas Radius and TACACS+ servers show accounting, timeout, retries, and shared secret values.

## Blade Slot

This command shows the blade extension information, such as number of blade extensions connected to the rack unit on the asset strip.

```
show bladeSlot [<assetstrip>] [<rackunit>]
 [<bladeslot>]
```

- assetstrip Asset strip index (1..99) [1]
- rackunit Rack unit index (1..99) [1]
- bladeslot Blade slot index (1..99 or all) [all]

## Default Thresholds

This command shows the thresholds of the different sensors on the Legrand Power Shelf.

```
show defaultThresholds
```

To show detailed information, add the parameter "details" to the end of the command.

```
show defaultThresholds details
```

---

Note: Range will be displayed if details is specified.

---

## Disconnected Peripherals

This command shows the lists of peripheral devices that are assigned, but currently absent on the Legrand Power Shelf.

```
show disconnectedperipherals
```

## Event Log

The command used to show the event log begins with `show eventlog`. You can add either the *limit* or *class* parameters or both to show specific events.

- *Show the last 30 entries:*

```
show eventlog
```

- *Show a specific number of last entries in the event log:*

```
show eventlog limit <n>
```

- *Show a specific type of events only:*

```
show eventlog class <event_type>
```

- *Show a specific number of last entries associated with a specific type of events only:*

```
show eventlog limit <n> class <event_type>
```

*Variables:*

- <n> is one of the options: *all* or a number.

| Option | Description                            |
|--------|----------------------------------------|
| all    | Displays all entries in the event log. |

| Option            | Description                                                                                            |
|-------------------|--------------------------------------------------------------------------------------------------------|
| An integer number | Displays the specified number of last entries in the event log. The number ranges between 1 to 10,000. |

- <event\_type> is one of the following event types.

| Event type         | Description                                                                          |
|--------------------|--------------------------------------------------------------------------------------|
| all                | All events.                                                                          |
| device             | Device-related events, such as system starting or firmware upgrade event.            |
| userAdministration | User management events, such as a new user profile or a new role.                    |
| userActivity       | User activities, such as login or logout.                                            |
| sensor             | Internal or external sensor events, such as state changes of any sensors.            |
| serverMonitor      | Server-monitoring records, such as a server being declared reachable or unreachable. |
| assetManagement    | Asset management events, such as asset tag connections or disconnections.            |
| modem              | Modem-related events.                                                                |
| timerEvent         | Scheduled action events.                                                             |
| webcam             | Events for webcam management, if available.                                          |
| cardReader         | Events for card reader management, if available.                                     |

## Environmental Sensor Threshold Information

This command syntax shows the specified environmental sensor's threshold-related information.

```
show sensor externalsensor <n>
```

To show detailed information, add the parameter "details" to the end of the command.

```
show sensor externalsensor <n> details
```

```

External sensor 1 (Temperature):
Reading: 22.6 deg C
State: normal

Active Thresholds: Default thresholds

Default Thresholds for Temperature sensors:
Lower critical threshold: 10.0 deg C
Lower warning threshold: 15.0 deg C
Upper warning threshold: 30.0 deg C
Upper critical threshold: 35.0 deg C
Deassertion hysteresis: 1.0 deg C
Assertion timeout: 0 samples

Sensor Specific Thresholds:
Lower critical threshold: 10.0 deg C
Lower warning threshold: 15.0 deg C
Upper warning threshold: 30.0 deg C
Upper critical threshold: 35.0 deg C
Deassertion hysteresis: 1.0 deg C
Assertion timeout: 0 samples

```

#### Variables:

- <n> is the environmental sensor number. The environmental sensor number is the ID number assigned to the sensor, which can be found on the Peripherals page of the Legrand Power Shelf web interface.

#### Displayed information:

- Without the parameter "details," only the reading, threshold, deassertion hysteresis and assertion timeout settings of the specified environmental sensor are displayed.
- With the parameter "details," more sensor information is displayed, including resolution and range.

---

Note: For a state sensor, the threshold-related and accuracy-related data is NOT available.

---

## History

This command shows the command history for current connection session.

```
show history
```

*Displayed information:*

- A list of commands that were previously entered in the current session is displayed.

## Inlet Information

This command syntax shows the inlet information.

```
show inlets <n>
```

To show detailed information, add the parameter "details" to the end of the command.

```
show inlets <n> details
```

*Variables:*

- <n> is one of the options: *all*, or a number, or a label.

| Option                  | Description                                                                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| all                     | Displays the information for all inlets.<br><hr/> <b>Tip:</b> You can also type the command without adding this option "all" to get the same data. <hr/> |
| A specific inlet number | Displays the information for the specified inlet only.<br>An inlet number needs to be specified only when there are more than 1 inlet on your PDU.       |

*Displayed information:*

- Without the parameter "details," only the inlet's name and RMS current are displayed.
- With the parameter "details," more inlet information is displayed in addition to the inlet name and RMS current, such as the inlet's RMS voltage, active power, active energy, plug type, rated current and operating voltage.

## Linking

This command syntax shows the PDU linking settings

```
show linking
```

## Network

This command shows all network configuration and all network interfaces' information, such as the IP address, MAC address, the Ethernet interfaces' duplex mode, and the wireless interface's status/settings.

```
show network
```

## Network Diagnostics

This command shows the network diagnostics (Wi-Fi/802.1x) log.

```
show network diagLog limit <limit>
```

*Variable:*

- <limit> Number of log lines to display (1..10000 or all)

## IP Configuration

This command shows the IP settings shared by all network interfaces, such as DNS and routes. Information shown will include both IPv4 and IPv6 configuration.

```
show network ip common
```

To show the IP settings of a specific network interface, use the following command.

```
show network ip interface <ETH>
```

*Variables:*

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                  |
|-----------|--------------------------------------------------------------|
| eth1      | Show the IP-related configuration of the ETH1 interface.     |
| eth2      | Show the IP-related configuration of the ETH2 interface.     |
| wireless  | Show the IP-related configuration of the WIRELESS interface. |
| bridge    | Show the IP-related configuration of the BRIDGE interface.   |

| Interface | Description                                                                                                                           |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------|
| all       | Show the IP-related configuration of all interfaces.                                                                                  |
|           | Tip: You can also type the command without adding this option "all" to get the same data. That is, <i>show network ip interface</i> . |

## IPv4-Only or IPv6-Only Configuration

To show IPv4-only or IPv6-only configuration, use any of the following commands.

- To show IPv4 settings shared by all network interfaces, such as DNS and routes:

```
show network ipv4 common
```

- To show IPv6 settings shared by all network interfaces, such as DNS and routes:

```
show network ipv6 common
```

- To show the IPv4 configuration of a specific network interface:

```
show network ipv4 interface <ETH>
```

- To show the IPv6 configuration of a specific network interface:

```
show network ipv6 interface <ETH>
```

Variables:

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                |
|-----------|------------------------------------------------------------|
| eth1      | Show the IPv4 or IPv6 configuration of the ETH1 interface. |

| Interface | Description                                                                                                                                                                                                   |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| eth2      | Show the IPv4 or IPv6 configuration of the ETH2 interface.                                                                                                                                                    |
| wireless  | Show the IPv4 or IPv6 configuration of the WIRELESS interface.                                                                                                                                                |
| bridge    | Show the IPv4 or IPv6 configuration of the BRIDGE interface.                                                                                                                                                  |
| all       | Show the IPv4 or IPv6 configuration of all interfaces.<br><hr/> Tip: You can also type the command without adding this option "all" to get the same data. That is, <i>show network ipv4 interface</i> . <hr/> |

## Network Diagnostics

### ► *Show network diagnostics log:*

This command shows the network diagnostics (Wi-Fi/802.1x) log.

```
show network diagLog
```

### ► *Clear network diagnostics log:*

This command clear the network diagnostics log.

```
clear networkDiagLog
```

## Network Interface Settings

This command shows the specified network interface's information which is NOT related to IP configuration. For example, the Ethernet port's LAN interface speed and duplex mode, or the wireless interface's SSID parameter and authentication protocol.

```
show network interface <ETH>
```

*Variables:*

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                                                                                                                                             |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| eth1      | Show the ETH1 interface's non-IP settings.                                                                                                                                                              |
| eth2      | Show the ETH2 interface's non-IP settings.                                                                                                                                                              |
| wireless  | Show the WIRELESS interface's non-IP settings.                                                                                                                                                          |
| bridge    | Show the BRIDGE interface's non-IP settings.                                                                                                                                                            |
| all       | Show the non-IP settings of all interfaces.<br><hr/> <div>Tip: You can also type the command without adding this option "all" to get the same data. That is, <i>show network interface</i>.</div> <hr/> |

## Network Service Settings

This command shows the network service settings only, including the Telnet setting, TCP ports for HTTP, HTTPS, SSH and Modbus/TCP services, and SNMP settings.

```
show network services <option>
```

*Variables:*

- <option> is one of the options: *all, http, https, modbus, redfish, ssh, snmp, syslog, telnet* and *zeroconfig*.

| Option | Description                                                                                                                                                                                                     |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| all    | Displays the settings of all network services, including HTTP, HTTPS, Telnet, SSH and SNMP.<br><hr/> <div>Tip: You can also type the command without adding this option "all" to get the same data.</div> <hr/> |
| http   | Only displays the TCP port for the HTTP service.                                                                                                                                                                |
| https  | Only displays the TCP port for the HTTPS service.                                                                                                                                                               |
| telnet | Only displays the settings of the Telnet service.                                                                                                                                                               |
| ssh    | Only displays the settings of the SSH service.                                                                                                                                                                  |
| snmp   | Only displays the SNMP settings.                                                                                                                                                                                |

| Option     | Description                                                       |
|------------|-------------------------------------------------------------------|
| syslog     | Only displays the Syslog settings.                                |
| modbus     | Only displays the settings of the Modbus/TCP service.             |
| redfish    | Only displays the redfish service settings.                       |
| zeroconfig | Only displays the settings of the zero configuration advertising. |

## Pdu

This command shows Legrand Power Shelf information, including model and firmware version.

```
show pdu
```

To show detailed information, add the parameter "details" to the end of the command.

```
show pdu details
```

With the parameter "details," more inlet information is displayed in addition to the model name and firmware version, such as the serial number, board revision, active power and energy, power status, sensor data and log capacity.

## Peripheral Device Packages

This command shows the Legrand Power Shelf attached peripheral device package information. the following command shows the information of all connected environmental peripheral device packages, each of which may contain more than one sensor or actuator.

```
show peripheralDevicePackages
```

Peripheral Device Package 1

Serial Number: QLL0000001

Package Type: DX-D2C6

Position: Port 1, Chain Position 1

Package State: operational

Firmware Version: 0x40

Peripheral Device Package 2

Serial Number: QLL0000002

Package Type: DX-D2C6

Position: Port 1, Chain Position 2

Package State: operational

Firmware Version: 0x40

## Peripheral Devices Settings

This command shows peripheral devices settings, including Z coordinate format of external sensors, device altitude, peripheral device auto management, maximum number of concurrently active powered dry contacts, and muting of other door handle.

```
show peripheralDevicesSetup
```

## Power Supply

This command shows state of all six power supply units.

```
show powersupply
```

## Rack Unit Settings of an Asset Strip

A rack unit refers to a tag port on the asset strips. This command shows the settings of a specific rack unit or all rack units on an asset strip, such as a rack unit's LED color and LED mode.

```
show rackUnit <n> <rack_unit>
```

*Variables:*

- <n> is the number of the FEATURE port where the selected asset strip is physically connected. For the Legrand Power Shelf device with only one FEATURE port, the number is always 1.
- <rack\_unit> is one of the options: *all* or a specific rack unit's index number.

| Option | Description                                                                               |
|--------|-------------------------------------------------------------------------------------------|
| all    | Displays the settings of all rack units on the specified asset strip.                     |
|        | Tip: You can also type the command without adding this option "all" to get the same data. |
|        |                                                                                           |

| Option            | Description                                                                                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A specific number | Displays the settings of the specified rack unit on the specified asset strip.<br><br>Use the index number to specify the rack unit. The index number is available on the asset strip or the Asset Strip page of the web interface. |

## Reliability

The command is used to show the reliability information, which begins with `show reliability`. You can add either the `data`, `errorlog` or `hwfailures` parameters to show specific details.

### ► *Show the options:*

```
show reliability?
```

### ► *Show the reliability data:*

```
show reliability data
```

### ► *Show the errorlog:*

```
show reliability errorlog
```

### ► *Show the current and past hardware failures:*

```
show reliability hwfailures
```

## Roles

The command shows role information

```
show roles
```

*Role 'Admin':*

Description: System defined administrator role including all privileges.

Privileges: adminPrivilege

*Role 'Operator':*

Description: Predefined operator role.

Privileges: acknowledgeAlarms

changePassword

viewEventSetup

changePduConfiguration

viewLog

## Security Settings

This command shows the security settings of the Legrand Power Shelf.

```
show security
```

To show detailed information, add the parameter "details" to the end of the command.

```
show security details
```

*Displayed information:*

- Without the parameter "details," the information including IP access control, role-based access control, password policy, HTTPS encryption is displayed and current FIPs mode status.
- With the parameter "details," more security information is displayed, such as user blocking time, user idle timeout and front panel permissions (if supported by your model) and FIPs Mode status.

## Sensor

This command syntax shows the available sensor commands, which provide further threshold details of different sensors.

```
show sensor?
```

Available commands:

externalsensor Shows external sensor threshold information

inlet Shows inlet sensor threshold information

inletline Shows inlet sensor threshold information

inletpole Shows inlet sensor threshold information

pdu Shows PDU sensor threshold information

powerSupply Shows power supply sensor information

► *Shows external sensor threshold information:*

```
show sensor externalsensor <n>
```

To show detailed information, add the parameter "details" to the end of the command.

```
show sensor externalsensor <n> details
```

► *Shows inlet threshold information:*

```
show sensor inlet <label> <sensor> [details]
```

► *Shows inletline threshold information:*

```
show sensor inletline <label> <line> <sensor> [details]
```

► *Shows inletpole threshold information:*

```
show sensor inletpole <label> <pole> <sensor> [details]
```

► *Shows pdu threshold information:*

```
show sensor pdu <sensor> [details]
```

► *Shows powersupply sensor information:*

```
show sensor powersupply <auxiliary> <input> <output>
```

► *Shows powerBus information:*

```
show sensor powerBus <sensor> [details]
```

*Variables:*

- <n> is the environmental sensor number. The environmental sensor number is the ID number assigned to the sensor, which can be found on the Peripherals page of the Legrand Power Shelf web interface.

*Displayed information:*

- Without the parameter "details," only the reading, threshold, deassertion hysteresis and assertion timeout settings of the specified environmental sensor are displayed.
- With the parameter "details," more sensor information is displayed, including resolution and range.

---

Note: For a state sensor, the threshold-related and accuracy-related data is NOT available.

---

## Server Reachability Information

This command shows all server reachability information with a list of monitored servers and status.

```
show serverReachability
```

### Server Reachability Information for a Specific Server

To show the server reachability information for a certain IT device only, use the following command.

```
show serverReachability server <n>
```

To show detailed information, add the parameter "details" to the end of the command.

```
show serverReachability server <n> details
```

*Variables:*

- <n> is a number representing the sequence of the IT device in the monitored server list.  
You can find each IT device's sequence number using the CLI command of `show serverReachability` as illustrated below.

| # | IP address      | Enabled | Status                          |
|---|-----------------|---------|---------------------------------|
| 1 | 192.168.84.126  | Yes     | Waiting for reliable connection |
| 2 | www.raritan.com | Yes     | Waiting for reliable connection |

*Displayed information:*

- Without the parameter "details," only the specified device's IP address, monitoring enabled/disabled state and current status are displayed.
- With the parameter "details," more settings for the specified device are displayed, such as number of pings and wait time prior to the next ping.

## SX Port

This command shows serial access port parameters.

```
show sxport [<sxportid>]
```

*Variables:*

- <sxportid> is one of the options: *all*, or a number.

| Option                       | Description                                                                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| all                          | Displays the information for all ports.<br><br>Tip: You can also type the command without adding this option "all" to get the same data.      |
| A specific sx port id number | Displays the information for the specified sx port only.<br>An sx port number needs to be specified only when there are more than 1 sx ports. |

## Time

This command shows the current date and time settings on the Legrand Power Shelf.

```
show time
```

To show detailed information, add the parameter "details" to the end of the command.

```
show time details
```

---

Note: If details is not specified, only the deviceTime, timeZone and setupMethod will be displayed.

---

## Unmanaged Peripherals

This command lists peripheral devices which are present, but not managed.

```
show unmanagePeripherals
```

## User

This command shows user information.

```
show user
```

## Configuring the Device and Network

To configure the device or network settings through the CLI, it is highly recommended to log in as the administrator so that you have full permissions. If you enter configuration mode from user mode, you may have limited permissions to make configuration changes.

To configure any settings, enter the configuration mode. Configuration commands are case sensitive.

### ► To enter configuration mode:

- 1) Ensure you have entered administrator mode and the # prompt is displayed.
- 2) Type `config` and press Enter.
- 3) The `config:#` prompt appears, indicating that you have entered configuration mode.

```
config:# _
```

- 4) Now you can type any configuration command and press Enter to change the settings.

---

**Important: To apply new configuration settings, you must issue the "apply" command before closing the terminal emulation program. Closing the program does not save any configuration changes.**

---

### ► To quit the configuration mode, use either "apply" or "cancel" command:

```
config:# apply
```

-- OR --

```
config:# cancel
```

The # or > prompt appears after pressing Enter, indicating that you have entered the administrator or user mode.

## Actuator Configuration Commands

An actuator configuration command begins with *actuator*. You can configure the name and location parameters of an individual actuator.

You can configure various parameters for one actuator at a time.

► *Change the name:*

```
config:# actuator <n> name "<name>"
```

► *Set the X coordinate:*

```
config:# actuator <n> xlabel "<coordinate>"
```

► *Set the Y coordinate:*

```
config:# actuator <n> ylabel "<coordinate>"
```

► *Set the Z coordinate:*

```
config:# actuator <n> zlabel "<z_label>"
```

► *Modify the actuator's description:*

```
config:# actuator <n> description "<description>"
```

*Variables:*

- <n> is the ID number assigned to the actuator. The ID number can be found using the web interface or CLI. It is an integer starting at 1.
- <name> is a string comprising up to 64 ASCII printable characters. The <name> variable must be enclosed in quotes when it contains spaces.
- <coordinate> is a string comprising up to 24 ASCII printable characters, and it must be enclosed in quotes.
- There are two types of values for the <z\_label> variable, depending on the Z coordinate format you set:

| Type       | Description                                                                                                 |
|------------|-------------------------------------------------------------------------------------------------------------|
| Free form  | <coordinate> is a string comprising up to 24 ASCII printable characters, and it must be enclosed in quotes. |
| Rack units | <coordinate> is an integer number in rack units.                                                            |

- <description> is a string comprising up to 64 ASCII printable characters, and it must be enclosed in quotes when it contains spaces.

## Asset Strip

This command configures asset strip settings.

```
config:# assetStrip <index> [name <name>] [numberOfRackUnits
 <rackunits>] [rackUnitNumberingMode <numberingmode>]
 [rackUnitNumberingOffset <offset>]
 [LEDColorForDisconnectedTags <disconnectedColor>]
 [LEDColorForConnectedTags <connectedColor>]
```

*Variables:*

- <index> Asset strip index (1..99 or all)
- <name> is a string comprising up to 64 ASCII printable characters. The <name> variable must be enclosed in quotes when it contains spaces.
- <rackunits> Rack unit count (8..64)
- <numberingmode> Rack unit numbering mode (topDown/bottomUp)
- <offset> Rack unit numbering offset (1..64)
- <disconnectedColor> Color of disconnected asset tags
- <connectedColor> Color of connected asset tags

## Authentication Commands

An authentication configuration command begins with *authentication*.

### Determining the Authentication Method

You can choose to set the authentication type only, or both set the authentication type and determine whether to switch to local authentication in case the remote authentication is not available.

- *Determine the authentication type only:*

```
config:# authentication type <option1>
```

- *Determine the authentication type and enable/disable the option of switching to local authentication:*

```
config:# authentication type <option1> useLocalIfRemoteUnavailable
 <option2>
```

---

Note: You cannot enable or disable the option of switching to local authentication without determining the authentication type in the CLI. Therefore, always type "authentication type <option1>" when setting up "useLocalIfRemoteUnavailable".

---

*Variables:*

- <option1> is one of the options: *local* , *ldap* or *radius*.

| Option  | Description                         |
|---------|-------------------------------------|
| local   | Enable Local authentication only.   |
| ldap    | Enable LDAP authentication only.    |
| radius  | Enable Radius authentication only.  |
| tacplus | Enable TACACS+ authentication only. |

- <option2> is one of the options: *true* or *false*.

| Option | Description                                                                                                                                  |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------|
| true   | Remote authentication is the first priority. The device will switch to local authentication when the remote authentication is not available. |
| false  | Always stick to remote authentication regardless of the availability of remote authentication.                                               |

## LDAP Settings

All LDAP-related commands begin with *authentication ldap*.

If you enable LDAP authentication, you must add at least one LDAP server. Later you can modify or delete any existing LDAP server as needed.

## Radius Settings

All Radius-related commands begin with *authentication radius*.

If you enable Radius authentication, you must add at least one Radius server. Later you can modify or delete any existing Radius server as needed.

## TACACS+ Settings

All TACACS+ related commands begin with *authentication tacplus*.

If you enable TACACS+ authentication, you must add at least one TACACS+ server. Later you can modify or delete any existing TACACS+ server as needed.

## Blade Slot

This command configures asset strip blade slot settings.

```
config:# bladeSlot <assetstrip> <rackunit> <bladeslot> [assetID <id>]
```

- <assetstrip> Asset strip index (1..99 or all)
- <rackunit> Rack unit index (1..99 or all)
- <bladeslot> Blade slot index (1..99 or all)
- <assetID> Asset Tag ID

## Configuring Environmental Sensors' Default Thresholds

You can set the default values of upper and lower thresholds, deassertion hysteresis and assertion timeout on a sensor type basis, including temperature, humidity, air pressure and air flow sensors. The default thresholds automatically apply to all environmental sensors that are newly detected or added.

A default threshold configuration command begins with *defaultThresholds*.

You can configure various default threshold settings for the same sensor type at a time by combining multiple commands.

- *Set the Default Upper Critical Threshold for a specific sensor type:*

```
config:# defaultThresholds <sensor type> upperCritical <value>
```

- *Set the Default Upper Warning Threshold for a specific sensor type:*

```
config:# defaultThresholds <sensor type> upperWarning <value>
```

- *Set the Default Lower Critical Threshold for a specific sensor type:*

```
config:# defaultThresholds <sensor type> lowerCritical <value>
```

► *Set the Default Lower Warning Threshold for a specific sensor type:*

```
config:# defaultThresholds <sensor type> lowerWarning <value>
```

► *Set the Default Deassertion Hysteresis for a specific sensor type:*

```
config:# defaultThresholds <sensor type> hysteresis <hy_value>
```

► *Set the Default Assertion Timeout for a specific sensor type:*

```
config:# defaultThresholds <sensor type> assertionTimeout <as_value>
```

*Variables:*

- <sensor type> is one of the following numeric sensor types:

| Sensor types     | Description               |
|------------------|---------------------------|
| absoluteHumidity | Absolute humidity sensors |
| relativeHumidity | Relative humidity sensors |
| temperature      | Temperature sensors       |
| airPressure      | Air pressure sensors      |
| airFlow          | Air flow sensors          |
| vibration        | Vibration sensors         |

- <value> is the value for the specified threshold of the specified sensor type. Note that diverse sensor types use different measurement units.

| Sensor types     | Measurement units                                                                     |
|------------------|---------------------------------------------------------------------------------------|
| absoluteHumidity | g/m <sup>3</sup> (that is, g/m <sup>3</sup> )                                         |
| relativeHumidity | %                                                                                     |
| temperature      | Degrees Celsius (°C) or Fahrenheit (°F), depending on your measurement unit settings. |
| airPressure      | Pascal (Pa) or psi, depending on your measurement unit settings.                      |
| airFlow          | m/s                                                                                   |

| Sensor types | Measurement units |
|--------------|-------------------|
| vibration    | g                 |

- <hy\_value> is the deassertion hysteresis value applied to the specified sensor type.
- <as\_value> is the assertion timeout value applied to the specified sensor type. It ranges from 0 to 100 (samples).

## Example - Default Upper Thresholds for Temperature

It is assumed that your preferred measurement unit for temperature is set to degrees Celsius. Then the following command sets the default Upper Warning threshold to 20 °C and Upper Critical threshold to 24 °C for all temperature sensors.

```
config:# defaultThresholds temperature upperWarning 20
 upperCritical 24
```

## Environmental Sensor Configuration Commands

An environmental sensor configuration command begins with *externalsensor*. You can configure the name and location parameters of an individual environmental sensor. Actuators are configured with their own commands.

### Changing the Sensor Name

This command names an environmental sensor.

```
config:# externalsensor <n> name "<name>"
```

*Variables:*

- <n> is the ID number of the environmental sensor that you want to configure. The ID number is available in the web interface or using the command "show externalsensors <n>" in the CLI. It is an integer starting at 1.
- <name> is a string comprising up to 64 ASCII printable characters. The <name> variable must be enclosed in quotes when it contains spaces.

### Specifying the CC Sensor Type

Legrand contact closure sensors support the connection of diverse third-party. You must specify the type of connected detector/switch for proper operation. Use this command when you need to specify the sensor type.

```
config:# externalsensor <n> sensorSubType <sensor_type>
```

*Variables:*

- `<n>` is the ID number of the environmental sensor that you want to configure. The ID number is available in the Legrand Power Shelf web interface or using the command `"show externalsensors <n>"` in the CLI. It is an integer starting at 1.
- `<sensor_type>` is one of these types: *contact*, *smokeDetection*, *waterDetection* or *vibration*.

| Type           | Description                                                                             |
|----------------|-----------------------------------------------------------------------------------------|
| contact        | The connected detector/switch is for detection of door lock or door closed/open status. |
| smokeDetection | The connected detector/switch is for detection of the smoke presence.                   |
| waterDetection | The connected detector/switch is for detection of the water presence.                   |
| vibration      | The connected detector/switch is for detection of the vibration.                        |

## Setting the X Coordinate

This command specifies the X coordinate of an environmental sensor.

```
config:# externalsensor <n> xlabel "<coordinate>"
```

*Variables:*

- `<n>` is the ID number of the environmental sensor that you want to configure. The ID number is available in the Legrand Power Shelf web interface or using the command `"show externalsensors <n>"` in the CLI. It is an integer starting at 1.
- `<coordinate>` is a string comprising up to 24 ASCII printable characters, and it must be enclosed in quotes.

## Setting the Y Coordinate

This command specifies the Y coordinate of an environmental sensor.

```
config:# externalsensor <n> ylabel "<coordinate>"
```

*Variables:*

- `<n>` is the ID number of the environmental sensor that you want to configure. The ID number is available in the Legrand Power Shelf web interface or using the command `"show externalsensors <n>"` in the CLI. It is an integer starting at 1.
- `<coordinate>` is a string comprising up to 24 ASCII printable characters, and it must be enclosed in quotes.

## Setting the Z Coordinate

This command specifies the Z coordinate of an environmental sensor.

```
config:# externalsensor <n> zlabel "<coordinate>"
```

*Variables:*

- `<n>` is the ID number of the environmental sensor that you want to configure. The ID number is available in the web interface or using the command `"show externalsensors <n>"` in the CLI. It is an integer starting at 1.
- Depending on the Z coordinate format you set, there are two types of values for the `<coordinate>` variable:

| Type       | Description                                                                                                                    |
|------------|--------------------------------------------------------------------------------------------------------------------------------|
| Free form  | <code>&lt;coordinate&gt;</code> is a string comprising up to 24 ASCII printable characters, and it must be enclosed in quotes. |
| Rack units | <code>&lt;coordinate&gt;</code> is an integer number in rack units.                                                            |

## Changing the Sensor Description

This command provides a description for a specific environmental sensor.

```
config:# externalsensor <n> description "<description>"
```

*Variables:*

- `<n>` is the ID number of the environmental sensor that you want to configure. The ID number is available in the web interface or using the command `"show externalsensors <n>"` in the CLI. It is an integer starting at 1.
- `<description>` is a string comprising up to 64 ASCII printable characters, and it must be enclosed in quotes when it contains spaces.

## Using Default Thresholds

This command determines whether default thresholds, including the deassertion hysteresis and assertion timeout, are applied to a specific environmental sensor.

```
config:# externalsensor <n> useDefaultThresholds <option>
```

*Variables:*

- <n> is the ID number of the environmental sensor that you want to configure. The ID number is available in the Legrand Power Shelf web interface or using the command "show externalsensors <n>" in the CLI. It is an integer starting at 1.
- <option> is one of the options: *true* or *false*.

| Option | Description                                                                               |
|--------|-------------------------------------------------------------------------------------------|
| true   | Default thresholds are selected as the threshold option for the specified sensor.         |
| false  | Sensor-specific thresholds are selected as the threshold option for the specified sensor. |

## Setting the Alarmed to Normal Delay for DX2-passive infrared sensor

This command determines the value of the Alarmed to Normal Delay setting for a Legrand presence detector.

```
config:# externalsensor <n> alarmedToNormalDelay <time>
```

*Variables:*

- <n> is the ID number of the environmental sensor that you want to configure. The ID number is available in the Legrand Power Shelf web interface or using the command "show externalsensors <n>" in the CLI. It is an integer starting at 1.
- <time> is an integer number in seconds, ranging between 0 and 300.

## Inlet Configuration Commands

An inlet configuration command begins with *inlet*. You can configure an inlet by using the inlet configuration command.

### Changing the Inlet Name

This command syntax names an inlet.

```
config:# inlet <n> name "<name>"
```

#### Variables:

- `<n>` is the number of the inlet that you want to configure. For a single-inlet PDU, `<n>` is always 1. The value is an integer between 1 and 50.
- `<name>` is a string comprising up to 64 ASCII printable characters. The `<name>` variable must be enclosed in quotes when it contains spaces.

## Enabling or Disabling an Inlet (for Multi-Inlet PDUs)

---

Enabling or disabling an inlet takes effect on a multi-inlet PDU only.

---

This command enables or disables an inlet.

```
config:# inlet <n> enabled <option>
```

#### Variables:

- `<n>` is the number of the inlet that you want to configure. For a single-inlet PDU, `<n>` is always 1. The value is an integer between 1 and 50.
- `<option>` is one of the options: *true* or *false*.

| Option | Description                      |
|--------|----------------------------------|
| true   | The specified inlet is enabled.  |
| false  | The specified inlet is disabled. |

---

Note: If performing this command causes all inlets to be disabled, a warning message appears, prompting you to confirm. When this occurs, press *y* to confirm or *n* to cancel the operation.

---

## Example - Inlet Naming

The following command assigns the name "AC source" to the inlet 1. If your Legrand Power Shelf contains multiple inlets, this command names the 1st inlet.

```
config:# inlet 1 name "AC source"
```

## Linking

## Network Configuration Commands

A network configuration command begins with *network*. A number of network settings can be changed through the CLI, such as the IP address, transmission speed, duplex mode, and so on.

## Configuring IPv4 Parameters

An IPv4 configuration command begins with *network ipv4*.

### Setting the IPv4 Configuration Mode

This command determines the IP configuration mode.

```
config:# network ipv4 interface <ETH> configMethod <mode>
```

*Variables:*

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                                     |
|-----------|-------------------------------------------------------------------------------------------------|
| eth1      | Determine the IPv4 configuration mode of the ETH1 interface (wired networking).                 |
| eth2      | Determine the IPv4 configuration mode of the ETH2 interface (wired networking).                 |
| wireless  | Determine the IPv4 configuration mode of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv4 configuration mode of the BRIDGE interface (that is, bridging mode).         |

- <mode> is one of the modes: *dhcp* or *static*.

| Mode   | Description                                              |
|--------|----------------------------------------------------------|
| dhcp   | The IPv4 configuration mode is set to DHCP.              |
| static | The IPv4 configuration mode is set to static IP address. |

### Setting the IPv4 Preferred Host Name

After selecting DHCP as the IPv4 configuration mode, you can specify the preferred host name, which is optional. The following is the command:

```
config:# network ipv4 interface <ETH> preferredHostName <name>
```

*Variables:*

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------|
| eth1      | Determine the IPv4 preferred host name of the ETH1 interface (that is, wired networking).        |
| eth2      | Determine the IPv4 preferred host name of the ETH2 interface (that is, wired networking).        |
| wireless  | Determine the IPv4 preferred host name of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv4 preferred host name of the BRIDGE interface (that is, bridging mode).         |

- <name> is a host name which:
  - Consists of alphanumeric characters and/or hyphens
  - Cannot begin or end with a hyphen
  - Cannot contain more than 63 characters
  - Cannot contain punctuation marks, spaces, and other symbols

## Setting the IPv4 Address

After selecting the static IP configuration mode, you can use this command to assign a permanent IP address to the Legrand Power Shelf.

```
config:# network ipv4 interface <ETH> address <ip address>
```

*Variables:*

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                   |
|-----------|-------------------------------------------------------------------------------|
| eth1      | Determine the IPv4 address of the ETH1 interface (that is, wired networking). |

| Interface | Description                                                                          |
|-----------|--------------------------------------------------------------------------------------|
| eth2      | Determine the IPv4 address of the ETH2 interface (that is, wired networking).        |
| wireless  | Determine the IPv4 address of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv4 address of the BRIDGE interface (that is, the bridging mode).     |

- <ip address> is the IP address being assigned to your Legrand Power Shelf. Its format is "IP address/prefix". For example, *192.168.84.99/24*.

## Setting the IPv4 Gateway

After selecting the static IP configuration mode, you can use this command to specify the gateway.

```
config:# network ipv4 interface eth1 gateway <ip
address>
```

*Variables:*

- <ip address> is the IP address of the gateway. The value ranges from 0.0.0.0 to 255.255.255.255.

| Interface | Description                                                                          |
|-----------|--------------------------------------------------------------------------------------|
| eth1      | Determine the IPv4 address of the ETH1 interface (that is, wired networking).        |
| eth2      | Determine the IPv4 address of the ETH2 interface (that is, wired networking).        |
| wireless  | Determine the IPv4 address of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv4 address of the BRIDGE interface (that is, the bridging mode).     |

## Setting IPv4 Static Routes

If the IPv4 network mode is set to static IP and your local network contains two subnets, you can configure static routes to enable or disable communications between the Legrand Power Shelf and devices in the other subnet.

These commands are prefixed with *network ipv4 staticRoutes*.

Depending on whether the other network is directly reachable or not, there are two methods for adding a static route. For further information, see Static Route Examples.

- *Method 1: add a static route when the other network is NOT directly reachable:*

```
config:# network ipv4 staticRoutes add <dest-1> nextHop <hop>
```

- *Method 2: add a static route when the other network is directly reachable:*

```
config:# network ipv4 staticRoutes add <dest-1> interface <ETH>
```

- *Delete an existing static route:*

```
config:# network ipv4 staticRoutes delete <route_ID>
```

- *Modify an existing static route:*

```
config:# network ipv4 staticRoutes modify <route_ID> dest <dest-2> nextHop
 <hop>
```

-- OR --

```
config:# network ipv4 staticRoutes modify <route_ID> dest <dest-2>
 interface <ETH>
```

#### *Variables:*

- <dest-1> is a combination of the IP address and subnet mask of the other subnet. The format is *IP address/subnet mask*.
- <hop> is the IP address of the next hop router.
- <ETH> is one of the interfaces: *ETH1/ETH2, WIRELESS* and *BRIDGE*. Type "bridge" only when your Legrand Power Shelf is in the bridging mode.
- <route\_ID> is the ID number of the route setting which you want to delete or modify.
- <dest-2> is a modified route setting that will replace the original route setting. Its format is *IP address/subnet mask*. You can modify either the IP address or the subnet mask or both.

## Configuring IPv6 Parameters

IPv6 is enabled by default. To configure IPv6 settings, use commands that begin with network ipv6.

---

Note: IPv6 stable privacy addresses are disabled by default and will not automatically generate the stable privacy IPv6 addresses unless you explicitly enable the feature.

---

## Setting the IPv6 Configuration Mode

This command determines the IP configuration mode.

```
config:# network ipv6 interface <ETH> configMethod <mode>
```

### Variables:

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                                     |
|-----------|-------------------------------------------------------------------------------------------------|
| eth1      | Determine the IPv6 configuration mode of the ETH1 interface (wired networking).                 |
| eth2      | Determine the IPv6 configuration mode of the ETH2 interface (wired networking).                 |
| wireless  | Determine the IPv6 configuration mode of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv6 configuration mode of the BRIDGE interface (that is, bridging mode).         |

- <mode> is one of the modes: *automatic* or *static*.

| Mode       | Description                                              |
|------------|----------------------------------------------------------|
| automatic* | The IPv6 configuration mode is set to automatic.         |
| static     | The IPv6 configuration mode is set to static IP address. |

---

\*You can configure the Legrand Power Shelf to either "Manual" or "Automatic" IPv6 settings. In manual mode, you must specify the device's IP address, the default router, the DNS server etc. But when Automatic mode is selected, the behavior of the Legrand Power Shelf depends on the configuration of the Router Advertisement (RA) in the network's router. If the RA contains a Prefix Information that has the "Autonomous address-configuration flag" set, the Legrand Power Shelf will use SLAAC and use an IPv6 address based on that Prefix. The Legrand Power Shelf will create a stable privacy address according to RFC 7217. If the RA has the "otherconf" flag set, the Legrand Power Shelf will also use Stateless DHCP to retrieve information like a DNS server. If the "managed" flag is set in the RA, Stateful Address Auto configuration is used via DHCPv6. Both modes (SLAAC and DHCPv6) can be used at the same time.

---

## Setting the IPv6 Preferred Host Name

After selecting DHCP as the IPv6 configuration mode, you can specify the preferred host name, which is optional. The following is the command:

```
config:# network ipv6 interface <ETH> preferredHostName <name>
```

### Variables:

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------|
| eth1      | Determine the IPv6 preferred host name of the ETH1 interface (wired networking).                 |
| eth2      | Determine the IPv6 preferred host name of the ETH2 interface (wired networking).                 |
| wireless  | Determine the IPv6 preferred host name of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv6 preferred host name of the BRIDGE interface (that is, bridging mode).         |

- <name> is a host name which:
  - Consists of alphanumeric characters and/or hyphens
  - Cannot begin or end with a hyphen
  - Cannot contain more than 63 characters
- Cannot contain punctuation marks, spaces, and other symbols

## Setting the IPv6 Address

After selecting the static IP configuration mode, you can use this command to assign a permanent IP address to the Legrand Power Shelf.

```
config:# network ipv6 interface <ETH> address <ip address>
```

### Variables:

- <ETH> is one of the network interfaces: *ETH1/ETH2*, *WIRELESS*, or *BRIDGE*. Note that you must choose/configure the bridge interface if your Legrand Power Shelf is set to the bridging mode.

---

*Note: In the bridging mode, only the IP parameters of the BRIDGE interface function. The IP parameters of ETH1/ETH2 and WIRELESS interfaces do NOT function.*

---

| Interface | Description                                                                          |
|-----------|--------------------------------------------------------------------------------------|
| eth1      | Determine the IPv6 address of the ETH1 interface (wired networking).                 |
| eth2      | Determine the IPv6 address of the ETH2 interface (wired networking).                 |
| wireless  | Determine the IPv6 address of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv6 address of the BRIDGE interface (that is, the bridging mode).     |

- <ip address> is the IP address being assigned to your Legrand Power Shelf. This value uses the IPv6 address format. Note that you must add /xx, which indicates a prefix length of bits such as /64, to the end of this IPv6 address.

### Setting the IPv6 Gateway

After selecting the static IP configuration mode, you can use this command to specify the gateway.

```
config:# network ipv6 interface gateway eth1 <ip
address>
```

*Variables:*

- <ip address> is the IP address of the gateway. This value uses the IPv6 address format.

| Interface | Description                                                                          |
|-----------|--------------------------------------------------------------------------------------|
| eth1      | Determine the IPv6 address of the ETH1 interface (that is, wired networking).        |
| eth2      | Determine the IPv6 address of the ETH2 interface (that is, wired networking).        |
| wireless  | Determine the IPv6 address of the WIRELESS interface (that is, wireless networking). |
| bridge    | Determine the IPv6 address of the BRIDGE interface (that is, the bridging mode).     |

### Setting IPv6 Static Routes

If the IPv6 network mode is set to static IP and your local network contains two subnets, you can configure static routes to enable or disable communications between the Legrand Power Shelf and devices in the other subnet.

These commands are prefixed with *network ipv6 staticRoutes*.

Depending on whether the other network is directly reachable or not, there are two methods for adding a static route. For further information, see Static Route Examples.

► *Method 1: add a static route when the other network is NOT directly reachable:*

```
config:# network ipv6 staticRoutes add <dest-1> nextHop <hop>
```

► *Method 2: add a static route when the other network is directly reachable:*

```
config:# network ipv6 staticRoutes add <dest-1> interface <ETH>
```

► *Delete an existing static route:*

```
config:# network ipv6 staticRoutes delete <route_ID>
```

► *Modify an existing static route:*

```
config:# network ipv6 staticRoutes modify <route_ID> dest <dest-2>
 nextHop <hop>
```

-- OR --

```
config:# network ipv6 staticRoutes modify <route_ID> dest <dest-2>
 interface <ETH>
```

*Variables:*

- <dest-1> is the IP address and prefix length of the subnet where the Legrand Power Shelf belongs. The format is *IP address/prefix length*.
- <hop> is the IP address of the next hop router.
- <ETH> is one of the interfaces: *ETH1/ETH2*, *WIRELESS* and *BRIDGE*. Type "bridge" only when your Legrand Power Shelf is in the bridging mode.
- <route\_ID> is the ID number of the route setting which you want to delete or modify.
- <dest-2> is a modified route setting that will replace the original route setting. Its format is *IP address/prefix length*. You can modify either the IP address or the prefix length or both.

## Configuring DNS Parameters

Use the following commands to configure static DNS-related settings.

► *Specify the primary DNS server:*

```
config:# network dns firstServer <ip address>
```

► *Specify the secondary DNS server:*

```
config:# network dns secondServer <ip address>
```

► *Specify the third DNS server:*

```
config:# network dns thirdServer <ip address>
```

► *Specify one or multiple optional DNS search suffixes:*

```
config:# network dns searchSuffixes <suffix1>
```

-- OR --

```
config:# network dns searchSuffixes
 <suffix1>,<suffix2>,<suffix3>,...,<suffix6>
```

► *Determine which IP address is used when the DNS server returns both IPv4 and IPv6 addresses:*

```
config:# network dns resolverPreference <resolver>
```

*Variables:*

- <ip address> is the IP address of the DNS server.
- <suffix1>, <suffix2>, and the like are the DNS suffixes that automatically apply when searching for any device via Legrand Power Shelf. For example, <suffix1> can be *example.com*, and <suffix2> can be *legrand.com*. You can specify up to 6 suffixes by separating them with commas.
- <resolver> is one of the options: *preferV4* or *preferV6*.

| Option   | Description                                        |
|----------|----------------------------------------------------|
| preferV4 | Use the IPv4 addresses returned by the DNS server. |
| preferV6 | Use the IPv6 addresses returned by the DNS server. |

## Setting LAN Interface Parameters

A LAN interface configuration command begins with *network ethernet*.

### Enabling or Disabling the LAN Interface

This command enables or disables the LAN interface.

```
config:# network ethernet <ETH> enabled <option>
```

*Variables:*

- <ETH> is one of the options -- *eth1* or *eth2*.

| Option | Description |
|--------|-------------|
| eth1   | ETH1 port   |
| eth2   | ETH2 port   |

- <option> is one of the options: *true* or *false*.

| Option | Description                                  |
|--------|----------------------------------------------|
| true   | The specified network interface is enabled.  |
| false  | The specified network interface is disabled. |

### Changing the LAN Interface Speed

This command determines the LAN interface speed.

```
config:# network ethernet <ETH> speed <option>
```

*Variables:*

- <ETH> is one of the options -- *eth1* or *eth2*.

| Option | Description |
|--------|-------------|
| eth1   | ETH1 port   |
| eth2   | ETH2 port   |

- <option> is one of the options: *auto*, *10Mbps*, *100Mbps* or *1000Mbps*.

| Option | Description                                                       |
|--------|-------------------------------------------------------------------|
| auto   | System determines the optimum LAN speed through auto-negotiation. |

| Option   | Description                        |
|----------|------------------------------------|
| 10Mbps   | The LAN speed is always 10 Mbps.   |
| 100Mbps  | The LAN speed is always 100 Mbps.  |
| 1000Mbps | The LAN speed is always 1000 Mbps. |

## Changing the LAN Duplex Mode

This command determines the LAN interface duplex mode.

```
config:# network ethernet <ETH> duplexMode <mode>
```

*Variables:*

- <ETH> is one of the options -- *eth1* or *eth2*.

| Option | Description |
|--------|-------------|
| eth1   | ETH1 port   |
| eth2   | ETH2 port   |

- <mode> is one of the modes: *auto*, *half* or *full*.

| Option | Description                                                                                          |
|--------|------------------------------------------------------------------------------------------------------|
| auto   | The Legrand Power Shelf selects the optimum transmission mode through auto-negotiation.              |
| half   | Half duplex:<br>Data is transmitted in one direction (to or from the Legrand Power Shelf) at a time. |
| full   | Full duplex:<br>Data is transmitted in both directions simultaneously.                               |

## Setting the LAN MTU

This command sets the MTU for the ethernet interface.

```
config:# network ethernet <ETH> mtu <mtu>
```

Variables:

- <ETH> is one of the options -- eth1 or eth2.
- <mtu> is the Maximum Transfer Unit. Enter a value from 1280-1500.

## Setting the Ethernet Authentication Method

Legrand Power Shelf supports 802.1X (EAP) Network Authentication. Enable the ethernet interface, and then set the authentication method.

```
config:# network ethernet <interface> [enabled
 <enabled>]
```

The following command sets the authentication method for the selected Ethernet interface to either none or Extensible Authentication Protocol (EAP).

```
config:# network ethernet <ETH> authMethod <method>
```

Variables:

- <ETH> is one of the options -- eth1 or eth2.

| Option | Description |
|--------|-------------|
| eth1   | ETH1 port   |
| eth2   | ETH2 port   |

- <method> is one of the authentication methods: *NONE* or *EAP*.

| Method | Description                               |
|--------|-------------------------------------------|
| NONE   | The authentication method is set to NONE. |
| EAP    | The authentication method is set to EAP.  |

## Setting Ethernet EAP Parameters

When the selected Ethernet interface's authentication method is set to EAP, you must configure EAP authentication parameters, including outer authentication, inner authentication, EAP identity, client certificate, client private key, password, CA certificate, and RADIUS authentication server. For more information, see Ethernet Interface Settings.

### ► Determine the outer authentication protocol:

```
config:# network ethernet <ETH> eapOuterAuthentication <outer_auth>
```

- *Determine the inner authentication protocol for authentication set to "EAP + PEAP":*

```
config:# network ethernet <ETH> eapInnerAuthentication <inner_auth>
```

- *Set the EAP identity:*

```
config:# network ethernet <ETH> eapIdentity <identity>
```

- *Set the EAP password:*

```
config:# network ethernet <ETH> eapPassword
```

After performing the above command, the Legrand Power Shelf prompts you to enter the password. Then type the password and press Enter.

- *Provide a client certificate for authentication set to "EAP + TLS" or "EAP + PEAP + TLS":*

```
config:# network ethernet <ETH> eapClientCertificate
```

After performing any certificate or private key commands, including commands for the client certificate, client private key, and CA certificate, the system prompts you to enter the contents of the wanted certificate or key. For an example with detailed procedure, see [EAP CA Certificate Example](#) (on page 381).

- *Provide a client private key for authentication set to "EAP + TLS" or "EAP + PEAP + TLS":*

```
config:# network ethernet <ETH> eapClientPrivateKey
```

- *Provide a CA TLS certificate for EAP:*

```
config:# network ethernet <ETH> eapCACertificate
```

- *Enable or disable verification of the TLS certificate chain:*

```
config:# network ethernet <ETH> enableCertVerification <option1>
```

► *Allow expired and not yet valid TLS certificates:*

```
config:# network ethernet <ETH> allowOffTimeRangeCerts <option2>
```

► *Allow network connection with incorrect system time:*

```
config:# network ethernet <ETH> allowConnectionWithIncorrectClock
 <option3>
```

► *Set the RADIUS authentication server for EAP:*

```
config:# network ethernet <ETH> eapAuthServerName <FQDN>
```

*Variables:*

- <ETH> is one of the options -- *eth1* or *eth2*.

| Option | Description |
|--------|-------------|
| eth1   | ETH1 port   |
| eth2   | ETH2 port   |

- <outer\_auth> is one of the options: *PEAP* or *TLS*.

| Option | Description                                                                         |
|--------|-------------------------------------------------------------------------------------|
| PEAP   | Outer authentication is set to Protected Extensible Authentication Protocol (PEAP). |
| TLS    | Outer authentication is set to TLS.                                                 |

- <inner\_auth> is one of the options: *MS-CHAPv2* or *TLS*.

| Option   | Description                                                                                         |
|----------|-----------------------------------------------------------------------------------------------------|
| MSCHAPv2 | Inner authentication is set to Microsoft's Challenge Authentication Protocol Version 2 (MS-CHAPv2). |
| TLS      | Inner authentication is set to TLS.                                                                 |

- <identity> is your user name for the EAP authentication.
- <option1> is one of the options: *true* or *false*.

| Option | Description                                             |
|--------|---------------------------------------------------------|
| true   | Enables the verification of the TLS certificate chain.  |
| false  | Disables the verification of the TLS certificate chain. |

- <option2> is one of the options: *true* or *false*.

| Option | Description                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| true   | Always make the network connection successful even though the TLS certificate chain contains any certificate which is outdated or not valid yet.   |
| false  | The network connection is NOT successfully established when the TLS certificate chain contains any certificate which is outdated or not valid yet. |

- <option3> is one of the options: *true* or *false*.

| Option | Description                                                                                                                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| true   | Make the network connection successful when the Legrand Power Shelf system time is earlier than the firmware build before synchronizing with the NTP server, causing the TLS certificate to become invalid. |
| false  | The network connection is NOT successfully established when the Legrand Power Shelf finds that the TLS certificate is not valid due to incorrect system time.                                               |

- <FQDN> is the name of the RADIUS server if it is present in the TLS certificate. The name must match the fully qualified domain name (FQDN) of the host shown in the certificate.

### EAP CA Certificate Example

This section provides a CA certificate example for the Ethernet interface "ETH1". Your CA certificate contents should be different from the contents displayed in this example.

In addition, the procedure of uploading the client certificate and client private key in CLI is similar to the following example, except for the CLI command.

#### ► To provide a CA certificate:

- 1) Make sure you have entered the configuration mode.
- 2) Type the following command for ETH1 and press Enter.

```
config:# network ethernet eth1 eapCACertificate
```

- 3) The system prompts you to enter the contents of the CA certificate.
- 4) Open a CA certificate using a text editor. You should see certificate contents similar to the following.

```

--- BEGIN CERTIFICATE ---
MIICjTCCAfigAwIBAgIEMaYgRzALBgqhkiG9w0BAQQwRTElMAkGA1UEBhMCVVMx
NjA0BgNVBAoTLU5hdGlvbmFsIEFlcm9uYXV0aWNzIGFuZCBTcGFjZSBBZG1pbmlz
dHJhdGlvbWAmFxE5NjA1MjgXMzQ5MDUrMDgwMBcROTgwNTI4MTM0OTA1KzA4MDAw
ZzELMAkGA1UEBhMCVVMxNjA0BgNVBAoTLU5hdGlvbmFsIEFlcm9uYXV0aWNzIGFu
ZCBTcGFjZSBBZG1pbmlzdHJhdGlvbWJgMAkGA1UEBRMCMTYwEwYDVQQDEwxdGV2
ZSBTY2hvY2gwWDALBgqhkiG9w0BAQEDSQAwwRgJBALrAwYydgxmzNP/ts0Uyf6Bp
miJYktU/w4NG67ULaN4B5CnEz7k57s9o3YY3LecETgQ5iQHmkwlyDTL2fTgVfw0C
AQOjgaswgagwZAYDVR0ZAQH/BFowWDBWMFQxCzAJBgNVBAYTAIVMTYwNAYDVQK
Ey1OYXRpb25hbCB8ZXJvbmF1dGljcyBhbmQgU3BhY2UgQWRtaW5pc3RyYXRpb24x
DTALBgNVBAMTBENSTDEwFwYDVROBAQH/BA0wC4AJODMyOTcwODEwMBGGA1UdAgQR
MA8ECTgzMjk3MDgyM4ACBSAwDQYDVROKBAYwBAMCBkAwCwYJKoZIhvcNAQEEA4GB
AH2y1VCEw/A4zaXzSYZJTUi3uawbbFiS2yxHvgf28+8Js0OHXk1H1w2d6qOHH21
X82tZXd/0JtG0g1T9usFFBDvYK8O0ebgz/P5ELJnBL2+atObEuJy1ZZ0pBDWINR3
WkDNLCGiTKp0F5EWIrVDwh54NNevkCQRZita+z4IBO
--- END CERTIFICATE ---

```

- 5) Select and copy the contents as illustrated below, including the starting line containing "BEGIN CERTIFICATE" and the ending line containing "END CERTIFICATE."
- 6) Paste the contents in the terminal.
- 7) Press Enter.
- 8) Verify whether the system shows the following command prompt, indicating the provided CA certificate is valid.

```
config: #
```

### Removing the Uploaded Certificate or Private Key

The procedures of removing an existing client certificate, client private key or CA certificate in CLI are similar.

This section illustrates such a procedure for the Ethernet interface "ETH1."

#### ► To remove a certificate or private key for ETH1:

- 1) Make sure you have entered the configuration mode.
- 2) Type the appropriate command, depending on which file you want to remove, and press Enter.

- *Client certificate:*

```
config: # network ethernet eth1 eapClientCertificate
```

- *Client private key:*

```
config: # network ethernet eth1 eapClientPrivateKey
```

- *CA certificate:*

```
config: # network ethernet eth1 eapCACertificate
```

- 3) The system prompts you to enter the contents of the chosen certificate or private key.
- 4) Press Enter without typing any data.
- 5) Verify whether the system shows the following command prompt, indicating the existing certificate or private key has been removed.

```
config: #
```

## Setting Wireless Parameters

You must configure wireless parameters, including Service Set Identifier (SSID), authentication method, Pre-Shared Key (PSK), and Basic Service Set Identifier (BSSID) after the wireless networking mode is enabled.

A wireless configuration command begins with *network wireless*.

---

Note: If wireless networking mode is not enabled, the SSID, PSK and BSSID values are not applied until the wireless networking mode is enabled. In addition, a message appears, indicating that the active network interface is not wireless.

---

### Setting the SSID

This command specifies the SSID string.

```
config:# network wireless SSID <ssid>
```

*Variables:*

- <ssid> is the name of the wireless access point, which consists of:
  - Up to 32 ASCII characters
  - No spaces
  - ASCII codes 0x20 ~ 0x7E

### Enabling or Disabling 802.11n High Throughput

This command enables or disables the 802.11n high throughput protocol.

```
config:# network wireless enableHT <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description          |
|--------|----------------------|
| true   | 802.11n is enabled.  |
| false  | 802.11n is disabled. |

### Setting the Wireless Authentication Method

This command sets the wireless authentication method to None, PSK, or Extensible Authentication Protocol (EAP).

```
config:# network wireless authMethod <method>
```

*Variables:*

- <method> is one of the authentication methods: *PSK* or *EAP*.

| Method | Description                               |
|--------|-------------------------------------------|
| PSK    | The authentication method is set to PSK.  |
| EAP    | The authentication method is set to EAP.  |
| None   | The authentication method is set to None. |

### Setting the PSK

If the Pre-Shared Key (PSK) authentication method is selected, you must assign a PSK passphrase by using this command.

```
config:# network wireless PSK <psk>
```

*Variables:*

- <psk> is a string or passphrase that consists of:
  - 8 to 63 characters
  - No spaces
  - ASCII codes 0x20 ~ 0x7E

### Setting Wireless EAP Parameters

When the wireless authentication method is set to EAP, you must configure EAP authentication parameters, including outer authentication, inner authentication, EAP identity, client certificate, client private key, password, CA certificate, and RADIUS authentication server. For more information, see Wireless Network Settings.

- *Determine the outer authentication protocol:*

```
config:# network wireless eapOuterAuthentication <outer_auth>
```

- *Determine the inner authentication protocol for authentication set to "EAP + PEAP":*

```
config:# network wireless eapInnerAuthentication <inner_auth>
```

- *Set the EAP identity:*

```
config:# network wireless eapIdentity <identity>
```

► *Set the EAP password:*

```
config:# network wireless eapPassword
```

After performing the above command, the Legrand Power Shelf prompts you to enter the password. Then type the password and press Enter.

► *Provide a Client Certificate for authentication set to "EAP + TLS" or "EAP + PEAP + TLS":*

```
config:# network wireless eapClientCertificate
```

After performing any certificate or private key commands, including commands for the client certificate, client private key, and CA certificate, the system prompts you to enter the contents of the wanted certificate or key. For an example with detailed procedure, see [EAP CA Certificate Example](#) (on page 381).

► *Provide a Client Private Key for authentication set to "EAP + TLS" or "EAP + PEAP + TLS":*

```
config:# network wireless eapClientPrivateKey
```

► *Provide a CA TLS certificate for EAP:*

```
config:# network wireless eapCACertificate
```

► *Enable or disable verification of the TLS certificate chain:*

```
config:# network wireless enableCertVerification <option1>
```

► *Allow expired and not yet valid TLS certificates:*

```
config:# network wireless allowOffTimeRangeCerts <option2>
```

► *Allow wireless network connection with incorrect system time:*

```
config:# network wireless allowConnectionWithIncorrectClock <option3>
```

► Set the RADIUS authentication server for EAP:

```
config:# network wireless eapAuthServerName <FQDN>
```

Variables:

- <outer\_auth> is one of the options: *PEAP* or *TLS*.

| Option | Description                                                                         |
|--------|-------------------------------------------------------------------------------------|
| PEAP   | Outer authentication is set to Protected Extensible Authentication Protocol (PEAP). |
| TLS    | Outer authentication is set to TLS.                                                 |

- <inner\_auth> is one of the options: *MS-CHAPv2* or *TLS*.

| Option   | Description                                                                                         |
|----------|-----------------------------------------------------------------------------------------------------|
| MSCHAPv2 | Inner authentication is set to Microsoft's Challenge Authentication Protocol Version 2 (MS-CHAPv2). |
| TLS      | Inner authentication is set to TLS.                                                                 |

- <identity> is your user name for the EAP authentication.

- <option1> is one of the options: *true* or *false*.

| Option | Description                                             |
|--------|---------------------------------------------------------|
| true   | Enables the verification of the TLS certificate chain.  |
| false  | Disables the verification of the TLS certificate chain. |

- <option2> is one of the options: *true* or *false*.

| Option | Description                                                                                                                                        |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| true   | Always make the network connection successful even though the TLS certificate chain contains any certificate which is outdated or not valid yet.   |
| false  | The network connection is NOT successfully established when the TLS certificate chain contains any certificate which is outdated or not valid yet. |

- <option3> is one of the options: *true* or *false*.

| Option | Description                                                                                                                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| true   | Make the network connection successful when the Legrand Power Shelf system time is earlier than the firmware build before synchronizing with the NTP server, causing the TLS certificate to become invalid. |

| Option | Description                                                                                                                                                   |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| false  | The network connection is NOT successfully established when the Legrand Power Shelf finds that the TLS certificate is not valid due to incorrect system time. |

- <FQDN> is the name of the RADIUS server if it is present in the TLS certificate. The name must match the fully qualified domain name (FQDN) of the host shown in the certificate.

## Setting the BSSID

This command specifies the BSSID.

```
config:# network wireless BSSID <bssid>
```

*Variables:*

- <bssid> is either the MAC address of the wireless access point or *none* for automatic selection.

## Setting the Wireless MTU

This command sets the MTU for the wireless interface.

```
config:# network wireless mtu<mtu>
```

*Variables:*

- <mtu> is the Maximum Transfer Unit. Enter a value from 1280-1500.

## Configuring the Cascading Mode

This command determines the cascading mode.

```
config:# network <mode> enabled <option1>
```

*Variables:*

- <mode> is one of the following cascading modes.

| Mode   | Description                                                                    |
|--------|--------------------------------------------------------------------------------|
| bridge | The Bridging mode, where each cascaded device is assigned a unique IP address. |

| Mode           | Description                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------------------|
| portForwarding | The Port Forwarding mode, where every cascaded device in the chain shares the same IP address, with diverse port numbers assigned. |

---

**Important: When enabling either cascading mode, you must make sure the other cascading mode is disabled, or the preferred cascading mode may not be enabled successfully.**

---

- <option1> is one of the following options:

| Option | Description                              |
|--------|------------------------------------------|
| true   | The selected cascading mode is enabled.  |
| false  | The selected cascading mode is disabled. |

► *If Port Forwarding mode is enabled, you must configure two more settings to finish the configuration:*

On ALL cascaded devices, you must configure the 'role' setting one by one.

```
config:# network portForwarding role <option2>
```

On the primary device, you must configure the 'downstream interface' setting.

```
config:# network portForwarding
 primaryUnitDownstreamInterface <option3>
```

*Variables:*

- <option2> is one of the following cascading roles:

| Role      | Description                        |
|-----------|------------------------------------|
| primary   | The device is a primary device.    |
| expansion | The device is an expansion device. |

- <option3> is one of the following options:

| Option    | Description                                                             |
|-----------|-------------------------------------------------------------------------|
| ETH1/ETH2 | ETH1/ETH2 port is the port where the 1st expansion device is connected. |
| Usb       | USB port is the port where the 1st expansion device is connected.       |

## Setting Network Service Parameters

A network service command begins with *network services*.

## Setting the HTTP Port

The commands used to configure the HTTP port settings begin with *network services http*.

### ► Change the HTTP port:

```
config:# network services http port <n>
```

### ► Enable or disable the HTTP port:

```
config:# network services http enabled <option>
```

### ► Enforce redirection from HTTP to HTTPS:

```
config:# network services http enforceHttps <option>
```

Variables:

- <n> is a TCP port number between 1 and 65535. The default HTTP port is 80.
- <option> is one of the options: *true* or *false*.

| Option | Description                                                                                                                                  |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------|
| true   | <ul style="list-style-type: none"><li>• The HTTP port is enabled.</li><li>- OR -</li><li>• HTTP redirection to HTTPS is enabled.</li></ul>   |
| false  | <ul style="list-style-type: none"><li>• The HTTP port is disabled.</li><li>- OR -</li><li>• HTTP redirection to HTTPS is disabled.</li></ul> |

## Setting the HTTPS Port

The commands used to configure the HTTPS port settings begin with *network services https*.

### ► Change the HTTPS port:

```
config:# network services https port <n>
```

### ► Enable or disable the HTTPS access:

```
config:# network services https enabled <option>
```

*Variables:*

- <n> is a TCP port number between 1 and 65535. The default HTTPS port is 443.
- <option> is one of the options: *true* or *false*.

| Option | Description                                                                      |
|--------|----------------------------------------------------------------------------------|
| true   | Forces any access to the Legrand Power Shelf via HTTP to be redirected to HTTPS. |
| false  | No HTTP access is redirected to HTTPS.                                           |

## Changing the Telnet Configuration

You can enable or disable the Telnet service, or change its TCP port using the CLI commands.

A Telnet command begins with *network services telnet*.

### ► *Enabling or Disabling Telnet*

This command enables or disables the Telnet service.

```
config:# network services telnet enabled <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                     |
|--------|---------------------------------|
| true   | The Telnet service is enabled.  |
| false  | The Telnet service is disabled. |

### ► *Changing the Telnet Port*

This command changes the Telnet port.

```
config:# network services telnet port <n>
```

*Variables:*

- <n> is a TCP port number between 1 and 65535. The default Telnet port is 23.

## Changing the SSH Configuration

You can enable or disable the SSH service, or change its TCP port using the CLI commands.

An SSH command begins with *network services ssh*.

### ► Enabling or Disabling SSH

This command enables or disables the SSH service.

```
config:# network services ssh enabled <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                  |
|--------|------------------------------|
| true   | The SSH service is enabled.  |
| false  | The SSH service is disabled. |

### ► Changing the SSH Port

This command changes the SSH port.

```
config:# network services ssh port <n>
```

*Variables:*

- <n> is a TCP port number between 1 and 65535. The default SSH port is 22.

### ► Determining the SSH Authentication Method

This command syntax determines the SSH authentication method.

```
config:# network services ssh authentication <auth_method>
```

*Variables:*

- <option> is one of the options: *passwordOnly*, *publicKeyOnly* or *passwordOrPublicKey*.

| Option        | Description                              |
|---------------|------------------------------------------|
| passwordOnly  | Enables the password-based login only.   |
| publicKeyOnly | Enables the public key-based login only. |

| Option              | Description                                                                 |
|---------------------|-----------------------------------------------------------------------------|
| passwordOrPublicKey | Enables both the password- and public key-based login. This is the default. |

If the public key authentication is selected, you must enter a valid SSH public key for each user profile to log in over the SSH connection.

## Setting the SNMP Notification

The command is used to configure SNMP system notification settings.

### ► *Enable/Disable Notification:*

Turn SNMP system notifications on or off

```
config:# network services snmp notifications enable/
 disable
```

Once notification is on, you can set snmpv2 or v3 information or traps notifications.

Variables: <option> is the command for snmpv2 or v3 notification

```
config:# network services snmp notifications
 <option>[argument]
```

| Option   | Description                                   |
|----------|-----------------------------------------------|
| v2inform | Configure SNMPv2 inform notification settings |
| v2trap   | Configure SNMPv2 trap notification settings   |
| v3inform | Configure SNMPv3 inform notification settings |
| v3trap   | Configure SNMPv3 trap notification settings   |

```
config:# network services snmp notifications
 <v2inform/v3inform>[argument]
```

| argument  | Description                     |
|-----------|---------------------------------|
| timesouts | SNMP inform timeout (s) (1..60) |
| retries   | SNMP inform retries (0..1440)   |

|            |                                   |
|------------|-----------------------------------|
| host       | SNMP notification host            |
| port       | SNMP notification port (1..65535) |
| community  | SNMP notification community       |
| host2      | SNMP notification host            |
| port2      | SNMP notification port (1..65535) |
| community2 | SNMP notification community       |
| host3      | SNP notification host             |
| port3      | SNMP notification port (1..65535) |
| community3 | SNMP notification community       |

```
config:# network services snmp notifications <v2trap/
v3trap>[argument]
```

| argument   | Description                       |
|------------|-----------------------------------|
| host       | SNMP notification host            |
| port       | SNMP notification port (1..65535) |
| community  | SNMP notification community       |
| host2      | SNMP notification host            |
| port2      | SNMP notification port (1..65535) |
| community2 | SNMP notification community       |
| host3      | SNP notification host             |
| port3      | SNMP notification port (1..65535) |

|            |                             |
|------------|-----------------------------|
| community3 | SNMP notification community |
|------------|-----------------------------|

## Setting the SNMP Configuration

You can enable or disable the SNMP v1/v2c or v3 agent, configure the read and write community strings, or set the MIB-II parameters, such as sysContact, using the CLI commands.

An SNMP command begins with *network services snmp*.

### ► Enabling or Disabling SNMP v1/v2c

This command enables or disables the SNMP v1/v2c protocol.

```
config:# network services snmp v1/v2c <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                           |
|---------|---------------------------------------|
| enable  | The SNMP v1/v2c protocol is enabled.  |
| disable | The SNMP v1/v2c protocol is disabled. |

### ► Enabling or Disabling SNMP v3

This command enables or disables the SNMP v3 protocol.

```
config:# network services snmp v3 <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                       |
|---------|-----------------------------------|
| enable  | The SNMP v3 protocol is enabled.  |
| disable | The SNMP v3 protocol is disabled. |

### ► Setting the SNMP Read Community

This command sets the SNMP read-only community string.

```
config:# network services snmp readCommunity <string>
```

*Variables:*

- <string> is a string comprising 4 to 64 ASCII printable characters.
- The string CANNOT include spaces.

► *Setting the SNMP Write Community*

This command sets the SNMP read/write community string.

```
config:# network services snmp writeCommunity <string>
```

*Variables:*

- <string> is a string comprising 4 to 64 ASCII printable characters.
- The string CANNOT include spaces.

► *Setting the sysContact Value*

This command sets the SNMP MIB-II sysContact value.

```
config:# network services snmp sysContact <value>
```

*Variables:*

- <value> is a string comprising 0 to 255 alphanumeric characters.

► *Setting the sysName Value*

This command sets the SNMP MIB-II sysName value.

```
config:# network services snmp sysName <value>
```

*Variables:*

- <value> is a string comprising 0 to 255 alphanumeric characters.

► *Setting the sysLocation Value*

This command sets the SNMP MIB-II sysLocation value.

```
config:# network services snmp sysLocation <value>
```

*Variables:*

<value> is a string comprising 0 to 255 alphanumeric characters.

## Setting the Syslog Configuration

You can enable or disable the Syslog message notification, configure the Syslog server, set transport protocol and port.

### ► *Enabling or Disabling Syslog message notification:*

```
config:# network services syslog enabled <option>
```

*Variables:*

- <option> is one of the options: true or false.

| Option | Description                                  |
|--------|----------------------------------------------|
| true   | The Syslog message notification is enabled.  |
| false  | The Syslog message notification is disabled. |

### ► *Configure the Syslog server:*

This command will set the syslog server.

```
config:# network services syslog server <ServerIP>
```

*Variables:*

- <ServerIP> is the ip address/Host name of syslog server.

### ► *Configure the Transport protocol:*

This command will set the transport protocol (UDP/TCP/TCP+TLS)

```
config:# network services syslog protocol <protocol>
```

*Variables:*

- <protocol> is either UDP/TCP or TCP+TLS.

---

Note: If TCP+TLS protocol is configured, you need to upload a CA certificate in PEM format.

---

► *Configure the Port:*

This command will set the port to communicate.

```
config:# network services syslog port <portnumber>
```

*Variables:*

- <portnumber> is numeric value (1..65535).

### Changing the Modbus Configuration

You can enable or disable the Modbus agent, configure its read-only capability, or change its TCP port.

A Modbus command begins with *network services modbus*.

► *Enabling or Disabling Modbus*

This command enables or disables the Modbus protocol.

```
config:# network services modbus enabled <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                   |
|--------|-------------------------------|
| true   | The Modbus agent is enabled.  |
| false  | The Modbus agent is disabled. |

► *Enabling or Disabling the Read-Only Mode*

This command enables or disables the read-only mode for the Modbus agent.

```
config:# network services modbus readonly <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                    |
|--------|--------------------------------|
| true   | The read-only mode is enabled. |

| Option | Description                     |
|--------|---------------------------------|
| false  | The read-only mode is disabled. |

### ► *Changing the Modbus Port*

This command changes the Modbus port.

```
config:# network services modbus port <n>
```

*Variables:*

- <n> is a TCP port number between 1 and 65535. The default Modbus port is 502.

### Setting Redfish Service

You can enable or disable the redfish service.

### ► *Enabling or Disabling Redfish service:*

```
config:# network services redfish enabled <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                      |
|--------|----------------------------------|
| true   | The redfish service is enabled.  |
| false  | The redfish service is disabled. |

### Enabling or Disabling Service Advertising

This command enables or disables the zero configuration protocol, which enables advertising or auto discovery of network services. See Enabling Service Advertising for details.

```
config:# network services zeroconfig <method> <option>
```

*Variables:*

- <method> is one of the options: *mdns* or *llmnr*.

| Option | Description                                            |
|--------|--------------------------------------------------------|
| mdns   | Service advertisement via MDNS is enabled or disabled. |

| Option | Description                                             |
|--------|---------------------------------------------------------|
| llmnr  | Service advertisement via LLMNR is enabled or disabled. |

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                                                                |
|---------|----------------------------------------------------------------------------|
| enable  | Service advertisement via the selected method (MDNS or LLMNR) is enabled.  |
| disable | Service advertisement via the selected method (MDNS or LLMNR) is disabled. |

## Changing Your Own Password

Every user can change their own password via this command if they have the Change Own Password privilege. Note that this command does not begin with *user*.

```
config:# password
```

After performing this command, the system prompts you to enter both current and new passwords respectively.

---

**Important: After the password is changed successfully, the new password is effective immediately whether or not you type the command "apply" to save the changes.**

---

### ► Example

This procedure changes your own password:

- 1) Verify that you have entered the configuration mode.
- 2) Type the following command and press Enter.

```
config:# password
```

- 3) Type the existing password and press Enter when the following prompt appears.

Current password:

- 4) Type the new password and press Enter when the following prompt appears.

Enter new password:

- 5) Re-type the new password for confirmation and press Enter when the following prompt appears.

Re-type new password:

## Peripheral Devices Configuration Commands

You can use the CLI to set the Z Coordinate format for external sensors, set the device altitude, enable/disable device auto management, set the active powered dry contact limit, and enable/disable the "mute other door handle" setting.

Peripheral device configuration commands begin with:

*config:# peripheralDevicesSetup*

| Field                                   | Description                                                     | More Information                                                                                                                                                                                                                    |
|-----------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>externalSensorsZCoordinateFormat</i> | Keyword                                                         | Z coordinate refers to the height of sensors.                                                                                                                                                                                       |
| <i>rackUnits / freeForm</i>             | Enter one of these values                                       | rackUnits: The height of the Z coordinate is measured in standard rack units. Type a numeric value in the rack unit to describe the Z coordinate.<br>freeForm: Any alphanumeric string can be used for specifying the Z coordinate. |
|                                         |                                                                 |                                                                                                                                                                                                                                     |
| <i>deviceAltitude</i>                   | Keyword                                                         | Specifies the altitude of your PDU above sea level (in meters). Must be set if a differential air pressure sensor is attached because the device's altitude is associated with the altitude correction factor.                      |
| <i>number1</i>                          | Enter an integer number from -425 up to 3000 when using Meters. | Negative numbers indicate altitude below sea level.                                                                                                                                                                                 |
|                                         |                                                                 |                                                                                                                                                                                                                                     |
| <i>peripheralDeviceAutoManagement</i>   | Keyword                                                         | Enable or disable the automatic management feature for sensors.                                                                                                                                                                     |
| <i>enable / disable</i>                 | Enter one of these values                                       |                                                                                                                                                                                                                                     |
|                                         |                                                                 |                                                                                                                                                                                                                                     |
| <i>activePoweredDryContactLimit</i>     | Keyword                                                         | You need either 'Change Peripheral Device Configuration' privilege or 'Administrator Privileges'.                                                                                                                                   |
| <i>number2</i>                          | Enter an integer number from 0 - 24.                            | An "active" actuator is turned ON, or, if with a door handle connected, is OPENED.                                                                                                                                                  |
|                                         |                                                                 |                                                                                                                                                                                                                                     |
| <i>muteOtherDoorHandle</i>              | Keyword                                                         |                                                                                                                                                                                                                                     |

|                         |                           |  |
|-------------------------|---------------------------|--|
| <i>enable / disable</i> | Enter one of these values |  |
|-------------------------|---------------------------|--|

► **Examples:**

```
config:# peripheralDevicesSetup
externalSensorsZCoordinateFormat freeForm
deviceAltitude 3
peripheralDeviceAutoManagement enable
activePoweredDryContactLimit 2
muteOtherDoorHandle disable
```

## Power Supply

powerSupply <command> [arguments...]

Available commands:

fanSpeed Configures shelf power supply fan speed override

[My PDU] config:# powerSupply fanSpeed

powerSupply fanSpeed <label> <override>

Configures shelf power supply fan speed override

label Power supply label

override Power supply fan override (1..100 or auto)

## Rack Unit

## Role Configuration Commands

A role configuration command begins with *role*.

### Creating a Role

This command creates a new role, with a list of semicolon-separated privileges assigned to the role.

```
config:# role create <name> <privilege1>;<privilege2>;<privilege3>...
```

If a specific privilege contains any arguments, that privilege should be followed by a colon and the argument(s).

```
config:# role create <name> <privilege1>:<argument1>,<argument2>...;
 <privilege2>:<argument1>,<argument2>...;
 <privilege3>:<argument1>,<argument2>...;
 ...
```

#### Variables:

- <name> is a string comprising up to 32 ASCII printable characters.
- <privilege1>, <privilege2>, <privilege3> and the like are names of the privileges assigned to the role. Separate each privilege with a semi-colon.
- <argument1>, <argument2> and the like are arguments set for a particular privilege. Separate a privilege and its argument(s) with a colon, and separate arguments with a comma if there are more than one argument for a privilege.

## All Privileges

This table lists all privileges. Note that available privileges vary according to the model you purchased. For example, a PDU without the outlet switching function does not have the privilege "switchOutlet."

| Privilege                          | Description                                                     |
|------------------------------------|-----------------------------------------------------------------|
| acknowledgeAlarms                  | Acknowledge Alarms                                              |
| adminPrivilege                     | Administrator Privileges                                        |
| changeAssetStripConfiguration      | Change Asset Strip Configuration                                |
| changeAuthSettings                 | Change Authentication Settings                                  |
| changeDateTimeSettings             | Change Date/Time Settings                                       |
| changeExternalSensorsConfiguration | Change Peripheral Device Configuration                          |
| changeModemConfiguration           | Change Modem Configuration                                      |
| changeNetworkSettings              | Change Network Settings                                         |
| changePassword                     | Change Own Password                                             |
| changePduConfiguration             | Change Pdu, Inlet, Outlet & Overcurrent Protector Configuration |
| changeSecuritySettings             | Change Security Settings                                        |
| changeSnmppSettings                | Change SNMP Settings                                            |
| changeUserSettings                 | Change Local User Management                                    |
| changeWebcamSettings               | Change Webcam Configuration                                     |

| Privilege            | Description                             |
|----------------------|-----------------------------------------|
| clearLog             | Clear Local Event Log                   |
| firmwareUpdate       | Firmware Update                         |
| performReset         | Reset (Warm Start)                      |
| switchActuator*      | Switch Actuator                         |
| switchOutlet**       | Switch Outlet                           |
| switchOutletGroup*** | Switch Outlet Group                     |
| viewAuthSettings     | View Authentication Settings            |
| viewEventSetup       | View Event Settings                     |
| viewEverything       | Unrestricted View Privileges            |
| viewLog              | View Local Event Log                    |
| viewSecuritySettings | View Security Settings                  |
| viewSntpSettings     | View SNMP Settings                      |
| viewUserSettings     | View Local User Management              |
| viewWebcamSettings   | View Webcam Snapshots and Configuration |

\* The "switchActuator" privilege requires an argument that is separated with a colon. The argument could be:

- All actuators, that is,  
`switchActuator:all`
- An actuator's ID number. For example:  
`switchActuator:1`  
`switchActuator:2`  
`switchActuator:3`
- A list of comma-separated ID numbers of different actuators. For example:  
`switchActuator:1,3,6`

---

*Note: The ID number of each actuator is shown in the Legrand Power Shelf web interface. It is an integer.*

---

\*\* The "switchOutlet" privilege requires an argument that is separated with a colon. The argument could be:

- All outlets, that is,  
`switchOutlet:all`
- An outlet number. For example:

```
switchOutlet:1
switchOutlet:2
switchOutlet:3
```

- A list of comma-separated outlets. For example:

```
switchOutlet:1,3,5,7,8,9
```

\*\*\* The "switchOutletGroup" privilege requires an argument that is separated with a colon. The argument could be:

- All outlet groups, that is,

```
switchOutletGroup:all
```

- An outlet group number. For example:

```
switchOutletGroup:1
```

```
switchOutletGroup:2
```

```
switchOutletGroup:3
```

- A list of comma-separated outlet groups. For example:

```
switchOutletGroup:1,3,5,7,8,9
```

## Modifying a Role

You can modify diverse parameters of an existing role, including its privileges.

### ► *Modify a role's description:*

```
config:# role modify <name> description "<description>"
```

### ► *Add more privileges to a specific role:*

```
config:# role modify <name> addPrivileges
 <privilege1>;<privilege2>;<privilege3>...
```

If a specific privilege contains any arguments, add a colon and the argument(s) after that privilege.

```
config:# role modify <name> addPrivileges
 <privilege1>:<argument1>,<argument2>...;
 <privilege2>:<argument1>,<argument2>...;
 <privilege3>:<argument1>,<argument2>...;
 ...
```

### ► *Remove specific privileges from a role:*

```
config:# role modify <name> removePrivileges
 <privilege1>;<privilege2>;<privilege3>...
```

If a specific privilege contains any arguments, add a colon and the argument(s) after that privilege.

```
config:# role modify <name> removePrivileges
 <privilege1>:<argument1>,<argument2>...;
 <privilege2>:<argument1>,<argument2>...;
 <privilege3>:<argument1>,<argument2>...;
 ...
```

---

**Note:** When removing privileges from a role, make sure the specified privileges and arguments (if any) exactly match those assigned to the role. Otherwise, the command fails to remove specified privileges that are not available.

---

*Variables:*

- <name> is a string comprising up to 32 ASCII printable characters.
- <description> is a description comprising alphanumeric characters. The <description> variable must be enclosed in quotes when it contains spaces.
- <privilege1>, <privilege2>, <privilege3> and the like are names of the privileges assigned to the role. Separate each privilege with a semi-colon. See *All Privileges* (on page ).
- <argument1>, <argument2> and the like are arguments set for a particular privilege. Separate a privilege and its argument(s) with a colon, and separate arguments with a comma if there are more than one argument for a privilege. For arguments syntax, see *All Privileges* (on page ).

## Deleting a Role

This command deletes an existing role.

```
config:# role delete <name>
```

## Example - Creating a Role

The following command creates a new role and assigns privileges to the role.

```
config:# role create tester firmwareUpdate;viewEventSetup
```

*Results:*

- A new role "tester" is created.
- Two privileges are assigned to the role: firmwareUpdate (Firmware Update) and viewEventSetup (View Event Settings).

## Security Configuration Commands

A security configuration command begins with *security*.

## Firewall Control

You can manage firewall control features through the CLI. The firewall control lets you set up rules that permit or disallow access to the Legrand Power Shelf from a specific or a range of IP addresses.

- An IPv4 firewall configuration command begins with *security ipAccessControl ipv4*.
- An IPv6 firewall configuration command begins with *security ipAccessControl ipv6*.

### Modifying Firewall Control Parameters

There are different commands for modifying firewall control parameters.

- *IPv4 commands*

#### ► *Enable or disable the IPv4 firewall control feature:*

```
config:# security ipAccessControl ipv4 enabled <option>
```

#### ► *Determine the default IPv4 firewall control policy for inbound traffic:*

```
config:# security ipAccessControl ipv4 defaultPolicyIn <policy>
```

#### ► *Determine the default IPv4 firewall control policy for outbound traffic:*

```
config:# security ipAccessControl ipv4 defaultPolicyOut <policy>
```

- *IPv6 commands*

#### ► *Enable or disable the IPv6 firewall control feature:*

```
config:# security ipAccessControl ipv6 enabled <option>
```

#### ► *Determine the default IPv6 firewall control policy for inbound traffic:*

```
config:# security ipAccessControl ipv6 defaultPolicyIn <policy>
```

#### ► *Determine the default IPv6 firewall control policy for outbound traffic:*

```
config:# security ipAccessControl ipv6 defaultPolicyOut <policy>
```

Variables:

- <option> is one of the options: *true* or *false*.

| Option | Description                             |
|--------|-----------------------------------------|
| true   | Enables the IP access control feature.  |
| false  | Disables the IP access control feature. |

- <policy> is one of the options: *accept*, *drop* or *reject*.

| Option | Description                                                                                                      |
|--------|------------------------------------------------------------------------------------------------------------------|
| accept | Accepts traffic from all IP addresses.                                                                           |
| drop   | Discards traffic from all IP addresses, without sending any failure notification to the source host.             |
| reject | Discards traffic from all IP addresses, and an ICMP message is sent to the source host for failure notification. |

## Managing Firewall Rules

You can add, delete or modify firewall rules using the CLI commands.

- An IPv4 firewall control rule command begins with *security ipAccessControl ipv4 rule*.
- An IPv6 firewall control rule command begins with *security ipAccessControl ipv6 rule*.

### Adding a Firewall Rule

Depending on where you want to add a new firewall rule in the list, the command for adding a rule varies.

- *IPv4 commands*

- ▶ *Add a new rule to the bottom of the IPv4 rules list:*

```
config:# security ipAccessControl ipv4 rule add <direction> <ip_mask>
 <policy>
```

- ▶ *Add a new IPv4 rule by inserting it above or below a specific rule:*

```
config:# security ipAccessControl ipv4 rule add <direction> <ip_mask>
 <policy> <insert> <rule_number>
```

-- OR --

```
config:# security ipAccessControl ipv4 rule add <direction> <insert>
 <rule_number> <ip_mask> <policy>
```

- *IPv6 commands*

► *Add a new rule to the bottom of the IPv6 rules list:*

```
config:# security ipAccessControl ipv6 rule add <direction> <ip_mask>
 <policy>
```

► *Add a new IPv6 rule by inserting it above or below a specific rule:*

```
config:# security ipAccessControl ipv6 rule add <direction> <ip_mask>
 <policy> <insert> <rule_number>
```

-- OR --

```
config:# security ipAccessControl ipv6 rule add <direction> <insert>
 <rule_number> <ip_mask> <policy>
```

*Variables:*

- <direction> is one of the options: *in* or *out*.

| Direction | Description       |
|-----------|-------------------|
| in        | Inbound traffic.  |
| out       | Outbound traffic. |

- <ip\_mask> is the combination of the IP address and subnet mask values (or prefix length), which are separated with a slash. For example, an IPv4 combination looks like this: *192.168.94.222/24*.
- <policy> is one of the options: *accept*, *drop* or *reject*.

| Policy | Description                                                                                                                                    |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------|
| accept | Accepts traffic from/to the specified IP address(es).                                                                                          |
| drop   | Discards traffic from/to the specified IP address(es), without sending any failure notification to the source or destination host.             |
| reject | Discards traffic from/to the specified IP address(es), and an ICMP message is sent to the source or destination host for failure notification. |

- <insert> is one of the options: *insertAbove* or *insertBelow*.

| Option      | Description                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------|
| insertAbove | Inserts the new rule above the specified rule number. Then:<br><i>new rule's number = the specified rule number</i>     |
| insertBelow | Inserts the new rule below the specified rule number. Then:<br><i>new rule's number = the specified rule number + 1</i> |

- <rule\_number> is the number of the existing rule which you want to insert the new rule above or below.

## Modifying a Firewall Rule

Depending on what to modify in an existing rule, the command varies.

- *IPv4 commands*

### ► *Modify an IPv4 rule's IP address and/or subnet mask:*

```
config:# security ipAccessControl ipv4 rule modify <direction>
 <rule_number> ipMask <ip_mask>
```

### ► *Modify an IPv4 rule's policy:*

```
config:# security ipAccessControl ipv4 rule modify <direction>
 <rule_number> policy <policy>
```

### ► *Modify all contents of an existing IPv4 rule:*

```
config:# security ipAccessControl ipv4 rule modify <direction>
 <rule_number> ipMask <ip_mask> policy <policy>
```

- *IPv6 commands*

### ► *Modify an IPv6 rule's IP address and/or prefix length:*

```
config:# security ipAccessControl ipv6 rule modify <direction>
 <rule_number> ipMask <ip_mask>
```

► **Modify an IPv6 rule's policy:**

```
config:# security ipAccessControl ipv6 rule modify <direction>
 <rule_number> policy <policy>
```

► **Modify all contents of an IPv6 existing rule:**

```
config:# security ipAccessControl ipv6 rule modify <direction>
 <rule_number> ipMask <ip_mask> policy <policy>
```

*Variables:*

- <direction> is one of the options: *in* or *out*.

| Direction | Description       |
|-----------|-------------------|
| in        | Inbound traffic.  |
| out       | Outbound traffic. |

- <rule\_number> is the number of the existing rule that you want to modify.
- <ip\_mask> is the combination of the IP address and subnet mask values (or prefix length), which are separated with a slash. For example, an IPv4 combination looks like this: *192.168.94.222/24*.
- <policy> is one of the options: *accept*, *drop* or *reject*.

| Option | Description                                                                                                                                    |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------|
| accept | Accepts traffic from/to the specified IP address(es).                                                                                          |
| drop   | Discards traffic from/to the specified IP address(es), without sending any failure notification to the source or destination host.             |
| reject | Discards traffic from/to the specified IP address(es), and an ICMP message is sent to the source or destination host for failure notification. |

## Deleting a Firewall Rule

The following commands remove a specific IPv4 or IPv6 rule from the list.

► **IPv4 commands**

```
config:# security ipAccessControl ipv4 rule delete <direction>
 <rule_number>
```

## ► IPv6 commands

```
config:# security ipAccessControl ipv6 rule delete <direction>
 <rule_number>
```

Variables:

- <direction> is one of the options: *in* or *out*.

| Direction | Description       |
|-----------|-------------------|
| in        | Inbound traffic.  |
| out       | Outbound traffic. |

- <rule\_number> is the number of the existing rule that you want to remove.

## FIPS

You can configure FIPS mode through the CLI. This command begins with `security fips [enabled]` and sets the mode accordingly for the next reboot.

## ► Configure FIPS mode:

```
config:# security fips <option> <option1>
```

Variables:

- <option> is one of the options: *enable* or *disable*.

| Option  | Description       |
|---------|-------------------|
| enabled | Enables the FIPS. |

- <option1> is one of the options: *true* or *false*.

| Option | Description                           |
|--------|---------------------------------------|
| true   | Enables the FIPS mode on next reboot  |
| false  | Disables the FIPS mode on next reboot |

## Restricted Service Agreement

The CLI command used to set the Restricted Service Agreement feature begins with `security restrictedServiceAgreement`,

## Enabling or Disabling the Restricted Service Agreement

This command activates or deactivates the Restricted Service Agreement.

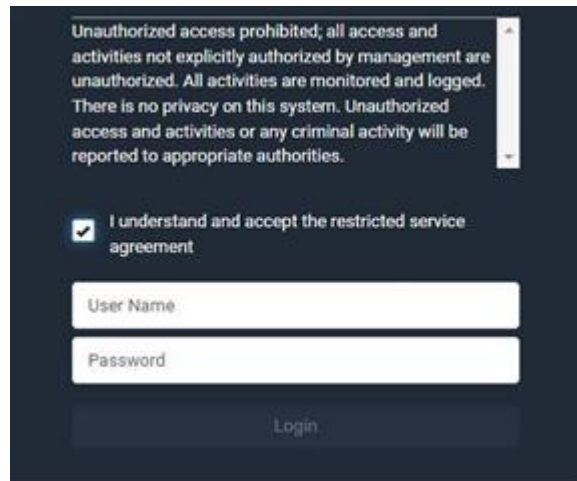
```
config:# security restrictedServiceAgreement enabled <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                                        |
|--------|----------------------------------------------------|
| true   | Enables the Restricted Service Agreement feature.  |
| false  | Disables the Restricted Service Agreement feature. |

After the Restricted Service Agreement feature is enabled, the agreement's content is displayed on the login screen.

A screenshot of a login interface on a dark background. At the top, a text box contains the following warning: "Unauthorized access prohibited; all access and activities not explicitly authorized by management are unauthorized. All activities are monitored and logged. There is no privacy on this system. Unauthorized access and activities or any criminal activity will be reported to appropriate authorities." Below this text is a checkbox that is checked, with the label "I understand and accept the restricted service agreement". Underneath the checkbox are two input fields: "User Name" and "Password". At the bottom of the form is a "Login" button.

Do either of the following, or the login fails:

- In the web interface, select the checkbox labeled "I understand and accept the restricted service agreement."

---

*Tip: To select the agreement checkbox using the keyboard, first press Tab to go to the checkbox and then Enter.*

---

- In the CLI, type *y* when the confirmation message "I understand and accept the restricted service agreement" is displayed.

## Specifying the Agreement Contents

This command allows you to create or modify contents of the Restricted Service Agreement.

```
config:# security restrictedServiceAgreement bannerContent
```

After performing the above command, do the following:

- 1) Type the text comprising up to 10,000 ASCII characters when the CLI prompts you to enter the content.
- 2) To end the content:
  - a. Press Enter.
  - b. Type `--END--` to indicate the end of the content.
  - c. Press Enter again.

If the content is successfully entered, the CLI displays this message "Successfully entered Restricted Service Agreement" followed by the total number of entered characters in parentheses.

---

Note: The new content of Restricted Service Agreement is saved only after typing the `apply` command.

---

## Login Limitation

The login limitation feature controls login-related limitations, such as password aging, simultaneous logins using the same user name, and the idle time permitted before forcing a user to log out.

A login limitation command begins with `security loginLimits`.

### Single Login Limitation

This command enables or disables the single login feature, which controls whether multiple logins using the same login name simultaneously is permitted.

```
config:# security loginLimits singleLogin <option>
```

*Variables:*

- `<option>` is one of the options: *enable* or *disable*.

| Option  | Description                        |
|---------|------------------------------------|
| enable  | Enables the single login feature.  |
| disable | Disables the single login feature. |

### Password Aging

This command enables or disables the password aging feature, which controls whether the password should be changed at a regular interval:

```
config:# security loginLimits passwordAging <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                          |
|---------|--------------------------------------|
| enable  | Enables the password aging feature.  |
| disable | Disables the password aging feature. |

## Password Aging Interval

This command determines how often the password should be changed.

```
config:# security loginLimits passwordAgingInterval <value>
```

*Variables:*

- <value> is a numeric value in days set for the password aging interval. The interval ranges from 7 to 365 days.

## Idle Timeout

This command determines how long a user can remain idle before that user is forced to log out of the Legrand Power Shelf web interface or CLI.

```
config:# security loginLimits idleTimeout <value>
```

*Variables:*

- <value> is a numeric value in minutes set for the idle timeout. The timeout ranges from 1 to 1440 minutes (24 hours).

## User Blocking

There are different commands for changing different user blocking parameters. These commands begin with `security userBlocking`.

- *Determine the maximum number of failed logins before blocking a user:*

```
config:# security userBlocking maximumNumberOfFailedLogins <value1>
```

- *Determine how long a user is blocked:*

```
config:# security userBlocking blockTime <value2>
```

*Variables:*

- <value1> is an integer between 3 and 10, or *unlimited*, which sets no limit on the maximum number of failed logins and thus disables the user blocking function.
- <value2> is a numeric value ranging from 1 to 1440 minutes (one day), or *infinite*, which blocks the user all the time until the user is unblocked manually.

## Strong Passwords

The strong password commands determine whether a strong password is required for login, and what a strong password should contain at least.

A strong password command begins with `security strongPasswords`.

### Enabling or Disabling Strong Passwords

This command enables or disables the strong password feature.

```
config:# security strongPasswords enabled <option>
```

*Variables:*

- <option> is one of the options: *true* or *false*.

| Option | Description                           |
|--------|---------------------------------------|
| true   | Enables the strong password feature.  |
| false  | Disables the strong password feature. |

### Minimum Password Length

This command determines the minimum length of the password.

```
config:# security strongPasswords minLength <value>
```

*Variables:*

- <value> is an integer between 8 and 32.

### Maximum Password Length

This command determines the maximum length of the password.

```
config:# security strongPasswords maxLength <value>
```

*Variables:*

- <value> is an integer between 16 and 64.

## Lowercase Character Requirement

This command determines whether a strong password includes at least a lowercase character.

```
config:# security strongPasswords enforceAtLeastOneLowerCaseCharacter
 <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                                   |
|---------|-----------------------------------------------|
| enable  | At least one lowercase character is required. |
| disable | No lowercase character is required.           |

## Uppercase Character Requirement

This command determines whether a strong password includes at least an uppercase character.

```
config:# security strongPasswords enforceAtLeastOneUpperCaseCharacter
 <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                                   |
|---------|-----------------------------------------------|
| enable  | At least one uppercase character is required. |
| disable | No uppercase character is required.           |

## Numeric Character Requirement

This command determines whether a strong password includes at least a numeric character.

```
config:# security strongPasswords enforceAtLeastOneNumericCharacter
 <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                                 |
|---------|---------------------------------------------|
| enable  | At least one numeric character is required. |
| disable | No numeric character is required.           |

## Special Character Requirement

This command determines whether a strong password includes at least a special character.

```
config:# security strongPasswords enforceAtLeastOneSpecialCharacter
 <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Option  | Description                                 |
|---------|---------------------------------------------|
| enable  | At least one special character is required. |
| disable | No special character is required.           |

## Maximum Password History

This command determines the number of previous passwords that CANNOT be repeated when changing the password.

```
config:# security strongPasswords passwordHistoryDepth <value>
```

Variables:

- <value> is an integer between 1 and 12.

## Role-Based Access Control

In addition to firewall access control based on IP addresses, you can configure other access control rules that are based on both IP addresses and users' roles.

- An IPv4 role-based access control command begins with *security roleBasedAccessControl ipv4*.
- An IPv6 role-based access control command begins with *security roleBasedAccessControl ipv6*.

### Modifying Role-Based Access Control Parameters

There are different commands for modifying role-based access control parameters.

- *IPv4 commands*

#### ► Enable or disable the IPv4 role-based access control feature:

```
config:# security roleBasedAccessControl ipv4 enabled <option>
```

#### ► Determine the IPv4 role-based access control policy:

```
config:# security roleBasedAccessControl ipv4 defaultPolicy <policy>
```

- *IPv6 commands*

#### ► Enable or disable the IPv6 role-based access control feature:

```
config:# security roleBasedAccessControl ipv6 enabled <option>
```

#### ► Determine the IPv6 role-based access control policy:

```
config:# security roleBasedAccessControl ipv6 defaultPolicy <policy>
```

Variables:

- <option> is one of the options: *true* or *false*.

| Option | Description                                    |
|--------|------------------------------------------------|
| true   | Enables the role-based access control feature. |

| Option | Description                                     |
|--------|-------------------------------------------------|
| false  | Disables the role-based access control feature. |

- <policy> is one of the options: *allow* or *deny*.

| Policy | Description                                                          |
|--------|----------------------------------------------------------------------|
| allow  | Accepts traffic from all IP addresses regardless of the user's role. |
| deny   | Drops traffic from all IP addresses regardless of the user's role.   |

---

Tip: You can combine both commands to modify all role-based access control parameters at a time.

---

## Managing Role-Based Access Control Rules

You can add, delete or modify role-based access control rules.

- An IPv4 role-based access control command for managing rules begins with *security roleBasedAccessControl ipv4 rule*.
- An IPv6 role-based access control command for managing rules begins with *security roleBasedAccessControl ipv6 rule*.

### Adding a Role-Based Access Control Rule

Depending on where you want to add a new rule in the list, the command syntax for adding a rule varies.

- *IPv4 commands*

- *Add a new rule to the bottom of the IPv4 rules list:*

```
config:# security roleBasedAccessControl ipv4 rule add <start_ip> <end_ip>
 <role> <policy>
```

- Add a new IPv4 rule by inserting it above or below a specific rule:

```
config:# security roleBasedAccessControl ipv4 rule add <start_ip> <end_ip>
 <role>
 <policy> <insert> <rule_number>
```

- IPv6 commands

- Add a new rule to the bottom of the IPv6 rules list:

```
config:# security roleBasedAccessControl ipv6 rule add <start_ip> <end_ip>
 <role> <policy>
```

- Add a new IPv6 rule by inserting it above or below a specific rule:

```
config:# security roleBasedAccessControl ipv6 rule add <start_ip> <end_ip>
 <role>
 <policy> <insert> <rule_number>
```

#### Variables:

- <start\_ip> is the starting IP address.
- <end\_ip> is the ending IP address.
- <role> is the role for which you want to create an access control rule.
- <policy> is one of the options: *allow* or *deny*.

| Policy | Description                                                                                         |
|--------|-----------------------------------------------------------------------------------------------------|
| allow  | Accepts traffic from the specified IP address range when the user is a member of the specified role |
| deny   | Drops traffic from the specified IP address range when the user is a member of the specified role   |

- <insert> is one of the options: *insertAbove* or *insertBelow*.

| Option      | Description                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------|
| insertAbove | Inserts the new rule above the specified rule number. Then:<br><i>new rule's number = the specified rule number</i>     |
| insertBelow | Inserts the new rule below the specified rule number. Then:<br><i>new rule's number = the specified rule number + 1</i> |

- <rule\_number> is the number of the existing rule which you want to insert the new rule above or below.

## Modifying a Role-Based Access Control Rule

Depending on what to modify in an existing rule, the command syntax varies.

- *IPv4 commands*

► *Modify a rule's IPv4 address range:*

```
config:# security roleBasedAccessControl ipv4 rule modify <rule_number>
 startIpAddress <start_ip> endIpAddress <end_ip>
```

► *Modify an IPv4 rule's role:*

```
config:# security roleBasedAccessControl ipv4 rule modify <rule_number>
 role <role>
```

► *Modify an IPv4 rule's policy:*

```
config:# security roleBasedAccessControl ipv4 rule modify <rule_number>
 policy <policy>
```

► *Modify all contents of an existing IPv4 rule:*

```
config:# security roleBasedAccessControl ipv4 rule modify <rule_number>
 startIpAddress <start_ip> endIpAddress <end_ip> role <role>
 policy <policy>
```

- *IPv6 commands*

► *Modify a rule's IPv6 address range:*

```
config:# security roleBasedAccessControl ipv6 rule modify <rule_number>
 startIpAddress <start_ip> endIpAddress <end_ip>
```

► *Modify an IPv6 rule's role:*

```
config:# security roleBasedAccessControl ipv6 rule modify <rule_number>
 role <role>
```

► **Modify an IPv6 rule's policy:**

```
config:# security roleBasedAccessControl ipv6 rule modify <rule_number>
 policy <policy>
```

► **Modify all contents of an existing IPv6 rule:**

```
config:# security roleBasedAccessControl ipv6 rule modify <rule_number>
 startIpAddress <start_ip> endIpAddress <end_ip> role <role>
 policy <policy>
```

*Variables:*

- <rule\_number> is the number of the existing rule that you want to modify.
- <start\_ip> is the starting IP address.
- <end\_ip> is the ending IP address.
- <role> is one of the existing roles.
- <policy> is one of the options: *allow* or *deny*.

| Policy | Description                                                                                         |
|--------|-----------------------------------------------------------------------------------------------------|
| allow  | Accepts traffic from the specified IP address range when the user is a member of the specified role |
| deny   | Drops traffic from the specified IP address range when the user is a member of the specified role   |

## Deleting a Role-Based Access Control Rule

These commands remove a specific rule from the list.

► **IPv4 commands**

```
config:# security roleBasedAccessControl ipv4 rule delete <rule_number>
```

► **IPv6 commands**

```
config:# security roleBasedAccessControl ipv6 rule delete <rule_number>
```

*Variables:*

- <rule\_number> is the number of the existing rule that you want to remove.

## Enabling or Disabling Front Panel Outlet Switching

---

---

This section applies to outlet-switching capable models only.

---

---

The following CLI commands control whether you can turn on or off an outlet by operating the front panel display.

- *To enable the front panel outlet control feature:*

```
config:# security frontPanelPermissions add switchOutlet
```

- *To disable the front panel outlet control feature:*

```
config:# security frontPanelPermissions remove switchOutlet
```

---

Tip: If your Legrand Power Shelf supports multiple front panel permissions, you can combine them into one command by adding a semicolon (;) between different permissions. For example, the following CLI command enables both front panel actuator control and outlet switching functions simultaneously.

```
security frontPanelPermissions add switchActuator;switchOutlet
```

---

## Enabling or Disabling Front Panel Actuator Control

The following CLI commands control whether you can turn on or off connected actuator(s) by operating the front panel LCD display.

- *To enable the front panel actuator control feature:*

```
config:# security frontPanelPermissions add switchActuator
```

- *To disable the front panel actuator control feature:*

```
config:# security frontPanelPermissions remove switchActuator
```

---

Tip: If your Legrand Power Shelf supports multiple front panel permissions, you can combine them into one command by adding a semicolon (;) between different permissions. For example, the following CLI command enables both front panel actuator control and the internal beeper-muting functions simultaneously.

```
security frontPanelPermissions add switchActuator;muteBeeper
```

---

## Enabling or Disabling Front Panel Beeper-Sound Control

The following CLI commands control whether you can mute the internal beeper by operating the front panel LCD display when the beeper sounds.

- *To enable the front panel beeper sound control feature:*

```
config:# security frontPanelPermissions add muteBeeper
```

- *To disable the front panel actuator control feature:*

```
config:# security frontPanelPermissions remove muteBeeper
```

---

Tip: If your Legrand Power Shelf supports multiple front panel permissions, you can combine them into one command by adding a semicolon (;) between different permissions. For example, the following CLI command enables both front panel actuator control and the the internal beeper-muting functions simultaneously.

```
security frontPanelPermissions add switchActuator;muteBeeper
```

---

## Sensor

A sensor configuration command begins with *sensor*. You can use the commands to configure the threshold, hysteresis and assertion timeout values for any sensor associated with the following items.

- Inlets
- Inlet poles (for three-phase PDUs only)
- Overcurrent protectors
- Environmental sensors

It is permitted to assign a new value to the threshold at any time regardless of whether the threshold has been enabled.

---

Note: Your Xerus product may not support all commands.

---

## Commands for Environmental Sensors

A sensor threshold configuration command for environmental sensors begins with *sensor externalsensor*.

You can configure various environmental sensor threshold settings at a time by combining multiple commands.

► *Set the Upper Critical threshold for an environmental sensor:*

```
config:# sensor externalsensor <n> <sensor type> upperCritical <option>
```

► *Set the Upper Warning threshold for an environmental sensor:*

```
config:# sensor externalsensor <n> <sensor type> upperWarning <option>
```

► *Set the Lower Critical threshold for an environmental sensor:*

```
config:# sensor externalsensor <n> <sensor type> lowerCritical <option>
```

► *Set the Lower Warning threshold for an environmental sensor:*

```
config:# sensor externalsensor <n> <sensor type> lowerWarning <option>
```

► *Set the deassertion hysteresis for an environmental sensor:*

```
config:# sensor externalsensor <n> <sensor type> hysteresis <hy_value>
```

► *Set the assertion timeout for an environmental sensor:*

```
config:# sensor externalsensor <n> <sensor type> assertionTimeout
 <as_value>
```

*Variables:*

- <n> is the ID number of the environmental sensor that you want to configure. The ID number is available in the web interface or using the command "show externalsensors <n>" in the CLI. It is an integer starting at 1.
- <sensor type> is one of the following numeric sensor types:

| Sensor types     | Description               |
|------------------|---------------------------|
| absoluteHumidity | Absolute humidity sensors |

| Sensor types     | Description               |
|------------------|---------------------------|
| relativeHumidity | Relative humidity sensors |
| temperature      | Temperature sensors       |
| airPressure      | Air pressure sensors      |
| airFlow          | Air flow sensors          |
| vibration        | Vibration sensors         |

---

*Note: If the specified sensor type does not match the type of the specified environmental sensor, this error message appears: "Specified sensor type 'XXX' does not match the sensor's type (<sensortype>)," where XXX is the specified sensor type, and <sensortype> is the correct sensor type.*

---

- <option> is one of the options: *enable*, *disable* or a numeric value.

| Option          | Description                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| enable          | Enables the specified threshold for a specific environmental sensor.                                                     |
| disable         | Disables the specified threshold for a specific environmental sensor.                                                    |
| A numeric value | Sets a value for the specified threshold of a specific environmental sensor and enables this threshold at the same time. |

- <hy\_value> is a numeric value that is assigned to the hysteresis for the specified environmental sensor.
- <as\_value> is a number in samples that is assigned to the assertion timeout for the specified environmental sensor. It ranges between 1 and 100.

## Commands for Inlet Sensors

A sensor configuration command for inlets begins with *sensor inlet*.

You can configure various inlet sensor threshold settings at a time by combining multiple commands.

- *Set the Upper Critical threshold for an inlet sensor:*

```
config:# sensor inlet <n> <sensor type> upperCritical <option>
```

► *Set the Upper Warning threshold for an inlet sensor:*

```
config:# sensor inlet <n> <sensor type> upperWarning <option>
```

► *Set the Lower Critical threshold for an inlet sensor:*

```
config:# sensor inlet <n> <sensor type> lowerCritical <option>
```

► *Set the Lower Warning threshold for an inlet sensor:*

```
config:# sensor inlet <n> <sensor type> lowerWarning <option>
```

► *Set the deassertion hysteresis for an inlet sensor:*

```
config:# sensor inlet <n> <sensor type> hysteresis <hy_value>
```

► *Set the assertion timeout for an inlet sensor:*

```
config:# sensor inlet <n> <sensor type> assertionTimeout <as_value>
```

*Variables:*

- <n> is the number of the inlet that you want to configure. For a single-inlet PDU, <n> is always 1.
- <sensor type> is one of the following sensor types:

| Sensor type       | Description            |
|-------------------|------------------------|
| current           | Current sensor         |
| voltage           | Voltage sensor         |
| activePower       | Active power sensor    |
| apparentPower     | Apparent power sensor  |
| powerFactor       | Power factor sensor    |
| activeEnergy      | Active energy sensor   |
| unbalancedCurrent | Unbalanced load sensor |
| lineFrequency     | Line frequency sensor  |

| Sensor type | Description              |
|-------------|--------------------------|
| phaseAngle  | Inlet phase angle sensor |

---

*Note: If the requested sensor type is not supported, the "Sensor is not available" message is displayed.*

---

- <option> is one of the options: *enable*, *disable* or a numeric value.

| Option          | Description                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------------------|
| enable          | Enables the specified threshold for a specific inlet sensor.                                                     |
| disable         | Disables the specified threshold for a specific inlet sensor.                                                    |
| A numeric value | Sets a value for the specified threshold of a specific inlet sensor and enables this threshold at the same time. |

- <hy\_value> is a numeric value that is assigned to the hysteresis for the specified inlet sensor.
- <as\_value> is a numeric value that is assigned to the assertion timeout for the specified inlet sensor.

## Commands for Inlet Pole Sensors

A sensor configuration command for inlet poles begins with *sensor inletpole*. This type of command is available on a three-phase PDU only.

You can configure various inlet pole sensor threshold settings at a time by combining multiple commands.

### ► Set the Upper Critical Threshold for an Inlet Pole:

```
config:# sensor inletpole <n> <p> <sensor type> upperCritical <option>
```

### ► Set the Upper Warning Threshold for an Inlet Pole:

```
config:# sensor inletpole <n> <p> <sensor type> upperWarning <option>
```

### ► Set the Lower Critical Threshold for an Inlet Pole:

```
config:# sensor inletpole <n> <p> <sensor type> lowerCritical <option>
```

### ► Set the Lower Warning Threshold for an Inlet Pole:

```
config:# sensor inletpole <n> <p> <sensor type> lowerWarning <option>
```

► **Set the Inlet Pole's Deassertion Hysteresis:**

```
config:# sensor inletpole <n> <p> <sensor type> hysteresis <hy_value>
```

► **Set the Inlet Pole's Assertion Timeout:**

```
config:# sensor inletpole <n> <p> <sensor type> assertionTimeout
 <as_value>
```

*Variables:*

- <n> is the number of the inlet whose pole sensors you want to configure. For a single-inlet PDU, <n> is always 1.
- <p> is the label of the inlet pole that you want to configure.

| Pole | Label<br><p> | Current sensor | Voltage sensor |
|------|--------------|----------------|----------------|
| 1    | L1           | L1             | L1 - L2        |
| 2    | L2           | L2             | L2 - L3        |
| 3    | L3           | L3             | L3 - L1        |

- <sensor type> is one of the following sensor types:

| Sensor type    | Description                  |
|----------------|------------------------------|
| current        | Current sensor               |
| voltage        | Voltage sensor               |
| activePower    | Active power sensor          |
| apparentEnergy | Apparent Energy sensor       |
| apparentPower  | Apparent power sensor        |
| powerFactor    | Power factor sensor          |
| activeEnergy   | Active energy sensor         |
| L-L Voltage    | Voltage is measured per line |

---

*Note: If the requested sensor type is not supported, the "Sensor is not available" message is displayed.*

---

- <option> is one of the options: *enable*, *disable* or a numeric value.

| Option          | Description                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| enable          | Enables the specified threshold for the specified inlet pole sensor.                                                     |
| disable         | Disables the specified threshold for the specified inlet pole sensor.                                                    |
| A numeric value | Sets a value for the specified threshold of the specified inlet pole sensor and enables this threshold at the same time. |

- <hy\_value> is a numeric value that is assigned to the hysteresis for the specified inlet pole sensor.
- <as\_value> is a number in samples that is assigned to the assertion timeout for the specified inlet pole sensor.

► *Additional sensors supported by specific models:*

Specific models support some or all of the following sensors. The CLI command(s) listed above can be also applied to the following sensors. Note that the measurement unit of current values in CLI is A, not mA.

| Sensor type             | Description                                                                                                                                                                                                                 |                                                                                                                                                                                                                                   |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| peakCurrent             | Peak current sensor                                                                                                                                                                                                         | Supported on PXC and Legrand PDU only <ul style="list-style-type: none"> <li>• three-phase models also support pole-level peak current</li> <li>• models with metered breakers also support breaker-level peak current</li> </ul> |
| reactivePower           | Reactive power sensor                                                                                                                                                                                                       |                                                                                                                                                                                                                                   |
| displacementPowerFactor | Displacement power factor sensor                                                                                                                                                                                            |                                                                                                                                                                                                                                   |
| residualCurrent         | RCM current sensor <ul style="list-style-type: none"> <li>• For Type A, it is the sensor that detects residual AC current.</li> <li>• For Type B, it is the sensor that detects both residual AC and DC current.</li> </ul> |                                                                                                                                                                                                                                   |
| residualDCCurrent       | RCM DC current sensor - detects residual DC current only.<br>Available only on PDUs with RCM Type B.                                                                                                                        |                                                                                                                                                                                                                                   |

## Commands for Inlet Line Sensors

A sensor configuration command for inlet line begins with *sensor inletline*. This type of command is available on a three-phase PDU only.

You can configure various inlet line sensor threshold settings at a time by combining multiple commands.

► *Set the Upper Critical Threshold for an Inlet line:*

```
config:# sensor inletline <n> <p> <sensor type> upperCritical <option>
```

► *Set the Upper Warning Threshold for an Inlet line:*

```
config:# sensor inletline <n> <p> <sensor type> upperWarning <option>
```

► *Set the Lower Critical Threshold for an Inlet line:*

```
config:# sensor inletline <n> <p> <sensor type> lowerCritical <option>
```

► *Set the Lower Warning Threshold for an Inlet line:*

```
config:# sensor inletline <n> <p> <sensor type> lowerWarning <option>
```

► *Set the Inlet line's Deassertion Hysteresis:*

```
config:# sensor inletline <n> <p> <sensor type> hysteresis <hy_value>
```

► *Set the Inlet line's Assertion Timeout:*

```
config:# sensor inletline <n> <p> <sensor type> assertionTimeout
 <as_value>
```

*Variables:*

- <n> is the number of the inlet whose line sensors you want to configure. For a single-inlet PDU, <n> is always 1.
- <p> is the label of the inlet line that you want to configure.
- <sensor type> is voltage.

| Label <n> | Line <p> |
|-----------|----------|
| 1         | L1-L2    |

| Label <n> | Line <p> |
|-----------|----------|
| 2         | L2-L3    |
| 3         | L3-L1    |

- <option> is one of the options: *enable*, *disable* or a numeric value.

| Option          | Description                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| enable          | Enables the specified threshold for the specified inlet line sensor.                                                     |
| disable         | Disables the specified threshold for the specified inlet line sensor.                                                    |
| A numeric value | Sets a value for the specified threshold of the specified inlet line sensor and enables this threshold at the same time. |

## PDU

## Power Supply

## Server Reachability Configuration Commands

You can use the CLI to add or delete an IT device, such as a server, from the server reachability list, or modify the settings for a monitored IT device. A server reachability configuration command begins with *serverReachability*.

### Adding a Monitored Device

This command adds a new IT device to the server reachability list.

```
config:# serverReachability add <IP_host> <enable> <succ_ping>
 <fail_ping> <succ_wait> <fail_wait> <resume> <disable_count>
```

*Variables:*

- <IP\_host> is the IP address or host name of the IT device that you want to add.
- <enable> is one of the options: *true* or *false*.

| Option | Description                                                      |
|--------|------------------------------------------------------------------|
| true   | Enables the ping monitoring feature for the newly added device.  |
| false  | Disables the ping monitoring feature for the newly added device. |

- <succ\_ping> is the number of successful pings for declaring the monitored device "Reachable." Valid range is 0 to 200.

- <fail\_ping> is the number of consecutive unsuccessful pings for declaring the monitored device "Unreachable." Valid range is 1 to 100.
- <succ\_wait> is the wait time to send the next ping after a successful ping. Valid range is 5 to 600 (seconds).
- <fail\_wait> is the wait time to send the next ping after an unsuccessful ping. Valid range is 3 to 600 (seconds).
- <resume> is the wait time before the Legrand Power Shelf resumes pinging after declaring the monitored device "Unreachable." Valid range is 5 to 120 (seconds).
- <disable\_count> is the number of consecutive "Unreachable" declarations before the Legrand Power Shelf disables the ping monitoring feature for the monitored device and returns to the "Waiting for reliable connection" state. Valid range is 1 to 100 or *unlimited*.

## Deleting a Monitored Device

This command removes a monitored IT device from the server reachability list.

```
config:# serverReachability delete <n>
```

*Variables:*

- <n> is a number representing the sequence of the IT device in the monitored server list. You can find each IT device's sequence number using the CLI command of `show serverReachability` as illustrated below.

| # | IP address      | Enabled | Status                          |
|---|-----------------|---------|---------------------------------|
| 1 | 192.168.84.126  | Yes     | Waiting for reliable connection |
| 2 | www.raritan.com | Yes     | Waiting for reliable connection |

## Modifying a Monitored Device's Settings

The command to modify a monitored IT device's settings begins with *serverReachability modify*.

You can modify various settings for a monitored device at a time.

- *Modify a device's IP address or host name:*

```
config:# serverReachability modify <n> ipAddress <IP_host>
```

- *Enable or disable the ping monitoring feature for the device:*

```
config:# serverReachability modify <n> pingMonitoringEnabled <option>
```

- *Modify the number of successful pings for declaring "Reachable":*

```
config:# serverReachability modify <n> numberOfSuccessfulPingsToEnable
 <succ_number>
```

- *Modify the number of unsuccessful pings for declaring "Unreachable":*

```
config:# serverReachability modify <n> numberOfUnsuccessfulPingsForFailure
 <fail_number>
```

- *Modify the wait time after a successful ping:*

```
config:# serverReachability modify <n> waitTimeAfterSuccessfulPing
 <succ_wait>
```

- *Modify the wait time after an unsuccessful ping:*

```
config:# serverReachability modify <n> waitTimeAfterUnsuccessfulPing
 <fail_wait>
```

- *Modify the wait time before resuming pinging after declaring "Unreachable":*

```
config:# serverReachability modify <n> waitTimeBeforeResumingPinging
 <resume>
```

- *Modify the number of consecutive "Unreachable" declarations before disabling the ping monitoring feature:*

```
config:# serverReachability modify <n> numberOfFailuresToDisable
 <disable_count>
```

*Variables:*

- <n> is a number representing the sequence of the IT device in the server monitoring list.
- <IP\_host> is the IP address or host name of the IT device whose settings you want to modify.
- <option> is one of the options: *true* or *false*.

| Option | Description                                                    |
|--------|----------------------------------------------------------------|
| true   | Enables the ping monitoring feature for the monitored device.  |
| false  | Disables the ping monitoring feature for the monitored device. |

- <succ\_number> is the number of successful pings for declaring the monitored device "Reachable." Valid range is 0 to 200.
- <fail\_number> is the number of consecutive unsuccessful pings for declaring the monitored device "Unreachable." Valid range is 1 to 100.
- <succ\_wait> is the wait time to send the next ping after a successful ping. Valid range is 5 to 600 (seconds).
- <fail\_wait> is the wait time to send the next ping after an unsuccessful ping. Valid range is 3 to 600 (seconds).
- <resume> is the wait time before the system resumes pinging after declaring the monitored device "Unreachable." Valid range is 5 to 120 (seconds).
- <disable\_count> is the number of consecutive "Unreachable" declarations before disabling the ping monitoring feature for the monitored device and returns to the "Waiting for reliable connection" state. Valid range is 1 to 100 or *unlimited*.

## Example - Server Settings Changed

The following command modifies several ping monitoring settings for the second server in the server reachability list.

```
config:# serverReachability modify 2 numberOfSuccessfulPingsToEnable 10
 numberOfUnsuccessfulPingsForFailure 8
 waitTimeAfterSuccessfulPing 30
```

## Serial Port Configuration Commands

A serial port configuration command begins with *serial*.

### Forcing the Device Detection Mode

This command forces the serial port on the Legrand Power Shelf to enter a specific device detection mode.

```
config:# serial deviceDetectionType <mode>
```

*Variables:*

- <mode> is one of the detection modes: *automatic*, *forceConsole*, *forceAnalogModem*, or *forceGsmModem*.

| Option           | Description                                                                                                                                                                                           |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| automatic        | The Legrand Power Shelf automatically detects the type of the device connected to the serial port.<br><br>Select this option unless your Legrand Power Shelf cannot correctly detect the device type. |
| forceConsole     | The Legrand Power Shelf attempts to recognize that the connected device is set for the console mode.                                                                                                  |
| forceAnalogModem | The Legrand Power Shelf attempts to recognize that the connected device is an analog modem.                                                                                                           |
| forceGsmModem    | The Legrand Power Shelf attempts to recognize that the connected device is a GSM modem.                                                                                                               |

## Example - Baud Rate

The following command sets the CONSOLE baud rate of the Legrand Power Shelf device's serial port to 9600 bps.

```
config:# serial consoleBaudRate 9600
```

## Time Configuration Commands

A time configuration command begins with *time*.

### ► Determining the Time Setup Method

This command determines the method to configure the system date and time.

```
config:# time method <method>
```

*Variables:*

- <method> is one of the time setup options: *manual* or *ntp*.

| Mode   | Description                                                         |
|--------|---------------------------------------------------------------------|
| manual | The date and time settings are customized.                          |
| ntp    | The date and time settings synchronize with a specified NTP server. |

### ► Setting NTP Parameters

A time configuration command for NTP-related parameters begins with *time ntp*.

► *Specify the primary time server:*

```
config:# time ntp firstServer <first_server>
```

► *Specify the secondary time server:*

```
config:# time ntp secondServer <second_server>
```

► *To delete the primary time server:*

```
config:# time ntp firstServer ""
```

► *To delete the secondary time server:*

```
config:# time ntp secondServer ""
```

*Variables:*

- The <first\_server> is the IP address or host name of the primary NTP server.
- The <second\_server> is the IP address or host name of the secondary NTP server.

► *Customizing the Date and Time*

To manually configure the date and time, use the following CLI commands to specify them.

---

Note: You shall set the time configuration method to "manual" prior to customizing the date and time.

---

► *Assign the date:*

```
config:# time set date <yyyy-mm-dd>
```

► *Assign the time:*

```
config:# time set time <hh:mm:ss>
```

*Variables:*

| Variable     | Description                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------------------|
| <yyyy-mm-dd> | Type the date in the format of yyyy-mm-dd.<br>For example, type <i>2015-11-30</i> for November 30, 2015.            |
| <hh:mm:ss>   | Type the time in the format of hh:mm:ss in the 24-hour format.<br>For example, type <i>13:50:20</i> for 1:50:20 pm. |

## Setting the Time Zone

The CLI has a list of time zones to configure the date and time for Legrand Power Shelf.

```
config:# time zone
```

After a list of time zones is displayed, type the index number of the time zone or press Enter to cancel.

### ► To set the time zone:

- 1) Type the time zone command as shown below and press Enter.

```
config:# time zone
```

- 2) The system shows a list of time zones. Type the index number of the desired time zone and press Enter.
- 3) Type `apply` for the selected time zone to take effect.

## Setting the Automatic Daylight Savings Time

This command determines whether the daylight saving time is applied to the time settings.

```
config:# time autoDST <option>
```

*Variables:*

- <option> is one of the options: *enable* or *disable*.

| Mode    | Description                        |
|---------|------------------------------------|
| enable  | Daylight savings time is enabled.  |
| disable | Daylight savings time is disabled. |

## Checking the Accessibility of NTP Servers

This command verifies the accessibility of NTP servers specified manually and then shows the result.

To perform this command successfully, you must:

- Own the "Change Date/Time Settings" permission.
- Customize NTP servers.

This command is available either in the administrator/user mode or in the configuration mode.

► *In the administrator/user mode:*

```
check ntp
```

► *In the configuration mode:*

```
config# check ntp
```

## Example -Time Configuration

This section illustrates several time configuration examples.

► *Example 1 - Time Setup Method*

The following command sets the date and time settings by using the NTP servers.

```
config:# time method ntp
```

► *Example 2 - Primary NTP Server*

The following command sets the primary time server to 192.168.80.66.

```
config:# time ntp firstServer 192.168.80.66
```

## User Configuration Commands

Most user configuration commands begin with *user* except for the password change command.

### Creating a User Profile

This command creates a new user profile.

```
config:# user create <name> <option> <roles>
```

After performing the user creation command, the Legrand Power Shelf prompts you to assign a password to the newly-created user. Then:

- 1) Type the password and press Enter.
- 2) Re-type the same password for confirmation and press Enter.

*Variables:*

- <name> is a string comprising up to 32 ASCII printable characters. The <name> variable CANNOT contain spaces.
- <option> is one of the options: *enable* or *disable*.

| Option  | Description                              |
|---------|------------------------------------------|
| enable  | Enables the newly-created user profile.  |
| disable | Disables the newly-created user profile. |

- <roles> is a role or a list of comma-separated roles assigned to the specified user profile.

## Modifying a User Profile

A user profile contains various parameters that you can modify.

---

Tip: You can combine all commands to modify the parameters of a specific user profile at a time.

---

### Changing a User's Password

This command allows you to change an existing user's password if you have the Administrator Privileges.

```
config:# user modify <name> password
```

After performing the above command, you are prompted to enter a new password. Then:

- 1) Type a new password and press Enter.
- 2) Re-type the new password for confirmation and press Enter.

*Variables:*

- <name> is the name of the user whose settings you want to change.

#### ► Example

The following procedure illustrates how to change the password of the user "May."

- 1) Verify that you have entered the configuration mode.
- 2) Type the following command to change the password for the user profile "May."

```
config:# user modify May password
```

- 3) Type a new password when prompted, and press Enter.
- 4) Type the same new password and press Enter.
- 5) If the password change is completed successfully, the config:# prompt appears.

### Modifying a User's Personal Data

You can change a user's personal data, including the user's full name, telephone number, and email address.

Various commands can be combined to modify the parameters of a specific user profile at a time.

#### ► *Change a user's full name:*

```
config:# user modify <name> fullName "<full_name>"
```

#### ► *Change a user's telephone number:*

```
config:# user modify <name> telephoneNumber "<phone_number>"
```

#### ► *Change a user's email address:*

```
config:# user modify <name> emailAddress <email_address>
```

#### *Variables:*

- <name> is the name of the user whose settings you want to change.
- <full\_name> is a string comprising up to 64 ASCII printable characters. The <full\_name> variable must be enclosed in quotes when it contains spaces.
- <phone\_number> is the phone number that can reach the specified user. The <phone\_number> variable must be enclosed in quotes when it contains spaces.
- <email\_address> is the email address of the specified user.

### Enabling or Disabling a User Profile

This command enables or disables a user profile. A user can log in to the Legrand Power Shelf only after that user's user profile is enabled.

```
config:# user modify <name> enabled <option>
```

#### *Variables:*

- <name> is the name of the user whose settings you want to change.
- <option> is one of the options: *true* or *false*.

| Option | Description                          |
|--------|--------------------------------------|
| true   | Enables the specified user profile.  |
| false  | Disables the specified user profile. |

## Forcing a Password Change

This command determines whether the password change is forced when a user logs in to the specified user profile next time.

```
config:# user modify <name> forcePasswordChangeOnNextLogin <option>
```

*Variables:*

- <name> is the name of the user whose settings you want to change.
- <option> is one of the options: *true* or *false*.

| Option | Description                                            |
|--------|--------------------------------------------------------|
| true   | A password change is forced on the user's next login.  |
| false  | No password change is forced on the user's next login. |

## Modifying SNMPv3 Settings

There are different commands to modify the SNMPv3 parameters of a specific user profile. You can combine all of the following commands to modify the SNMPv3 parameters at a time.

- *Enable or disable the SNMP v3 access to Legrand Power Shelf for the specified user:*

```
config:# user modify <name> snmpV3Access <option1>
```

- *Determine the security level:*

```
config:# user modify <name> securityLevel <option2>
```

- *Determine whether the authentication passphrase is identical to the password:*

```
config:# user modify <name> userPasswordAsAuthenticationPassphrase
 <option3>
```

► *Determine the authentication passphrase:*

```
config:# user modify <name> authenticationPassPhrase
```

After performing the above command, the system prompts you to enter the authentication passphrase.

► *Determine whether the privacy passphrase is identical to the authentication passphrase:*

```
config:# user modify <name> useAuthenticationPassPhraseAsPrivacyPassPhrase
 <option4>
```

► *Determine the privacy passphrase:*

```
config:# user modify <name> privacyPassPhrase
```

After performing the above command, the system prompts you to enter the privacy passphrase.

► *Determine the authentication protocol:*

```
config:# user modify <name> authenticationProtocol <option5>
```

► *Determine the privacy protocol:*

```
config:# user modify <name> privacyProtocol <option6>
```

*Variables:*

- <name> is the name of the user whose settings you want to change.
- <option1> is one of the options: *enable* or *disable*.

| Option  | Description                                                    |
|---------|----------------------------------------------------------------|
| enable  | Enables the SNMP v3 access permission for the specified user.  |
| disable | Disables the SNMP v3 access permission for the specified user. |

- <option2> is one of the options: *noAuthNoPriv*, *authNoPriv* or *authPriv*.

| Option       | Description                       |
|--------------|-----------------------------------|
| noAuthNoPriv | No authentication and no privacy. |

| Option     | Description                    |
|------------|--------------------------------|
| authNoPriv | Authentication and no privacy. |
| authPriv   | Authentication and privacy.    |

- <option3> is one of the options: *true* or *false*.

| Option | Description                                               |
|--------|-----------------------------------------------------------|
| true   | Authentication passphrase is identical to the password.   |
| false  | Authentication passphrase is different from the password. |

- <option4> is one of the options: *true* or *false*.

| Option | Description                                                         |
|--------|---------------------------------------------------------------------|
| true   | Privacy passphrase is identical to the authentication passphrase.   |
| false  | Privacy passphrase is different from the authentication passphrase. |

- <option5> is one of the following options:

| Option  | Description                                 |
|---------|---------------------------------------------|
| MD5     | MD5 authentication protocol is applied.     |
| SHA-1   | SHA-1 authentication protocol is applied.   |
| SHA-224 | SHA-224 authentication protocol is applied. |
| SHA-256 | SHA-256 authentication protocol is applied. |
| SHA-384 | SHA-384 authentication protocol is applied. |
| SHA-512 | SHA-512 authentication protocol is applied. |

- <option6> is one of the following options:

| Option  | Description                          |
|---------|--------------------------------------|
| DES     | DES privacy protocol is applied.     |
| AES-128 | AES-128 privacy protocol is applied. |
| AES-192 | AES-192 privacy protocol is applied. |

| Option                       | Description                          |
|------------------------------|--------------------------------------|
| AES-256                      | AES-256 privacy protocol is applied. |
| AES-192 (3DES key extension) | AES-192 privacy protocol is applied. |
| AES-256 (3DES key extension) | AES-256 privacy protocol is applied. |

- An authentication or privacy passphrase is a string comprising 8 to 32 ASCII printable characters.

## Changing the Role(s)

This command changes the role(s) of a specific user.

```
config:# user modify <name> roles <roles>
```

*Variables:*

- <name> is the name of the user whose settings you want to change.
- <roles> is a role or a list of comma-separated roles assigned to the specified user profile.

## Changing Measurement Units

You can change the measurement units displayed for temperatures, length, and pressure for a specific user profile. Different measurement unit commands can be combined so that you can set all measurement units at a time.

---

Note: The measurement unit change only applies to the web interface and command line interface.

---

### ► Set the preferred temperature unit:

```
config:# user modify <name> preferredTemperatureUnit <option1>
```

### ► Set the preferred length unit:

```
config:# user modify <name> preferredLengthUnit <option2>
```

### ► Set the preferred pressure unit:

```
config:# user modify <name> preferredPressureUnit <option3>
```

*Variables:*

- <name> is the name of the user whose settings you want to change.
- <option1> is one of the options: *C* or *F*.

| Option | Description                                         |
|--------|-----------------------------------------------------|
| C      | This option displays the temperature in Celsius.    |
| F      | This option displays the temperature in Fahrenheit. |

- <option2> is one of the options: *meter* or *feet*.

| Option | Description                                          |
|--------|------------------------------------------------------|
| meter  | This option displays the length or height in meters. |
| feet   | This option displays the length or height in feet.   |

- <option3> is one of the options: *pascal* or *psi*.

| Option | Description                                              |
|--------|----------------------------------------------------------|
| pascal | This option displays the pressure value in Pascals (Pa). |
| psi    | This option displays the pressure value in psi.          |

## Specifying the SSH Public Key

If the SSH key-based authentication is enabled, specify the SSH public key for each user profile using the following procedure.

### ► To specify or change the SSH public key for a specific user:

- 1) Type the SSH public key command as shown below and press Enter.

```
config:# user modify <name> sshPublicKey
```

- 2) The system prompts you to enter the contents of the SSH public key. Do the following to input the contents:

- a. Open your SSH public key with a text editor.
- b. Copy all contents in the text editor.
- c. Paste the contents into the terminal.
- d. Press Enter.

► *To remove an existing SSH public key:*

- 1) Type the same command as shown above.
- 2) When the system prompts you to input the contents, press Enter without typing or pasting anything.

► *Example*

The following procedure illustrates how to change the SSH public key for the user "assistant."

- 1) Verify that you have entered the configuration mode.
- 2) Type the following command and press Enter.

```
config:# user modify assistant sshPublicKey
```

- 3) You are prompted to enter a new SSH public key.
- 4) Type the new key and press Enter.

## Deleting a User Profile

This command deletes an existing user profile.

```
config:# user delete <name>
```

## Changing Your Own Password

Every user can change their own password via this command if they have the Change Own Password privilege. Note that this command does not begin with *user*.

```
config:# password
```

After performing this command, the system prompts you to enter both current and new passwords respectively.

---

**Important: After the password is changed successfully, the new password is effective immediately whether or not you type the command "apply" to save the changes.**

---

► *Example*

This procedure changes your own password:

1) Verify that you have entered the configuration mode.

2) Type the following command and press Enter.

```
config:# password
```

3) Type the existing password and press Enter when the following prompt appears.

Current password:

4) Type the new password and press Enter when the following prompt appears.

Enter new password:

5) Re-type the new password for confirmation and press Enter when the following prompt appears.

Re-type new password:

## Setting Default Measurement Units

Default measurement units, including temperature, length, and pressure units, apply to the user interfaces across all users except for those whose preferred measurement units are set differently by themselves or the administrator. Diverse measurement unit commands can be combined so that you can set all default measurement units at a time.

---

Note: The measurement unit change only applies to the web interface and command line interface.

---

### ► Set the default temperature unit:

```
config:# user defaultpreferences preferredTemperatureUnit <option1>
```

### ► Set the default length unit:

```
config:# user defaultpreferences preferredLengthUnit <option2>
```

### ► Set the default pressure unit:

```
config:# user defaultpreferences preferredPressureUnit <option3>
```

Variables:

- <option1> is one of the options: *C* or *F*.

| Option | Description                                         |
|--------|-----------------------------------------------------|
| C      | This option displays the temperature in Celsius.    |
| F      | This option displays the temperature in Fahrenheit. |

- <option2> is one of the options: *meter* or *feet*.

| Option | Description                                          |
|--------|------------------------------------------------------|
| meter  | This option displays the length or height in meters. |
| feet   | This option displays the length or height in feet.   |

- <option3> is one of the options: *pascal* or *psi*.

| Option | Description                                              |
|--------|----------------------------------------------------------|
| pascal | This option displays the pressure value in Pascals (Pa). |
| psi    | This option displays the pressure value in psi.          |

## Unblocking a User

If any user is blocked from accessing, you can unblock them at the local console.

### ► To unblock a user:

- 1) Access the CLI interface using any terminal program via a local connection.
- 2) When the Username prompt appears, type `unlock` and press Enter.

**Username: unlock**

- 3) When the "Username to unblock" prompt appears, type the name of the blocked user and press Enter.

**Username to unblock:**

- 4) A message appears, indicating that the specified user was unblocked successfully.

## Actuator Control Operations

An actuator, which is connected to a dry contact signal channel of a sensor package, can control a mechanism or system. You can switch on or off that mechanism or system through the actuator control command in the CLI.

Perform these commands in the administrator or user mode.

## Network Troubleshooting in Diagnostic Mode

## Querying DNS Servers

This command syntax queries Internet domain name server (DNS) information of a network host.

```
diag> nslookup <host>
```

*Variables:*

- <host> is the name or IP address of the host whose DNS information you want to query.

## Showing Network Connections

This command syntax displays network connections and/or status of ports.

```
diag> netstat <option>
```

*Variables:*

- <option> is one of the options: *ports* or *connections*.

| Option      | Description                |
|-------------|----------------------------|
| ports       | Shows TCP/UDP ports.       |
| connections | Shows network connections. |

## Testing the Network Connectivity

This ping command sends the ICMP ECHO\_REQUEST message to a network host for checking its network connectivity. If the output shows the host is responding properly, the network connectivity is good. If not, either the host is shut down or it is not being properly connected to the network.

```
diag> ping <host>
```

*Variables:*

- <host> is the host name or IP address whose networking connectivity you want to check.

*Options:*

- You can include any or all of additional options listed below in the ping command.

| Options         | Description                                                                                     |
|-----------------|-------------------------------------------------------------------------------------------------|
| count <number1> | Determines the number of messages to be sent. <number1> is an integer number between 1 and 100. |
| size <number2>  | Determines the packet size. <number2> is an integer number in bytes between 1 and 65468.        |

| Options              | Description                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| timeout<br><number3> | Determines the waiting period before timeout. <number3> is an integer number in seconds ranging from 1 to 600. |

The command looks like the following when it includes all options:

```
diag> ping <host> count <number1> size <number2> timeout <number3>
```

## Tracing the Route

This command syntax traces the network route between your Legrand Power Shelf and a network host.

```
diag> traceroute <host> <useICMP> <timeout>
```

*Variables:*

- <host> is the name or IP address of the host you want to trace.
- <useICMP> is optional. It has only one value -- useICMP. Type useICMP in the end of this command only when you want to use ICMP packets rather than UDP packets.
- <timeout> is the maximum amount of time (in seconds) until traceroute will be terminated (1..900).

## Example - Ping Command

The following command checks the network connectivity of the host 192.168.84.222 by sending the ICMP ECHO\_REQUEST message to the host for 5 times. You can also use ipv6 address to check the connectivity.

```
diag> ping 192.168.84.222 count 5

ping fd07:a47c:0000:823e:3b02:0000:982b:0463
count 5
```

## Example: Ping Monitoring and SNMP Notifications

In this illustration, it is assumed that a significant PDU (IP address: 192.168.84.95) shall be monitored by your Legrand Power Shelf to make sure that PDU is properly operating all the time, and the Legrand Power Shelf must send out SNMP notifications (trap or inform) if that PDU is declared unreachable due to power or network failure. The prerequisite for this example is that the power sources are different between your Legrand Power Shelf and the monitored PDU.

This requires the following two steps.

► *Step 1: Set up the ping monitoring for the target PDU*

- 1) Choose Device Settings > Server Reachability.
- 2) Click  **Monitor New Server**.
- 3) Ensure the "Enable ping monitoring for this server" checkbox is selected.
- 4) Enter the data shown below.

- Enter the server's data.

| Field               | Data entered  |
|---------------------|---------------|
| IP address/hostname | 192.168.84.95 |

- To make the Legrand Power Shelf declare the accessibility of the monitored PDU every 15 seconds (3 pings \* 5 seconds) when that PDU is accessible, enter the following data.

| Field                                        | Data entered |
|----------------------------------------------|--------------|
| Number of successful pings to enable feature | 3            |
| Wait time after successful ping              | 5            |

- To make the Legrand Power Shelf declare the inaccessibility of the monitored PDU when that PDU becomes inaccessible for around 12 seconds (4 seconds \* 3 pings), enter the following data.

| Field                                                | Data entered |
|------------------------------------------------------|--------------|
| Wait time after unsuccessful ping                    | 4            |
| Number of consecutive unsuccessful pings for failure | 3            |

- To make the Legrand Power Shelf stop pinging the target PDU for 60 seconds (1 minute) after the PDU inaccessibility is declared, enter the following data. After 60 seconds, the Legrand Power Shelf will re-ping the target PDU,

| Field                                           | Data entered |
|-------------------------------------------------|--------------|
| Wait time before resuming pinging after failure | 60           |

- The "Number of consecutive failures before disabling feature (0 = unlimited)" can be set to any value you want.
- 5) Click Create.

► *Step 2: Create an event rule to send SNMP notifications for the target PDU*

- 1) Choose Device Settings > Event Rules.
- 2) Click  **New Rule**.
- 3) Select the Enabled checkbox to enable this new rule.
- 4) Configure the following.

| Field/setting     | Data specified                                                  |
|-------------------|-----------------------------------------------------------------|
| Rule name         | Send SNMP notifications for PDU (192.168.84.95) inaccessibility |
| Event             | Choose Server Monitoring > 192.168.84.95 > Unreachable          |
| Trigger condition | Select the Unreachable radio button                             |

This will make the Legrand Power Shelf react only when the target PDU becomes inaccessible.

5) Select the System SNMP Notification Action.

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