CLAIRITY™ Link Router

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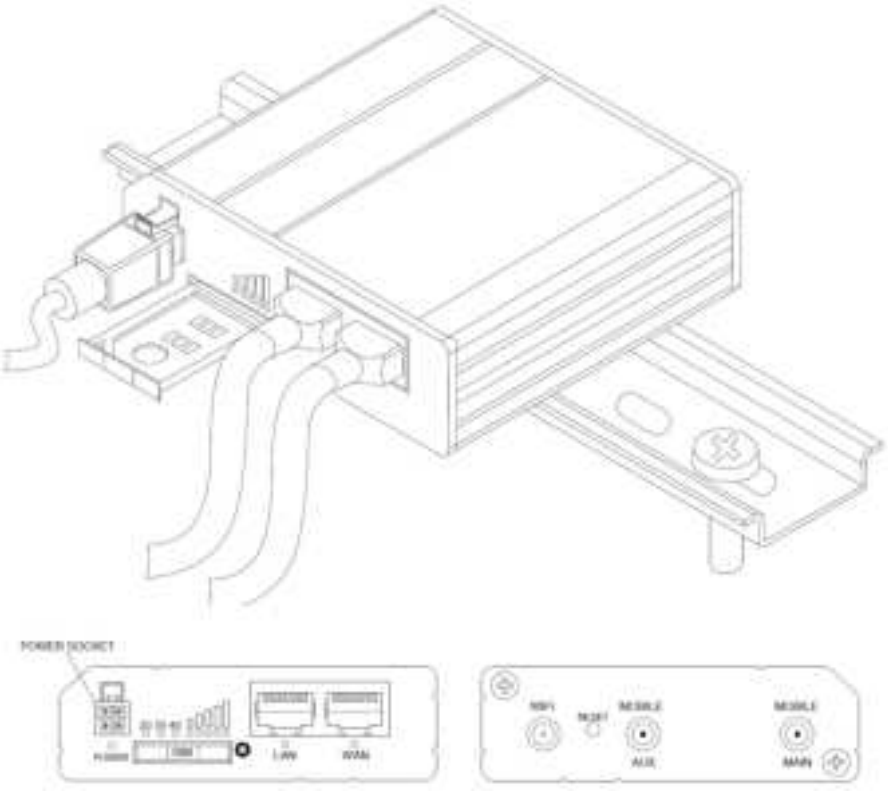
Overview

The CL**AIR**ITY™ Link router serves as a connection point for one or more nLight ECLYPSE™ controllers and the CL**AIR**ITY Link Portal. Through the portal, factory and factory representative experts can configure items such as system device settings, system sequence of operations, and system lighting schedules. Though referred to most commonly as a router throughout this user guide, the device performs as both a router and a modem–both connecting a network to the wider Internet and allowing wired and wireless devices to communicate through that Internet connection.

This user guide will review the router hardware, best practices, and its user interface.

Hardware



Interoperability

The CL**AIR**ITY Link router is designed only to work with one or more nLight ECLYPSE™ system controller(s). The router does not work with other system controllers such as the nGWY, nGWY2, Fresco, XPoint Bridges, the nDTC, and controllers made by others. nLight and nLight AIR devices exchange information with the CL**AIR**ITY Link portal via a combination of an associated nLight ECLYPSE and a CL**AIR**ITY Link router. If either a connection to an nLight ECLYPSE or a system's CL**AIR**ITY Link router is not present, communication with the CL**AIR**ITY Link portal will not possible.

WAN

The WAN port of the router is configured as a DHCP client, allowing it to be assigned an IP address by an owner-provided network. This port's configuration is best for allowing the router to discover nLight ECLYPSE controllers on the same subnet of an owner-provided network. This port is also used to connect a router with the CL**AIR**ITY Link portal using an owner-provided network. When connected to a router using its WAN port, configuration of the CL**AIR**ITY Link router is only possible through the CL**AIR**ITY Link portal. If direct configuration is desired (as opposed to configuration through the portal), the LAN port of the router should be used. See Initial Login via Ethernet Connection section for more information on connecting to the router via the LAN connection.

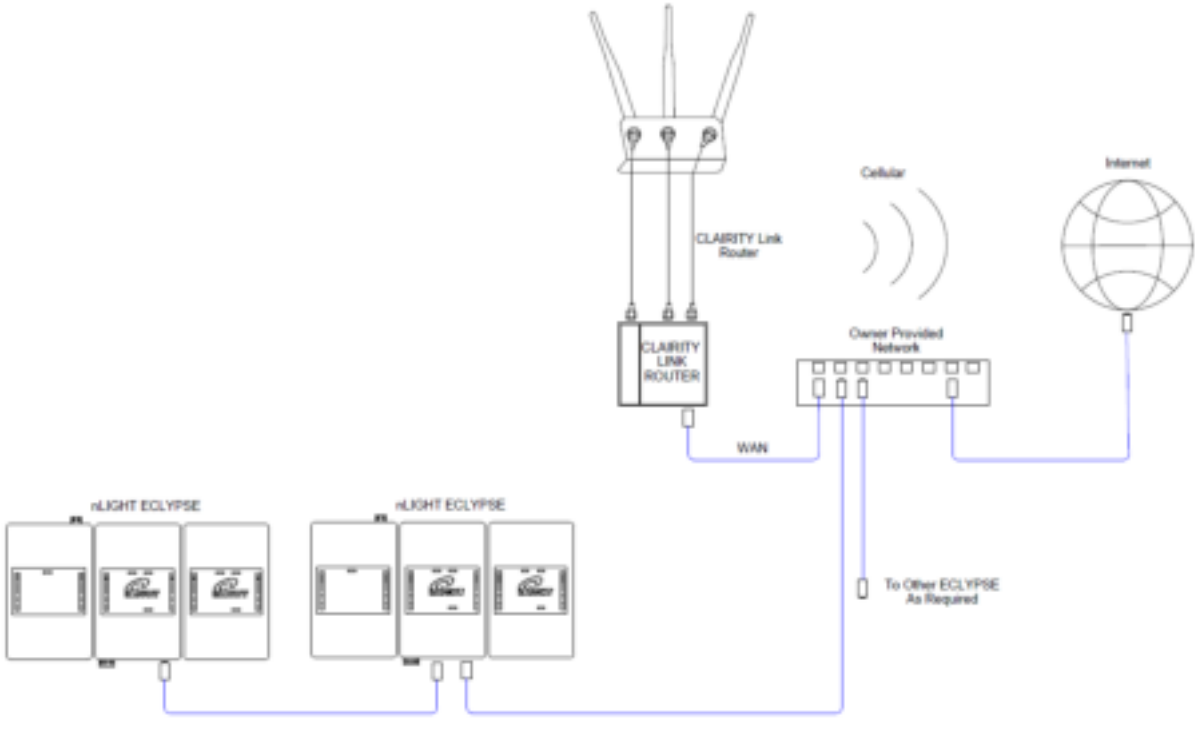
The detail below shows nLight ECLYPSE controllers connected to an owner-provided network. This topology is one of two supported topologies (another is referenced in the LAN section of this user guide). It is best practice to avoid connecting controllers directly to the WAN port. nLight ECLYPSE controllers must be either connected to the owner-provided network or to the LAN port on the router but may not be connected to both. Connecting controllers to both connection points will result in controllers on separate subnets, which is not supported. Up to five controllers may communicate through the router to the CL**AIR**ITY Link portal using its WAN port.

CRITICAL NOTE:

A router will not use cellular connectivity to connect with the portal if Internet connectivity is detected on its WAN connector. The router will use Ethernet for connectivity, assuming that network configuration adjustments (where applicable) will be made to allow for outbound communication. If connected to a network without Internet access via its WAN connector, the router will continue to use cellular as its primary means of communication with the CLAIRITY Link portal.

See the nLight IT Requirements document for the configurations needed for successful outbound communication.

Internet connectivity is detected via Internet Control Message Protocol (ICMP) pings to public IP addresses 8.8.4.4, 8.8.8.8, 208.67.222.222, and 208.67.220.220. If a ping to any of the addresses fails, the router will attempt cellular connectivity with the portal.

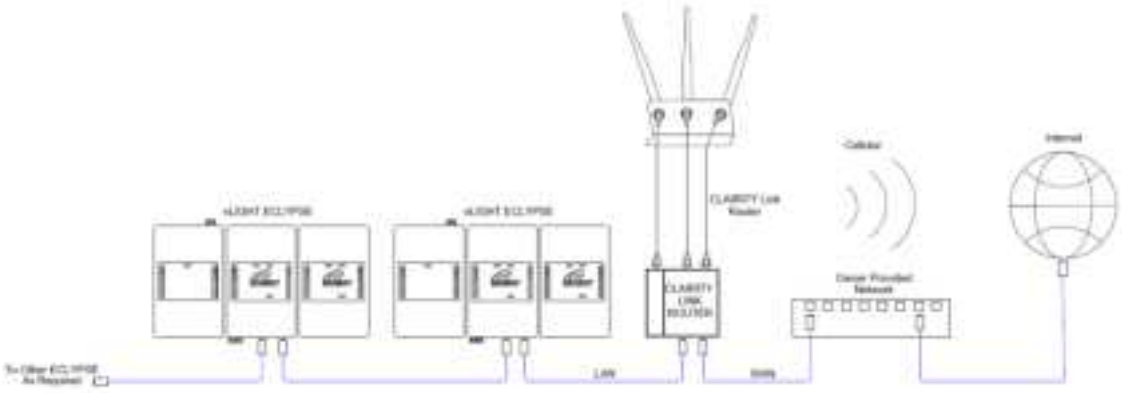


LAN

The LAN port of the router is configured as a DHCP server by default, allowing it to assign IP addresses to connected devices. When connecting to nLight ECLYPSE controllers that are daisy-chained together, the LAN port of the router will discover connected controllers and assign IP addresses within a 192.168.1.x range. Connecting the LAN port directly to an owner-provided network will not result in outbound communication between the router and the CL**AIR**ITY Link portal and may cause unexpected results.

The detail below shows nLight ECLYPSE controllers connected only to the LAN port of the router. This topology is one of two supported topologies (another is referenced in the WAN section of this user guide). nLight ECLYPSE controllers must be either connected to the owner-provided network or to the LAN port on the router but may not be connected to both. Connecting controllers to both connection points will result in controllers on separate subnets, which is not supported. Up to five controllers may communicate through the router to the CL**AIR**ITY Link portal using its LAN port.

Using the LAN port to connect nLight ECLYPSE controllers to the CL**AIR**ITY Link router will result in the nLight ECLYPSE controllers being assigned an IP address by the router, which will prevent access to the nLight ECLYPSE controllers over the owner-provided network. However, the nLight ECLYPSE controllers will be accessible via the CL**AIR**ITY Link portal. For nLight ECLYPSE controllers to be accessible via the owner-provided network and via the CL**AIR**ITY Link portal, the configuration shown under the WAN section should be used.



Power

The router may be powered a couple of ways using a 4-pin connector. When shipped separate of the nLight ECLYPSE, the assembly includes both a 120VAC wall adapter and a connector cable for powering from an nLight ECLYPSE PS50X transformer.

Mobile and Wi-Fi

Labels for the two MOBILE (cellular) connectors and for the Wi-Fi antenna connectors can be found above the SMA connectors on the CL**AIR**ITY Link router. When connecting antennas to the router directly or via extender cables, it is important to match the antenna type with the identification above the SMA connector. Antenna types can be identified by labels on the antennas themselves.

Reset

A discrete reset button can be found between the router's two MOBILE SMA connections, and it is used to recover the router from extreme, unexpected failure conditions.

Resetting the device should not be done for general troubleshooting; power cycling the unit will recover from most unexpected failure conditions.

Using the SIM ejection tool that ships with the router or a common paperclip, the reset button can be used to reset the router or to restore the unit to factory defaults, including reverting the password associated with the router to default. Factory restoring the unit will not remove the connectivity string that is required for cloud communication.

To reboot the unit, press the reset button for less than one second. If the button is held for more than one second but less than five seconds, nothing will happen.

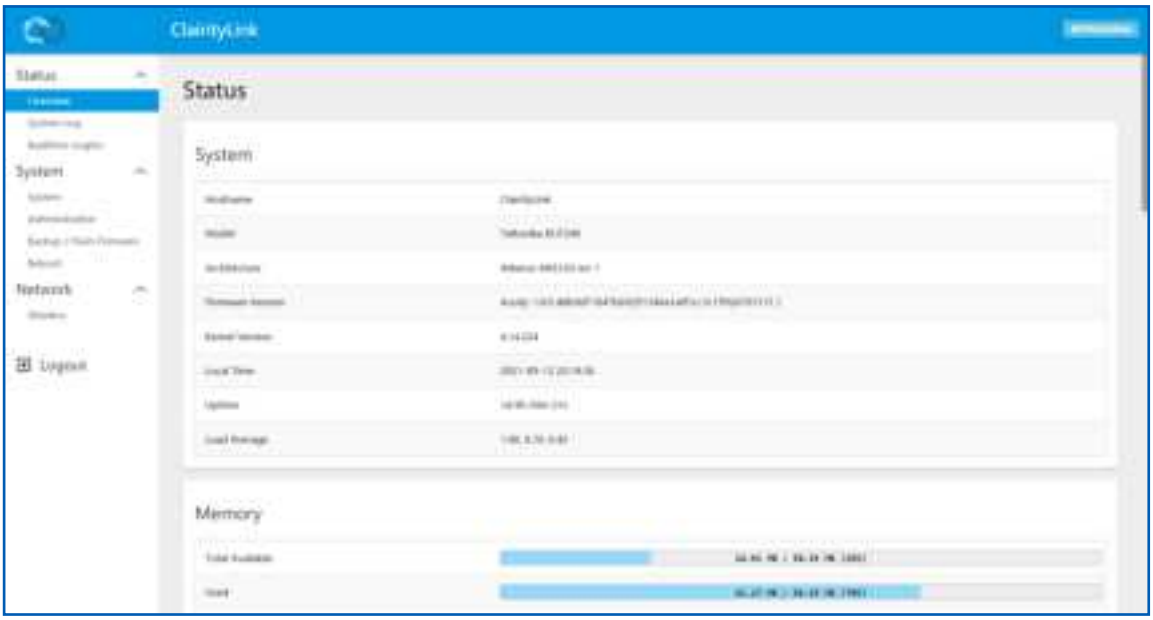
To factory reset the unit, press the reset button for more than five seconds. Any configurations made to the units IP address, LAN/WAN settings, NTP server location, and more will be restored to factory default.

Web UI Overview – Ethernet Connection

When connecting to the CL**AIR**ITY Link router using Ethernet, users can view and/or configure many operational settings on the CL**AIRI**TY Link router, including all settings visible through a Wi-Fi Hotspot Connection and more. For general operation, accessing the Web UI through an Ethernet connection is unnecessary and modification of settings via this user interface should be done with factory assistance.

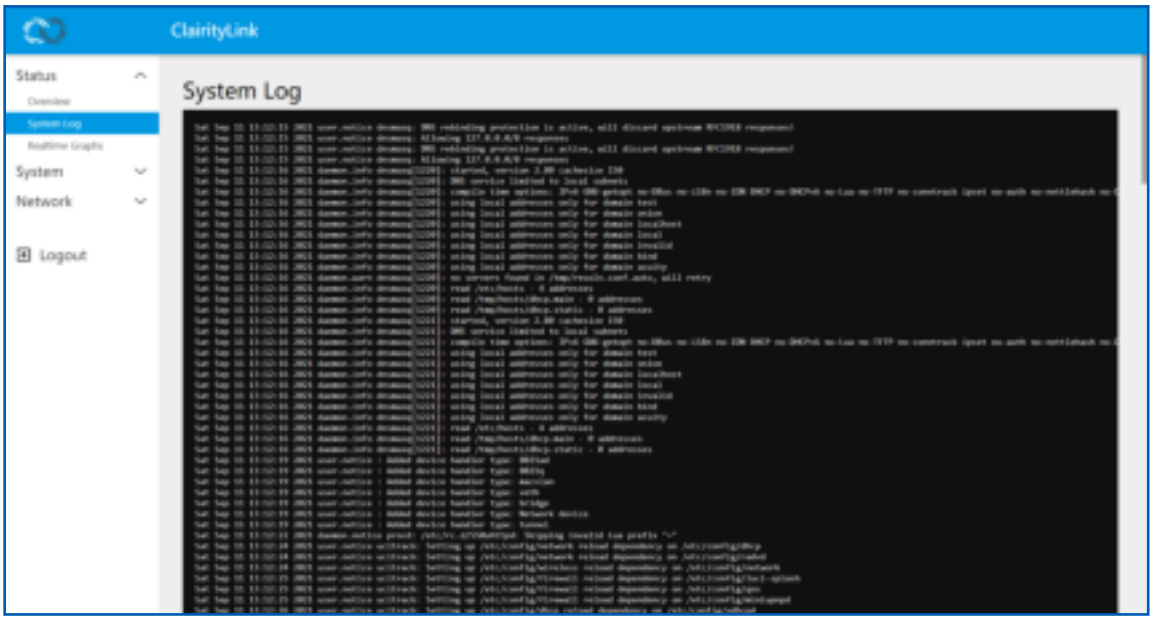
Status – Overview

The Overview screen provides read-only information about the router, including its firmware version, kernel version, system uptime, memory usage, network configuration, DHCP leases, and its cellular signal strength. The information on this screen is a summary of information found on other screens.



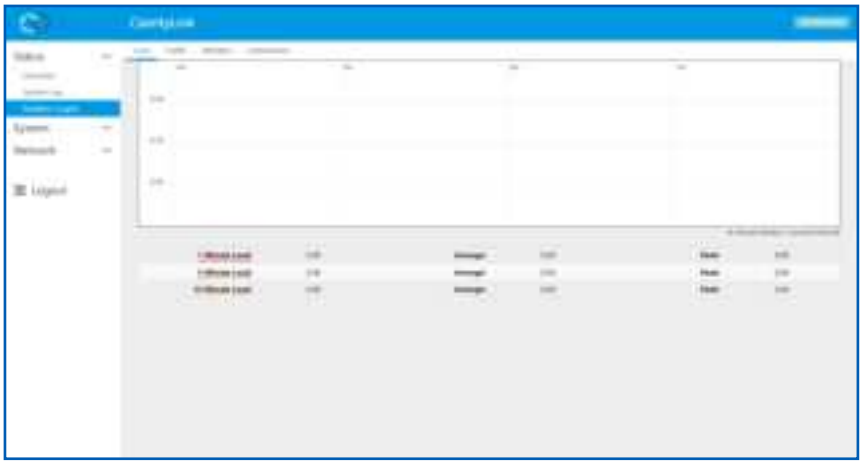
Status – System Logs

The system log provides a chronological list of logged events, including attempts to reach the AcuityNext server, disconnections from the server, notes for when IP addresses are assigned to the router, when IP addresses are assigned by the router, login attempts, and more.



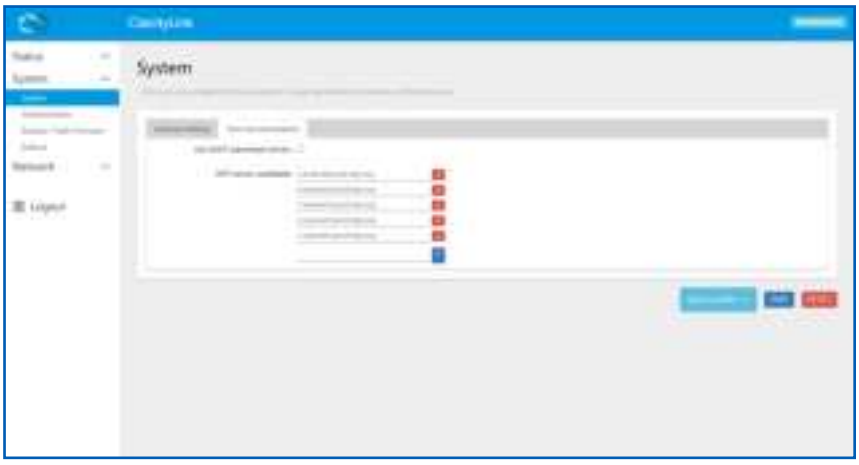
Status - Realtime Graphs

The Realtime Graphs screen shows how much data each router connection is managing. Once accessed, the screen will start recording and display up to 5 minutes of historical data. This screen may be used for diagnostic purposes.



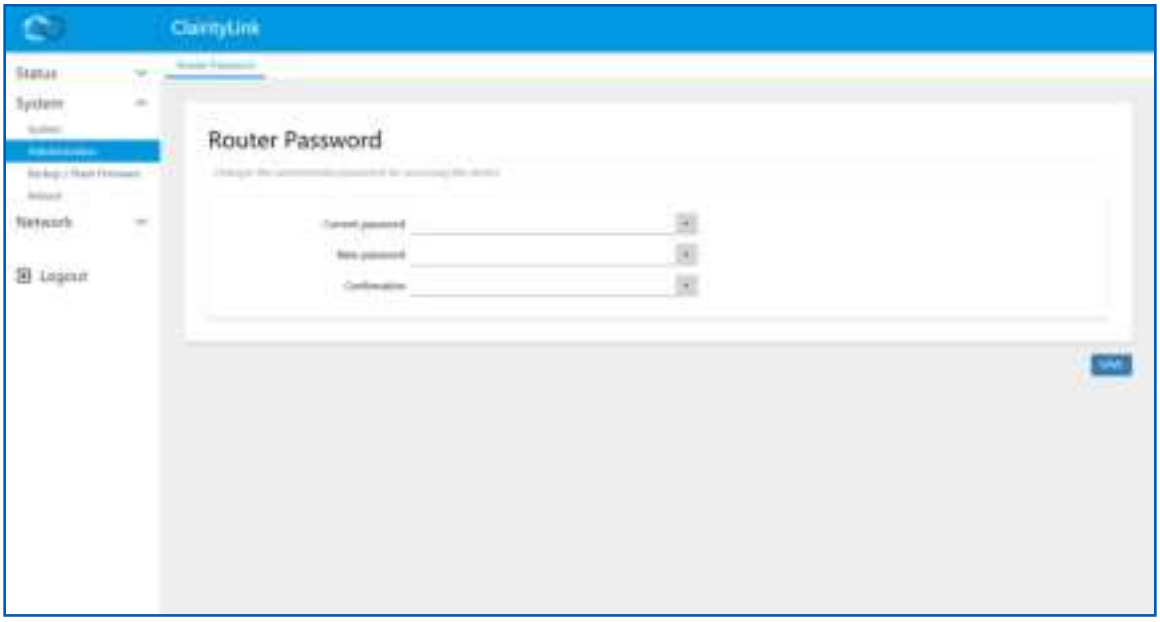
System – System

The system screen presents information on the current local time, displays preferred NTP servers, and allows for NTP servers to be added. For typical use of the router with the CL**AIR**ITY Link solution, this screen is not used.



System - Administration

This screen is used to update the password on the router.



System – Backup / Flash Firmware

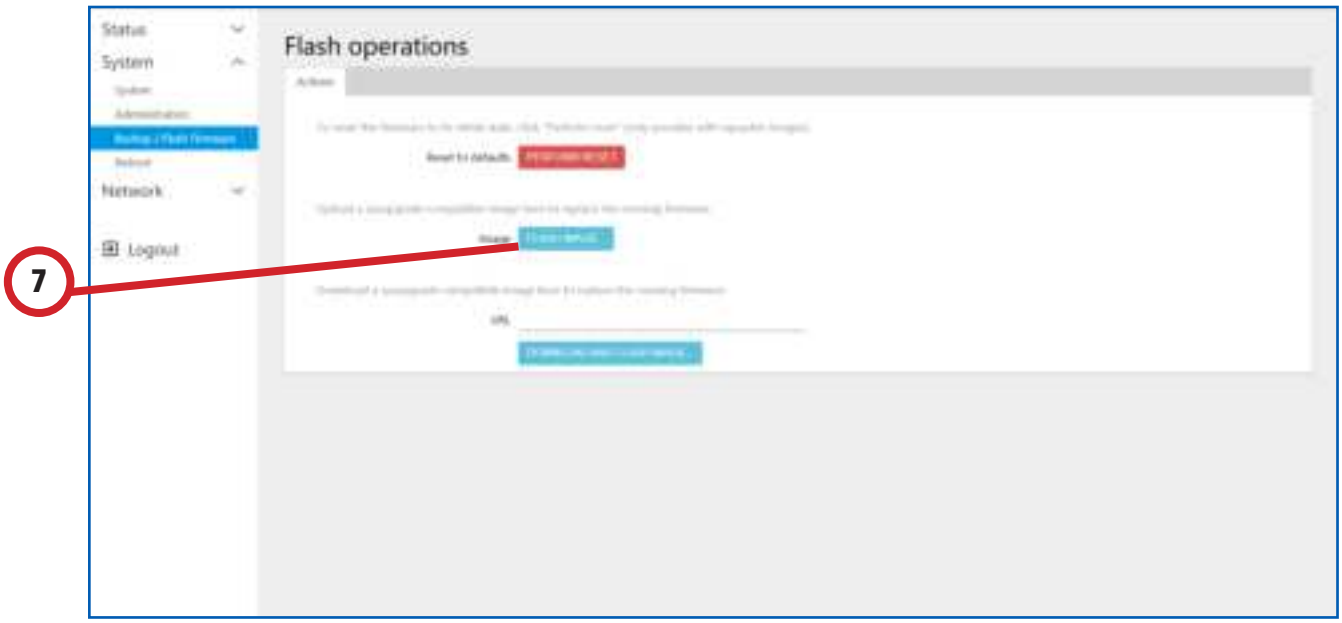
The Backup / Flash Firmware screen is primarily used to update router firmware but also includes a button to reset the router to factory default settings. The below are steps for updating firmware on the CL**AIR**ITY Link router via this menu.

Firmware updates can be downloaded from the CL**AIR**ITY Link portal.

1. Visit https://clairitylink.acuitynext.com/modems. Logging into the portal will be necessary if not already connected.
2. On your router, select View.
3. The current version of firmware will be listed, and if a newer version of firmware is available, you will be presented with the option to download the firmware.
4. Download the firmware.
5. Log into your router by visiting its IP address.
6. From the tree, select Backup / Flash Firmware.

Status - Backup / Flash Firmware - cont'd

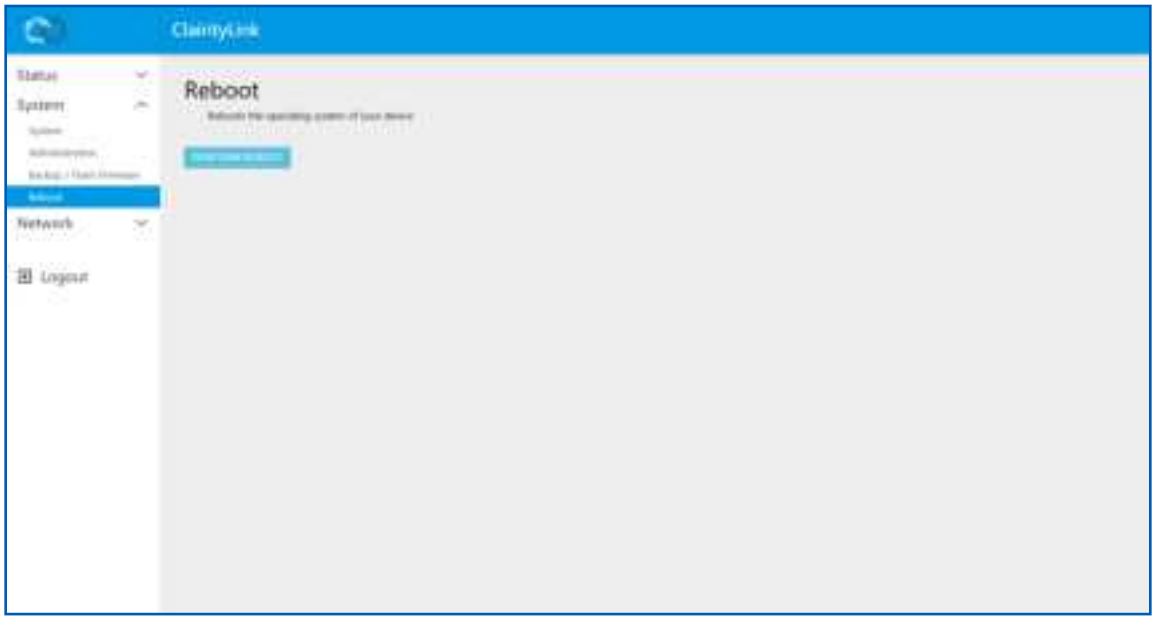
7. Click the FLASH IMAGE button.



8. Browse for a downloaded firmware image and select upload to upload the file.
9. Firmware will upload to the router immediately and typically takes less than one minute to complete.
   Users may be required to acknowledge the firmware file name before the update will begin.
10. Wait for the firmware update to complete. **Do not disconnect or remove power from the device during the update process.** A firmware update typically takes around 5 minutes to complete. Once completed, a user will be presented with the login screen.

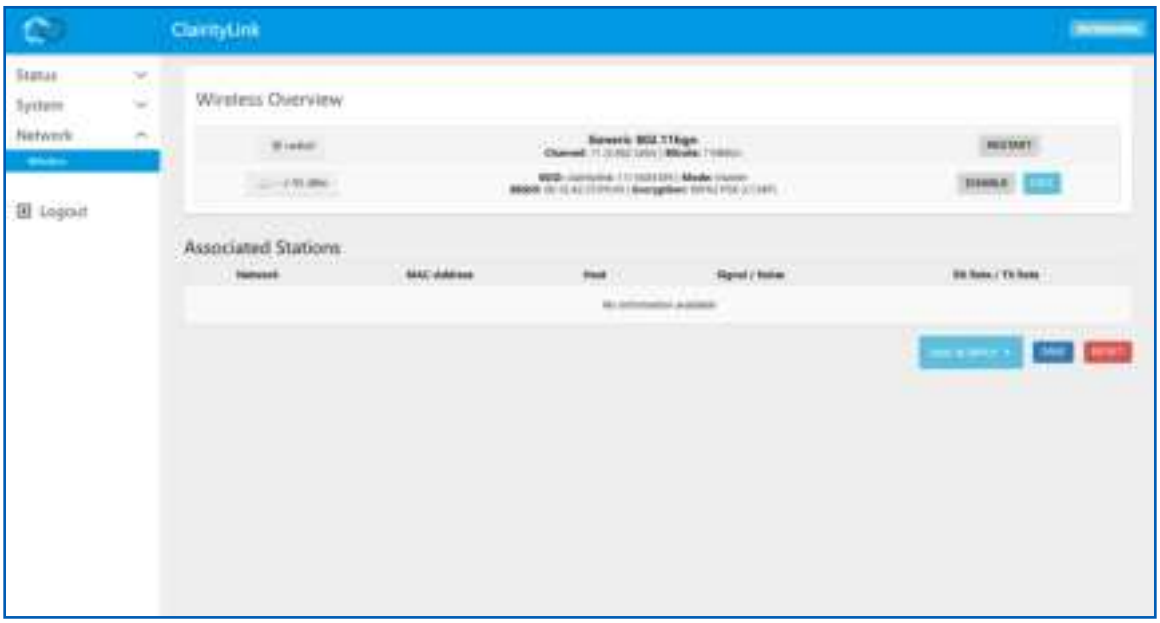
System – Reboot

A user can perform a reboot from this screen. This is useful when physical access to the router is restricted,but network access is available.



Network - Wireless

The Wireless screen is used to scan for potential Wi-Fi networks and connect the router to a network as a client. Reconfiguring wireless settings is not recommended; it will result in loss of the hotspot connection feature for quick diagnostics.



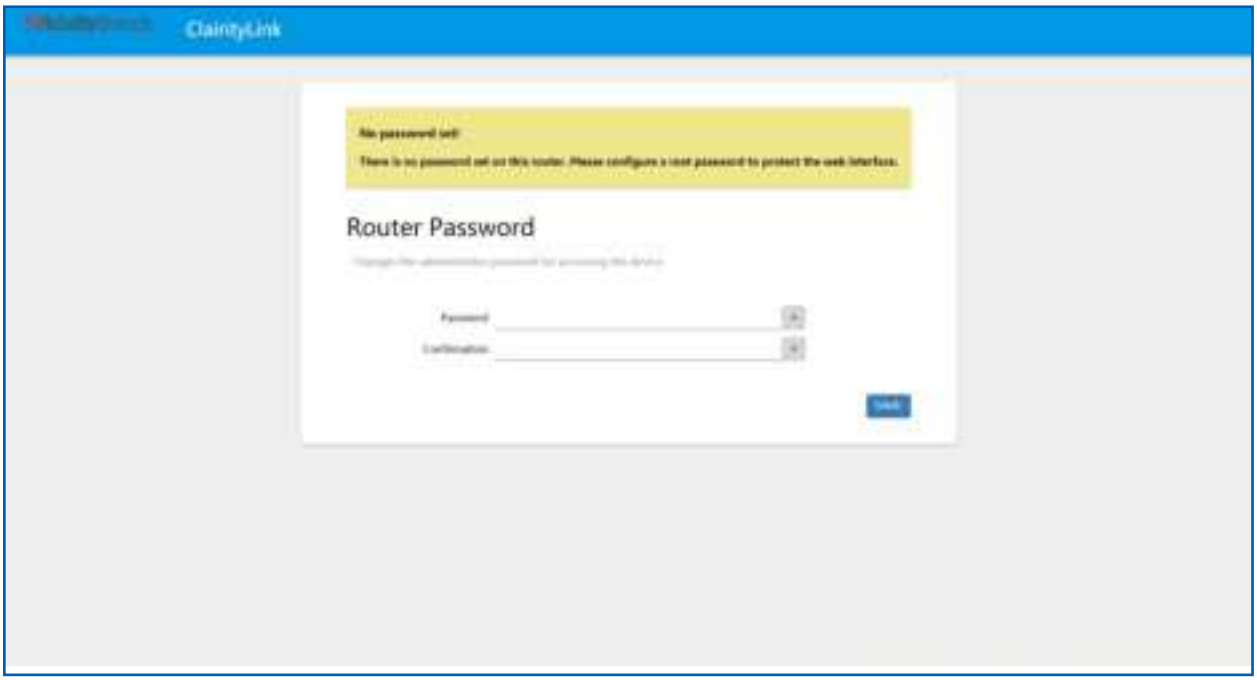
Initial Login via Ethernet Connection - Password Enforcement

By default, the router's WAN port is set to DHCP, allowing the router to communicate quickly with other devices on an owner-provided network. The router's LAN port is configured to the static IP address 192.168.1.1.

Using a default password is not permitted when connecting to a router via Ethernet. Wi-Fi hotspot connection will not enforce a password update.

Follow the steps below to update the password on the router.

1. Connect with the router using Ethernet, visiting the address https://192.168.1.1. When accessing the router's web interface, a user's device will need to be on the same subnet as the router.
2. If logging in for the first time, you will be asked to update your password. Passwords must be at least 6 characters in length.



3. Using the new password, users can access the device with the username "root".

Web UI Overview – Wi-Fi Hotspot Connection

The CL**AIR**ITY Link router supports a Wi-Fi hotspot connection for quick display of important information, including signal quality, firmware version, uptime, network connectivity, IP addresses, and modem identifiers–cellular ICCID and IMEI most importantly, which can be used to identify a modem in the CL**AIR**ITY Link portal.

Users can connect to the Wi-Fi hotspot the wireless network created by the router from their device's Wi-Fi settings screen. The name of the hotspot will be represented as "clairitylink-[serial number of router]". The router's serial number can be found on the back of the router. Also, the router's default Wi-Fi hotspot password can be found on the back of the router.

An alternative way to access the Wi-Fi hotspot is to:

1. Scan a peelable QR code included with each router.
2. Accepting the connection to the router if/when prompted.
3. Open any browser on the viewing device.

All information found in the Wi-Fi hotspot is presented as read-only information and does not contain personally identifiable information.

System

After successfully connecting to the CL**AIR**ITY Link router's Wi-Fi hotspot connection, a user is presented with the System screen. This screen gives useful information such as firmware and uptime. Uptime is a representation of how long the device has been online and operational.

Memory

The Memory screen is used to review used, buffered, and cached memory on the router. This screen is useful for troubleshooting, such as if a router rejects a firmware package due to size limitations.

Network

Information on IP addresses and availability of a mobile connection can be found on the Network screen. Uptime (found underneath the Mobile heading on the Network screen) identifies how long a device has been connected to a cellular network.

Modem

Information for identifying a router and its associated SIM can be found on this page. The CL**AIR**ITY Link portal supports searching for a router's SIM ICCID and its IMEI, both of which are found on this screen. Additional items such as signal quality can be used to verify if antenna placement allows for good cellular connectivity.

Iot Client

Through the IoT Client screen, users can verify that the router has confirmed communication with the CL**AIR**ITY Link portal. The screen also gives information on connected system controllers, which are listed under a Gateways header.

Security

Several software and firmware features secure communication between the components of the CL**AIR**ITY Link solution.

Outbound Communication

Communication between the router and the CL**AIR**ITY Link portal (cloud) only begins through outbound communication. This differs from a conventional Virtual Private Network (VPN) approach, whose bi-directional communication is initiated through an inbound request. Network management is easier through the CL**AIR**ITY Link solution because it only requires a few ports to be open on the owner network. See the nLight IT Requirements document for more information.

The router will only forward information from nLight ECLYPSE controllers and their connected devices to the cloud. All other device messages are ignored. This limits the ability of an outside entity to gain access to information unrelated to the lighting control system.

Firewall

The CL**AIR**ITY Link router firewall includes a whitelist of locations with which the router can communicate. Such locations include servers for device firmware downloads, the AcuityNext domain name, and others. See the nLight IT Requirements document for more information on necessary outbound communication.

CLAIRITY Link Transporter

The CL**AIR**ITY Link transporter encrypts information exchange between authenticated users with necessary authorization rights and the CL**AIR**ITY Link portal. This software is available for optional installation when installing SensorView versions 15.2 and later. The transporter has no direct association with the CL**AIR**ITY Link router, but without this component, end to end communication using CL**AIR**ITY Link is not possible. See the SensorView User Guide for more information on this software.

CLAIRITY™ Link

