Simply Better Connections

eco DC

Energy & DCIM Management
Web GUI
User Manual

PE Device Safety Notice

- Set the maximum permissible breaker protection in the building circuitry to the current rating specified on the rating plate. Observe all national regulations and safety codes as well as deviations for breakers.
- Only connect the PE Device to a grounded power outlet or a grounded system!
- Make sure that the total current input of the connected systems does not exceed the current rating specified on the rating plate of the PE Device.
- There is a risk of explosion if the battery is replaced with an incorrect type. Dispose of used batteries according to the relevant instructions.

User Information

Online Registration

Be sure to register your product at our online support center:

International	http://eservice.aten.com

Telephone Support

For telephone support, call this number:

International	886-2-8692-6959
China	86-400-810-0-810
Japan	81-3-5615-5811
Korea	82-2-467-6789
North America	1-888-999-ATEN ext 4988 1-949-428-1111

User Notice

All information, documentation, and specifications contained in this manual are subject to change without prior notification by the manufacturer. The manufacturer makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties as to merchantability or fitness for any particular purpose. Any of the manufacturer's software described in this manual is sold or licensed *as is*. Should the programs prove defective following their purchase, the buyer (and not the manufacturer, its distributor, or its dealer), assumes the entire cost of all necessary servicing, repair and any incidental or consequential damages resulting from any defect in the software.

The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Product Information

For information about all ATEN products and how they can help you connect without limits, visit ATEN on the Web or contact an ATEN Authorized Reseller. Visit ATEN on the Web for a list of locations and telephone numbers:

International	http://www.aten.com
North America	http://www.aten-usa.com

Contents

About this Manual

This user manual is provided to help you get the most out of your eco DC. It covers all aspects of the application, including its installation, configuration, and operation:

Applications covered in this manual include:

Models	Product Names
eco DC	Energy & DCIM Management Web GUI

An overview of the information found in the manual is provided below.

Chapter 1, Introduction, Introduces you to the eco DC, its purpose, features, and functions.

Chapter 2, Installation, Provides the necessary steps to install eco DC.

Chapter 3, First-time Setup, Provides the basic operation instructions for first-time setup of eco DC.

Chapter 4, Energy, Guides you through how to monitor the energy used via ATEN PDUs.

Chapter 5, User, Guides you through how to manage the two different types of user login accounts: administrator and user.

Chapter 6, Device, Covers how to configure the devices, eco PDUs, managed.

Chapter 7, System, Guides you through other system settings of eco DC.

Chapter 8, Log, Describes the system and device logs recorded by eco DC.

Appendix, Provides certificate information and utility details regarding the eco DC.

Note:

- Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit or connected devices.
- ATEN regularly updates its product documentation for new features and fixes. For an up-to-date eco DC documentation, visit

  http://www.aten.com/global/en/

Conventions

This manual uses the following conventions:

`Monospaced`	Indicates text that you should key in.
[ ]	Indicates keys you should press. For example, [Enter] means to press the **Enter** key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1.	Numbered lists represent procedures with sequential steps.
♦	Bullet lists provide information, but do not involve sequential steps.
>	Indicates consecutive selecting options (such as on a menu or dialog box). For example, Start > Run means to open the *Start* menu, and then select *Run*.
⚠	Indicates critical information.

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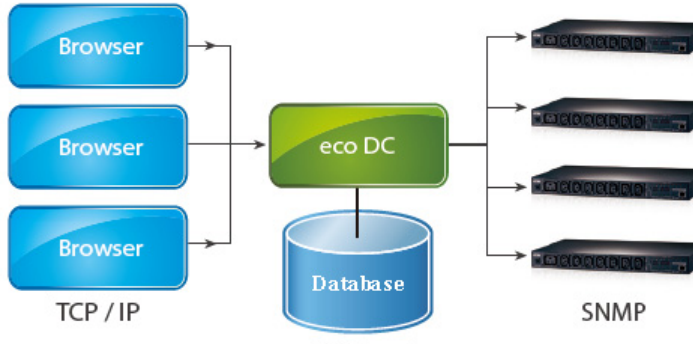
Chapter 1
Introduction

Overview

The ATEN eco DC Web GUI has been developed to work with ATEN PE series green energy power distribution units (PDUs) to effectively increase the efficiency of data centers' power usage. Eco DC is a web-based GUI allowing users to manage and control PDUs through a web browser. There is no additional software to install or setup steps needed to manage your ATEN PDUs. The eco DC can run in any OS platform allowing users to easily manage the power consumption of a data center through intuitive interface with easy to read graphics.

Coupled with sensor-enabled eco PDUs*, the eco DC web GUI can give you means to assess, diagnose, and estimate how much energy you are using and ultimately save. Following the suggestions generated by the sensor-enabled system allows you to optimize energy usage to save energy without harming your IT equipment's reliability. The ATEN eco DC web GUI provides secure and centralized (single portal, single login) access, administration, and management for up to 3000 PE devices over the network – local and worldwide – anywhere and anytime.



eco DC Structure

Because ATEN eco DC offers a single, integrated web-based GUI to manage all your devices, users no longer need to learn the interface for each individual device or remember every device's IP address, making system management easier and more efficient.

By consolidating the management of your ATEN devices, eco DC allows every device to be accessed and controlled by means of a single login. Its ability to manage all outlets in different ATEN devices makes eco DC the ideal solution for the power management of large data centers and branch office server rooms located in several remote locations within the same intranet.

ATEN eco DC is able to automatically discover all ATEN devices within the same intranet and has the ability to monitor/manage them. The web GUI provides monitoring/managing of PE device outlet power ON/OFF/Reboot, sequential ON/OFF of outlet, current / kWH / environmental monitoring at PDU/outlet level, name of outlet, current / kWH / environmental sensor threshold setting/alert, etc., through SNMP. Threshold exceeding alerts are also available through Syslog/SMTP.

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* See *Compatible Products* on eco DC's web page for a list of compatible ATEN sensor-enabled eco PDUs.

ATEN's eco DC offers the full functionality capable of managing the PDUs through SNMP. This allows multiple users to log to the web GUI concurrently to manage PDUs in different authorized room, floors, or buildings, making distributed PDU management much more efficient under one centralized environment. With two levels of authorized user accounts and permissions, users can be configured to monitor and manage different functions of each PDU. Having this new web-based version allows data centers to optimize their performance and centralize their management.

Features

- Automatic discovery of all ATEN devices within an intranet
- Remote real-time power measurement and monitoring
  - PDU level current / voltage / power dissipation / power consumption
  - Outlet On / Off / Recycle status
  - Circuit breaker status monitoring
- Windows pop-out to easily monitor the data center's status'
- Remote real-time power outlet management*
  - Power outlet On / Off / Cycle switching by outlet or user-defined group
  - Power outlet On / Off / Cycle switching with pre-defined schedule
  - User-defined outlet level delays for sequential power up
  - Current / Voltage / Power Dissipation / Power Consumption threshold level setting
  - User access assignment for every outlet
  - Name assignment to individual outlets
- Remote real-time environment sensor monitoring
  - Temperature / Temperature + Humidity reading
  - Temperature and Humidity threshold level setting
- Plotting / Monitoring of all PE devices
  - Add data center server racks
  - Add PE devices for each server rack
  - Manage device / device outlet status for each plot
- Essential indices including Rack Intake Temperature, Rack Exhaust Temperature, Rack Equipment, and Temperature Difference
- Power analysis report for optimizing data center energy management – including power usage, power load, power cost, CO2 cost, power capacity and trends
- Exceed threshold alert through SMTP and Syslog
- 3-phase PDU compatibility — 3-phase power distribution for managing data centers with heavy workloads
- Cascade support — can monitor PDUs cascaded via Ethernet ports (1 x 1 Gb + 1 x 100M)
- Syslog provision

- Two-level password security
- Strong security features include password protection and advanced encryption technologies – 128-bit SSL
- Supports online UPS and SNMP Card
- Real-time status charts for Current / Voltage / Wattage remote monitoring

Note: Not all functions are supported by all ATEN eco PDU PE models. Please see , page 6, and your eco PDU PE User Manual for further details.

Requirements

Systems that the eco DC web GUI will be installed on should meet the following requirements:

	Server Version	Client Version
Operating System	Windows 7 / Windows Server 2008 or later	
CPU	2.5 GHz Quad Core	2.0 GHz Dual Core
Resolution	Larger than 1440 x 900	
Memory	8 GB	4 GB
Disk	1 TB	NA
Network	1 Gbps Ethernet	

Sensors

For complete energy management of an instrumented data center with the use of the ATEN eco PDU and eco DC web GUI, you should install 4 sensors for each of the racks in your data center in order to generate a complete energy-efficient data chart. Higher sensor installation density is helpful to generate more accurate data. 8-port models have 2 sensor ports. In this case, Sensor 1 needs to be installed at the intake of the rack (EA1140 or EA1240) and sensor 2 needs to be placed at the exhaust of the IT equipment of the rack (EA1140 or EA1240) or the floor (EA1340).

To get the most complete eco DC web GUI data, the recommended 2 eco PDU unit per rack sensor setup is show in the table, below:

eco PDU	Port	Location	Part Number	Sensor
eco PDU 1	Sensor 1	Intake	EA1240	Temperature / Humidity
	Sensor 2	Floor	EA1340	Differential Pressure / Temperature
eco PDU 2	Sensor 1	Intake	EA1240	Temperature / Humidity
	Sensor 2	Exhaust	EA1240	Temperature / Humidity

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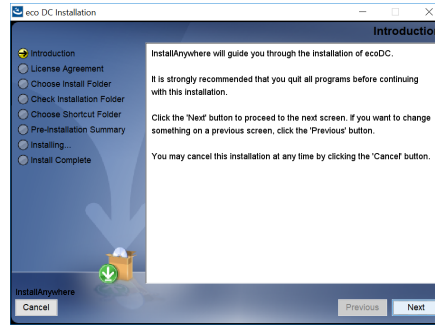
Chapter 2
Installation

Before You Begin

The eco DC Web GUI can be downloaded from the ATEN website. The package requires a product key to complete the installation. Once you have downloaded and saved the installation file, follow the instructions below:

Installing eco DC

1. Double-click the eco DC setup file to open the installer. The Introduction window appears:



   Click **Next** to continue.

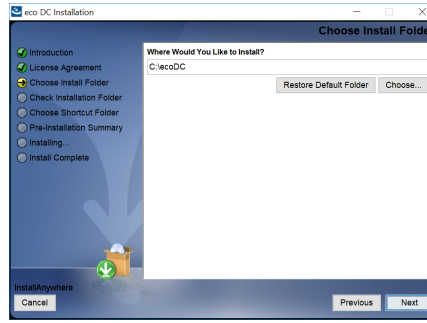
2. The *License Agreement* window appears:

   Check “I accept the terms of the license agreement” and then click **Next** to continue.

3. The *Serial Number* window appears:

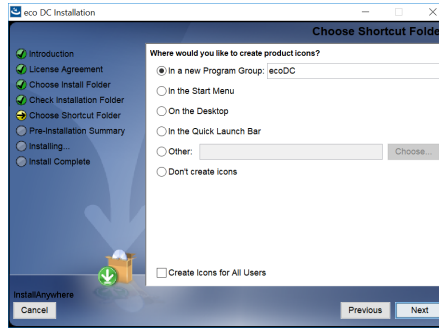
Enter your serial number and click **Next** to continue.

4. The *Choose Installation Folder* window appears:



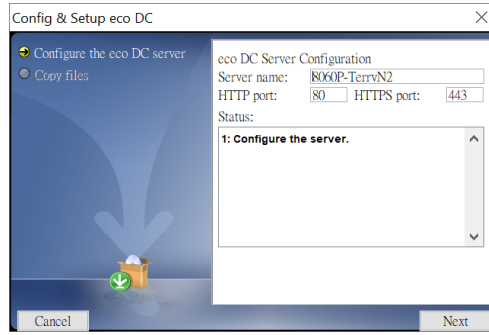
Use the default directory or click **Choose...** to specify a location on your computer. Click **Next** to continue.

5. The *Choose Folder Shortcut* window appears:



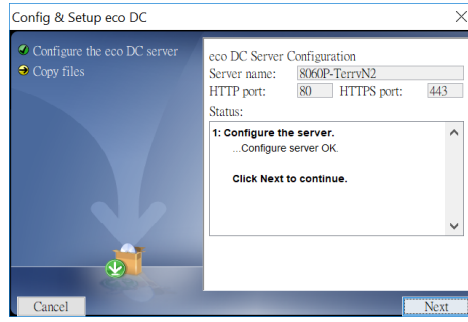
Choose the locations you would like eco DC shortcut icons to be placed. Click **Next** to continue.

6. The *Configure & Setup* window appears:

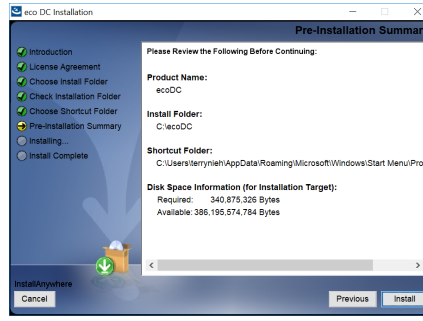


Key in the eco DC Server name, HTTP port, and HTTPS port, or use the default settings, and click **Next** to continue.

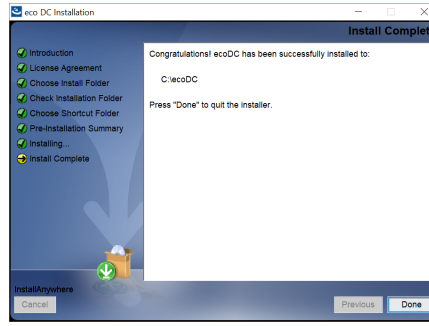
7. Two more windows will appear informing you that the configuration and server installation is OK. Click **Next**, and then **Continue**.



8. The *Pre-Installation Summary* window appears, review the setup information and click **Install** to continue.



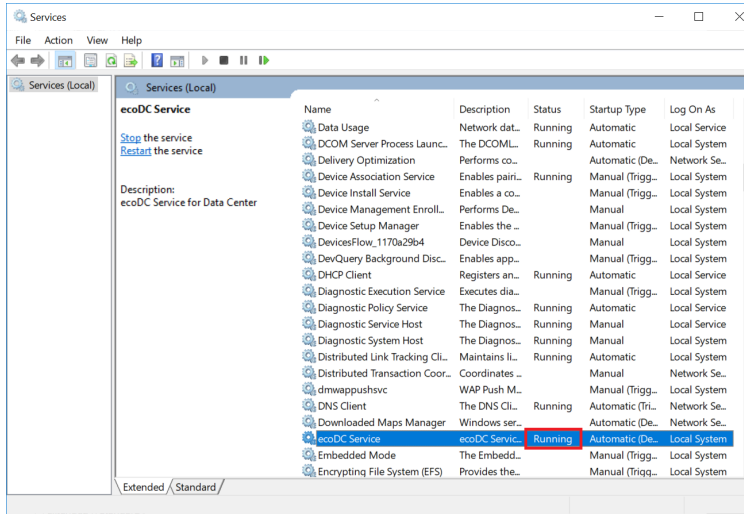
9. When the installation is finished, the *Installation Complete* window appears. Click **Done** to exit.



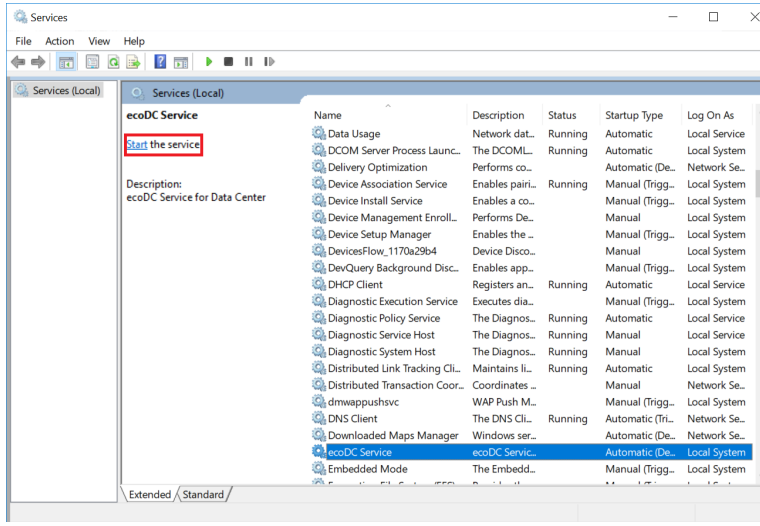
Post-installation Check

After the installation, the eco DC program starts automatically (and starts automatically with every bootup).

To check that the eco DC has started, go to the Services desktop app (shown in *Desktop Service Check* on page 12) and see if *Running* is shown under the Status column.



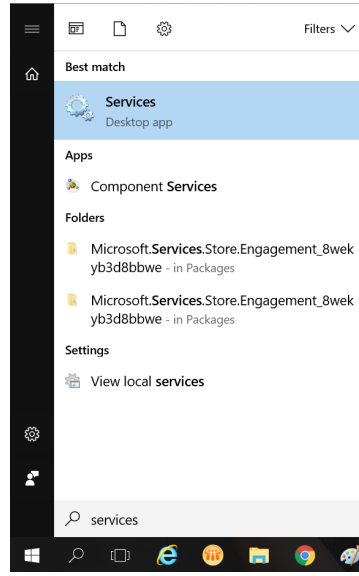
If *Running* is not shown, you can click *Start* to start the service.



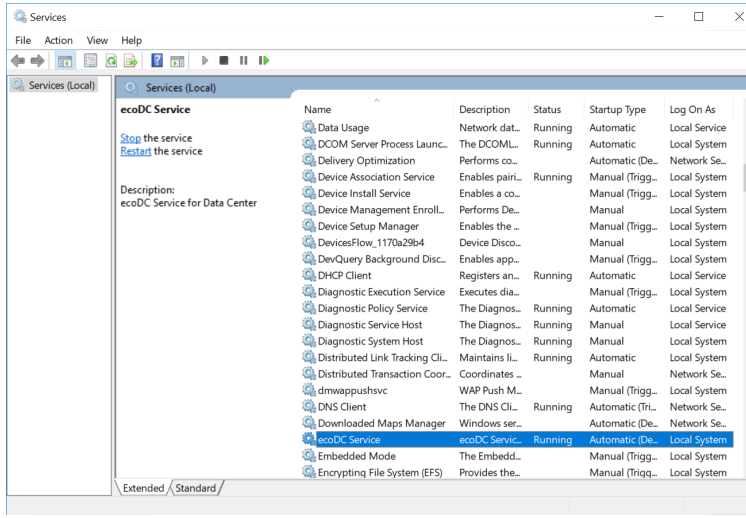
Desktop Service Check

Follow the steps below to go to the Service desktop application:

1. On your windows desktop, search for the keyword *Services* and click to start this desktop app.



2. Scroll down the list to find the eco DC service.

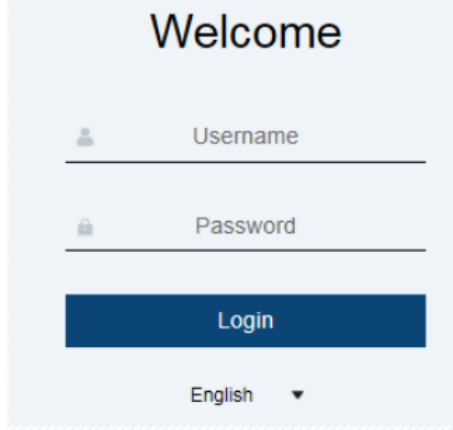


Chapter 3
First-time Setup

Logging In

To log into the eco DC, do the following:

1. Open a web browser and type the following address:127.0.0.1
2. The eco DC login screen appears:



1. Provide a valid Username and Password.

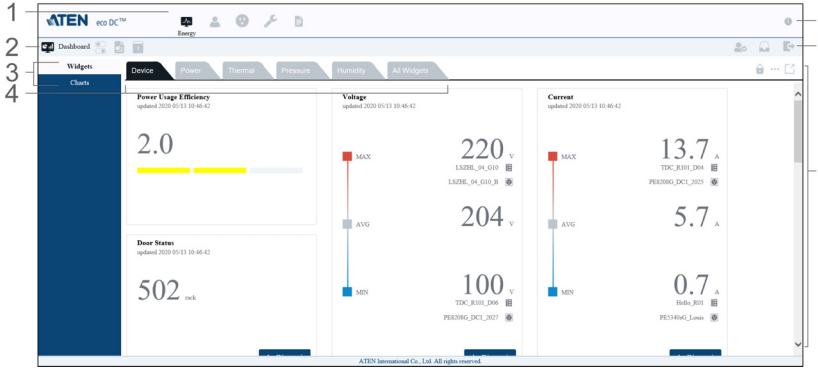
> **Note:** If this is the first time you are logging in, use the default Username: *administrator*; and the default Password: *password*. For security purposes, the system will prompt you to change the password.

2. Use the drop-down menu to select your desired language.
3. Click **Login** to bring up the main page.

The Web Browser Main Page

Once you have successfully logged in, the eco DC user interface Main Page appears. Each of the interfaces is described in the sections that follow. The look of the page varies slightly, depending on which user account is used to log in.

After users log in and are authenticated, the *Web Browser Main Page* comes up, with the Device - Dashboard page displayed:



Page components are discussed on the next page.

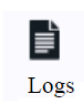
Page Components

The web page screen components are described in the table below:

No.	Item	Description
1	Toolbar	The toolbar contains the eco DC main operation categories. The items that appear here are determined by the user's type, and the authorization options that were selected when the user's account was created.
2	Sub-toolbar	The sub-toolbar contains operational sub-categories that pertain to the item selected in the toolbar. The items that appear in the sub-toolbar are determined by the user's type, and the authorization options that were selected when the user's account was created.
3	Menu	The menu section is another sub-category of the sub-toolbar. It determines which tabs are available.
4	Tabs	Various tabs are available that can be selected for interactive information/details.
5	About	About provides information regarding the switch's current firmware version.
6	Settings	Click these buttons to select options relevant to the current session.
7	Interactive Display Panel	This is your main work area. The screens that appear reflect your toolbar, sub-toolbar, menu and tab choices.

Toolbar

The number and type of icons that appear on the toolbar at the top of the page are determined by the user's type (Administrator or User) and the permissions assigned when the user's account was created. The functions associated with each of the icons are explained in the table below:

Icon	Function
 Energy	**Energy:** This page is used to view and capture information about your PDU and data center's energy use. This page is available to all users.
 User	**User:** This page is used to create and manage Users and Groups. It can also be used to assign devices to them. This tab is available to Administrators who have been given User Management permission. The tab doesn't appear for other users.
 Device	**Device:** The Device Management page is used to add devices and configure the overall operation of the data center. This page is only available to Administrators who have been given Device Management permission. The tab doesn't appear for other and users.
 System	**System:** This page is used to manage various system options which help manage the overall operation of the eco DC web GUI. This page is available to Administrators who have been given System Management permission. The tab doesn't appear for other and users.
 Logs	**Logs:** This page is used to view contents of the log file. This page is available to Administrators who have been given Log permission. The tab doesn't appear for other and users.

Settings

The *Settings* icons appear for all users. There are three icons that appear on the right end of the sub-toolbar. The functions associated with each of the icons are explained in the table below:

Icon	Function
	**Preference:** This icon opens a window allowing you to set personal settings for the current user. ◆ **Idle Timeout**: Sets the amount of time that can pass before the user is automatically logged out of the web session. ◆ **Max Notifications**: Sets the maximum number of notifications that can appear when the Notification icon is clicked. You can set which notifications are shown here (see *Events*, page 112). ◆ **Preferred Page For Energy Tab**: Use the drop-down menu to select the default sub-toolbar to be displayed for the Energy Toolbar. ◆ **Password**: Use these settings to create a new password by checking **Reset password** and then key in the old password, new password, and confirm password. ◆ **Discard**: Click to exit without saving changes. ◆ **Save**: Click to save changes.
	**Notifications:** This icon is used to view and delete notifications that have been setup. Clicking the icon reveals options to view, delete, mark as read and clear all notifications. To select which notifications are received, see *Events*, page 112.
	**Exit:** Click this icon to log out of the eco DC web session.

Quick Step-by-Step Setup

Once you have logged in, you need to define your data center and configure various parameters before you can begin to use ATEN eco DC to monitor and manage your devices. You will need to: add PDUs and configure their threshold settings; setup the layout; add racks, and then add PDUs to the racks.

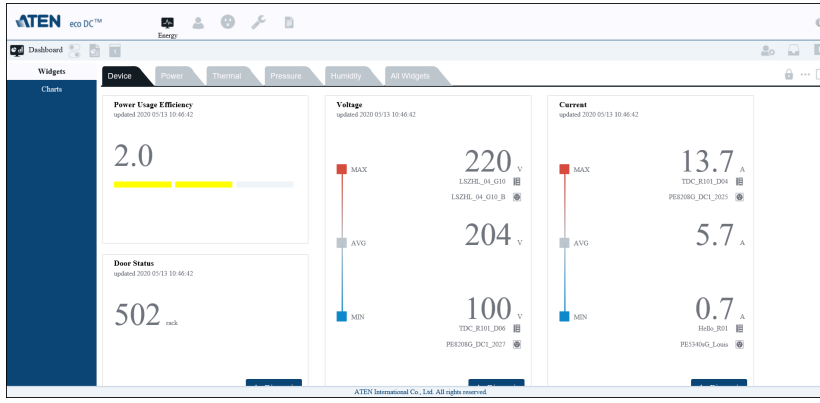
The steps below provide a quick reference to the sections of the user manual you can refer to in order to do this successfully.

1. Go to *Device - Installation,* and under the **Device** tab add ATEN PDUs (see *Adding Devices*, page 78).
2. Go to *Device - Installation,* and under the **Device** tab select PDUs in the sidebar and configure the *Threshold Settings* for each device (see *Devices*, page 79).
3. Go to *Device - Installation*, and under the **Layout** tab setup the data center by adding a: *Data Center*, *Building*, *Floor*, and then *Room* (see *Layout*, page 86).
4. Go to *Device - Installation*, and under the **Layout** tab, select a room and add racks to it, and then add the PDUs to the racks (see *Adding Racks*, page 88).
5. Once you have completed these steps, please proceed to *Energy*, page 19.

Chapter 4
Energy

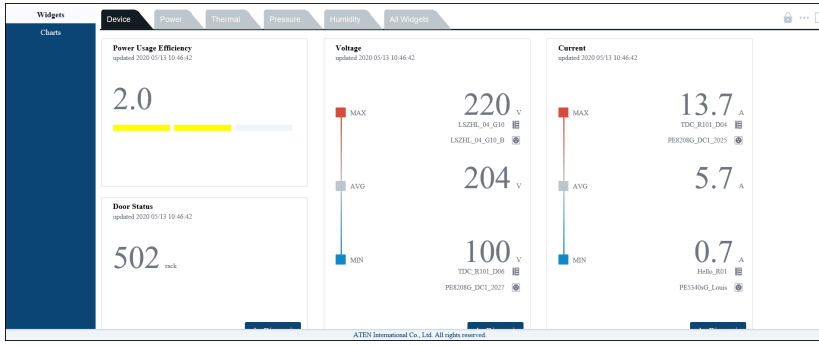
Overview

The *Energy* toolbar provides four sub-toolbar options: *Dashboard* to view real-time power measurements and environment monitoring; *Power Control* to manage the power of PDUs and outlets; *Analysis* to generate energy usage reports; and *Schedule* to create group control tasks.

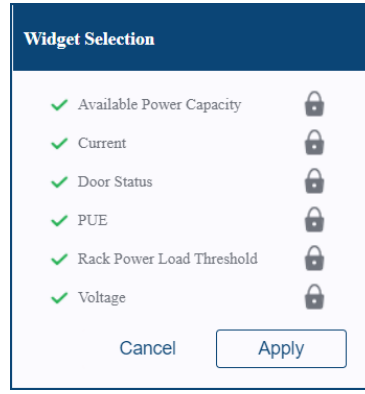


Dashboard

The *Dashboard* features Widgets and Charts in the Menu. They show the overall energy and environmental information collected about your data center. The Tabs of the interactive display panel lists different tabs depending on your Menu selection. The Widgets menu lists five categories for viewing related data in the main panel: Device, Power, Thermal, Pressure, and Humidity. The Charts menu lists Current, VA, and Wattage. Each tab can be selected to display different types of information about your data center.



In the top right corner are three icons: **Lock/Unlock** to lock/unlock the position of all widgets on the page; **Widget Settings** (shown below) allow you to add/remove widgets and lock their position on the page; and **Maximize Window** to pop open a new window to display the current data.



Check the widgets listed in *Widget Settings* to add/remove them from the Dashboard page and click **Apply** to save.

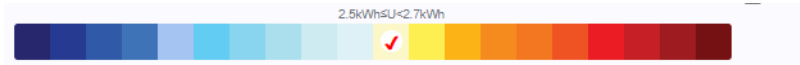
Widgets

Widgets on the Dashboard display information about different parts of your data center energy and environmental usage. You can position widgets anywhere on by page by drag-and-drop, after the window has been unlocked using the **Lock** icon in the top right corner.You can remove widgets from the page by clicking the **X** in the top right corner of its window.

Clicking the **Diagnosis** button opens a new window with detailed information about the data, as discussed in the sections that follow. The pages the follow discuss each of the widgets that can be added to Dashboard for monitoring. In the Diagnosis window use the left sidebar to select a room to view its data.

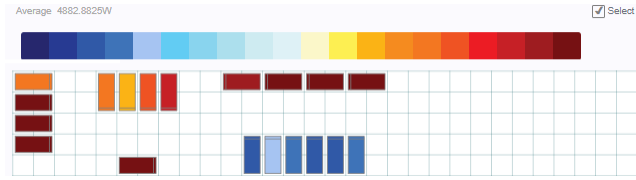
Quick View Color Scale

The Diagnosis sections of Widgets use the same color scale, but with different units for each reading. For example, the *Power Consumption* page, under the **Power**, displays a scale from 0.7 – 4.3 kWh, as shown below:



Selecting a color in the scale highlights the racks with that particular reading.

Check **Select All** to view each rack in a color according to its reading. The racks are displayed in a color related to their status on the various scales.

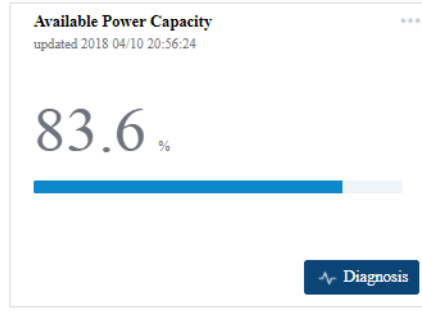


Device

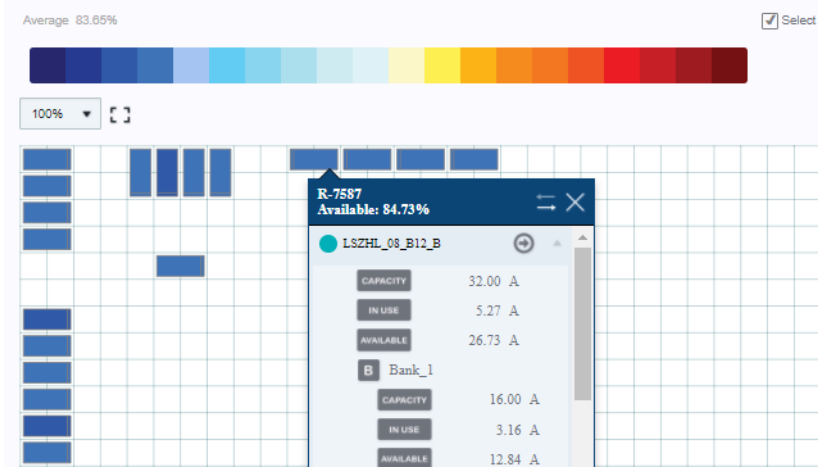
Available Power Capacity

Displays the Average % of available power for all the racks. The *Available Power Capacity* uses a standard formula for rack devices:

Total Power Capacity (KWh) - Power in Use (KWh) = Available Power Capacity (KWh).



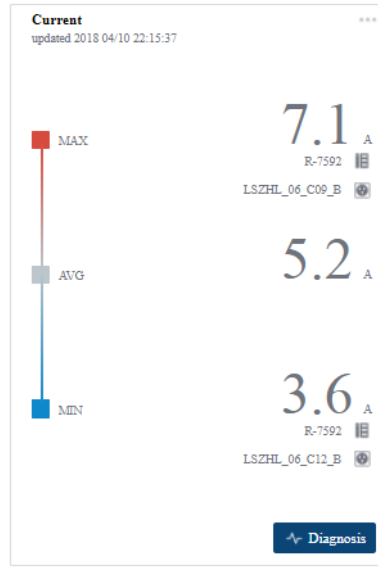
Click **Diagnosis** to open a window with options to view additional rack data:



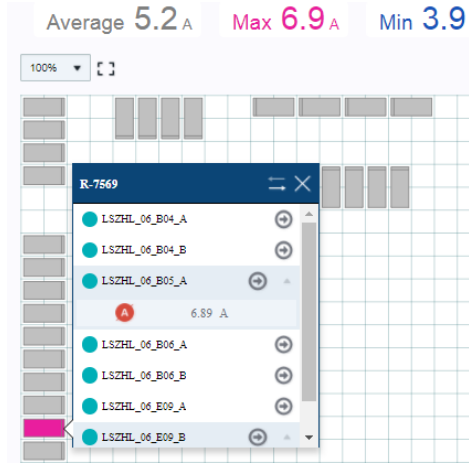
You can click each rack to display the percentage of available power for that rack. The colors represent the available power capacity for each rack displayed in 5% increments. Uncheck **Select All** and click a color to view the racks which are recording data within that 5% range. Use to jump to a device's Power Control page.

Current

Displays the real-time measurement of the two devices with the minimum and maximum *Current*, and the average *Current* measurement of all devices.



Click **Diagnosis** to open a window with options to view additional rack data:



You can click each rack to display the *Current* reading for that rack. The colors represent the average, maximum, and minimum *Current* readings. Use to jump to a device's Power Control page.

Door Status

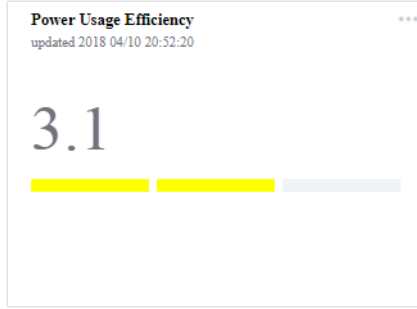
Door Open displays the open/close status of each cabinet door installed with a door sensor (EA1440, EA1441, or EA1442). GREEN: Rack Door is Closed. GRAY: No Door Sensor Installed. ORANGE: Rack Door is Open.

Click **Diagnosis** to open a window with options to view additional rack data:

You can click the Open, N/A, or Close radio buttons to display the racks with that reading. The colors represent the data shown readings above. After selecting a rack, use  to jump to a device's Power Control page.

Power Usage Efficiency

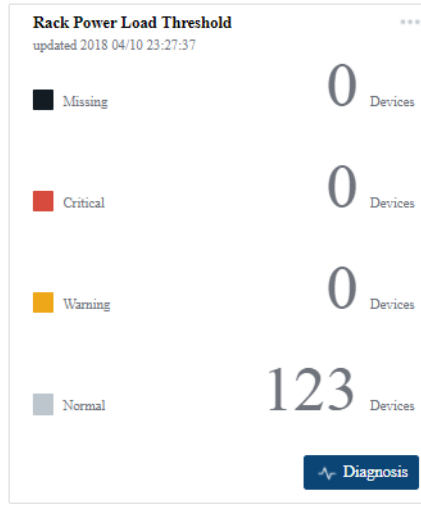
The PUE is the ratio of the total energy used by the data center to the energy delivered to connected equipment. PUE is the inverse of data center infrastructure efficiency (DCIE).



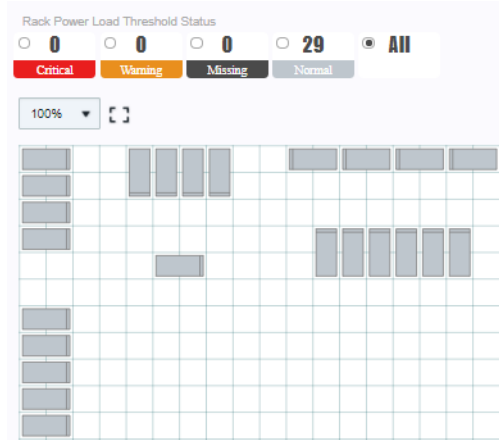
PUE Reading	DCIE	Level of Efficiency
3.0 or higher	33%	Very Inefficient
2.5	40%	Inefficient
2.0	50%	Average
1.5	67%	Efficient
1.2	83%	Very Efficient

Rack Power Threshold

This displays the power threshold levels of each rack in four categories: Critical, Warning, Missing, and Normal.



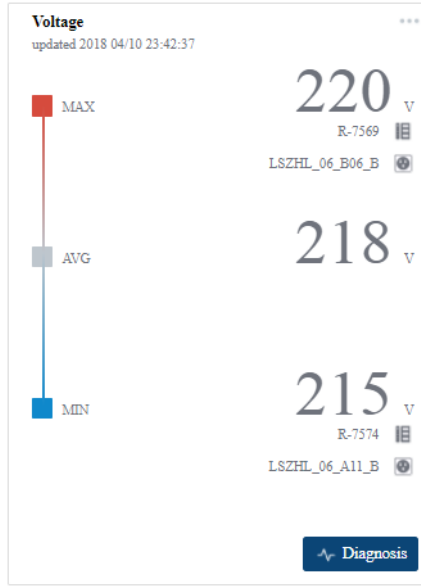
Click **Diagnosis** to open a window with options to view additional rack data:



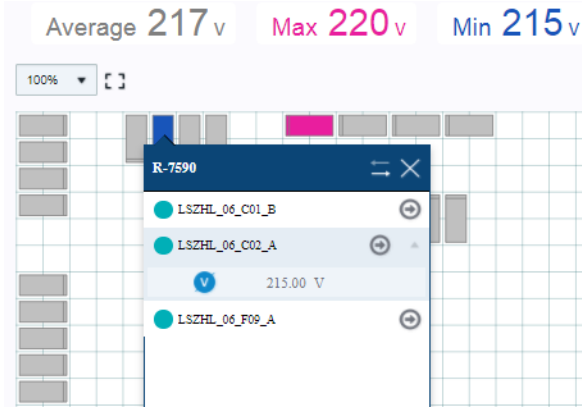
You can click each device in a rack to display all reading for that device. The colors represent the number of racks at different readings, as shown above. Use the radio buttons to highlight racks at each reading. After clicking a rack, use  to jump to a device's Power Control page.

Voltage

Displays the real-time measurement of the two devices with the minimum and maximum *Voltage*, and the average *Voltage* measurement of all devices.



Click **Diagnosis** to open a window with options to view additional rack data:



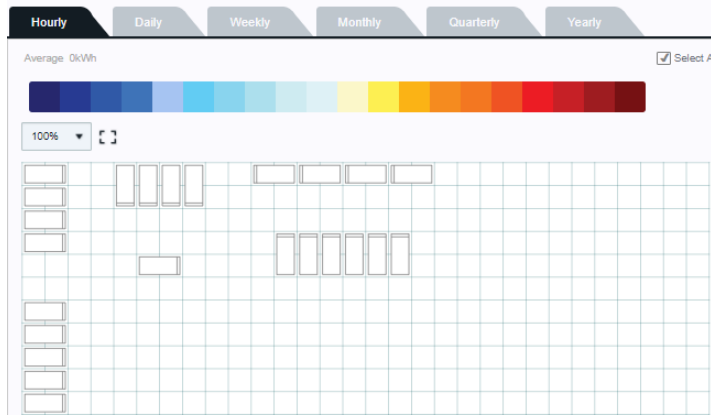
You can click each rack to display the *Voltage* reading for that rack. The colors represent the average, maximum, and minimum *Voltage* readings. Use to jump to a device's Power Control page.

Power

Power Consumption

Displays the real-time measurement of the two devices with the minimum and maximum *Power Consumption*, and the average *Power Consumption* measurement of all devices.

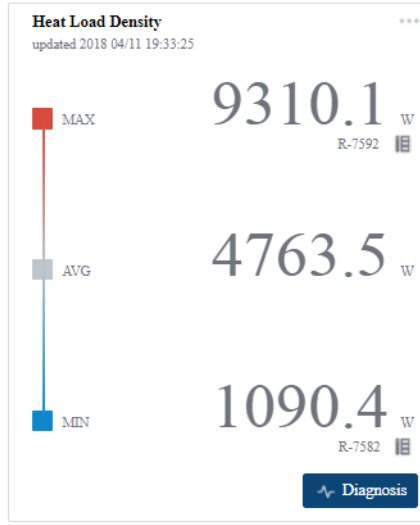
Click **Diagnosis** to open a window with options to view additional rack data:



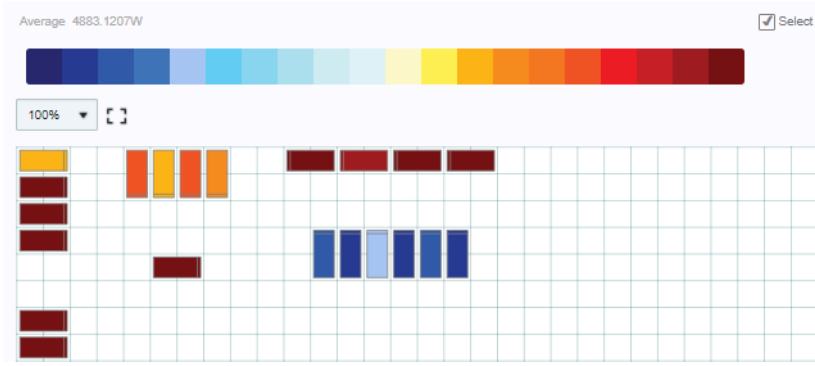
You can click each rack to display the *Power* reading for that rack. The colors represent *Power* readings ranges. Select a tab to view *Power Consumption* by a particular time range. Use to jump to a device's Power Control page.

Heat Load Density

Displays the real-time measurement of the two racks with the minimum and maximum *Heat Load Density*, and the average *Heat Load Density* measurement of all racks.



Click **Diagnosis** to open a window with options to view additional rack data:

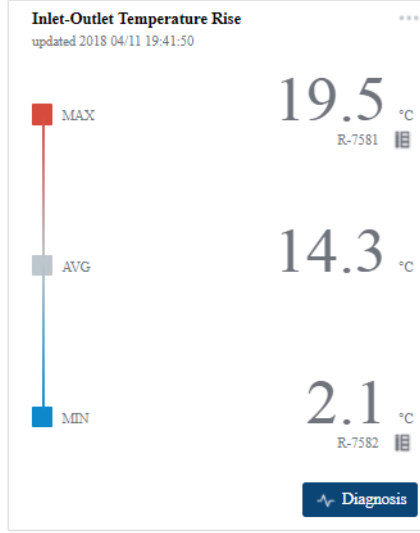


You can click each rack to display the *Heat Load Density* reading for that rack. The colors represent *Heat Load Density* ranges. Use to jump to a device's Power Control page.

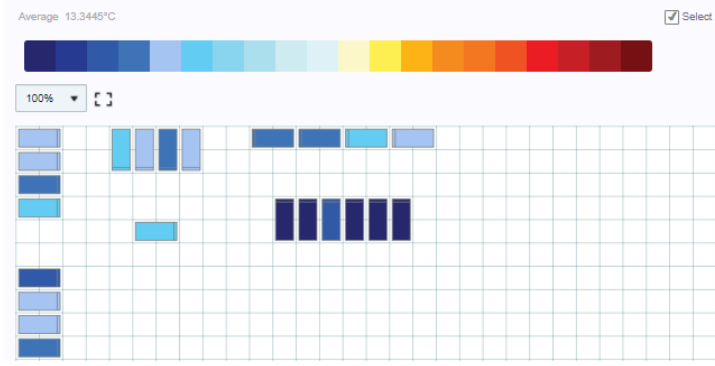
Thermal

Inlet-Outlet Temperature Rise

This page displays the real-time inlet-outlet temperature rise values, at the minimum, maximum and the average reading. The color scale displays a range from 2–20 °C.



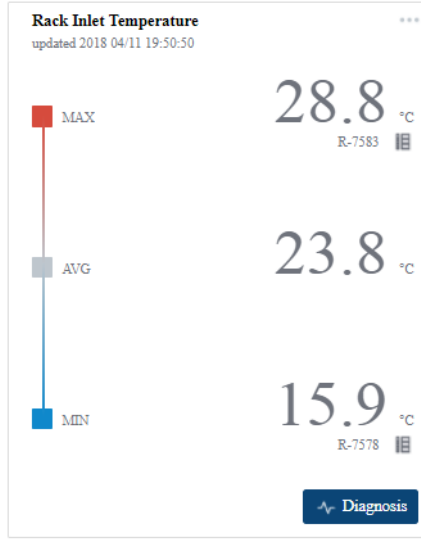
Click **Diagnosis** to open a window with options to view additional rack data:



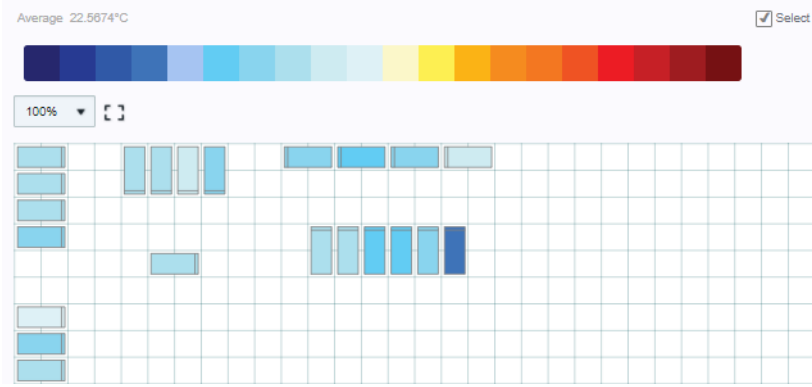
You can click each rack to display the *Inlet-Outlet Temperature Rise* reading for that rack. The colors represent *Inlet-Outlet Temperature Rise* ranges. Use to jump to a device's Power Control page.

Rack Inlet Temperature

This page displays the real-time rack inlet temperature values, at the minimum, maximum and average reading.The color scale displays a range from 10–45°C.



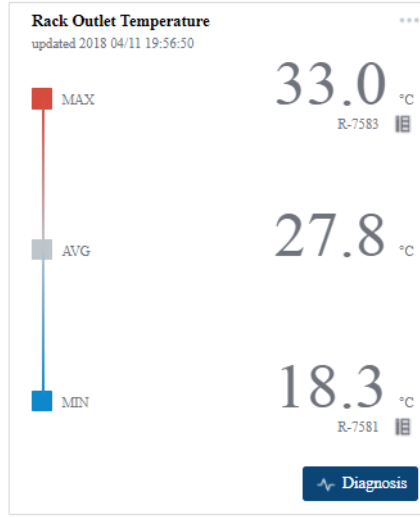
Click **Diagnosis** to open a window with options to view additional rack data:



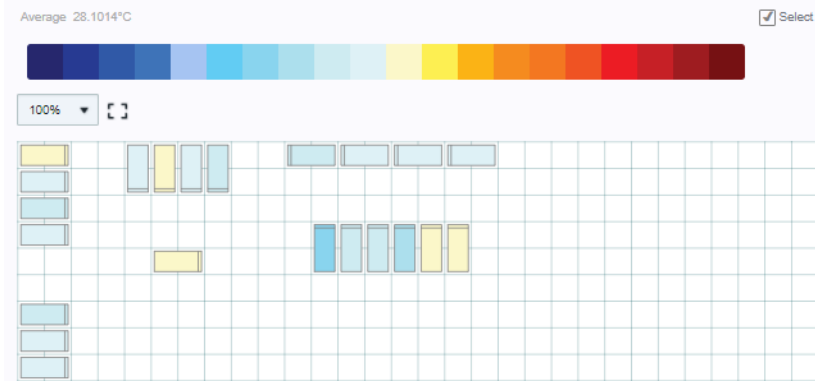
You can click each rack to display the *Rack Inlet Temperature* reading for that rack. The colors represent *Rack Inlet Temperature* ranges. Use to jump to a device's Power Control page.

Rack Outlet Temperature

This page displays the real-time rack outlet temperature values, at the minimum, maximum, and average reading.The color scale displays a range from 10–45°C.



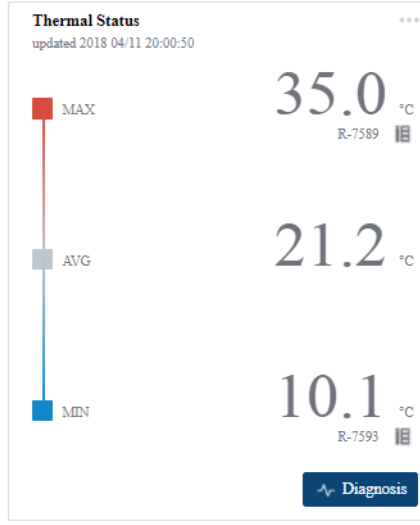
Click **Diagnosis** to open a window with options to view additional rack data:



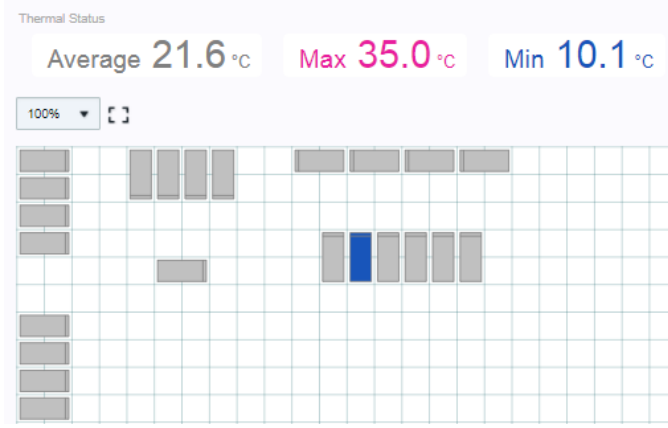
You can click each rack to display the *Rack Outlet Temperature* reading for that rack. The colors represent *Rack Outlet Temperature* ranges. Use to jump to a device's Power Control page.

Thermal Status

This page displays the real-time thermal status values, at the minimum, maximum, and average reading.The color scale displays a range from 10–45°C.



Click **Diagnosis** to open a window with options to view additional rack data:

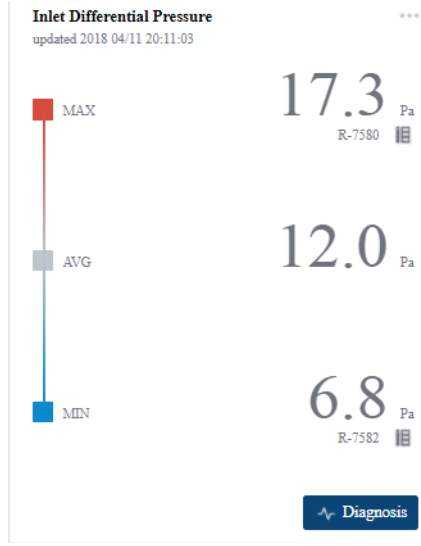


You can click each rack to display the *Thermal* reading for that rack. The colors represent the average, maximum, and minimum *Thermal* readings. Use to jump to a device's Power Control page.

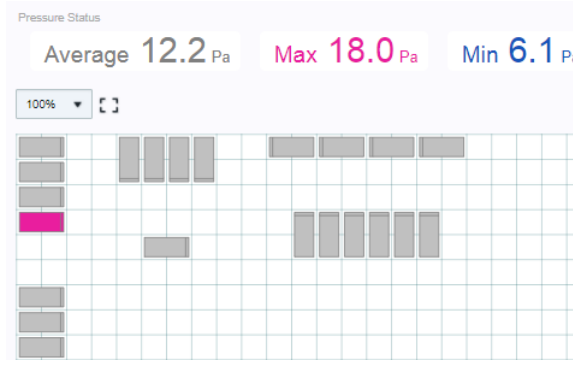
Pressure

Inlet Differential Pressure

This page displays the real-time inlet differential pressure values, at the minimum, maximum, and average readings. The color scale displays a range from 0–200 Pa.



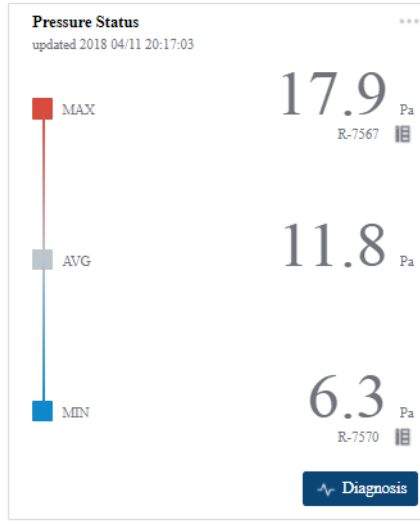
Click **Diagnosis** to open a window with options to view additional rack data:



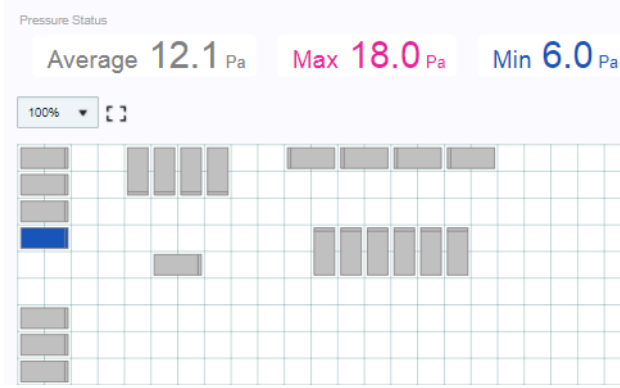
You can click each rack to display the *Inlet Differential Pressure* reading for that rack. The colors represent the average, maximum, and minimum *Inlet Differential Pressure* readings. Use to jump to a device's Power Control page.

Pressure Status

This page displays the real-time pressure values, at the minimum, maximum, and average reading. The color scale displays a range from 0–200 Pa.



Click **Diagnosis** to open a window with options to view additional rack data:



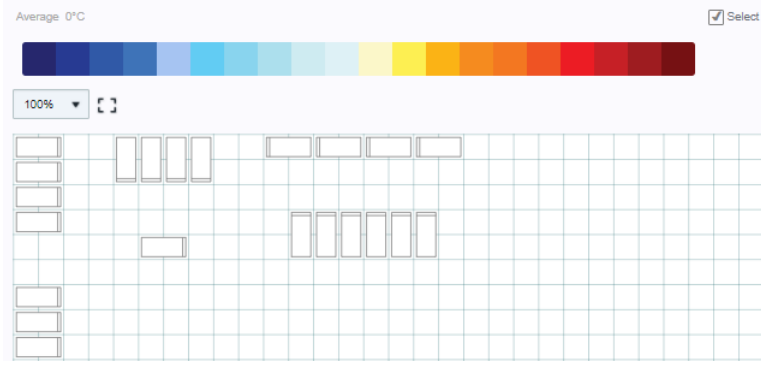
You can click each rack to display the *Pressure Status* reading for that rack. The colors represent the average, maximum, and minimum *Pressure Status* readings. Use to jump to a device's Power Control page.

Humidity

Cold Inlet Dew Point Temperature

This page displays the real-time cold inlet dew point temperature values, at the minimum, maximum, and average reading. The color scale displays a range from 0–15 °C.

Click **Diagnosis** to open a window with options to view additional rack data:

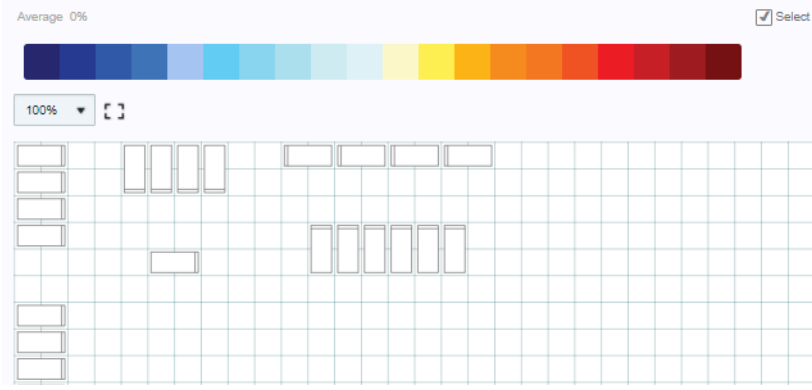


You can click each rack to display the *Cold Inlet Dew Point Temperature* reading for that rack. The colors represent *Cold Inlet Dew Point Temperature* ranges. Use to jump to a device's Power Control page.

Cold Inlet Relative Humidity

This page displays the real-time cold inlet relative humidity values, at the minimum, maximum, and average reading. The color scale displays a range from 10–90%.

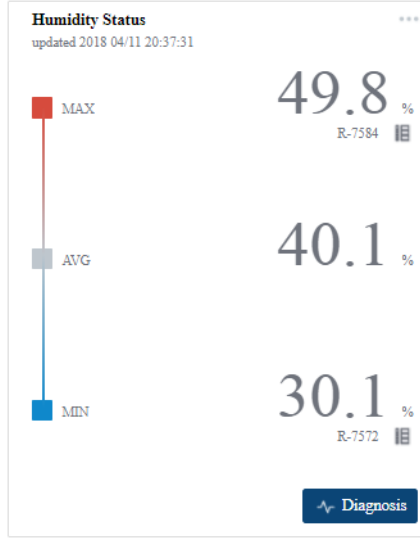
Click **Diagnosis** to open a window with options to view additional rack data:



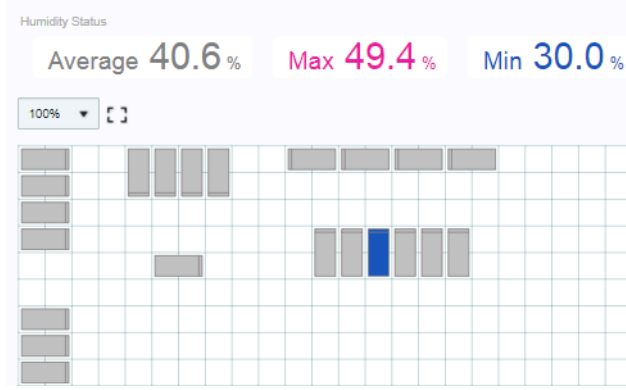
You can click each rack to display the *Cold Inlet Relative Humidity* reading for that rack. The colors represent *Cold Inlet Relative Humidity* ranges. Use to jump to a device's Power Control page.

Humidity Status

This page displays the real-time humidity values, at the minimum, maximum, and average reading. The color scale displays a range from 0–90%.



Click **Diagnosis** to open a window with options to view additional rack data:



You can click each rack to display the *Humidity Status* reading for that rack. The colors represent the average, maximum, and minimum *Humidity Status* readings. Use to jump to a device's Power Control page.

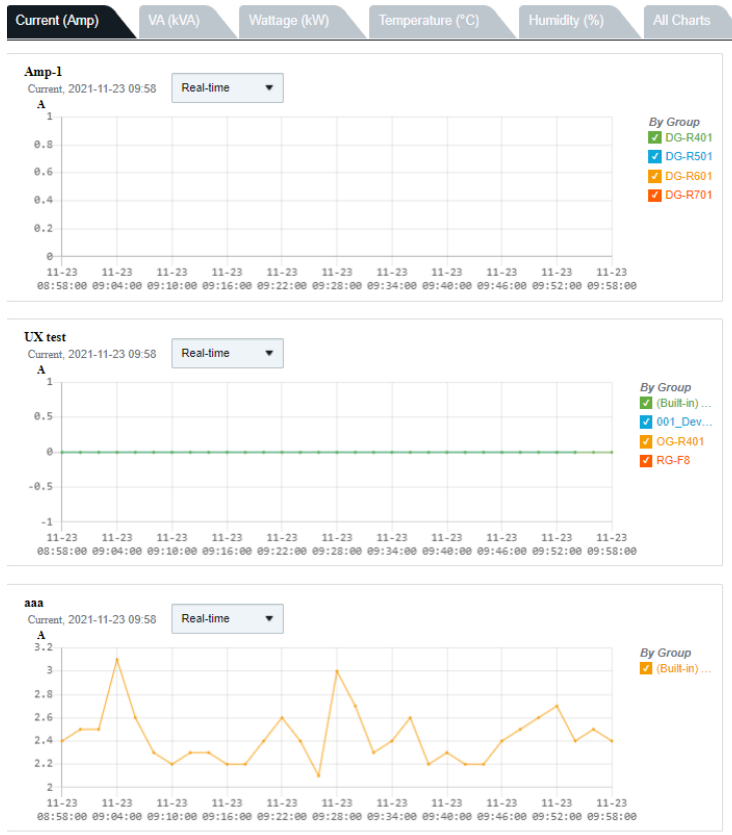
All Widgets

The *All Widgets* page displays widgets from every category listed in the tabs.

Charts

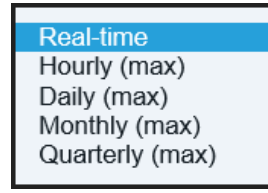
The Charts menu lets you put data group information against time into a chart. The data group information available are Current, VA, Wattage, Temperature, and Humidity. Use the tabs to choose which particular information chart(s) are displayed.

You can place up to 4 data group's information into a single chart for comparison, and create up to 32 charts. An example is shown:

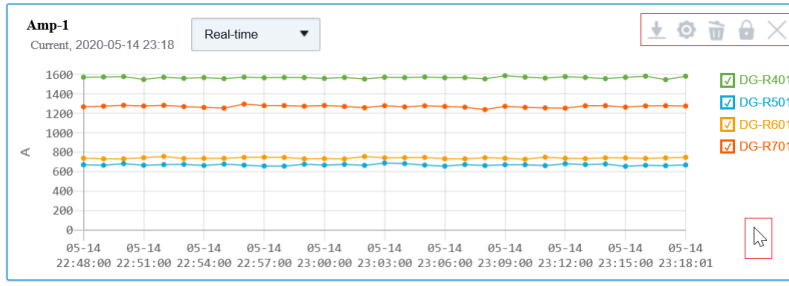


4 data group's current information is shown in the top-most chart while only 1 data group's is shown in the bottom-most chart.

The button "Real-time" is a drop-down menu button. Click the menu for a list of available time periods the information is to be displayed, and click to select your option:

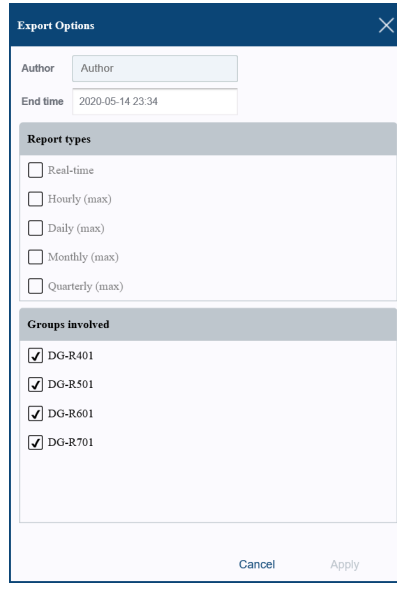


When you move your mouse over a chart, the chart's border becomes blue and extra options become available (top right corner). An example is shown:



Export

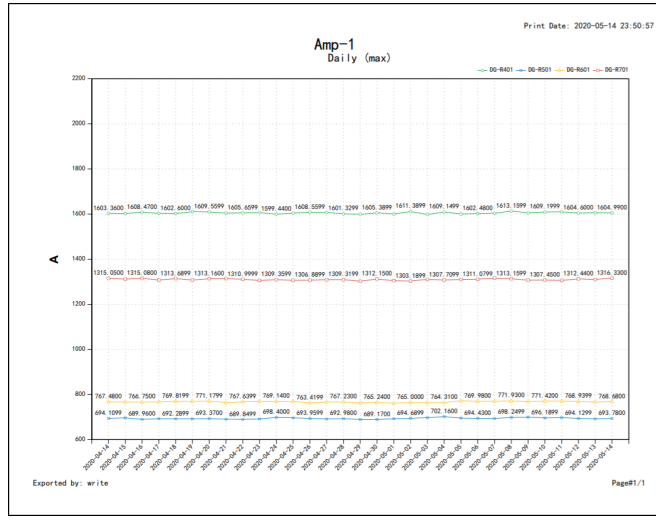
When you click the Export icon, a pop-up window appears. An example is shown:



To get a report,

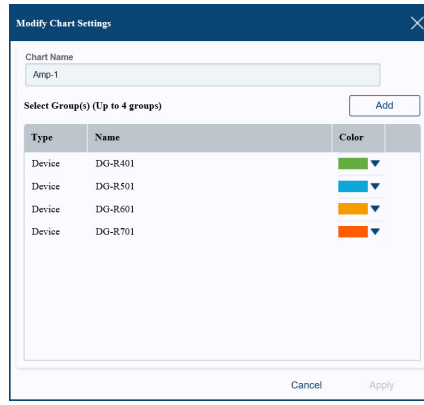
1. Enter a name for the Author field.
2. Click the End time field to select the date and time the data collection ends.
3. Click to check/uncheck the Report types (multiple selection available).
4. Click to check/uncheck the Groups involved.
5. Click **Apply**.

The report will be a pdf file. Choose a way you wish to open the file. An example of the report is shown:



Settings

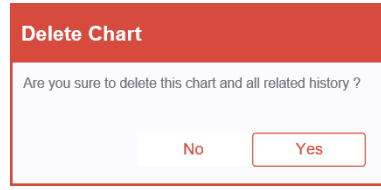
When you click the Settings icon, a pop-up window appears for you to modify the chart's settings. An example is shown:



After your modifications, click **Apply** to save the changes.

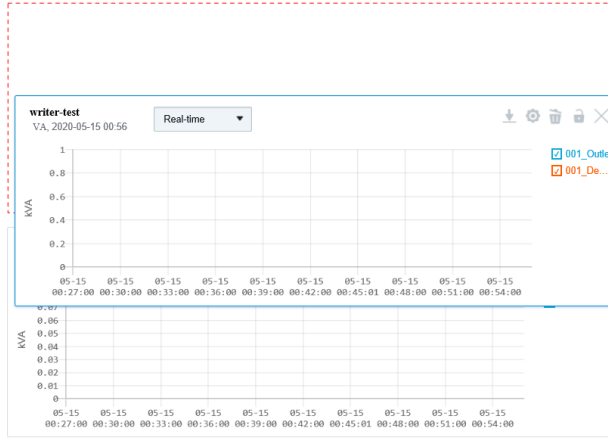
Delete

If you wish to delete the chart, click the Delete icon. A system confirmation message will pop-up as shown:



Lock / Unlock

When you click this icon, you can toggle this chart between locked and unlocked. When unlocked, you can drag the chart around to re-arrange its position. The chart at the chart position you wish to drag to must also be unlocked. An example of moving a chart is shown:

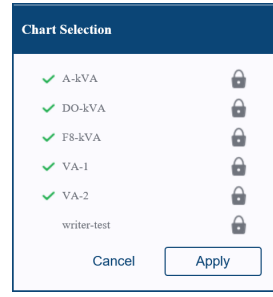


If you wish to unlock/lock all the charts, click the lock icon on the top right corner of the interactive panel.

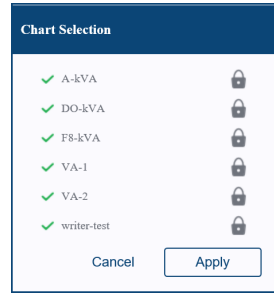
Hide

If you wish to hide the chart from displaying, click this icon.

To unhide the hidden charts, click the Chart Selection icon ··· on the top right corner of the interactive panel for a list of charts. An example is shown:

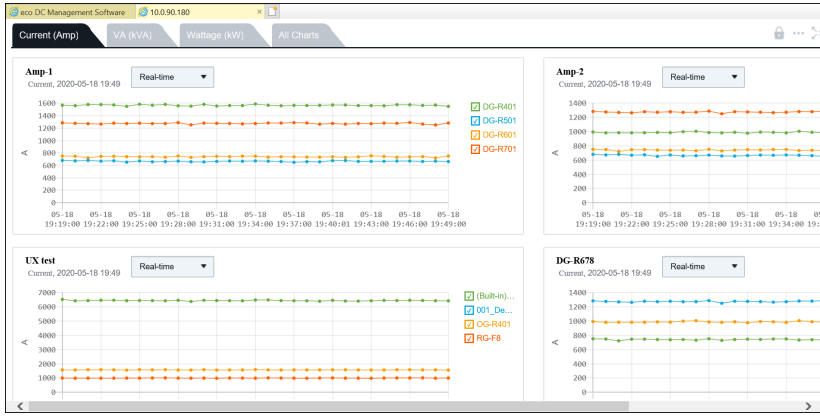


Check the chart you wish to unhide and click **Apply** to bring it back.



Maximize Window

Click this icon to expand the current interactive panel to view the charts.



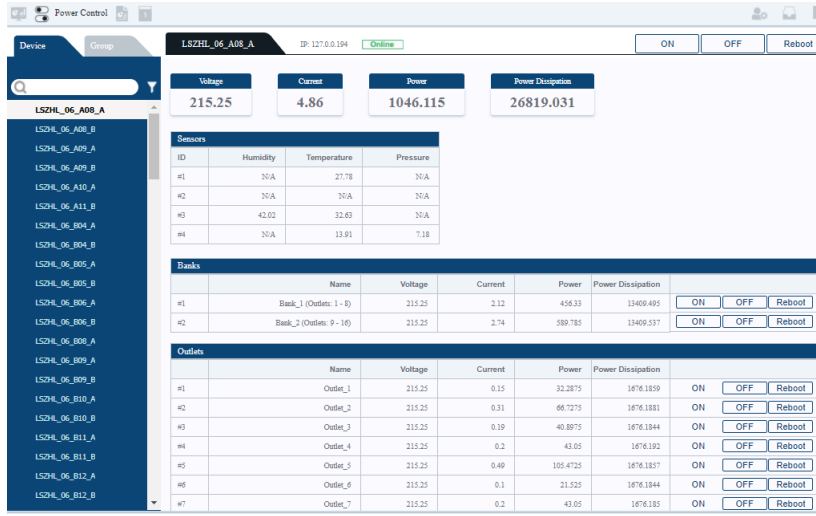
Interactions are exactly the same except the page is bigger and that there's a Full Screen icon to expand the interactive panel into full screen.

Power Control

The *Power Control* sub-toolbar selection allows you to perform manual power management at the device or outlet level and displays detailed energy and environmental information about your data center.

Note: Not all eco PDU PE models support outlet level power management. Please see , page 6, and your User Manual for further details.

Click on a device in the side bar and its page appears with the Voltage, Current, Power, Power Dissipation information displayed at the PDU, Bank and Outlet level:



The top bar on the page displays the PDU name, IP address, online status, and the ON, OFF and Reboot options to manually power manage the device.

Sensors

This section is view only and provides status information about the sensors.

Banks

Use the ON, OFF and Reboot options to manually power manage the banks.

Outlet Status

Use the ON, OFF and Reboot options to manually power manage the individual outlet.

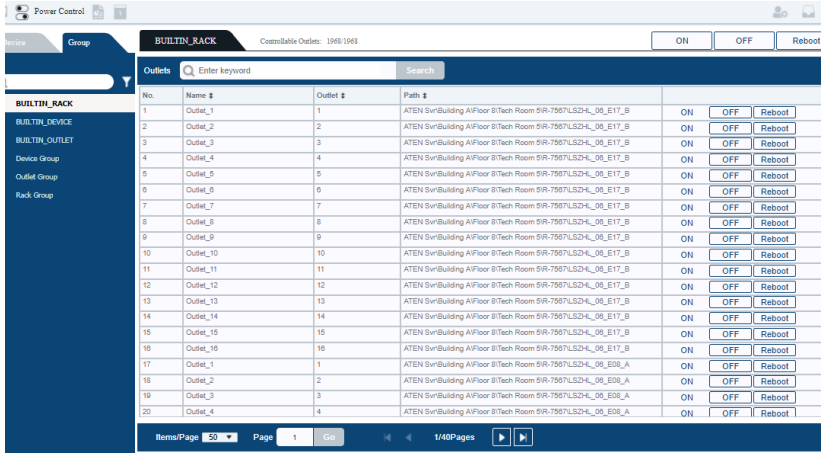
Group Control

The *Group* tab allows you to perform simultaneous manual power management at the outlet level on data groups that you have already created.

Note: 1. See *Data Group*, page 91, for details about creating groups for power management control.

2. Not all models support outlet level power management. Please see , page 6, and your User Manual for further details.

Click on a group in the side bar and its page appears, as below:



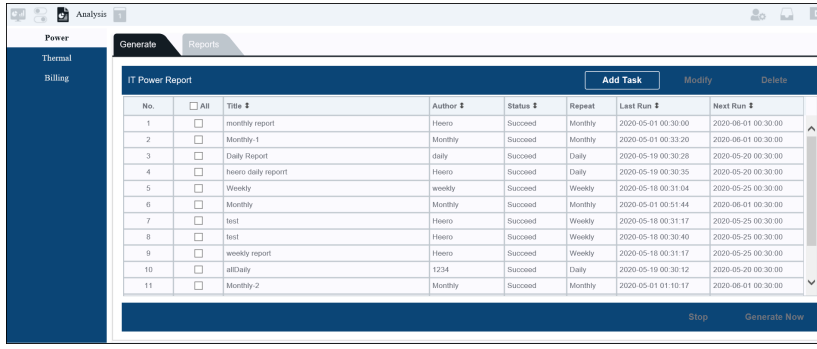
The sidebar provides predefined groups that can be selected to manage outlets that are grouped together. Use ON, OFF and Reboot on the top bar to reboot outlet groups; or use the same power options listed next to the outlets in the main panel to manage the power of individual outlets.

Analysis

The *Analysis* page allows you to create Power, Thermal and Billing reports to better understand energy use, environmental factors and costs associated with your data center.

Generate

The *Generate* tab allows you to establish the parameters and schedule for the reports that you want to create. Select a report type in the sidebar and then click **Add Task** to begin configuring the report.



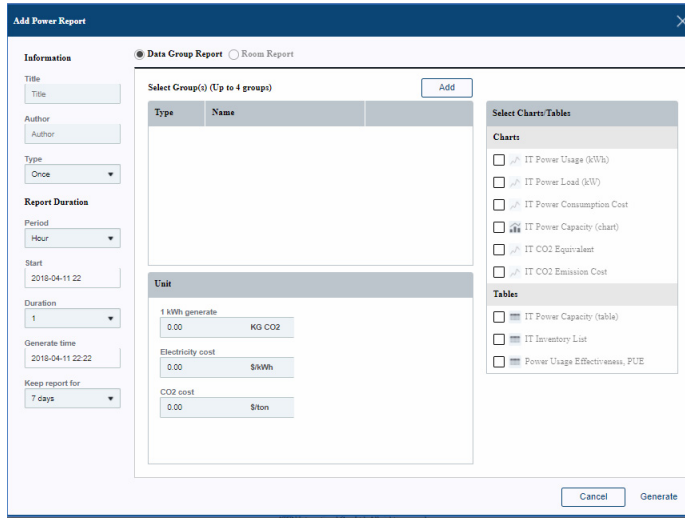
The Generate Report fields are explained in detail in the following table:

Field	Explanation
Menu	The menu provides three options to generate reports: ◆ **Power** – to create reports based on power usage. ◆ **Thermal** – to create reports based on temperature. ◆ **Billing** – to create reports based on costs.
Add Task	Clicking **Add Task** opens a window that provides options to generate custom reports about your data center's energy and environmental usage.
Modify	Check boxes in the main panel to select tasks then click **Modify** to make changes to them.
Delete	Check boxes in the main panel to select tasks then click **Delete** to remove it from the list.
Stop	Click **Stop** if you want to stop a task thats in the process of being generated.

Field	Explanation
Generate Now	Select a task in the main panel by checking its box and then click **Generate now** to create the report. Once completed, the report will appear in the *Completed Reports* tab.

Power / Thermal

After you click **Add Task** a window opens to configure the report parameters:



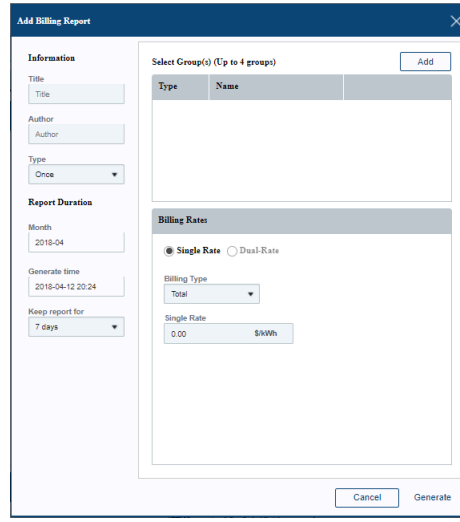
The *Power* and *Thermal* fields are explained in the following table:

Field	Explanation
Report Type	Use the radio buttons to select a report type: ◆ **Data Group Report**– to create a report based on groups of devices. ◆ **Room** – to create a report based on all devices in a room.
Information	Use the *Title* and *Author* fields to enter information about the custom report. Use the Type drop-down menu to select how often to generate a report: Once, Daily, Weekly, Monthly, or Yearly.
Report Duration	Allows you to generate the report based on a time frame. Enter the *Start / Generate* (when you want the report to begin/end), the *Period* (options are hour, day, week, month, or quarter) and the *Duration* (1–24), then use the *Keep Report For* drop-down menu to select the amount of time to pass before the report is deleted. Select **Permanent** to keep the report indefinitely.

Field	Explanation
Add	Click **Add** to add up to four device groups or rooms for which the report will be generated about.
Unit	When Data Group (Power reports only) is selected you need to configure these three parameters to generate customized reports related to your data center's energy costs.
Select Charts / Tables	Use the check boxes to select the type(s) of information you want to collect for the report. The more options that are selected the longer the report will take to generate.
Generate	After entering the parameters, click **Generate** to add the report to the list.

Billing

After you click **Add Task** a window opens to configure the Billing parameters:



The *Billing* fields are explained in the following table:

Field	Explanation
Add	Click **Add** to add up to four device groups for which the billing report will be generated about.
Information	Use the *Title* and *Author* fields to enter information about the custom report. Use the Type drop-down menu to select how often to generate a report: *Once*, or *Monthly*.

Field	Explanation
Report Duration	Select the month to run the report and the time to generate the report. Use the *Keep Report For* drop-down menu to select the amount of time to pass before the report is deleted. Select **Permanent** to keep the report indefinitely.
Billing Rates	Use the radio button to select the type of rate: ◆ **Single Rate** – to create a report based on a single dollar figure. Use the *Billing Type* drop-down menu to select: ◆ Total: a report based on all rack devices. ◆ Rack: a report based per rack with a subtotals. ◆ **Dual-Rate** – to create a report based on two different figures: Peak and Non-peak rates. Enter the time Peak rates start and the number of hours that the peak rate runs. Use the *Billing Type* drop-down menu to select: ◆ Total: a report based on all rack devices. ◆ Rack: a report based per rack with a subtotals.
Generate	After entering the parameters, click **Generate** to add the report to the list.

Reports

The *Reports* tab allows you to view or save reports that you've created.

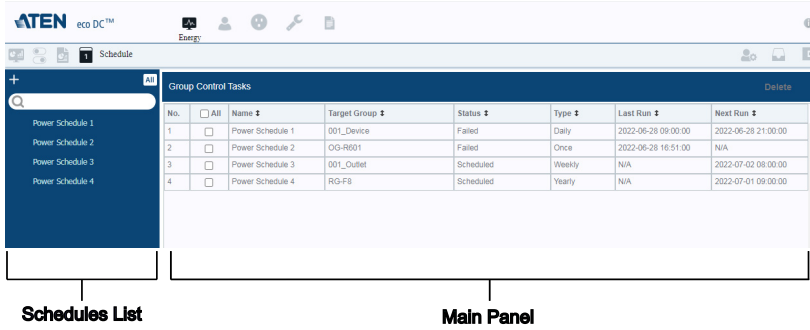
Select a report type in the sidebar, check the box of the report(s) you want to view or save, and click **Open** or **Save as** to respectively begin viewing the report in a new window (the browser's pop-up blocker must be disabled) or export the report as a PDF or Excel file.

Schedule

The *Schedule* page allows you to power on and/or power off outlets at regular intervals or on a specified time.

Overview

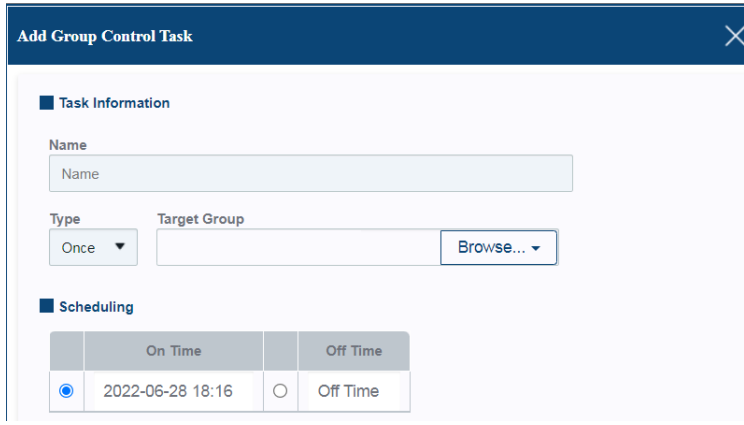
A schedule page contains a schedules list and a main panel.



- **Schedules list:** shows a list of created schedules.
- **Main panel:**
  - List view: click All to show a list of created schedules with information such as the target group (of outlets), execution status, and the interval type.
  - Configuration view: click a schedule from the sidebar to show the schedule settings.

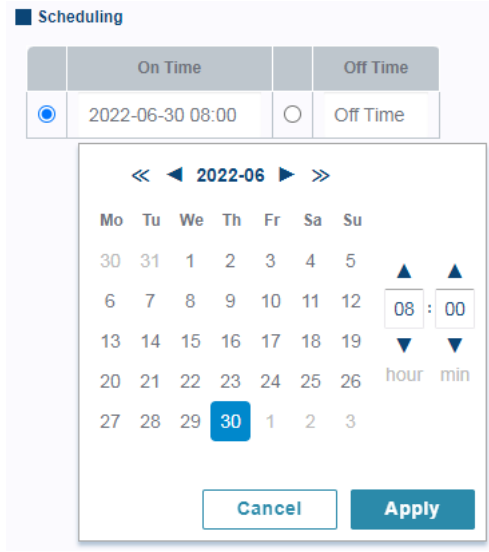
Adding a Power-on / Power-off Schedule

1. In the eco DC main page, go to **Energy** > **Schedule**.
2. In the sidebar, click + . This window appears.

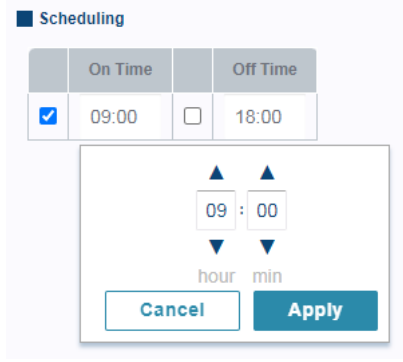


3. Configure the following settings.
   - **Name:** Name the task.
   - **Type:** Click the drop-down menu to select an interval type.
     - **Once:** powers on *or* off the target outlet(s) on a specified date and time.
     - **Daily:** powers on and off the target outlet(s) daily at specified times.
     - **Weekly:** powers on and off the target outlet(s) weekly at specified times and days of the week.
     - **Yearly:** powers on and off the target outlet(s) at specified times and days of the week, with exceptions on specified dates.
   - **Target Group:** Click **Browse** to select a target group for the task. To add a data group, go to **Device** > **Data Group**.

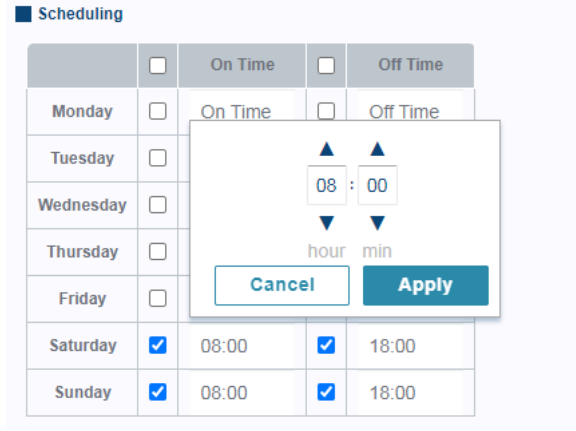
- **Scheduling:**
  - **Once:** Click to select On Time *or* Off Time, and then click on the date to specify the date and time in a pop-up calendar. Click **Apply** to save the setting.



  - **Daily:** Click to select On Time and then click on the time to set the on-time in a pop-up menu. Click **Apply** to save the setting. Repeat these steps to configure the off-time.

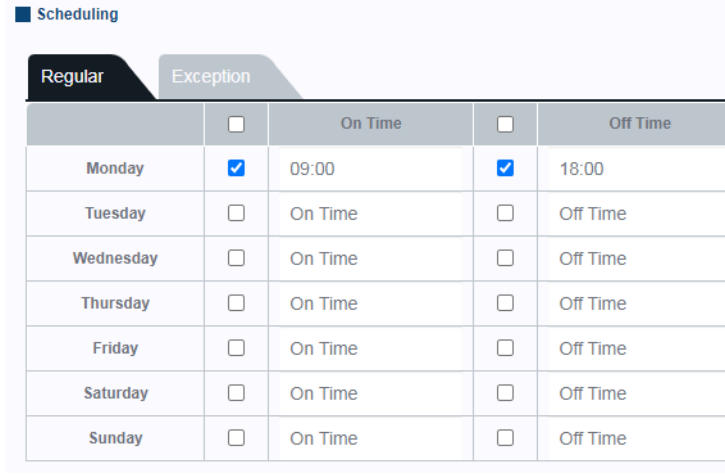


- **Weekly:** Click to select one or more On Time and then click on the time(s) to set the on time(s) in a pop-up menu. Click **Apply** to save the setting. Repeat these steps to configure their off-time(s).

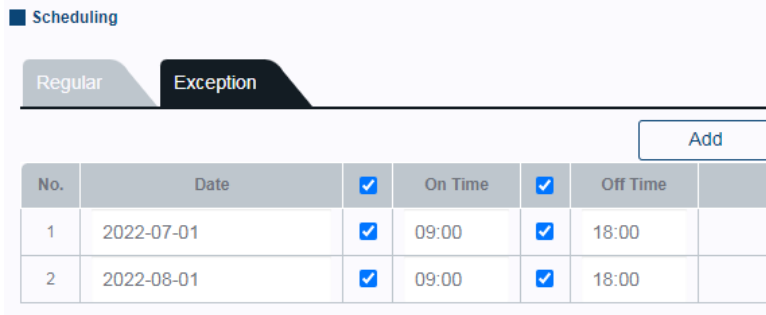


- **Yearly:**

  In the Regular tab, click to select one or more On Time and then click on the time(s) to set the on time(s) in a pop-up menu. Click **Apply** to save the setting. Repeat these steps to configure their off-time(s).



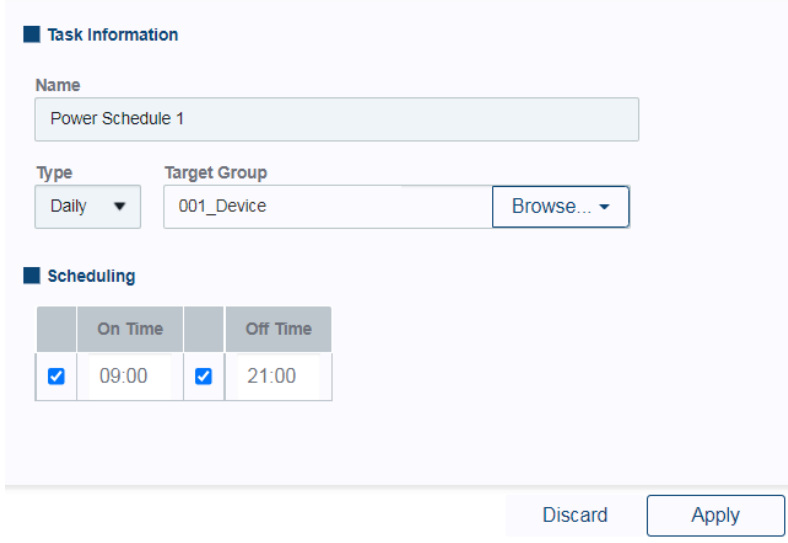
In the Exception tab, add the dates and times when the schedule needs to change.



4. Click **Save**.

Editing a Power-on / Power-off Schedule

1. In the eco DC main page, go to **Energy** > **Schedule**.
2. In the sidebar, click a schedule. The settings page appears.
   For example:

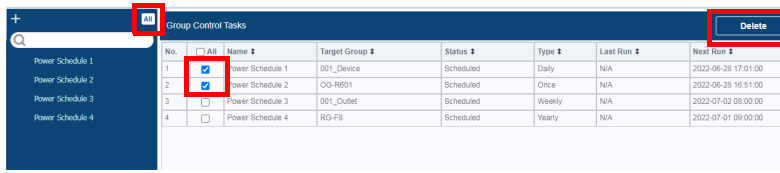


3. Configure the settings as required.
4. Click **Apply** to save the configuration.

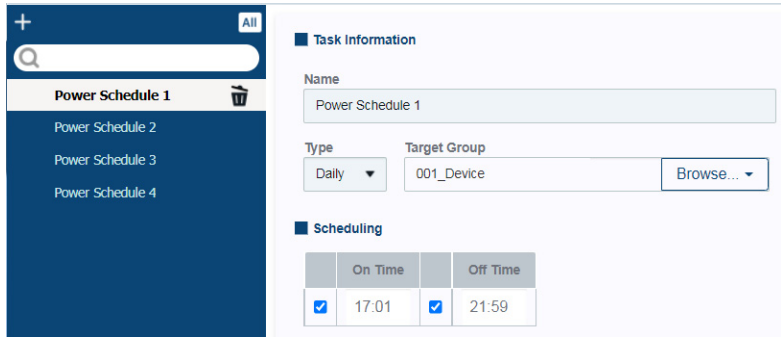
Deleting Schedules

Use one of the following ways to delete schedules.

- From the schedule page, click All to switch to list view, click to select one or more schedules, and click **Delete** on the top right.



- From the sidebar, click a schedule, and then click .



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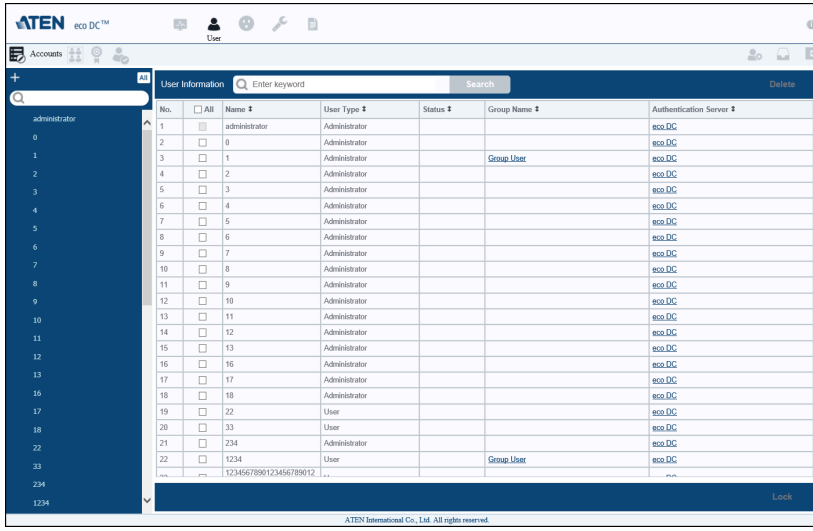
Chapter 5
User

Overview

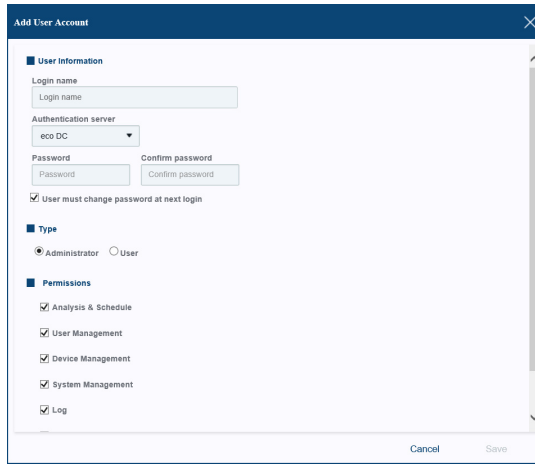
When you select *User* from the toolbar the **Accounts** screen appears. eco DC supports two types of user accounts: Administrator and User. There are four sub-toolbar selections available from the User's tab: *Accounts*, *Authentication Services*, and *Sessions*.



Accounts

To add an account, do the following:

1. Click +. The *Add New User Account* page appears:



2. In the *User Information* section, key in a Login name and Password, and select the Authentication Server. This screen is the same as when the account is selected from the sidebar.
3. In the *Type* section, select the user type. Options are: *Administrator* and *User*.

> **Note:** Administrators have full access rights by default; users have, by default, no access rights apart from "View Only" where they only have access to the Energy toolbar. If they are assigned group permission, on the other hand, they can access almost everything (see *Selecting an Account*, page 63).

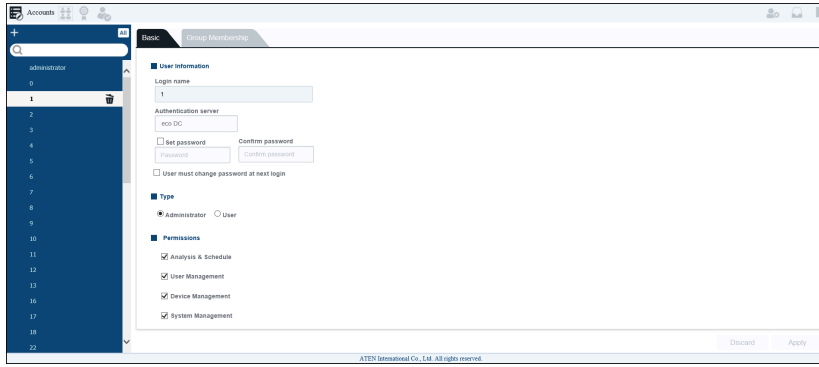
4. In the *Access Permissions* section, set the permissions of Administrator accounts. To set the device-by-device permissions for an account, open the user's page from the sidebar and select the Device Access tab.
5. Click *Save* to save your settings.

Selecting an Account

The *Basic*, *Group Membership* and *Device Access* tabs appears when you select a user account from the Menu. Use these tabs to edit this account's permission to view and manage devices and groups. The *Device Access* tab do not appear for Administrator accounts as they have full permissions.

- Basic

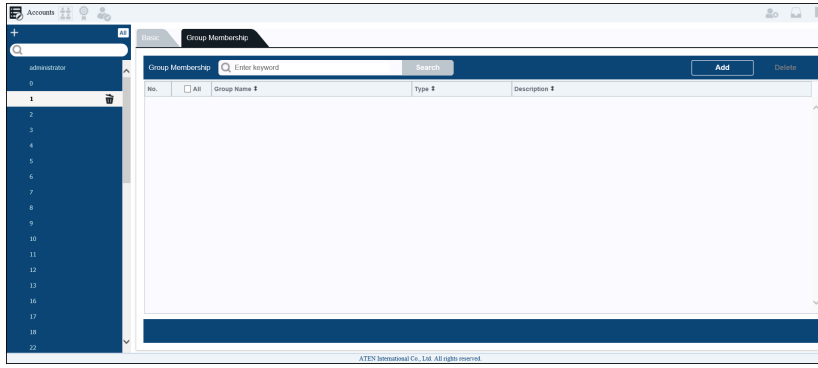
This tab lets you configure the user information, type and permission. An example is shown below:



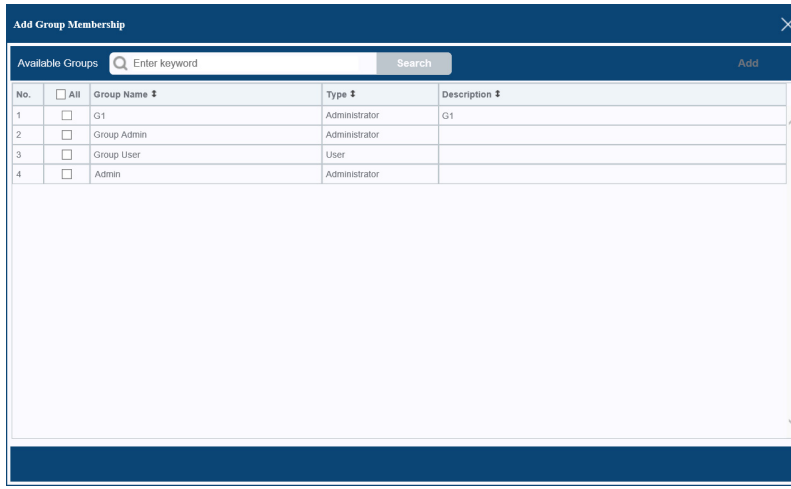
Click **Apply** if you wish to apply the changes you've made.

- Group Membership

This tab displays the group(s) the user account belongs to. An example is shown:

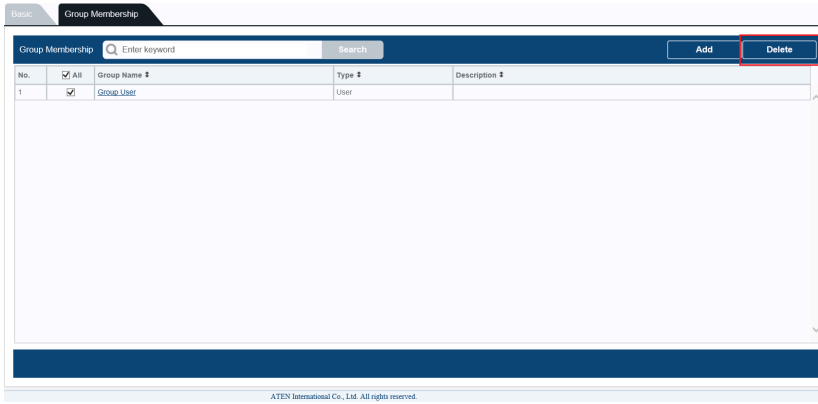


If you wish to add this user to a particular group, click **Add** on the top right corner. A list of available groups will be displayed in the dialog box as shown in the example below:



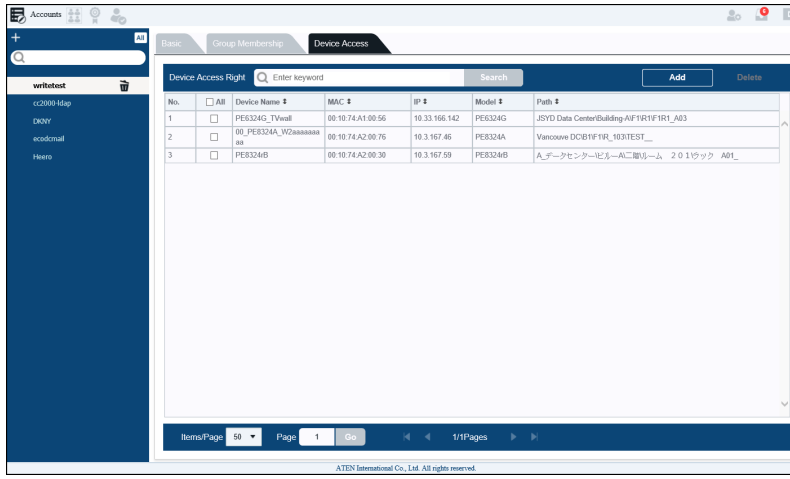
Check the box(es) you wish to add the user account to and click **Add**.

If you wish to delete the user from the group, check the box on the Group Membership tab and click **Delete**.



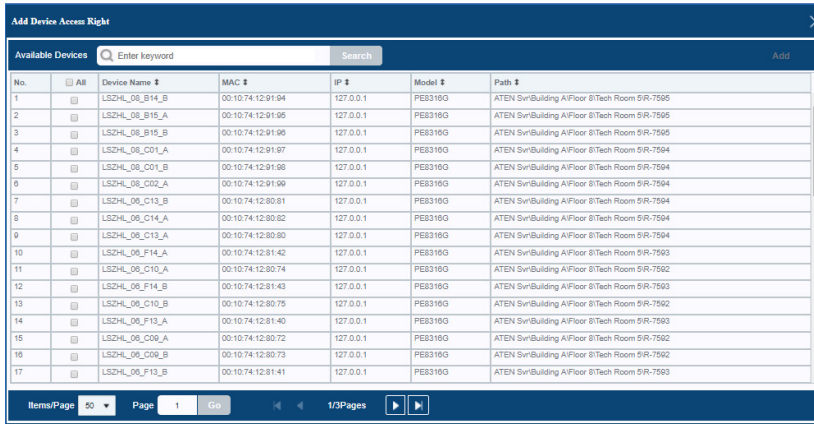
- Device Access

This tab displays the device(s) the user account has access to. An example is shown:



To add device access for the account individually, do the following:

1. Click **Add** on the top right corner. The *Add Device Access Rights* dialog window appears:



2. In the *All* column, check the boxes of the devices you want to allow the user to access. When the user logs in, these devices will appear in the sidebar.

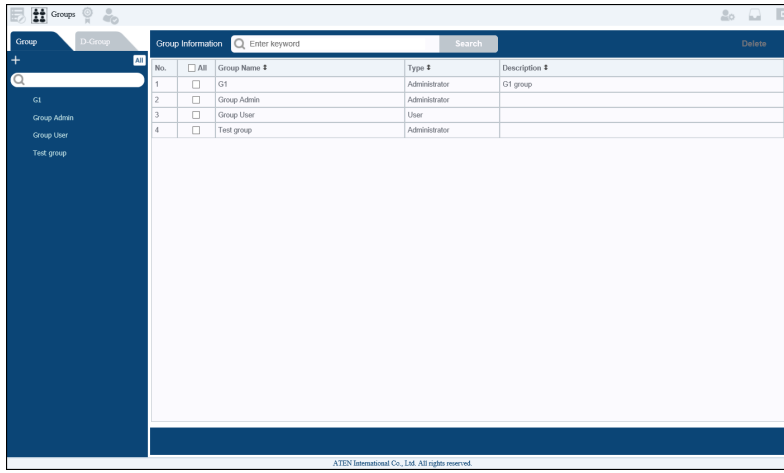
Note:

- If a user is given more access rights via Group Membership, the accessible devices will appear in **Energy > Power Control > Device** tab.
- Administrators have full access rights by default; users have no device or group access rights by default. User accounts only have access to the Energy tab with view status and power control options.

3. Click **Add**. When you are finished, click **X**.
4. After adding devices they appear listed on the Device Access tab.

Groups

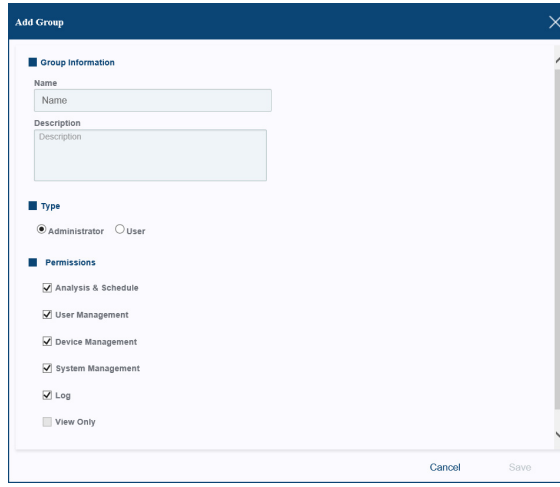
This page displays the user groups you have previously created.



In the menu, you can also choose the “Domain Group” tab to show the groups according to the domain.

Add User Group

To add a user group, click the + icon above the menu:



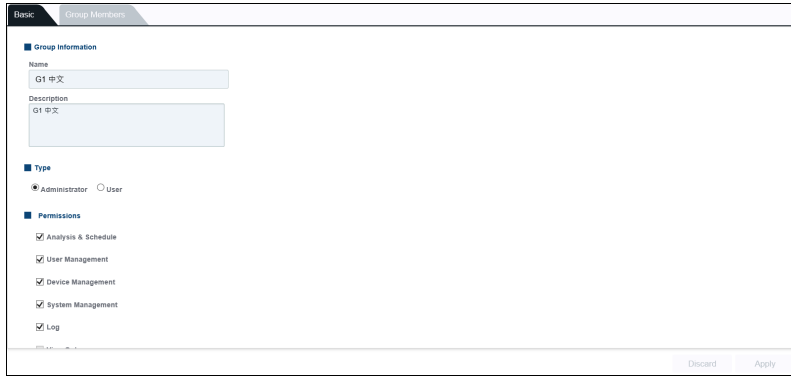
Enter the appropriate information and click **Save**.

User Group

2 tabs will be shown (Groups and Group Members) in the interactive display panel after clicking a user group in the menu.

- Basic

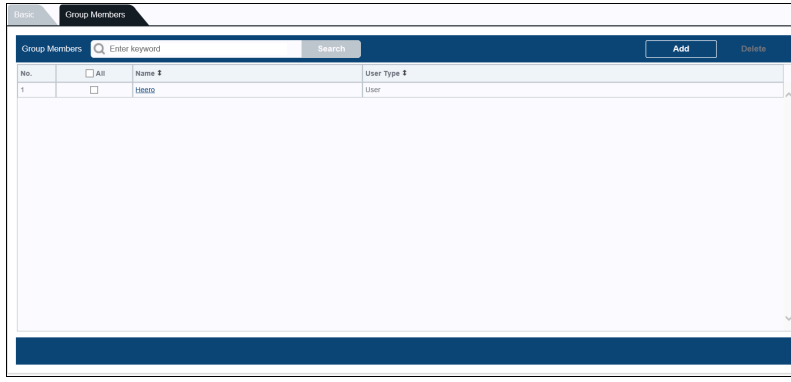
You can configure the group's information, type and permissions in this tab. An example is shown:



Click **Apply** if you wish to apply the changes you've made.

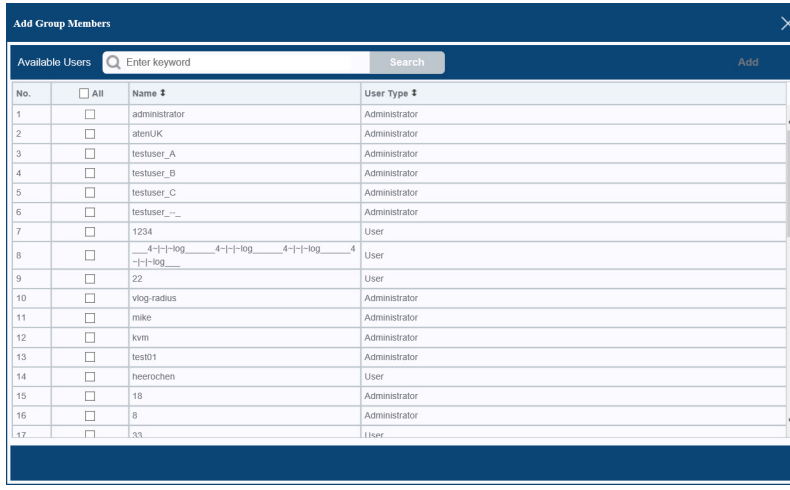
- Group Members

This tab displays all the group members of this group. An example is shown:



To delete the user from the group, check the box on the Group Members page and click **Delete**.

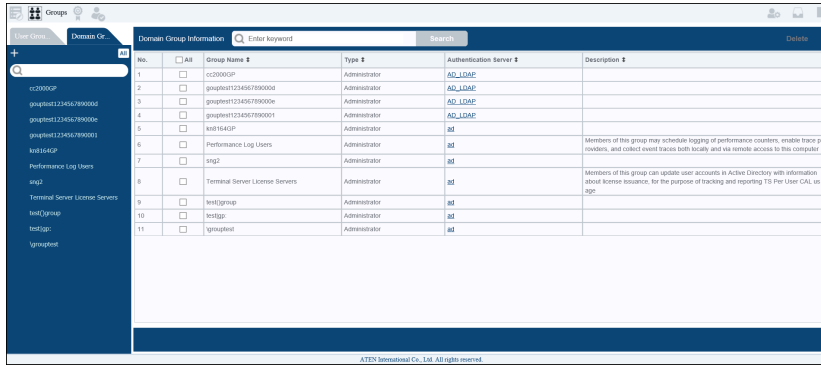
If you wish to add group members, click **Add** for the dialog window shown below:



Check the box of the users you wish to add and click **Add**.

Domain Group

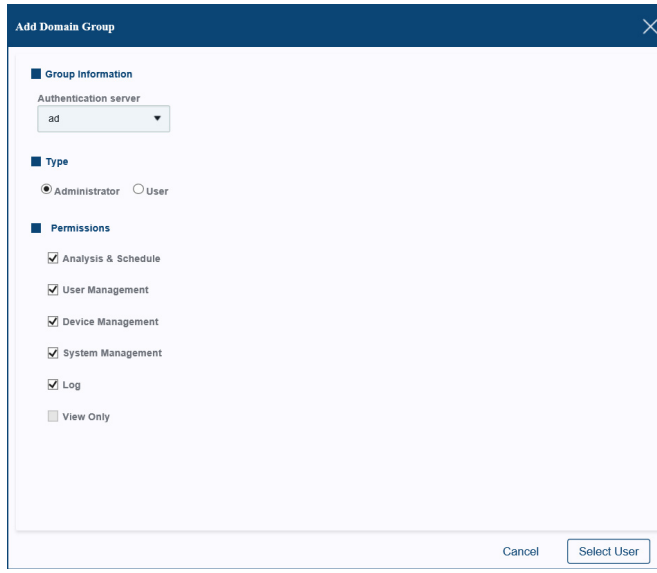
The page below is an example of the Domain Group:



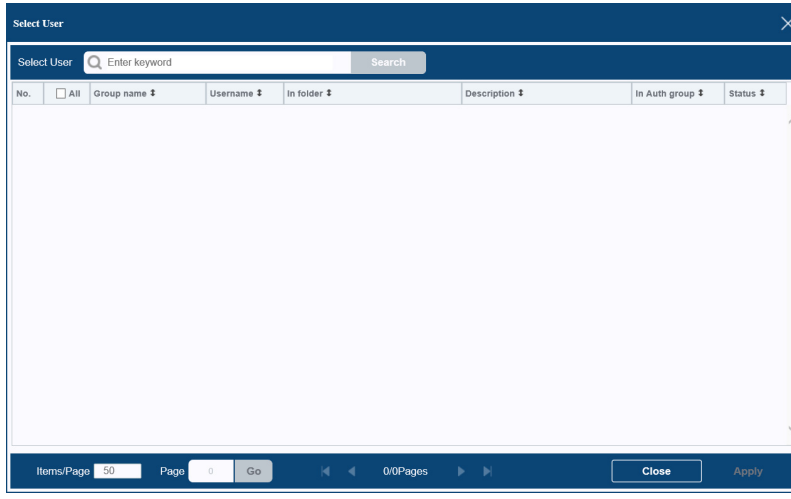
To delete a domain group, check the group's box and click **Delete**.

- Add Domain Group

To add a domain group, click the + icon for the dialog window below:



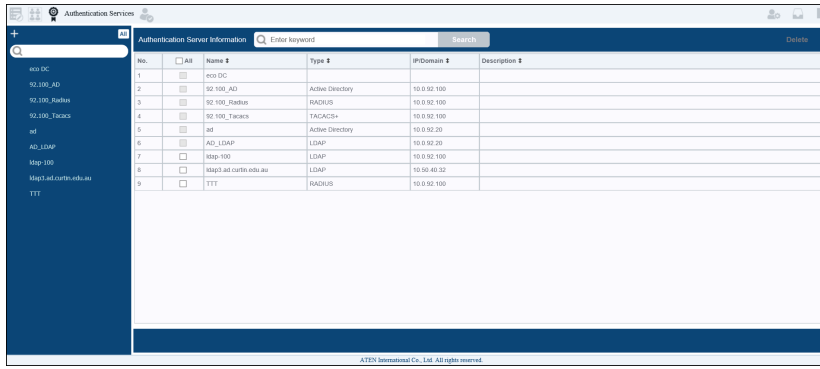
Select the Authentication Server, check/uncheck the group's type and permissions and click **Select User**.



Select the user you wish to add by checking the box and click **Apply**.

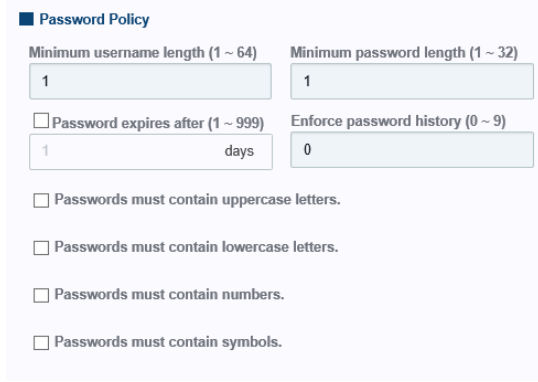
Authentication Services

Clicking the *Authentication Services* sub-toolbar brings you to the information list. An example is shown:



Clicking one of the servers in the menu allows you to configure the external authentication server's information or the password policy of the eco DC. By default, the **eco DC** authentication service appears in the menu and cannot be deleted.

Click **eco DC** in the menu and the *Password Policy* page appears:



Minimum username length (1-64)	Enter the minimum number of characters required for usernames.
Minimum password length (1-32)	Enter the minimum number of alpha/numeric characters required for passwords.
Password expires after (1-999)	Enter the number of days that can pass before users are forced to create a new password.

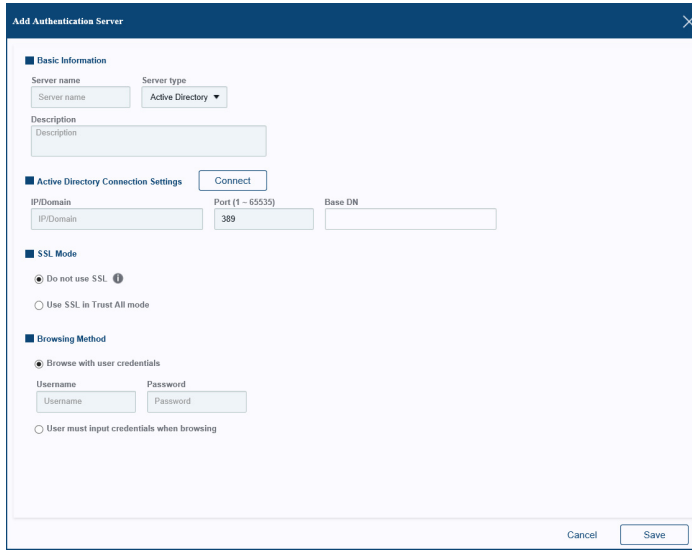
Enforce password history (0-9)	Enter the number of unique passwords that must be used before an old password can be used again.
Password must contain upper letters	Check this box to require users to have at least one uppercase letter in their password.
Password must contain lower letters	Check this box to require users to have at least one lowercase letter in their password.
Password must contain numbers	Check this box to require users to have at least one number in their password.
Password must contain symbols	Check this box to require users to have at least one symbol (!, @, #, $, %, ^, &, *) in their password.

External Authentication

Click any of the external authentication servers in the menu and the configuration page for the server will be shown in the interactive display panel. The page corresponds to the page shown in the *Add Authentication Server* page below.

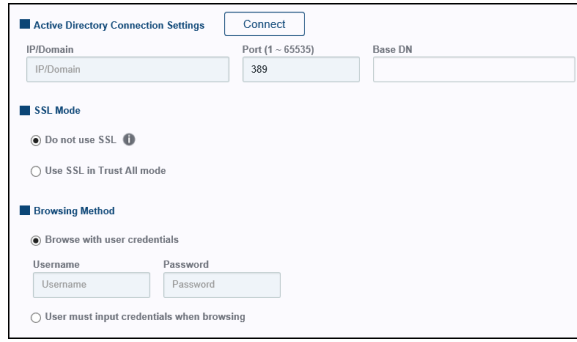
To add an authentication server, do the following:

1. Click +. The Add New Authentication Server page appears:



2. In the *Basic Information* section, key in a Server name and Description, and select a **Server Type**:

- *Active Directory*

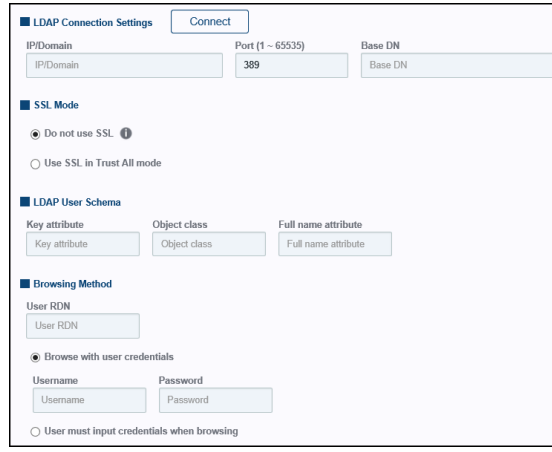


Fill in the **IP address**, **Port** and **Base DN**.

Select *Use SSL in Trust All Mode* or *Do not use SSL*.

Select *Browse with user credentials* and enter the **Username** and **Password**; or *User must input credentials when browsing*.

- LDAP



Fill in the **IP/Domain**, **Port** and **Base DN**.

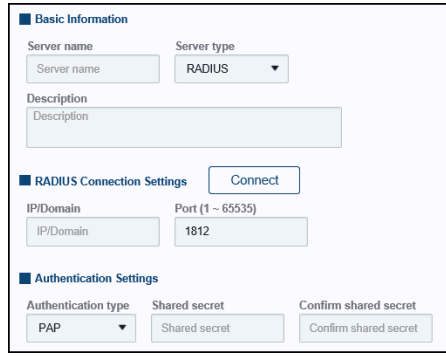
Select *Use SSL in Trust All Mode* or *Do not use SSL*.

Fill in the **Key attribute**, **Object class**, **Full name attribute**.

Fill the **User RDN**.

Select *Browse with user credentials* and enter the **Username** and **Password**; or *User must input credentials when browsing*.

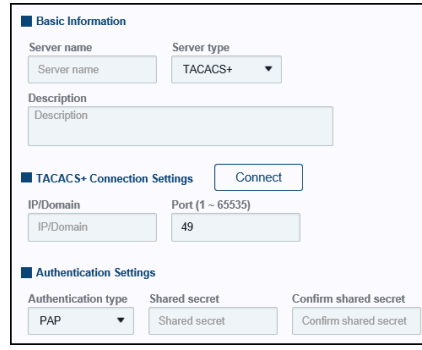
- RADIUS



Fill in the **IP/Domain**, and **Port**.

Select the *Authentication type* and fill in the **Shared secret** and **Confirmed shared secret**.

- TACASC+



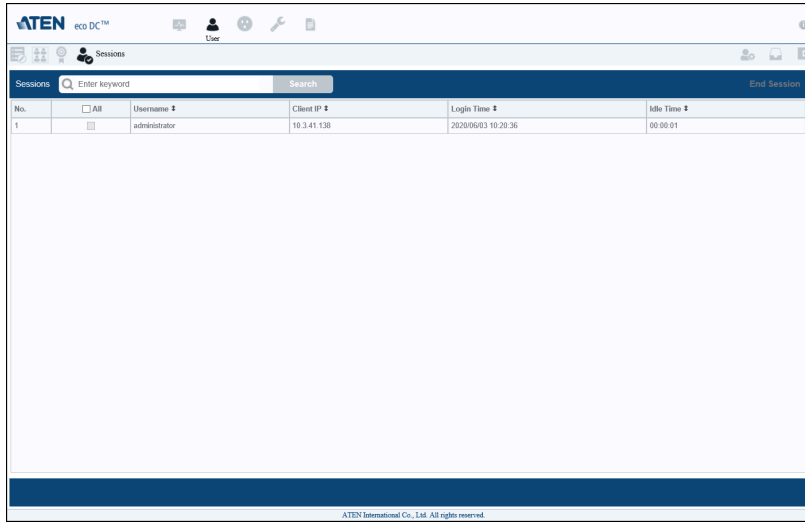
Fill in the **IP/Domain**, and **Port**.

Select the *Authentication type* and fill in the **Shared secret** and **Confirmed shared secret**.

3. Click **Save** to save your settings.

Sessions

The *Session* page lets the administrator see at a glance which users are currently logged into the eco DC, and provides information about each of their sessions.



Note: 1. The Session page isn't available for ordinary users.

2. The sort order of the information displayed can be changed by clicking the column headings.

The meanings of the headings at the top of the page are fairly straightforward. The *Client IP* heading refers to the IP address that the user has logged in from; the *Login Time* tells you when the user logged in, and the *Idle* heading lists how long the account has been inactive.

This page also gives the administrator the option of forcing a user logout by selecting the username and clicking **End Session** at the top right corner of the main panel.

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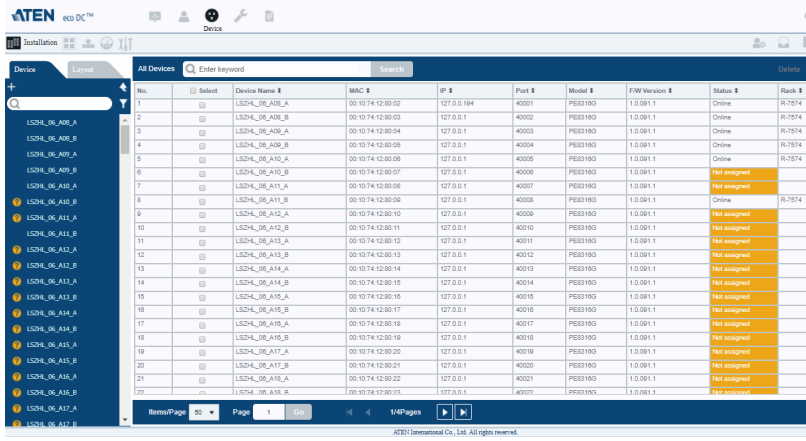
Chapter 6
Device

Overview

The *Device* tab allows you to configure each device and define your data center by *Data Center, Building, Floor, Room,* and *Rack*. You can also define detailed parameters, such as Device Threshold Settings, at the PDU and outlet level and eco Sensors settings. See the following sections for more detailed information.

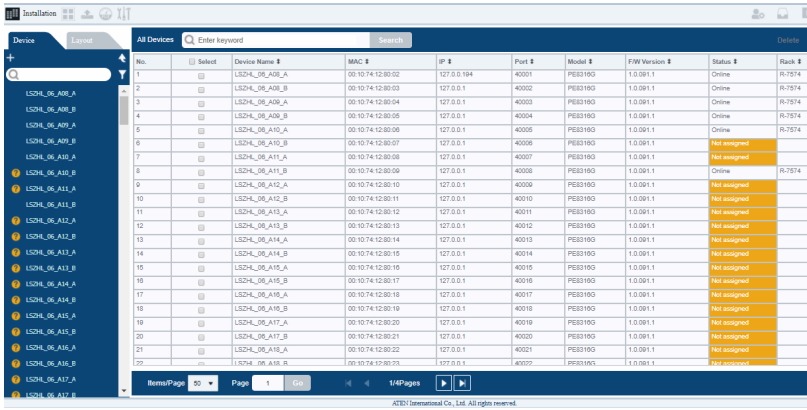


Note: 1. At least one rack must be installed and defined for eco DC to work.

2. Not all functions (such as outlet level monitoring) are supported by all models. Please see , page 6, and your eco PDU User Manual for details

Installation

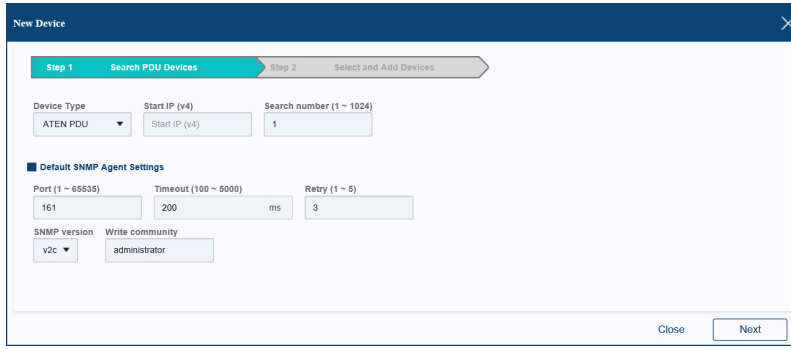
The *Installation* sub-toolbar options allows you to view and configure devices and define the layout of your data center. This page opens to the **Device** tab in the menu which lists all the devices in your data center:



Adding Devices

To add devices, do the following:

1. On the sidebar, click +. The *New Device* page appears to configure parameters and search for devices on the network:

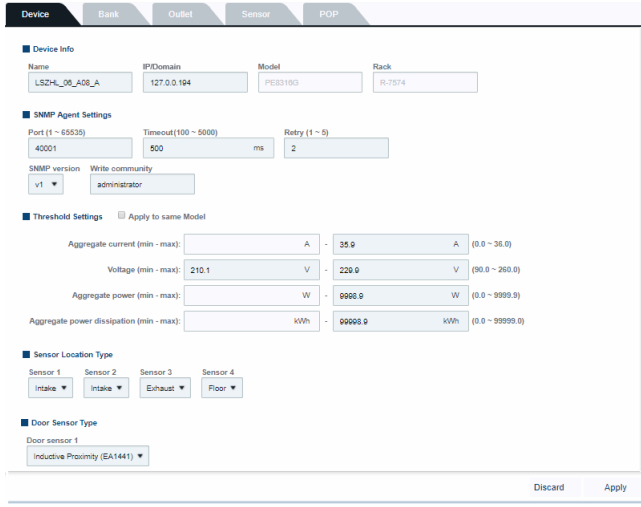


2. In the *Search PDU Devices* section, select the device type (ATEN PDU, ATEN UPS, etc.) from the drop-down menu, key in the *Start IP (v4)* and *Search Number*.
3. Enter the information under *Default SNMP Agent Settings* and click **Next**.
4. When a list of devices appears, check the device boxes and click **Add**.

Devices

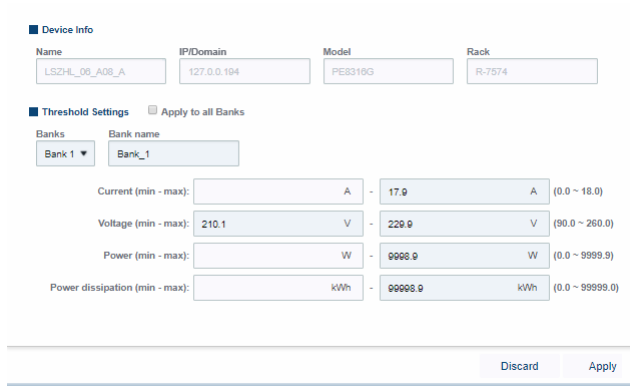
The *Devices* tab lists all the PDUs in your data center. You can select devices to configure the settings by selecting them in the sidebar, or by double-clicking the devices in the main panel. When a device is selected, its first tab appears:

Device



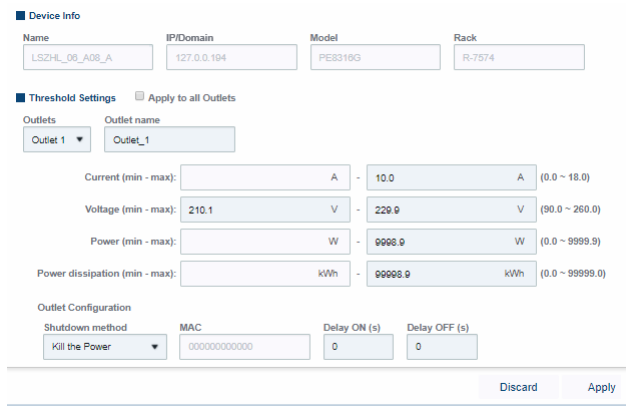
Device Info	This section displays the *Name*, *IP/Domain*, *Model* and *Rack* information for configuration.
SNMP Agent Settings	Configure the SNMP Agent settings here.
Threshold	Set the device threshold settings (min.–max), using the parameters provided, for: ◆ Aggregate Current ◆ Voltage ◆ Aggregate Power ◆ Aggregate Power Dissipation Note: For these settings to appear click the **Advanced Settings** radio button.
Sensor Location Type	Select the sensors' locations from the drop-down menus.
Door Sensor Type	Select the door sensor type from the drop-down menu.
Apply	Click **Apply** to save the settings.

Bank



Device Info	This section displays the device *Name*, *IP/Domain*, *Model* and *Rack* information.
Threshold	Enter the bank *Name*, and use the drop-down menu to configure multiple banks individually, or check *Apply to all banks* to configure all banks with the same settings. Set the outlet threshold settings (min.–max), using the parameters provided, for: ◆ Current ◆ Voltage ◆ Power ◆ Power Dissipation **Note:** Depending on your device, not all these options may be available.
Apply	Click **Apply** to save the settings.

Outlet



Device Info	This section displays the device *Name*, *IP/Domain*, *Model* and *Rack* information.
Threshold	Use the Outlets drop-down menu to select the outlet to configure, or use Apply to all outlets to configure the same settings for all outlets. Set the outlet threshold settings (min.–max), using the parameters provided, for: ◆ Aggregate Current ◆ Voltage ◆ Aggregate Power ◆ Aggregate Power Dissipation ◆ Select one of the three choices for the *Shutdown Method* from the drop-down menu – see *Shutdown Methods*, page 81, for details. ◆ Set MAC address and Delay Time On/Off for the selected method.
Apply	Click **Apply** to save the settings.

Shutdown Methods

The three available shutdown methods are explained in detail below:

- **Kill the Power** – If this option is selected, the device waits for the amount time set in the *Power Off Delay* field, and then turns the Outlet's power Off. Turning the power off performs a cold (non-safe) shutdown.
- **Wake on LAN** – This is a Safe Shutdown and Restart option. If this is selected, when an Outlet is turned Off, the device first sends a message to the computer telling it to prepare for a shutdown; it then waits for the

amount time set in the *Power Off Delay field* to give the OS time to close down before the computer is powered down to standby mode.

Likewise, when the Outlet is turned On, the device waits for the amount time set in the *Power On Delay* field, then sends an Ethernet message to the computer connected to the Outlet telling the computer to turn itself On.

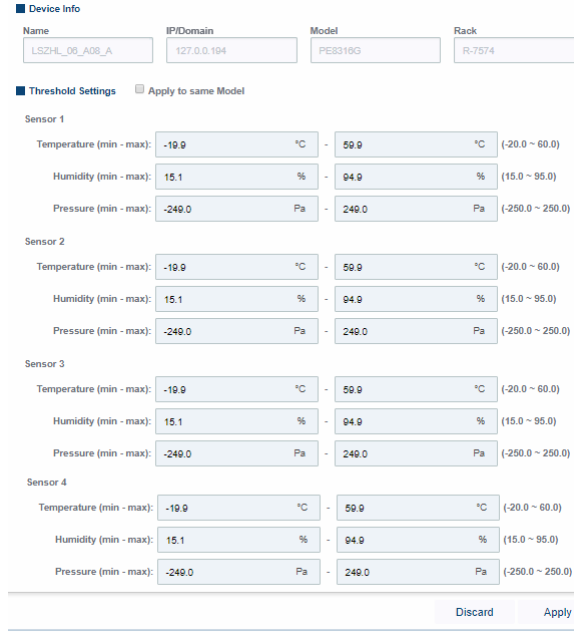
Note: For Safe Shutdown and Restart, the computer must be running Windows (Windows 98 or higher), and the *Safe Shutdown* program (available by download from our website), must be installed and running on the computer.

- **System after AC Back** – This is a Safe Shutdown and Restart option. If this is selected, when an Outlet is turned Off, the Device first sends a message to the computer telling it to prepare for a shutdown; it then waits for the amount time set in the *Power Off Delay* field to give the OS time to close down before the computer is powered down.

  When the Outlet is turned On, the device waits for the amount time set in the *Power On Delay* field, then sends power to the server. When the server receives the power, it turns itself on.

Note: For Safe Shutdown and Reboot, the computer must be running Windows (Windows 98 or higher), and the *Safe Shutdown* program (available by download from our website), must be installed and running on the computer.

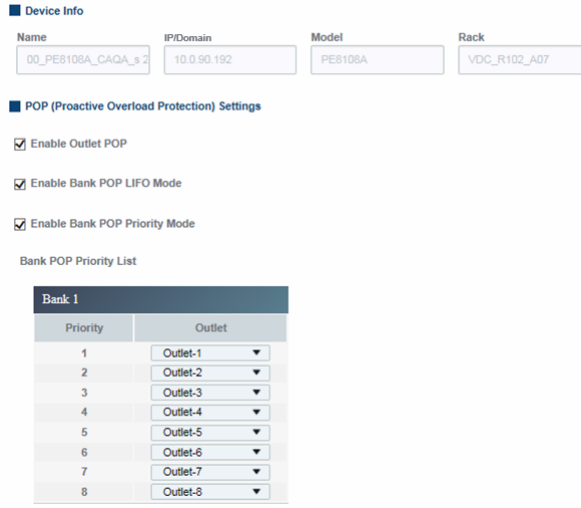
Sensor



Device Info	This section displays the device *Name*, *IP/Domain*, *Model* and *Rack* information for configuration.
Threshold Settings	This section provides the threshold settings for Sensors 1-4. Check *Apply to same Model* to use the same settings for all sensors connected to the same PDU model as the one you are configuring. Set the sensor threshold settings (min.–max), using the parameters provided, for: ◆ Temperature ◆ Humidity ◆ Pressure
Apply	Click **Apply** to save the settings.

POP

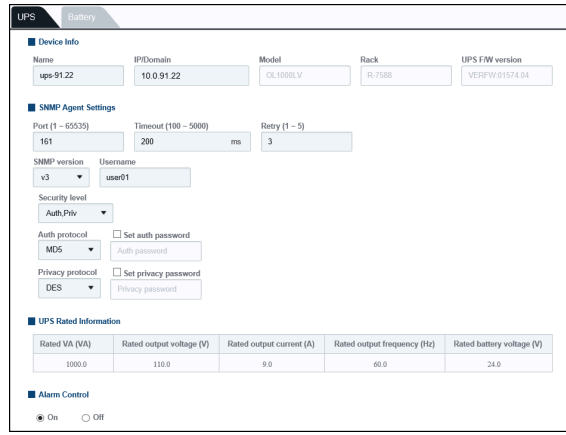
Depending on the ATEN PDU model, this tab may or may not appear, and different options will be available. Please refer to the user manual of the ATEN PDU selected for instructions on the available options.



Device Info	This section displays the device *Name*, *IP/Domain*, *Model* and *Rack* information for configuration.
POP (Proactive Overload Protection) Settings	This section provides the settings to configure Proactive Overload Protection for outlets. Check the *Enable POP modes* to use these feature. See the user manual of the selected PDU for details of the POP features and how to configure the settings.
Apply	Click **Apply** to save the settings.

UPS

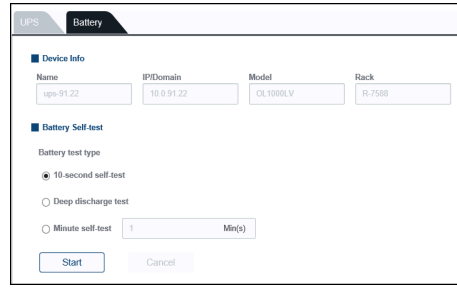
If you choose a UPS device, this tab will appear.



Device Info	This section displays the device *Name*, *IP*, *Model*, *Rack* and *UPS F/W version* information.
SNMP Agent Settings	For fields that can be entered, enter a parameter between the specified range. For fields that have drop-down menu, select from the available options.
Apply	Click **Apply** to save the settings.

Battery

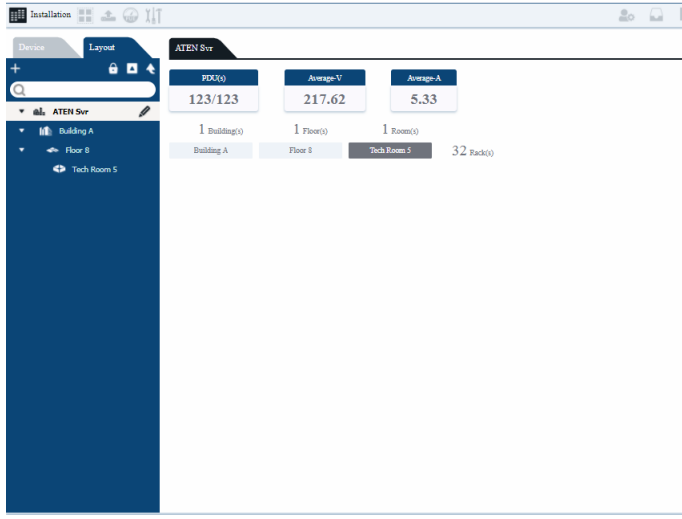
The battery tab allows you to do battery self-test for the UPS.



Device Info	This section displays the device *Name*, *IP*, *Model*, and *Rack* information.
Battery Self-test	Select the test type and click **Start** to start the test.

Layout

The *Layout* tab is for configuring the layout of your data center. The sidebar provides a tree-view list of the data center and its building(s), floor(s), and room(s).



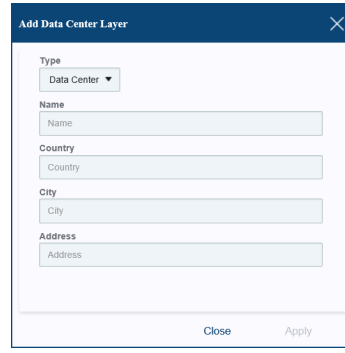
Each level of the layout provides energy and basic information about that level of the data center. This information includes the number of PDUs, the average voltage, average aggregate power, and the number of buildings, floors, rooms and racks.

Adding Layout

There is a hierarchy which must be followed when adding the layout, meaning you must add one before the other, in this order: **Data Center - Building - Floor - Room**. You can add multiple Data Centers with multiple buildings, floors and rooms. At the room level you can configure the racks which contain the PDUs.

To add a layout, do the following:

1. On the menu, click +. The *Create Data Center Layer* window appears:

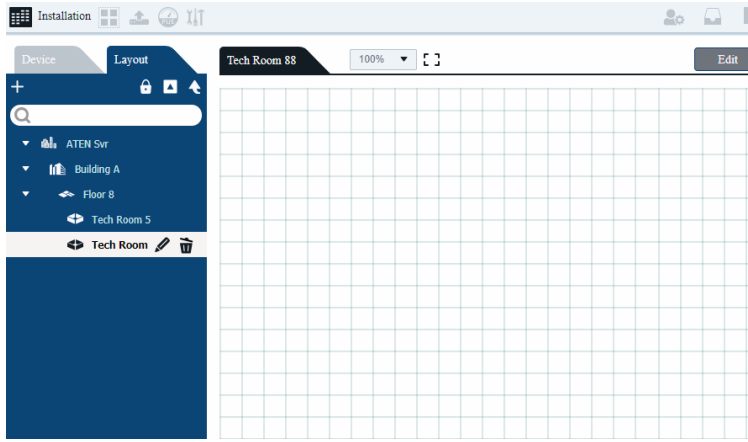


2. Use the drop-down menu to select the *Type*: **Data Center**. Key in the Name, Country, City and Address. Click **Apply**.
3. In the menu, select the *Data Center* and click + again. Use the Type drop-down menu and select **Building**. Key in the Name, Country, City and Address. Click **Apply**.
4. In the menu, select the *Building* and click + again. Use the Type drop-down menu and select **Floor**. Key in the Name, Country, City and Address. Click **Apply**.
5. In the menu, select the *Floor* and click + again. Use the Type drop-down menu and select **Room**. Key in the Name, Country, City and Address. Click **Apply**.
6. You can add additional buildings, floors and rooms at each level. Once the Rooms have been added, you can select them to add racks to your data center.

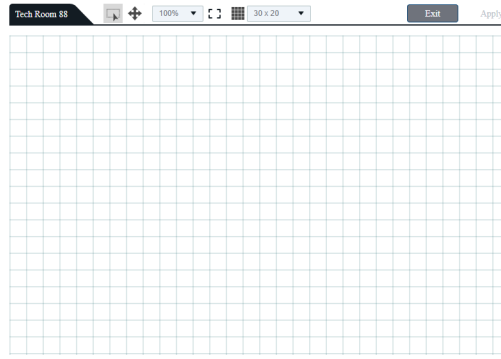
Adding Racks

To add racks to a room, do the following:

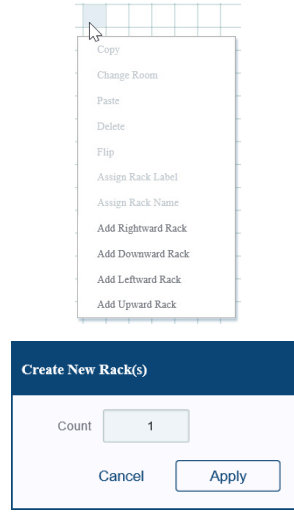
1. In the sidebar, select a Room. A grid appears:



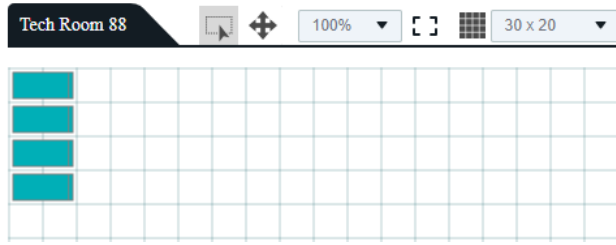
2. Click **Edit**. A page appears to add racks to the room. Use the bar options to Select and Change, Zoom and Pan, Auto Fit, and set the Layout's grid size.



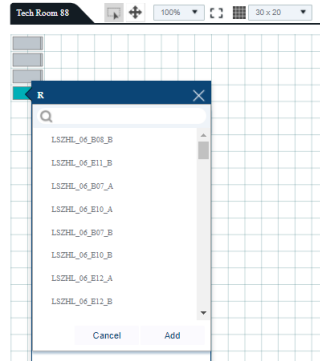
3. Right-click on a square and how the rack is to be positioned:



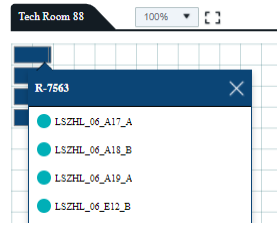
4. Enter the number of racks to add, and click **Apply**. The racks appear in the position that you selected. You can drag-and-drop, delete, copy, and paste racks. Add racks until you've completed the design of your data center.



5. To add devices, double-click a rack and click +.

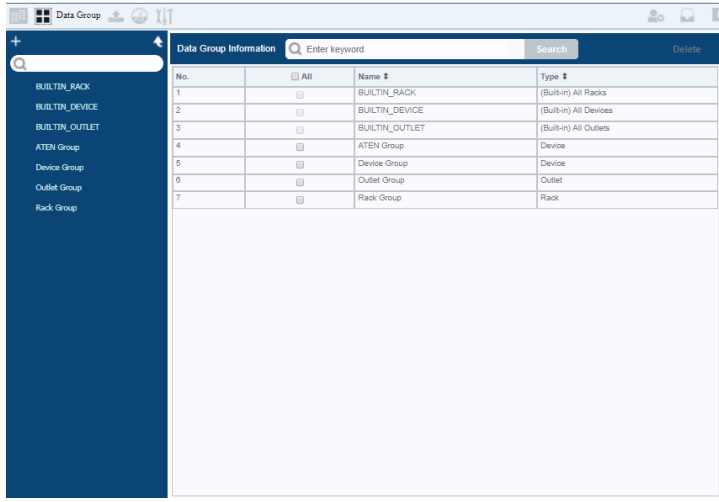


6. Select the device(s) and click **Add**.
7. After adding all the devices to each rack, click **Exit**.
8. On the Room page, click racks to view the list of devices. Racks without devices appear gray.



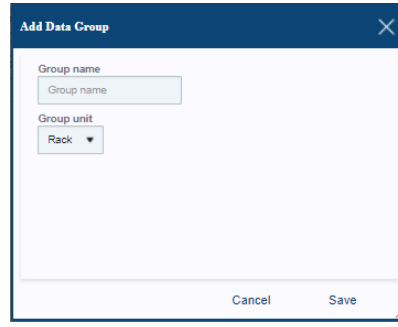
Data Group

The *Data Group* sub-toolbar option allows you to create groups of racks, devices or outlets for power management control. The menu and the main panel *list*s groups that have been created. The first three groups (BUILTIN_RACK, BUILTIN_DEVIC, BUILTIN_OUTLET) contain all units in their Group Unit and cannot be deleted.



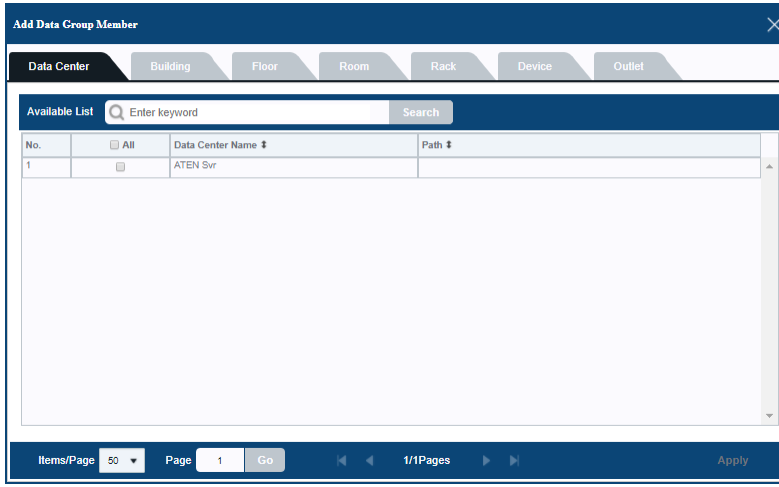
To define a group, do the following:

1. On the sidebar, click +.The *Add Data Group* page appears:



2. Key in the *Group Name* and select the *Group Unit*: **Rack**, **Device**, or **Outlet**.
3. Click **Save**.

4. The Group appears in the menu, and opens to the page where you can add Racks, Devices, or Outlets.
5. Click Add. The *Add Data Group Member* page appears:



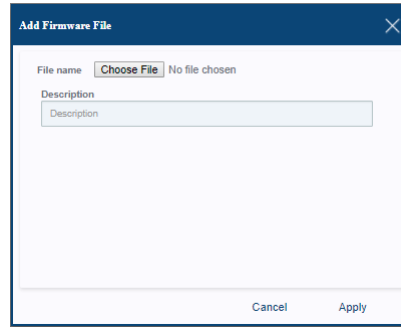
6. Use the tabs to find racks, devices, or outlets to add to the group. The tabs that appear depend on the *Group Unit* type that was selected.
7. Click **Apply**.

Firmware Upgrade

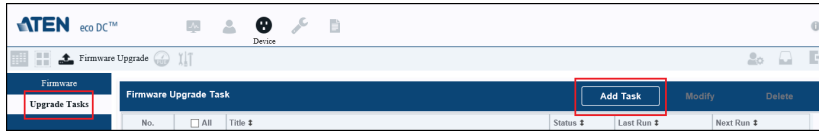
The *Firmware Upgrade* sub-toolbar option allows you to add firmware upgrade files and then create tasks to apply the update to the appropriate devices.

To add a firmware file and schedule an upgrade task, do the following:

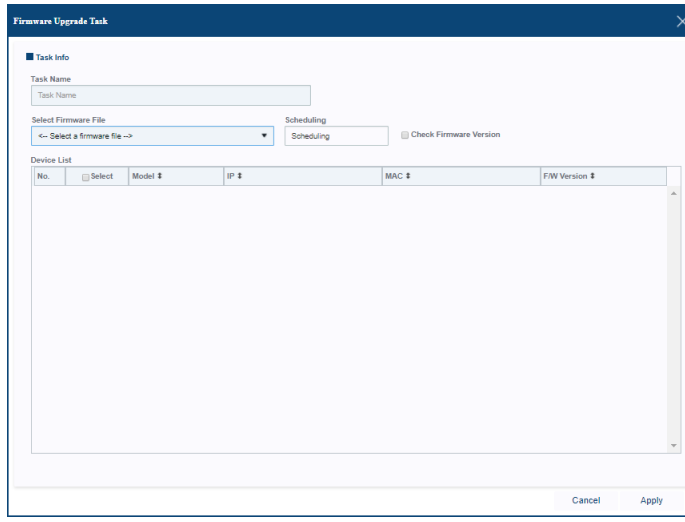
1. On the main bar, click **Add**.The *Add Firmware File* page appears:



2. Key in the *Description* and click **Choose File** and browse to select the firmware upgrade file.
3. Click **Apply**.
4. On the menu, select *Upgrade Tasks*.



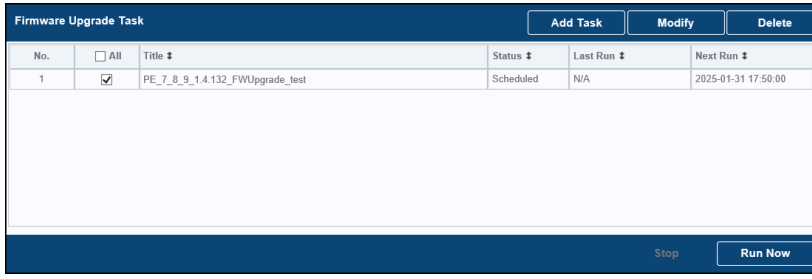
5. Click **Add Task**. The Firmware Upgrade Task page appears:



6. Key in the *Task Name*, select the Firmware File from the drop-down menu and click Scheduling to choose a date/time to run the task.
7. Select **Check Firmware Version** to have the upgrade check the devices firmware version before it installs. If the current firmware on the device is more up-to-date than the one being applied, the firmware will not be installed.
8. Click **Apply** to save the scheduled firmware upgrade.

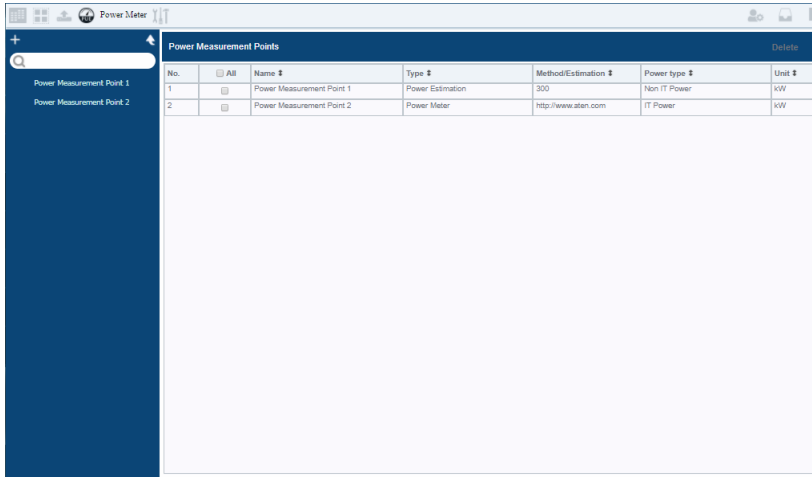
Run Upgrade Task Now

If you want to run a firmware upgrade straight away, check the task and click **Run Now** on the bottom right corner of the page. An example is shown below:



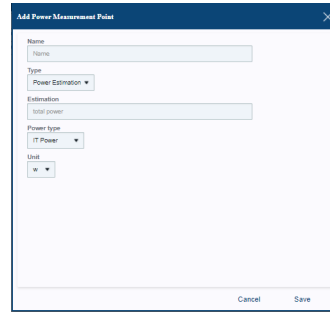
Power Meter

The *Power Meter* sub-toolbar option lets you create Power Measurement Points. Power Measurement Points allow you to use Non IT Facility Energy data to compare to the data center's IT Power data obtained from the ATEN PDUs. This information is used to calculate the PUE. You can obtain Non IT Facility Energy data from third-party power meters via URL: https://IP:Port/PowerMeter.json?, or a simple power estimation.



To create a Power Measurement Point, do the following:

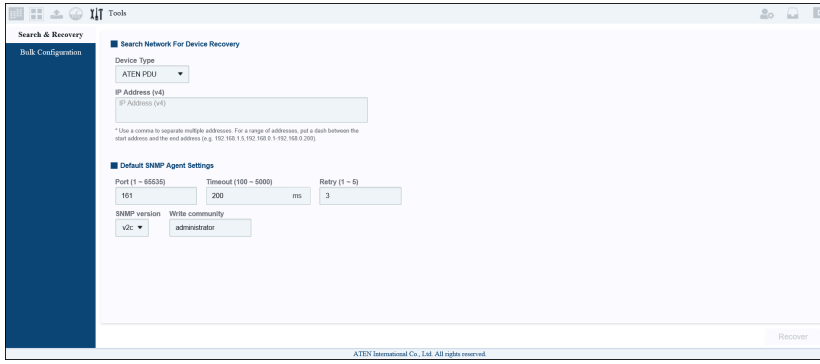
1. On the sidebar, click +. The *Add Power Measurement Point* page appears:



2. Key in the *Name* and *Estimation* (amount), select the **Type**, **Power Type**, and **Unit**.
3. Click **Save**.

Tools

The *Tools* sub-toolbar options includes two menu functions: *Search & Recovery* and *Bulk Configuration*.

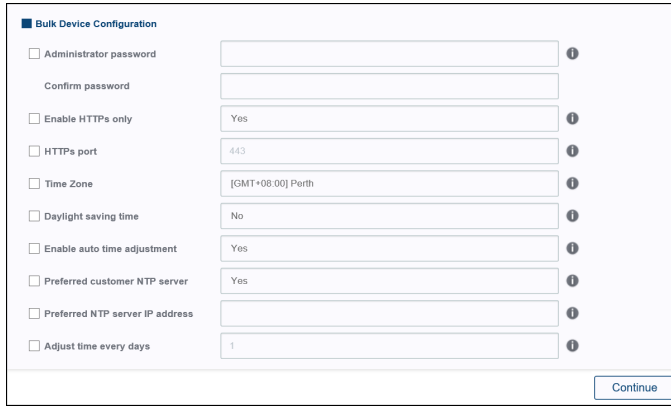


Search & Recovery

This tool searches the desired network and recover offline devices if possible. It will scan the specified IP address(es) to find matched device(s) that was offline and update its network settings (IP, port, SNMP parameters, etc.) to bring it online.

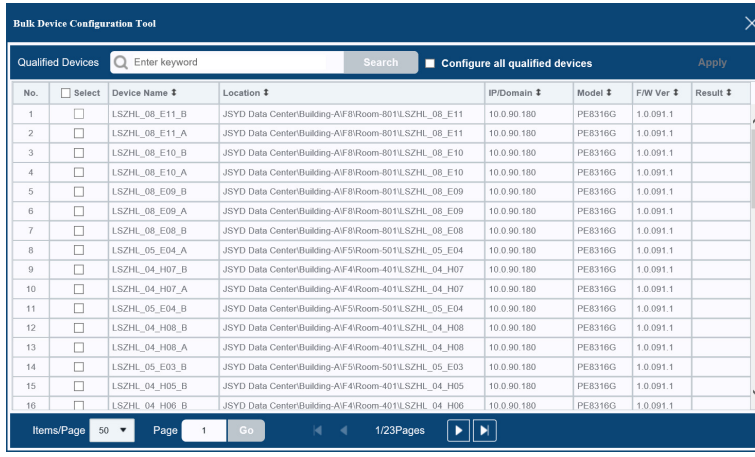
Bulk Configuration

If you wish to configure certain settings in a bulk, use this menu.

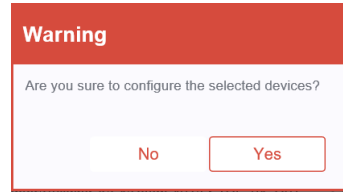


To bulk configure:

1. Check the checkbox of the setting you wish to bulk configure and alter the setting (drop-down menu or enter information into the field).
2. Click **Continue**. The system will display a list of devices for bulk configuration.



3. Check the checkbox of the devices you wish to bulk configure and click **Apply**. The system will ask if you would like to continue.



4. Click **Yes** to complete bulk configuration.

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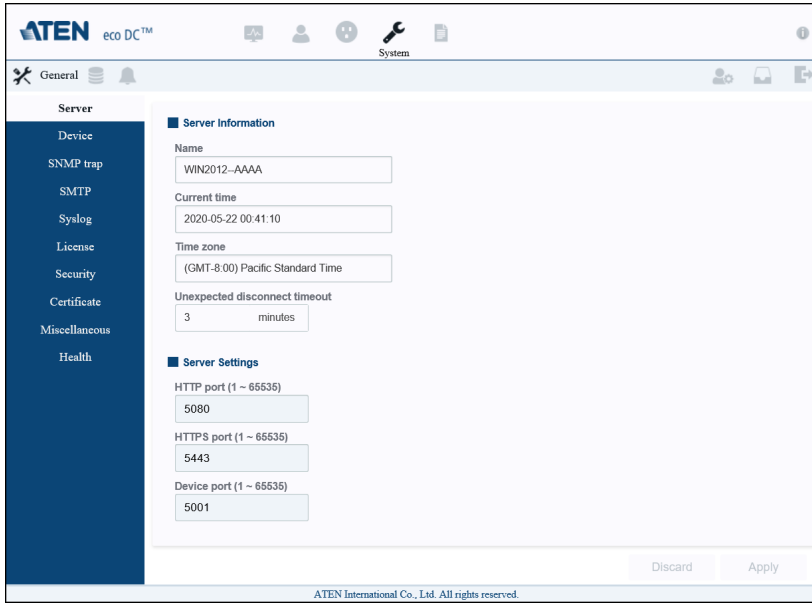
Chapter 7
System

Overview

The *System* tab allows you to set system, database and events settings for the eco DC software.

General

This *General* sub-toolbar selection allows you to configure various system parameters:



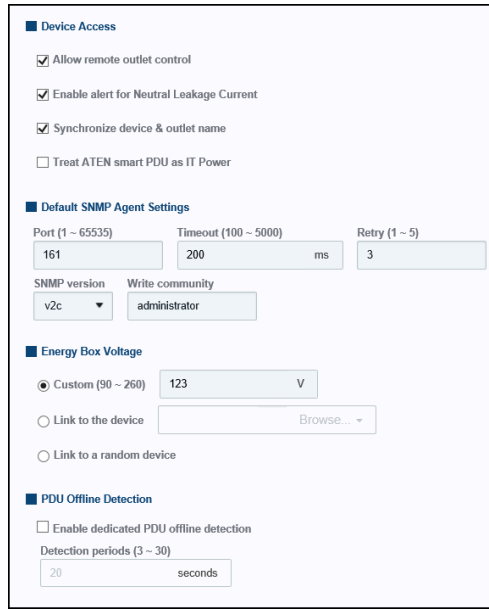
Server

Allows you to view and configure basic eco DC server settings.

- Provides the *Server Information*: Name, Current Time, and Timezone.
- *Unexpected disconnect timeout* shows how long the eco DC will wait when a user loses connectivity before ending the session.
- Configure the *Server Settings*: HTTP Port, HTTPS Port, Device Port.

Device

Allows you to configure the default settings related to eco DC's relationship with devices it connects to.



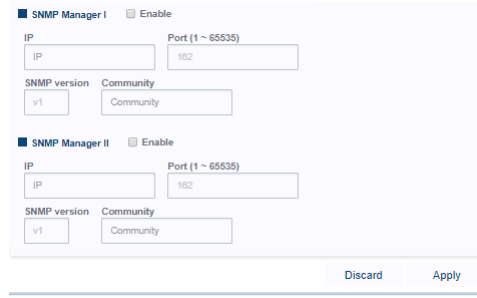
- Use the check boxes to:
  - Allow remote outlet control.
  - Enable alert for Neutral Leakage Current.
  - Synchronize device and outlet name.
  - Treat ATEN smart PDU as IT power. Checking this option means all the power from ATEN PDUs will be treated as IT Equipment Energy when calculating the data center's PUE.
- Set the Default SNMP Agent Settings: Port, Timeout, Retry (1~5), SNMP version, and Write Community.
- Use the *Energy Box Voltage* radio button to select a voltage:
  - Custom (90~260) – enter a custom voltage number.
  - Link to the device – click browse and select a energy box.
  - Link to a random device – an energy box is selected for you.
- Use the *PDU Offline Detection* to configure the function.
  - Check the **Enable dedicated PDU offline detection** to enable the function.

- Enter the detection period in the field (3~30)

- Click **Apply** to save the settings.

SNMP trap

This section sets the SNMP trap server settings.

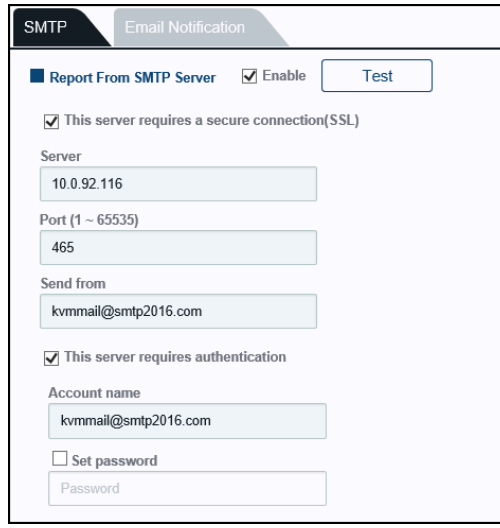


- *SNMP Manager I* – Check **Enable** to configure the first SNMP server:
  - Enter the IP address, Port SNMP version and key in the Community.
  - Click **Test** to attempt a connection.
- *SNMP Manager II* – Check **Enable** to configure the second SNMP server:
  - Enter the IP address, Port SNMP version and key in the Community.
- Click **Test** to attempt a connection.
- Click **Apply** to save the settings.

SMTP

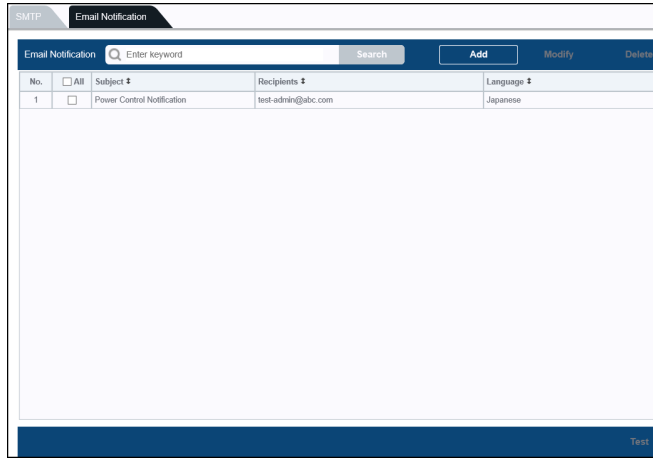
Use these settings to have the eco DC email reports from an SMTP server.

SMTP



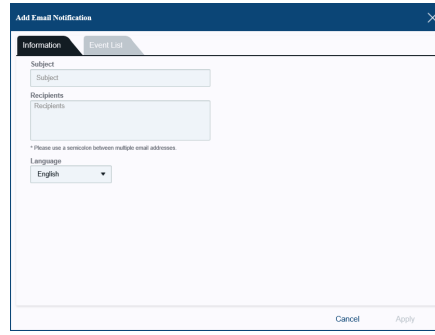
- If required, check *This server requires a secure connection (SSL)*
- Check **Enable** to receive reports from the SMTP server.
  - Enter the IP address, Port, and Send from (e-mail address).
  - If required, check *This server requires authentication* and key in the **account name** and **password**.
- Click **Test** to attempt a connection.
- Click **Apply** to save the settings.

Email Notification



This tab allows you to setup email notifications.

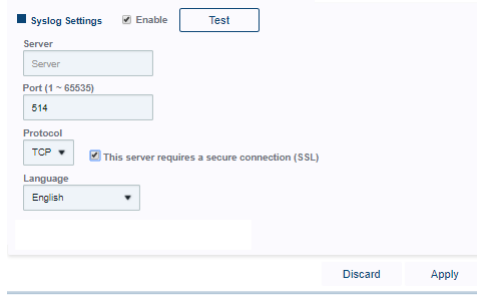
- Click **Add** for the email notification configuration window:



  - Enter the subject, recipients (multiple recipients option available) and language in the Information tab.
  - Check the checkbox of the notification events you wish the system to notify in the Event List tab.
  - Click **Apply** to add this notification to the system.
- Check the checkbox of a current notification and click **Modify** to modify the configuration. Click **Apply** to save the configuration.
- Check the checkbox of a current notification(s) and click **Delete** to delete.
- Check the checkbox of any current notification and click **Test** (bottom right corner) to test if the system sends the notification.

Syslog

Use these settings configure the Syslog server settings.



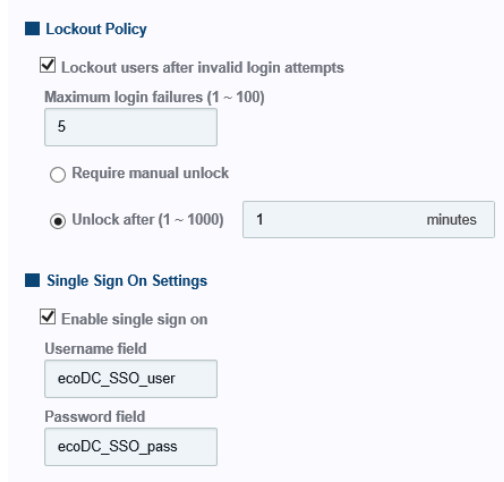
- *Syslog Server* – Check **Enable** to use a Syslog server.
  - Enter the Server, Port, and select the Protocol and Language.
  - When TCP protocol is selected (if needed), check *This server requires authentication*.
- Click **Test** to attempt a connection.
- Click **Apply** to save the settings.

License

This page displays license information about the eco DC software.

Security

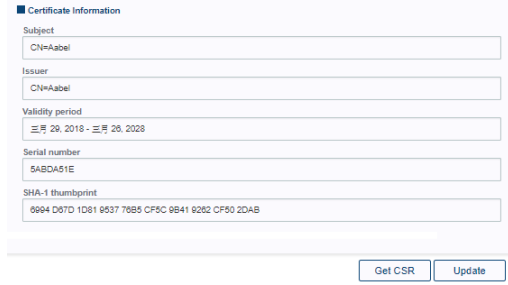
Use these settings configure the eco DC security settings.



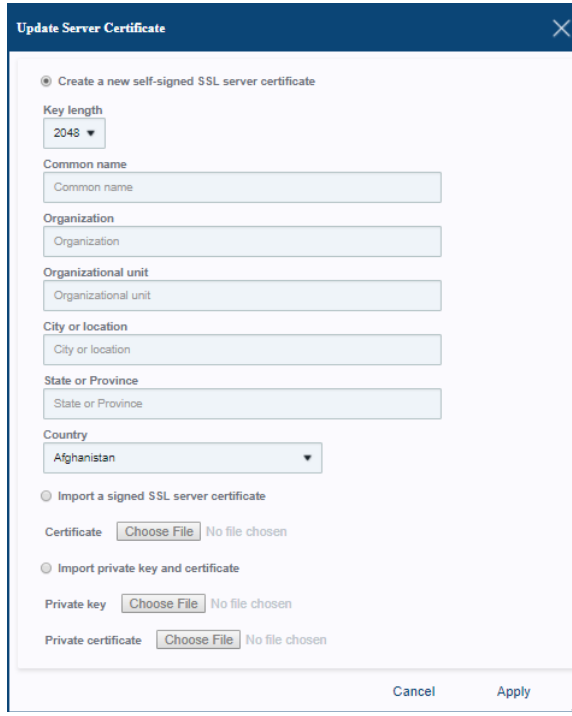
- *Lock Out Policy* – sets the user login policy. To use this feature, check *Lockout users after invalid login attempts*.
  - Key in the *Maximum login failures (1~100)* that users are allowed before their account is locked out.
  - If you want to require the administrator to unlock a user's account, select *Require manual unlock*.
  - If you want a user's account to unlock after a specific amount of time, select *Unlock after (1~1000)* and key the number of minutes.
- *Single Sign On Settings* – Check *Enable single sign on* if you wish to enable this function (allow users from another web application to log in eco DC automatically through a form-based authentication).
  - Key in the *Username field identification string* and *Password field identification string* for the single sign on account.
  - To integrate, please refer to *SSO HTML* on page 127.
- Click **Apply** to save the settings.

Certificate

This section provides information and allows you to update the certificates.



- *Certificate Information*– provides information about the certificate: Subject, Issuer, Validity Period, Serial Number and SHA-1 thumb print.
- Click **Get CSR** to save the certificate file (csr.cer) to a convenient location on your computer. This is the file that you give to the third party CA to apply for their signed SSL certificate.
- Click **Update** to import a certificate.



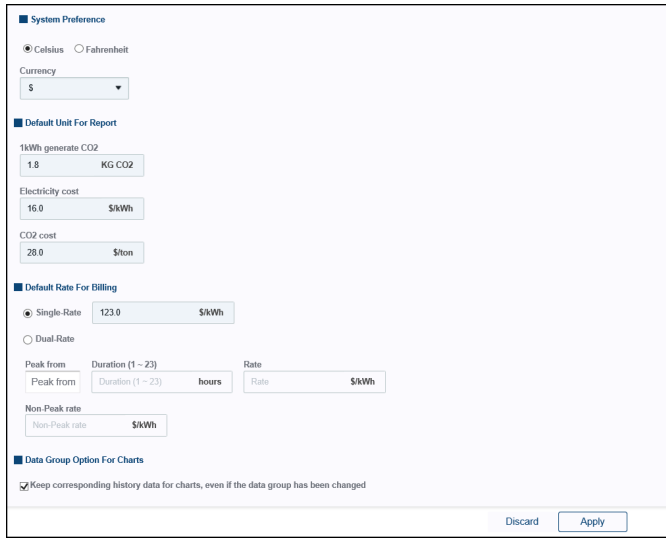
1. There are three types of certificates to select from:
   - *Create a new self-signed SSL server certificate*:
     Select the Key Length.

     Enter the Organization, City or Location, State and Country information.
   - *Import a signed SSL server certificate*:
     Certificate – click **Choose File** to upload the file.
   - *Import Private Key and Certificate*:
     Private Key – click **Choose File** to upload the file.

     Private Certificate – click **Choose File** to upload the file.
2. Click **Apply**.

Miscellaneous

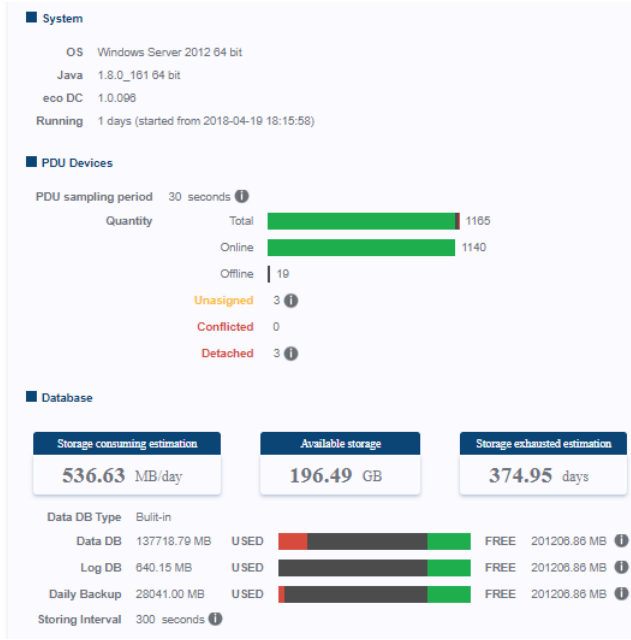
This section configures default options for the eco DC interface.



- *System Preferences* – sets the default Temperature Unit and Currency. You can choose "User defined currency" from the *Currency* drop-down menu and enter the unit into the field the follows.
- *Default unit for report* – sets the default 1kWh generate CO2, Electricity cost, and CO2 cost units to use for generating reports.
- *Default rate for billing* – sets the default Single and Dual-Rate units for generating custom reports.
- *Data Group Option For Charts* – check the checkbox under this option to keep historical data for charts.
- Click **Apply** to save the settings.

Health

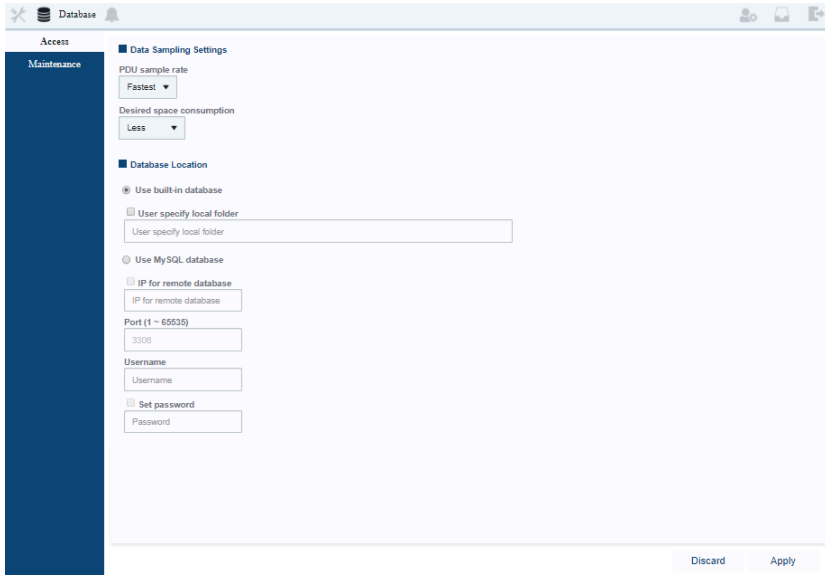
This section provides System, Device and Database information.



- *System* – displays information about the local operating system, Java version, and eco DC version.
- *PDU Devices* – displays the PDU sampling period, and information about devices the eco DC is currently managing.
- *Database* – displays statistics about the database the eco DC is managing, including the storing estimations, available storage, storage location, daily backup and disk space used. Details about the Database are provided in the next section.

Database

This *Database* sub-toolbar selection allows you to configure settings related to the data stored by the eco DC.



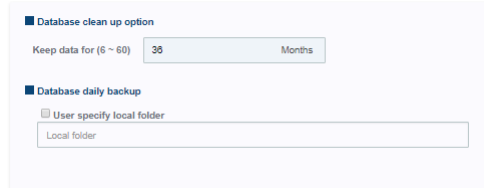
Access

The *Access* section, shown above, configures how the data is managed.

- Use the *PDU sample rate* drop-down menu to select how fast the eco DC collects data about devices.
- *Desired space consumption* – use the drop-down menu to select, on average, how much disk space you want to utilize for data.
- *Use built-in database* – select this option to save eco DC data on the local computer's disk drive. By default, the eco DC will choose its own directory to save database files, or you can check *User specified local folder* to choose your own location to save the data.
- Use MySQL database – select this option to use an SQL database to save eco DC data. Check *IP for remote database* and key in the IP address, Port, Username and Password.
- Click **Apply** to save the settings.

Maintenance

Use *Maintenance* to configure how the database is maintained.

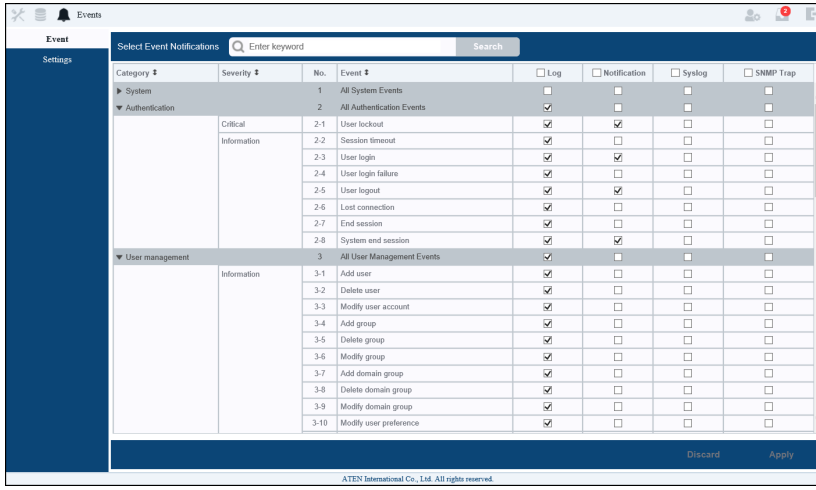


- *Database clean up option* – enter the number of months you want the eco DC to save data before it begins deleting old data. Key a number between 6 and 60.
- *Database daily backup* – to create a backup of that day's eco DC data, check *User specify local folder* and key in the directory. If no location is entered the backup will be saved to the default directory: C:\ecoDC\data\EcoDC_dailyBackup

Note: It is strongly recommended that you use the same directory for daily backup and the database backup (see *Database Backup* on page 122). If any of the data is backed up to a different location, you may lose this bit of data when restoring the database.

Events

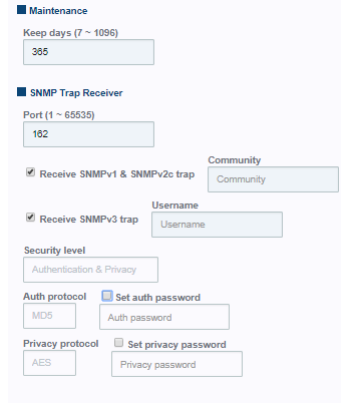
The *Events* sub-toolbar selection allows you to set which system messages to use and where to save them.



- In the main panel use the check boxes to select which **Event** type to save and where to send them, options are:
  - *Log* – saves the events to the eco DC's System Log which can be viewed on the Logs toolbar option.
  - *E-mail* – sends the events that are checked to the e-mail address specified under SMTP settings (see *SMTP*, page 102).
  - *Notification* – sends the events that are checked to the notification panel which can be found on the sub-toolbar by clicking the Notification icon (see *Settings*, page 17).
  - *Syslog* – sends the events to the Syslog server specified under *System - General* settings (see *Syslog*, page 104).
  - *SNMP Trap* – sends the events to the SNMP server specified under *System - General* settings (see *SNMP trap*, page 101).
  - Click **Apply** to save the settings.

Settings

Use the event Settings to configure how events are managed.



- *Maintenance* – key in the number of days you want the system to keep event logs for before they are deleted, Options are 7 to 1096 days.
- *SNMP Trap Receiver* – to use an SNMP Trap Receiver to receive device logs from PDUs, enter the required server information.
- Click **Apply** to save the settings.

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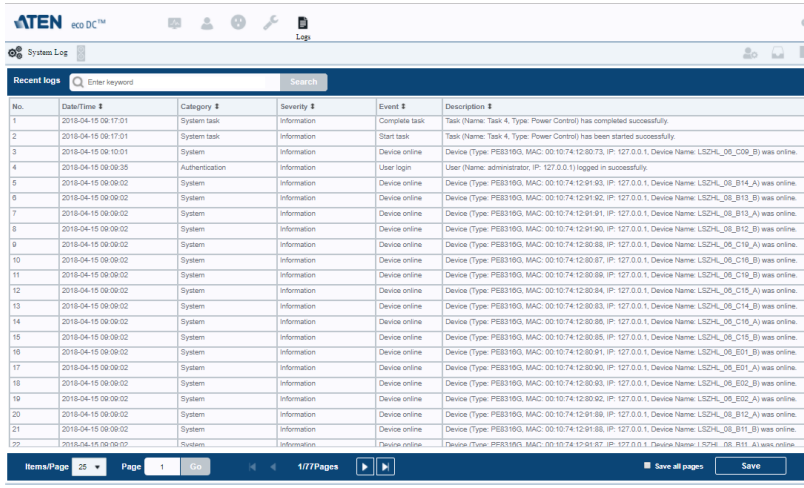
Chapter 8
Log

Overview

The eco DC keeps a record of transactions that take place on its installation. The *System Log* and *Device Log* pages provide an array of filters and functions that allow you to view and export the log file data. To set the number of days the event log stores, see *Settings*, page 113.



System Log

- Clicking the **System Log** sub-toolbar button refreshes the log list with the latest events.
- *Recent Logs* – key in search terms and click **Search** to find specific events.
- *Items/Page* – this drop-down menu at the lets you set the number of events to display per page. Choose between 25 to 400 events.
- *Page* – depending on the items per page selected, this box allows you to key in a number and jump to that page. Click **Go** to jump to the page.
- *First Page / Last Page* – these two buttons on the bottom bar allow you to skip to the first and last log page. Between these buttons shows the page displayed and the total number of pages.

- *Previous / Next* – these two buttons on the bottom bar allow you to move backward and forward to view event log pages. Between these buttons shows the page displayed and the total number of pages.
- *Save* – click to save a system_log.cvs files which contains a list of the logs currently being displayed in the main panel. Check **Save all pages** to save all of the events currently logged by the eco DC.

Device Log

The *Device Log* lists events sent from the devices added to the eco DC. The features and functions of the Device Log are essentially the same as the System log, as described above. See *System Log*, page 115 for details.

Appendix

Technical Support

International

- For online technical support – including troubleshooting, documentation, and software updates: **http://eservice.aten.com**
- For telephone support, see *Telephone Support*, page ii.

North America

Email Support		support@aten-usa.com
Online Technical Support	Troubleshooting Documentation Software Updates	http://eservice.aten.com
Telephone Support		1-888-999-ATEN ext 4988 1-949-428-1111

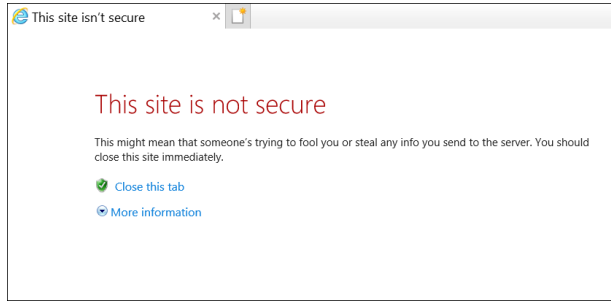
When you contact us, please have the following information ready beforehand:

- Product model number, serial number, and date of purchase.
- Your computer configuration, including operating system, revision level, expansion cards, and software.
- Any error messages displayed at the time the error occurred.
- The sequence of operations that led up to the error.
- Any other information you feel may be of help.

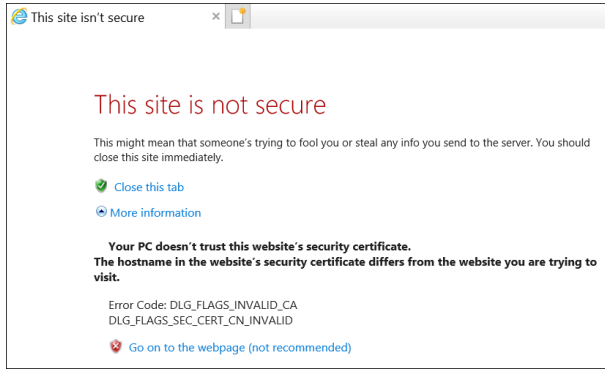
Trusted Certificates

Overview

When you try to log in to the device from your browser, a Security Alert message appears to inform you that the device's certificate is not trusted, and asks if you want to proceed.



The certificate can be trusted, but the alert is triggered because the certificate's name is not found on the Microsoft list of Trusted Authorities.



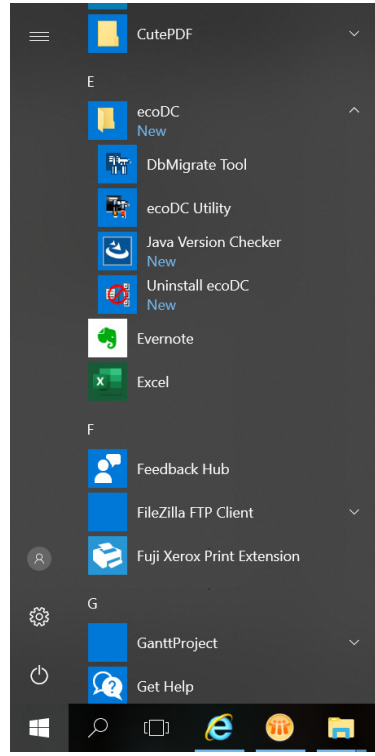
You can ignore the warning, click **More information** and click **Yes** to go on.

Note: To avoid users having to go through the certificate acceptance prompt each time they log in, you can use a third party certificate authority (CA) to obtain a signed certificate. Refer to *Import a signed SSL server certificate:*, page 107 under *Certificate*, page 106 for more details.

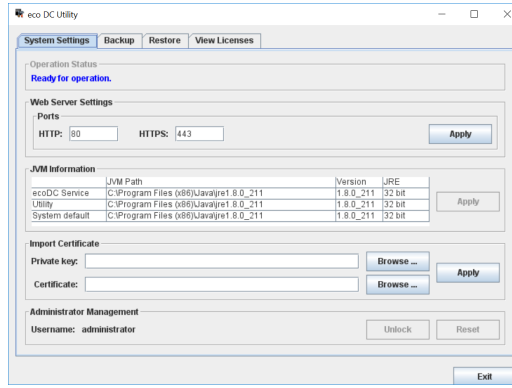
ecoDC Utility

The ecoDC Utility gets installed as part of the eco DC installation procedure. It allows you to configure a number of the eco DC's parameters from the desktop of the computer that the eco DC runs on, without having to invoke the browser GUI.

To run the program in Windows, click the *Start* menu, navigate to the ecoDC entry, and select **ecoDC Utility**:



When you run the program, a screen similar to the one below appears:



The Utility offers four tabs: *System Settings*, *Backup*, *Restore* and *View Licenses*. Each of the tabs is described in the sections that follow.

System Settings

Apache Tomcat is the program that serves the eco DC's web pages. The eco DC's installation programs asks you to specify the ports that Apache Tomcat listens on for web requests.

- The *HTTP* port is the regular port that Apache Tomcat listens on. The default is 80. If you use a different port, users must specify the port number in the URL of their browsers.
- The *HTTPS* port is the secure port that Apache Tomcat listens on. The default is 443. If you use a different port, users must specify the port number in the URL of their browsers.

If a port conflict occurs with the ports that you have set and prevents the web page from opening, you can use this utility to change the port settings.

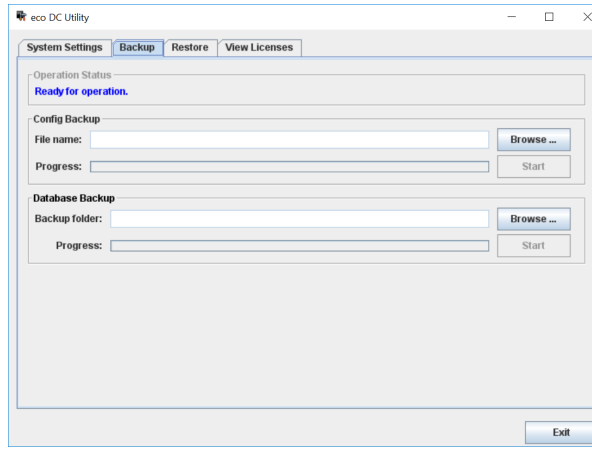
After making your settings, click **Apply** to save the changes.

If you wish to import private key or certificate, click **Browse** in the *Import Certificate* section, select the file and click **Apply**.

In the *Administrator Management* section, click **Reset** to return the administrator's account to the default settings. Click **Unlock** if the account was previously locked.

Backup

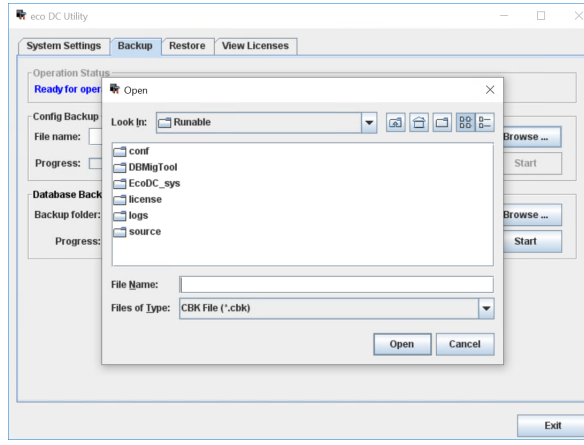
The Backup tab lets you backup current configuration or database.



Config Backup

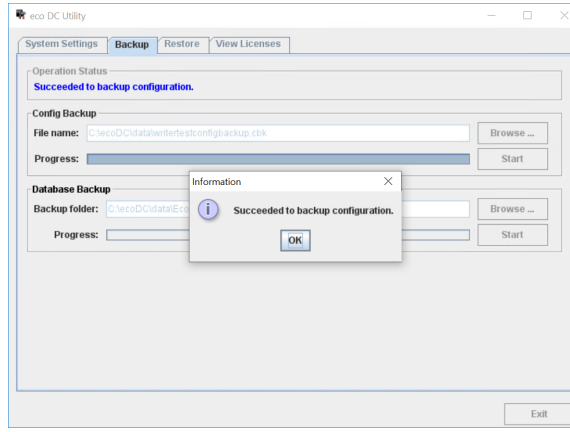
Enter a config file name in the *File name:* field. Backed up file will be stored in the *C:\ecoDC\Runable* directory by default.

Alternatively, you can click **Browse** for a file dialog box, find a location you wish to store the backup file in, enter a name and click **Open** to return to the utility page.



Click **Start** to start the backup and the progress status will be shown in the progress bar.

When completed, a success message will be shown:



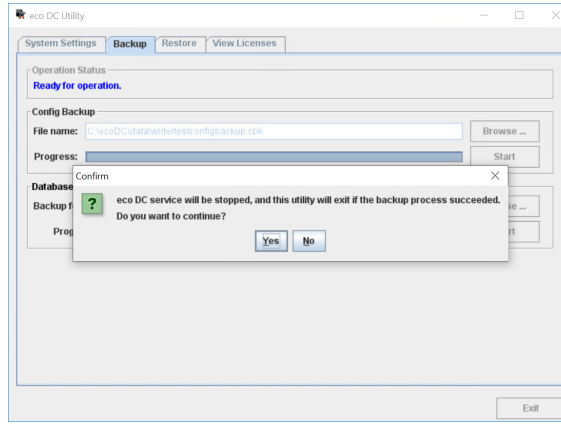
Database Backup

Enter a database folder name in the *Backup folder:* field. Backed up folder will be stored in the *C:\ecoDC\Runable* directory by default.

Alternatively, you can click **Browse** for a file dialog box, find a location you wish to database backup and click **Open**.

Note: It is strongly recommended that you use the same directory for daily backup (see *Maintenance* on page 111) and the database backup. If any of the data is backed up to a different location, you may lose this bit of data when restoring the database.

Click **Start** to start the database backup and a warning will pop up.

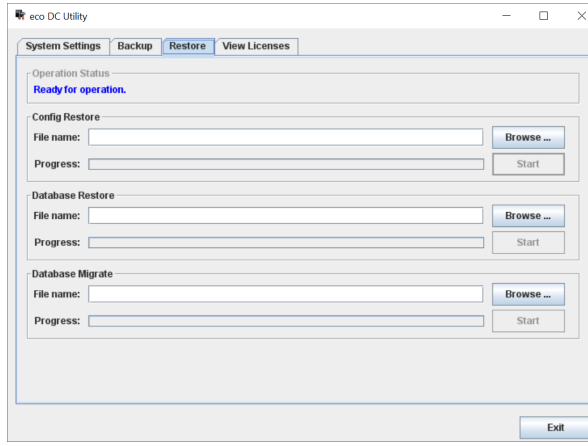


Click **Yes** and the progress status will be shown in the progress bar.

When completed, the utility will be closed and the eco DC service will restart.

Restore

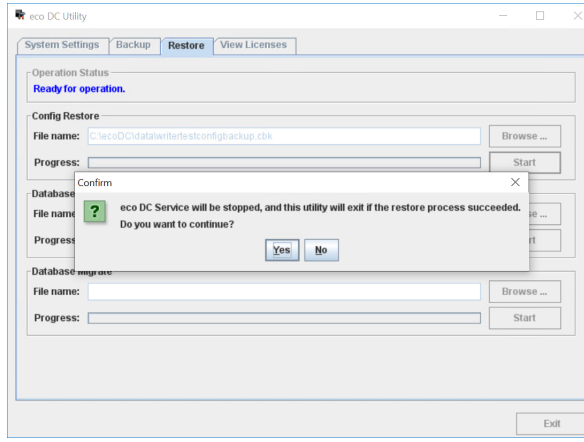
The Restore tab lets you restore configuration or database, or migrate a database to the eco DC service.



Click **Browse** (Config Restore, Database Restore, Database Migrate) and locate the file/folder you wish to restore/migrate and click **Start**.

Note: When restoring database, make sure your daily backup files (see *Maintenance* on page 111) and the database backup files (see *Database Backup* on page 122) are in the same folder as both backup file types contribute to a full database.

A warning will pop up as shown:

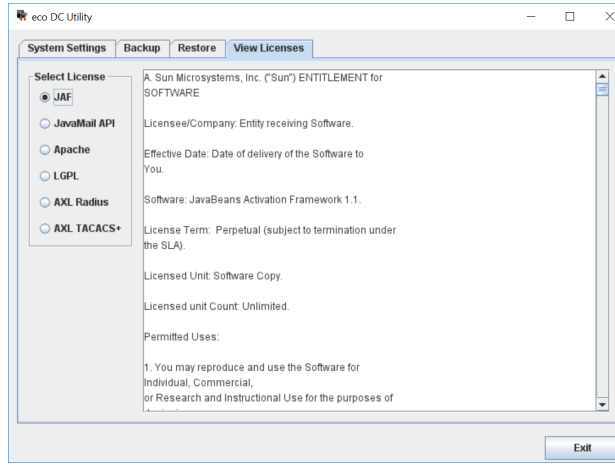


Click **Yes** and the progress status will be shown in the progress bar.

When completed, the utility will be closed and the eco DC service will restart.

View License

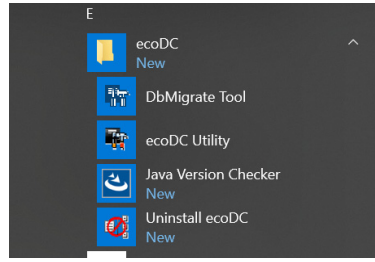
The View Licenses tab lets you view the licenses that are related to the eco DC package. To view a license, click its radio button.



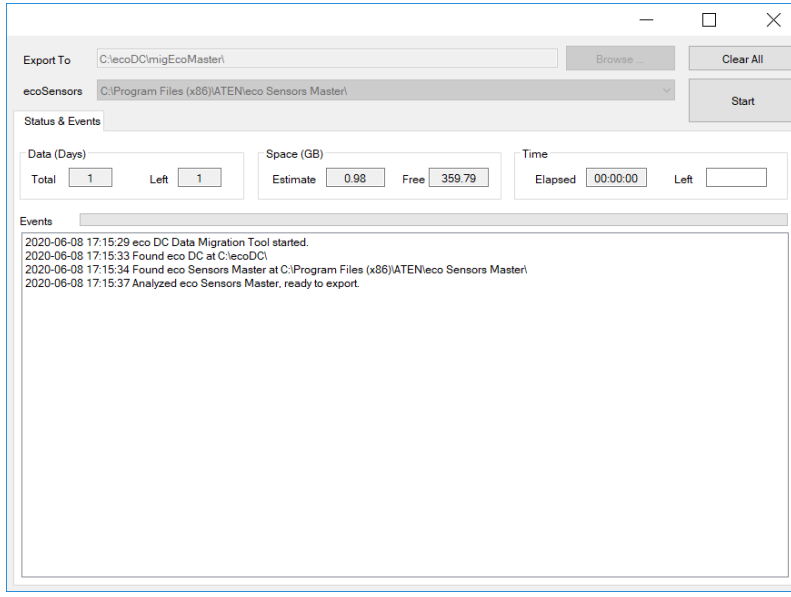
Database Migration Tool

If you have eco Sensors installed previously, you can migrate data information from the eco Sensors to the eco DC using the Database Migration Tool.

To run the program in Windows, click the *Start* menu, navigate to the ecoDC entry, and select **DbMigrate Tool**:



The diagram below is an example of the migration tool.



To start the migration, click **Start**. When completed, a success message will be shown in the message box.

SSO HTML

If *Single Sign On* is enabled, it will allow users from another web application to log in eco DC automatically through a form-based authentication. An example of the HTML sample codes is in the next section.

SSO HTML Sample Codes

```
<html>
<head><title>Sample page for eco DC SSO (Single Sign On) Sample</title></head>
<script language="JavaScript">
<!--
function doLogin()
{
    form1.submit();
}
-->
</script>
<body>
    <table>
   <div align="center">
      <form id="form1" name="form1"  method="post" action="https://10.3.166.65:443/ccadmin/singlesignon.do">
     <!-- Server_IP_port: eco DC server IP/port (default port could be omitted) -->
       <tr>
         <td>
       <font size=5>Test page for eco DC SSO (Single Sign On)</font>   
         </td>
       </tr>
```

```
      <tr>
        <td>
          eco DC Username: <input class="sw4" type="text"
name="MySSO_Username" value="administrator" size="15"> <br><br>
          <!-- signonusername: Username field in eco DC SSO setting page -->
      </td>
    </tr>
      <tr>
        <td>
          eco DC Password: <input class="sw4" type="password"
name="MySSO_Password" value="password" size="15"> <br><br>
          <!-- signonpassword: Password field in eco DC SSO setting page -->
      </td>
    </tr>
      <tr>
        <td>
        <!--
         eco DC Username: <input class="sw4" type="text" name="loginname"
value="administrator" size="15">  &amp;nbsp;&amp;nbsp;&amp;nbsp;&amp;nbsp; eco DC
Password: <input class="sw4" type="password" name="loginpass"
value="password" size="15"> <br><br>
          -->
       <input class="bw" type="button" value="SSO to eco DC" name="login"
onClick="doLogin();">
      </td>
    </tr>
      </form>
  </div>
</body>
</html>
```