

# LOW-COST LORA GATEWAY: WEB ADMIN INTERFACE



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# CONTENTS

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- ❑ This tutorial presents the web admin interface which is an add-on to the low-cost gateway
- ❑ Please read first the "Low-cost LoRa gateway: a step-by-step tutorial" to understand the gateway configuration
- ❑ Let's get started...

# GATEWAY WEB ADMIN INTERFACE (1)

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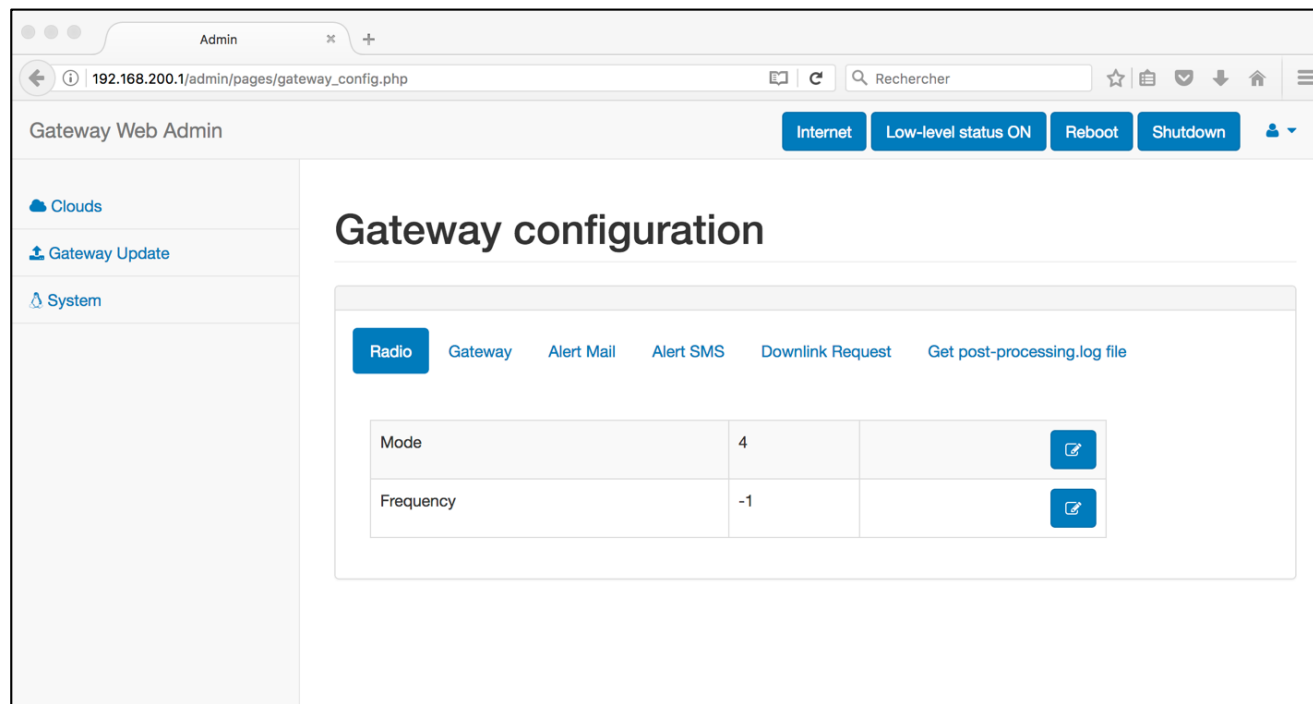
- ❑ A gateway web admin interface has been added to the latest version
- ❑ To install the web admin interface, check if you have the `gw_web_admin` folder in your `lora_gateway` folder
- ❑ If you don't, then update to the latest version
- ❑ Then, go into `gw_web_admin` and run the `install.sh` script
  - ❑ `cd gw_web_admin`
  - ❑ `sudo ./install.sh`

# GATEWAY WEB ADMIN INTERFACE (2)

□ <http://192.168.200.1/admin>

□ Login: admin

□ Password: loragateway



# WEB ADMIN FEATURES

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- ☐ Currently, you can use the web admin to:
  - ☐ Test Internet connectivity
  - ☐ Easily reboot and shutdown your gateway
    - Be carefull, if you shut down the gateway, you need to physically access the gateway to power it it on again
  - ☐ Change LoRa mode and frequency
  - ☐ Set your gateway id and configure alerting system (mail, SMS)
  - ☐ Update your gateway with the latest github version and perform the basic configuration procedure
  - ☐ Upgrade your gateway by preserving your configuration files
  - ☐ Change the WiFi SSID and password
  - ☐ Enable/Disable local AES decryption
  - ☐ Enable/Disable ThingSpeak and WAZIUP Orion cloud
  - ☐ For ThingSpeak, you can specify a new write key
  - ☐ For WAZIUP Orion, you can specify the project name, the organization name and the service tree
    - Fiware-service=project\_name
    - sensor\_name=organization\_name+"\_Sensor"
    - Fiware-servicePath='/' + organization\_name + service\_tree

# GATEWAY MAIN PAGE

## □ Gateway main page (configuration page)

The screenshot shows the 'Gateway Web Admin' interface. The browser address bar displays '192.168.200.1/admin/pages/gateway\_config.php'. The page title is 'Gateway configuration'. A sidebar on the left contains links for 'Clouds', 'Gateway Update', and 'System'. The main content area has a top navigation bar with buttons for 'Internet', 'Low-level status ON', 'Reboot', and 'Shutdown'. Below this, there are tabs for 'Radio', 'Gateway', 'Alert Mail', 'Alert SMS', 'Download request', and 'Get post-processing log file'. The 'Radio' tab is active, showing a table with columns for 'Mode' and 'Frequency'. The 'Mode' column contains the value '4'. Four blue callout boxes with arrows point to specific elements: 'Check Internet connectivity' points to the 'Internet' button; 'Display the last low-level gw status' points to the 'Low-level status ON' button; 'Reboot the gateway. Need to reboot after any update' points to the 'Reboot' button; and 'Shutdown the gateway' points to the 'Shutdown' button.

Gateway Web Admin

Internet Low-level status ON Reboot Shutdown

### Gateway configuration

Radio Gateway Alert Mail Alert SMS Download request Get post-processing log file

Mode	Frequency
4	

Check Internet connectivity

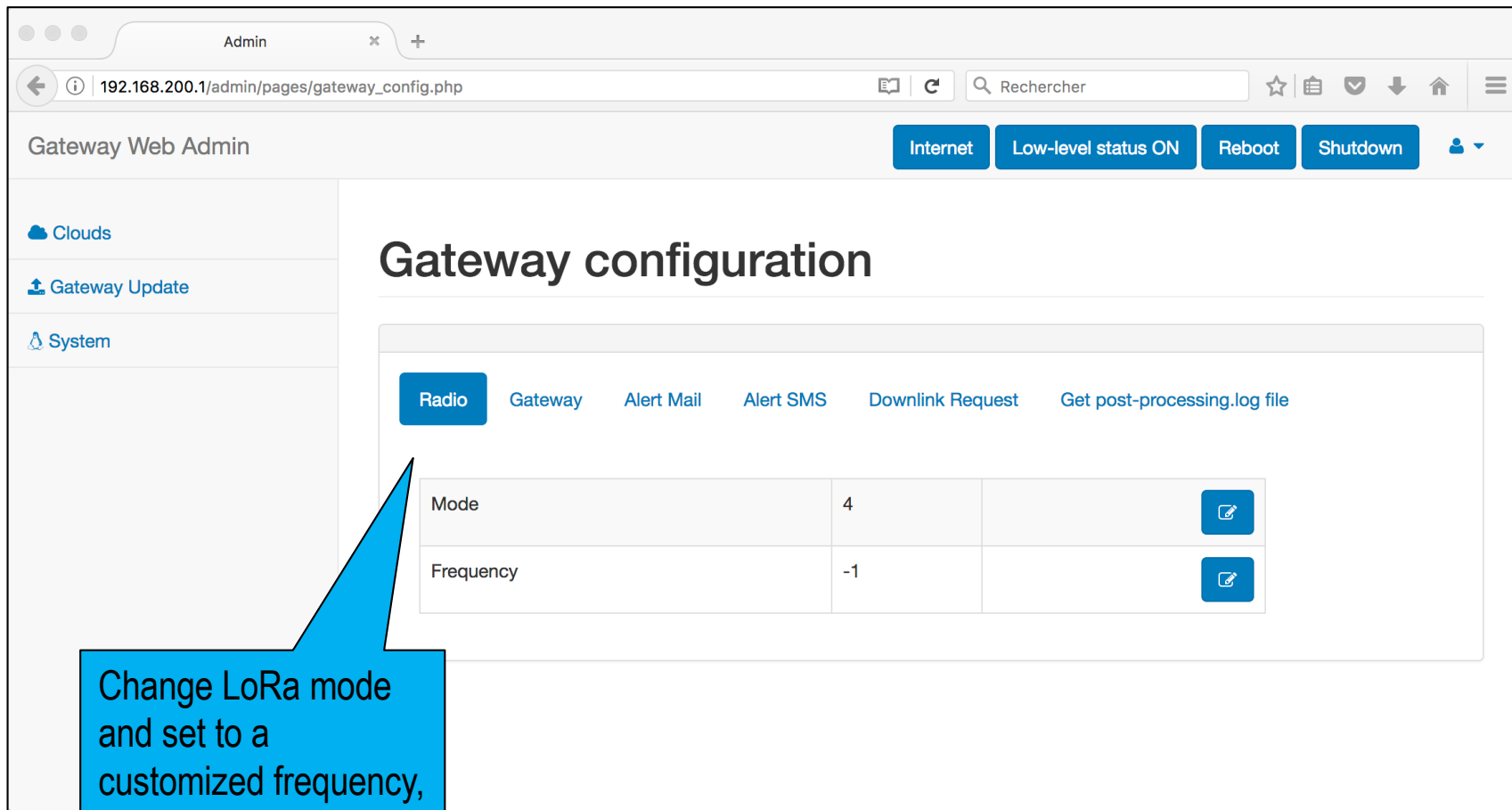
Display the last low-level gw status

Reboot the gateway. Need to reboot after any update

Shutdown the gateway

# GATEWAY CONFIGURATION (1)

## □ Gateway radio configuration section



The screenshot shows the 'Gateway Web Admin' interface. The main heading is 'Gateway configuration'. Below it, there are tabs for 'Radio', 'Gateway', 'Alert Mail', 'Alert SMS', 'Downlink Request', and 'Get post-processing.log file'. The 'Radio' tab is selected. It contains a table with two rows: 'Mode' with value '4' and 'Frequency' with value '-1'. Each row has a blue edit icon to its right. A blue callout box points to the 'Radio' tab and the table, containing the text: 'Change LoRa mode and set to a customized frequency, e.g. 433.3MHz'.

Mode	Frequency
4	-1

Change LoRa mode and set to a customized frequency, e.g. 433.3MHz

# GATEWAY CONFIGURATION (2)

## □ Gateway configuration section

Admin

192.168.200.1/admin/pages/gateway\_config.php

Gateway Web Admin

Clouds

Gateway Update

System

### Gateway configuration

Radio Gateway Alert Mail Alert SMS Downlink Request

Gateway ID	00000027EB84C456	
AES	true	

Set gateway ID (should normally be pre-configured, see Update section)

Also allow to set the AES encryption option



# GATEWAY CONFIGURATION (3)

## □ Gateway email alerting section

Your email account password

Enter your mail address for sending emails

The SMTP mail server to send emails

A list of email recipient addresses to receive alert notifications

The screenshot shows a web browser window with the title 'Admin'. The main heading is 'Gateway configuration'. Below the heading, there are tabs for 'Gateway', 'Alert Mail', 'Alert SMS', and 'Downlink Re'. The 'Alert Mail' tab is selected. The configuration table has the following fields:

Enabled	false
Mail Account	a_gmail_address
Mail Password	7c9268550caa0e9c6b282d2fe9946e89
Mail Server	smtp.gmail.com
Contacts	the_contact_mail_address,another_contact_mail_address_if_needed

Each row in the table has a blue edit icon (pencil) to its right.

# GATEWAY CONFIGURATION (4)

## □ Gateway SMS alerting section

The screenshot shows a web browser window with the title 'Admin'. The main content area is titled 'Gateway configuration'. On the left, there is a sidebar with links for 'Clouds', 'Gateway Update', and 'System'. The main area has tabs for 'Radio', 'Gateway', 'Alert Mail', 'Alert SMS', and 'Downlink Request'. The 'Alert SMS' tab is selected. Below the tabs is a table with the following data:

Parameter	Value	Action
Enabled	false	
Pin code	0	
Contacts	+33XXXXXXXXXX, +33XXXXXXXXXX	

Two blue callout boxes provide additional information:

- A callout box pointing to the 'Pin code' field contains the text: 'The SIM card pin code'.
- A callout box pointing to the 'Contacts' field contains the text: 'A list of mobile phone numbers to receive alert notifications'.

# GATEWAY CONFIGURATION (5)

## □ Gateway generating downlink messages

Destination node, between 2 and 255

The string to send. Can be specific commands for the device if it has been programmed/configured accordingly.

More info on [https://github.com/CongducPham/LowCostLoRaGw/blob/master/gw\\_full\\_latest/README-downlink.md](https://github.com/CongducPham/LowCostLoRaGw/blob/master/gw_full_latest/README-downlink.md)

That will generate in the downlink folder a downlink-post.txt file with the following entry:  
`{"status": "send_request", "dst": 2, "data": "hello from gateway"}`

Gateway Web Admin

Gateway configuration

Radio Gateway Alert Mail Alert SMS Downlink Request

Destination

2

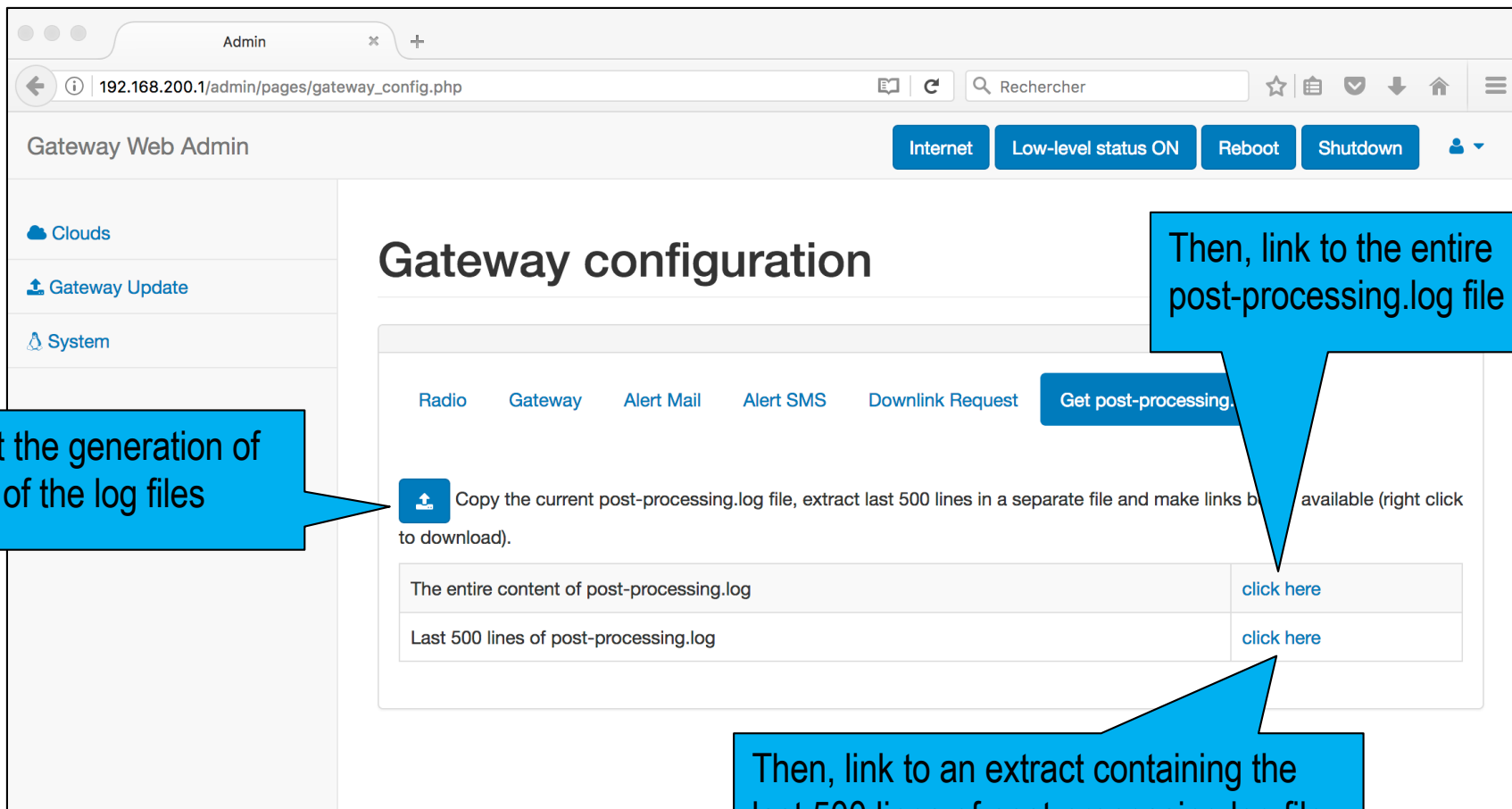
Message

hello from gateway

Submit Clear

# GATEWAY CONFIGURATION (6)

## □ Gateway log files section



The screenshot shows the 'Gateway Web Admin' interface. The main heading is 'Gateway configuration'. Below it, there are tabs: 'Radio', 'Gateway', 'Alert Mail', 'Alert SMS', 'Downlink Request', and 'Get post-processing.log'. A blue button labeled 'Get post-processing.log' is visible. Below the tabs, there is a section with a download icon and text: 'Copy the current post-processing.log file, extract last 500 lines in a separate file and make links b... available (right click to download)'. Below this, there are two rows of links:

The entire content of post-processing.log	<a href="#">click here</a>
Last 500 lines of post-processing.log	<a href="#">click here</a>

To start the generation of a copy of the log files

Then, link to the entire post-processing.log file

Then, link to an extract containing the last 500 lines of post-processing.log file

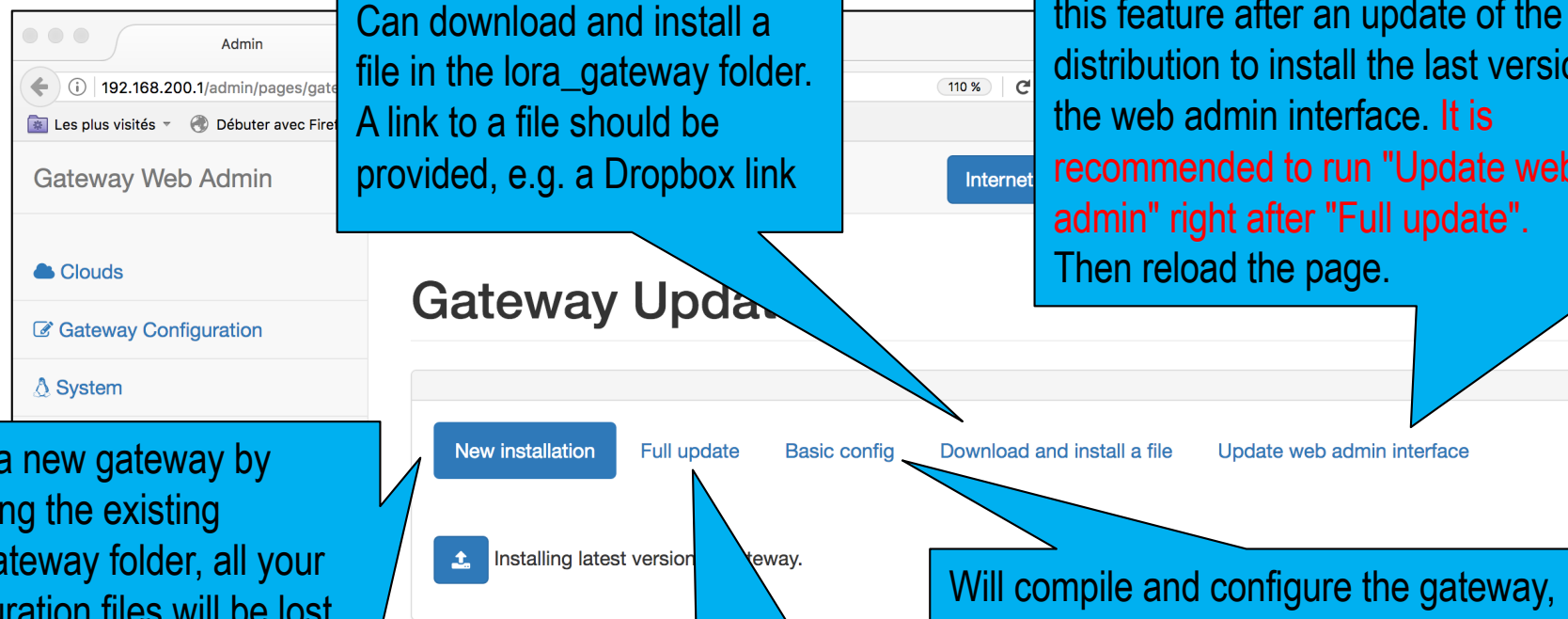
# GET GATEWAY LOG FILES

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- ☐ The "Get post-processing.log file" option is a convenient way for an end-user to obtain the log file that can be sent (mail) to an experienced user for analysis or debug purposes.
- ☐ The entire post-processing/log file can be obtained, or
- ☐ Only the last 500 lines
- ☐ The last feature can be used by an end-user to see whether data have been recently received from end-devices or not

# GATEWAY UPDATE PAGE

## □ Gateway update section



Can download and install a file in the lora\_gateway folder. A link to a file should be provided, e.g. a Dropbox link

Update the web admin interface. Use this feature after an update of the distribution to install the last version of the web admin interface. **It is recommended to run "Update web admin" right after "Full update".** Then reload the page.

Install a new gateway by removing the existing lora\_gateway folder, all your configuration files will be lost.

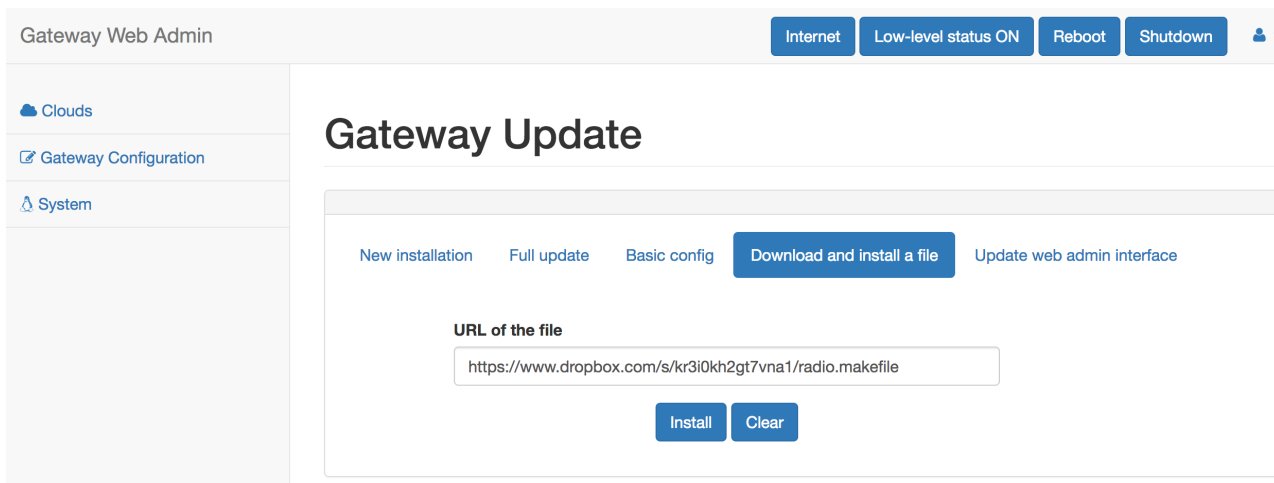
This may be needed after a major upgrade of the distribution if you start from a very old SD card image.

Update with latest version on github, all your configuration files will be kept. This is the **recommended option**.

Will compile and configure the gateway, especially for the **gateway id** & the **WiFi SSID** derived from the last 5 bytes of the eth MAC address. This is also required if you install a new gateway using the provided SD card image. **It is recommended to run "Basic config" right after "Full update".**

# DOWNLOAD & INSTALL A FILE

- ❑ The "Download and install a file" option is a convenient way to install a configuration file
  - ❑ For instance, a customized radio.makefile file can be edited by an experienced user, then put on Dropbox and the link provided to an end-user (mail, SMS,...)
  - ❑ After installation, the end-user can use "Basic config" to recompile the gateway program and then reboot



Gateway Web Admin

Internet Low-level status ON Reboot Shutdown

Clouds Gateway Configuration System

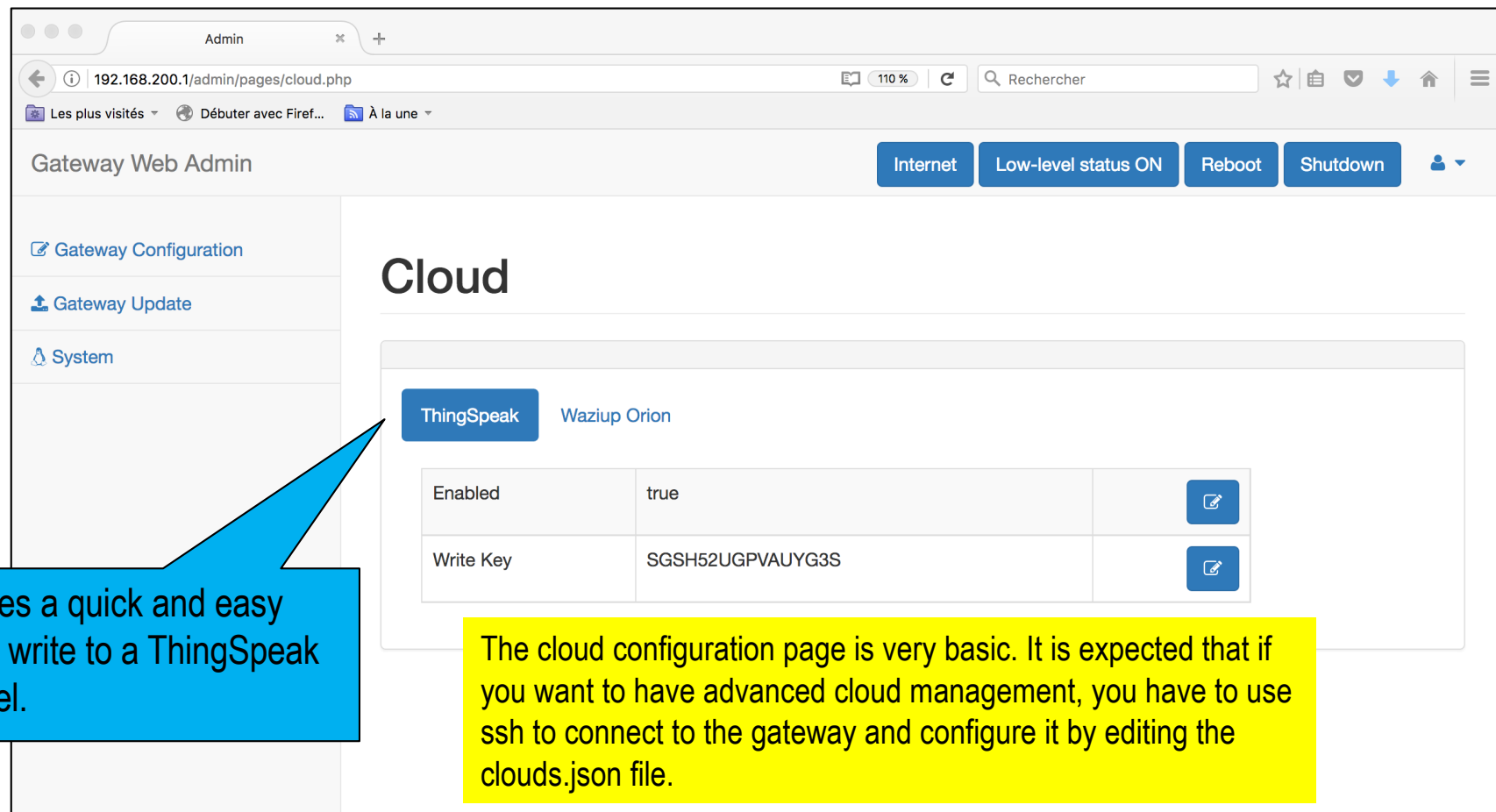
## Gateway Update

New installation Full update Basic config **Download and install a file** Update web admin interface



URL of the file

Install Clear

## □ Gateway cloud configuration section



The screenshot shows the 'Gateway Web Admin' interface. The left sidebar contains links for 'Gateway Configuration', 'Gateway Update', and 'System'. The main content area is titled 'Cloud' and features a 'ThingSpeak' button and a 'Waziup Orion' button. Below these, there is a table with configuration details:

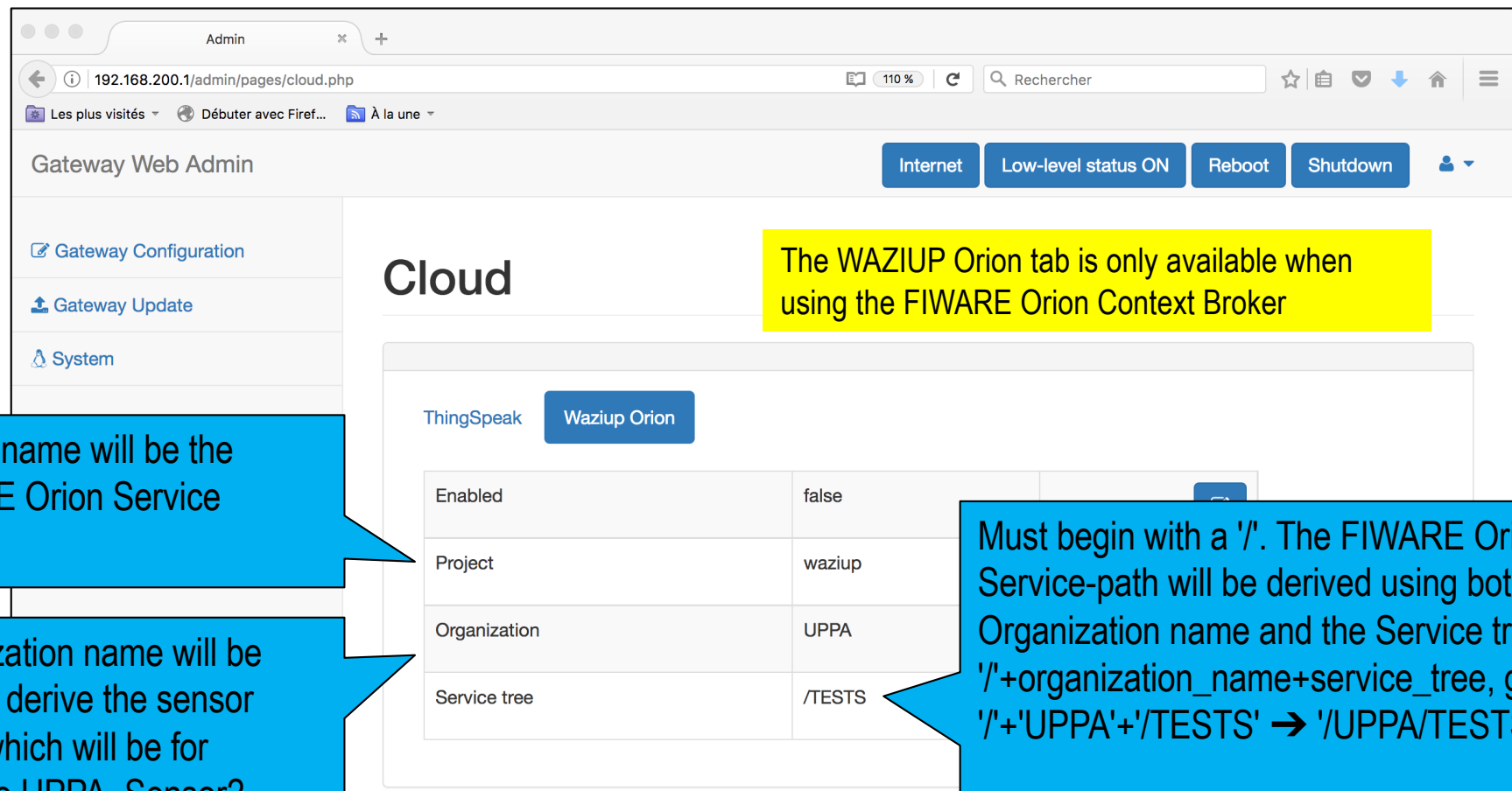
Enabled	true	
Write Key	SGSH52UGPVAUYG3S	

A blue callout box points to the 'ThingSpeak' button with the text: 'Provides a quick and easy way to write to a ThingSpeak channel.'

A yellow callout box contains the text: 'The cloud configuration page is very basic. It is expected that if you want to have advanced cloud management, you have to use ssh to connect to the gateway and configure it by editing the clouds.json file.'



## □ Configuring WAZIUP Orion cloud



The screenshot shows the 'Gateway Web Admin' interface. The left sidebar contains 'Gateway Configuration', 'Gateway Update', and 'System'. The main content area is titled 'Cloud' and has a yellow callout box stating: 'The WAZIUP Orion tab is only available when using the FIWARE Orion Context Broker'. Below this, there are two tabs: 'ThingSpeak' and 'Waziup Orion'. The 'Waziup Orion' tab is active, showing a configuration table with the following data:

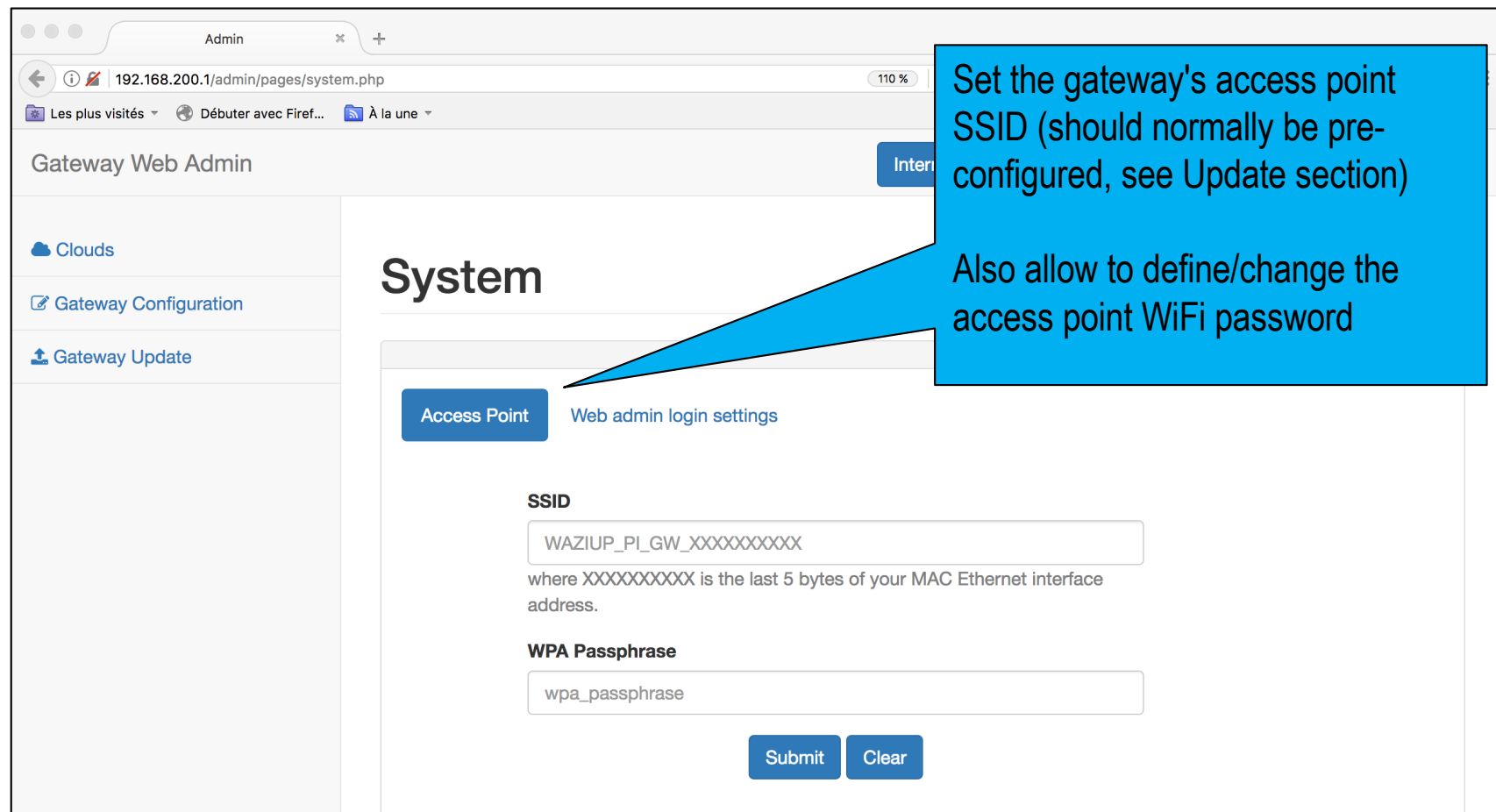
Enabled	false
Project	waziup
Organization	UPPA
Service tree	/TESTS

Three blue callout boxes provide additional context:

- Project name will be the FIWARE Orion Service
- Organization name will be used to derive the sensor name which will be for instance UPPA\_Sensor2
- Must begin with a '/'. The FIWARE Orion Service-path will be derived using both the Organization name and the Service tree: `'/' + organization_name + service_tree`, giving `'/' + 'UPPA' + '/TESTS' → '/UPPA/TESTS'`

# GATEWAY SYSTEM CONFIGURATION (1)

## □ Gateway WiFi access point



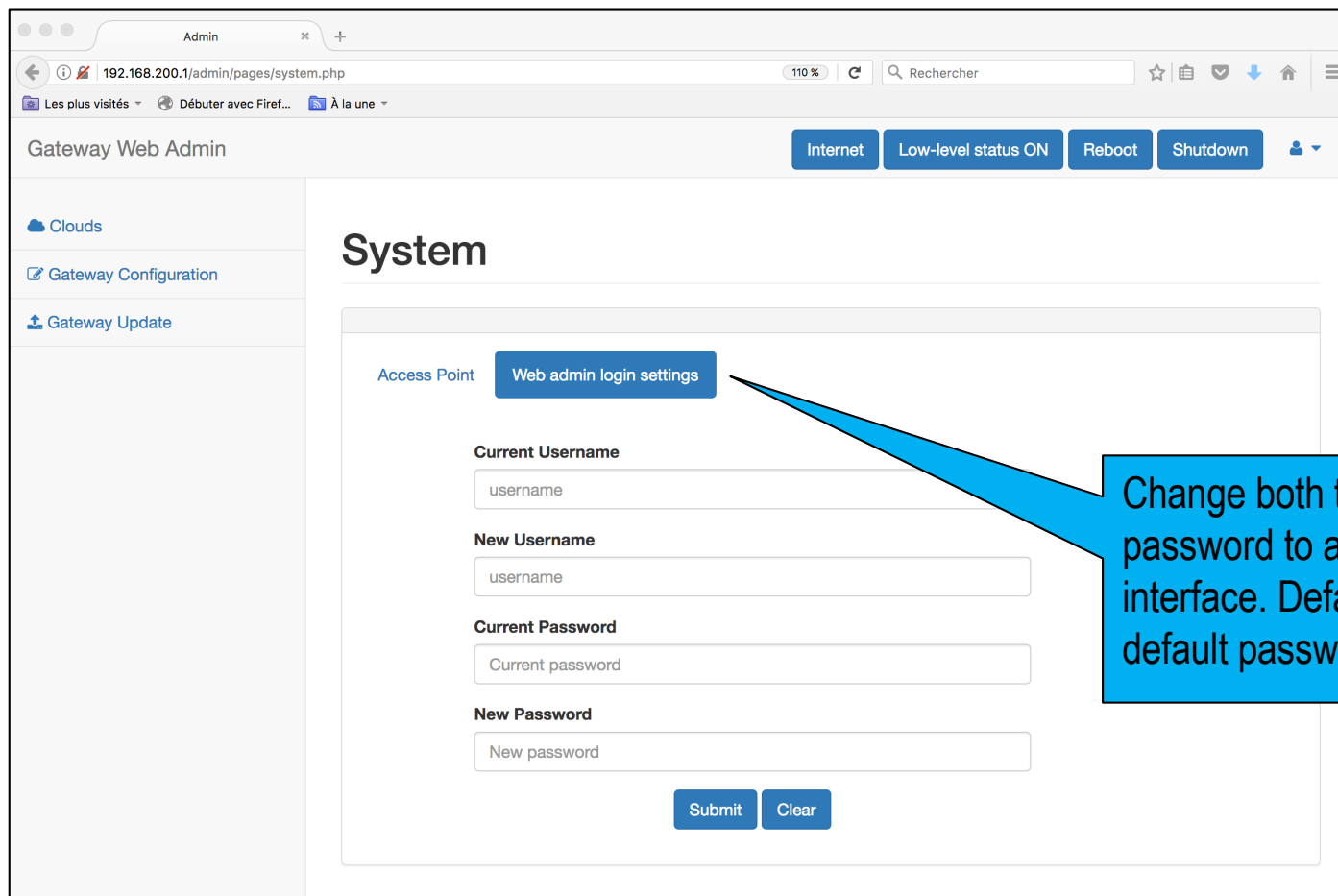
The screenshot shows the 'Gateway Web Admin' interface. The left sidebar contains links for 'Clouds', 'Gateway Configuration', and 'Gateway Update'. The main content area is titled 'System' and has two tabs: 'Access Point' (selected) and 'Web admin login settings'. Under the 'Access Point' tab, there are two input fields: 'SSID' and 'WPA Passphrase'. The 'SSID' field contains the text 'WAZIUP\_PI\_GW\_XXXXXXXXXX' with a note below it stating 'where XXXXXXXXXX is the last 5 bytes of your MAC Ethernet interface address.' The 'WPA Passphrase' field contains the text 'wpa\_passphrase'. At the bottom right of the form are 'Submit' and 'Clear' buttons.

Set the gateway's access point SSID (should normally be pre-configured, see Update section)

Also allow to define/change the access point WiFi password

# GATEWAY SYSTEM CONFIGURATION (2)

## □ Gateway web admin interface



The screenshot shows a web browser window with the URL `192.168.200.1/admin/pages/system.php`. The page title is "Gateway Web Admin". On the left sidebar, there are links for "Clouds", "Gateway Configuration", and "Gateway Update". The main content area is titled "System" and contains a tabbed interface with "Access Point" and "Web admin login settings". The "Web admin login settings" tab is active, showing four input fields: "Current Username" (with placeholder "username"), "New Username" (with placeholder "username"), "Current Password" (with placeholder "Current password"), and "New Password" (with placeholder "New password"). Below these fields are "Submit" and "Clear" buttons. A blue callout box points to the "Web admin login settings" tab with the text: "Change both the login and password to access the web admin interface. Default login is admin and default password is loragateway".