identix

Quick Start Guide for Identix IoT gateways

For HW version 4.0.1 including mPad+, rPad+, EZ230 and EZ270 devices

Version 1.1

Table of Contents

Introduction

The IoT gateways from Identix are based on the CONNECTIX OS which is an embedded operating system that manages data capture and transfer from RAIN RFID tags and Bluetooth Beacons to business applications and cloud platforms.

Connectix offers a unified software interface, including programming APIs, for all devices, except for specific features of each hardware model.

Initial setup

Connect the gateway to a power supply

Identix mPad+, rPad+, EZ230 and EZ270 are powered though a standard "USB Type A" power brick.

All models can also communicate via USB to a Host computer running Window, Linux, or any other OS. The Host USB port can be used not only for data communications but also as the power source for the gateways.

It is important to make sure the USB power supply (either an external power brick or the Host computer USB port) has enough capacity to drive the gateway.

Model	Max Consumption
mPad+, rPad+, EZ230	1A (5 watts)
rPad+MX and EZ270	2A (10 watts)

Power Consumption table for Identix gateways

Warning!

The Identix gateways are designed according to USB 2.0 standards using +5V DC power. The maximum input voltage on the USB port for the gateway is +6.5VDC. Exceeding this limit will permanently damage the device.

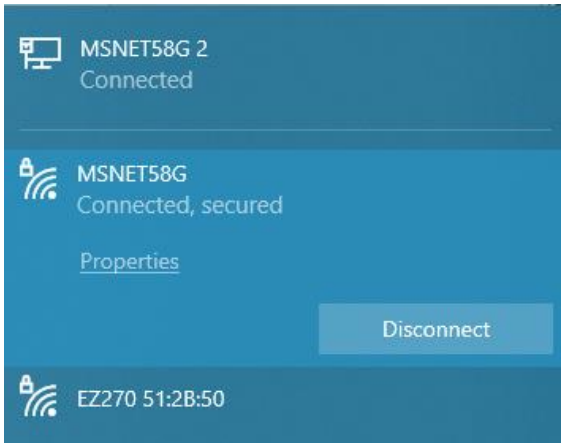
Some USB phone chargers implement "fast adaptative charging methods" such as such as "Samsung Adaptive Fast Charging" and "Samsung Super-Fast Charging 1.0 and 2.0" which supply voltages up to 11V to the USB port. Connecting de gateway on these kinds of chargers will permanently damage them!

Access the embedded WiFi hotspot

When the gateway is powered up, a WiFi hotpot is created. The Wi-Fi network name (SSID) contains the gateway model followed by the last three octets of the gateway WLAN MAC address. In the example below the gateway name is “EZ270 51:2B:50”.

Attention! the connection to the gateway via the internal Wi-Fi hotspot is provided only as a method for the device configuration and it was not designed to be used for the normal device operation. To operate the device via network interface, first connect it to a permanent and stable Wi-Fi connection.

Use the following password to connect to the gateway hotspot: !Idntx1234



Log into the administration console

Once connected to the gateway Wi-Fi hotspot, open a browser on the default IP address (192.168.4.1) to access the administration interface

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Using a browser, connect to http://192.168.4.1 to access the administration console

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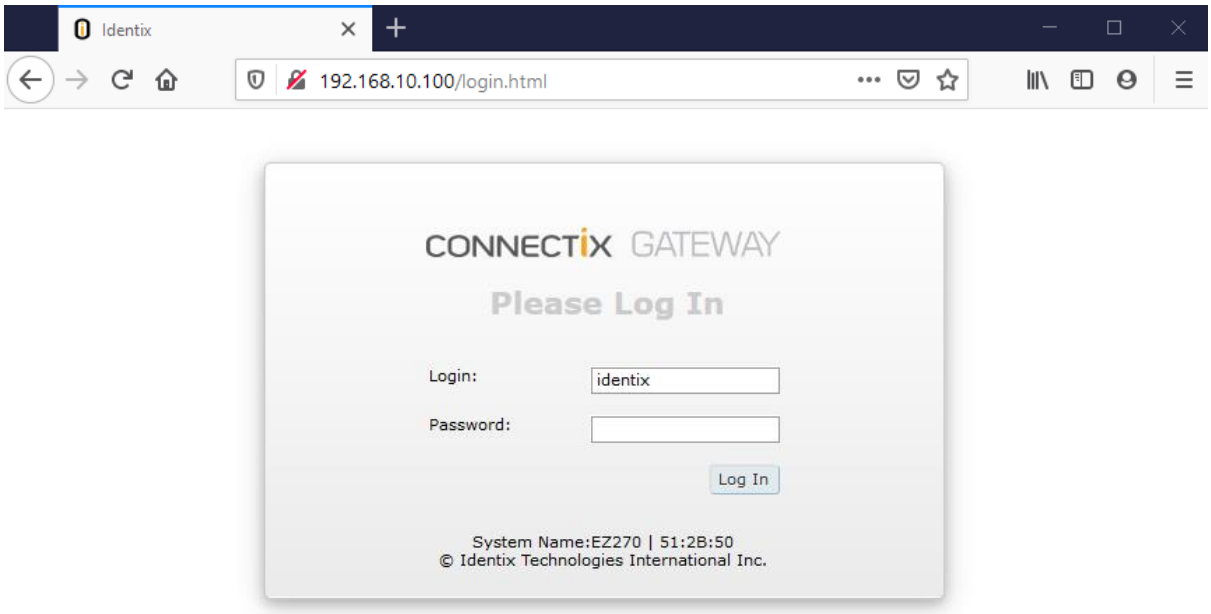
After the login screen is shown, use the default username and password for accessing the administration console

Default username: identix
Default password: identix



After successfully logging into the system, you will be able to check / modify the gateway configuration parameters though the administration console

Network Configuration

The gateways connect to a WiFi network as a WLAN station (client) and may send collected data to business applications and cloud services using different protocols such as MQTT, HTTP, sockets etc.

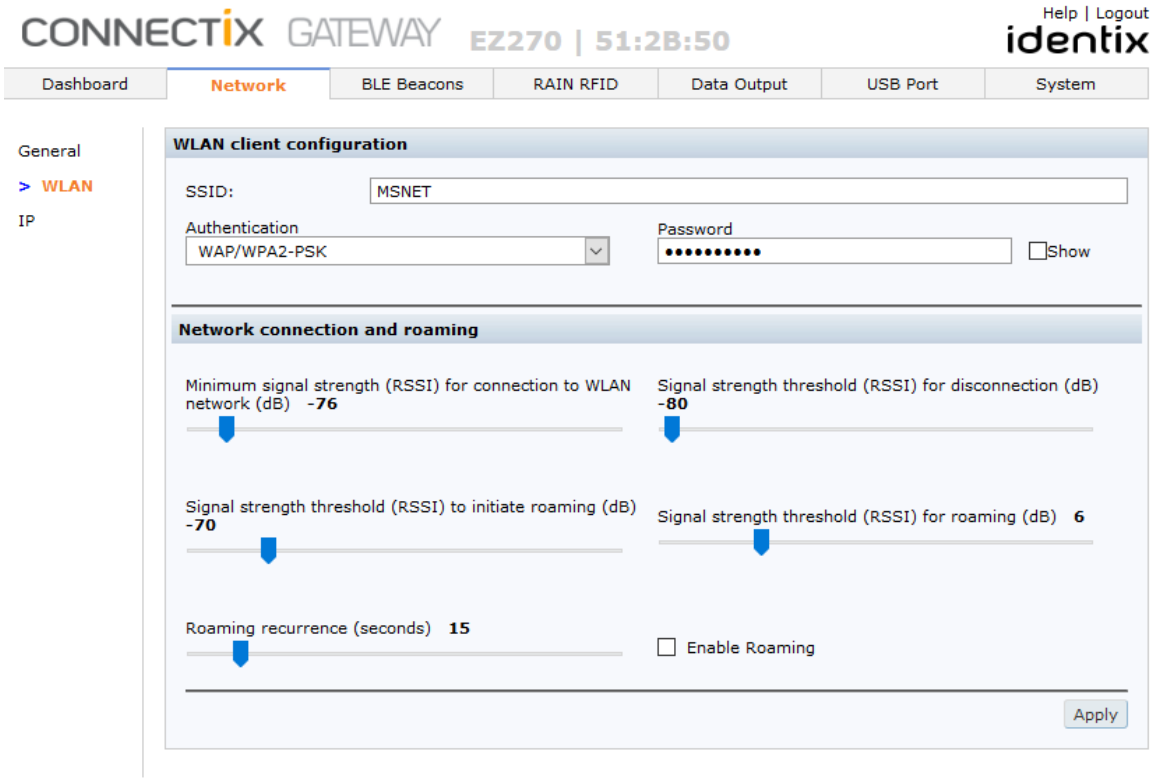
Optionally the RAIN RFID reader present in the gateway can communicate to a host computer via the USB port.

Use the next sections to configure the WLAN station parameters

- WLAN client connection – this is the WLAN network the gateway will connect to
- Roaming behavior - these parameters allow you to configure WLAN roaming and its behavior
- IP address – allows to switch between dynamic (DHCP) and fixed IP address

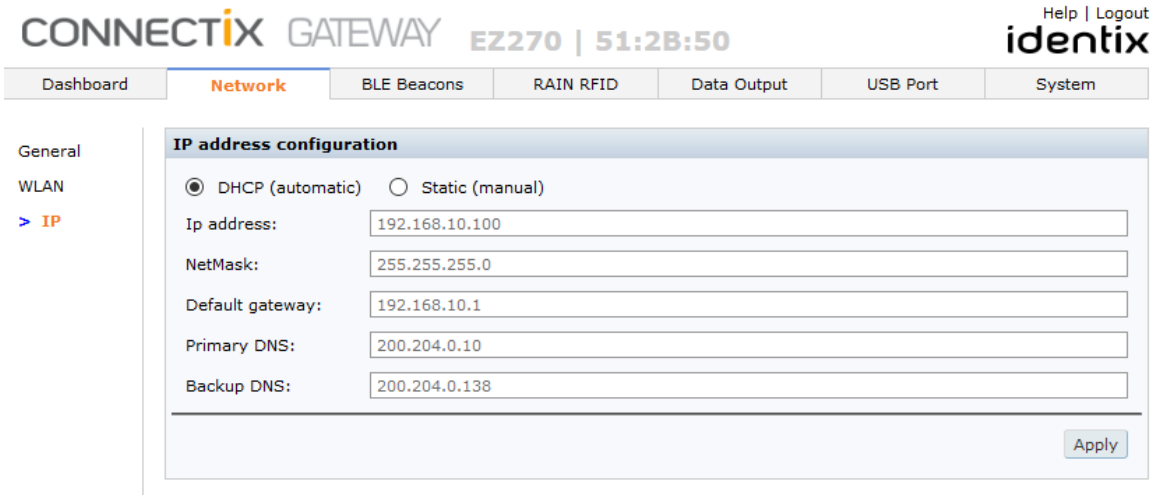
Network – WLAN

Please enter the SSID the gateway will be connected to. You may optionally operate the RFID reader via USB only. In this case you may leave the SSID field empty, not connecting to any WiFi network.



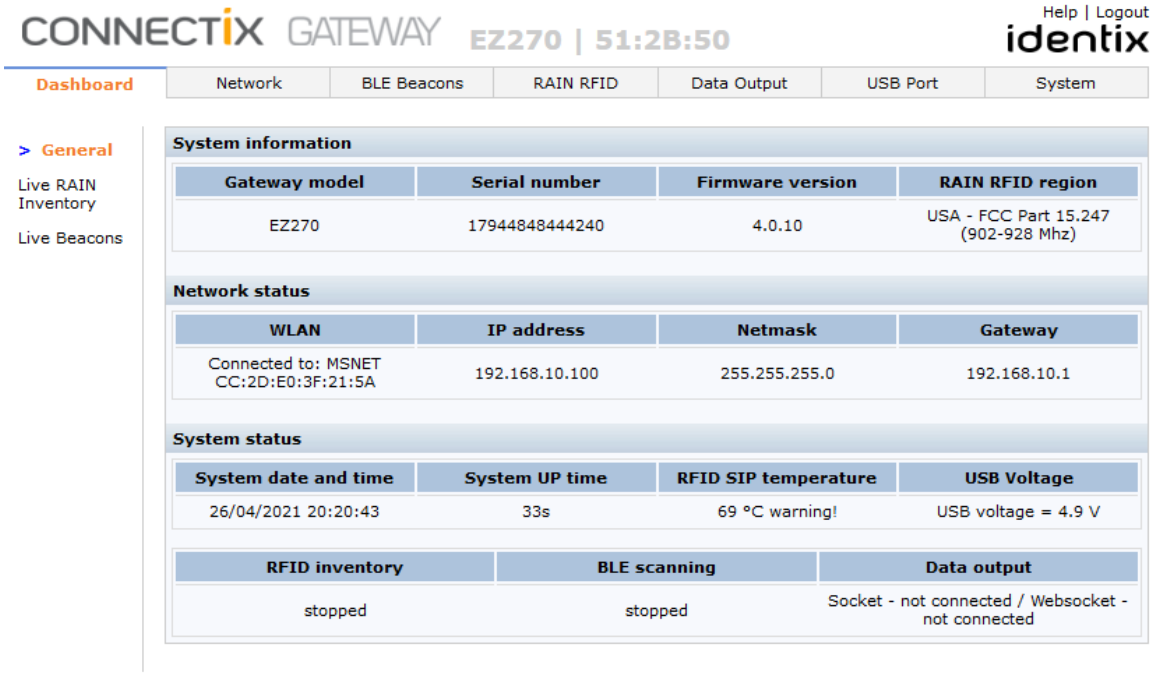
Network - IP

Choose DHCP or enter the static IP address information



Main Dashboard

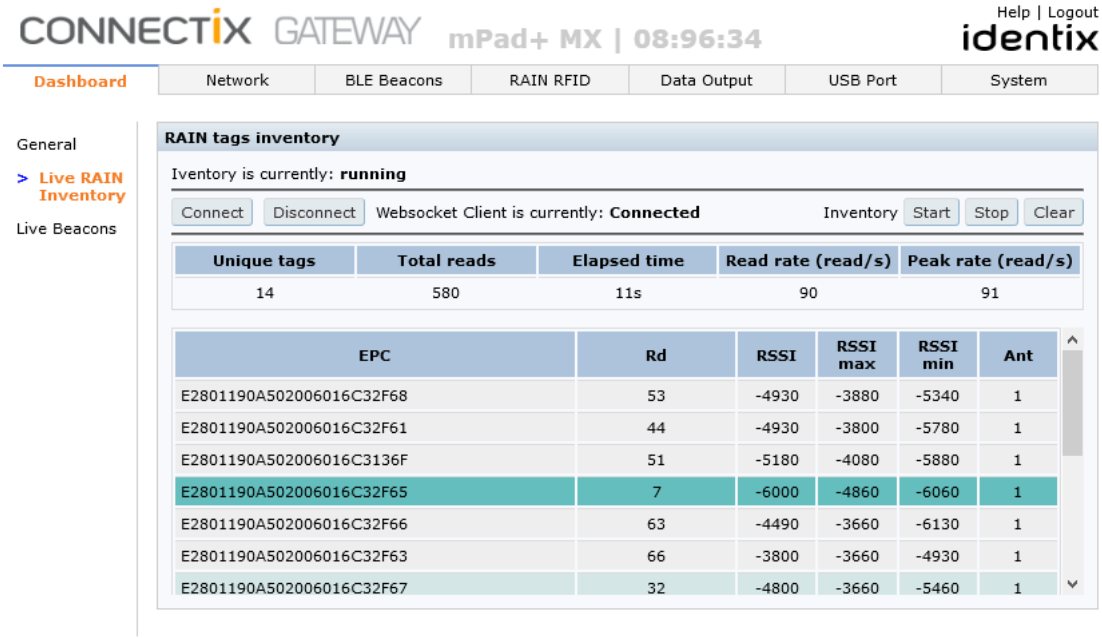
The system dashboard shows a lot of useful information, including a summary of network connection, firmware version, main components health and current system status.



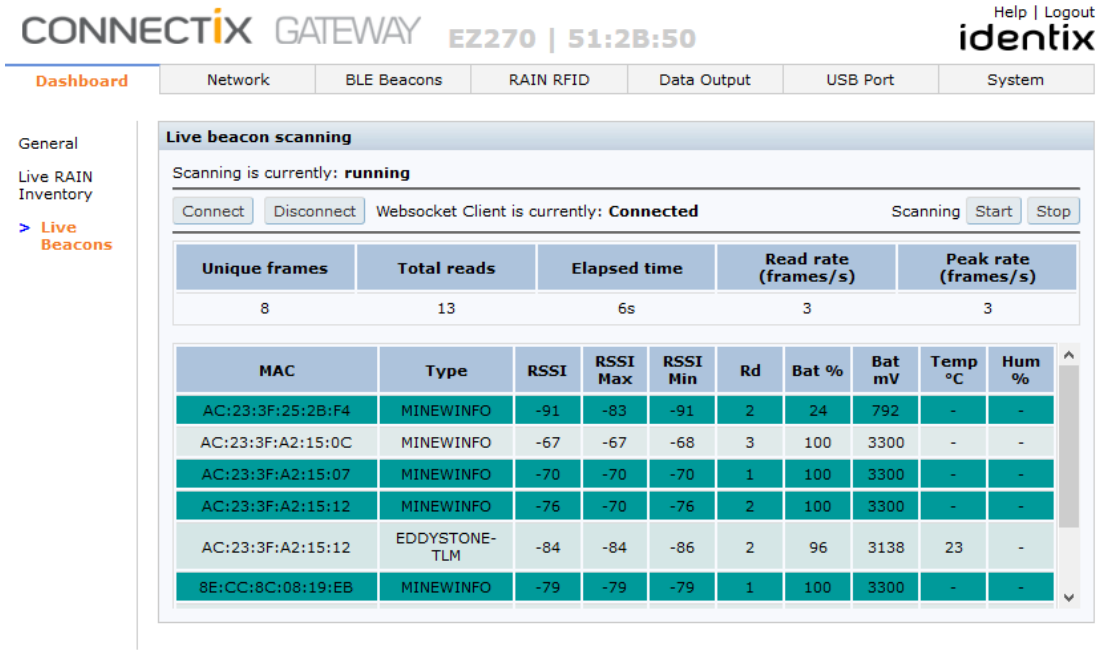
Live Information

Through these two panels it is possible to see the RAIN RFID inventory data and BLE beacons scanning in real time. These interfaces are implemented over web sockets, and you must hit the "Connect" buttons to see the data in real time.

Live RAIN - RFID inventory in real-time

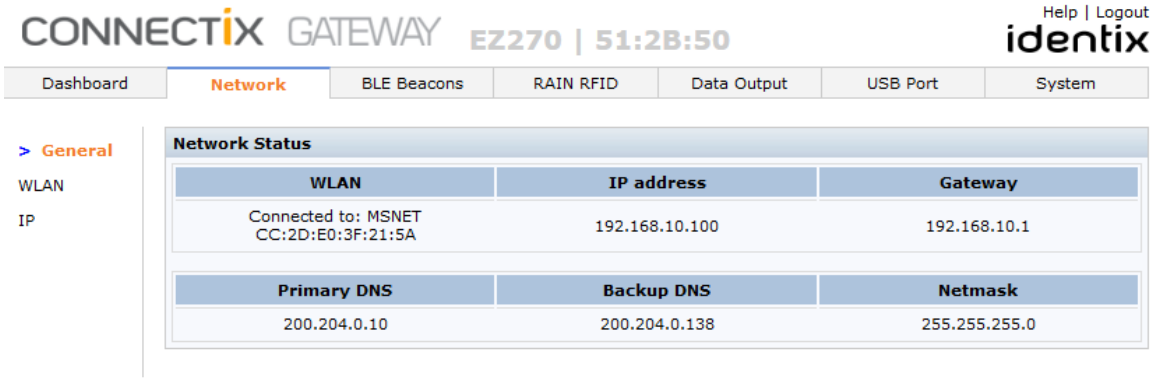


Live Beacons – BLE beacons scanning in real-time



Network Status – network connection status

This section displays a summary about the gateway WLAN configuration and connection status

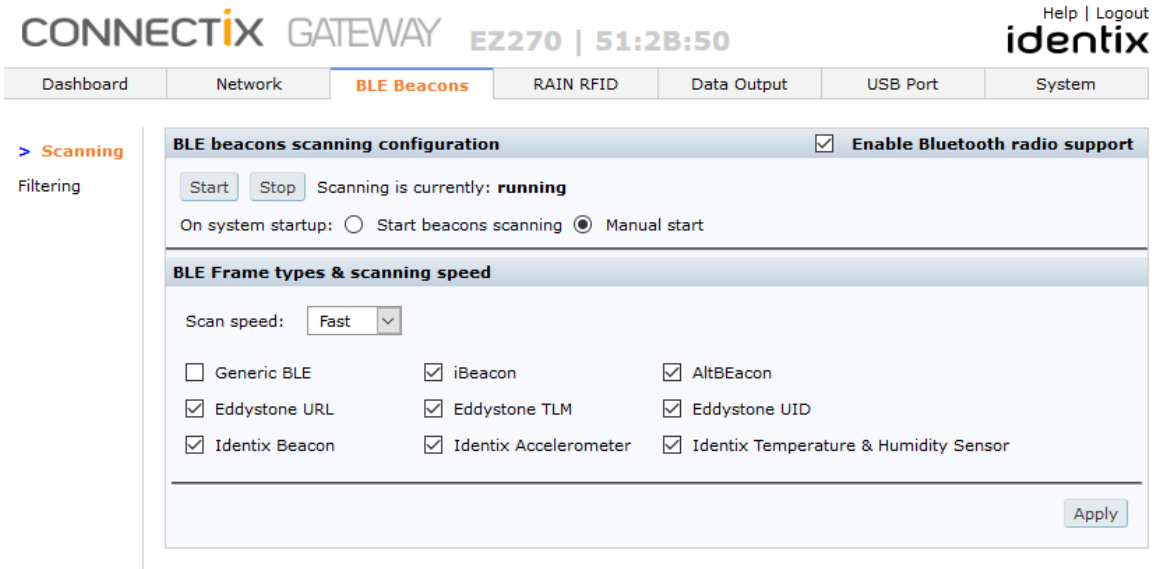


BLE Beacons Gateway configuration

Though the following screens is possible to configure the BLE Beacons gateway functionality.

For optimal performance, if you do not plan to use the gateway for beacons scanning, we recommend leaving the option “Enable Bluetooth radio support” disabled.

BLE Beacons Scanning



Attention! BLE beacons scanning is disabled by default since it may impact RFID reading performance under high RFID read rate conditions.

BLE Beacons Filtering

Through this section, two kinds of filters can be enabled to reduce the volume of captured data.

- RSSI filter – use it to filter BLE beacons by signal intensity. This may be useful to capture data for BLE beacons which are within a certain distance range from the gateway
- MAC Address filter – use it to filter BLE beacons by MAC address

RAIN RFID reader configuration

Use this section to configure the RAIN RFID reader operating parameters

Inventory

Through the following screen, the following parameters may be configured

- Inventory configuration
  - Defines how inventory will be executed after system startup
- Inventory Duty Cycle
  - Inventory can be configured to run continuously, or a cycled inventory may be defined

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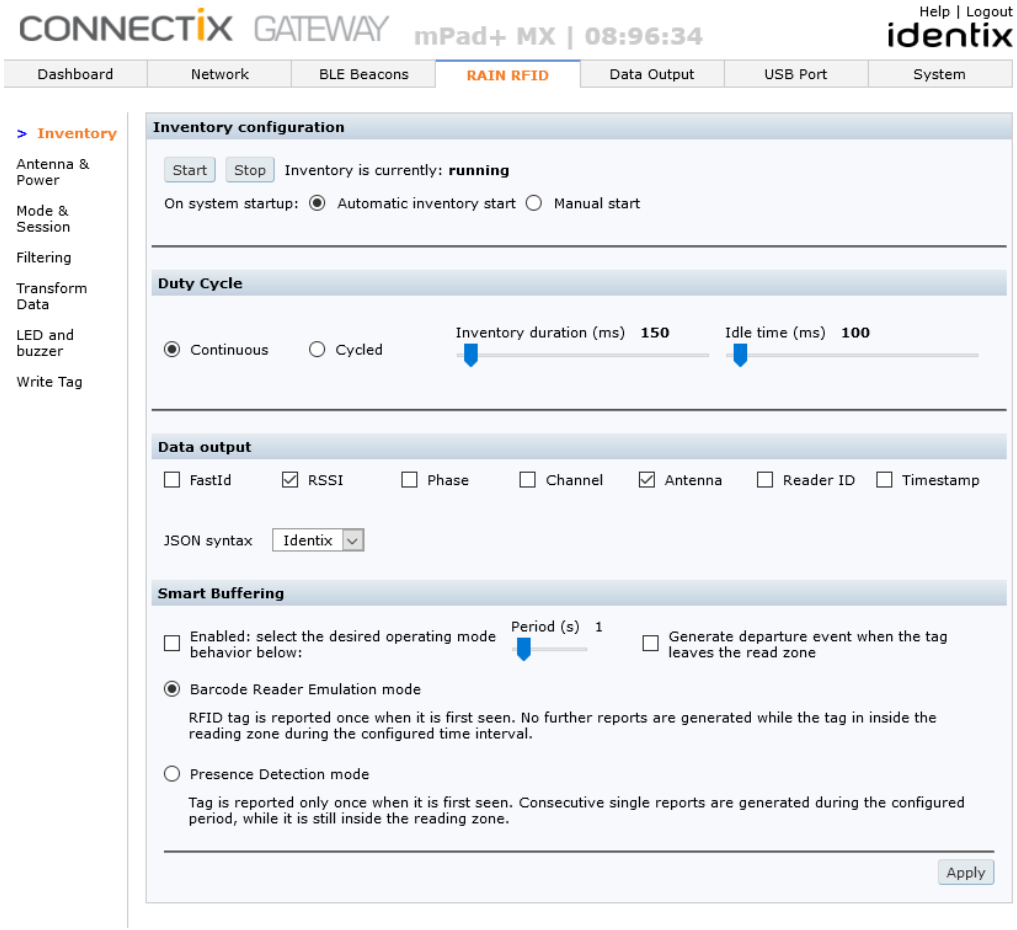
Attention! By default, to reduce power consumption, the gateway is configured by default to execute inventory in duty cycle mode. To maximize RFID reading performance, change the Duty Cycle parameter to "Continuous Inventory"

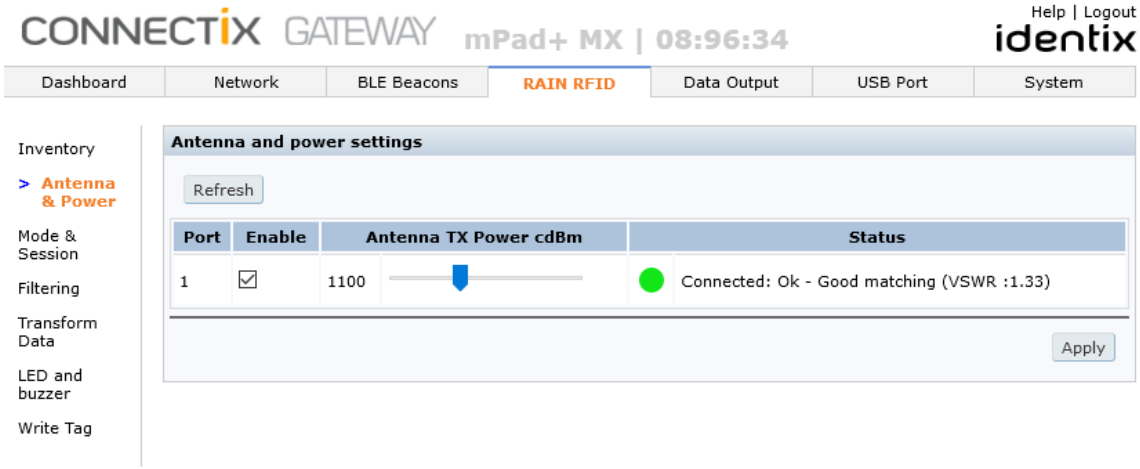
- Data Output
  - Allow selection of which information will be captured during RFID inventory
- Smart buffering

  These settings allow the configuration of the gateway internal buffer which accumulates reads and reports data based on the selected criteria



Antenna & Power

Use these settings to enable/disable antennas and configure transmit power on each antenna port.



Reader Mode & Session

Use this section configure the RAIN RFID “search mode”, “session” and “RF profile”.

Search Mode

Dual target reads ‘A’ tags one at a time and moves them into the ‘B’ state. Reads ‘B’ tags one at a time and moves them into the ‘A’ state.

Single Target reads ‘A’ tags one at a time and moves them into the ‘B’ state. Those tags will remain in the 'B' state depending on the persistence of the session used, before reverting to the 'A' state. Single Target B>A is the same operation but with inverted flag states.

TagFocus (also described as Single Target with Suppression): this search mode is the same as Single Target, except provides the advantage of Sessions 2 and 3, in that the tag will remain quiet while in the read field once inventoried.

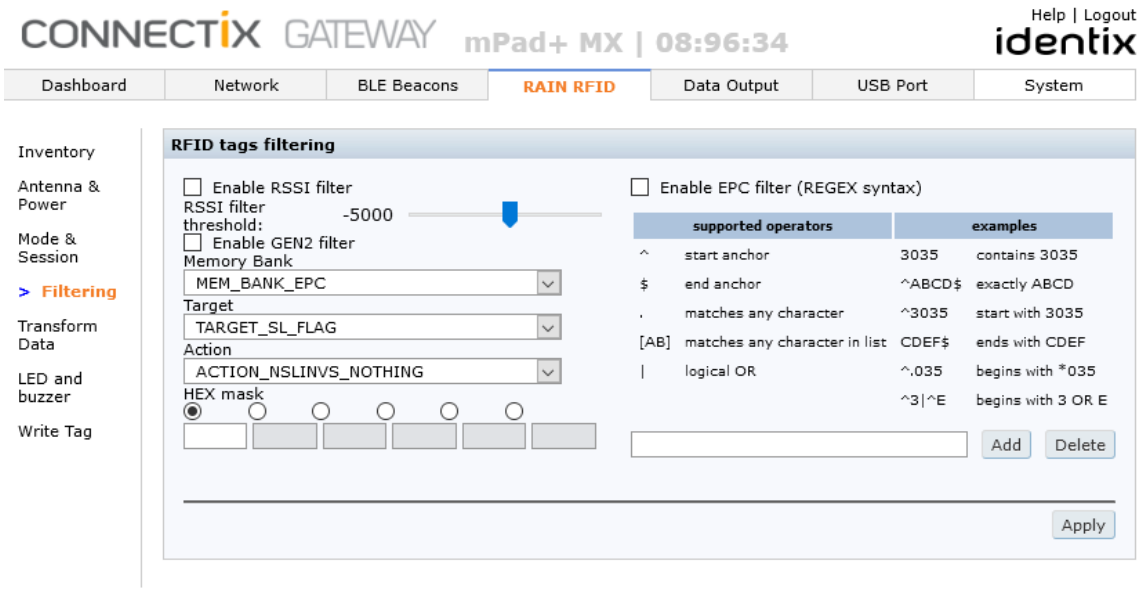
Session

When the reader inventories a tag, the session flag state is changed from 'A' to 'B' - how long the tag stays in the 'B' state before reverting to the 'A' state is called "persistence". It is important to realize that exact persistence times (denoted by their session flags as S0, S1, S2, and S3) cannot be set by the user; they can only be approximated according to the Search Mode and Session.

Filtering

RAIN RFID tags can be filtered at the gateway using three different criteria

- RSSI filter – to filter tags by backscattered signal intensity
- EPC filter – you may use regular expressions that are applied for filtering EPC data
- GEN2 filter – this is a low-level filter that operates at the GEN2 protocol level



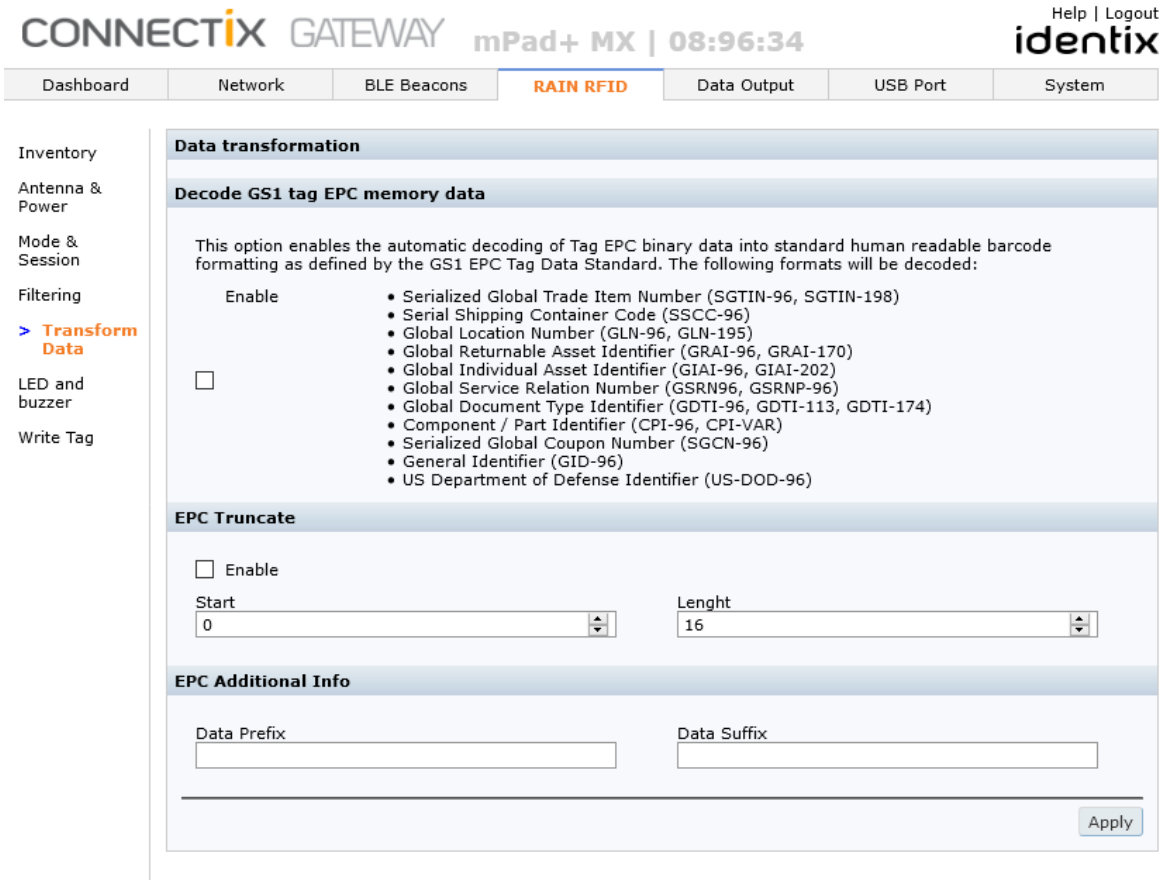
Data Transformation

This section allows the following operations to be executed after the RAIN RFID EPC data is captured

- Decode GS1 tag EPC memory data – this option enables the automatic decoding of Tag EPC binary data into standard human readable barcode formatting as defined by the GS1 EPC Tag Data Standard. The following formats are automatically decoded when this setting is enabled:
    - Serialized Global Trade Item Number (SGTIN-96, SGTIN-198)

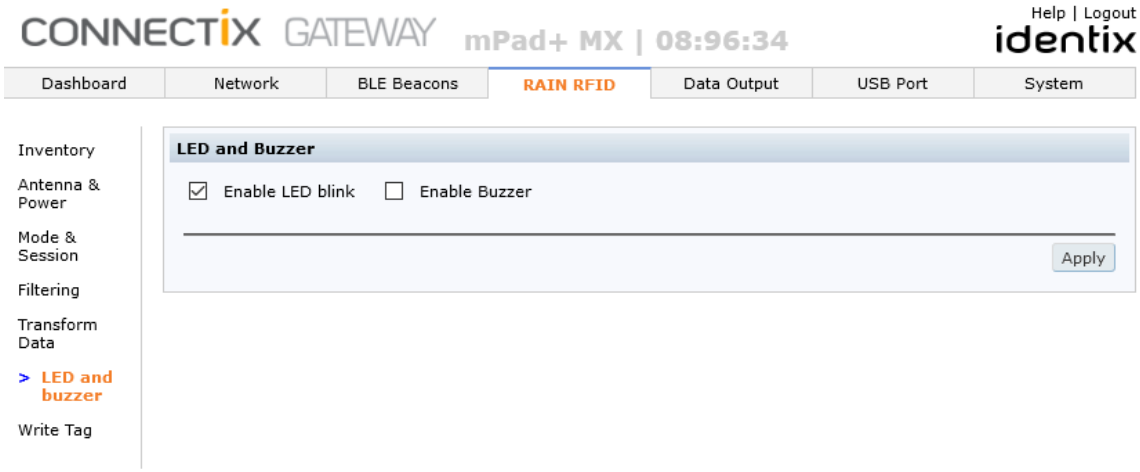
- Serial Shipping Container Code (SSCC-96)
- Global Location Number (GLN-96, GLN-195)
- Global Returnable Asset Identifier (GRAI-96, GRAI-170)
- Global Individual Asset Identifier (GIAI-96, GIAI-202)
- Global Service Relation Number (GSRN96, GSRNP-96)
- Global Document Type Identifier (GDTI-96, GDTI-113, GDTI-174)
- Component / Part Identifier (CPI-96, CPI-VAR)
- Serialized Global Coupon Number (SGCN-96)
- General Identifier (GID-96)
- US Department of Defense Identifier (US-DOD-96)

- EPC Truncate – allows ECP data to be truncated from a given position
- EPC Additional Info – allows EPC data to be appended / prepended by given strings



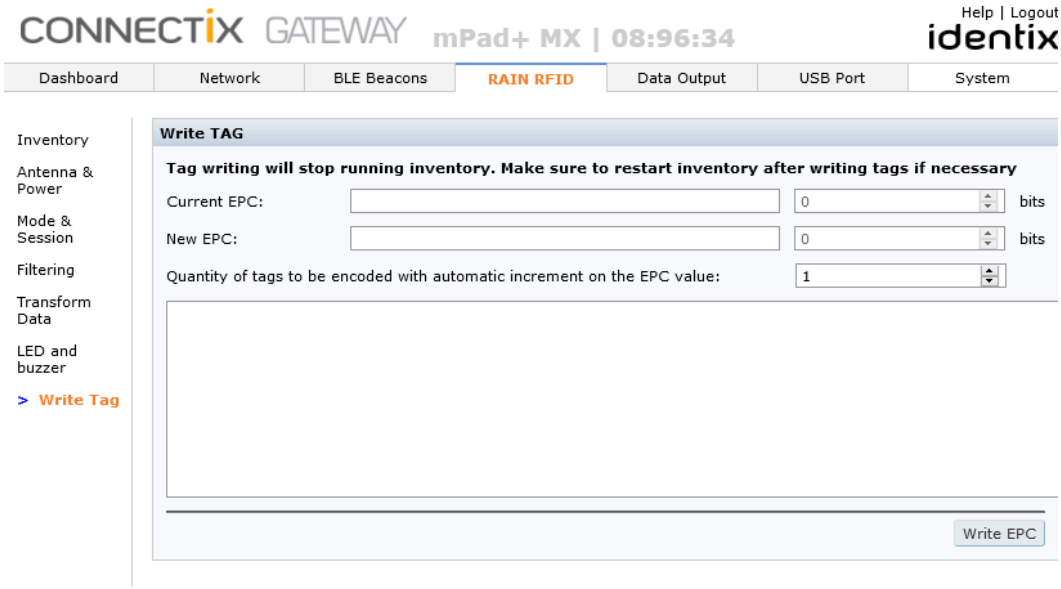
LED and Buzzer

Use this option to configure the LED and buzzer behavior during inventory



RAIN RFID Write Tag

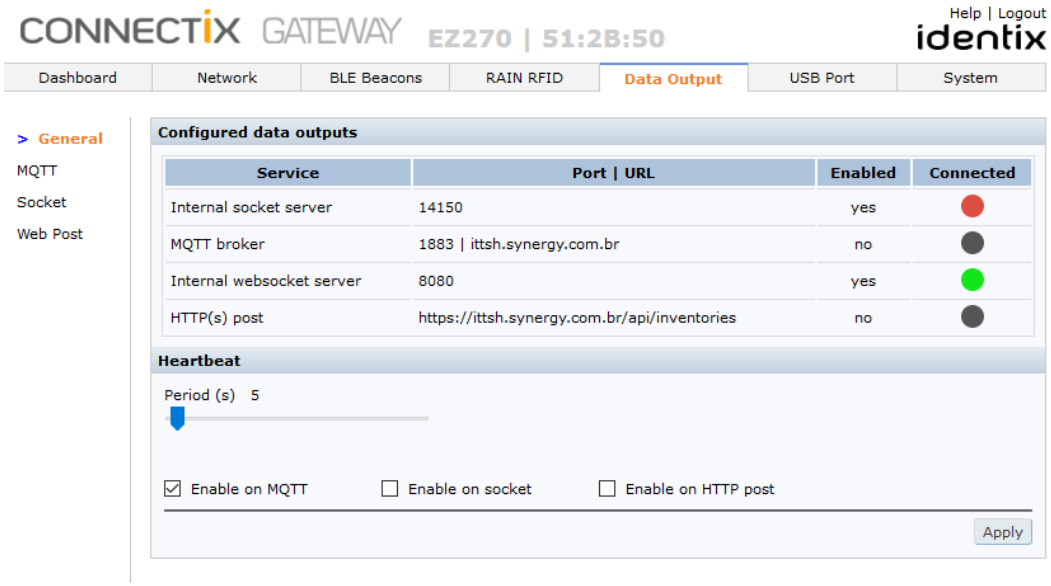
Allows writing of RFID tag EPC data



Data Output configuration

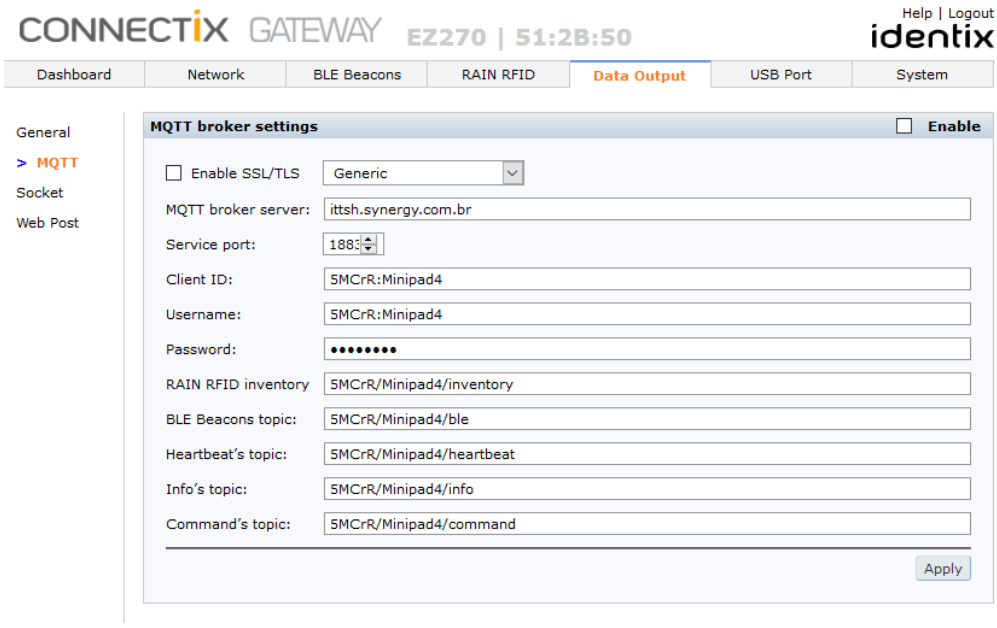
This section allows you to define how the collected data is made available for applications and services. JSON-formatted data is sent to different channels, including MQTT brokers, HTTP servers and cloud services.

Data Output



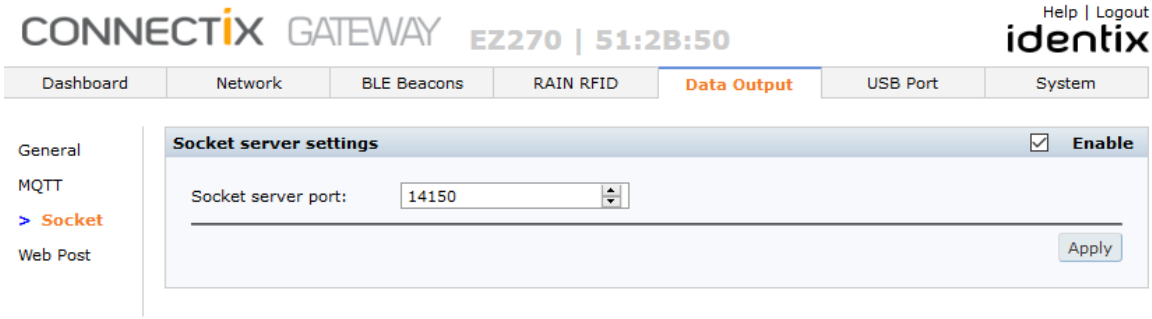
MQTT

Use this section to configure output via MQTT(s)



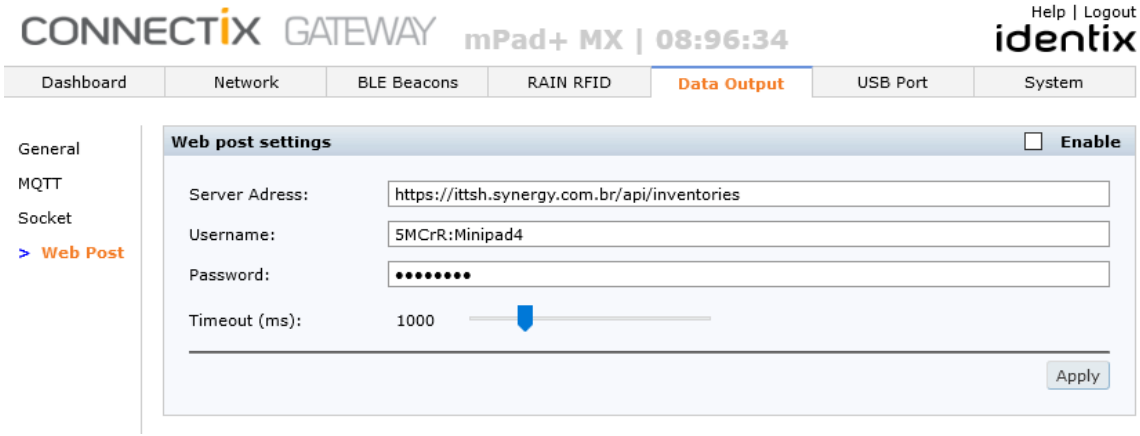
Sockets

Use this section to enable a local socket server



HTTP POST

Use this section to configure output via HTTP(s)



USB Port

USB Port configuration

This section allows you the configure how the USB port will behave. By default, the gateway is configured in USB Mirror mode, which essentially mirrors data set over the network interfaces in JSA format.

Attention! Normally, USB does not require any special driver to function properly. If you face communication issues or the USB port is not recognized in Windows OSs, you may need an updated driver that can be downloaded from the Identix support website: https://idntx.zendesk.com/

If the USB interface does not work properly, the following article may apply:

https://idntx.zendesk.com/hc/en-us/articles/4402568912787-Virtual-COM-port-USB-drivers-to-be-used-when-Windows-installed-drivers-do-not-work-correctly

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Mirror Mode (default)

In this scenario, a USB virtual COM port is created. Device configuration and inventory commands are done only via Web interface or REST API. Output data formatting can be configured via the “USB Port / Data Formatting” menu. Output data can be simultaneously sent to network destinations (JSON) and the virtual COM port.

HID (keyboard wedge) mode

In this case, a virtual USB keyboard is created. Device configuration and inventory commands are done only via Web interface or REST API. Keyboard emulation data formatting can be configured via the “USB Port / Data Formatting” menu. Output data can be simultaneously sent to network destinations (JSON) and the virtual keyboard. For barcode similar operation it is recommended to check and adjust settings on the following menus: “RAIN RFID / Mode Session”, “RAIN RFID / Transform Data” and “Rain RFID / Inventory (Smart Buffering)”.

RAW mode

In this scenario, a USB virtual COM port is created. A limited set of device configuration and inventory commands are executed through the virtual COM port sing a simple 02-way protocol. Output data formatting can be configured via the “USB Port / Data Formatting” menu. Output data can be simultaneously sent to network destinations (JSON) and the virtual COM port.

RAW legacy mode

This mode is like the “RAW mode” operation but uses the RAW mode protocol implemented in the legacy devices only with USB ports. This mode of operation is provided only for backward compatibility and is not recommended for use in new developments.

Transparent mode

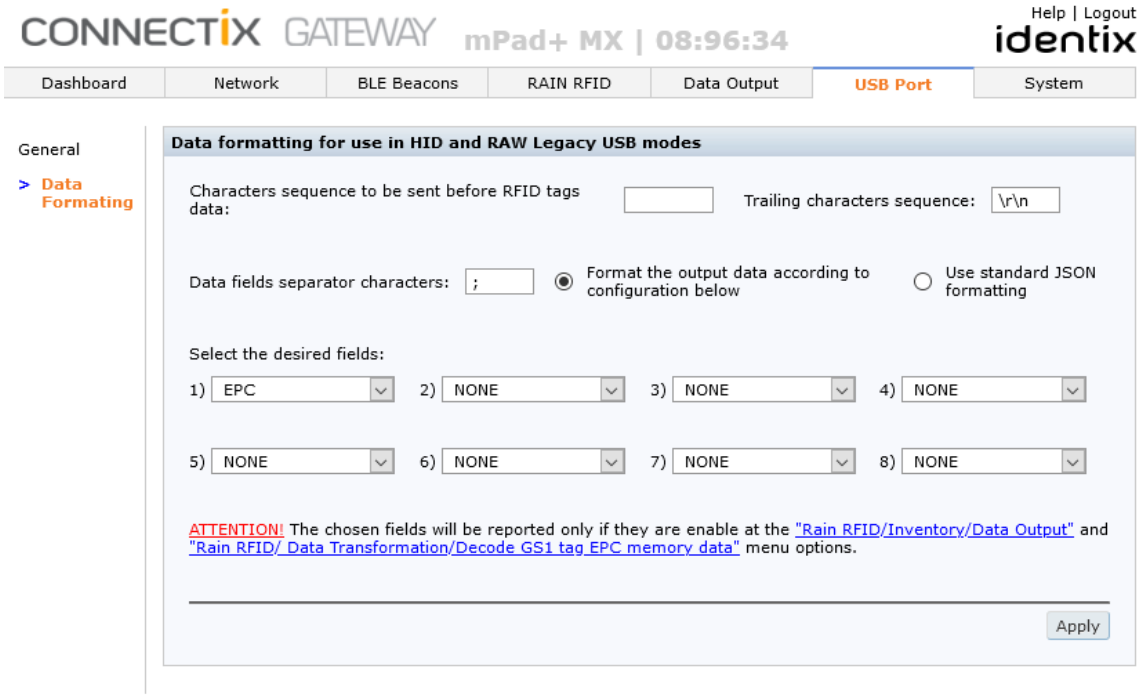
In this mode, a virtual COM port is created, but the RFID radio is exclusively controlled via the USB port using the Impinj IRI protocol. Configuration of RFID parameters is disabled on the web interface and RFID data output is limited to the USB port. Since the IRI protocol is now obsolete, this mode of operation is provided only for backward compatibility and is not recommended for use in new developments.

USB port disabled

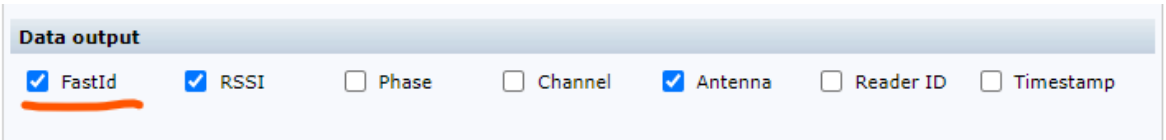
In this case, the USB port is completely disabled and used only for DC power supply. All system operation is via Wi-Fi network interface.

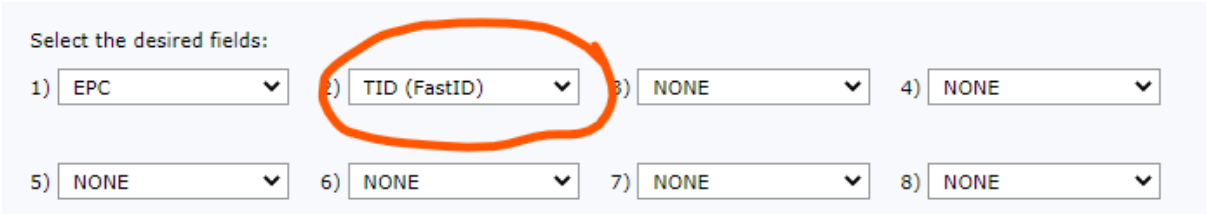
USB Port Data Formatting

Through this screen it is possible to define the data formatting for the data output via USB (except for Transparent mode of operation)



Attention! It is important to have enabled the appropriate RFID data (except for EPC) to be collected so they can be available for sending over the USB port. For instance, if you want "EPC" and "FastId (TID)" to be present on the output data, then "FastId" must be enable on BOTH screens: as a configured field in the "USB Port / Data Formatting" screen and in the "Rain RFID/Inventory/Data Output" screen.

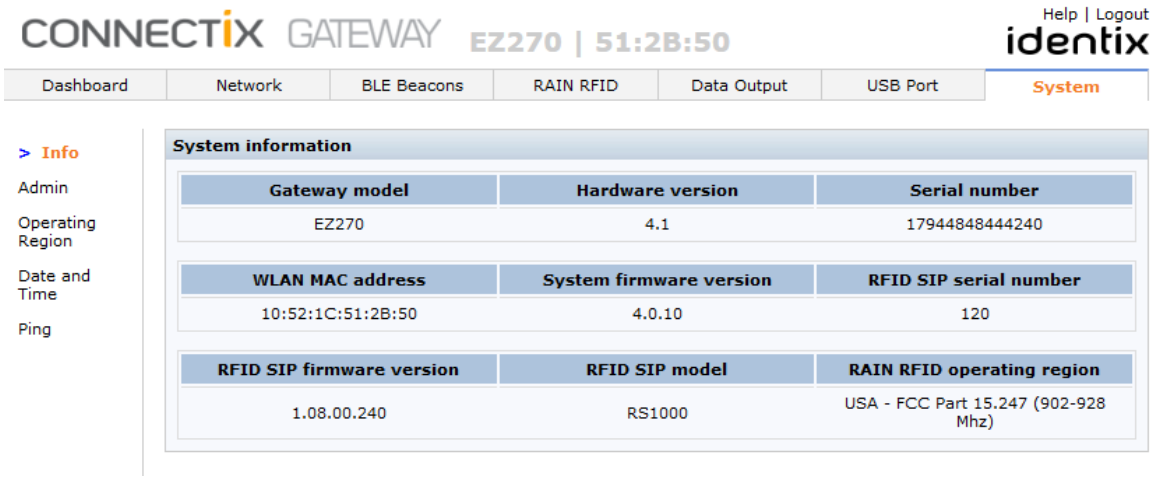




System Information and Management

System Info

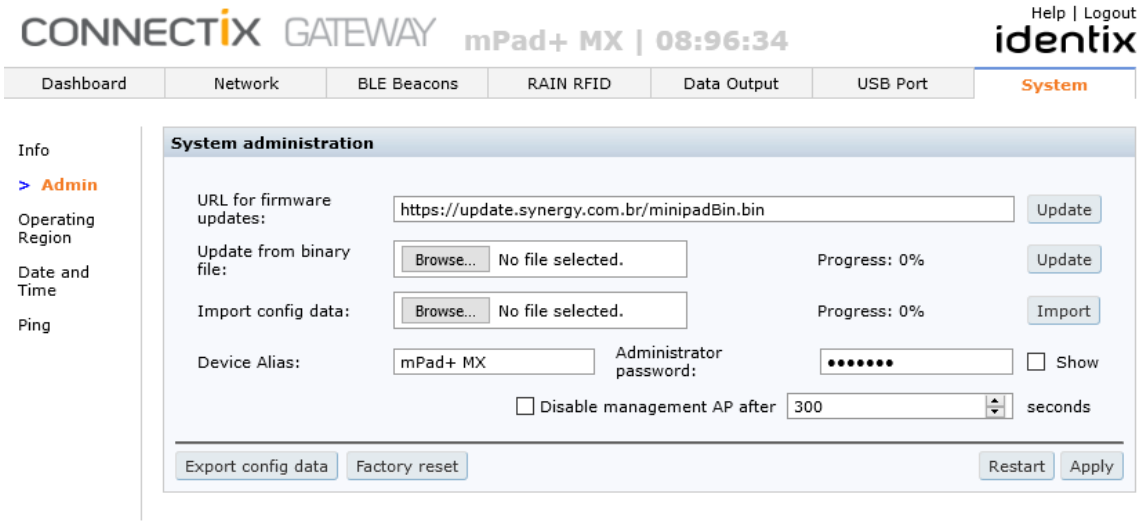
This section provides useful system information including the Firmware Version installed on the gateway.



System Admin

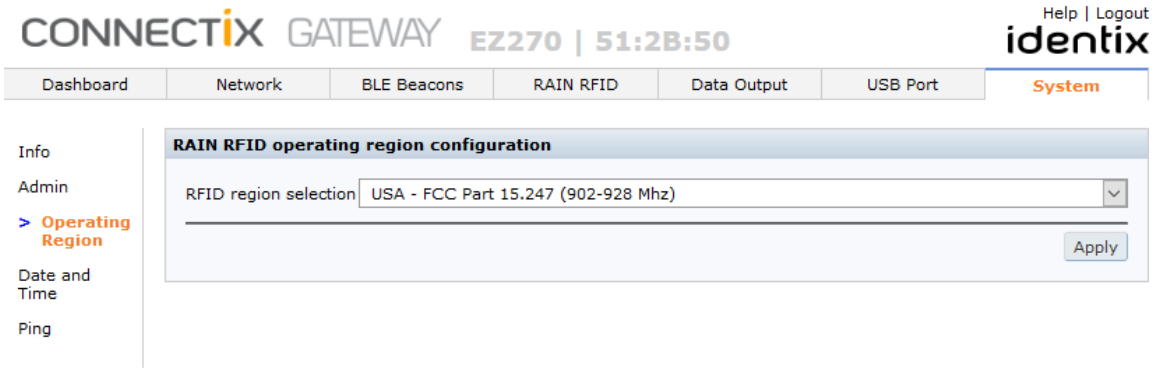
The following operations can be performed though this section:

- Device firmware updated
- Modify administration password
- Disable the device configuration Access Point. When this option is checked, the internal management hotspot automatically shuts down after the device is powered up
- Export and import the device configuration
- Reset the device to factory defaults



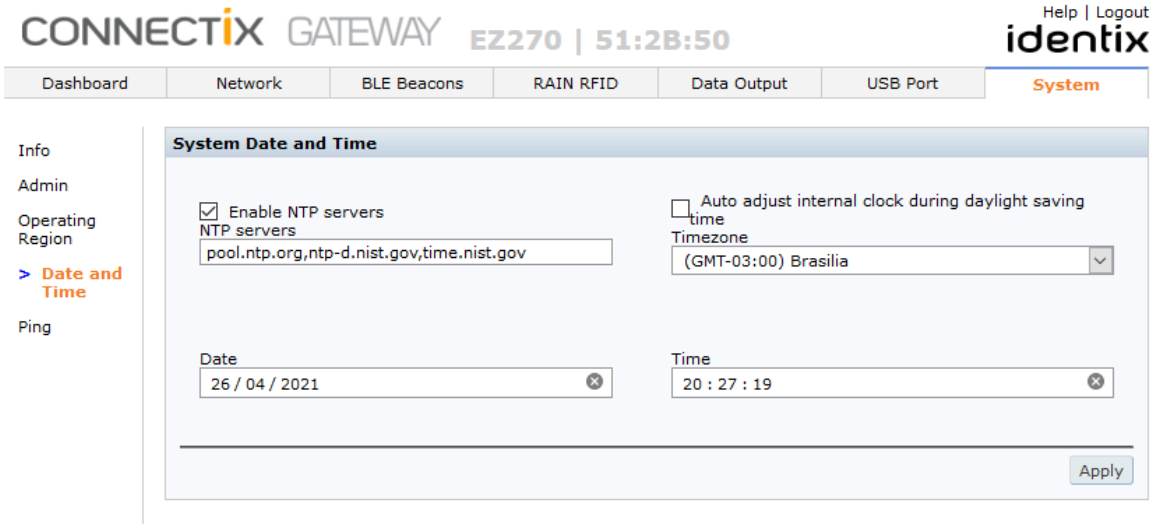
System – RAIN RFID Operating Region

Configure here the region where the gateway is installed.



System Date Time

Configure here the date and time information



System Ping

Through this screen it is possible to ping a given host directly from the gateway

Help

This screen forwards you the Identix support website which contains most updated information.

Contact information

Helpdesk: https://idntx.zendesk.com/hc/en-us

support@idntx.com