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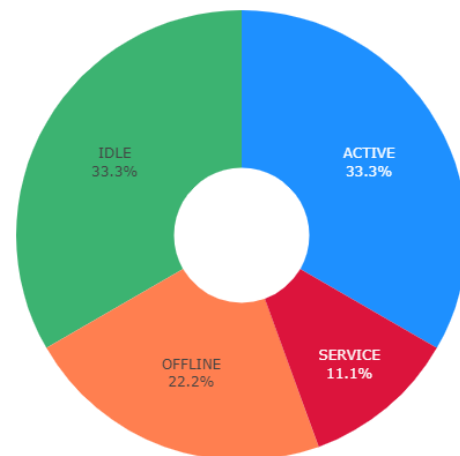
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JACO CARE MANUAL

CartScope™ Console

SmartTouch III

DataBroker Appliance



All Jaco products are designed,
manufactured, assembled, and
supported in the United States.



Jaco is certified as a Women's
Business Enterprise by the Women's
Business Enterprise National Council.

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The following symbols are used within this Users Guide and/or Jaco Products



Symbol	Meaning
	A Note indicating a special case or instruction related to the section
	A Callout to another Section in the Document

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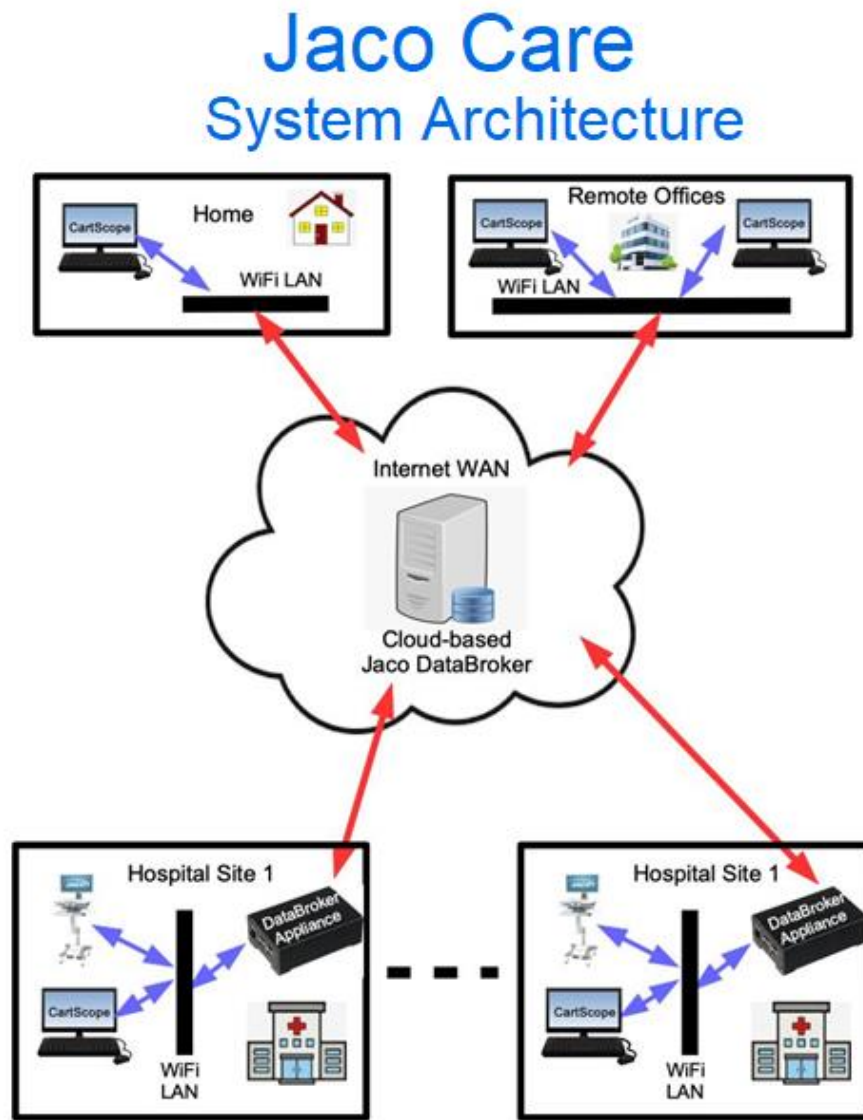
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1. Jaco Care System

1.1. Overview

The Jaco Care ecosystem of hardware and software provides a powerful and comprehensive solution to medical cart fleet management. Using this system, a Jaco cart's SmartTouch III unit senses and reports a wide variety of critical cart and power system parameters to help you track the performance of your carts and identify issues before they become problems. The CartScope™ Console application provides a user-friendly interface to display those parameters in a convenient and efficient manner. The Jaco DataBroker server uses the well-known MQTT (publish and subscribe) protocol to provide an effective mechanism to connect the instrumented carts to the Jaco DataBroker and CartScope™ console.



CartScope™ Console Application

- ✓ Uncluttered browser-based User Interface (UI) focused on Exception Management
 - Specific display widgets to show key data points at a glance
 - User assignable Cart Name and Group ID to help with identification
- ✓ Jaco DataBroker and Browser based software
 - Zero installation and minimal configuration
 - Utilize standard SQL queries to customize displayed data via on-screen query helper
- ✓ Real-time reporting and display of a variety of critical cart and battery parameters
 - Cart location using strongest Access Point signal
 - Easily view open Service Requests and Migrating Carts
 - See specific charge percentage and cycle count per cart

SmartTouch III Status Module

- ✓ Intuitive and Responsive User Interface
 - Quick and easy user control over Sound, Keyboard Lights, and Service Requests
 - Audible and visual Low Battery charge indication
 - Onscreen Wi-Fi connection status and Wi-Fi signal strength indicator
- ✓ Multiple deployment options including single LAN and multi-site reporting
 - Runs standalone - no client computer software required
- ✓ Captures and reports critical cart data
 - Battery data such as number of cycles and remaining battery capacity
 - Uses internal battery gas gauge for accurate data reporting
 - Captures and reports length of time of Open Service Requests

Jaco DataBroker Publish and Subscribe Appliance and Cloud Servers

- ✓ The plug-and-play Jaco DataBroker Appliance provides a very effective and convenient mechanism for deployment
 - Cloud based publish and subscribe (MQTT) servers
 - Minimal configuration required
- ✓ Easily expand from a single site to a multiple location environment with LAN and WAN based deployments
 - No internet connection required for single-site, LAN-based deployment
 - Single-site operation continues even if the Internet connection is disrupted when set up for multi-site

This User Guide provides information for the following Jaco EVO Cart Models:

EVO-20-JC-L250	EVO-20-JC-L500	EVO-20-HS-JC-NB	EVO-20-HS-JC-C-NB
EVO-10-JC-L250	EVO-10-JC-L500	EVO-10-HS-JC-NB	EVO-10-HS-JC-C-NB

1.2. Useful Terms

Terms	Explanation
CartScope™	The web-based application run by the DataBroker that allows for easy viewing of cart statuses, location, and details as well as access tracking for electronic drawers.
DataBroker	The small Linux server appliance that runs CartScope™. The DataBroker is where the databases for locations, PINs, cart status, and events live.
SmartTouch III	The status module mounted on the Jaco Carts. This status module has a screen and set of buttons used to control electronic drawer locks and service request ability. The unit also reads and transmits data to the DataBroker.
Over-the-Air (OTA)	Refers to the process of updating the SmartTouch III firmware by sending out an MQTT message packet over the wireless network.
MQTT	Message Queuing Telemetry Transport. Refers to the publish and subscribe protocol for message transmission that the Jaco Care system uses to send small packets of data to and from the different ecosystem components.
Migrating Cart	A Migrating cart is one that has left its assigned area. Migration status is tracked within CartScope using access point MAC address tracking. A user can create a database that links MAC addresses of access points to a specific Group ID and then give that location a name. By linking the Group ID to a location, CartScope can check the group ID of a cart against the group ID of the location it is in. If the two group IDs do not match, the cart is marked as Migrating.
Cart Statuses:	
Service	The SERVICE mode can be enabled at any cart by any user simply by pressing 3-Unlock . When activated, a Service Request is opened within CartScope. The opened request is logged as an event, and the time the request has been opened is tracked. Carts in the SERVICE mode are designated with Red within CartScope.
Offline	The OFFLINE status is assigned to a cart if it has not reported in to CartScope in the last two minutes. If a cart has been marked as OFFLINE, check the last reported battery percentage. If it was last reported as 0 or 1 percent, the cart has died and needs to be recharged. If the last reported percentage was large, the cart may be unable to connect to the wireless network in its current location. Carts in the OFFLINE mode are designated with Yellow within CartScope.
Idle	A cart that is reporting as IDLE has not had its motion sensor triggered within the past 15 seconds. When a cart is IDLE, the SmartTouch III screen will turn off. Additionally, if an OTA update message was sent out, an IDLE cart will perform the entire update and restart. Carts in the IDLE mode are designated with Green within CartScope.
Active	A cart reporting the ACTIVE status has recently detected motion. Typically, this means the cart is in use, so OTA updates are paused. Carts that have the motion sensor disabled will always be marked as ACTIVE. Carts in the ACTIVE mode are designated with Blue within CartScope.

2. Jaco Care Quick Start Guidelines

2.1. Deployment and Start Up Check List

✓ Read and accept the Software License Agreements

This content is available in the Legal and Licenses section in this User Guide.

- The license agreement covers both the firmware programmed into the SmartTouch III status modules, the Jaco DataBroker Appliance, and the CartScope™ Console Application.

✓ Determine Desired Deployment Architecture

The first step is to determine the deployment architecture based on desired access and requirements.

- If the deployment is limited to one geographic location and does not require remote DataBroker access, then a LAN-based deployment is recommended.
 - The LAN-based deployment requires that the Jaco DataBroker server be located within the LAN either as software on a local server or via the Jaco DataBroker appliance.
- If the deployment requires support for multiple, geographically dispersed facilities or remote DataBroker access, a cloud-based server deployment is required.

✓ Configure / Provision the Jaco DataBroker Appliance

The next step is to setup the Jaco DataBroker Appliance.

- Even if the cart monitoring and status reporting facilities of the CartScope console are not required, the DataBroker Appliance is used for eDrawer PIN storage as well as Over-the-Air updates for the SmartTouch III firmware.
- If the default password for the server is going to be changed, make sure to set the new password via the CartScope Settings tab.

✓ Configure / Provision Carts

The next step is to configure the carts' Wi-Fi and Drawer Combinations.

- The SmartTouch III currently requires a 2.4GHz Wi-Fi network.
- WPA2-PSK and WPA2-Enterprise PEAP are supported Network and Service email logins.
- eDrawer PINs can be four, five, or six digits, and must only use numbers 1 to 6.
- If the server password has been changed, make sure to enter the new password when configuring status modules.

✓ Check Software Status

Ensure that all devices are connecting properly and that devices are up to date.

- Once configured (and if the Wi-Fi access is enabled), the firmware version can be checked and upgraded via the cart's Over-the-Air (OTA) facility if necessary.
- The Jaco DataBroker server provides the required Publish and Subscribe service that connects the SmartTouch III units to the CartScope console application.

2.2. Deployment of the Jaco DataBroker

The easiest way to get started with the Jaco Care Ecosystem is to setup the DataBroker Appliance.

- Simply connect the unit to the network using an ethernet cord then connect its USB-C power adapter.
 - For Wireless connections, see Section [5.2.5 Setting up Wi-Fi on the DataBroker](#).
- Once the DataBroker has started up, CartScope™ can be accessed via any web browser by entering the address <http://jacodatabroker:8080>.
- Change the server password, if desired, via the Settings page in CartScope.

2.3. Configuration and Deployment of Jaco Carts

Once the DataBroker is up and running, the next step for setting up the Jaco Care system is to configure the SmartTouch III units. This can be done using the SmartTouch III Management Utility, which can be downloaded from the Documentation and Support page in CartScope. See the **SmartTouch III Management Utility User Guide** for specific instructions on using the utility. Alternatively, the SmartTouch III unit's built-in configuration utility can be used according to the following steps.

Before beginning any deployment, ensure the white USB-C cable in the PC bay is plugged in to the rear of the nosecone. This cable is disconnected prior to shipping to prevent unnecessary battery drain.

1. Once the SmartTouch III is powered, its built-in configuration utility can be used.
2. On the status module, enter the Admin code (**6-1-1-3-3-5-Unlock**) and press **5** to put it in Configuration mode.
3. The unit will generate a weak wireless network that will be used for configuration of the device. This network name is displayed on screen and will be of the form **Config-AA00BB**.
4. Use a PC or other wirelessly enabled device to connect to the network using the password **Jaco611335 or the new password**.
5. On the connected device, scan the QR code on the status module or use a web browser to navigate to <http://192.168.4.1>. The Cart Configurator will be displayed.
6. Parameters for cart names, group ID, and wireless network connection can be set using this utility. See Section [2.4 Network Authentication Options](#) for information on configuring the Network settings. If the server password has changed, make sure to change it here as well.
7. Once the settings have been entered, press **Save** to reboot the SmartTouch III unit
8. For more information on the Configuration process, see Section [4.1 SmartTouch III Unit Configuration](#).

2.4. Network Authentication Options

The JacoCare ecosystem implements two network authentication options:

- WPA2-PSK
- WPA2-Enterprise PEAP

Deployment details for a given Wi-Fi network are highly dependent on the specific network itself. The discussion below is only meant to provide general guidance on the deployment of the Jaco Care system.

2.4.1. WPA2-Enterprise PEAP Deployment

WPA2-Enterprise requires a RADIUS authentication server and an associated server certificate. Deployment of a WPA2-Enterprise network is typically more complicated than a simple WPA2-PSK network but provides additional security.

There are a variety of Extensible Authentication Protocols (EAP) used for enterprise authentication. This deployment implements the PEAP-MSCHAPv2 protocol secured by Username and Password credentials.

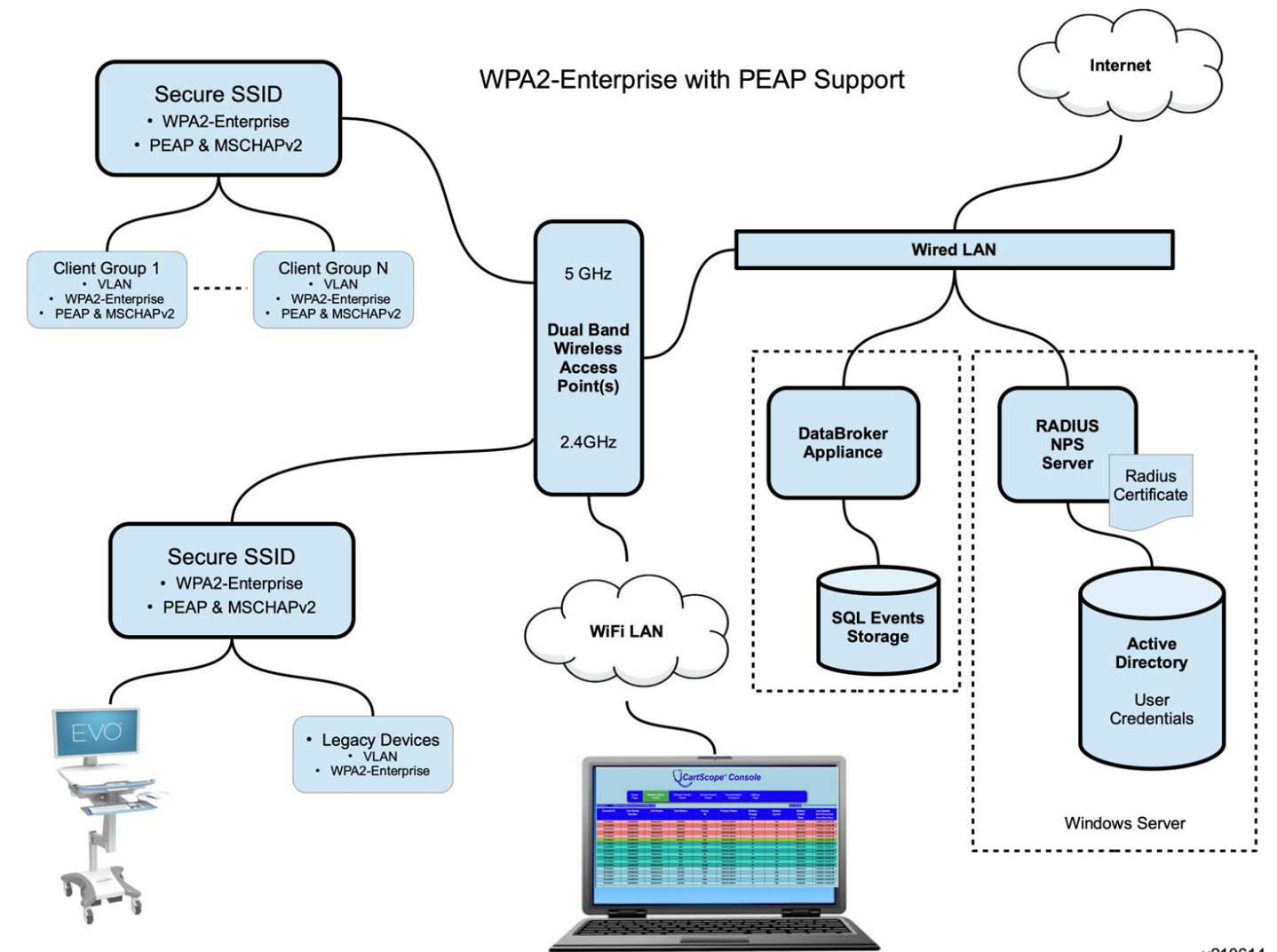
WPA2-Enterprise with PEAP requires that an appropriate certificate be generated and installed in the Windows Server. Since the certificate is installed in the Windows Server, it does not have to be loaded onto each individual SmartTouch III unit, greatly simplifying the deployment of this authentication environment.

A Username and Password must be generated for the SmartTouch III Units and entered into the Active Directory database.

To place the SmartTouch III into the WPA2-Enterprise mode select **WPA2-Enterprise with PEAP** using the built-in SmartTouch III configuration utility as detailed in Section [2.3 Configuration and Deployment of Jaco Carts](#). Then, enter the Wi-Fi SSID, Username, and Password. Press Save Parameters. The SmartTouch III will reboot.

If the server-side certificate has been properly generated and installed in the Windows Server and the Username and Password credentials have been entered into the Active Directory database, the SmartTouch III will connect to the network.

The diagram below shows a typical network topology for SmartTouch III authenticating into the Wi-Fi network using WPA2-Enterprise and PEAP protocol.



2.5. Configuration of the CartScope™ Console

When first getting started with CartScope™, there are a few main points of interest for configuration.

- The brokeradmin Password
 - The brokeradmin account used to login to the Server has a default password of **Jaco611335**.
 - This password can be changed via the Settings page in CartScope.
 - Make sure to change the password in the **Broker Password** field of the SmartTouch III accordingly
- The RealTime Status Table
 - The columns in this table can be customized to best suit the needs of the viewer. Simply press the Select Displayed Columns button and choose the desired configuration.
 - See Section [3.3.1 RealTime Status Table Parameters](#) for explanations of each parameter.
- The Settings Page Admin login
 - The Settings page of CartScope is username and password protected
 - The default login information for the Settings page is:
 - Username: **admin**
 - Password: **611335**
 - Change the login information by using the *Change Settings Login* utility on the page.
 - Both the username and password should be changed to provide the best security
 - There are no requirements on the login information
- The Service Email Settings on the Settings Page
 - Configure the Service Email to send an email whenever a cart opens or closes a Service request.
 - Enter an account username and password to serve as the Sending account for the Service emails in the first two fields.
 - Designate the email for who will receive the service emails in the “Email To” field. Only one address can be entered, so if multiple recipients are desired it is best to use an email alias.
- The PINs Database Setup
 - The PINs database is used to manage and track authorized access of eDrawers.
 - The PINs database can be configured in three ways:
 - Using the Utility on the **Settings** Page in CartScope
 1. Select the desired PIN size (4, 5, or 6 digits)
 2. Enter the User’s name and press Tab.
 3. Note down the generated PIN.
 4. Press Save.
 - Uploading a CSV file of names or names and PINs.
 - Note, PINs must only use numbers 1 to 6 and can be 6 digits at most
 - Creating a database following the proper schema and moving it to the DataBroker
 - This process is outlined in Section [5.4 eDrawer PINs Authorization Facility](#).

- The MAC Address to Location/Group ID Association Database Setup
 - The MAC Address to Location database is used to track the physical location of carts and report any carts that have 'migrated' outside of their intended area of deployment.
 - This database can be configured in two ways:
 - Using the utility on the Settings Page in CartScope™
 1. Enter the MAC address of the wireless adapter of the access point or select it from the dropdown list.
 2. Choose the Group ID to associate this MAC address with.
 3. Enter the name or text that will replace the MAC address in the Current Location column of the RealTime Status Table.

Note that entries will be displayed in the table as "Group ID – AP Location" [i.e. "ICU – West Wing"], so there is no need to put the Group ID in the AP Location field.

 4. The SSID, access point IP address and model, and Wi-Fi channel can also be added to the database. These parameters are not required.
 5. Press Add Location Items. The entry will be added to the database.
 6. Once all desired locations have been added, press Reload MAC/Location DB to properly load the table for use in the RealTime Status Table.
 - Creating a database following the proper schema and moving it to the DataBroker
 - This is outlined in Section [5.6 MAC Address to Location/GroupID Association Facility](#).

Congratulations!
The Jaco Care Ecosystem is now configured!

3. CartScope™ Console Application

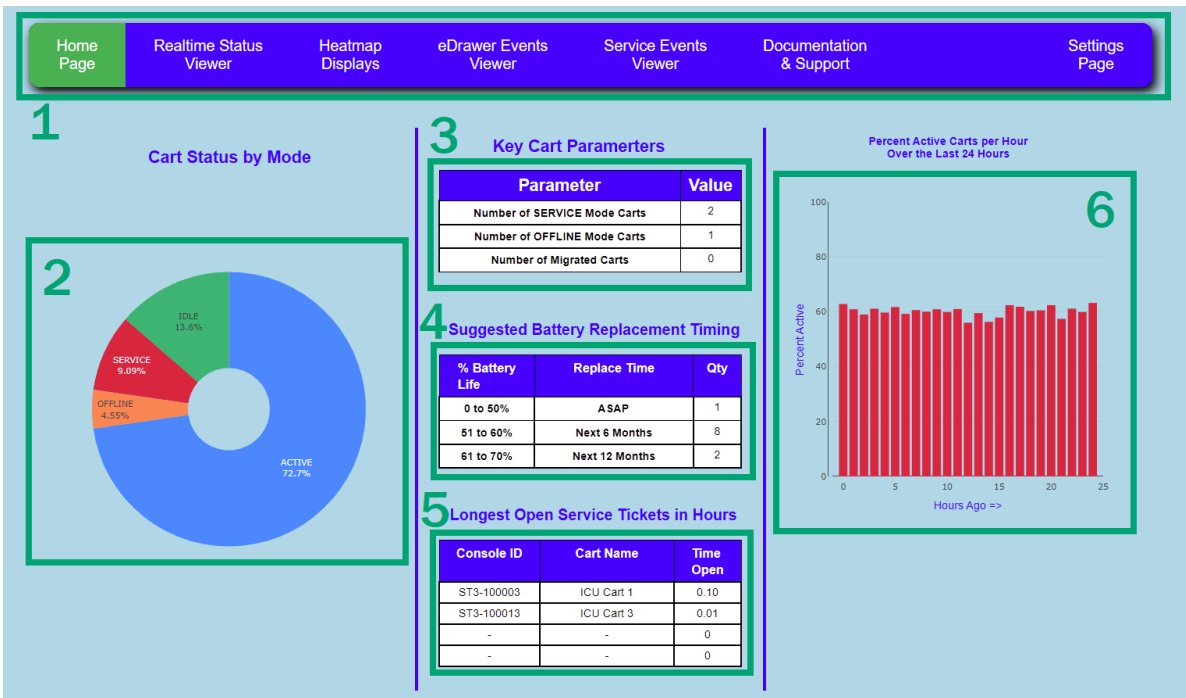
3.1. CartScope™ Overview

The **CartScope™ Console Application** provides a real-time look at the hospital's cart fleet with a focus on exception reporting. The CartScope Console

- Uses standard web browsers for display.
- Is highly portable and can be run on a variety of modern desktop operating systems and devices including Windows, Mac OS, tablets, and smartphones.
- Is designed to be easy to use with a simple, uncluttered user-interface.

3.2. The CartScope™ Home Page Display

Upon startup, the CartScope console application displays the Home Page as shown below:



1. The menu navigation bar appears near the top of each page of the CartScope application and is used to move from page to page.
2. The left-most “widget” is a pie-chart showing the real-time status of the fleet of carts. The carts’ status (Active, Idle, Service or Offline) is shown as a percentage of the total number of carts in the fleet and is updated approximately every five seconds. Hovering the mouse pointer over a slice will show the total number of carts with this status.

➔ See Section [1.2 Useful Terms](#) for an explanation of each status.

3. The center widget contains three tables summarizing several key exception parameters. The top table provides an indication of the number carts that may require attention.

- The first parameter is the number of carts in the SERVICE mode.
- The second parameter is the number of carts in the OFFLINE status.
- The third parameter is the number of carts that have batteries below 60% usable capacity.
- The fourth parameter is the number of carts that have been marked as *Migrating*.

➔ See Section [1.2 Useful Terms](#) for the definition of a *Migrating* cart.

4. The second table displays a Suggested Battery Replacement Timetable.

- The table shows the number of carts with a low total usable battery capacity along with the recommended time to budget for replacements

5. The third table in the center column displays the four carts having the longest open service request times. It also shows the name and unique ID of those carts.

6. The right-most widget plots the percent of active carts per hour over a period of 24 hours. A snapshot of the number of active carts versus the total number of carts is taken each minute for an hour then averaged to provide an average percentage of Active carts that hour. This value is calculated every hour and plotted in the chart on a rolling basis.

3.3. RealTime Status Page

The RealTime Status page provides a snapshot view of every cart's status. It updates every five seconds. The table will display carts that need attention with higher priority. Any carts in Service mode will appear at the top of the table, followed by Offline carts, then Idle carts, and, lastly, Active carts.

1

Home Page

Realtime Status Viewer

Heatmap Displays

eDrawer Events Viewer

Service Events Viewer

Documentation & Support

Settings Page

2

Display ALL

Select Displayed Columns

Auto-Refresh is ON

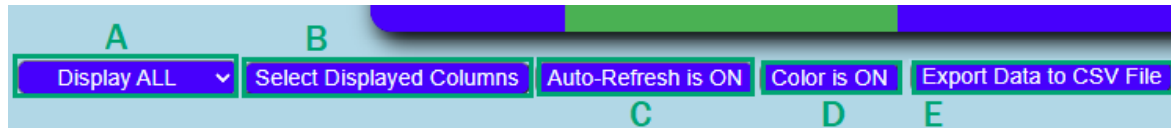
Color is ON

Export Data to CSV File

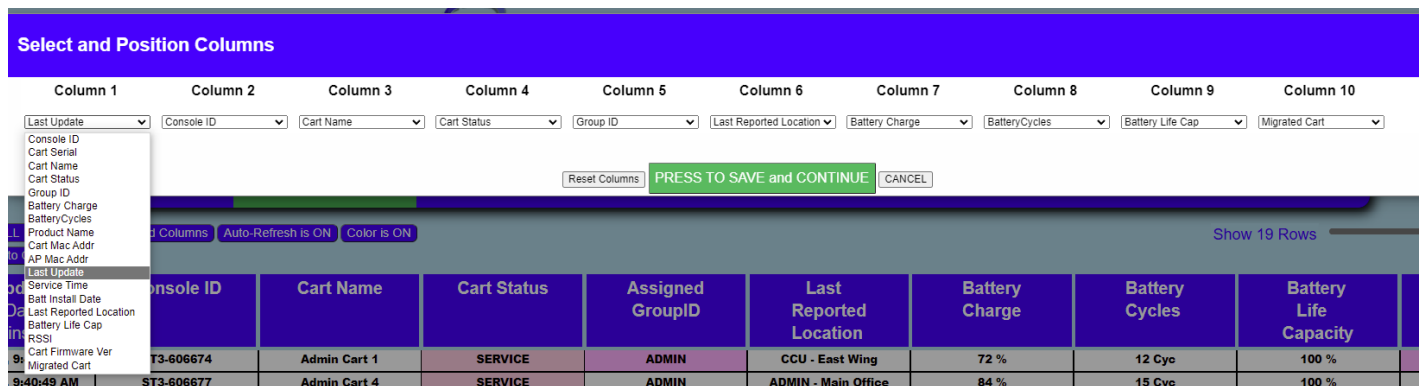
Show 20 Rows

Last Update Month/Day/Year Hour:Min:Secs	Console ID	Cart Name	Cart Status	Assigned GroupID	Battery Charge	Battery Cycles	Battery Life Capacity	Last Reported Location	Cart Firmware Version
5/20/2022, 3:28:40 PM	ST3-100010	CCU Cart 5	SERVICE	CCU	28 %	3740 Cye	51 %	CCU - Floor 1 - West	39-0056-220317
5/20/2022, 3:28:49 PM	ST3-100013	ICU Cart 3	SERVICE	ICU	78 % 100 %	872 Cye 2213 Cye	89 % 71 %	ICU - Floor 2 - North	39-0054-220317
5/20/2022, 3:28:22 PM	ST3-100004	Radio Cart 1	SERVICE	RADIO	83 %	3795 Cye	50 %	ONCO - Floor 2 - East	39-0056-220317
5/20/2022, 3:28:25 PM	ST3-100005	CCU Cart 2	IDLE	CCU	44 %	264 Cye	97 %	CCU - Floor 1 - West	39-0056-220317
5/20/2022, 3:29:16 PM	ST3-100002	CCU Cart 1	IDLE	CCU	30 %	3695 Cye	51 %	CCU - Floor 1 - West	39-0056-220317
5/20/2022, 3:28:34 PM	ST3-100008	Maternity Cart 1	IDLE	MATNY	30 % - %	742 Cye - Cye	91 % - %	MATNY - Floor 2 - West	39-0054-220317
5/20/2022, 3:29:10 PM	ST3-100020	Maternity Cart 2	IDLE	MATNY	56 % 54 %	3052 Cye 1776 Cye	60 % 77 %	MATNY - Floor 2 - West	39-0054-220317
5/20/2022, 3:28:46 PM	ST3-100012	Radio Cart 2	IDLE	RADIO	82 %	1616 Cye	79 %	RADIO - Floor 1 - East	39-0056-220317
5/20/2022, 3:28:28 PM	ST3-100006	CCU Cart 3	ACTIVE	CCU	60 %	1321 Cye	83 %	CCU - Floor 1 - West	39-0056-220317
5/20/2022, 3:28:31 PM	ST3-100007	CCU Cart 4	ACTIVE	CCU	1 %	2539 Cye	67 %	CCU - Floor 1 - West	39-0056-220317
5/20/2022, 3:28:52 PM	ST3-100014	CCU Cart 6	ACTIVE	CCU	18 %	605 Cye	92 %	CCU - Floor 1 - West	39-0056-220317
5/20/2022, 3:28:19 PM	ST3-100003	ICU Cart 1	ACTIVE	ICU	- % 94 %	- Cye 627 Cye	- % 92 %	ICU - Floor 2 - North	39-0054-220317
5/20/2022, 3:28:43 PM	ST3-100011	ICU Cart 2	ACTIVE	ICU	25 % 9 %	3011 Cye 3365 Cye	60 % 56 %	ICU - Floor 2 - North	39-0054-220317
5/20/2022, 3:29:01 PM	ST3-100017	ICU Cart 4	ACTIVE	ICU	78 % - %	1587 Cye - Cye	79 % - %	ICU - Floor 2 - North	39-0054-220317
5/20/2022, 3:29:04 PM	ST3-100018	Onco Cart 2	ACTIVE	ONCO	32 % - %	3535 Cye - Cye	53 % - %	ONCO - Floor 2 - East	39-0054-220317
5/20/2022, 3:29:13 PM	ST3-100001	Onco Cart 1	ACTIVE	ONCO	5 % 55 %	3364 Cye 2146 Cye	56 % 72 %	PHARM - Floor 1 - South	39-0054-220317
5/20/2022, 3:28:37 PM	ST3-100009	Psych Cart 1	ACTIVE	PSYC	89 %	2630 Cye	65 %	PSYC - Floor 1 - North	39-0056-220317
5/20/2022, 3:28:55 PM	ST3-100015	Radio Cart 3	ACTIVE	RADIO	36 %	454 Cye	94 %	RADIO - Floor 1 - East	39-0056-220317
5/20/2022, 3:28:58 PM	ST3-100016	Radio Cart 4	ACTIVE	RADIO	40 %	3512 Cye	54 %	RADIO - Floor 1 - East	39-0056-220317
5/20/2022, 3:29:07 PM	ST3-100019	Radio Cart 5	ACTIVE	RADIO	12 %	90 Cye	99 %	RADIO - Floor 1 - East	39-0056-220317

1. The controls just above the RealTime Status Table are used to allow user-defined adjustments to the displayed table.



- A. The **Display ALL** dropdown allows the user to select a specific status mode: Display ALL, Display SERVICE, Display OFFLINE, Display IDLE, or Display Active. Doing so will restrict the table to showing only carts with that status.
- B. When pressed, **Select Displayed Columns** opens a dialog box to select which of the 19 parameters are to be displayed in which of the 10 columns of the RealTime Status Table.



- Any parameter can be chosen from the dropdown below each column identifier.
 - Once the selection process is completed, pressing **PRESS TO SAVE and CONTINUE** will save the selected configuration. Pressing **Reset Columns** will restore the factory default configuration. Pressing **CANCEL** exits the dialog box without saving any changes and reloads the page.
- C. Pressing **Auto-Refresh** will toggle the table's automatic refresh. If it is ON, the table will refresh every five seconds. When set to OFF, the table will not update automatically.
 - D. Toggling Color will turn color coding for carts on or off within the table. By default, this setting is on. If this setting is toggled to OFF, all carts will be rendered in grey. When ON, Migrated carts will have their **Group ID** and/or **Migrated Cart** Column highlighted purple, Carts with batteries that have less than 60% usable capacity remaining will have the corresponding field highlighted in a dark red, and the Cart status column will be highlighted with the following scheme:

Column Status	Background Color
Service	Red
Idle	Green
Active	Blue
Offline	Yellow

- E. The **Export Data to CSV File** button will capture a snapshot of the current data in the Realtime status table and download it in a CSV format.

- 2) The slider control sets the **number of rows to be displayed** from one to the total number of carts reporting (including offline carts that had previously reported in). The table will be updated with the selected number of rows to be displayed upon the next update in approximately 5 seconds.

Cart Name	Cart Status	3 Assigned GroupID	Last Reported Location	Battery Charge	Battery Cycles	Battery Life Capacity	3 Migrated Cart
Admin Cart 1	SERVICE	ADMIN	CCU - East Wing	72 %	12 Cyc	100 %	YES
Admin Cart 3	SERVICE	ADMIN	ICU - West Wing	100 %	4 Cyc	100 %	YES
CCU Cart 5	SERVICE	CCU	CCU - East Wing	81 %	52 Cyc	100 %	NO
IT Cart 1	OFFLINE	IT	IT - Office	100 %	32 Cyc	100 %	NO

- 3) If a **MAC Address to Location Database** is configured, carts will also be tracked for migration. If Colors are enabled, Migrated carts will be identified by a purple coloring in the **Group ID** or **Migrated Cart** columns. A migrated cart is one that has moved to a location outside of its intended zone. This is tracked by using the Access Point MAC address to Location name mapping database, as described below.
- CartScope™ checks the database for MAC addresses of access points and converts any matches in the 'Current Location' column to the associated location name text. (e.g., if a cart is reporting its location as the MAC address 84:D8:1B:BA:F1:41 and that address is associated with the name "Floor 2 West" in the database, that name will be displayed in the table.)
 - CartScope will also check the group ID associated with the access point MAC address in the database. If that group ID is different from the group ID of the cart reporting that location, the cart is marked as *Migrating*. The number of migrating carts is also tracked on the home page.

3.3.1. RealTime Status Table Parameters

Parameter	Description
Console ID	A programmatically generated unique ID for each ST-III console
Cart Serial	A Jaco entered cart serial number
Cart Name	A user-defined cart name
Cart Status	The current cart status (e.g. Service, Offline, Idle or Active)
Group ID	A short Group or Department name (typically less than 5 characters)
Battery Charge	The current state-of-charge of the cart's battery as a percentage of full charge Displays both battery values for Hot Swap carts (will display '-' to indicate an empty battery bay)
Battery Cycles	Number of battery recharge cycles Displayed as (Battery1Cycles) (Battery2Cycles) for Hot Swap carts (will display '-' to indicate an empty battery bay)
Product Name	A Jaco entered cart product name
Cart MAC Addr	The MAC address of the status module's Wi-Fi adapter
AP MAC Addr	The MAC address of the first Access Point the cart connected to on startup
Last Update	The date and time of the last cart update report
Service Time	The "open ticket time" of an ongoing cart's service request
Battery Install Date	The date of installation for the current batteries
Last Reported Location	The MAC address of the nearest Access Point If the Location Database is configured, the Location information will be displayed
Battery Life Capacity	The remaining capacity of the battery as a % of a new battery. Displayed as Battery1Cap Battery2Cap for Hot Swap carts (will display '-' to indicate an empty battery bay)
RSSI	The relative signal strength of the closest access point in dBm The closer to zero, the better the signal
Cart Firmware Version	The current firmware version of the status module 39-0054 denotes Hot Swap; 39-0056 denotes Integrated Battery
Migrated Cart	A YES or NO value indicating if this cart has migrated from its assigned location

3.4. Heatmap Displays

The Heatmap Displays page uses a color-coded graph to display some important information at a glance. The page can display two different heatmaps, Remaining Usable Battery Capacity and Realtime Cart Status. The height of the cells in the graph can be changed to Large (Default), Medium, or Small to make viewing larger cart populations easier.

Clicking on one of the graph's cells will display the represented cart's ID, serial number, battery cycles, remaining battery capacity, location, and firmware version. Hot Swap carts report the data from each battery in a separate cell but will display the same data in the alert message for both. Hot Swap data displayed includes the health of all batteries present.

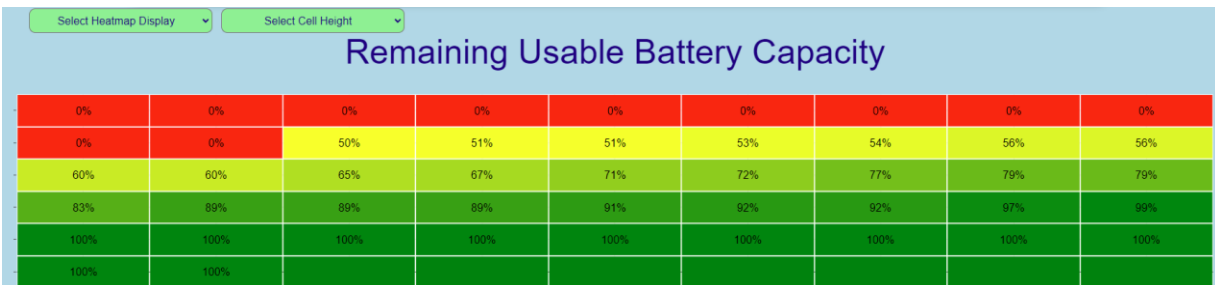
jacodatabroker.local:8080 says:

CART INFORMATION:
Cart ID Number: CCU Cart 6
Cart Serial Number: JC100014
Battery 1 Cycles: 605
Remaining Batt1 Cap: 92%
Last Reported Location: CCU - Floor 1 - West
Cart Firmware Version: 39-0056-220317

OK

3.4.1. Remaining Usable Battery Capacity

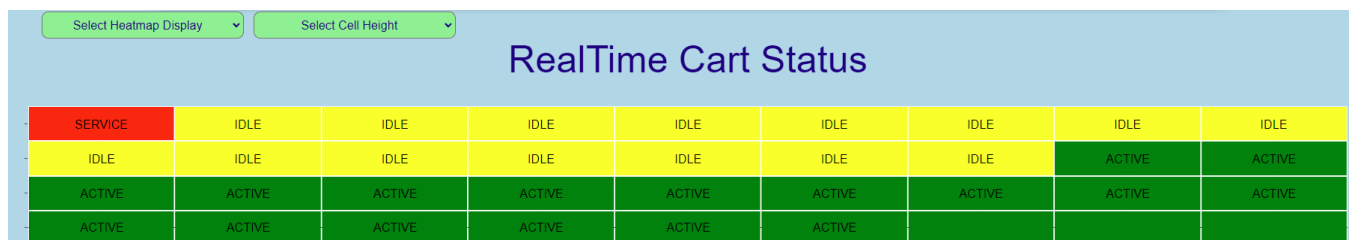
This graph works by sorting and displaying the remaining usable battery capacity of all carts from low to high. Cells are shaded from red to yellow to green representing a scale of battery health. This graph provides a quick visual representation of where the current capacity for the batteries in all carts lies and aims to work in conjunction with the Suggested Battery Replacement Timing table on the home page to help users prepare and budget for battery replacements.



3.4.2. Realtime Cart Status

This graph sorts the cart population by cart status and colors cells from red to orange to yellow to green on a sliding scale in order of SERVICE, OFFLINE, IDLE, and ACTIVE. This means that one or more of the 4 colors may be eliminated in the display if one or more of the statuses is not represented in the graph.

This graph aims to provide a quick way to assess the status of carts at a moment in time based on current usage. It essentially provides a snapshot of the data represented in the Percent Active Carts per Hour graph on the home page.



3.5. eDrawer Events Page

The eDrawer page contains a table that displays all recorded eDrawer events. An eDrawer event is created whenever there is an attempt to unlock the eDrawers on a cart. When a user enters a PIN, the unit sends a message to the DataBroker. The DataBroker then checks the PIN against the PINs Database. If this is a valid PIN, it sends an authorization message back and logs an “eDrawer opened” event. If the entered PIN is not valid, the DataBroker sends a rejection message and logs an “Authorization Failure” event.

An event entry in the table contains:

- Date and time
- Unique ID of the status module
- Username associated with the entered PIN (or “Not Available” if the PIN is invalid)
- Cart Name
- Cart Group ID
- Message of either “eDrawer Opened” or “Authorization Failure”

The page also has an **Export Events to CSV File** button that will export the contents of the entire eDrawer Events Database as a CSV file for download.

Auto-Refresh is ON Export Events to CSV File						
Date/Time Month/Day/Year Hour:Min:Secs	Console UUID	User Name	Cart Serial	Cart ID	Group ID	Log Message
11/1/2021, 10:03:21 AM	ST3-606682	Jane Smith	JC000113	CCU Cart 4	CCU	eDrawer Opened
11/1/2021, 4:04:33 AM	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
11/1/2021, 4:03:21 AM	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
10/29/2021, 6:48:51 AM	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
10/29/2021, 3:14:29 AM	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
10/28/2021, 9:02:35 PM	ST3-606682	Not Available	JC000113	CCU Cart 4	CCU	Authorization Failure
10/28/2021, 5:24:13 PM	ST3-606682	Jane Smith	JC000113	CCU Cart 4	CCU	eDrawer Opened
10/23/2021, 10:04:13 AM	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
10/23/2021, 10:04:13 AM	ST3-606671	Not Available	JC000103	ICU Cart 3	ICU	Authorization Failure

3.5.1. WPA2-PSK Deployment

WPA2-PSK is a Network Authentication protocol that requires knowledge of a single, 256-bit Pre-Shared Key (PSK) to access. The security of the network using this deployment method is highly dependent on the strength of the user entered passphrase.

To configure a SmartTouch III unit for WPA2-PSK Authentication, connect to the built-in configuration utility as outlined in Section [2.3 Configuration and Deployment of Jaco Carts](#). Then, select WPA2-PSK as the Authentication Type and enter the Wi-Fi SSID and Password. Press Save Parameters.

The SmartTouch III will reboot and the newly entered parameters will take effect.

3.6. Service Events Page

The Service Events Table displays “Service Req Opened” and “Service Req Closed” events.

Each entry shows:

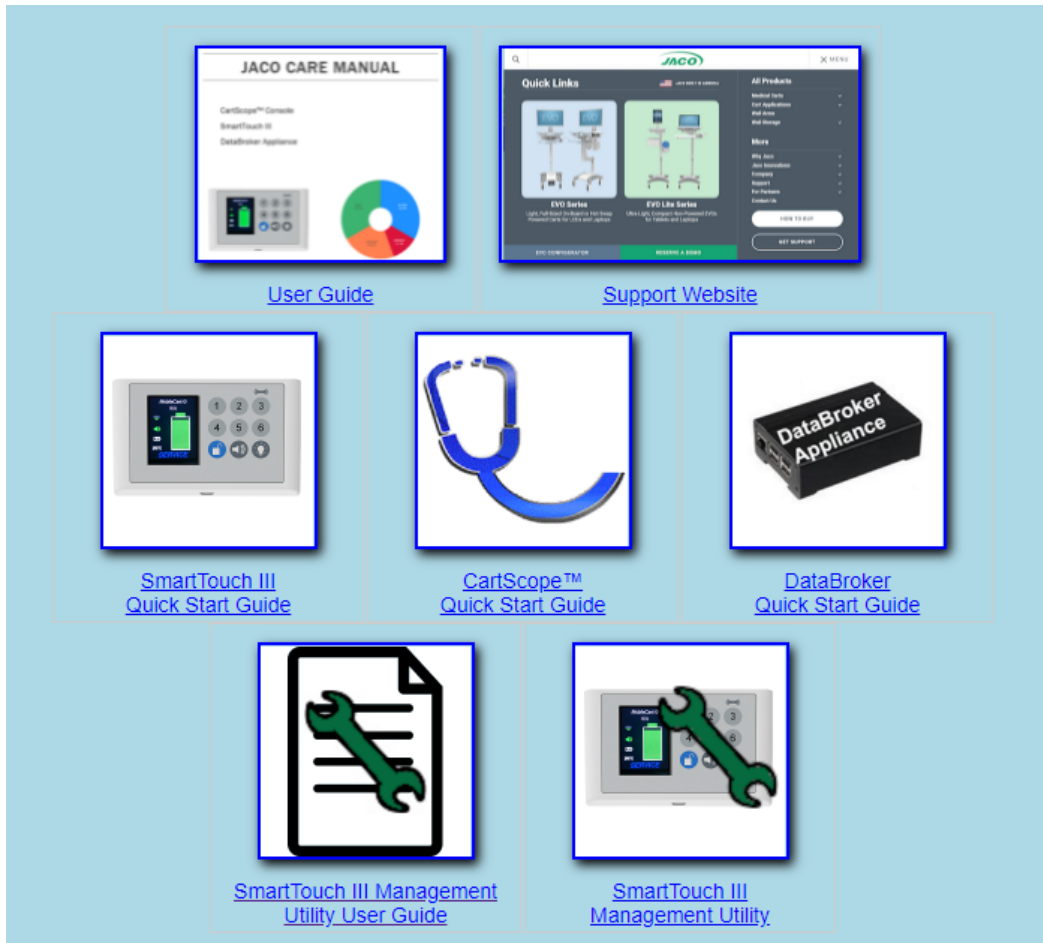
- The date/time the event occurred
- Cart identification information
- If the event was an opening or a closing of a service request
- The total time a service request was open.

As in the RealTime Status display, an Auto-Refresh button allows for the freezing and resumption of auto refreshing of the displayed tables. The page also has an **Export Events to CSV File** button that will export the contents of the entire Service Events Database as a CSV file for download.

Auto-Refresh is ON Export Events to CSV File						
Date/Time Month/Day/Year Hour:Mins:Secs	Console UUID	Cart Serial	Cart ID	Group ID	Time Ticket Is Open	Log Message
10/31/2021, 10:45:22 PM	ST3-606672	JC000104	ICU Cart 4	ICU	301	Service Req Closed
10/31/2021, 6:16:21 PM	ST3-606672	JC000104	ICU Cart 4	ICU	0	Service Req Opened
10/30/2021, 2:19:08 PM	ST3-606676	JC000107	Admin Cart 3	ADMIN	707	Service Req Closed
10/30/2021, 2:32:12 AM	ST3-606676	JC000107	Admin Cart 3	ADMIN	0	Service Req Opened
10/27/2021, 9:55:05 AM	ST3-606682	JC000113	CCU Cart 4	CCU	53	Service Req Closed
10/27/2021, 9:02:52 AM	ST3-606682	JC000113	CCU Cart 4	CCU	0	Service Req Opened

3.7. Documentation and Support Page

The Documentation Page contains useful links. A copy of this User Guide is in this tab. Quick Start guides for each component of the Jaco Care System can be found here. This page also links to the Jaco website to allow for quick submission of support tickets. The SmartTouch III Management Utility and Guide can be downloaded from here.



3.8. CartScope™ Settings

The **Settings Page** contains utilities to manage the CartScope™ Console web application as well as the DataBroker server itself. It is broken up into several items laid out in a grid with differing functions. The top set of items is used to manage CartScope settings while the bottom ones are used for DataBroker Server maintenance.

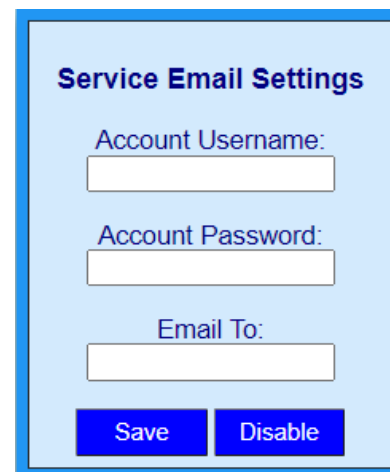
The Settings Page is Username and Password protected. Once the proper Username (**admin**) and Password (**611335**) are entered, the page is opened as shown below.

Service Email Settings Account Username: <input type="text"/> Account Password: <input type="password"/> Email To: <input type="text"/> <input type="button" value="Save"/> <input type="button" value="Disable"/>	PINs DataBase Settings PIN Size: <input type="text" value="4 Digits"/> Username: <input type="text"/> Assigned PIN: <input type="text"/> <input type="button" value="Save"/> <input type="button" value="Cancel"/> <hr/> Delete User: <input type="text" value="Select a Username"/> <input type="button" value="Delete"/> <input type="button" value="Cancel"/>	Create PINs Database from File Upload a CSV File <small>Files should have Names in column A and PINs in column B Note this will completely overwrite the current PINs Database</small> <input type="button" value="Select File"/> No File Selected <input type="text" value="Select File Format"/> <input type="text" value="Select a PIN Size"/> <input type="button" value="Create Database"/>
Database Management <input type="button" value="Clear RealTime Database"/> <input type="button" value="Reload MAC/Location DB"/>	MAC Address to Location/Group ID Association MAC Address:* <input type="text"/> Group ID:* <input type="text"/> Channel: <input type="text" value="1"/> AP Location:* <input type="text"/> Model: <input type="text"/> SSID: <input type="text"/> IP Address: <input type="text"/> <input type="button" value="Update Location Items"/> <input type="button" value="Clear"/>	
Change Settings Login New Username: <input type="text" value="admin"/> New Password: <input type="password"/> <input type="button" value="Save"/> <input type="button" value="Cancel"/>	SmartTouch 3 Firmware Update Select New Firmware File: <input type="text"/> Select Group: <input type="text" value="All Carts"/> <input type="button" value="Update Carts' Firmware"/> <hr/> Upload New Firmware File <input type="button" value="Select File"/> No File Selected <input type="button" value="Upload"/>	

3.8.1. Email Settings

The **Service Email Settings** box configures the DataBroker email facility to send an email to an individual or a group of individuals upon receipt of a Service Request message from a reporting cart.

- Enter the appropriate configuration information into each box and press the **SAVE** button to save the configuration entries or press the **Cancel** button to delete and not save the entered information.
- Once an account is configured, the “Username” and “Email To” boxes will display the current configuration.
- Currently, only Office365 Email Accounts can be used.
- Accounts must also have 2-Factor-Authentication disabled.



The screenshot shows a light blue dialog box titled "Service Email Settings". It contains three text input fields: "Account Username:", "Account Password:", and "Email To:". Below these fields are two buttons: "Save" and "Disable".

3.8.2. PINs File Settings

The **PINs File Settings** box provides a convenient facility for adding and/or deleting users and their associated eDrawer PINs. The “add user and PIN” functionality allows the user to select the size of the PIN (4, 5 or 6 digits) and then enter a Username. The Username is checked against the Usernames in the PINs database to verify it is not a duplicate. Once a valid username is entered, the user either presses the keyboard Tab key or clicks into the Assigned PIN box and a unique PIN (of the previously selected size) is generated and displayed.

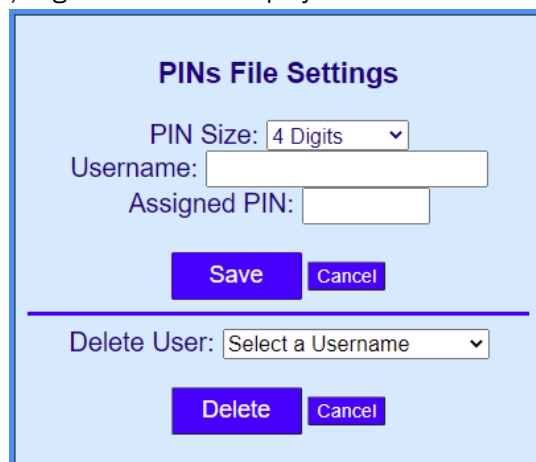


NOTE: The user should memorize and/or write down the generated PIN as once it is saved, the boxes are cleared.

The generated PIN is randomly created, so PINs will not follow a predetermined pattern and are guaranteed to be unique. All digits are ensured to be between 1 and 6 are not “trivial,” meaning that they are neither repeated digits (1111, 22222, etc.) nor cascaded digits (1234, 54321, etc.).

Once a valid username and PIN are available, the **Save** button is enabled and pressing it will save the new user and PIN in the PINs database. Pressing **Cancel** will clear the boxes and not save the new username and PIN.

The Delete User functionality removes a user and its associated PIN from the PINs database. The Select a Username dropdown box is populated with Usernames from the PINs database to avoid errors when typing in a username. The usernames are sorted alphabetically to aid in locating a username.



The screenshot shows a light blue dialog box titled "PINs File Settings". It has two sections. The top section for adding a user includes a "PIN Size:" dropdown menu (set to "4 Digits"), a "Username:" text box, and an "Assigned PIN:" text box. Below these are "Save" and "Cancel" buttons. The bottom section for deleting a user includes a "Delete User:" dropdown menu (set to "Select a Username") and "Delete" and "Cancel" buttons.

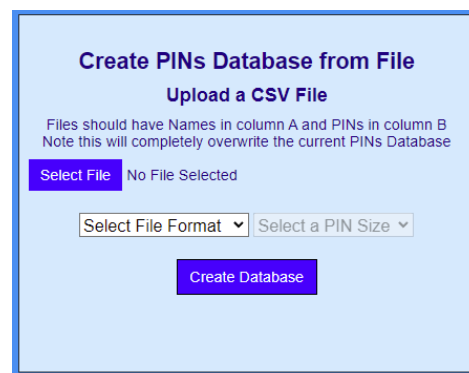
➔ Once a Username is selected and the **Delete** button is pressed, the Username and associated PIN are deleted from the database. Pressing **Cancel** resets the Select a Username textbox and does not delete the user and PIN.

See Section [5.4 eDrawer PINs Authorization Facility](#) for more information on PINs and the PINs Database.

3.8.3. Create PINs Database from File

The **Create PINs Database from File** box allows a user to upload a CSV file to create a database of PINs for eDrawer access. Simply select the file, pick the corresponding file format, and press **Create Database**.

CSV files must have names in column A and may have PINs in column B. If the file being uploaded has no PINs, CartScope™ will generate PINs of the chosen length for each user in the file and put all in a new database. If the file does contain PINs, CartScope will verify that every name in the file has a corresponding PIN and add all to a new database. If a name is missing a corresponding PIN, CartScope will alert the user with a message of those name(s).



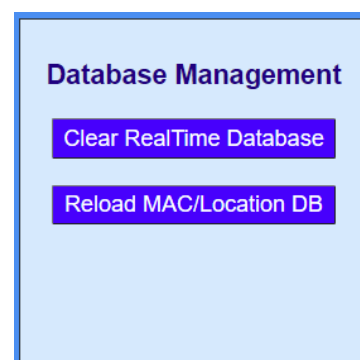
The screenshot shows a web interface titled "Create PINs Database from File" with a subtitle "Upload a CSV File". Below the title, a note states: "Files should have Names in column A and PINs in column B. Note this will completely overwrite the current PINs Database". There is a "Select File" button next to the text "No File Selected". Below this, there are two dropdown menus: "Select File Format" and "Select a PIN Size". At the bottom, there is a "Create Database" button.

If using user-created PINs, make sure they are either 4, 5, or 6 digits long and only contain numbers 1 through 6. Also note that using this utility will completely overwrite the current PINs Database.

3.8.4. Database Management

The **Database Management** box has several useful buttons.

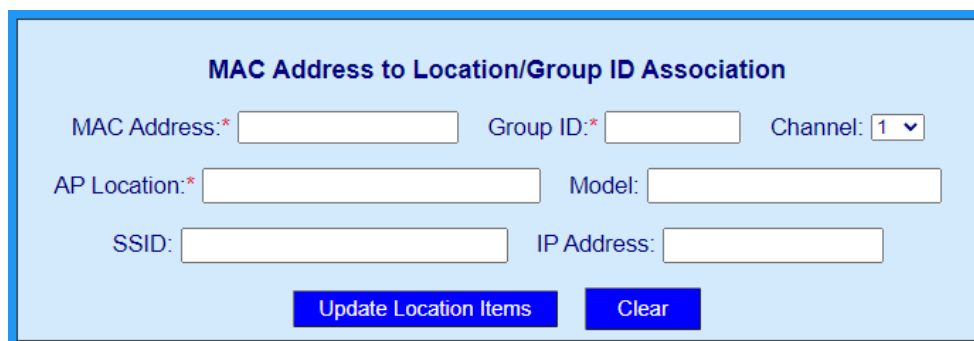
- The first button will clear the RealTime database. If carts are replaced or taken out of service, their entries will remain in the RealTime status table with the OFFLINE status. This button can be used to clear those old entries. On the RealTime Status Page, the table will be cleared and then re-populated over the next minute.
- The second button will reload the MAC Address to Location Association Database. This button must be pressed if any changes have been made to the database since the DataBroker booted up.



The screenshot shows a web interface titled "Database Management". It contains two buttons: "Clear RealTime Database" and "Reload MAC/Location DB".

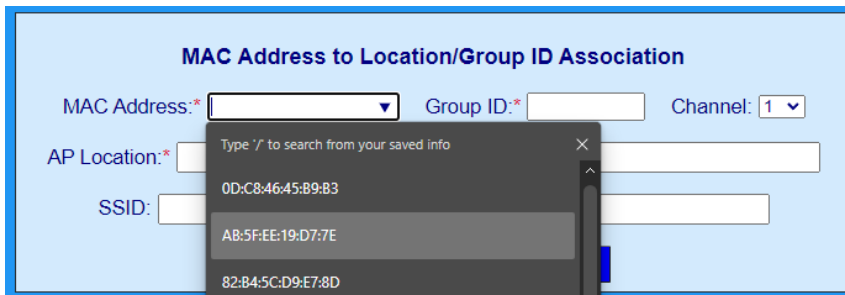
3.8.5. Location and Group Assignment

The MAC Address to Location/Group ID Association box allows for the MAC addresses of access points to be mapped to a human recognizable name. It will also track 'migrating' carts. The utility will track MAC addresses and GroupIDs that CartScope has encountered via StatusPackets and store them as dropdown items to make entering MAC addresses easier. However, both fields can be manually filled as well.



The screenshot shows a web interface titled "MAC Address to Location/Group ID Association". It contains several input fields: "MAC Address:*" (with a dropdown arrow), "Group ID:*" (with a dropdown arrow), "Channel:" (with a dropdown arrow showing "1"), "AP Location:*" (with a dropdown arrow), "Model:" (with a dropdown arrow), "SSID:" (with a dropdown arrow), and "IP Address:" (with a dropdown arrow). At the bottom, there are two buttons: "Update Location Items" and "Clear".

1. To add an entry to the database, enter the MAC address or select it from the drop down, then, enter or select the Group ID to tie the Access Point to,
Note: the MAC address is case-sensitive; enter letters as capitals.

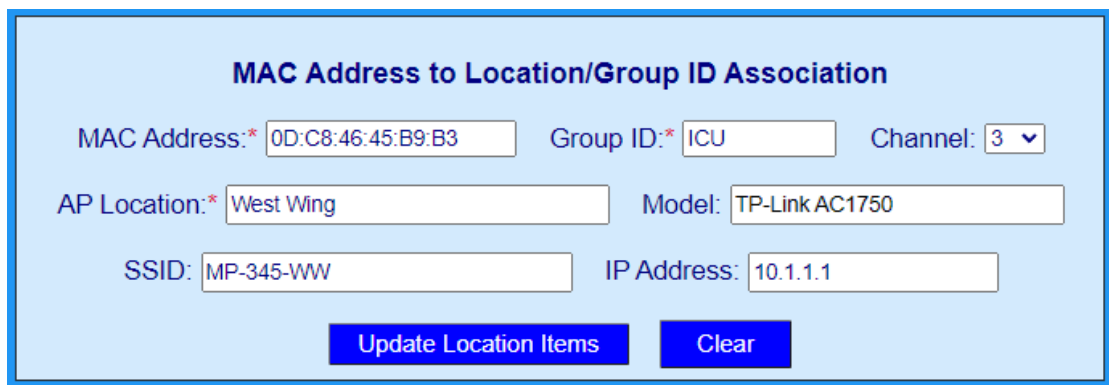


The screenshot shows the 'MAC Address to Location/Group ID Association' form. The 'MAC Address:*' field has a dropdown menu open, displaying a search bar 'Type "/" to search from your saved info' and a list of MAC addresses: '0D:C8:46:45:B9:B3', 'AB:5F:EE:19:D7:7E', and '82:B4:5C:D9:E7:8D'. Other fields visible include 'Group ID:*', 'Channel: 1', 'AP Location:*', and 'SSID:'.

2. Next, add a human-readable location description (e.g., Floor 2 West). Additionally, the model name of the access point, the SSID it is connected to, the wireless channel used, and its IP Address may all be entered and saved, but these parameters are optional.
3. Press **Add Location Items**.
4. After any number of locations have been added to the database, it needs to be reloaded before it will begin to make the association in the RealTime Status Table. Simply press the Reload Mac/Location DB button mentioned above.
5. Press **Clear** to clear the form.

Note that some Wireless Access Points with multiple antennae may have multiple MAC addresses, one for each antenna. In this case, each MAC address must be registered into the database.

The Utility will also display the associated information if a MAC address that has already been associated with a Location is selected in the dropdown.



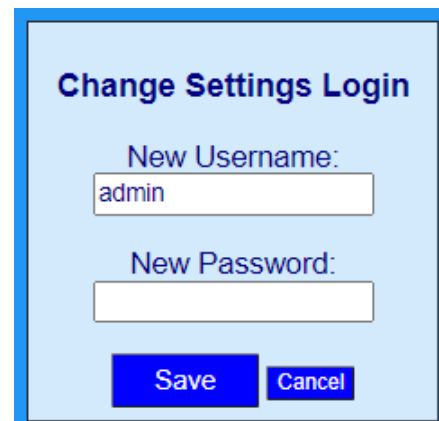
The screenshot shows the 'MAC Address to Location/Group ID Association' form with all fields populated. The 'MAC Address:*' field contains '0D:C8:46:45:B9:B3', 'Group ID:*' contains 'ICU', 'Channel:' has a dropdown set to '3', 'AP Location:*' contains 'West Wing', 'Model:' contains 'TP-Link AC1750', 'SSID:' contains 'MP-345-WW', and 'IP Address:' contains '10.1.1.1'. At the bottom are two buttons: 'Update Location Items' and 'Clear'.

➡ See Section [5.6 MAC Address to Location/GroupID Association Facility](#) for more information on the Location to Group ID database.

3.8.6. Change Settings Login

The Username and Password to access the Settings page can be changed using the Change Settings Login utility. Simply enter a new username and/or password and press **Save**. There are no complexity requirements on the utility to allow for each customer to follow their specific complexity requirement protocol.

The Change Settings Login utility will also display the currently in-use username.

The image shows a web interface titled "Change Settings Login". It has a light blue background with a darker blue border. At the top, the title "Change Settings Login" is in bold blue text. Below the title, there are two input fields. The first is labeled "New Username:" and contains the text "admin". The second is labeled "New Password:". Below these fields are two buttons: "Save" and "Cancel", both in blue with white text.

3.8.7. Firmware Update Settings

The **Firmware Update Settings** box contains the OTA firmware update facility.

- New Firmware files will be distributed by Jaco and can be added to the DataBroker's storage by uploading them here. Simply browse to the file and press **Upload**. Files can also be uploaded through the instructions in [Section 5.5 Using the Firmware Over-the-Air \(OTA\) Update Tool](#). The Select New Firmware File dropdown control will be populated with the .bin files contained in the Firmware_Updates directory in the Jaco DataBroker appliance.
- The **Select Group** dropdown control is populated with the Group IDs of the reporting carts.
- To send out a firmware update, select a firmware file from the dropdown, then select either "All Carts" or a particular Group ID as shown in the dropdown list. Press the **Update Cart's Firmware** button to send an appropriate update message or press **Cancel** to dismiss the update process without updating any carts.



NOTE: The SmartTouch III will not install the firmware update until the cart enters IDLE mode and will reboot upon completion of the firmware update process. Additionally, a cart with a firmware version greater than or equal to the version pushed out will not update. This prevents accidental rolling back of firmware.

➔ See [Section 5.5 Using the Firmware Over-the-Air \(OTA\) Update Tool](#) for more details on using the OTA Firmware Update facility.

The image shows a web interface titled "SmartTouch 3 Firmware Update". It has a light blue background with a darker blue border. At the top, the title "SmartTouch 3 Firmware Update" is in bold blue text. Below the title, there are two dropdown menus. The first is labeled "Select New Firmware File:" and has a downward arrow. The second is labeled "Select Group:" and has "All Carts" selected. Below these is a blue button with white text that says "Update Carts' Firmware". Below this button is a horizontal line. Below the line, the text "Upload New Firmware File" is in bold blue text. At the bottom, there are three buttons: "Upload File" (blue with white text), "No File Selected" (light blue with black text), and "Upload" (blue with white text).

3.8.8. DataBroker Management

The CartScope™ Settings page can also be used to perform some maintenance on the DataBroker. This section contains three items. The first contains two update buttons: a button to perform a manual update of the DataBroker packages, and a button to update the NodeJS packages used by CartScope. System updates are automatically performed daily, but these two buttons allow for manual updating of critical packages.

The second item is a utility for changing the brokeradmin account password. To change the default brokeradmin password, simply enter a new password, confirm the password by re-entering it, and press **Change**. The Server will restart CartScope and apply the change. This will change the account password in the Linux operating system, so any SSH or FTP connections made from this point on will need to use the new password. **Only use this utility to change the account password! Do not change the password in the Linux command line interface!** The CartScope application needs access to brokeradmin resources and requires the password be changed in this manner.

Note that any deployed status modules should be configured to use the new, non-default password.

3.8.8.1. Updating the CartScope™ Console

The third utility in the DataBroker Management section is used to update the Jaco Care System files. When needed, Jaco will distribute a .Zip file containing all needed update files. Simply upload this .Zip file and press **Upload Files** to update.

Note that file names must not be altered.

DataBroker Management

Manual Updates

Apt Update/Upgrade:

Node Packages:

Change brokeradmin Account Password

New Password:

Confirm Password:

Upload New CartScope Files

NOTE: DO NOT RENAME ANY FILES

No File Selected

4. SmartTouch III

4.1. SmartTouch III Unit Configuration

There are two main ways to configure SmartTouch III status modules. For large volumes of status modules, it is recommended that the SmartTouch III Management Utility is used. For individual status module configuration, the built-in configuration method can be used.

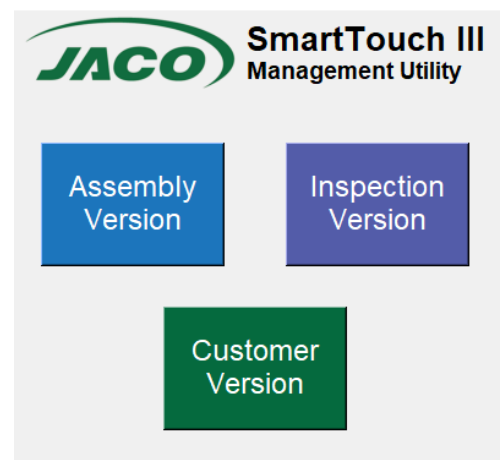
4.1.1. Using the SmartTouch III Management Utility

The SmartTouch III Management Utility is an easy-to-use program designed to streamline the SmartTouch III configuration process. It is best suited for larger batches of carts but can also be used for small volumes. The utility works by automating some of the steps of the configuration process outlined in Section [4.1.2 Built-In Configurator](#).

4.1.1.1. Getting Started

First, on a wirelessly enabled PC, download the SmartTouch II Management Utility program from CartScope™ under the **Documentation and Support** Tab. Note that the user guide for the utility is also available on this tab.

Extract the ZIP file to a convenient location and open the program by double clicking the SmartTouch III Management Utility.exe file. The splash screen will open. Select the Customer version of the program.



NOTE: The terminal window that appears will display output during the configuration process, it is best to drag and/or resize it to a convenient location on the screen.

Multiple SmartTouch III units can be configured at a time, just make certain the correct Config network is selected during the process.

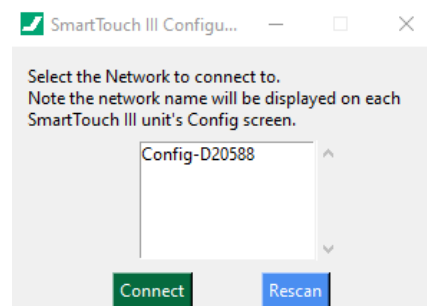
Note that if a unit needs a firmware update, it is best to perform the update first, then configure.

The Utility is equipped with a “Save Configuration” feature that is turned on by default. This saves the entered parameters, so every time the application is closed and reopened, the most recent settings populate the form. All parameters are saved except for the Wi-Fi password. The parameters are saved when the checkbox is clicked and when the **Configure SmartTouch** button is pressed. Turning off this setting will cause the form to be populated by the default parameters on next launch.

4.1.1.2. Configure SmartTouch III Units

1. On the SmartTouch III, enter the Admin menu by entering the Admin code '**6-1-1-3-3-5-Unlock**'.
2. Press '**5**' to put the unit in Config Mode. A blue screen with a white QR code should appear.
3. If not already open, launch the SmartTouch III Management Utility.
4. Verify that the PC has detected the wireless network generated by the SmartTouch III:
Select the **Network Connections** icon in the taskbar and verify a network named something like **Config-AA00BB** has appeared.
5. Enter the parameters to configure. For an explanation of each parameter, see below.
6. Press **Configure**. A window will pop up displaying all currently detected Config networks. Select the one that is shown on the Config screen of the unit and press **Connect**. The terminal window will show the status of the process.
7. Verify the unit reboots and shows the correct Cart name and Group ID.

The screenshot shows the 'Configuration' window of the JACO SmartTouch III Management Utility. It includes a list of instructions at the top, a 'View Config Screen' button, and various configuration fields. The fields are: Cart Name (JacoCart), Group ID (*), Radio Wi-Fi (On), eBin PIN (4123), eBin Unlock Time (10s), Wi-Fi Authentication (PSK), Wi-Fi SSID (SSID), Wi-Fi Username, Wi-Fi Password (masked), Brokeradmin Password (masked), and Motion Sensor (On). There are buttons for 'Update Firmware', 'Clear Form', and 'Configure'. A checkbox for 'Save Configuration Parameters' is checked.



Parameter Explanation

All parameters can be left blank to cause the unit to retain its current setting for that field. The “No Local PIN” box can also be checked to configure the status module to have no local PIN.

Parameter	Explanation
Cart Name	The name assigned to the cart. This name will be used to identify the cart in the CartScope™ and will appear on the unit's screen. Default Value: "JacoCart"
Group ID	The name of the group this cart belongs to. Default Value: ""
Radio Wi-Fi	Toggles the cart's wireless radio communication. If off, the cart cannot connect to a Wi-Fi network. Changing it to Off will make the Wi-Fi Entry fields inactive. Select the “No Change” box to keep the current settings. Default Value: on
eBin PIN	The configured PIN that allows for the unlocking of the eDrawer. Changing this will not change the administrator PIN. If it is preferable to not have a default PIN, check the adjacent checkbox. Default Value: 4123
eBin Unlock Time (s)	The number of seconds the eBin drawers will remain unlocked after entering a correct pin. Default Value: 10
Wi-Fi Authentication	Method of wireless authentication, WPA2-PSK or WPA2-Enterprise with PEAP. Select the “No Change” box to keep the current settings. Default Value: PSK
Wi-Fi SSID	The name of the Wi-Fi network the ST-III unit will connect to. Default Value: SSID
Wi-Fi Username	The username needed to connect to the wireless network. For Enterprise PEAP only, the field will be disabled if PSK is selected.
Wi-Fi Password	The password to the Wi-Fi network. This field can be hidden or shown.
Brokeradmin Password	The password used to login to the brokeradmin account on the DataBroker. This field can be hidden or shown.
Motion Sensor	Toggles the cart's motion sensor. If Off , activity will not be tracked and carts will all be treated as ACTIVE by CartScope. Select the “No Change” box to keep the current settings. Default Value: On

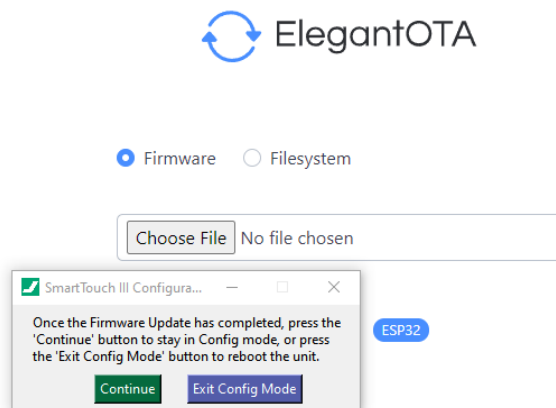
4.1.1.3. Firmware Update

The SmartTouch III Management Utility can also be used to perform Firmware updates more quickly on individual status modules. This will be most useful during initial setup of the status modules. Note that if a status module needs both a firmware update and to be configured, it is best to perform the update first then leave the status module in Config Mode.

First, make sure to download the latest firmware file from Jaco. Next, perform **Steps 1-4** under the **Configure SmartTouch Units** section. Then, press the **Firmware Update** button. The utility will open the default web browser to the Firmware Update page.

Simply browse to the firmware file, select it, and wait for the update to finish. Once the update is done, press the **Continue** button on the popup window if more configuration is needed or press **Exit Config Mode** to reboot the unit.

The unit will reboot. The firmware version can be checked by entering the Admin code **6-1-1-3-3-5-Unlock**, and pressing '3'. The **FWVer** parameter on this screen should show the new version.



4.1.2. Built-In Configurator

SmartTouch III Units can be individually configured using the built-in Cart Configurator. This utility is a browser-based program that is accessible via the SmartTouch III unit's weak Access Point mode. The unit generates a small wireless network that can be accessed like a regular wireless network from most devices. The webpage for configuration can then be accessed.

To access the Cart Configurator, follow these steps.

1. On the unit that will be configured, enter the Admin code **6-1-1-3-3-5-Unlock**. Once in the Admin menu, press **5** to put the unit in Configuration Mode.
2. Use a PC, iPhone, or similar device to connect to the status module's configuration network which will appear with a name like **Config-AA00BB** where the last six digits are the last digits of the unit's MAC address. This name can also be found on the unit's Config screen.
3. On the connected device, scan the QR code that appeared on the status module's screen or use a web browser to navigate to <http://192.168.4.1>. The Cart Configurator will appear populated with the currently configured settings.
4. Fill out the form with the necessary information. Each parameter is explained in detail in Section [4.1.2.2 SmartTouch III Parameters](#) below. For information on Network Authentication setup, see Section [2.4 Network Authentication Options](#).

Note: The MAC address, Firmware Version, and Serial number cannot be changed. The Model number should also not be changed.

5. When the information has been entered, press the **Save Parameters** button to submit the new parameters to the status module. It will restart and exit the Configuration Mode. Pressing **Cancel** will not save the new parameters but will still restart the status module causing it to exit Configuration Mode.

Firmware Version:	39-0056-220317
Mac Address:	AC:67:B2:D2:05:88
Cart Serial Num:	JC205642 <input type="button" value="Unlock"/>
Model Name:	EVO-20-JC-L250
Group ID:	*
Cart Name:	JacoCart
Batt Install Date:	April 2021 <input type="button" value="Calendar"/>
Radio Enabled:	Enabled: <input checked="" type="radio"/> Disabled: <input type="radio"/>
eBin Open Time:	10
Default PIN:	4123
Authentication Type:	WPA2-PSK: <input checked="" type="radio"/> WPA2-Enterprise with PEAP: <input type="radio"/>
WiFi SSID:	SSID
WiFi Username:	Username
WiFi Password:	***** <input type="checkbox"/> Show
Activity Sensor Enabled:	Enabled: <input checked="" type="radio"/> Disabled: <input type="radio"/>
Broker Password:	***** <input type="checkbox"/> Show

4.1.2.1. Performing a Firmware Update Using the Configurator

The SmartTouch III units have two ways to perform Firmware updates: via the Over-the-Air facility in CartScope™ and in the built-in Cart Configurator. The Firmware update loader within the Configurator provides a way for systems that do not wish to connect their carts to Wi-Fi to easily update firmware. To use this feature, enter the Cart Configurator as described in Section [4.1.2 Built-In Configurator](#) then perform the following:

1. At the bottom of the Cart Configurator screen, press the **Go to Update Page** button in the *Update Firmware* section.
2. Use the **Choose File** button to navigate to the updated firmware .bin file.
3. A progress bar will appear showing the status of the update.
4. Once the update is complete, press the browser **Back** button to return to the Configurator. From there, press **Cancel** to reboot the SmartTouch III unit and exit the Configuration Mode.

4.1.2.2. SmartTouch III Parameters

The changeable parameters of the utility and their default values are listed below.

Data Field	Description	Default Value
Group ID	The name of the group this cart belongs to.	*
Cart Name	The name assigned to the cart. This name will be used to identify the cart in the DataBroker application and will appear on the SmartTouch III unit's screen.	JacoCart
Battery Installation Date	Date on which the current battery was installed. Will be set by Jaco production. Should also be adjusted when batteries are replaced.	January 2021
Radio Enabled	Toggles the cart's wireless radio communication. If Disabled, the cart cannot connect to a Wi-Fi network.	Enabled
eBin Unlock Time	The number of seconds the eBin drawers will remain unlocked after entering a correct pin.	10
Default PIN	The configured PIN that allows for the unlocking of the eDrawer when the cart is not connected to Wi-Fi. Changing this will not change the administrator PIN. If it is preferable to not have a default PIN, leave this field blank.	4123
Authentication Type	The method of authentication the wireless network uses: WPA2-PSK or WPA2-Enterprise with PEAP	WPA2-PSK
WiFi SSID	The name of the Wi-Fi network the ST-III unit will connect to.	SSID
WiFi Username	The username for logging in to the network. Only used with WPA2-Enterprise authentication.	Username
WiFi Password	The password to the Wi-Fi network for PSK or the account password for Enterprise. This field can be hidden or shown.	Password
Activity Sensor Enabled	The option for disabling or enabling the motion sensor on the SmartTouch Unit.	Enabled
Broker Password	The password for the brokeradmin account on the DataBroker.	Jaco611335

4.2. SmartTouch III Interface

The SmartTouch III unit has several useful features designed for ease of use. All the various features are described in the sections following.

4.2.1. Using eBin PINs

- Enter PIN digits by pressing numeric keys.
- PINs are 4, 5, or 6 digits in length.
- Attempted PIN entries greater than 8 digits will be cleared, and the Incorrect PIN Growl will sound.
- After entering a PIN, press the Unlock key.
- If a correct PIN is entered, the Correct PIN Beep will sound and eBin(s) will be unlocked.
- If an incorrect PIN is entered, the Incorrect PIN Growl will sound.
- If the Unlock key is pressed while the eBins are unlocked, the eBins will immediately re-lock.
- If the unit is connected to Wi-Fi, it will authenticate entered PINs via the database on the DataBroker.
- The unit will cache the five most recent correct PINs locally. If the unit becomes disconnected from Wi-Fi, the eDrawers can still be unlocked using any of the five most recent PINs as well as the default PIN that was configured.
- This local cache can be cleared by entering the Admin menu and pressing '6'.
- If the unit is never connected to Wi-Fi or no correct PINs were entered, only the built-in default PIN will unlock drawers.



NOTE: If it is preferred not to have a default PIN, leave the eBin PIN field blank in the Cart Configurator.

4.2.2. Turn On / Turn Off Keyboard LEDs

The SmartTouch III status module is equipped with a series of LEDs on the bottom that allow a user to easily illuminate a keyboard positioned below it. Simply press the Lightbulb Key to alternatively turn the keyboard LEDs on and off.

4.2.3. Turn On / Turn Off Console Sounds

By default, the SmartTouch III unit has a variety of audible cues. As described in [Section 4.2.1 Using eBin PINs](#), whenever a PIN is entered on the unit, a Correct or Incorrect noise will play. Additionally, the unit will also beep when the battery state-of-charge is low, as described in [Section 4.2.7 On-Screen Battery Status Indicator](#). Press the Sound Key to alternatively turn these sounds on and off.

The speaker icon in the lower left side of the screen will change to reflect the status of the Console sound.

4.2.4. Set / Reset the Service Request Notification

The SmartTouch III status module has a built-in Service request feature. This allows the user to easily denote a cart that needs service without having to make a phone call or email.

Press the number 3 key (with the small wrench icon shown above the key) and then press Unlock to alternatively set and clear the Service Request Notification.

“SERVICE” will be displayed in the lower center of the screen when a Service Request is active.

When a service request is opened, the unit sends a message to the CartScope™ Console.

If Email notifications are configured in CartScope, an email will also be sent when a request is opened.

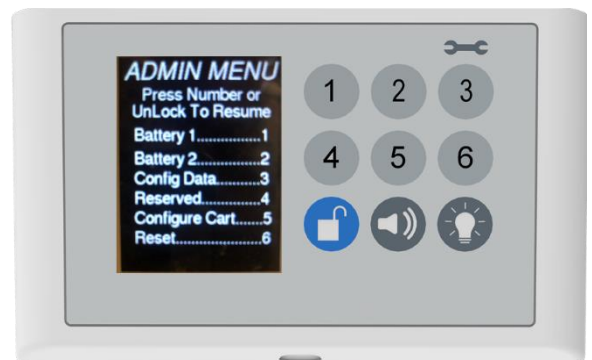


4.2.5. Enter Admin Mode

The Admin Main Menu contains useful information for monitoring the SmartTouch III unit. Most of the information contained in the Admin Menu is also available in the CartScope Console's RealTime Status table.

To access the admin menu:

1. Enter the Admin PIN (611335) and press the Unlock key.
2. The Admin Main Menu screen will appear.
3. To view Battery 1 parameters, press 1.
4. To view Battery 2 parameters, press 2.
5. To view the Cart configuration parameters, press 3.
 - a. These parameters include: Cart serial number, cart model, set group name, current IP address, cart MAC address, access point MAC address, and current firmware version.
6. To put the cart into Configuration Mode, press 5.
7. To restart the SmartTouch console, press 6.
8. The 4 key is reserved for future implementation.
9. From any sub-screen, press Unlock to return to the Admin Main Menu.
10. Pressing Unlock from the Admin Main Menu will restart the unit.



4.2.6. Screen Timeout / Blanking

When first started or after a restart, the SmartTouch III unit's screen will remain off for a few seconds while the console calibrates the touchpads.



NOTE: It is important not to have anything within 5 feet of the front of the proximity sensor during the calibration phase. Also do not touch the buttons during calibration.

- The screen will enter sleep mode if a user is not detected by the proximity sensor for approximately 10 seconds.
- The screen will turn on as a user comes within approximately three feet of the front of the cart.
- The screen will also turn on if any key is pressed.
- If the sensor is disabled, the status module will never enter sleep mode.

4.2.7. On-Screen Battery Status Indicator

The battery state-of-charge is indicated by the colored fill of the on-screen battery icon(s).

The state-of-charge body color changes from a bright green to yellow when the state-of-charge falls below 35% and to red when the state-of-charge falls below 10%.

If the cart is plugged in for recharging, a charging icon is displayed.



4.2.7.1. Integrated Battery Carts

The active battery state-of-charge percent is shown in the lower left portion of the screen.



When the SoC falls below 5%, a “RCHRG NOW” message is displayed in the body of the battery icon.

Low Battery Warning beeps will also sound at 15%, 10%, 5%, and 3%.

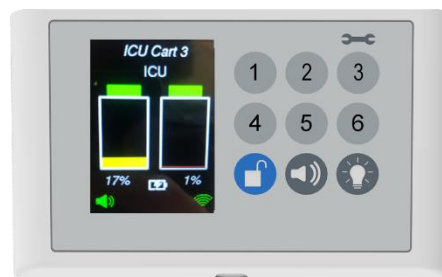
4.2.8. On-Screen Battery Status Indicator

The battery state-of-charge percent for each battery is shown below its corresponding icon.

The LEDs on the rear of the cart will also reflect the battery state-of-charge percent by displaying Green, Amber, or Red just like the battery body on the screen.

A low battery warning beep will occur if either battery reaches 9%, 5%, or 3%, only when both batteries are below the 10% threshold.

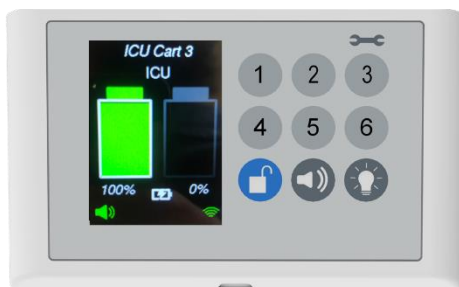
If only one battery is inserted, the other battery body will be shown in grey outline on the screen.



4.2.9. On-Screen Cart Name and Group ID

The user specified cart name is displayed in the top center of the screen. The default name is "JacoCart".

The user specified group ID is displayed in the top, second line of the screen. The default Group ID is "*".



4.2.10. On-Screen Wi-Fi Signal Strength Indicator

The Wi-Fi signal strength icon will change to reflect the measured RSSI parameter of the received Wi-Fi signal. A green icon indicates the unit is connected to the DataBroker and the network. An orange icon indicates the unit is connected to the network but is not connected to the DataBroker. A fully grayed out icon indicates the status module does not have network access.

4.2.11. RealTime Cart Status Updates

Every minute, each cart sends a JSON formatted packet of status information to the DataBroker via the MQTT publish and subscribe protocol. This information is then used to populate the RealTime Status SQL database for display on the CartScope™ console app.

Details of the RealTime Status Packet are described in Section [7.4.2 RealTime Status Packet Message](#).

5. Jaco DataBroker

5.1. DataBroker Overview

The Jaco DataBroker is an MQTT publish-and-subscribe server which acts as a switchboard routing publish messages (e.g., Status Packets) from the carts to CartScope™ consoles that have subscribed to the relevant topic and vice-versa.

The DataBroker server can be deployed as the Jaco DataBroker Appliance (the fastest and most convenient approach) or as software on an existing hospital server. For multi-site applications, a cloud-based server deployment is recommended (otherwise implementation via a VPN will be required to make the multi-sites appear logically as a single LAN).

5.2. DataBroker Appliance

The quickest and simplest approach to provide a Jaco DataBroker is with the Jaco DataBroker Appliance. The Jaco DataBroker Appliance is a physically small but very powerful Linux server that is easily provisioned to become part of the Wi-Fi LAN servicing the cart fleet.

The Jaco DataBroker Appliance is pre-configured with the necessary publish and subscribe (MQTT) protocol services, MQTT-to-SQL connector, and more.

The Jaco DataBroker is configured with a network name of “jacodatabroker” and can be accessed on the local network using “jacodatabroker.”

The DataBroker appliance is configured to perform updates automatically daily, but can also be manually updated using the DataBroker Maintenance features in the CartScope Settings page, as described in [Section 3.8.7 Firmware Update Settings](#).

Additionally, the appliance is equipped with ClamAV Linux anti-virus that performs hourly antivirus scans.

5.2.1. DataBroker Appliance Quick Deployment Overview

- Connect the DataBroker Appliance to the Wi-Fi router/access point via an Ethernet cable.
 - If a Wi-Fi deployment is needed, see [Section 5.2.5 Setting up Wi-Fi on the DataBroker](#)
- Connect the power brick to the appliance and turn on the switch.
- Connect to CartScope and perform a password change via the Settings page as described in [Section 3.8.8 DataBroker Maintenance](#).
- The Jaco DataBroker Appliance is pre-configured to allow the carts on the same network to connect to it via mDNS.

5.2.2. Using SSH and FileZilla with the DataBroker Appliance

It is suggested that administration connection to the DataBroker be accomplished using SSH for command line connections and FileZilla for FTP (file transfer protocol) connections. These methods are described below.

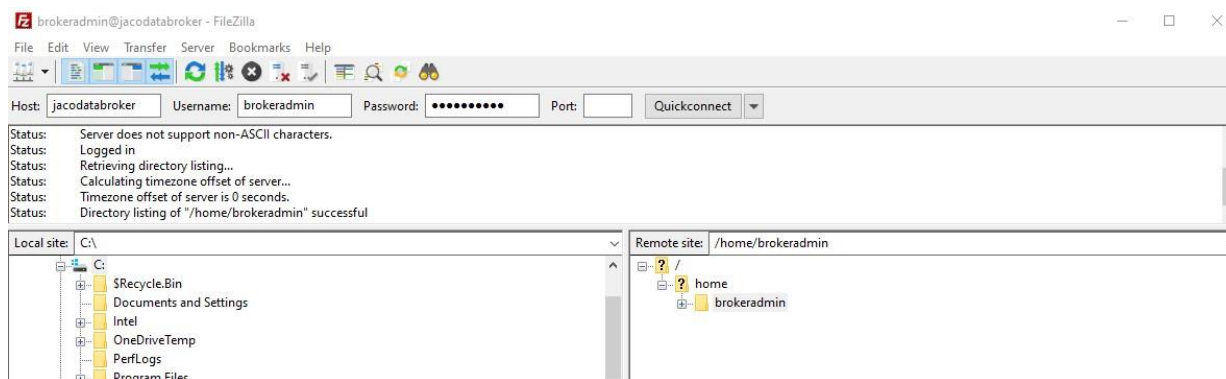
1. Open a terminal emulator and initiate an SSH connection to the appliance
2. Enter: SSH brokeradmin@jacodatabroker
3. Enter the appliance password

Any Linux commands can now be entered via the remote connection.

For FTP transfers, the free FileZilla utility is recommended. FileZilla can be downloaded at: <https://filezilla-project.org/download.php>.

1. Download and open the appropriate version of FileZilla.
2. Once FileZilla is running, at the top of the window enter:
Host: jacodatabroker Username: brokeradmin Password: Jaco611335 (or New Password)
3. Press **Quickconnect**. A prompt on if the information should be saved will appear. Make a selection. Another prompt asking to allow an insecure FTP connection will appear. Allow the connection.

If the information is saved, later connections can be established by simply pressing the dropdown arrow next to the Quickconnect button and choosing the brokeradmin@jacodatabroker option.



5.2.3. Cloning the SD Memory Card

It is recommended that the current Jaco DataBroker SD memory card be “cloned” for safekeeping and backup. Directions for cloning the SD memory card are available in Section [7.1 Cloning the SD Memory Card](#).

5.2.4. Setting the Time on an Offline DataBroker

Since the DataBroker does not require an internet connection, some customers may wish to deploy the device on a network that is closed to the outside. In this case, the DataBroker will be unable to set the system time using servers, so the time will be reported incorrectly. To manually set the date and time, follow the steps below.

Note that the CartScope™ software expects the DataBroker to be on UTC time. Make sure to set the time to UTC rather than the time zone of the device’s physical location.

1. Establish an SSH connection as described in [5.2.2 Using SSH and FileZilla with the DataBroker Appliance](#).
2. Enter the command, filling in the current date and time:

`sudo date -s “YYYY-MM-DD HH:MM:SS”`
3. Press enter
4. The date will be set to the entered value.

5.2.5. Setting up Wi-Fi on the DataBroker

Open an SSH connection to the DataBroker as outlined in Section [5.2.2 Using SSH and FileZilla with the DataBroker Appliance](#). In the command line, enter

```
sudo nano /etc/wpa_supplicant/wpa_supplicant.conf
```

In the window that opens, there will be templates for creating wireless network connection profiles for the DataBroker. Uncomment the type of authentication that will be used by removing the '#' symbol from the front of each line, starting at 'network={' and ending at the closing '}'.

```
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1
country=US

# To configure Wi-Fi, uncomment the corresponding profile and
#     Add the needed information

# WPA2-PSK
#network={
#     ssid="<SSID>"
#     psk="<password>"
#}

# WPA2 Enterprise PEAP
#network={
#     ssid="<SSID>"
#     key_mgmt=WPA-EAP
#     eap=PEAP
#     identity="<user>@<domain>"
#     password="<password>"
#     phase1="peaplabel=0"
#     phase2="MSCHAPV2"
#}
```

Then, enter the necessary configuration information in between the quotes in the fields denoted by '<>'. For WPA2-PSK connections, only the SSID and pre-shared key will be needed. For Enterprise PEAP connections, enter the SSID, account name, and account password.

Note that only one network profile should be uncommented and active at a time.

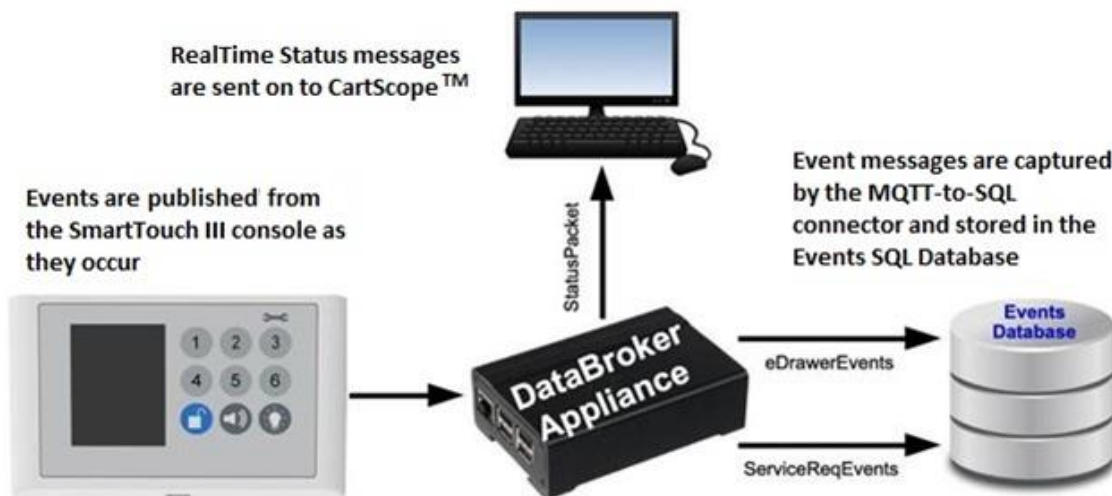
5.3. DataBroker SQL Database of Events

5.3.1. Events Capture Overview

The SmartTouch III console captures a variety of events and “publishes” those events to the Jaco DataBroker Appliance. The DataBroker Appliance has a custom “events message-to-database connector” running as a non-stop Linux daemon that captures those event messages and stores the timestamped messages in an SQL database for regulatory archival and analysis purposes.

The simplest way to view the Events database is through the eDrawer Events and Service Events tabs in CartScope™. However, the database can also be viewed as tables. As described in Section [5.2.2 Using SSH and FileZilla with the DataBroker Appliance](#), use FileZilla, or a similar FTP program, to transfer the Events Database, named **JacoCareEvents.db**, to the target PC. The database is located at: /home/brokeradmin/JacoCareEvents.db.

The contents of the database may be viewed on any PC. Once transferred, the free **DB Browser for SQLite Utility** can be used to view the data in the various tables.



➔ See Section [7.5 DB Browser for SQLite Utility](#) for instructions on creating or editing databases using the Utility.

5.3.2. Events Database Tables

Currently two families of events are captured and stored: 1) eDrawer events and 2) Service Request events. Certain key parameters are captured as appropriate to each event type and are stored in specific SQL tables as shown below:

Database Structure Browse Data Edit Pragmas Execute SQL								
Table: eDrawerEvents								
	Date	Time	ConsoleID	UserName	CartSerial	CartID	GroupID	LogMessage
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
1	Mon Oct 19 2020	14:49:50	ST99029	DefaultPin	JC24685436	MobileCart10	ICU	eDrawer Opened
2	Mon Oct 19 2020	14:50:31	ST99029	Dr. Govid Patel	JC24685436	MobileCart10	ICU	eDrawer Opened
3	Mon Oct 19 2020	14:51:48	ST99029	Reese Weathers...	JC24685436	MobileCart10	ICU	eDrawer Opened

Database Structure

Browse Data

Edit Pragmas

Execute SQL

Table:

ServiceReqEvents

New Record

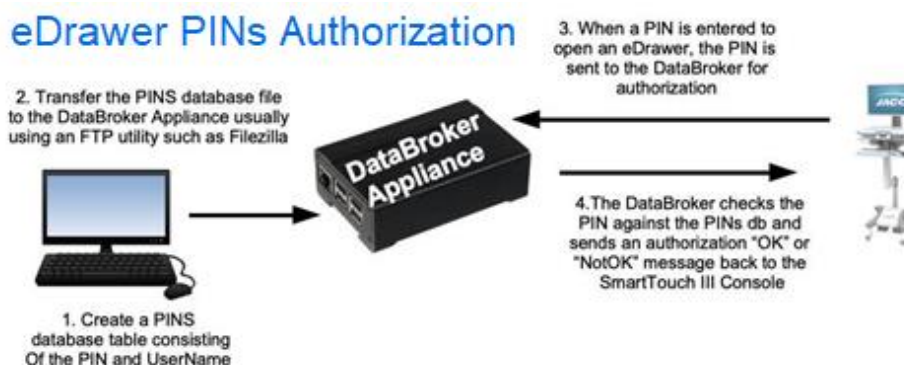
Delete Record

	Date	Time	ConsoleID	UserName	CartSerial	CartID	GroupID	TimeOpen	LogMessage
	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
1	Mon Oct 19 2020	15:18:03	ST99029	Default User	JC24685436	MobileCart10	ICU	0 mins	Service Req Opened
2	Mon Oct 19 2020	17:15:45	ST99029	Default User	JC24685436	MobileCart10	ICU	114 mins	Service Req Closed
3	Mon Oct 19 2020	17:16:59	ST99029	Default User	JC24685436	MobileCart10	ICU	0 mins	Service Req Opened
4	Mon Oct 19 2020	17:28:15	ST99029	Default User	JC24685436	MobileCart10	ICU	11 mins	Service Req Closed

The event capture and publish infrastructure is quite extensible and it is anticipated that additional events will be captured and stored in future releases.

5.4. eDrawer PINs Authorization Facility

The Jaco DataBroker Appliance provides a convenient facility for setting up a centrally located PINs database and an over-the-air eDrawer PINs authorization mechanism for the SmartTouch III Units.



- An SQL database named **SmartTouchPINS.db** is created containing one table named **PINsTable** with the following schema: UserName TEXT UNIQUE, Pin TEXT UNIQUE.
- This database is in the brokeradmin directory on the DataBroker.
- When a PIN is entered at a cart, an authorization request is made to the DataBroker.
- The PIN is checked against the database and an authorization message is sent to the cart (OK or Fail).
- At the same time, an eDrawer Event is created and stored in the eDrawer Events database.



NOTE: If the cart is not connected to the Wi-Fi LAN and/or not connected to the Jaco DataBroker the eDrawer PIN resorts to the default configured PIN as noted in Section [4.2.1 Using eBin PIN](#).

As outlined in section [3.8.2 PINs File Settings](#), users can be added to the PINs database via the Settings page in CartScope™. Alternatively, a database following the schema above can be created and populated elsewhere then placed in the proper directory of the DataBroker using FileZilla. See Section [7.5 DB Browser for SQLite Utility](#) for instructions on using the free and simple **DB Browser for SQLite** to create a database.

An alternative to using FileZilla to upload the created PINs database to the DataBroker is the Linux Secure Copy Protocol (SCP) command. To use this method of transfer:

1. Open a terminal window on the PC and establish an SSH session on the Jaco DataBroker Appliance as described in Section [5.2.2 Using SSH and FileZilla with the DataBroker Appliance](#).
2. Type **scp** [source file path] [username]@[host]:[path]
3. e.g., **scp ./Desktop/PINS.pins brokeradmin@jacodatabroker:/home/brokeradmin/SmartTouchPINS.db**.
4. Enter the brokeradmin password (**Jaco611335 or new password**)
5. If successful, a message will appear in the terminal window

5.5. Using the Firmware Over-the-Air (OTA) Update Tool

Setting up and using the SmartTouch III OTA Firmware update facility is very straightforward:

- Upload the new firmware file to the **Firmware_Updates** directory in the Jaco DataBroker Appliance via the CartScope™ Settings page as described in Section [3.8.7 Firmware Update Settings](#), or as described below.
- Go to the Settings Page of the CartScope Console application and follow the directions for the firmware update facility in Section [3.8.7 Firmware Update Settings](#).

➔ See Section [7.4.5 Firmware Update Message](#) for more information on the Firmware Update messages and the OTA update process.

5.5.1. Uploading the Firmware File to the Jaco DataBroker Appliance

Besides using the utility in the Settings tab of CartScope in Section [3.8.7 Firmware Update Settings](#), firmware update files can be uploaded in two ways:

1. Upload the firmware update file using FileZilla as described in Section [5.2.2 Using SSH and FileZilla with the DataBroker Appliance](#)
2. Upload the file using the Linux Secure Copy Protocol (SCP) as described below

Be certain to place the Firmware file in the **Firmware_Updates** directory.

For SCP:

1. Open a terminal window on the PC to establish an SSH session on the Jaco DataBroker Appliance
2. Type `scp [source file path] [username]@[host]:[path]`
3. e.g., `scp ./Desktop/PINS.pins brokeradmin@jacodatabroker:/home/brokeradmin/Firmware_Updates/39-005x-yymmdd.bin`
(NOTE: This command should all be entered as one line.)
4. Enter the brokeradmin password (Jaco611335 or new password)
5. If successful a message will appear in the terminal window.

5.6. MAC Address to Location/GroupID Association Facility

The Jaco DataBroker Appliance provides an easy way to identify physical locations of carts by linking the MAC address of the closest access point to a human-readable name. To do this, a database file can be created that contains the MAC address-to-Text mapping.

- The database file is created with the name **CSMacAssoc.db** and contains one table called **MacAssocTable**. This file is created in the **brokeradmin** directory on the DataBroker.
- The table has the following schema: MacAddr TEXT UNIQUE, GroupID TEXT, Channel INT, APLoc TEXT, Model TEXT, SSID TEXT, IPAddr TEXT. In detail, these parameters are:
 - MacAddr – MAC address of the wireless access point being configured; letters must be capitalized
 - GroupID – The Group ID of the carts that will be connecting to this access point
 - Channel – The Wireless channel this access point uses (1-11) (Optional)
 - APLoc – The human-readable location of this access point (e.g., “Floor 2 West”)
 - Model – The model of this access point (Optional)
 - SSID – The SSID of the wireless network this access point supplies a connection to (Optional)
 - IPAddr – The IP address of this wireless access point (Optional)
- If a database of MAC address to Location associations is configured, a Cart’s ‘Current Location’ parameter in the RealTime Status Table will display a human-readable description.
- If a MAC address is also associated with a Group ID, CartScope™ can track which carts are ‘migrating,’ that is, which carts are outside of their intended area. See Section [3.3 RealTime Status Page](#) for more on tracking Migrating carts.

There are two ways to create and populate the MAC Address Association database:

- Using the Utility found in the Settings page of CartScope

➔ See Section [3.8.5 Location and Group Assignment](#) for instruction on using the utility.

- Manually writing the database and transferring it to the DataBroker
 - As with the PINs database, this can be done using a program like **DB Browser for SQLite**. See Section [7.5 DB Browser for SQLite Utility](#) for instructions on creating this.
 - As with the utility, if a wireless access point has multiple network interfaces, each interface’s MAC address must be added separately. Note that by right-clicking on the row numbers on the left-hand side of the **Browse Data** box, an entry can be duplicated.

Regardless of the method used, the DataBroker needs to be refreshed if changes are made to the MAC Association database. To do this, press the **Reload Mac/Location DB** button in the **Database Management** box on the settings page of CartScope, or restart the DataBroker manually.

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6.2. Use of eBin PINs Statement



NOTE: Use of the eBin/eDrawer PINs for any purpose other than to unlock the cart eBin / eDrawers (e.g. computer or application login credentials) is **STRONGLY** discouraged.

6.3. FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that

interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -- Reorient or relocate the receiving antenna. -- Increase the separation between the equipment and receiver. -- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. -- Consult the dealer or an experienced radio/TV technician for help. FCC Radiation Exposure Statement This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be colocated or operating in conjunction with any other antenna or transmitter. If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID:2AHMR-ESP32-S Or Contains FCC ID: 2AHMR-ESP32-S" when the module is installed inside another device, the user manual of this device must contain below warning statements;

- 1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.
- 2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product Modular shall be used for fixed or mobile operations only. Minimum 20 cm must be maintained between device and user body during normal operations. The modular transmitter is only FCC authorized for FCC part 15 subpart C, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

6.4. Laser Statement

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No.50, dated June 24, 2007.

FCC ID:
2AC7Z-ESPWROOM02
CLASS 1
LASER PRODUCT

7. Advanced Configuration

7.1. Cloning the SD Memory Card

Once the DataBroker is properly configured, a backup copy of the SD card should be made in case of any issues. To clone the current Jaco DataBroker SD memory card for safekeeping and backup, the following approach is recommended:

7.1.1. Windows Cloning Instructions

Use the following instructions to create an image file (JacoCare.img) from the existing SD Memory Card and store it on your desktop:

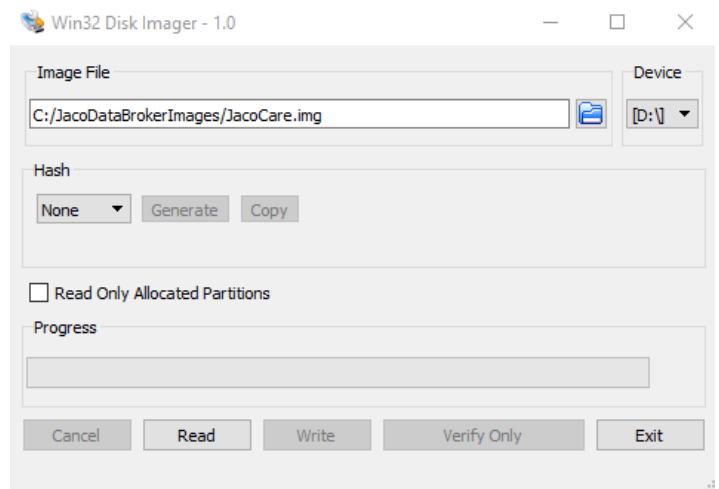
1. Remove the SD memory card from the Jaco DataBroker and insert it into a PC.

NOTE: On Windows, the SD card will be detected as multiple devices and will be assigned several drive letters; take note of at least one of these drive letters. Windows will also tell you to format the SD card. **DO NOT FORMAT THE SD CARD.**

2. Run Win32 Disk Imager. Download and install Win32 Disk Imager from <https://win32diskimager.org/>. Verify the SD card is connected to the PC before opening the program.

NOTE: This will require Administrator privileges. Opening the program will also require Administrator privileges.

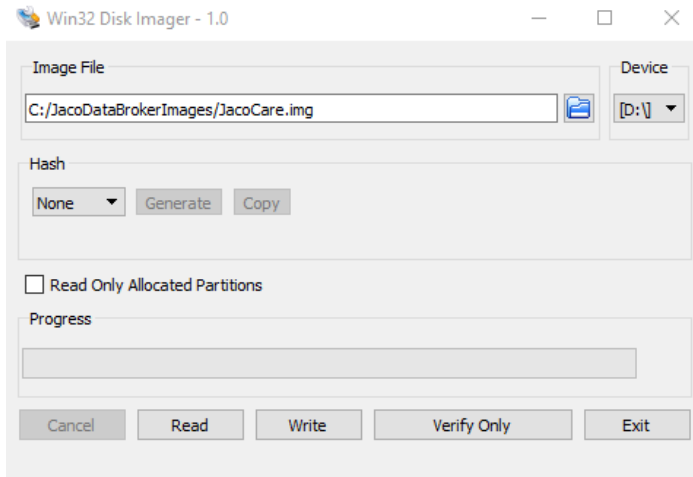
3. Once the program is open, choose the location for the backup to save by clicking the folder icon in the **Image File** panel. Once you have navigated to a location, enter the name "JacoCare.img" in the **File Name** field. Click **Open**.
4. Select any one of the drive letters associated with the SD card in the **Device** panel. If the SD card is the only device detected, it will be automatically selected.
5. Leave all other default settings and select **Read**. The program will save the .img file.
6. Once the Reading is complete, close the program and safely eject the SD card.



7.1.2. Restore Image to Disk (Windows)

Program a blank SD Card as the cloned backup:

1. Connect a blank SD card of appropriate size to the PC. Since it is blank, it will receive only one drive letter; note the letter.
2. Open Win32 Disk Imager. Navigate to the .img file previously created.
3. Select the correct drive letter corresponding to the new SD card using the dropdown menu.



4. Press **Write**. Select **Yes** at the prompt.
5. When the Write process finishes, close the program and safely eject the SD card.

7.1.3. Mac OS Cloning Instructions

To create a disk image on **Mac OS**, use the Disk Utility.

1. Open the Disk Utility and select the SD card (parent level not the boot level)
2. Right click on the SD card and select "Image from <card name>"
3. Enter the "Save As" name (e.g. JacoCare) and select where to store the image.
4. Select "DVD/CD master" from the Format dropdown and click "Save".
5. Change the stored image extension from .cdr to .iso for use with the Etcher app.

7.1.4. Linux Cloning Instructions

On **Linux**, open a terminal window and enter:

1. `sudo dd if=/dev/diskN of=<yourpathto>/JacoCare.img`

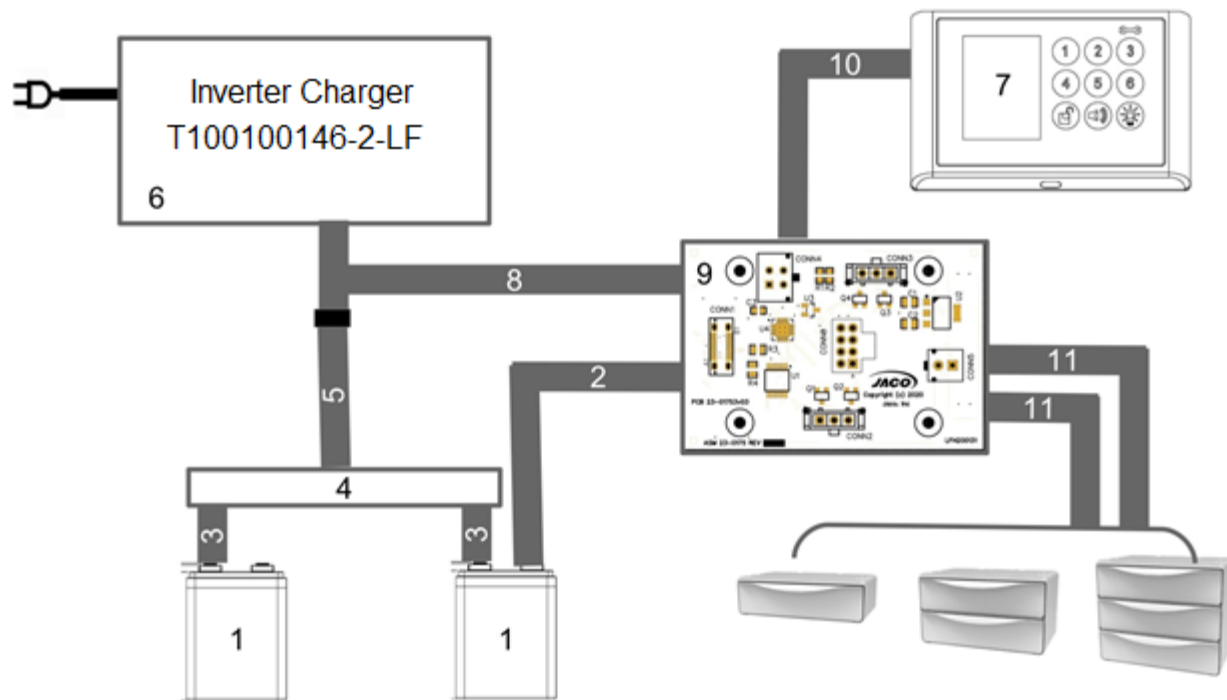
7.1.5. Restore Image to Disk (Non-Windows)

To restore a disk image on **Non-Windows Operating Systems**:

1. Download and install Etcher from Balena.io/etcher if not previously installed on the computer from <https://www.balena.io/etcher/>
2. Place a blank SD memory card into a USB memory card adapter and insert the adapter into a USB port
3. Start Etcher, select the pi.img (or pi.iso) file, select the blank SD card and press program

7.2. Powertrain for EVO-10/20-JC-L250/500

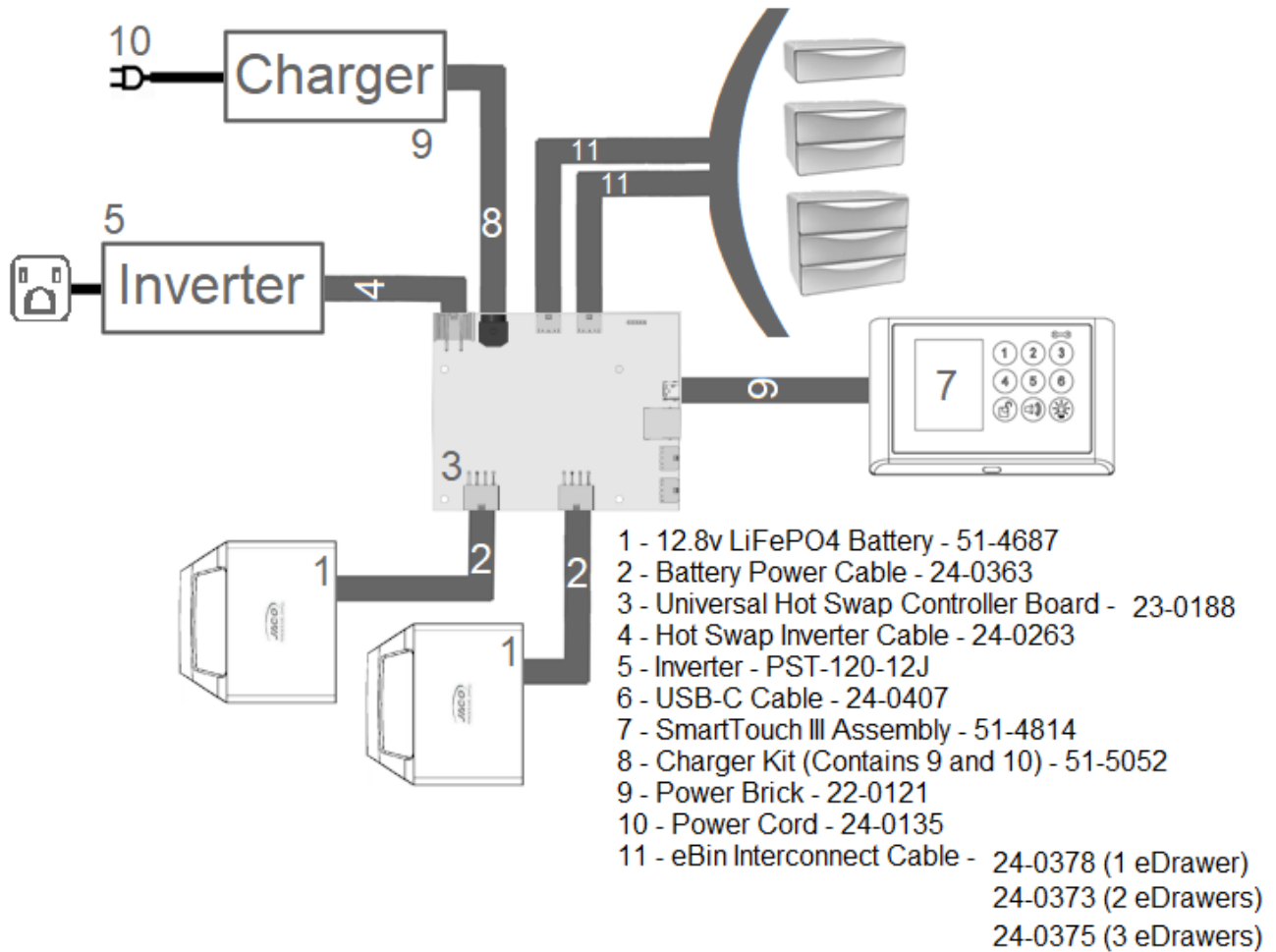
Powertrain for EVO Models EVO-20-JC-L250/500 and EVO-10-JC-L250/500



- 1 - 24v LiFePO4 Battery (one for L250, two for L500)
- 2 - Gas Gauge Connector Cable - 24-0398
- 3 - Battery Connector Cable - 24-0220
- 4 - Battery Interconnect Board - 23-0138
- 5 - Battery Interconnect Cable - 24-0334
- 6 - TDI Inverter Charger - T100100146-2-LF
- 7 - SmartTouch III Assembly - 51-4921
- 8 - TDI Cable Adapter - 24-0411
- 9 - TDI Adapter Board - 23-0175
- 10 - USB-C Cable - 24-0407
- 11 - eBin Interconnect Cable - 24-0378 (1 eDrawer), 24-0373 (2 eDrawers), 24-0375 (3 eDrawers)

7.3. Powertrain for EVO-10/20-HS-JC-NB and EVO-10/20-HS-JC-C-NB

Powertrain for EVO Models EVO-10/20-HS-JC-NB and EVO-10/20-HS-JC-C-NB

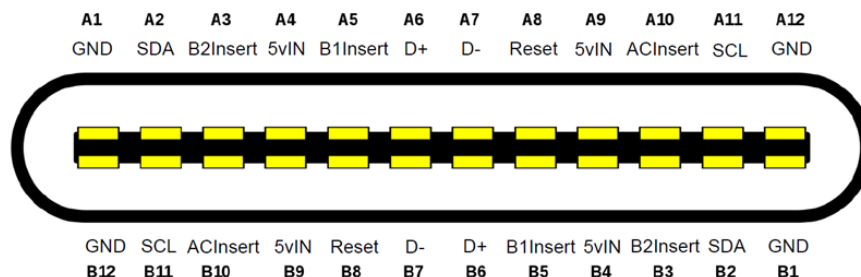


7.4. SmartTouch III Interface Details

The SmartTouch III console has several hardware and firmware interfaces. This section outlines the details of various aspects of the interfaces including the JSON format of the MQTT publish messages the status module sends to the DataBroker.

7.4.1. USB-C Hardware Connector

The USB-C connector provides signal and power connections to the SmartTouch III console device. A standard USB-C connector's signal definitions are re-purposed for the SmartTouch III as shown below:



NOTE: The USB-C cable crosses pins 2 and 11 and must be accounted for at the “receiving end” of the cable.

7.4.2. RealTime Status Packet Message

The MQTT topic for publishing and subscribing to the status packet message is **StatusPacket**

Each JSON packet consists of a number of “key”:“value” entries. An example of a status packet is shown below:

```
{
  "stid" : ST3-2460105
  "cartid" : "JacoCart",
  "cartserial" : "JC203746",
  "rssi" : -42
  "groupid" : "",
  "status" : "ACTIVE",
  "ip" : "10.0.0.228",
  "currentLocation" : "F0:41:53:C2:71:00",
  "batt1charge" : "40",
  "batt1cycles" : "2",
  "productName" : "EVO-20-JC-L250",
  "battInstallDate" : "2021-06",
  "serReqTime" : 0,
  "batt1LifeCap" : "80"
  "batt2LifeCap" : "-1"
  "cartmac" : "31:BE:23:33:4F:C4",
  "apmac" : "F0:41:53:C2:71:00",
  "activetime" : 0,
  "movetime" : 0,
  "firmwareVer" : "39-0056-211025"
  "batt2charge" : "-1"
  "batt2cycles" : "-1"
}
```

In more detail, here is each key with a brief description:

Key	Definition
stid	A programmatically generated UUID for each SmartTouch III console
cartid	A user-defined name for the cart
cartserial	A Jaco provided cart serial number
rss	The relative signal strength of the closest access point in dBm
groupid	A user-defined group identification name or wildcard *
status	The current status of the cart
ip	The SmartTouch III module's current IP address
currentLocation	The MAC address of the closest access point
batt1charge/batt2charge	The current state-of-charge of the battery in percentage
batt1cycles/batt2cycles	The number of recharge cycles this battery has performed
productName	The Jaco provided product model number
battInstallDate	The date that the battery was installed
serReqTime	The time a service request has been open or 0 if no request
batt1LifeCap	The remaining battery life capacity as a % of a new battery
batt2LifeCap	The remaining battery life capacity as a % of a new battery
cartmac	The MAC address of the SmartTouch III Wi-Fi interface
apmac	The MAC address of the attached access point
activetime	Not currently in use
movetime	Not currently in use
firmwareVer	The current version of firmware on the unit

7.4.3. Drawer Events and eDrawer PIN Authorization

An eDrawer Event is generated and stored in the eDrawerEvents database as part of the eDrawer PIN authorization activity.

When a PIN is entered at the SmartTouch III to open an eDrawer, a message is created and sent to the Jaco DataBroker appliance to determine if the PIN is valid. The DataBroker queries the PIN database and, if the PIN is validated, a return message is sent to the SmartTouch III console indicating that the PIN is valid. The eDrawer(s) are unlocked and a timestamped record is generated indicating that the eDrawer(s) have been opened. The record is then inserted in the eDrawer Events database.

If the PIN is not valid, a message is sent to the SmartTouch III indicating that the PIN is not valid, the eDrawer(s) are not unlocked, and a timestamped record is generated indicating an Authorization Failure. The record is then inserted in the eDrawer Events database.

7.4.4. Service Events Message

The MQTT topic for publishing and subscribing to the service events message is "ServiceReqEvents".

Each JSON packet consists of a number of "key": "value" entries. An example of a service request events packet is shown below:

```
{
  "stid": "ST3-2460105",
  "cartSerial": "JC203746",
  "cartName": "JacoCart",
  "groupName": "ICU",
  "timeOpen": 0,
  "logMsg": "Service Req Opened"
}
```

Key	Definition
stid	A programmatically generated UUID by each SmartTouch III console
cartSerial	A Jaco provided cart serial number
cartName	A user-defined name for the cart
groupName	A user-defined group identification name or wildcard *
timeOpen	The time the service request has been open
logMsg	Indicates if the event is an opening or closing service event

7.4.5. Firmware Update Message

The OTA firmware update facility uses MQTT messages to push updates out to the SmartTouch III units. The MQTT topic for publishing a Firmware Update message is “FWUpdate”. When an IT user pushes a firmware message out to the carts, a message packet consisting of the string <Firmware Binary File Name>:<GroupID> is generated and sent. When a cart receives the message, it checks the Group ID first. If the group ID corresponds to this cart, it checks the version of the firmware file. If the firmware version is newer than the current firmware on the status module, it updates by pulling the file from CartScope™.

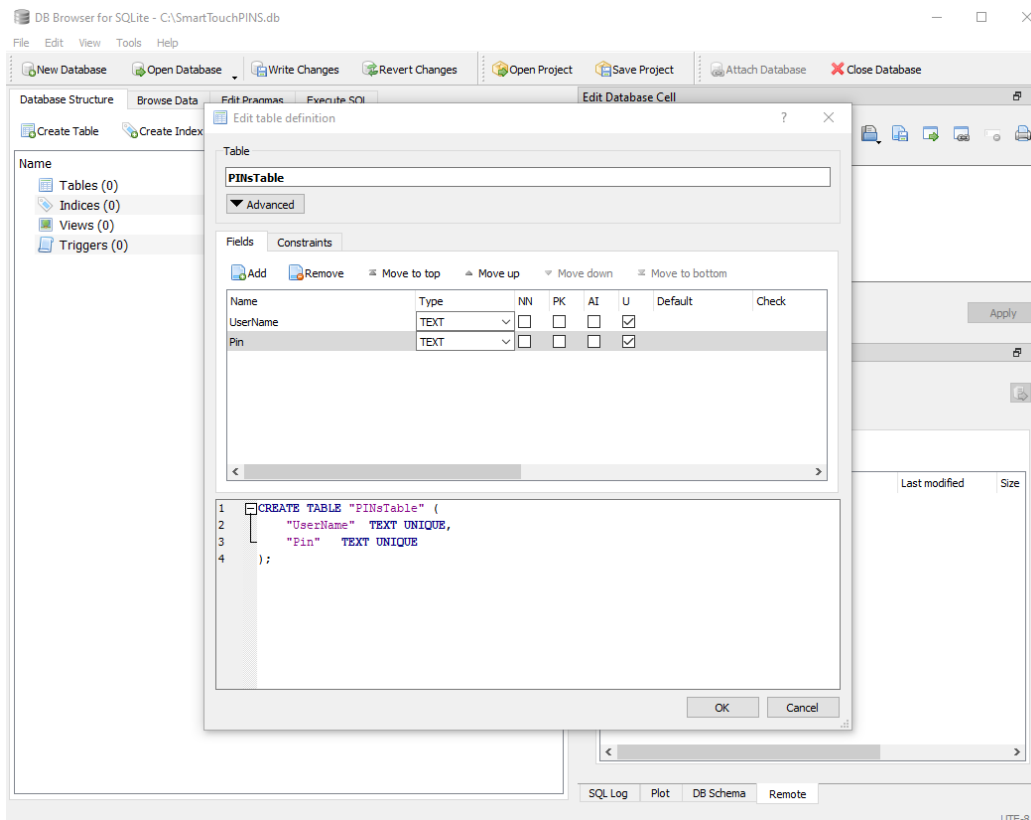
As an example, a firmware update message of “39-0056-210323.bin”:”ICU” is sent out. The cart MobileCart2 in the ADMIN group ignores the message since the group ID is ICU. However, MobileCart1 in the ICU group checks the firmware against its own. If the date is newer, the unit updates.

Note that if All Carts are to be updated, the <GroupID> field can be “ALL”.

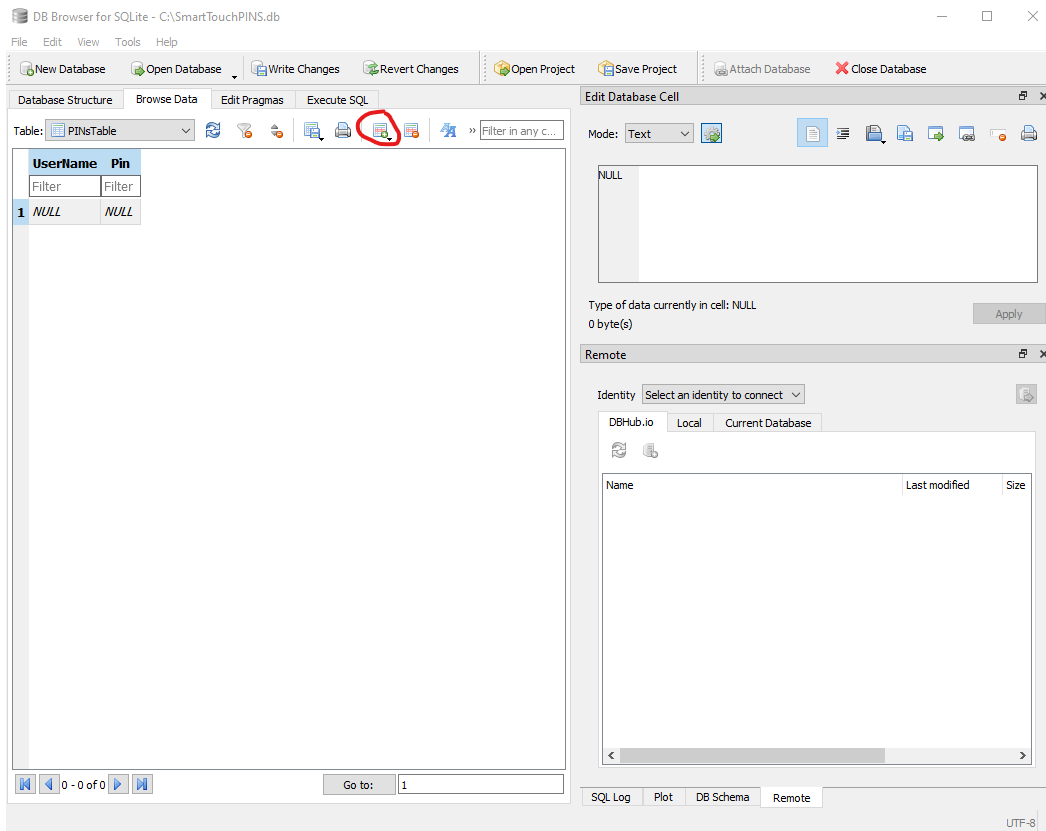
7.5. DB Browser for SQLite Utility

DB Browser for SQLite (DB4S) is a high quality, visual, open-source tool used to create, design, and edit database files compatible with SQLite. It is designed to be used by developers and end-users and does not require knowledge of the SQL language. For the user's convenience, instructions for creating and populating and viewing databases using the program are outlined below. The home page for the DB Browser for SQLite is located at: <https://sqlitebrowser.org/>.

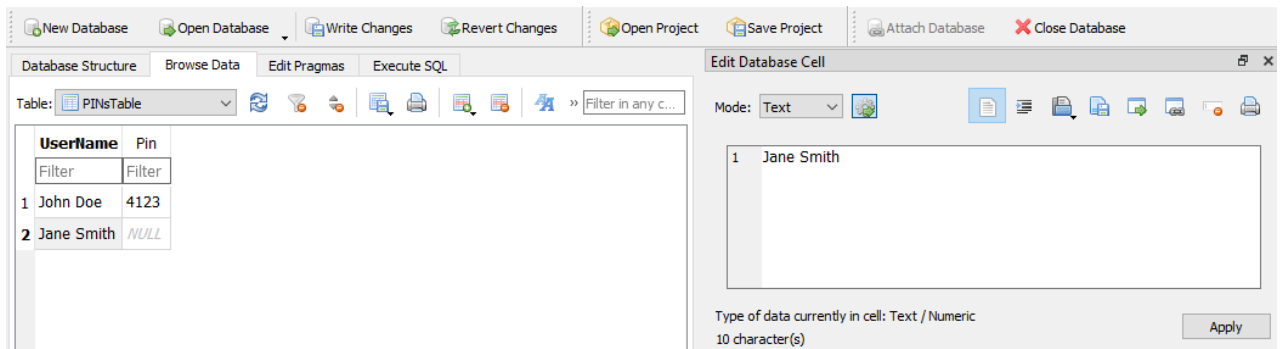
1. Download, install, and run the proper version of DB Browser for your Operating System.
2. Select **New Database**, navigate to the desired location, enter the name of the file, and press **Save**.
3. The Table creation wizard will open. Enter the name of the table, then press **Add** in the **Fields** tab below.
4. Enter the name of the first field. Set the **Type** to the correct option, TEXT or INTEGER. If this parameter is UNIQUE check the **U** checkbox.



5. After all parameters have been entered, press **Ok**.
6. Navigate to the **Browse Data** tab. To add an entry to the table, press the "Insert a new record in the current table" button, circled below.



7. Select one of the newly created *NULL* entries in the window. In the right hand **Edit Database Cell** box, enter the values for the selected cell. Press **Apply**.



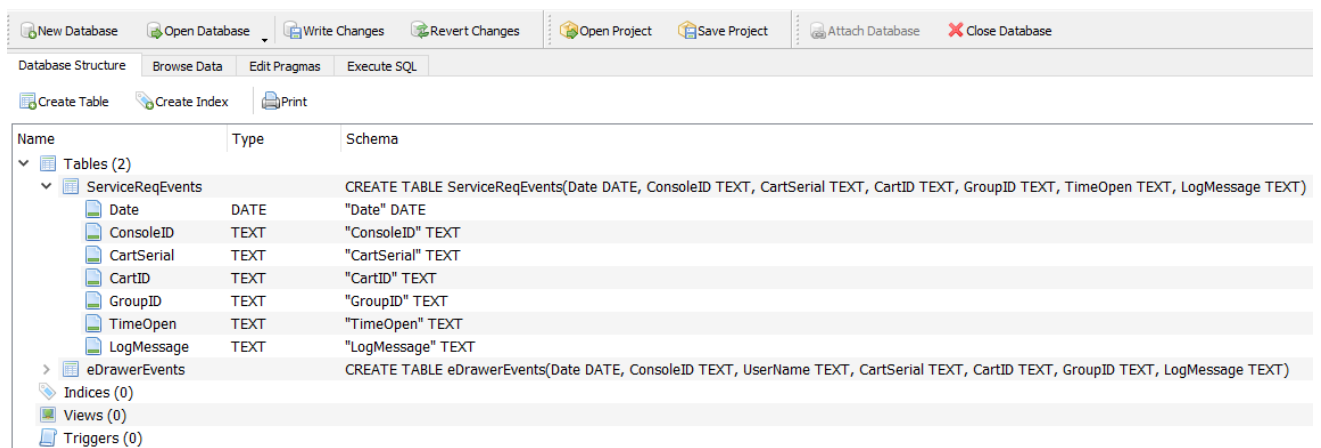
8. To save the changes, press **Write Changes**.

The database file is now ready for FTP transfer to the DataBroker Appliance, as described in [Section 5.2.2 Using SSH and FileZilla with the DataBroker Appliance](#).

7.5.1. Viewing a Database using DB Browser

The DB Browser for SQLite Utility can also be used to easily view databases.

6. Download, install, and run the proper version of DB Browser for your Operating System.
7. Select **Open Database**, navigate to the database file's location, select it, and press **Open**.
8. The **Database Structure** tab will display the table(s) within this database, as well as their schema. Each table can be expanded to show detailed information about the fields it contains.



9. The **Browse Data** tab presents the data contained in the tables in a grid format. Switch between tables by using the **Table:** dropdown menu.

The screenshot shows the 'Browse Data' tab in the DB Browser for SQLite. The 'Table:' dropdown menu is set to 'eDrawerEvents'. The data is displayed in a grid format with columns: Date, ConsoleID, UserName, CartSerial, CartID, GroupID, and LogMessage. The data is filtered by 'Filter' in each column. The data rows are as follows:

	Date	ConsoleID	UserName	CartSerial	CartID	GroupID	LogMessage
1	2021-10-23 14:04:13	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
2	2021-10-23 14:04:13	ST3-606671	Not Available	JC000103	ICU Cart 3	ICU	Authorization Failure
3	2021-10-28 21:24:13	ST3-606682	Jane Smith	JC000113	CCU Cart 4	CCU	eDrawer Opened
4	2021-10-29 01:02:35	ST3-606682	Not Available	JC000113	CCU Cart 4	CCU	Authorization Failure
5	2021-10-29 07:14:29	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
6	2021-10-29 10:48:51	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
7	2021-11-01 08:03:21	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
8	2021-11-01 08:04:33	ST3-606671	John Doe	JC000103	ICU Cart 3	ICU	eDrawer Opened
9	2021-11-01 14:03:21	ST3-606682	Jane Smith	JC000113	CCU Cart 4	CCU	eDrawer Opened

10. From here, the tables can be searched, printed, exported to a CSV file, and more.

8. Basic Troubleshooting

The following are some basic troubleshooting procedures for common issues with the Jaco Care System. For more help on a particular matter, visit the [Jaco Support Website](#).

8.1. CartScope™

Issue	Solution(s)
Hostname jacodatabroker:8080 not resolving	<p>If Windows 10 is being used, verify the system is updated to the latest Windows version. If this still does not fix the issue, follow these steps to enable Reliable Multicast Protocol.</p> <ul style="list-style-type: none">- In the Start Menu search box, enter Network Status then press Enter.- Select Change Adapter Options.- Right-click any active connection and select Properties.- Select Install, then Protocol, then Add.- Select Reliable Multicast Protocol, then press Ok.- Press Ok to exit the properties dialog box.- Right-click the connection and select Disable.- Right-click the connection again and select Enable. <p>The hostname should now be resolving without issue.</p> <p>If Windows 7 is being used, download and install Bonjour Print Services from Apple. This will enable the multicast DNS resolution.</p>
Update CartScope™	<p>Jaco will distribute Updates as .Zip files that can be uploaded to CartScope via the Settings tab.</p> <p>See Section 3.8.8.1 Updating the CartScope™ Console for more information.</p>

8.2. SmartTouch III

Issue	Solution(s)
SmartTouch III not displaying Wi-Fi connection	<p>Verify all entered Wi-Fi information is correct.</p> <p>Restart the unit. Wi-Fi connection should be established a few seconds after a restart.</p> <p>If an orange Wi-Fi symbol is shown the unit is not connected to the DataBroker. Verify the DataBroker is operating by accessing CartScope. If the brokeradmin account password has been changed, verify the unit has been configured with the new password.</p>
SmartTouch III unit is frozen	<p>Press the Reset button on the back of the unit.</p> <p>Disconnect then reconnect the USB-C cable.</p>