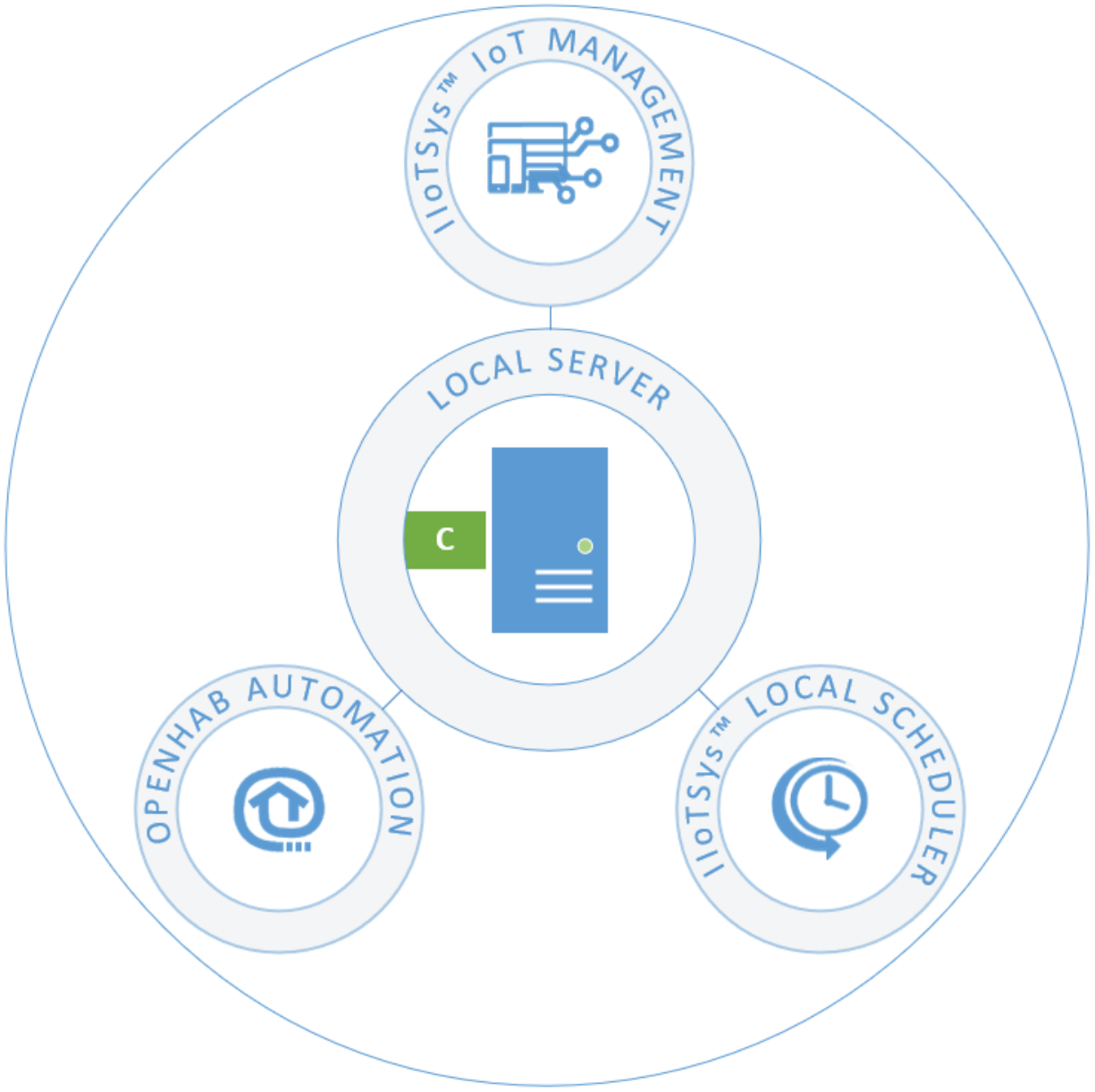
IIOTSYS™

IoTSwitch

User Manual
iiotsys™ Automation Server



Images: Ubuntu-19-10-01-aarch64-OpenHAB2-5-2-Erlang-OPT-22_04032020 or later.
Appliances: openhab_iotswitch_vm_ubuntu_04032020 or later.

User Manual: iiotsys™ Automation Server

Introduction:

The iiotsys™ automation server software is provided as a virtual machine that can be deployed on a VMware ESXi hypervisor (Traditional hardware Server), or VMware Player (Desktop PC or Laptop) or ported to and run on any popular virtualization platforms.
The automation server software is also provided in a disk image that can be deployed directly onto a Raspberry Pi 4 B 2GB 4GB, Raspberry Pi 3 B, B+.

The iiotsys™ automation server software is the latest Ubuntu x64 bit version, open-source operating system with packaged openHAB2, RabbitMQ, phpMyadmin and a custom iiotsys™ web based IoT web administration application interface; supports API integration with iiotsys™ mobile applications and has basic features like SSH, web TTY shell, htop (performance) and SFTP access.

openHAB2 is an open source, mature, technology agnostic home automation platform which runs as the centre of your smart home. openHAB2 software integrates different home automation systems, devices and technologies. openHAB Mobile applications, openHAB Basic UI (switch control), openHAB HABpanel, and openHAB Paper UI (configuration) are made available as default package interfaces where additional plugins and features can be added. openHAB2 is also used via a cloud connector as an enabler for Voice control via Amazon and Google Assistant as well as If That Then This (IFTTT).

RabbitMQ is a message-queueing software also known as a message broker or queue manager. Simply said; it is software where queues are defined, to which applications connect in order to transfer a message or messages.

phpMyAdmin is a free and open source administration tool for MySQL and MariaDB.

iiotsys™ Web Administration Application is a administration tool that manages full integration for server (openHAB2), device (IoT Switches) accounts and routing to all (local, iiotsys cloud and third-party) Rabbit MQ servers. Manages full integration of IoT Switches into openHAB2. Manages full configuration and control of IoT Switches (adding, changing, updating). Manages the underlying MariaDB database. KLD Technologies cc, is the first vendor to write and support a full product integration for openHAB2. The iiotsys™ web application is designed to integrate and control the following openHAB configuration elements; rules, items, sitemaps, mqtt configuration and persistence.

The iiotsys™ web application is also designed to manage all aspects of the iiotsys™ IoT Switch configuration elements as follows; cloud and local MQ server accounts (server control and IoT Switch device), several encrypted control keys, local iiotsys™ IoT Switch Access point, local consumers Wi-Fi network connectivity, security access to the iiotsys™ IoT Switch through the local consumers Wi-Fi network, Automating of IoT Switch Scheduling, direct control and testing of connected IoT Switches.

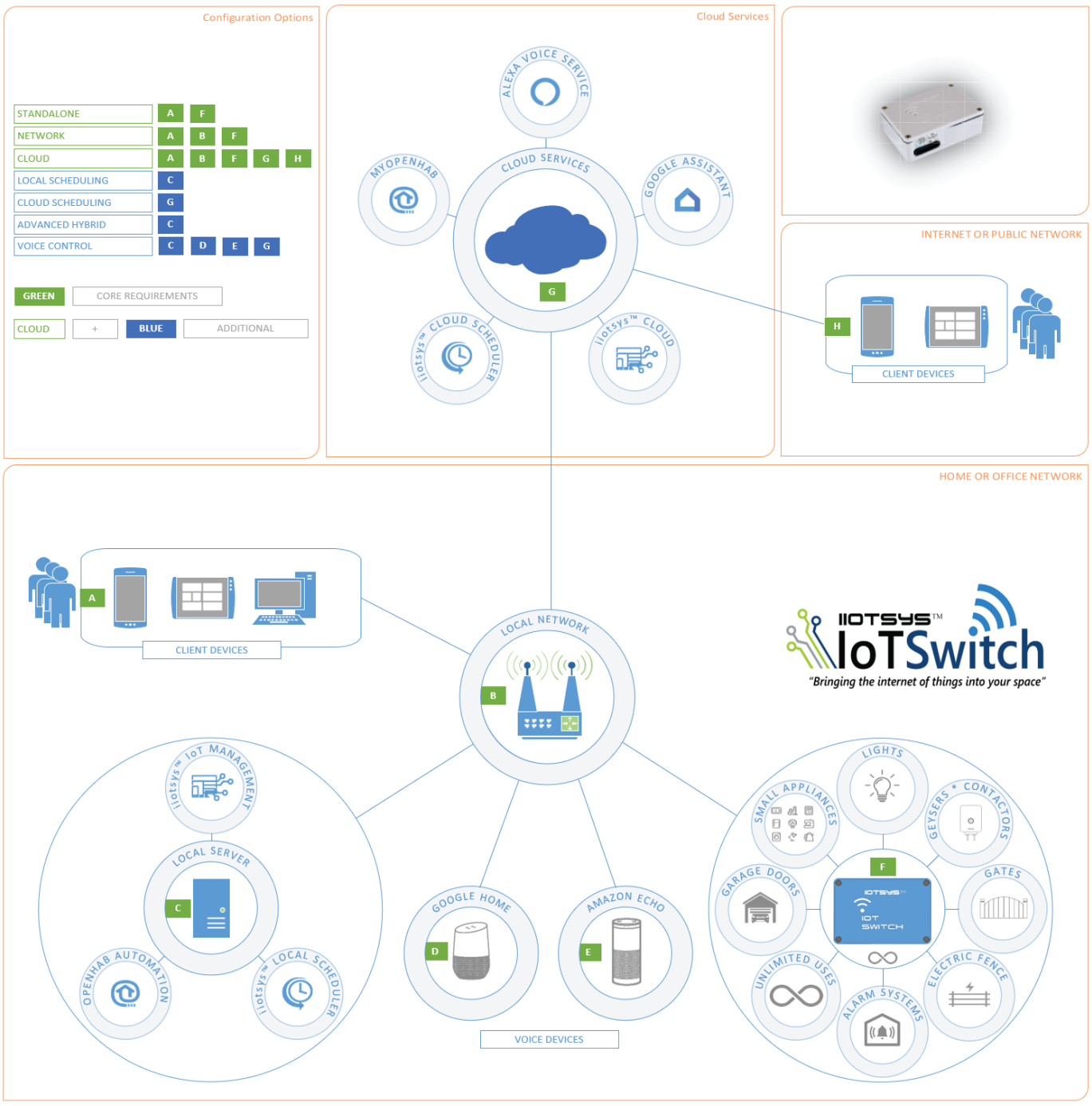
Summary:

The iiotsys™ automation server is central point of control that can securely manage and control locally deployed network (LAN) IoT Switches, wide area network deployed network (WAN) IoT Switches, multiple RabbitMQ server accounts and exchange message routing, native openHAB mobile applications (Android and Apple), iiotsys™ mobile applications. (Android and Apple), Voice control with Amazon voice or Google Assistant, IFTT.

Configuration options:

The iiotsys™ automation server, apart from being based on opensource platforms and message queuing for control of the iiotsys™ IoT Switches, is seamlessly integrated into cloud offerings, allowing you the flexibility to easily integrate other smart global products, or grow your deployment mix to suit your requirements and mitigate your risks in terms of control, dependencies or limitations.
As per the diagram below "**C**" represents the iiotsys™ automation server in our service offerings. The requirements to build a mix of needs ranging from standalone would require "**A**" and "**F**", Full configuration for Voice control would require options A through G where one or both of options D and E are required. C or G or both can be used for Voice control. Client devices H and A are open to consumer preferences.

The iiotsys™ eco-system architecture diagram



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Getting started:

On booting of the server automation software, the server console screen displays the default access username and passwords for each of the areas together with the respective feature URL's as follows; IoT and MQ Administration, openHAB UI, FTP, Web UI Shell, HTOP and Database Administration. Username and Passwords are displayed below the access URL's. Simply use a Web browser on a device connected to your local network to access the various URL's.
Below is example console screenshots for the Virtual Server and the Raspberry Pi servers demonstrating how this information is displayed when accessing the respective URL's. Please note that if you are using a local DNS and DHCP server the client FQDNS for these servers will be ubuntu.your.domain on your local DNS. The virtual machine automation server requires a local area network (LAN or Wi-Fi) that has a DHCP service running (for initial configuration) and internet access. The Raspberry Pi automation server only requires internet access.

Virtual Machine Server Console

```
Ubuntu GNU/Linux x86_64 #28-Ubuntu SMP Wed Dec 18 05:37:46 UTC 2019 5.3.0-26-generic ubuntu tty1
Welcome to the custom IoTSwitch OpenHab2 Server!

Please use the URL's below in your browser.
Choose the appropriate IPv4 address if more than one interface is configured.
If no IPv4 Address is visible then a DHCP server is required on your network
or your virtual server is not connected to a local network.

IoT Administration              http://192.168.2.177/
MQ Administration               http://192.168.2.177:81/
OpenHAB 2.5 Server              http://192.168.2.177:8080/
ftp Server                      ftp://192.168.2.177:21/
Shellinabox(SSH)                https://192.168.2.177:4200/
Htop                            http://192.168.2.177:8888/htop_app/
MariaDB Management              http://192.168.2.177/phpmyadmin

The Default users have been created:

For Linux
username: ubuntu            password:ubuntu
username: root              password:ubuntu

For MariaDB
username: root              password:openhab

For MQ
username ubuntu             password:ubuntu

FTP Server has been enabled on this Server (port 21) for the root user.
SSH Server has been enabled on this Server (port 22) for administrator and root users.

Note: Do NOT! delete the MQ server admin user.
Please visit our website http://www.kldtechnologies.co.za for more information.


ubuntu login:
```

Raspberry Pi Server Console

```
Welcome to the custom IoTSwitch OpenHab2 Server!

Please use the URL's below in your browser.
Choose the appropriate IPv4 address if more than one interface is configured.
If no IPv4 Address is visible then a DHCP server is required on your network
or your virtual server is not connected to a local network.

IoT Administration              http://192.168.2.166/
MQ Server Administration        http://192.168.2.166:81/
OpenHAB 2.5.0 Server            http://192.168.2.166:8080/
FTP Server                      ftp://192.168.2.166:21/
Shellinabox(SSH)                https://192.168.2.166:4200/
Htop                            http://192.168.2.166:8888/htop_app/
MySQL Management                http://192.168.2.166/phpmyadmin

The Default users have been created:

For Linux
username: ubuntu            password:raspberry
username: root              password:ubuntu

For MariaDB
username: root              password:openhab

For MQ
username ubuntu             password:ubuntu

FTP Server has been enabled on this Server (port 21) for the root user.
SSH Server has been enabled on this Server (port 22) for administrator and root users.

Note: Do NOT! delete the MQ server admin user.
Please visit our website http://www.kldtechnologies.co.za for more information.

root@ubuntu:~#
```

Accessing the URL's:
Below are screenshots and examples of the URL's when accessed by a web browser. Please note that the demonstration screenshots are from a iiotsys automation server that already have a few IoT Switch devices, MQ accounts, HABMin and HABPanel added and configured, thereby demonstrating how interfaces look when used and not empty.

openHAB 2.5 Server

Local MQ Server Administration

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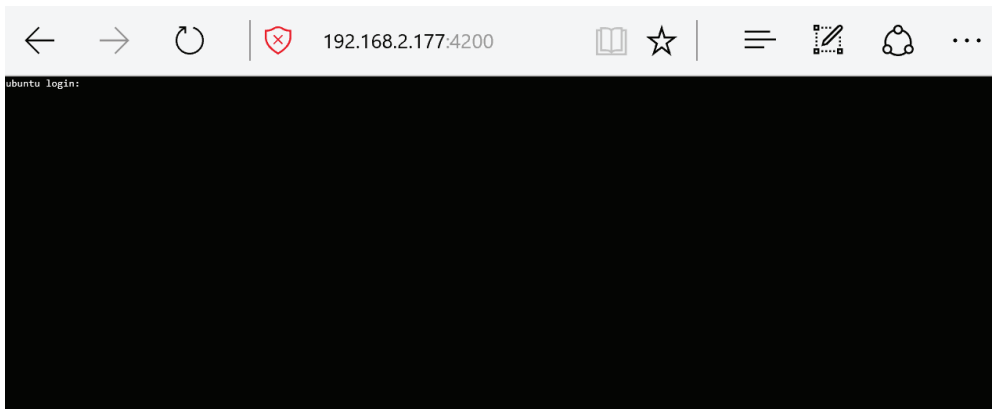
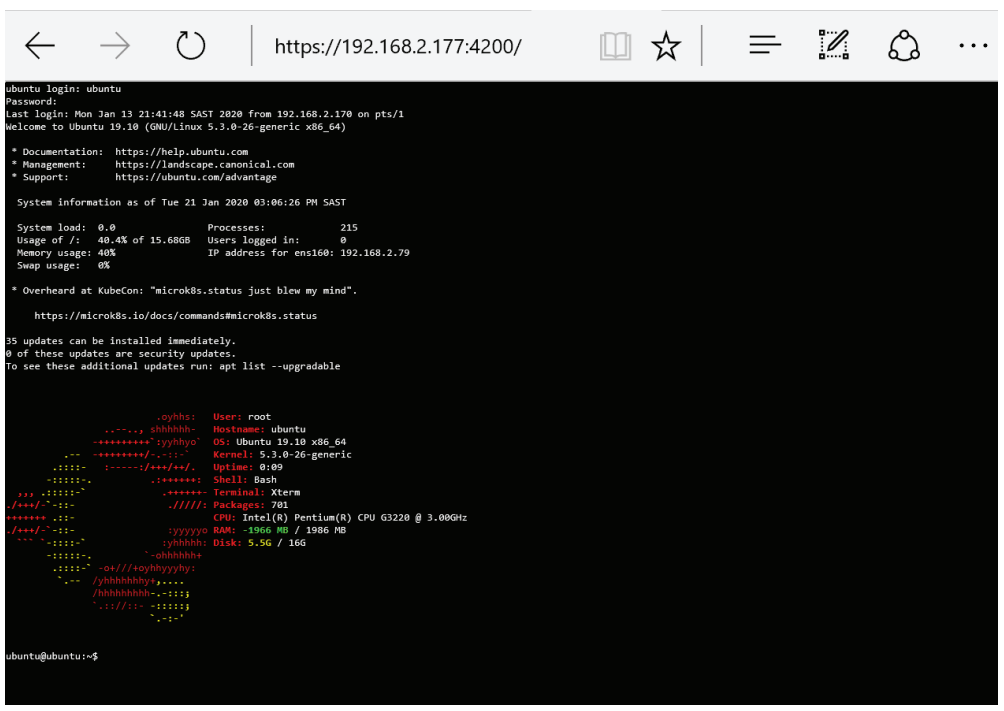
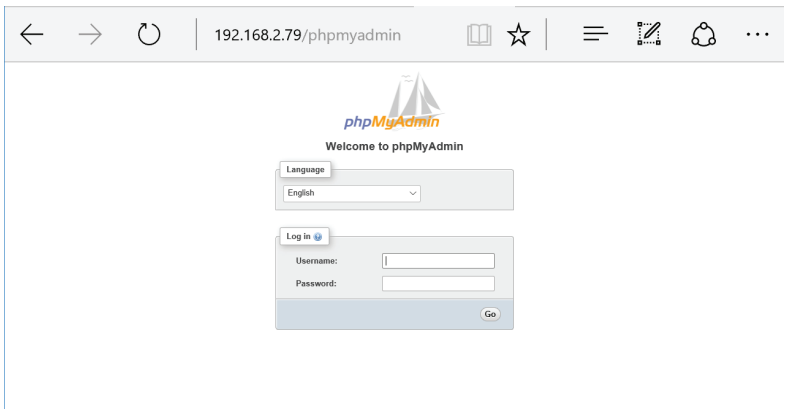
Accessing the URL's:
(Continued)

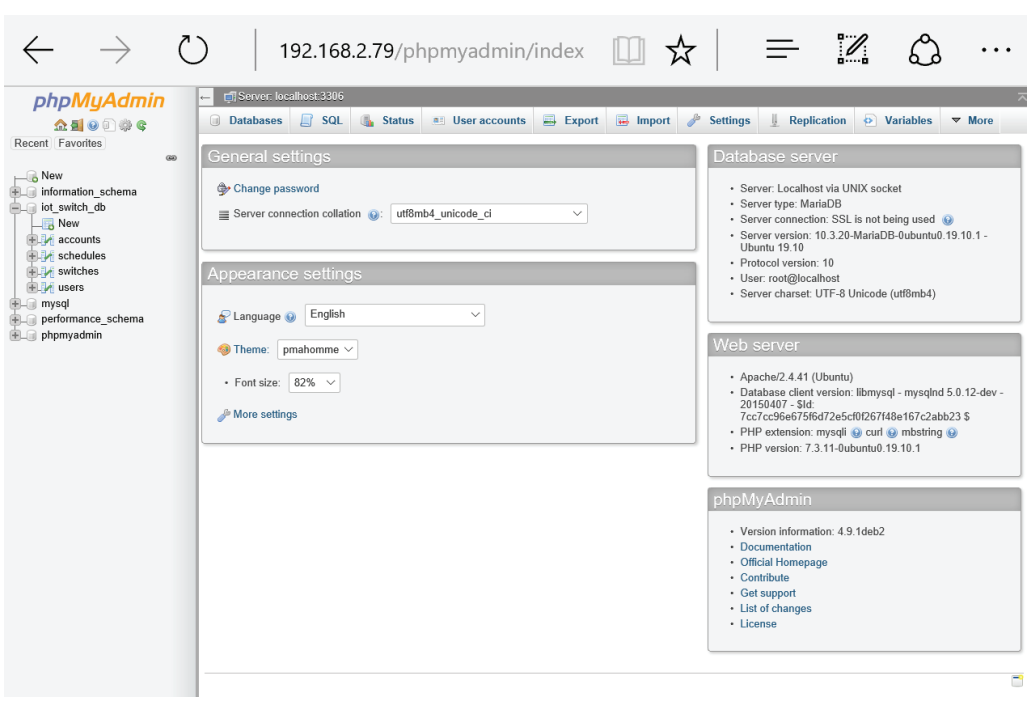
Shellinabox (SSH) Web TTY





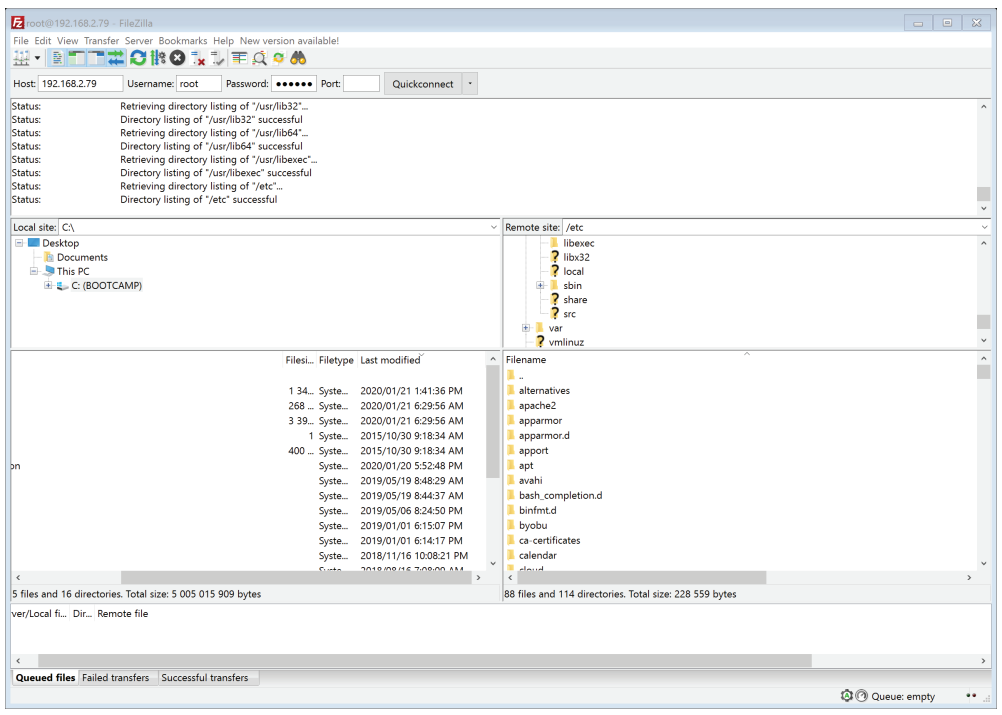
MariaDB Administration



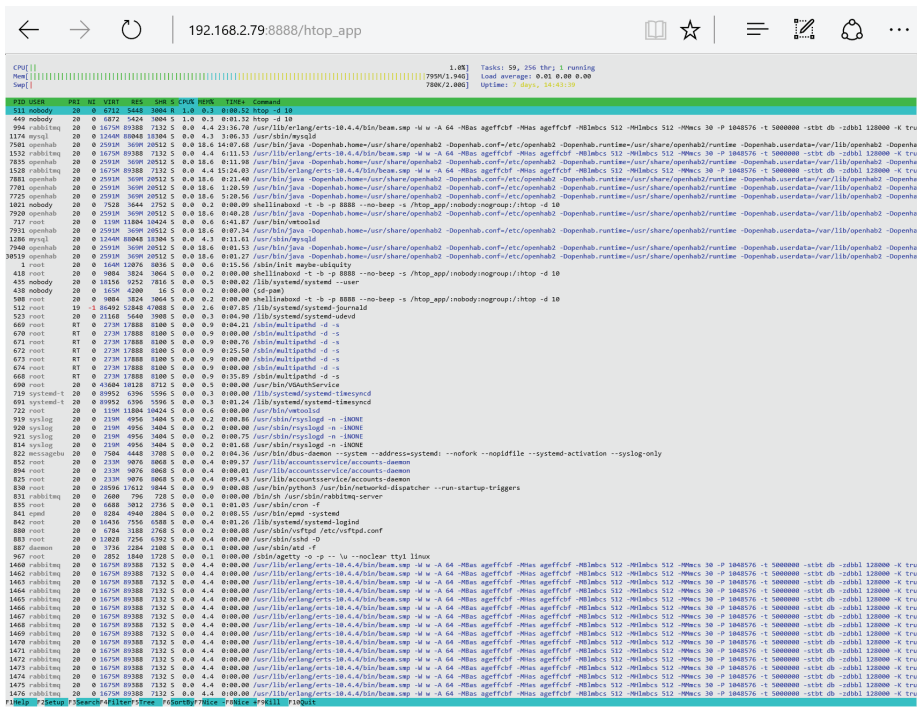


Accessing the URL's:
(Continued)

FTP Server access



Htop Performance monitor



Full iiotsys™ Product Integration

IoT Administration

Foreword:

For the previous interfaces in-depth detail around configuration is beyond the scope of this document and is both automated and made easy for iiotsys™ products by the iiotsys™ full integration, now managed through the iiotsys™ Web Administration Application and the REST Application Interfaces. openHAB2 is a substantial automation platform where integration and plugins can be configured to add iot, smart and other devices to this platform without affecting existing iiotsys™ integrations. All iiotsys™ products configurations are maintained for all packaged application servers (Rabbit MQ, MariaDB, Linux). The next sections explain the iiotsys™ Web Administration Application.

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Main Menu:
The Main Menu facilitates the most commonly needed features to manage the iiotsys automation server as well as links to the other menus as follows, Migration Menu, Configuration Menu, Scheduling Menu and the Administration Menu.

Add an existing Switch to OpenHAB:
This option adds an existing Switch that has already been configured. Enter the IP Address, Toggle or Pulse Switch Type and a icon to be used, lock and unlock control keys (available from Mobile App if originally added by the Mobile App under switch details) and click the Submit button. The system will query the switch and make it available for control in openHAB. All added IoT Switches will appear under the **All configured Switch Devices** information at the bottom of the page once added.

Delete a IoT Switch from OpenHAB:
All switches are be available from the drop-down selection, select the switch you wish to remove and click the Submit button. This will remove the Switch from openHAB control as well as any associated schedules and MAC address reservations. The configuration on the IoT Switches and MQ server (control or device) accounts will not be deleted.
All deleted IoT Switches will be removed under the **All configured Switch Devices** information at the bottom of the page once deleted as well as from all the IoT drop down selections throughout the automation server administration interfaces. IoT Switches that are linked to camera motion detection events in the **Video Configuration Menu** cannot be deleted until the camera name is removed from the **Video Configuration Menu**.

OTA Update IoT Switch firmware: This option checks for the latest firmware online and then offers option to update the firmware Over The Air (OTA) if a newer version is found. Internet access for the IoT switch via the local Wi-Fi network is required. Select an existing IoT switch and click Submit.

Rebuild Switch Configuration:
The system will automatically manage openHAB and MQ accounts in the background, however if custom changes have been made directly to the database or just a simple refresh is needed then this feature allows the rebuild of the Switches in openHAB and the associated MQ control accounts.

Create or Delete a openHAB MQ Server control account:
A control account is required by openHAB on the same MQ server that switches are subscribed to in order that openHAB can publish control messages to them.

This option Adds or removes MQ server control account configurations for openHAB. With **iiotsys** checked (default) simply enter email address and click Submit to automatically create the accounts needed.
Alternatively, the publish to openHAB feature on the iiotsys mobile App automatically creates your accounts when publishing to openHAB.
The default control accounts are labelled **iiotsys** and **localhost** and will appear under **All openHAB MQ Server control accounts** at the bottom of the page once created.
Please note that when configuring a new switch using the automation server configuration user interface (UI) at least one control account needs to exist.

Additional control MQ accounts can be created by checking the **custom** option and entering the required details. This automation server can support unlimited openHAB control accounts. Additional custom control accounts will be labelled <openHAB ID entered> and <openHAB ID entered>_localhost and will also appear under **All openHAB MQ Server control accounts** at the bottom of the page once created.

To delete a openHAB server control account simply select the control account from the openHAB ID drop-down under the **Delete a openHAB Server control account** option and click Submit. Please note that if any IoT Switches are still linked to the email address of the control account then the account will not be deleted.

Force rebuild of accounts option, checked and click Submit to rebuild account configurations. The system automatically rebuilds the accounts when adding or removing accounts, however a use case would be where the server IPv4 address has changed and openHAB is no longer controlling local switches.

Lock and Unlock a IoT Switch: Performs a lock and unlock of the IoT Switch Web UI.
Show IoT Switch IPv4 Address: Returns the local area network IPv4 address of the IoT Switch.
Show IoT Switch State: Returns the state of the IoT Switch, either ON or OFF.
Show IoT Switch Status: Returns the status of the IoT Switch, ONLINE if it is registered.
Bulk IoT Switch Control: Turns ON/OFF/PULSE ALL ONLINE IoT Switches.
Set IoT Switch Default Boot State: Changes default boot state of the IoT Switch at boot or power failure restore to either ON or OFF.
Control IoT Switches: Turns a IoT Switch ON/OFF/PULSE and returns confirmation.
Restore a IoT Switch: Restores complete configuration to a unconfigured IoT Switch connected to the local Wi-Fi network.

NOTE!:
- The MQ features LOCK, UNLOCK, IPv4 Address, STATE, STATUS and Controls (ON OFF PULSE) return a confirmation using screen alerts (pop-ups).
The iiotsys mobile app is the preferred method to configure a new or unconfigured switch and then publish to the automation server via the publish to openHAB iiotsys mobile app feature, however if the IoT Switch is connected to the local Wi-Fi network using a mobile browser (see the help instructions on the mouse overs) the automation server web UI can be used to fully configure a IoT Switch. The IoT Switch can then be added to the iiotsys mobile app as an existing switch whilst the mobile device is connected the same local Wi-Fi network as the IoT Switch. The IoT Switch must be migrated using the migration menu from local to cloud MQ server (see Migration Menu) in order for the iiotsys mobile app to control the IoT Switch. All IoT Switches subscribed to local, iiotsys cloud or third party MQ servers can be controlled by the native openHAB mobile app without need for migration.

All openHAB MQ Server control accounts:
This is a list of openHAB MQ server control accounts added to the local database using either Mobile App publish to openHAB function or **Add or Remove MQ Server Configuration**.

All configured Switch Devices:
This is a list of all configured IoT Switches that can be controlled using openHAB mobile app, iiotsys™ mobile App, HABPanel, openHAB basic or custom Web UI, or this interface.

Migrate
This menu option redirects you to the migration menu where IoT Switch devices can be migrated between MQ Servers.

Config
This menu option redirects you to the configuration menu to manage every aspect of your IoT Switch devices.

Video
This menu option redirects you to the Video configuration menu to manage adding motion monitoring and timer control for cameras as well as adding video streams for ip cameras and camera streams from Digital Video Recorders (DVR) and Network Video Recorders (NVR).

Scheduler:
This menu option redirects you to the Scheduler menu to add and remove schedules to automate control of your IoT Switches.

User Administration:
This menu option redirects you to the Administration menu to manage security and system access, user names and

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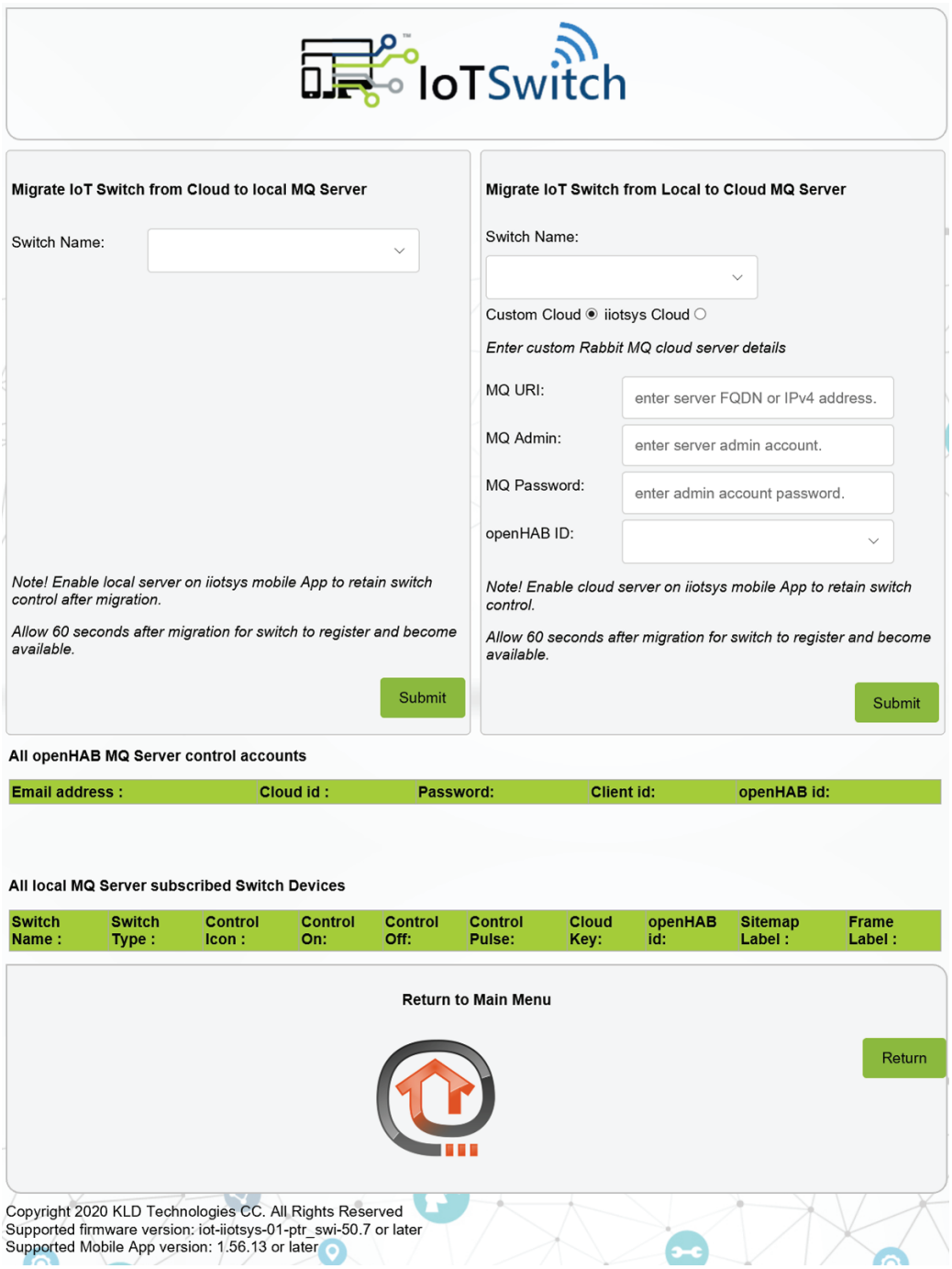


Migrate menu:
This menu facilitates migration of IoT Switches devices between cloud Message Queueing (MQ) servers and the local MQ server instances. Hybrid models of MQ switch control can be built using this interface where IoT Switch devices can subscribe to any mix of MQ Servers.

Migrate IoT Switch from Cloud to local MQ Server:
Select the switch you wish to migrate from a drop-down selection of existing switches, select your email address from the drop-down of existing email addresses, select the openHAB ID from the drop down of existing openHAB ID's and click Submit.
NOTE!
- The openHAB ID is a local only, but unique value that openHAB uses to identify which MQ server (control account) is being used and which MQ server to publish the MQ control commands that control the IoT Switches. openHAB ID's are created in the main menu when creating a MQ account to control any IoT Switches that are subscribed to the same MQ server.

TIP!
- Ensure iiotsys™ Mobile Application MQ server setting is also set to local MQ server to control these switches or use the openHAB mobile Application for complete switching control.
- Hover your mouse pointer over the input or selection fields for help, a detailed explanation of the required information or selections.

Migrate IoT Switch from Local to Cloud MQ Server:
(with default option **iiotsys Cloud** *radio button checked)*
Select the switch you wish to migrate from the drop-down selection of existing switches and click Submit. MQ IoT Switch Device accounts are automatically created.

(with option **Custom Cloud** *radio button checked)*
Select the switch you wish to migrate from a drop-down selection of existing switches, insert the IPv4 or FQDNS address, account with administration rights on the MQ server, the account password, select a existing openHAB ID from the drop-down and click Submit.
Please note that when creating custom MQ accounts on third party servers connection is made on SSL port 443 to the third party MQ server.

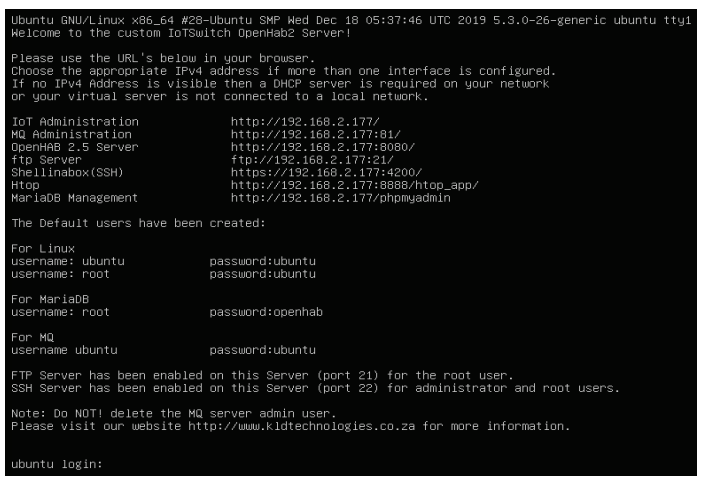
All openHAB MQ Server control accounts:
This is a list of cloud MQ control accounts added using either the iiotsys Mobile App publish to openHAB feature on the iiotsys mobile application or the automation server **Create a openHAB MQ Server Control Account** main menu function.

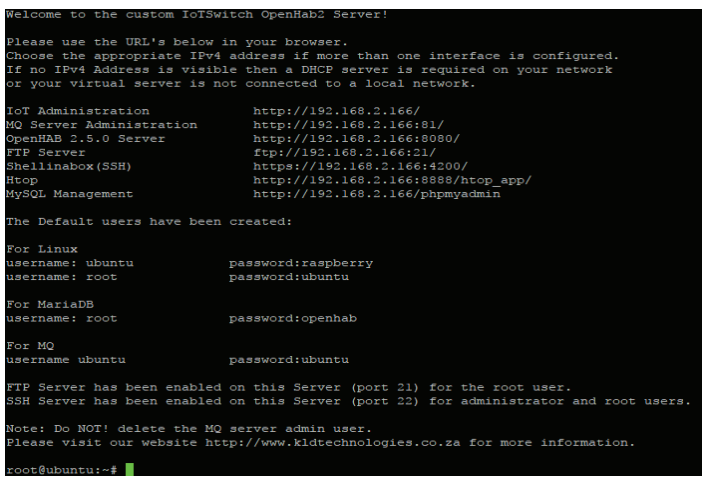
All local MQ Server subscribed Switch Devices:
This is a list of all locally subscribed IoT Switch devices that can be migrated.

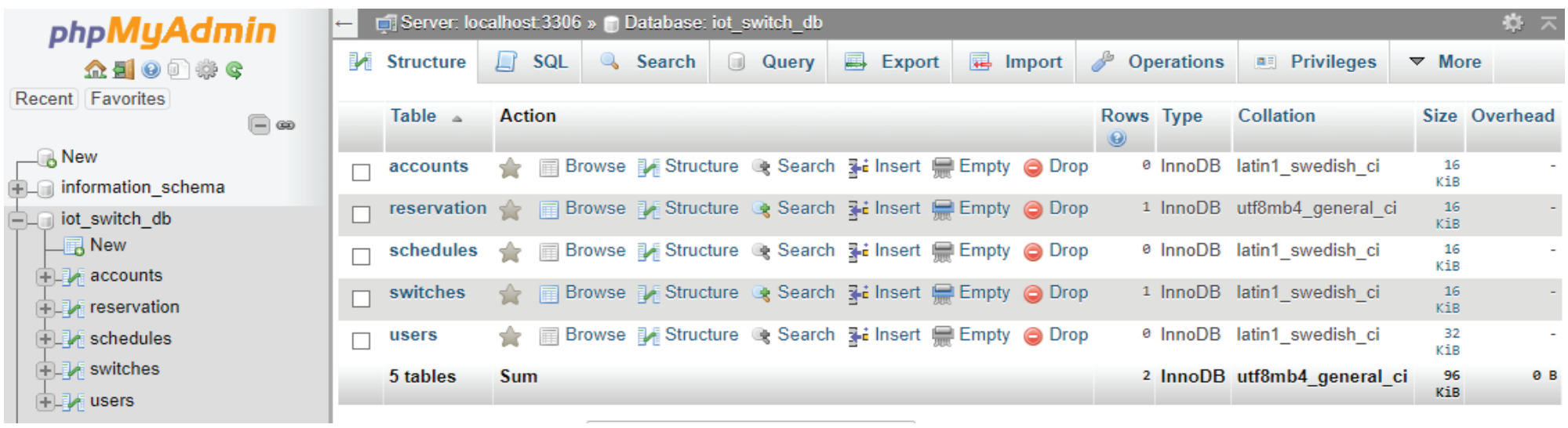
Return to main menu:
Click the Return button to return to the main menu.

Local database and feature access:

A local database is maintained to ensure all control elements are tracked and managed. The subject of database administration is beyond the scope of this document, however please note that alteration of any of this data independently of the purposed controlling web interface and its associated underlying code can severely impact the satisfactory operation of this product.
The default access username and password are displayed on the server console screen together with the respective feature URL's as follows; IoT and MQ Administration, openHAB UI, FTP, Web UI Shell, HTOP and Database Administration. Username and Passwords are displayed below the access URL's. (Example console boot screens for Virtual Machine (host) and Raspberry Pi are shown below, respectively)







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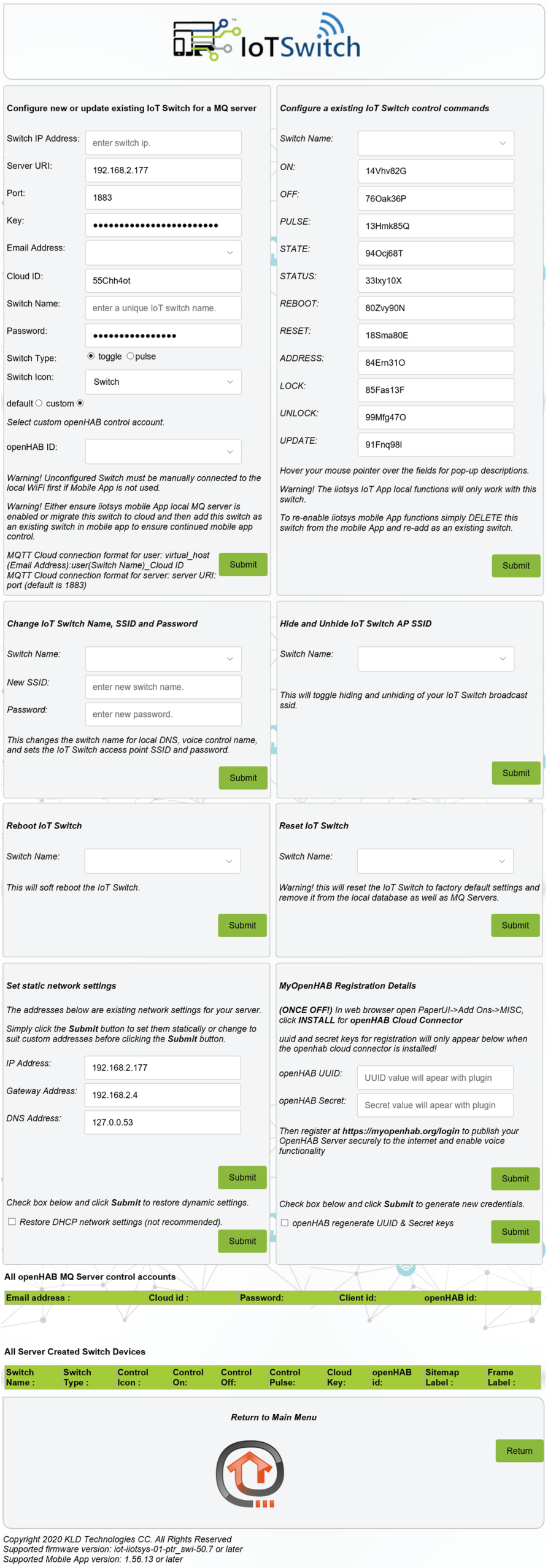

Configuration menu:
This menu facilitates complete management of local switches whether added by the Mobile App or directly using this interface.

Configure new or update existing IoT Switch for a MQ server:
This function configures a IoT Switch that has no existing configuration (new or replaced) or updates an existing IoT Switch with new settings.

With **default** option checked (default) enter the switch IPv4 address, The local server IPv4 address and default port are auto-populated; a random key and password is generated for your convenience, however custom values can be entered. Select a email address from the drop-down. Enter a custom name for your switch. Select a switch type and an icon then click the Submit button. The configuration is stored in the local database and the targeted IoT Switch is configured across the network.
With **custom** option checked ensure that (above) the email address selected corresponds to the openHAB control account selected from the openHAB ID server control account drop-down, then click the Submit button.

NOTE!
- Email address field will not be populated with any options if no openHAB server control accounts exist.
- Delete the IoT Switch from iiotsys mobile app and re-add it as an existing switch (if above was done to update a existing switch), or simply add an existing switch on the mobile app (if above was to create a new switch that was not already on the iiotsys mobile app). This is done to ensure that the IoT Switch details are also updated on the iiotsys mobile app
- It is good practice to always first check if the IoT Switch being configured Status in online using the **Show IoT Switch Status (ONLINE)** main menu option before doing any change or update actions.
- Use two words for the IoT Switch Name separated by an underscore, this is to make naming more convenient and consistent when and if voice integration is done. e.g. Patio_Floodlight, Pool_Pump, House_Geyser etc.

Configure a existing IoT Switch control commands:
Select the IoT Switch from the drop-down selection, alter the randomly generated codes if needed, the click the Submit button. The configuration is updated in the local database and the selected IoT Switch is configured across the network.

NOTE!
- Switch Name field will not be populated with any options if no configured IoT Switches exist.
- Delete the IoT Switch from iiotsys mobile app and re-add it as an existing switch. This is done to ensure that the IoT Switch details are also updated on the iiotsys mobile app.

Change IoT Switch Name, SSID and Password:
Select the IoT Switch from the drop-down selection, enter the new Switch Name (SSID), a password, and click Submit.

NOTE!
- Use two words for the IoT Switch Name separated by an underscore, this is to make naming more convenient and consistent when and if voice integration is done. e.g. Patio_Floodlight, Pool_Pump, House_Geyser etc.
- The IoT Switch device acts as both a Access Point (meaning devices like mobile phones and laptop Wi-Fi can connect directly to the IoT Switch as if it were an access point) and a Client (meaning that the IoT Switch also connects to and existing Wi-Fi network) Simultaneously, this option changes the service set identifier(SSID) of the IoT Switch Access Point network.
A service set identifier (SSID) is a sequence of characters that uniquely names a wireless local area network (WLAN). An SSID is sometimes referred to as a "network name." This name allows stations to connect to the desired network when multiple independent networks operate in the same physical area. Changing the default SSID and password ensures that no unauthorised access can be gained using the IoT Switch device factory default values (SSID: IoTSwitchCloud, Password: IoTSwitchCloud).
- The Switch name will then visible in your local domain name lookup as Switch_Name.Your_Domain.xx.
- The Voice services, if used, then need to be re-synchronised with Amazon or Google so that the IoT Switch can now be voice controlled using its new name. For Amazon simply say “Alexa, discover connected devices” and for Google say “Hey Google, re-sync my devices”.

Hide and Unhide IoT Switch AP SSID:
Select the IoT Switch from the drop-down selection, click the Submit button.
This Enables and Disables SSID Broadcast making your IoT Switch Access Point Wi-Fi Network SSID visible or hidden in your local area signal range.

Reboot IoT Switch:
Select the IoT Switch from the drop-down selection, click the Submit button.
A reboot restarts the IoT Switch (Warm Reboot) and leaves all the configuration information unchanged.

Reset IoT Switch:
Select the IoT Switch from the drop-down selection, click the Submit button. This resets the IoT Switch to Factory default settings and clears all the stored configurations on the IoT Switch non-volatile memory. The information is also removed from the local database together with any schedules and reservations (RPI) as well as all associated MQ server device accounts from the respective MQ servers.

Local Network Settings:
The existing DHCP values are displayed for IPv4, Gateway and DNS, click Submit to set the existing values statically or change them to suit then click Submit. To revert the network configuration to dynamic (DHCP) simply check the Restore DHCP network settings check box and click the Submit button. ***It is required to set a static IPv4 address for this automation server after initial setup.*** IoT Switch IPv4 addresses remain dynamic.

MyOpenHAB Registration Details:
UUID and Secret is used when registering on myopenhab.org website. From the openHAB Paper UI select addons and then install the openHAB cloud connector.

NOTE!
- UUID and Secret will remain blank until the openHAB connector is installed. These values can be customised or regenerated once the plugin has been installed. Please refer to our online videos on how to install the openHAB cloud connector.
- The openHAB cloud connector enables Voice functionality with Amazon Alexa and Google Assistant , IFTTT If This Then That, as well as publishing the local openHAB server to the internet allowing the use of the openHAB Mobile App from the internet.

Return: click the Return button to return to the Main Menu

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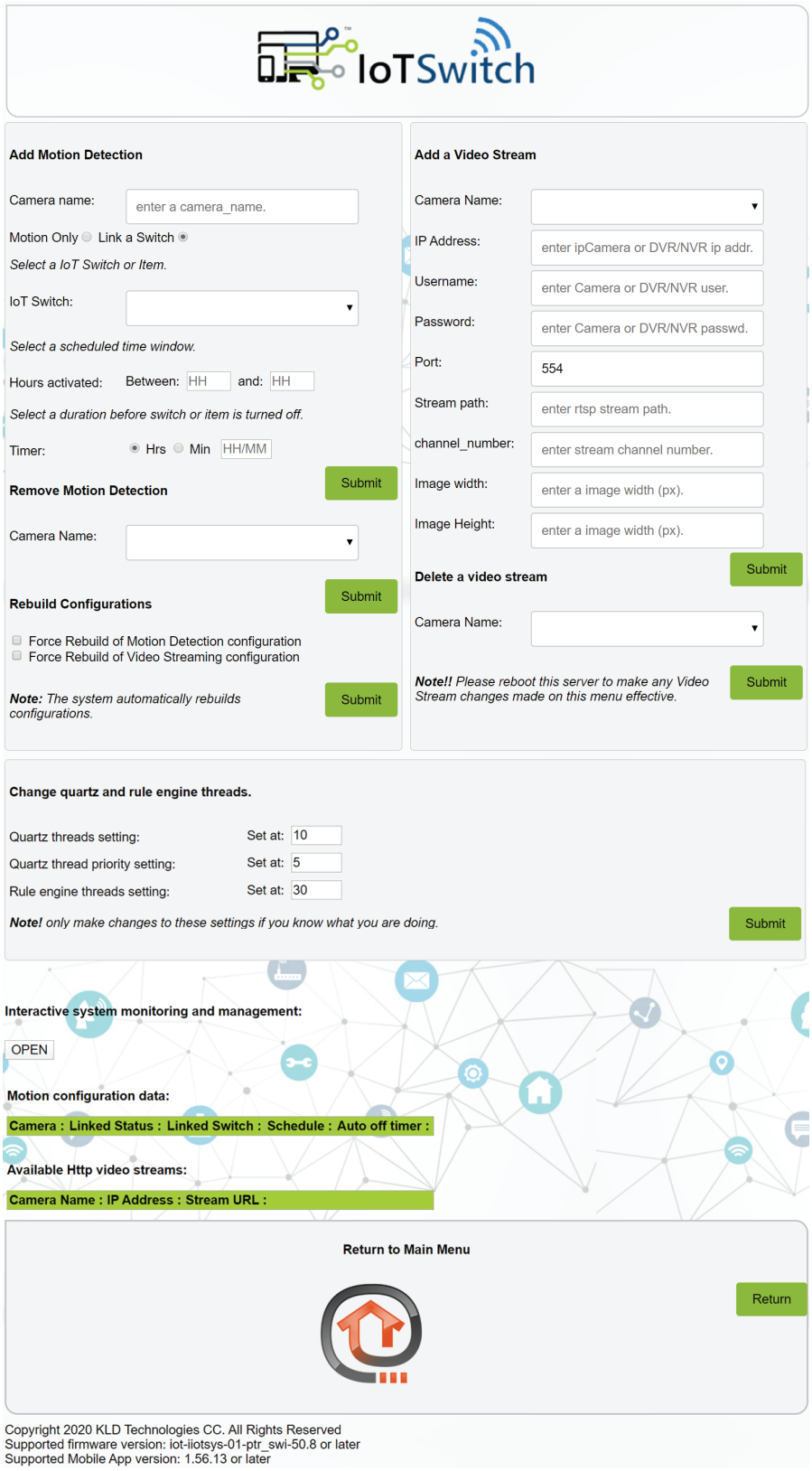
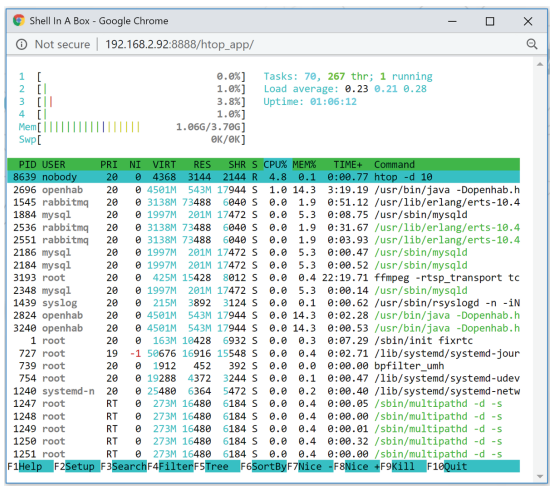
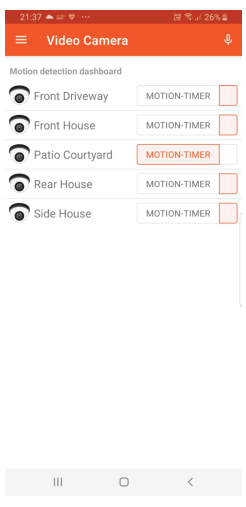
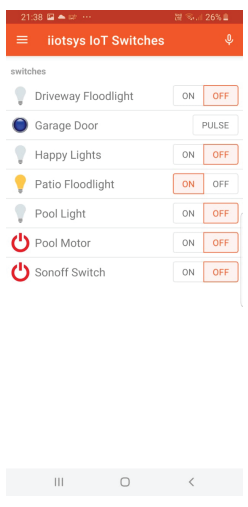
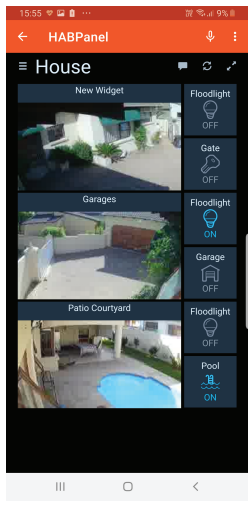




Click the Open button, a pop-up window displays the Interactive system-monitor process-viewer and process-manager. It shows a frequently updated list of the processes running on the server, normally ordered by the amount of CPU usage. Colour is used to give visual information about processor, swap and memory status.





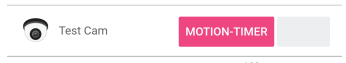


Video Configuration menu:
This menu facilitates complete management of camera motion alerts, linked IoT Switch schedules and timer control, rule and timer threads, system performance monitoring, as well as managing video streams from ip cameras, dvr and nvr systems.

Add Motion Detection:
Motion Only option: This function configures a new camera name in format camera_name and auto populates the Video Camera menu in the openHAB menus. Motion alerts emailed (mailto: server@openhab.local) to the local automation server ip address on SMTP (Simple Mail Transfer Protocol) port 25, having the exact camera_name in either the body or subject of the email will trigger a motion alert for the camera. No SMTP authentication is required.

Link a Switch (optional): This function allows the motion alert event to be linked to a existing IoT Switch, select a IoT Switch from the drop-down, enter the desired schedule in hour of the day between 00-23 to 00-23, select the time units in hours or minutes, then enter the desired timer time in hours 00-99 or minutes 00-99 respectively and click Submit. Once a switch is linked to a camera it will turn on when a motion detected event occurs within the specified schedule and turn off again as per the time chosen for the timer function.

Email Processing: Received emails are checked every 10 seconds by the automation server. Specific triggering emails per camera are removed once received and processed. Aged emails not related to any camera names are deleted every hour. If you have a system that requires creating a login mail POP3 or IMAP account or in order to send SMTP emails to the automation server, the default credentials are SMTP,POP3 and IMAP server is the local IP address of the automation server with ports 25, 110 and 143 respectively; email: server@openhab.local, User: server, Password: openhab. On some systems SMTP authentication is enforced, the automation server supports SSL and plain text authentication mechanisms. These default credentials should not be changed with exception of the password.



TIP!
- Manually tapping the **MOTION-TIMER** button for a camera on the Video Camera openHAB menu will turn on any linked switch, provided the event ocurrs within the schedule set, and apply the auto-off time set, timer. This does not affect normal operation of the IoT Switches. Multiple triggering does not extend the set timer time.

Remove Motion Detection:
Select a camera_name from the drop-down list and click Submit to remove the camera. If a video stream is also linked to the camera then you will receive a notification to first delete the video stream

Rebuild Configurations:
Motion detection and Video Streaming configurations can be rebuilt to refresh changes made manually to the database. It is not necessary to use this function during normal use of the menu interface. It is also strongly advised not to manually change the database entries as this can adversely affect the performance of this product.

Add a Video Stream:
This section allows live rtsp streams to be imported from any ONVIF or custom ip cameras or digital, network video recorders and generates a corresponding mjpeg format live video stream that can be used to build HABpanel dashboards or consumed by rendering browsers. The mjpeg (*.mpg) stream static URL can be used in a dashboard iframe or browser. Please see Administration menu for changes that may impact the default URL's.

Select the camera name from the drop-down list, enter the ip address of the ip camera or dvr, nvr, enter the username and password, enter a custom rtsp port if needed, the stream path, channel number, the desired width and height of the image you require for your HABPanel dashboard or browser iframe and click Submit.

examples:
AirLive ip camera rtsp stream rtsp://user:password@192.168.1.100:554//Stream1 or Stream2
Stream path would be // and channel_number would be Stream1 (for main stream) OR Stream2 (for sub-stream).

v380 ip camera rtsp stream rtsp://user:password@192.168.1.100:554/1 or 2
Stream path would be / and channel_number would be 1 (for main stream) OR 2 (for sub-stream) or just a space.

HikVision DVR ip camera stream rtsp://user:password@192.168.1.100/Streaming/Channels/101 or 102.
Stream path would be /Streaming/Channels/ and channel would be 101 for main OR 102 for sub-stream. Other Camera channels for camera 2 would be 201 and 202, camera 3 would be 301 and 302, camera 4 would be 401 and 402 and so on.

TIP!
- Download and use VLC media player and open test network streams to verify you have the correct camera feed rtsp string for your ip camera or drv, nvr. For some cameras the rtsp ports need to be opened first.
- Additional IP camera HikVision channels on a 8 port DVR are typically greater than the last analouge port number, e.g 8 port HikVision DVR with support for 2 ip cameras would be channel 901,902 and so forth.

NOTE!
- Motion Detection and Video Stream configurations are independent, however a Motion Detection camera name is required to be configured before adding a Video Stream in order to keep camera names unique.

Delete a video stream:
Select the camera name from the drop-down list and click Submit to delete the stream configuration for the selected camera. Please note a reboot is required following finalization of changes made in adding or deleting video streams.

Change Quartz, Quartz priority and Rule Engine threads:
When rules are executing in the openHAB rule engine they occupy what is called a rule thread. The more rules executing the more threads are required, care has been taken in this development to use minimal threads and adjustment should not be necessary.
Quartz threads and priority are consumed when timers are created in openHAB, care has been taken to give preference to timer management in this development and adjustment should not be necessary.

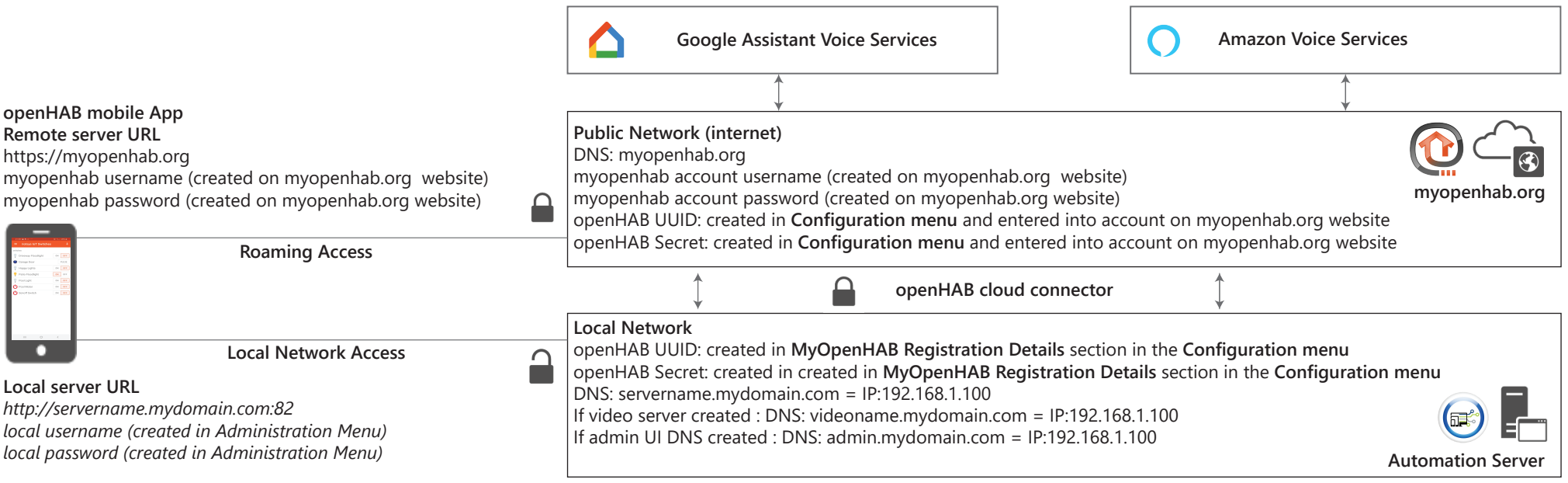
Interactive system monitoring and management:
Click the Open button, a pop-up window displays the Interactive system-monitor process-viewer and process-manager. It shows a frequently updated list of the processes running on the server, normally ordered by the amount of CPU usage. Colour is used to give visual information about processor, swap and memory status.

Motion configuration data:
Displays configured camera names and associated configuration whether just motion, if linked, which IoT Switch is linked, a schedule of armed operation and the auto-off configured time in minutes or hours.

Available Http video streams:
Displays the configured video streams per camera name, the camera or dvr, nvr IPv4 address and the available http mjpeg (*.mpg) static URL that can be accessed for use in browser or dashboard iframes.

User Manual: iiotsys™ Automation Server

Publishing the automation server - option without SSL certificates
The below diagram depicts the configuration of the openHAB mobile App, the network and the automation server. In this configuration the automation server is published securely through the openHAB cloud connector to the myopenhab cloud server. Webhooks on the mobile App switch between the local Wi-Fi network and the mobile network using a **Remote server** and **Local server** URL credentials entered into the openHAB mobile App settings. In this configuration all features except the remote HABPanel video streaming is supported. Please note that in this configuration HABPanel stores two HABPanel dashboard configurations. One for Remote access and one for Local access. No SSL certificates are required.



(**option**) *if video server NOT created in openHAB http options (no video stream authentication)*
iFrame URL: http://192.168.1.100:8090/camera_name.mpg

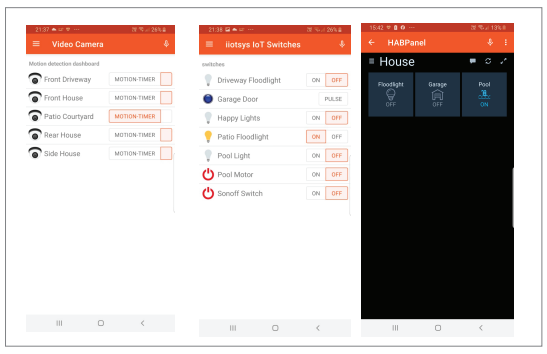
(**option**) *if video server created in openHAB http options (enables video stream authentication)*
iFrame URL: http:videoname.mydomain.com:82/camera_name.mpg
local username (created in Administration Menu)
local password (created in Administration Menu)

(**option**) *if admin UI server DNS created http://admin.mydomain.com:82/*

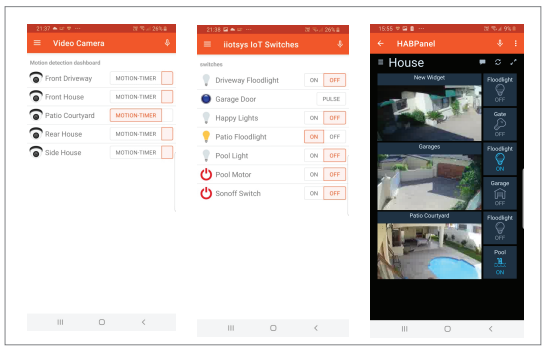
Replace these values in the diagram
- mydomain.com
- servername
- videoname
- admin
- 192.168.1.100
- camera_name
- local username
- local password
- myopenhab username
- myopenhab password

Local Firewall rules required:
- none

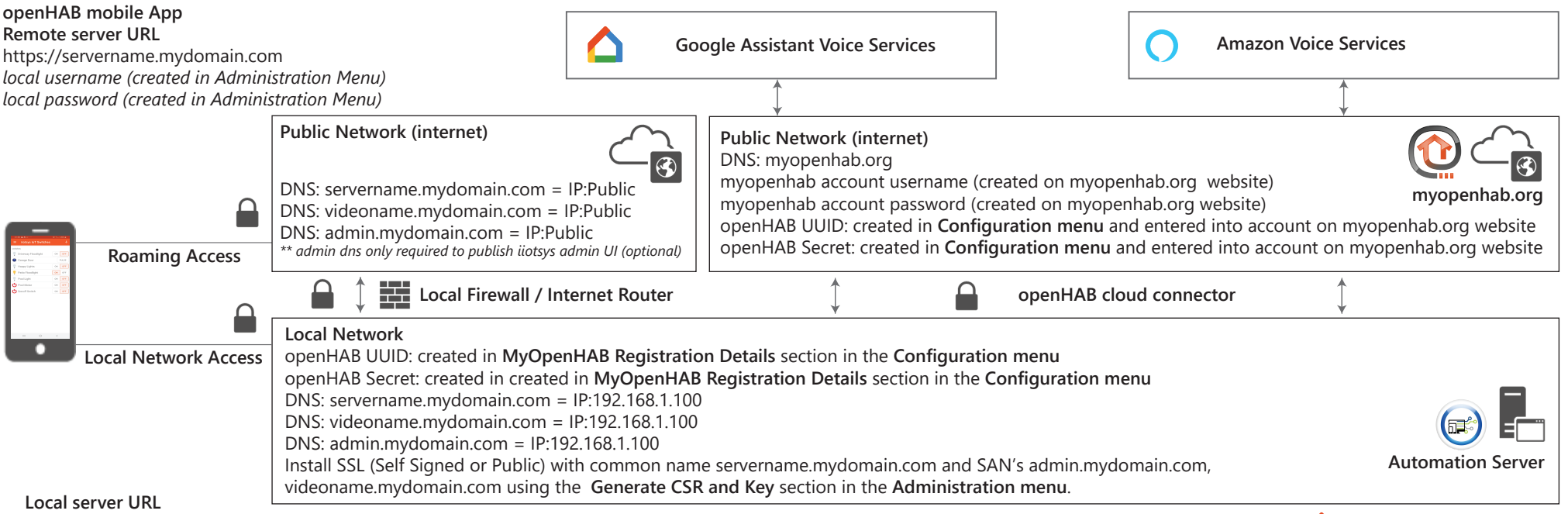
Roaming Access Features Supported



Local Access Features Supported



Publishing the automation server - option with SSL certificates
The below diagram depicts the configuration of the openHAB mobile App, the network and the automation server. In this configuration the automation server is published securely through the openHAB cloud connector to the myopenhab cloud server for voice services only. Webhooks on the mobile App switch between the local Wi-Fi network and the mobile network using a **Remote server** and **Local server** URL credentials entered into the openHAB mobile App settings. In this configuration all features are supported. Please note that in this configuration HABPanel stores only one HABPanel dashboard configuration. One for Remote access and Local access. SSL certificates are required.



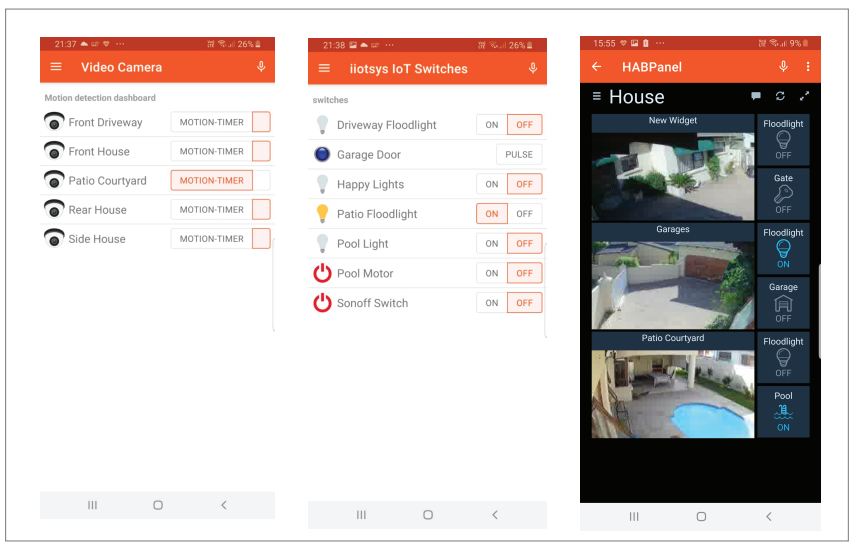
Local server URL
https://servername.mydomain.com
local username (created in Administration Menu)
local password (created in Administration Menu)

iFrame URL: *https:videoname.mydomain.com/camera_name.mpg*
local username (created in Administration Menu)
local password (created in Administration Menu)

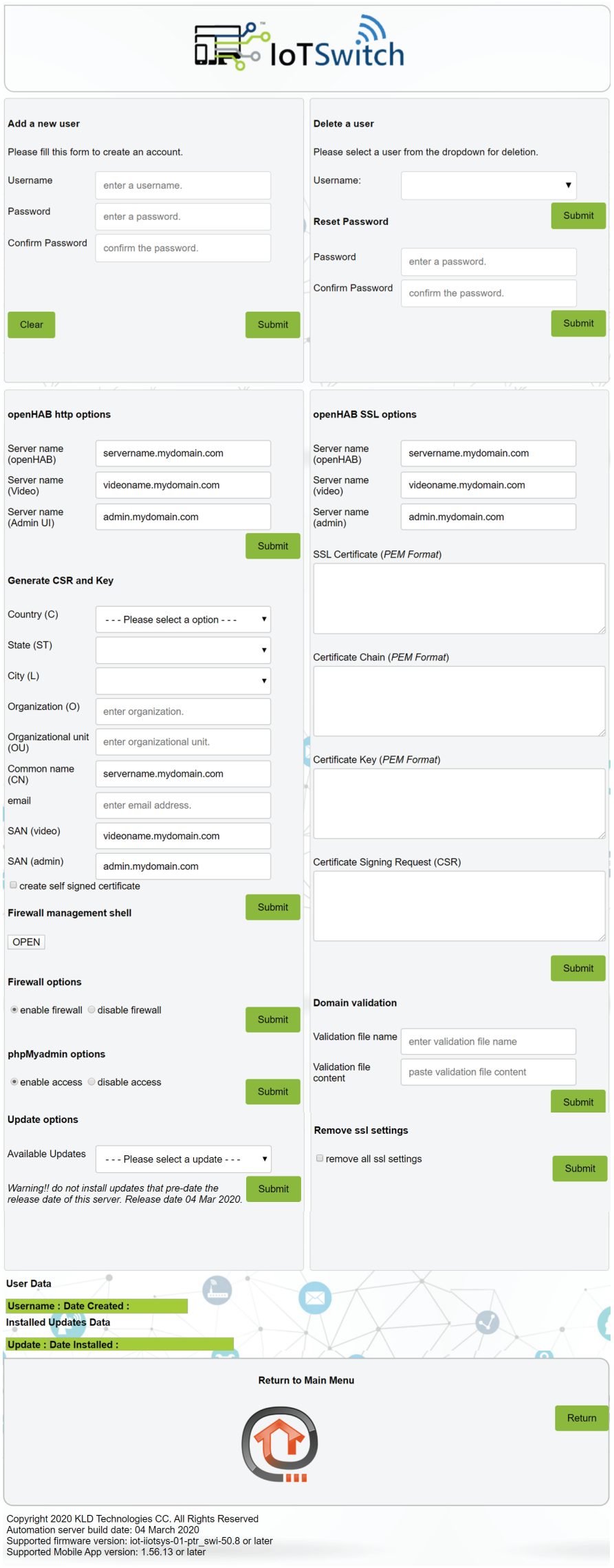
Replace these values in the diagram
- mydomain.com
- servername
- videoname
- admin
- IP:Public (*public fixed or static IP address*)
- 192.168.1.100
- camera_name
- local username
- local password
- myopenhab username
- myopenhab password

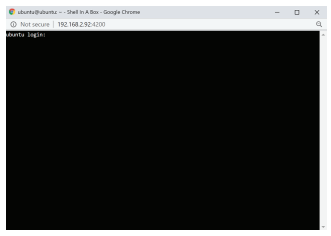
Local Firewall rules required:
- Port forward 443 https to automation server IP address
- For pfsense create reverse proxy webserver and mapping for both servername.mydomain.com and videoname.mydomain.com

Roaming and Local Access Features Supported

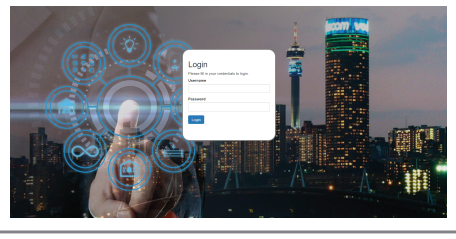


User Manual: iiotsys™ Automation Server





UFW Firewall management shell:
Click Open button to open a pop-up shell access window. Shell access is provided for manually managing the firewall rules, login as default user ubuntu then change user to root or sudo commands and proceed.



User login screen once first user is created.
Enter the username and password created and click Login.

Administration menu:
This menu facilitates complete management of administration and security of the system. Adding and removing of users, resetting of passwords, http and https configurations, updating automation server releases, certificate request generation, secure certificate management, local firewall management and database access URI management.

TIP!
- The process is to first create a username and password. Create a local DNS name for the admin UI, openHAB and video streaming server that resolves on the local network to the IP address of the automation server. Set a static IP address for the automation server ethernet connection in the configuration menu. If SSL is going to be used (Self signed or Public) create the same admin UI, openHAB and video streaming server public DNS records that resolves from the internet to your local internet router IP address (dynDns or any other provider is also suitable for dynamic IP addresses and dns names).
- Enter the admin UI, openHAB servername and Video streaming server DNS names into the openHAB http options section and click Submit. At this point the admin UI, openHAB and Video streaming server are accessible on http port 82 with the username just created.
- If SSL is going to be used (Self Signed or Public) Generate the CSR and Key by filling in the details, ticking the self signed option also generates a certificate.
- Click Submit on the openHAB SSL option to fully implement SSL functionality. Once done the admin UI, openHAB server and Video streaming server are available on https port 443 using the DNS names provided.
- Finally, allow https port 443 to be forwarded to your local automation server IP address from your internet router and or firewall.

Add a new user:
Enter a username and password, confirm the password and click Submit. Once Submit is clicked a username and password is created for access to this web UI (all menu's) as well as access to openHAB (all features) and any streaming services. The generic port 8080 for openHAB is blocked by the firewall and openHAB is then published on http port 82. More usernames can be created as required to access either this web UI (User Interface), openHAB or video streaming server URL's.

Delete a user:
Select a existing username from the drop-down menu and click Submit. Once Submit is clicked the user is deleted. Access is then revoked for both this web UI as well as for openHAB for the deleted user. Once the last user is deleted the generic access to openHAB on http port 8080 is restored with anonymous web UI and openHAB access re-instated. The video streaming server is then available on the server IP address port 8090.

Reset Password:
Enter a new password, confirm the password and click Submit. Once Submit is clicked the user that is currently logged onto the web UI's password is changed to the new password as well as the password for the user to openHAB and the video streaming server.

openHAB http options:
This option adds the admin UI, openHAB and video streaming server dns names to the webserver, and is compulsory once the first user is added and before the last user is deleted on the system. Please ensure a local host file entry or local DNS server is configured that the admin UI, openHAB and video streaming server dns names can be resolved (forward lookup) to the IPv4 address of the automation server on the local network.
The admin UI, openHAB and video streaming servers are then accessible on the local http port 82 as follows; http://admin.mydomain.com:82/, http://servername.mydomain.com:82/ and a video stream on http://videoname.mydomain.com:82/camera_name.mpg these will then require authentication using the usernames created earlier. The http video stream URL is used in the iframe widget created in the HABPanel (for http access, please refer to **Publishing the automation server - without SSL certificates** for clarity on the supported features and configuration).

Generate CSR and Key:
This utility helps create a CSR (Certificate Signing Request) and a Private Key. The CSR can be submitted to either a local CA (Certificate Authority) or a public SSL provider. Please ensure that the common name entered is the same as the openHAB server DNS name and the SAN (Subject Alternative Name) is the same as the admin UI, Video streaming server DNS names. From the drop down select Country, State, City. Then enter your Organization, Organizational Unit, Common name (pre-populated), Email Address and SAN's (pre-populated), tick create self signed certificate if a self signed certificate is going to be used (This generates a Certificate with the CSR and Key), then click Submit. Once Submit is clicked and the browser refreshed the CSR and Key (and Certificate if self signed option was checked) will be visible in the respective multi text windows. (Optional) Simply copy and paste the CSR for use in obtaining a certificate from a service provider or alternative CA. At any point new Certificates, Keys or CSR's can be pasted into the multi text windows and submitted to change SSL settings. Self signed certificates can be used but need to be accepted once-off in the respective openHAB mobile applications.

TIP!
- Use a online Certificate Signing Request checker tool to ensure your CSR is correct before purchasing a public certificate. Once the certificate is issued open the certificate with a text editor (Wordpad or Notepad) and copy paste the certificate in the Certificate multi text window then click submit. There is no need to re-generate the CSR and Key.

Firewall options:
Firewall is based on UFW (Ubuntu Fire Wall) and is automatically managed, however if there is a need to disable and re-enable the firewall then simply click either enable or disable firewall and click the Submit button. Once the Submit button is clicked the firewall is either disabled or re-enabled according to the selection made. Please note the selection once actioned is persistent across reboots.

UFW Firewall management shell
Click Open button. Shell access is provided for manually managing the firewall rules, login as default user ubuntu then change user to root or sudo commands and proceed.

phpMyadmin options:
Select option to enable or disable access and click the Submit button. Once the Submit button is clicked the web UI login for phpMyadmin is either blocked (webpage unavailable) or allowed (webpage available). Please note the selection once actioned is persistent across reboots.

Update options:
Select a update from the drop-down list, click Submit to install the update. Updates need to be installed dated sequentially to ensure all features are updated. Installed updates appear under the **Installed Updates Data** table at the bottom of the page. Updates contain bug fixes and new features for the automation server.

openHAB SSL options:
Enter a new admin UI, openHAB or Video streaming server DNS name or leave unchanged.
The admin UI, video streaming DNS name is required to be a subdomain of the openHAB domain, for example if the openHAB dns is openhab.mydomain.com, the domain then being mydomain.com, then a sub domain admin UI, Video streaming DNS name would be video.mydomain.com and admin.mydomain.com respectively.

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openHAB SSL options (continued):
It is required to use a multidomain or wildcard certificate for these purposes or a SSL certificate that supports the admin UI FQDNS and video streaming FQDNS in the subject alternative names.

The admin UI DNS, openHAB DNS name and video streaming DNS name must resolve (forward lookup) from both the local network and the public network (internet), however only port 443 needs to be forwarded from the local internet router to the local automation server IP address. If a URL aware internet router or firewall is used then the URL's for admin UI, openHAB and video streaming DNS must also be forwarded.

If a CSR and Key was generated in the previous step and used to purchase a public certificate, simply copy and paste the issued public certificate and certificate chain (ca-bundle) into the corresponding boxes and click Submit. If a certificate, key, csr and certificate chain were obtained elsewhere simply copy and paste into the corresponding multi text input boxes and then click Submit. A minimum of a Certificate and a Key are required for SSL access to be successfully configured. Please note that the Certificate Chain multi text box details are concatenated to the SSL Certificate once Submit is clicked, it will not display in the Certificate chain multi text box once Submit is clicked and there is no need to repeat the process. This is to allow better validation of the certificate chain with some mobile devices when a certificate chain or certificate bundle is provided.

Once the Submit button is clicked the certificates, CSR's and Key is stored and installed in the local automation server.
The http webserver is removed and the https webserver is then automatically configured. The openHAB server and video server are then available on https port 443 (default).
The admin UI will be https://admin.mydomain.com, openHAB URL will be https://servername.mydomain.com and the video stream URL will be https://videoname.mydomain.com/camer-a_name.mpg
Enter the openHAB URL and credentials into the **Remote server URL** and **Local server URL** sections in the openHAB mobile App settings menu.

Domain validation
When purchasing a public SSL it may be necessary to validate that you are the owner of the domain. This is typically done via email, however most SSL vendors also provide a verification file that must be uploaded to your webserver root directory. Typically, these files are a html file with a registration key. simply capture the name of the file with its extension into the Validation file name box, for e.g. name.html , open the file in a text editor (Wordpad or Notepad) and copy paste the contents into the Validation file content box, then click Submit. Test the access by entering the ip address of your automation server and the corresponding file in a URL for e.g. http://192.168.1.100/name.html to see if it displays correctly. Ensure the public DNS for the openHAB server is provided to the SSL vendor and also that the local internet router and firewall allow http port 80 traffic to your local automation server. Once the validation process is completed by the SSL vendor then remove the internet firewall or router rules allowing access to http port 80 of your local automation server.

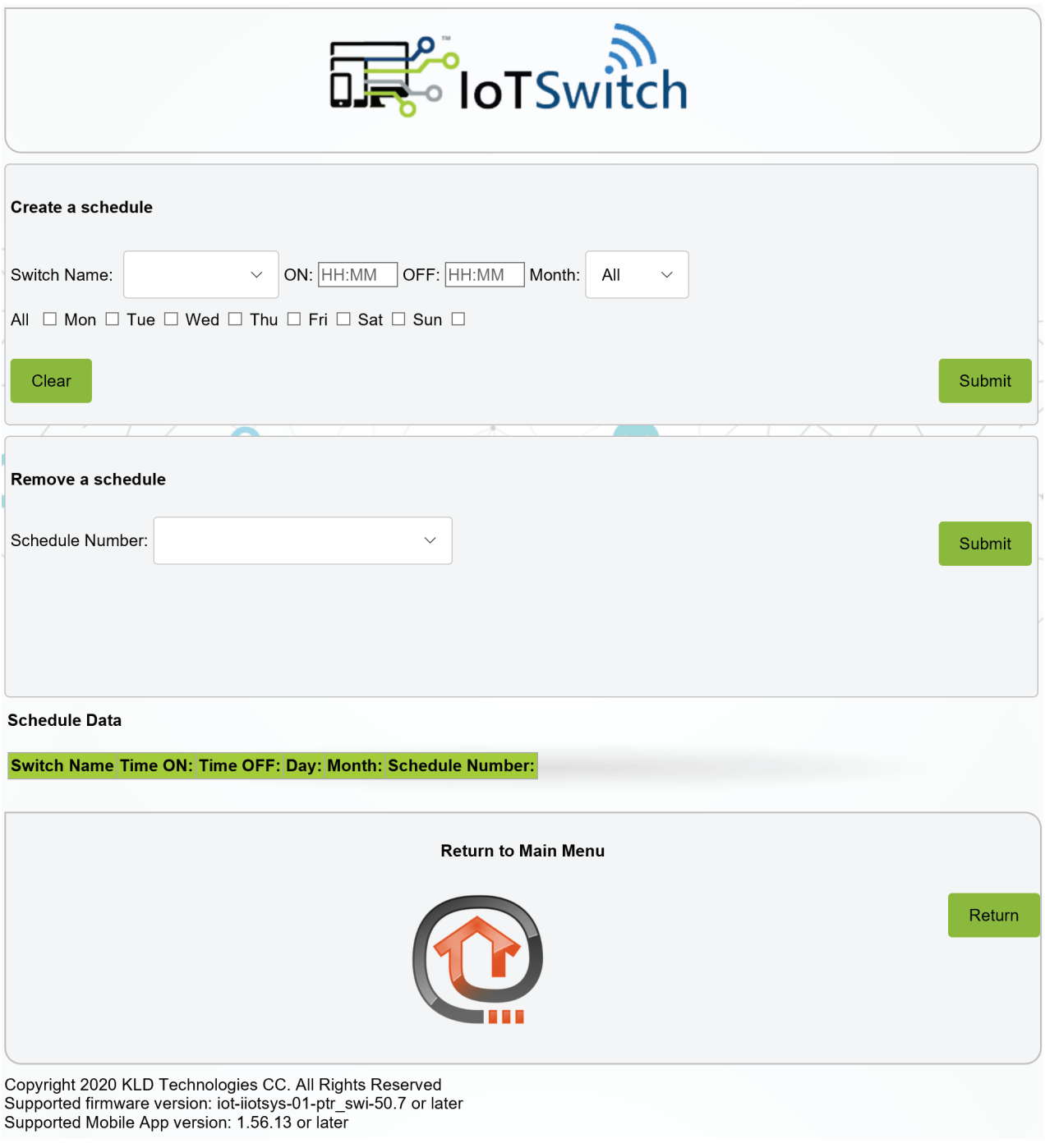
TIP!
- To troubleshoot, eliminate or temporarily open all ports without writing any rules on the local UFW firewall, simply disable the firewall using the disable firewall option and clicking Submit. Remember to re-enable the firewall again for added security.

Remove SSL settings:
Check the remove all ssl settings option and click Submit. Once Submit is clicked all certificates, keys, csr's, https openHAB webserver and https video streaming webserver is deleted and the http server is re-instated for both the openHAB and video streaming server on http port 82.

User Data:
A list of usernames and date of creation is displayed in this table for all users created on the system**.**

Installed Updates Data:
A list of updates that have been installed.

Return: click the Return button to return to the Main Menu



Supported firmware version: iot-iiotsys-01-ptr_swi-50.7 or later
Supported Mobile App version: 1.56.13 or later

Scheduler Menu:
This menu facilitates scheduling IoT Switches to be switched on, off or pulsed during specified time periods

Create a schedule:
Select a IoT Switch from the drop down selection, specify the time in 24Hr format for the IoT Switch to be Switched on (on = pulse where switch type is set to pulse).

Specify the off time in 24hr format, select a month or all, select a day of the week or all by ticking the appropriate week days check boxes (if none are checked **All** becomes the default), then click the Submit button.

The schedule is written to openHAB and the information stored in the local database with a corresponding unique Schedule Number.

Remove a schedule:
Select the Schedule number from the drop down, then click the Submit button. The schedule is removed from openHAB and the local database.

Schedule Data:
Schedules that have been created successfully will be listed here.

Return to main menu:
Click the Return button to return to the main menu.

NOTE!
- IoT Switches that are added as pulse type switches are pulsed during the ON time set event, as pulse type switches automatically turn off after 1 second the OFF time then set is thus irrelevant, however good practice would be to make a ON event to turn on (pulse) a pulse type switch to be OFF one minute later to conclude the event when creating a schedule.

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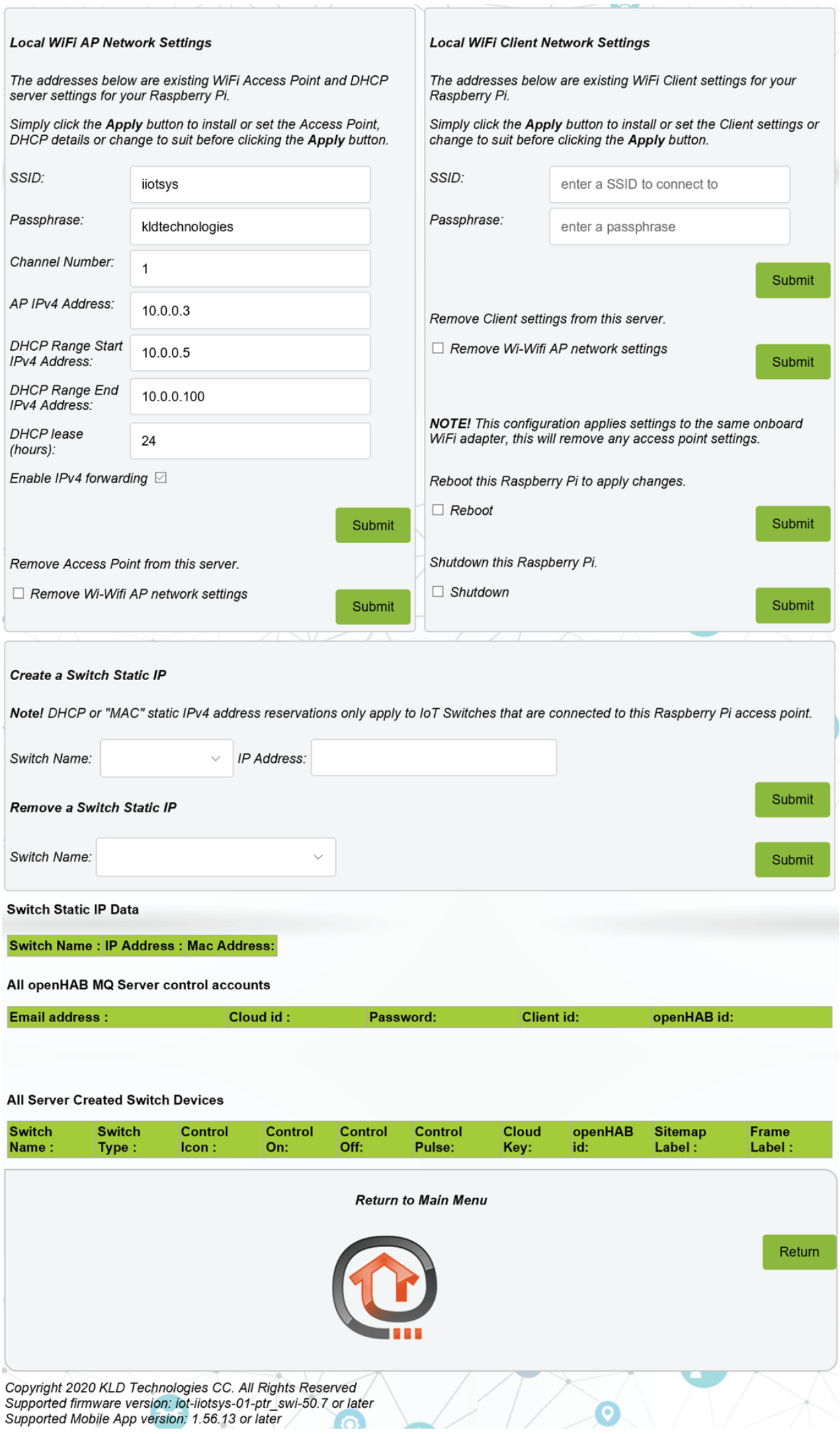
Additional Wi-Wi Network Features for Raspberry Pi: Local Wi-Fi and Client Network Settings.



Configuration Menu (Additional Raspberry Pi features):
These additional features appear in the Raspberry Pi Configuration Menu enabling of the configuration of the Raspberry Pi onboard Wi-Fi adapter as either an Access point or to connect to a existing LAN Wi-Fi (Client). Please note the Raspberry Pi only supports up to 5 concurrent connections as an Access Point.

Local WiFi AP Network Settings:
Enter a SSID, Passphrase, Channel number, IPv4 address (usually the first IPv4 Address in a range), a DHCP start Address, DHCP range end Address and a lease period.
IPv4 forwarding will enable the Raspberry Pi to act as a router to ranges outside of the defined ranges above connected to the LAN ethernet interface. (For e.g. a hotspot to the internet connected to the LAN). Click Submit.

If the SSID does not become visible or available check the Reboot checkbox and click Submit. The SSID will become available to connect to using the Passphrase entered in the previous step and a IPv4 address will be issued in the DHCP range specified during the previous step above.

Remove Wi-WiFi AP network settings:
Check the box and click submit to remove the Access Point settings.

Local WiFi Client Network Settings:
Enter your local Wi-Fi network SSID and Passphrase to connect your Raspberry Pi. Click Submit. Check the Reboot checkbox and click Submit.

Reboot: (checkbox) click Submit, reboots the Raspberry Pi operating system.

Shutdown: (checkbox) click Submit, shuts the Raspberry Pi down. Power cycle is then required to start up (boot) again.

Create a Switch Static IP:
Select a IoT Switch from the drop-down list, enter a IPv4 address in the DHCP range, click Submit.

Remove a Switch Static IP:
Select a IoT Switch from the drop-down list, click Submit.

Switch Static IP Data:
Existing Static IPv4 reservations with corresponding information is listed in this table.

Note!
- Only IoT Switches and clients connected to the Raspberry Pi Wi-Fi access point can have their IPv4 addresses statically reserved.

All openHAB MQ Server control accounts:
This is a list of openHAB MQ server control accounts added to the local database using either Mobile App publish to openHAB function or **Add or Remove MQ Server Configuration**.

All Server Created Switch Devices:
This is a list of IoT Switches that was created using this configuration interface.

Return: click the Return button to return to the Main Menu.

Note!
- All Raspberry Pi images are provided with the default iiotsys SSID configured. Simply connect to the Raspberry Pi access SSID **iiotsys** *using password* **kldtechnologies** *then open a web browser and proceed to* **http://10.0.0.3/** *from the main menu select configuration (config) menu, view and set network settings for LAN and WLAN as needed.*
- The onboard Wi-Fi adapter of the Raspberry Pi can be configured to be either an access point (clients connect to it) or a client (it connects to your existing Wi-Fi network) but not both simultaneously (together at the same time).
As a result, when trying to configure both, the last conflicting configuration will automatically be removed.
- Any combination of access point or local client with LAN ethernet connected will function without issues.

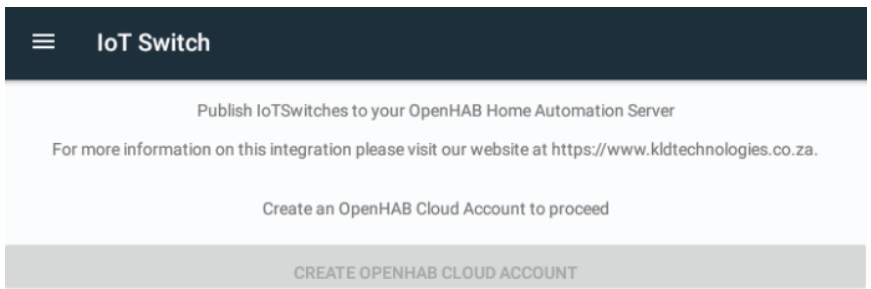
Important Notes: Raspberry Pi openHAB server.

- The Raspberry Pi onboard Wi-Fi Adapter can be configured as either a Access Point (Soft AP) or connected to an existing Wi-Fi network as a client (Station) and cannot simultaneously be both. The code has been designed that if a Client configuration is configured while a Access point configuration exists or vice versa then the latter will automatically be uninstalled.
- Cloud enabled IoT Switches in near proximity can be connected directly to the Raspberry Pi server provided IPv4 routing is enabled (IPv4 Forwarding check box was ticked when configuring the Soft AP) and the internet is reachable through the LAN ethernet connection on the Raspberry Pi.
- There is a limitation of 5 concurrent connections to the Raspberry Pi Access Point, the purpose of the Access Point is to extend hybrid connectivity options, meet the requirements of a smaller consumer who does not have a Wi-Fi network or a consumer who just wants to initially trial the solutions offered by KLD Technologies cc before investing in more expensive hardware.
- There is a limitation of resources on a Raspberry Pi of CPU, RAM, Storage (64Gb MicroSD), however it is fit for purpose (< 20 IoT Switches) within these limitations as our solutions use a very lightweight MQ technology and footprint, whereas the Virtual Server can be scaled to suit much larger installations (>20 IoT Switches) and performance demands.

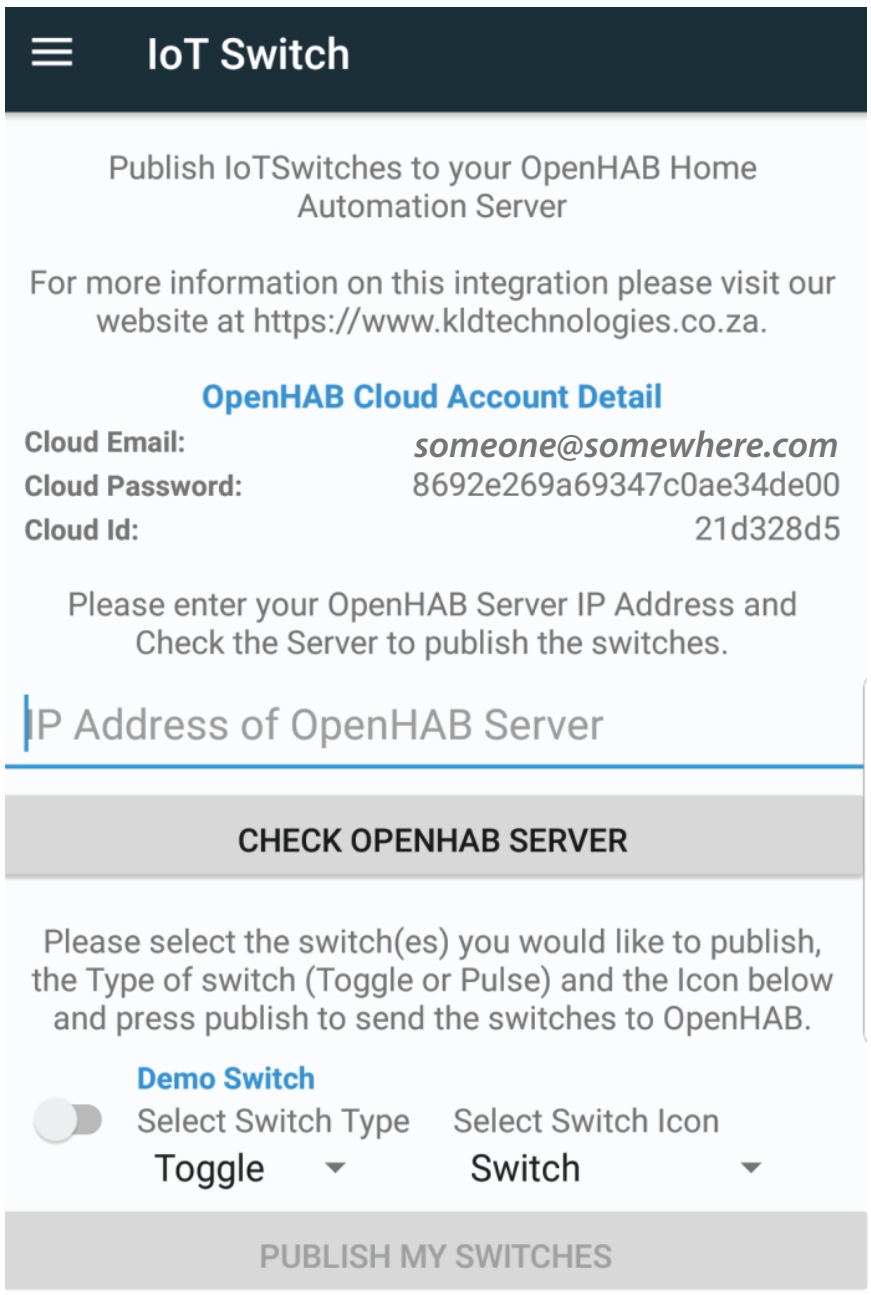
User Manual: iiotsys™ Automation Server

Adding iiotsys™ IoT Switches to the automation server:
IoT Switches can initially be added to the automation server in two ways;
Publishing IoT Switches from the iiotsys™ Mobile Application OR using the iiotsys™ Web Administration Application web user interface (UI).

Adding iiotsys™ Switches using the iiotsys™ Mobile Application API;
Open the iiotsys™ Mobile Application, click the flyout menu, select publish to openHAB option from the flyout menu.
The publish to OpenHAB API interface to iiotsys™ openHAB server software requires that at least one IoT Switch exists in the Switch List. The API will also create the first openHAB Server control account for the owner. Each owner is permitted to have one free cloud account for a openHAB server instance. multiple openHAB servers belonging to the same owner can use the same cloud account belonging to the owner. non-owners cannot create server cloud accounts and owners cannot create more than one openHAB server control account on iiotsys™ cloud MQ server. (Unlimited openHAB server control accounts are supported for local Rabbit MQ and third party Rabbit MQ servers).



Click on the Publish to OpenHAB option from the Main Menu.
Click on the CREATE OPENHAB CLOUD ACCOUNT.



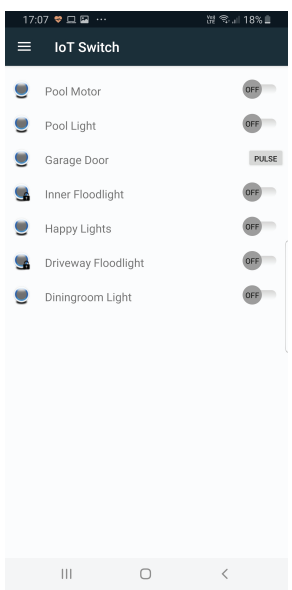
Once a cloud account has been created the OpenHAB Cloud Account Detail will become populated with the iiotsys™ Cloud account details, Cloud Email, Cloud Password and Cloud ID. This openHAB control server account will also be published to the automation server and appear under the Main Menu of the iiotsys™ Web Administration Application interface under **All openHAB MQ Server control accounts:**.

Enter the local IPv4 or FQDNS address for the iiotsys™ automation server and click the CHECK OPENHAB SERVER button. Once the openHAB local server API is available and validated the PUBLISH MY Switches option will become available at the bottom of the menu and you will now be able to select IoT Switches listed that you wish to publish to openHAB server.

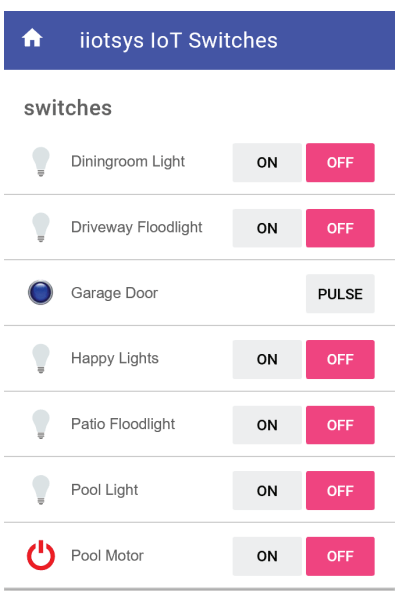
Enable the IoT Switches toggle button that you want to publish to the local openHAB server.
Select the Switch Type as Toggle or Pulse and select a Switch Icon from the drop-down list.
Repeat this for all the desired IoT Switches.

Click the PUBLISH MY SWITCHES button at the bottom of the menu when done. A pop-up notification will advise you that the IoT Switches have been successfully been published to the openHAB server. The selected IoT Switches will be published to the automation server and appear under the iiotsys™ Web Administration Application interface under **All configured Switch Devices:**.

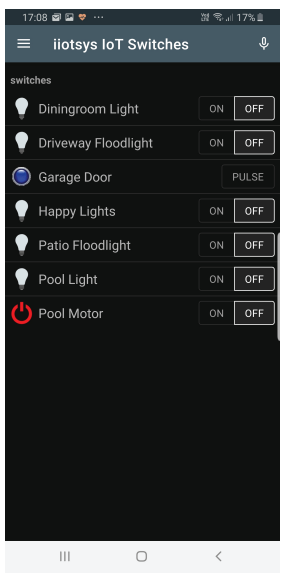
For each of the steps above conformational and informational pop-ups will guide the process. Once the IoT Switches have been published to the local openHAB server they will be immediately available for control in the openHAB server Basic User Interface, HABPanel, openHAB Mobile Applications and available to consumed as fully integrated items throughout all openHAB2 interfaces. Please see our openHAB tutorial videos for more information on those areas. Below is the result of publishing switches.



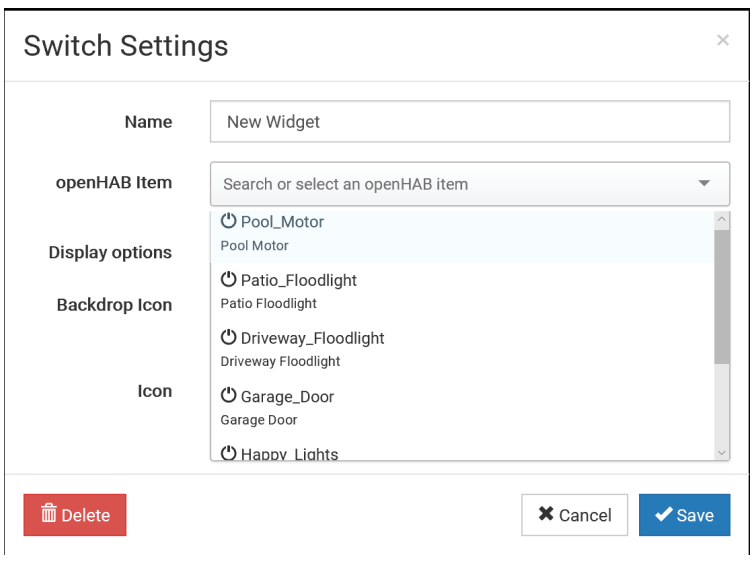
iiotsys™ Mobile App



openHAB Basic Web User Interface



openHAB Mobile App

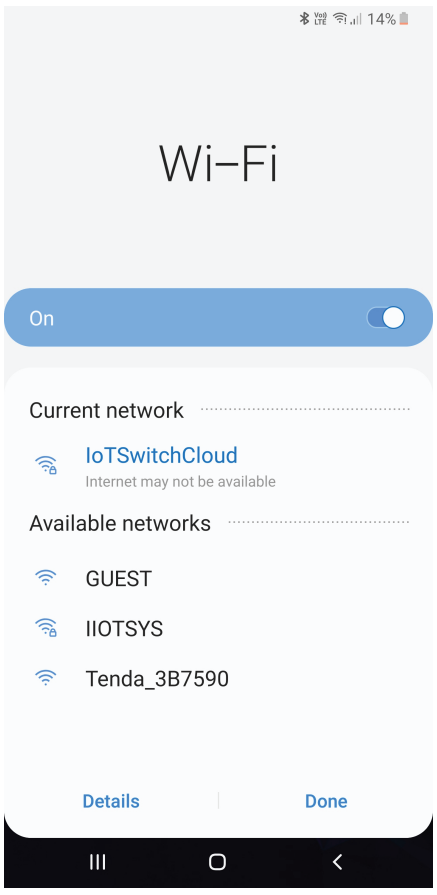


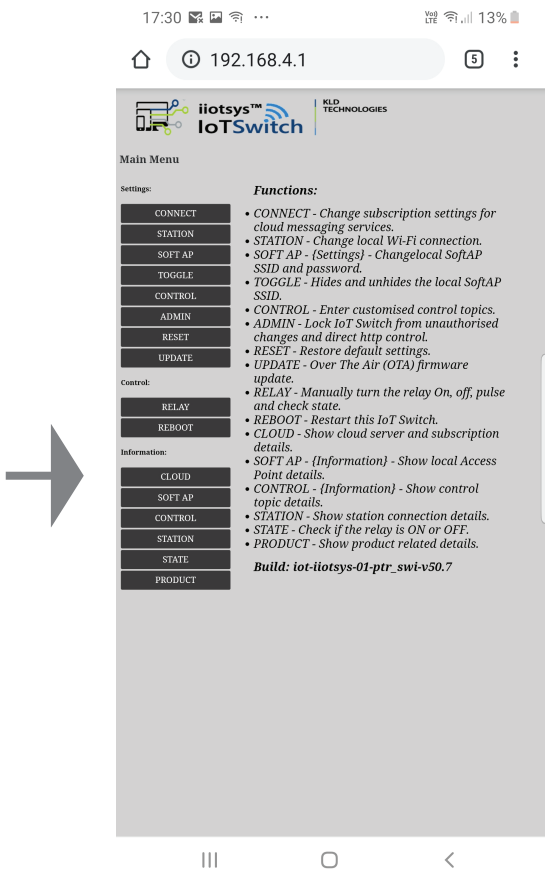
Items Generally available in openHAB (HABPanel, HABMin)

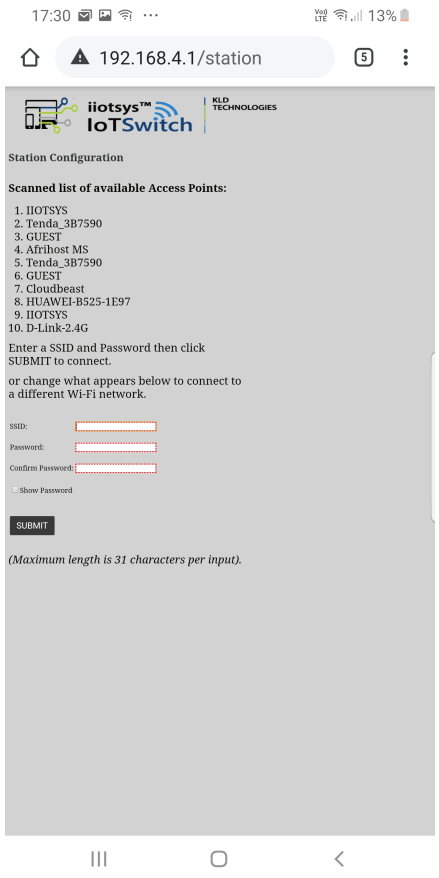
User Manual: iiotsys™ Automation Server

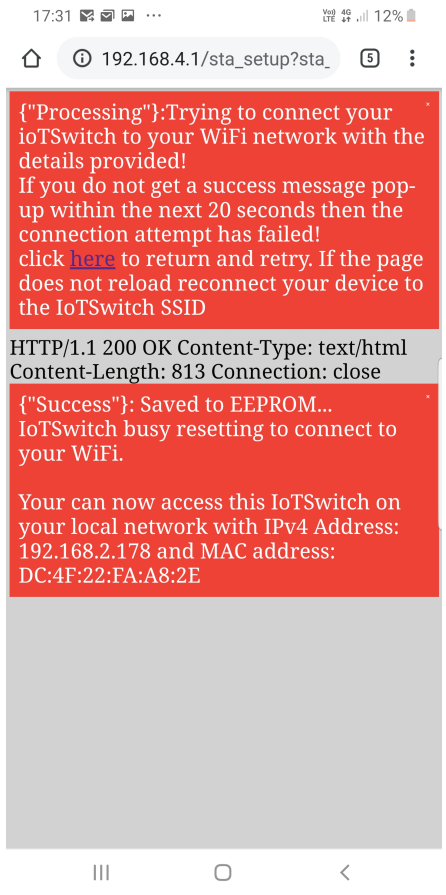
Adding iiotsys™ Switches using the iiotsys™ Web Administration Application and API;

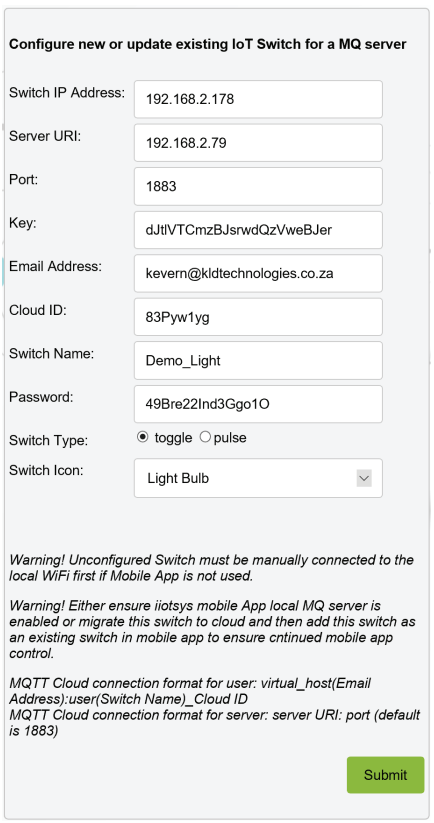
Adding a new iiotsys™ IoT Switch:
Connect the iiotsys™ IoT Switch to the local Wi-Fi network, connect to SSID **IoTSwitchCloud** using your laptop or mobile device. The default password is **IoTSwitchCloud**, the Default IPv4 Address is **192.168.4.1**, select **STATION** from the menu, enter the SSID and password for your local Wi-Fi Network and click Submit. Observe the connection and IPv4 address issued to the IoT Switch.



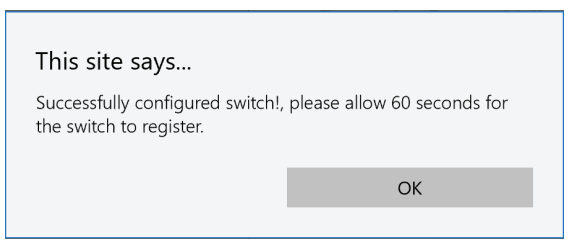




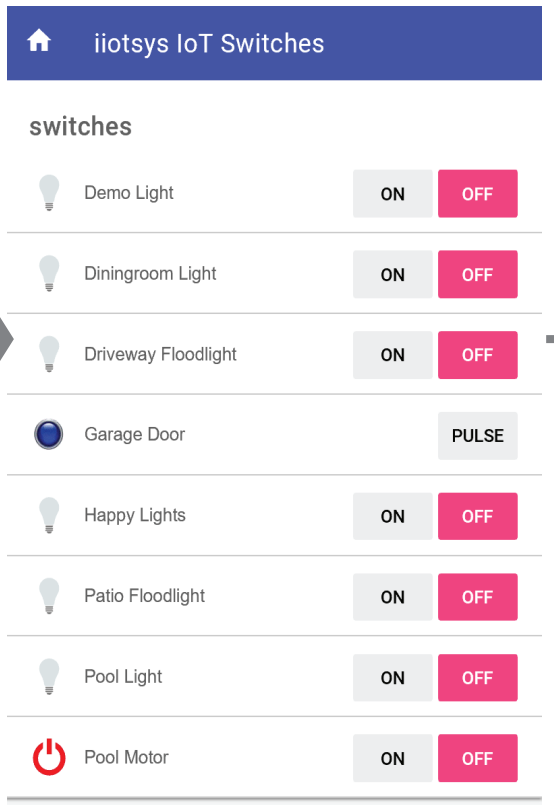


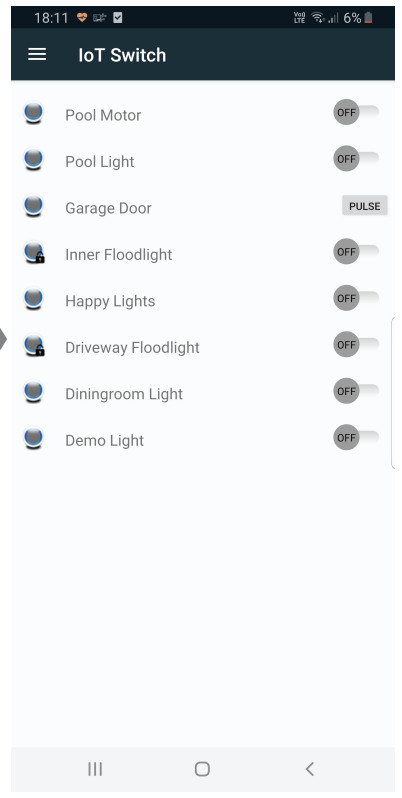


Using the configure a new or update existing IoT Switch for a MQ server section in the configuration menu. Enter the IPv4 address assigned to the device when it was connected in the step above. Enter a email address and switch name. Enter a lock and unlock password of your choice. and click submit. The iiotsys™ Web Administration Application will completely provision the switch and notify success via a alert pop-up.

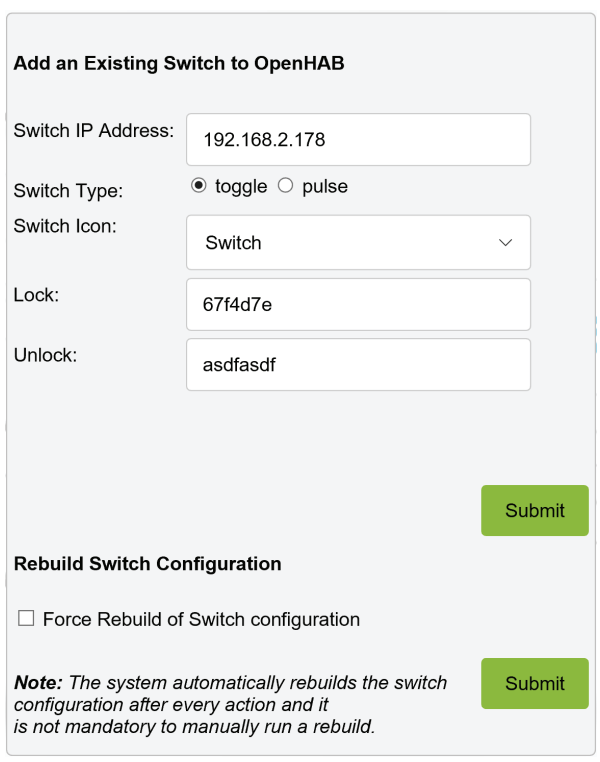


The newly configured switch is now available for control. Use the Add existing switch feature in the iiotsys mobile App to add the Switch if needed in the iiotsys™ Mobile App. The native openHAB mobile app is automatically updated with the changes.

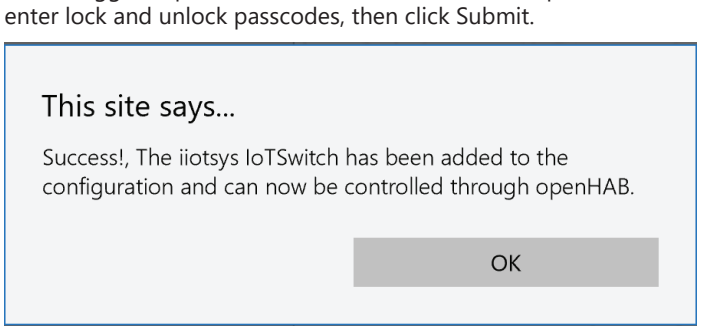




Adding an existing iiotsys™ IoT Switch:



Adding an existing iiotsys™ IoT Switch:
Using the add an existing switch to openHAB section in the main menu, enter the IPv4 address of the switch discovered using the iiotsys™ Mobile App or local DNS and DHCP.
Select toggle or pulse function, an icon from the drop-down list, enter lock and unlock passcodes, then click Submit.



The newly added switch is now available for control. Use the Add existing switch feature in the iiotsys mobile App to add the Switch if needed in the iiotsys™ Mobile App.

Requirements for IoT Switches
The IoT Switches require a local 2.4Ghz Wi-Fi network with a DHCP service and internet access.

Closing notes

Once IoT Switches are added to the iiotsys™ automation server they are available as items in openHAB to be consumed in any of the interfaces such as HABMin and HABPanel.

Additionally, with the enabling of the openHAB cloud connector in the openHAB Paper UI configuration, the relevant UUID and Secret Keys shown in the iiotsys™ Web Administration Application, Configuration Menu can be used to connect the automation server to the openHAB cloud opening Voice and IFTTT functionality.

More detailed manuals are available for the iiotsys™ Mobile Applications and iiotsys™ Products as well as "How To" videos from our website.

The iiotsys™ Eco system is designed to be flexible and scalable and can readily integrate or be connected to other systems.