



wahsega

Carina Indoor Surface Mount IP Intercom

User's Guide



Getting Started

This step-by-step guide will help you configure your Wahsega Indoor Surface Mount IP Intercom.

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The Wahsega product line offers the highest quality two-way audio and durability in the industry today. Each and every Wahsega product is designed, developed and manufactured in the USA, ensuring a superior product at the best price available in the market.

Carina Indoor Surface Mount IP Intercom Functionality

The initial functions of Wahsega's Carina Indoor Surface Mount IP Intercom include:

Centralized Event Manager configuration

- Event Manager auto-detects each Carina IP intercom on the network
- All configuration options accessible via Carina Event Manager's centralized HTTP Web interface
- Bulk configuration options available for quick and easy setup
- Mic and speaker volume control within configuration webpages
- Remote firmware upgradeable
- Able to receive live or pre-recorded audio from Event Manager
- Can play scheduled bell and event alerts from Event Manager

SIP intercom

- IP paging speaker
- Crystal clear audio
 - Multiple mono audio codecs to choose from
 - Environmental noise suppression
- Extensive interoperability with most SIP servers and PBXs

Simple installation

- Power-over-Ethernet (PoE 802.3af) powered

On-board relay

- Remotely triggered by SIP or multicast

Industry-leading standby power of < 2W

Quality Standards

- Wahsega products achieve the highest standards of performance in the market by utilizing our complete quality assurance program encompassing software testing, product design and a multistage automated factory test program.
- Wahsega's ultimate goal is to provide a solution that is both cost effective and unsurpassed in quality. By leveraging existing relationships with suppliers to guarantee premium components at the lowest possible prices, we are able to ensure Wahsega products are the finest quality in the market while still offered at highly competitive prices directly to installers.
- In order to achieve the greatest possible voice clarity, all voice and related algorithms have been individually tested to ensure the highest potential MOS score. The accumulated error syndrome, which can cause poor voice quality, is mitigated through this testing process.
- Wahsega's engineering team utilizes a wide array of dedicated test servers to pull and build the various software projects multiple times per day. Each automatic build is then run through an extensive set of automated test cases to ensure the highest performance of each and every firmware version released. This test case coverage is expanded on a continual basis.
- All Wahsega products are 100% factory tested at the board level through a bed of nails full functional test, not just an "is it close enough?" flying probe test. Every finished product is 100% tested again after the final assembly via an automated test station to ensure the highest production quality product for installers.
- To assure the highest quality standards, all Wahsega products are designed, developed and manufactured in the USA.

Chapter 2

User Experience

All Carina IP Intercoms receive and play audio broadcasts from the Carina Event Manager via multicast and can also place and answer two-way SIP calls using an IP PBX such as Wahsega's Paging Intercom Server (PICS).

The Indoor Surface Mount IP Intercom is a low-cost, small, surface mount IP intercom with one or two buttons, powered via Power-over-Ethernet (PoE). It can be used to broadcast alerts and announcements via RTP multicast, or it can function as a SIP intercom.

The Indoor Surface Mount IP Intercom's call button can be configured as a panic button, with a long-press feature to reduce the number of panic button false alarm calls. With this advanced functionality, a brief button press places a call to one preconfigured number in normal intercom mode—such as a front office phone—while a longer press-and-hold will place a call to a second, preconfigured emergency number.

With an onboard relay, the Indoor Surface Mount IP Intercom allows centralized or local control of a door lock or other relay options such as a strobe.

Available in one- or two-button configurations, the single-button intercom can also be connected to the Wahsega Panic/Call Button or standard panic buttons. This second button can place a call, activate the intercom's internal relay or send a DTMF code during an active call.

Programming the Indoor Surface Mount IP Intercom is simple, and LED feedback on the intercom lets installers know when their system is up and running. The intercom supports the SIP protocol so it can register with the Wahsega PICS, Diet IP PBX or any IP PBX for easy integration with your existing phone system. The best way to manage this device is through the Carina Event Manager or Event Manager Lite.

Software Capabilities

Wahsega's Indoor Surface Mount IP Intercom is configured centrally at the Carina Event Manager, which allows bulk configuration as well as individual customization.

This allows access to various settings such as network/IP address, SIP account and Event Manager configuration, intercom/speaker behavior, button functionality, and administrative functions such as firmware upgrade and configuration backup/restore. The configuration is stored in a .JSON file, which is human readable and can be edited by site administrators.

The Indoor Surface Mount IP Intercom's configuration pages are also accessible using an HTTP Web interface, viewable from any Web browser on the same LAN. However, all Carina devices should be configured within the Carina Event Manager's configuration webpages whenever possible. Any configuration changes to a Carina device's individual webpages will be overwritten by the Event Manager.

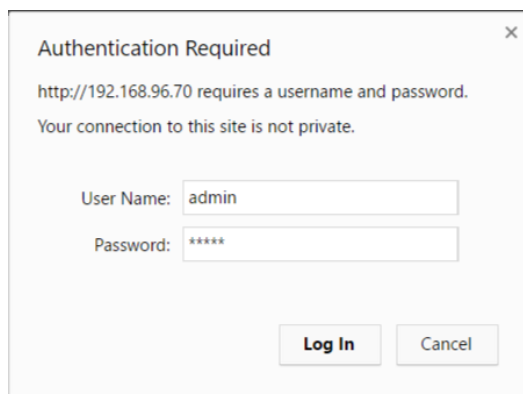
Getting Started

1. All Carina devices should be configured within the Carina Event Manager's configuration webpages. While it is possible to make changes at the device's own webpages, any configuration changes to the device's webpages will be **overwritten** by the Event Manager.
2. Locate and note your Indoor Surface Mount IP Intercom's MAC address. It is printed on a white sticker located on the rear of the device.
3. Connect the Indoor Surface Mount IP Intercom's main Ethernet port—labeled *LAN*—to a network using a Power-over-Ethernet (PoE) Ethernet connection. When connected, it will power on immediately, and the *LINK/ACTV* status LED will begin to blink.
4. Your Carina Event Manager will automatically detect the Carina Indoor Surface Mount IP Intercom when you power up and connect to the network via PoE.
5. On the Event Manager's Web interface, navigate to the Devices page to discover your Indoor Surface Mount IP Intercom's IP address. Look for the device matching the MAC address you noted in step two.
6. Following the instructions in the next sections, change Event Manager settings for your Carina Indoor Surface Mount IP Intercom as needed.
7. To apply changes and settings to your Carina Indoor Surface Mount IP Intercom, **save changes** and **reprovision** your intercom. This is an important step! ***Your changes in Event Manager will not take effect at the intercom until you have reprovisioned the endpoint.***

Endpoint Configuration Without Carina Event Manager

If needed, individual endpoint configuration is available via the Carina Indoor Surface Mount IP Intercom's individual webpages. **However, if users choose to make configuration changes in the intercom's webpages, those changes will not be recognized by the Event Manager and will be overwritten by any configuration changes made to the endpoint in the Event Manager.** For best results, all configuration changes should be made at the Event Manager and not at the intercom's individual configuration webpage.

1. To access an individual intercom's webpages, navigate to its IP address in your Web browser (for example, <http://123.456.78.9>). Wahsega recommends using Chrome or Firefox for best results.
2. When you access the configuration webpages, the intercom will ask for a username and password. The default username and password are *admin* and *admin*.



Authentication Required

http://192.168.96.70 requires a username and password.
Your connection to this site is not private.

User Name:

Password:

3. On the left side of the page is the Status bar. It shows the intercom's current *System* information such IP address, MAC address, system time and uptime. The intercom's SIP account status (default status is *unconfigured* and *unregistered*) is listed under *Accounts*.

4. To change the IP address settings, go to the *Network* page and modify settings in the *WAN* section. To set the network for DHCP, click the *Dynamic IP* radio button. For static IP addressing, click the *Static IP* radio button and fill in the relevant IP address fields with values from your network administrator.
5. Set time and date and change username or password on the *System* page. Please note that the Carina Event Manager may be used as a system NTP server for consistent date and time across the network. Simply enter *carina.wahsega.local* as the NTP server and make sure that NTP is enabled for this endpoint.
6. To change the SIP account settings, go to the *Accounts* page and modify settings in the account. Most users will only need to set *Username/Number* (the phone number or extension assigned to this speaker), *Domain* (the hostname or IP address of your SIP server) and *Password* (password for this SIP extension, if needed). You may also provide a *Display Name*, which may be used by your SIP server depending on its configuration.

If your SIP server or proxy server requires an authentication username that is different from the name entered in *Username/Number*, enter it under the *Authentication Username* field.

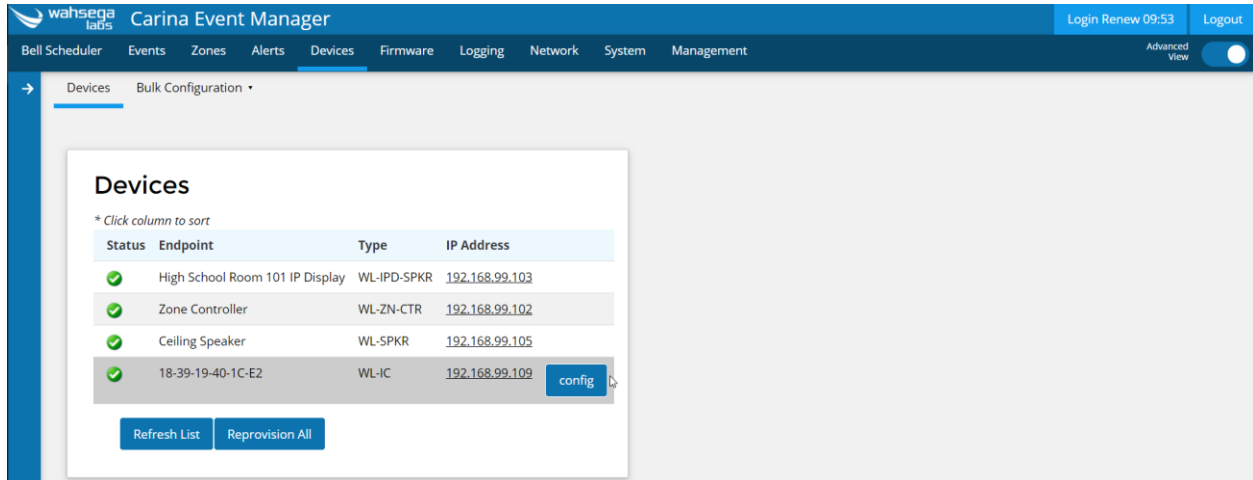
7. Load new firmware, backup configuration, or restore a configuration file on the *Management* page.

Chapter 3

Configuration in Event Manager

The Carina Indoor Surface Mount IP Intercom should be configured within the Carina Event Manager's configuration webpages. Event Manager automatically detects each Carina endpoint on the same network, and it provides bulk or individual configuration options. Wahsega recommends using a Chrome or Firefox browser for best results.

Individual Device Configuration



Carina Event Manager

Login Renew 09:53 Logout

Bell Scheduler Events Zones Alerts **Devices** Firmware Logging Network System Management

Advanced View

Devices Bulk Configuration

Devices


* Click column to sort

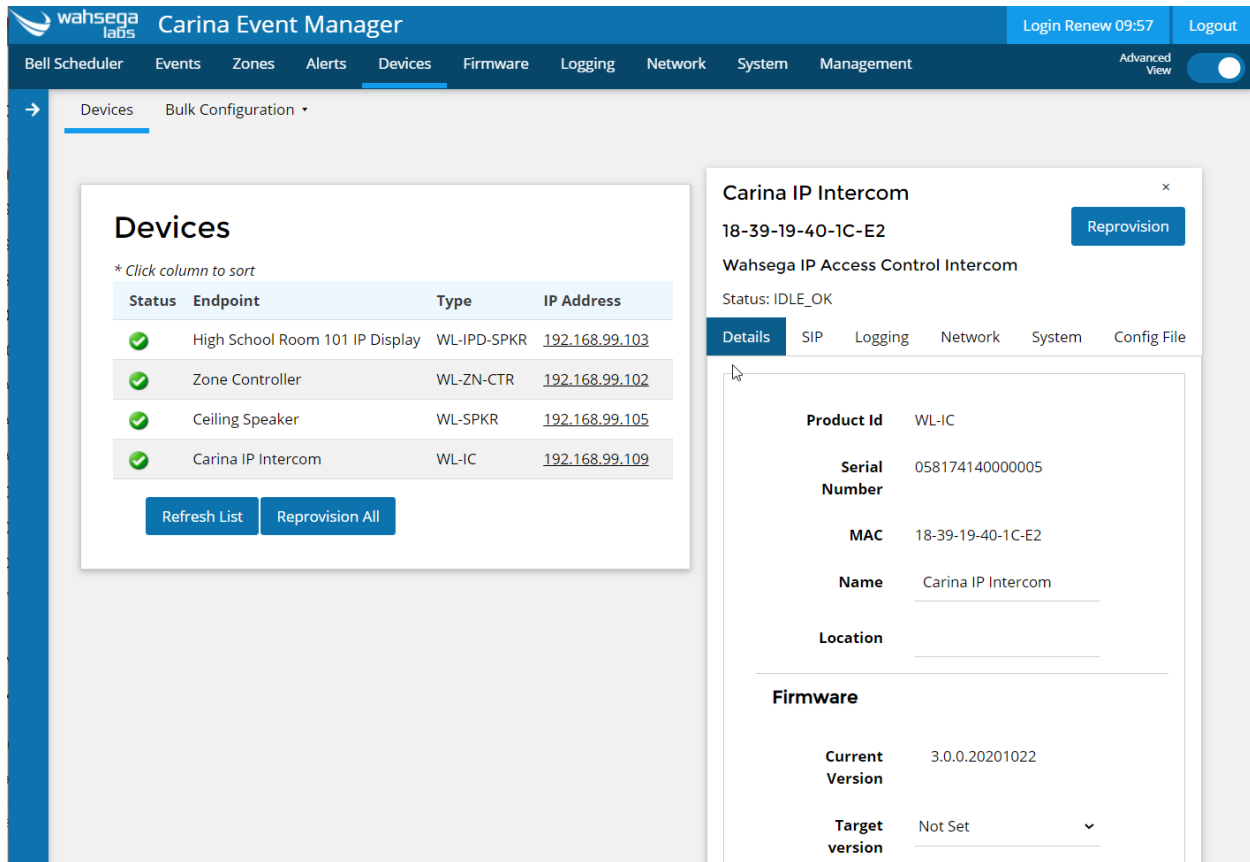
Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	18-39-19-40-1C-E2	WL-IC	192.168.99.109

config

Refresh List Reprovision All

Navigate to the *Devices* page on your Event Manager and click the button next to the device you'd like to configure.





The screenshot shows the Wahsega Event Manager interface. The top navigation bar includes 'wahsega labs Carina Event Manager', 'Login Renew 09:57', and 'Logout'. Below the navigation bar are tabs for 'Bell Scheduler', 'Events', 'Zones', 'Alerts', 'Devices', 'Firmware', 'Logging', 'Network', 'System', and 'Management'. The 'Devices' tab is active, showing a 'Bulk Configuration' dropdown and a 'Devices' table.

Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	Carina IP Intercom	WL-IC	192.168.99.109

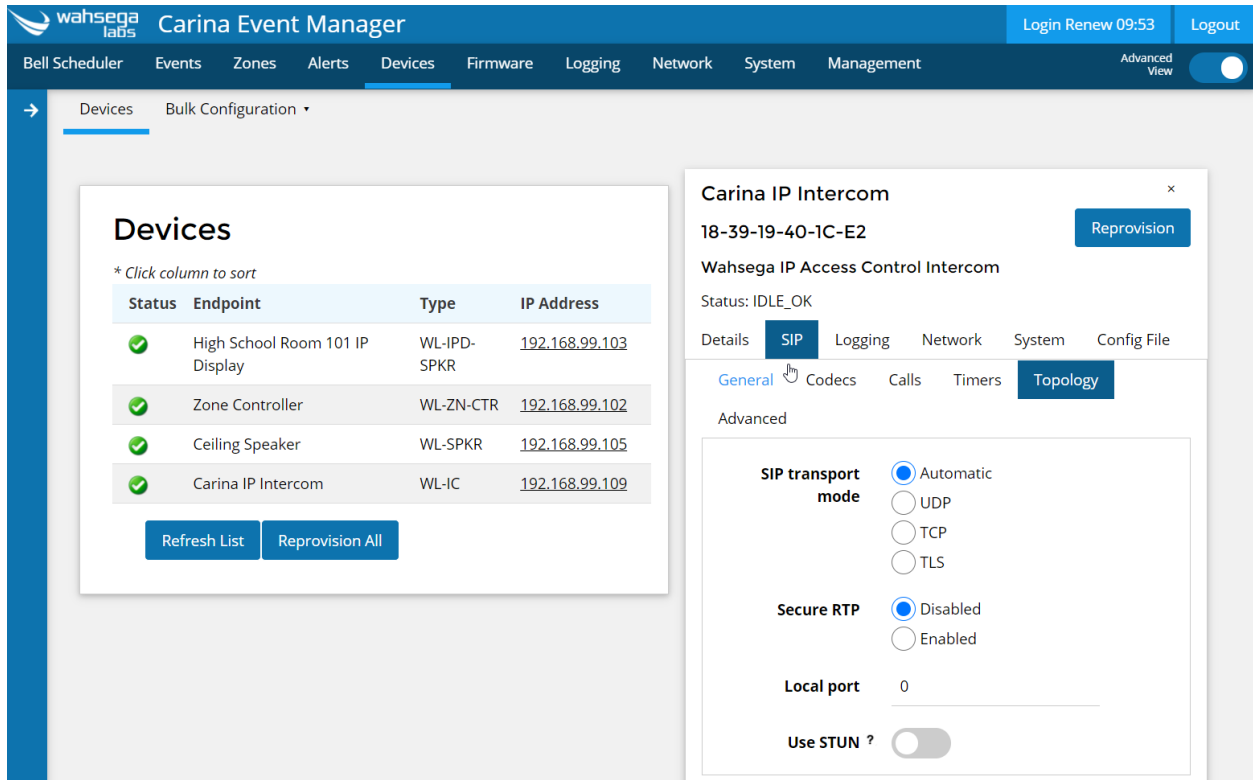
Buttons: Refresh List, Reprovision All

The detailed view for the 'Carina IP Intercom' (ID: 18-39-19-40-1C-E2) shows the following information:

- Product Id:** WL-IC
- Serial Number:** 058174140000005
- MAC:** 18-39-19-40-1C-E2
- Name:** Carina IP Intercom
- Location:** (empty field)
- Firmware:**
 - Current Version:** 3.0.0.20201022
 - Target version:** Not Set

Details

- **Name** – Give this Indoor Surface Mount IP Intercom a unique name for your reference.
- **Location** – Physical location of intercom, for user reference.
- **Firmware**
 - **Current Version** – Firmware version this intercom is currently running
 - **Target Version** – Firmware version this intercom should be running currently or upon next reprovisioning cycle. Target version “Not Set” will keep this device at Current Version upon reprovisioning.



The screenshot shows the 'Carina Event Manager' web interface. The top navigation bar includes 'Bell Scheduler', 'Events', 'Zones', 'Alerts', 'Devices', 'Firmware', 'Logging', 'Network', 'System', and 'Management'. The 'Devices' page is active, displaying a table of devices and a configuration window for a 'Carina IP Intercom'.

Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	Carina IP Intercom	WL-IC	192.168.99.109

The configuration window for the 'Carina IP Intercom' (ID: 18-39-19-40-1C-E2) shows the 'SIP' tab selected. The 'SIP transport mode' is set to 'Automatic'. The 'Secure RTP' is set to 'Disabled'. The 'Local port' is set to '0'. The 'Use STUN' option is toggled off.

SIP

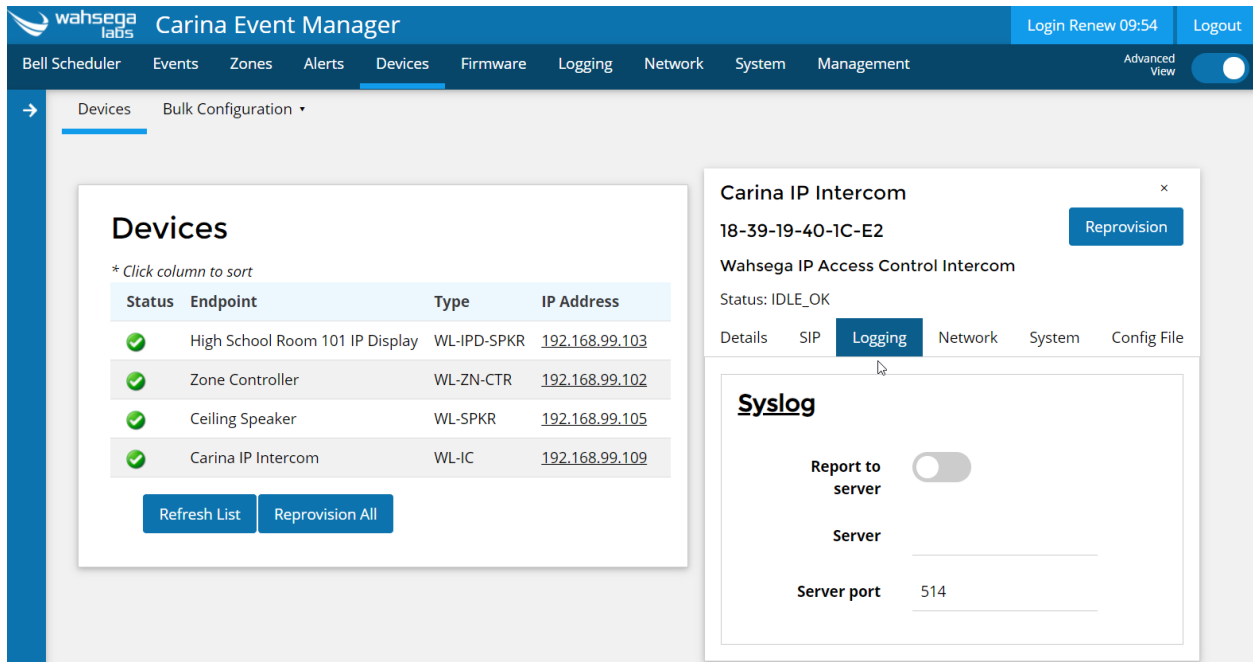
Configure registration and for two-way SIP calls.

▪ General

- **Register with SIP server** – Enable this to register this intercom’s SIP extension with your SIP server.
- **Display name** – Name to be displayed as the caller ID.
- **Username/Number** – Username, phone number or extension of the SIP account.
- **Domain** – Domain of the account (IP address of the SIP server).
- **Password** – The password used to register this account with the SIP server, if needed.
- **Authentication username** – By default, authentication is done with the Username/Number above. Fill in the Authentication Username if a different username is needed.

- **Codecs** – The Codec List is shown in preferred order from top to bottom. This list may be rearranged by dragging and dropping the codecs within the list.
 - Available codecs are: G.722 HD, DVI4 HD, G.726 fixed payload, DVI4 Narrowband, G.711 uLaw, G.711 aLaw, G.729, OPUS.
- **Calls** – Configure display behavior for inbound and outbound calls.
 - **Relay control** – When enabled, the intercom’s onboard relay will be triggered for the duration of an active SIP call.
 - **Inbound** – Adjust settings for inbound calls.
 - **Allowed** – When inbound calls are set to “not allowed,” the calls will be rejected immediately.
 - **Priority** – Priorities determine which audio event will take precedence over other audio events. A higher priority event will take over a lower priority event. If two events of the same priority occur, they will be handled in the order received.
 - **Auto-Answer** – When Auto-Answer is not enabled, an inbound call will continue ringing until the Incoming Call Timeout occurs. Auto-answer is enabled by default when inbound calls are allowed.
 - **Tone Notification** – When enabled, a tone will be played out of the intercom’s speaker just before a call goes active.
 - **Outbound** – Adjust settings for outbound calls.
 - **Allowed** – When disabled, outbound calls by any means from this intercom are prevented.
- **Timers**
 - **Call Attempt Timeout** – An unanswered outbound call attempt will be automatically cancelled when this timer expires. Default is 180 seconds.

- **Incoming Call Timeout** – An unanswered inbound call attempt will be automatically cancelled when this timer expires.
- **Call Active Timeout** – An active call will be automatically terminated when this timer expires.
- **Topology**
 - **SIP transport mode** – Select mode to match your SIP server’s SIP transport mode.
 - **Secure RTP** – Disabled by default.
 - **Local Port** – Enter local port if needed.
 - **Use STUN** – When enabled, the SIP client will use the public IP address of this device when communicating with the SIP server instead of its private IP address. *Note: STUN must also be configured on the Network page if this is checked.*
- **Advanced**
 - **Proxy** – When set, all SIP traffic will be sent through the proxy server, no matter the Domain setting.
 - **Proxy port** – If set to 0, the default proxy port of 5060 will be assumed. Default value is 0.
 - **Registration lifetime** – Interval, in seconds, the SIP client will re-register with the SIP server. Default value is 3600.
 - **Keep-alive** – When enabled, the SIP client will periodically send a keep-alive message to the server. This is useful when connecting to a server across a NAT connection, or in keeping a TCP connection to the SIP server active.
 - **Silence suppression** – When enabled, RTP packets are not sent when silence is detected.



The screenshot shows the Wahsega Carina Event Manager interface. The top navigation bar includes 'Bell Scheduler', 'Events', 'Zones', 'Alerts', 'Devices', 'Firmware', 'Logging', 'Network', 'System', and 'Management'. The 'Devices' tab is active, showing a list of devices with columns for Status, Endpoint, Type, and IP Address. A modal window for 'Carina IP Intercom' is open, displaying the device ID '18-39-19-40-1C-E2' and a 'Reprovision' button. The 'Logging' tab is selected, showing the 'Syslog' configuration section with a 'Report to server' toggle (currently disabled), a 'Server' input field, and a 'Server port' field set to '514'.

Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	Carina IP Intercom	WL-IC	192.168.99.109

Logging

- **Syslog** – Syslog is a network protocol to enable system logging from a device to a network server. This may be used to aid in diagnosing the behavior of a device.
 - **Report to server** – Enable to begin logging to a network server. Default value: Disabled.
 - **Server address** – The IP address or URL of the syslog server.
 - **Server port** – The port (if needed) for the syslog server.

wahsega labs Carina Event Manager Login Renew 09:57 Logout

Bell Scheduler Events Zones Alerts **Devices** Firmware Logging Network System Management Advanced View

→ Devices Bulk Configuration ▾

Devices

** Click column to sort*

Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	Carina IP Intercom	WL-IC	192.168.99.109

[Refresh List](#) [Reprovision All](#)

Carina IP Intercom ✕

18-39-19-40-IC-E2 [Reprovision](#)

Wahsega IP Access Control Intercom

Status: IDLE_OK

Details SIP Logging **Network** System Config File

Basic Settings

Connection type Dynamic IP (DHCP) Static IP

Dynamic IP Options

Host Name

Static IP Options

IP Address

Mask

Default router

DNS primary

DNS secondary

STUN

Stun Server

Stun Port

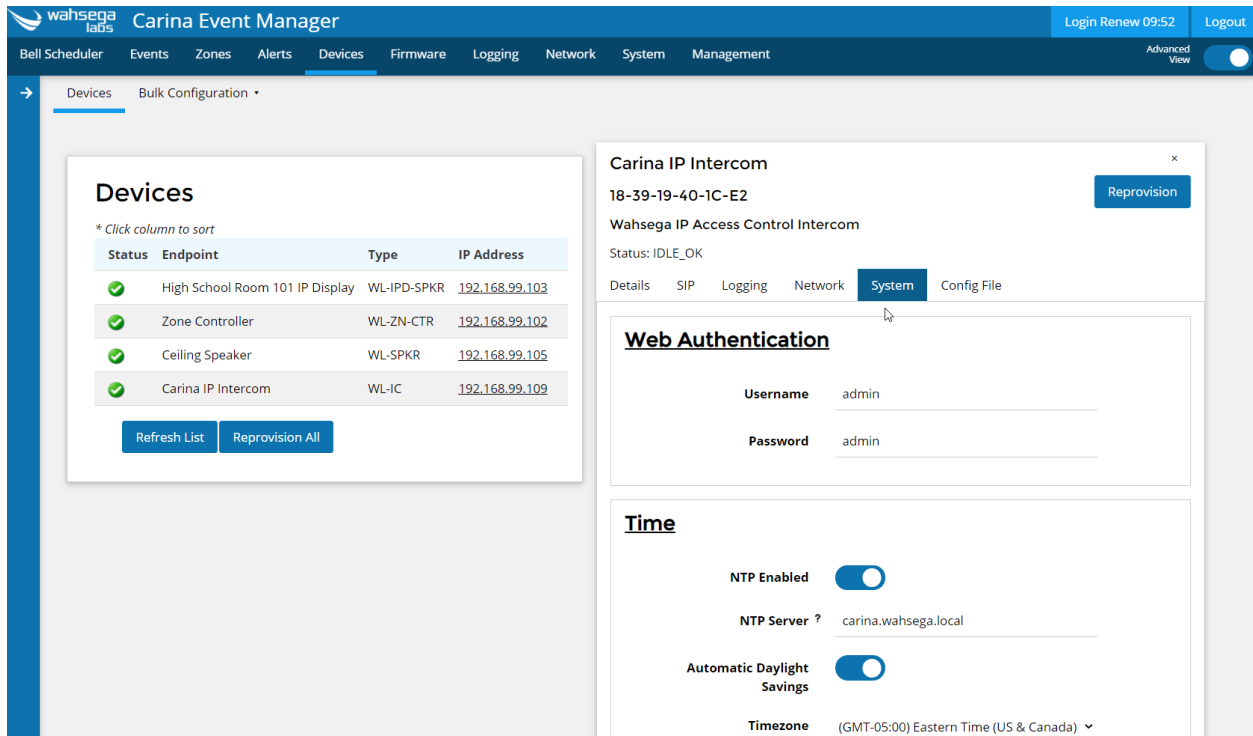
Additional Settings

Enable IGMPv3

Network

- **Basic Settings**
 - **Connection Type** – Choose DHCP or Static IP.

- **Dynamic IP Options** – If you choose to use DHCP to assign an address automatically. Note that when using DHCP, the IP address for your IP intercom may change. However, a new IP address will not affect configuration settings made through your Event Manager.
 - **Host Name** – Set host name to change how this device is listed in your DHCP server, if desired.
- **Static IP** – Choose this to enter IP address settings manually.
 - *Warning: If you enter a configuration that is not accessible from your network, you may be unable to communicate with the Indoor Surface Mount IP Intercom! Double-check that the settings you enter are correct before reprovisioning the Indoor Surface Mount IP Intercom to apply them.*
- **STUN**
 - **Server/Port** – Enter your STUN server here if applicable. STUN servers may be required to operate with a public SIP server from behind a NAT or router.
- **Additional Settings (advanced)**
 - **Enable IGMPv3** – Check to enable IGMP version 3 on your IP Speaker. If unchecked, IGMP version 2 (IGMPv2) will be used. Default setting is *disabled*. If you know that your routers have IGMPv3 enabled, you can safely enable this setting. *If unsure, leave disabled* to ensure support with routers that only use IGMPv2.
 - **MTU size** – Maximum transmission unit allowed on the Ethernet connection. The standard for Ethernet networks is 1500, and you *should not change this value* unless directed by your network administrator.



The screenshot shows the 'Carina Event Manager' interface. On the left, a 'Devices' table lists several devices with their status, endpoint, type, and IP address. The 'System' tab is selected for the 'Carina IP Intercom' device. The 'Web Authentication' section shows fields for 'Username' (admin) and 'Password' (admin). The 'Time' section includes toggle switches for 'NTP Enabled' and 'Automatic Daylight Savings', and a dropdown for 'Timezone' set to '(GMT-05:00) Eastern Time (US & Canada)'.

Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	Carina IP Intercom	WL-IC	192.168.99.109

System

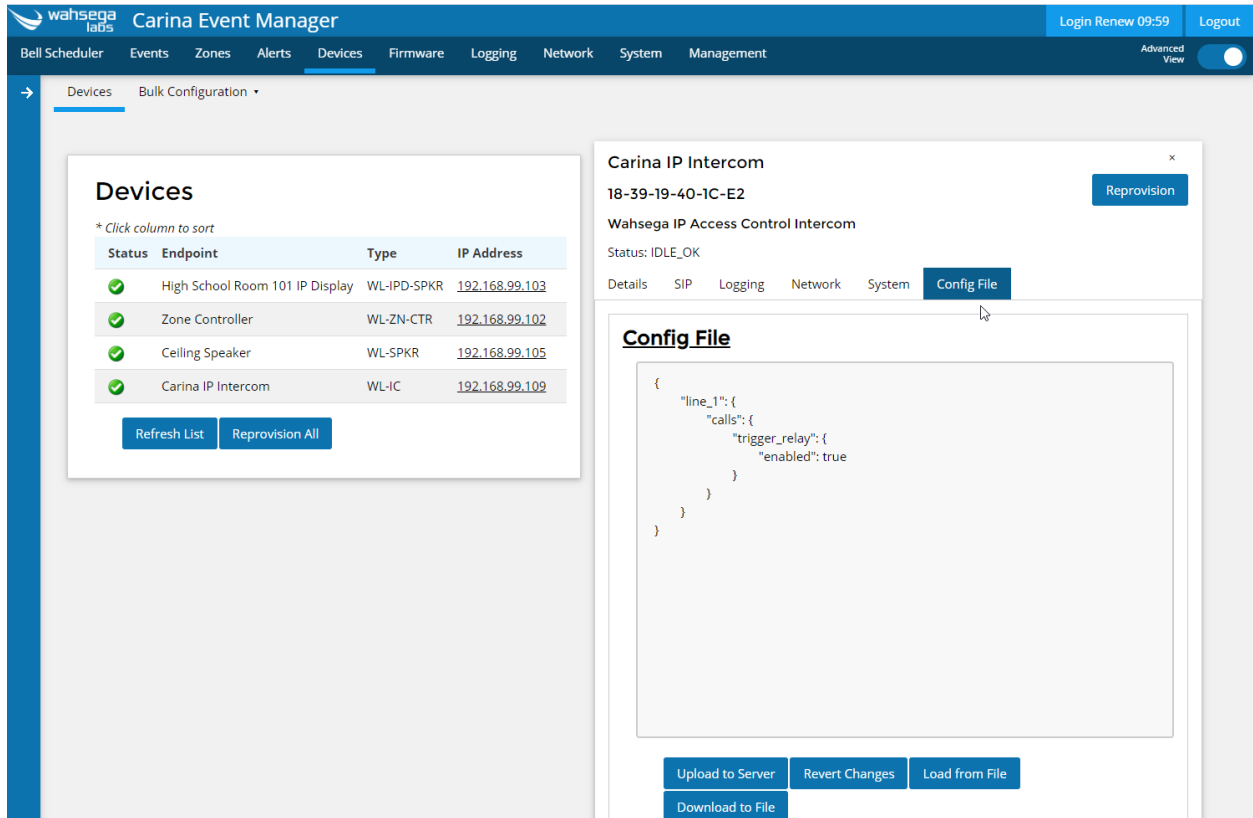
- **Web Authentication**

- **Username** – Change username for this IP intercom, if desired. Default username is *admin*.
- **Password** – Change password for this IP intercom, if desired. Default password is *admin*.

- **Time**

- **NTP Enabled** – When enabled, the system will query the NTP (network time protocol) server for the current time. The timezone and daylight savings time configuration is handled separate from the NTP time. Default value: Enabled
- **NTP Server** – The Wahsega Event Manager can behave as an NTP server. To take advantage of this, endpoints are best configured to use the default value. Default value: *carina.wahsega.local*

- **Automatic Daylight saving time** – Select this only if daylight saving time is currently in effect in your location. For more information about DST rules and dates, see <http://www.nist.gov/pml/div688/dst.cfm>.
- **Time zone** – Select the region that most closely matches your time zone. (Note that daylight saving time is *not* automatically applied based on region.)



The screenshot shows the 'Carina Event Manager' interface. On the left, a 'Devices' table lists various components. On the right, a detailed view for a 'Carina IP Intercom' is shown, including a 'Config File' section with a JSON configuration editor. Below the editor are buttons for 'Upload to Server', 'Revert Changes', 'Load from File', and 'Download to File'.

Status	Endpoint	Type	IP Address
✓	High School Room 101 IP Display	WL-IPD-SPKR	192.168.99.103
✓	Zone Controller	WL-ZN-CTR	192.168.99.102
✓	Ceiling Speaker	WL-SPKR	192.168.99.105
✓	Carina IP Intercom	WL-IC	192.168.99.109

```

{
  "line_1": {
    "calls": {
      "trigger_relay": {
        "enabled": true
      }
    }
  }
}

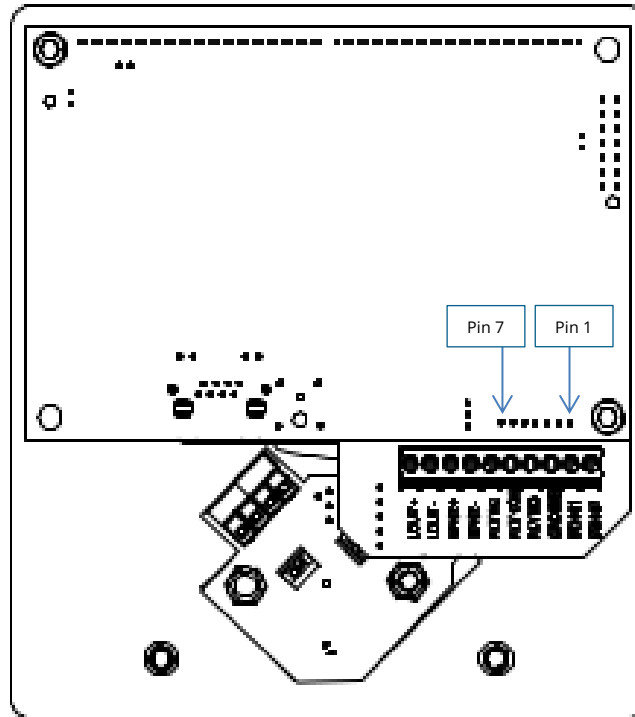
```

Config File

Users may choose the advanced option to manually edit or load a JSON configuration file here.

- **Upload to Server** – Loads changes made here to the Event Manager server, to take effect immediately.
- **Revert Changes** – Delete any changes made in this session and revert to currently loaded configuration file.
- **Load from File** – Load a JSON configuration file for a Carina Indoor Surface Mount IP Intercom into this intercom.
- **Download to File** – Download this Indoor Surface Mount IP Intercom’s current info.json configuration file.

Appendix A Software-based Factory Reset



As a “reset to factory defaults” function, two pins on the 7-pin connector can be jumpered together using a standard 2mm electrical jumper. When the intercom boots up, it will check to see if these pins are jumpered, and if so, it will perform a “factory reset”. Which pins are jumpered together determines the type of factory reset performed:

- Jumper pins **2 & 3**: Erase the info.json file and all settings revert to defaults.
- Jumper pins **4 & 5**: Format the file system.

Because this is a software-based reset, the software must be minimally functional in order to use it. In other words, it cannot be used to recover a unit which has been loaded with a firmware image that does not boot.

Steps for activating the factory reset:

1. Unplug the Indoor Surface Mount IP Intercom from power.
2. Install a 2mm jumper on the two pins according to which type of factory reset you want. (For example, to erase configuration and revert to default settings, install a jumper across pins 2 and 3.)
3. With the jumper in place, plug in power to the Indoor Surface Mount IP Intercom (using PoE).
4. Wait **at least 10 seconds** for the Indoor Surface Mount IP Intercom to boot, read the jumper, and apply the factory reset. You will hear a new beep pattern to indicate that the reset has been successful.
5. Unplug the Indoor Surface Mount IP Intercom from power.
6. Remove the jumper.
7. Re-apply power.
8. When the Indoor Surface Mount IP Intercom boots up again, it will have been restored to factory defaults based on the jumpers.
9. Open your device's configuration webpages. Go to General System Configuration, find Hardware Type, and change setting to "SIP Alerter."
10. Open your device's configuration webpages. On the System page, viewing Advanced Settings, set the "Hardware Type" to Wahsega SIP Alerter.
11. Save setting and reboot your device when prompted.

Carina Indoor Surface Mount IP Intercom

WL-IC-SMT-SIP-I-W-R-CAR

User's Guide

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