



TEKTELIC
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BSP Upgrade using KonaFT



Introduction

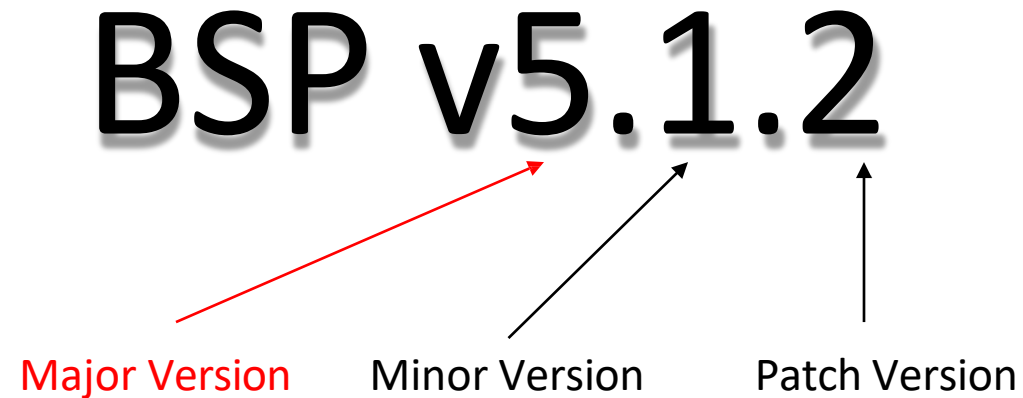
- Reference guide to upgrade BSP on **Kona Gateways (Enterprise, Micro, Macro and Mega)** using **KonaFT**
- Requirements:
 1. [The latest release of KonaFT](#)
 2. Gateway (on which BSP needs to be upgraded) and KonaFT must be connected in the same computer sub-network
 3. FTP program such as [FileZilla](#) or [WinSCP](#)

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Intermediate Upgrades

- Depending on the BSP version, you may have to upgrade your Kona Gateway multiple times. You would upgrade to the **Intermediate BSP versions**, then to the Final BSP version.
- Intermediate upgrades are always between each **Major Version** released.



Intermediate Upgrades (Continued)

- This slide outlines the process for **determining intermediate BSP upgrades**.
- Each intermediate upgrade **should be in-between Major BSP versions**.
- For a baseline reference, please see the next slide.
- You may choose to upgrade to the latest Major version and Minor version. (i.e. BSP v2.1.3 -> v3.3.7 on Micro)



The above graphic outlines the intermediate upgrade process:

1. BSP upgrade from v4.X.X to v5.X.X
2. BSP upgrade from v5.X.X to v6.X.X

NOTE: When performing multiple BSP upgrades, [the upgrade files and package will need to be removed before each upgrade.](#) This will ensure the gateway will have enough space for each upgrade.

Intermediate Upgrades (Continued)

- This slide shows the intermediate BSP upgrades as a baseline reference.

Gateway	Initial BSP Version	Intermediate BSP versions	Final BSP Version
Kona Micro	Older than v2.1.x	v2.1.3	v3.x.x and newer
Kona Micro PoE	v2.x.x	v2.5.1	v5.x.x and newer
Kona Macro	Older than v3.1.x	v3.1.5	v4.x.x and newer
Kona Mega	Older than v3.1.x	v3.1.4	v4.x.x and newer
Kona Enterprise	v1.x.x	v2.0.1	v3.x.x and newer

Table-1 Intermediate upgrades for Older BSPs

For example, if your Kona Macro has BSP v1.6.5 and you wish to upgrade it to a later version i.e. v5.X.X, the upgrade process must follow the below steps:

1. BSP Upgrade from v1.6.5 to v3.1.5
2. BSP Upgrade from v3.1.5 to v4.0.3
3. BSP Upgrade from v4.0.3 to v5.X.X

Download Upgrade Package

All BSP upgrade packages can be found on the TEKTELIC FTP server. You can find out [the latest releases here](#). Instructions to access the FTP are as follows:

1. Configure your FTP client (such as [FileZilla](#) or [WinSCP](#)) to “Use explicit FTP over TLS if available”.

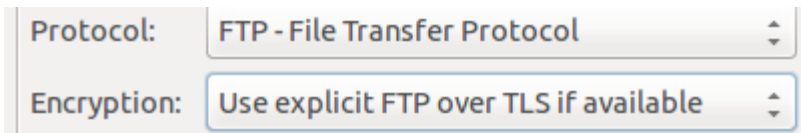


Figure-1 FTP client settings

2. Use the following credentials to access the server.
 - Site: **74.3.134.34**
 - Username: **customer**
 - Password: **vU6_ATR3**
3. Navigate to the correct directory and download the BSP package of your choice.

Connecting to your Gateway

Ensure that the computer and gateway are on the same computer network. Then follow the steps below:

1. In the top left corner, click on Tools and select **Find my Gateway**
2. Then **select the interface that corroborates to the gateway's network.** When ready, click **Scan.**
3. When your gateway appears, **click on the entry and finalize by clicking Select.**
4. On newer versions of KonaFT, select **SNMPv2 from the drop-down menu indicated.**
5. Below the SNMP drop-down menu in step 4, click **Start** to connect to your gateway.

A pop-up with the title "AGENT MISMATCH DETECTED" may appear. This can be ignored.

Connecting to your Gateway (Cont.)

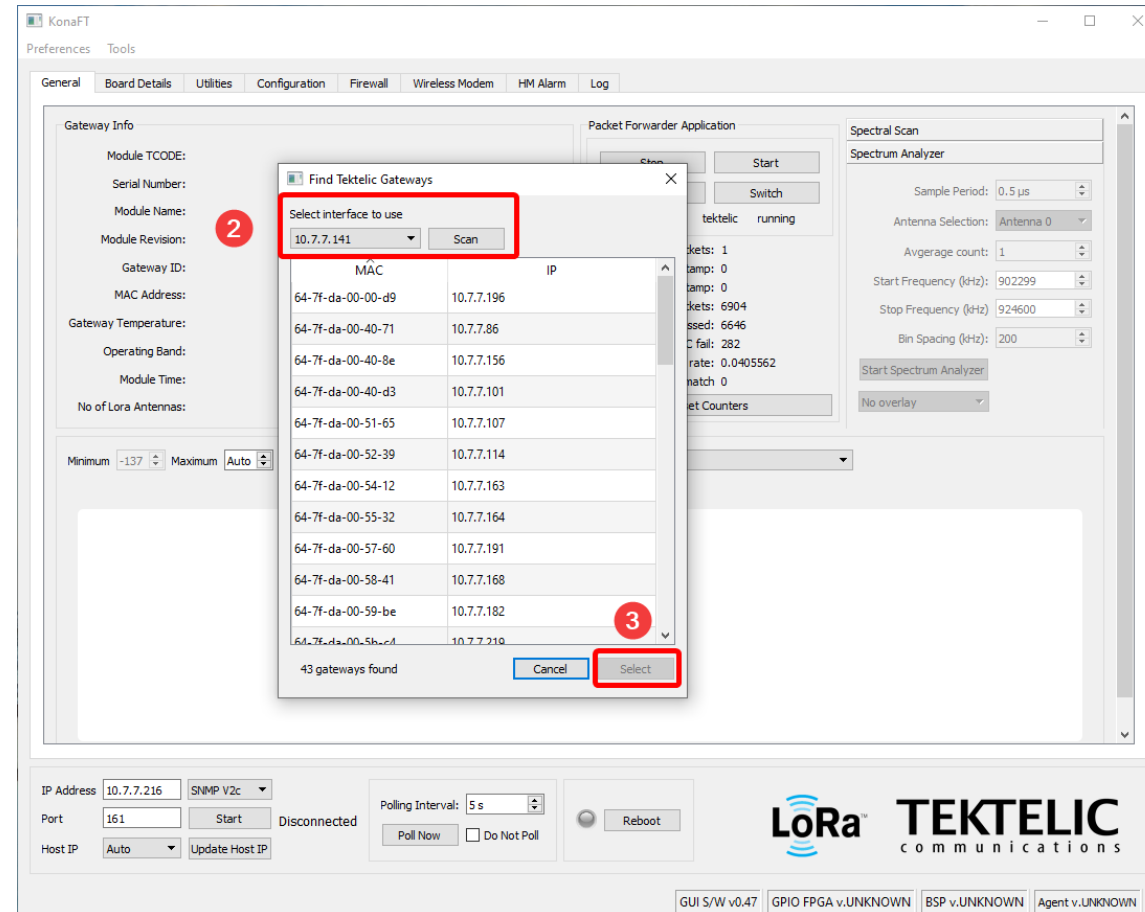


Figure-1 Find My Gateway

Connecting to your Gateway (Cont.)

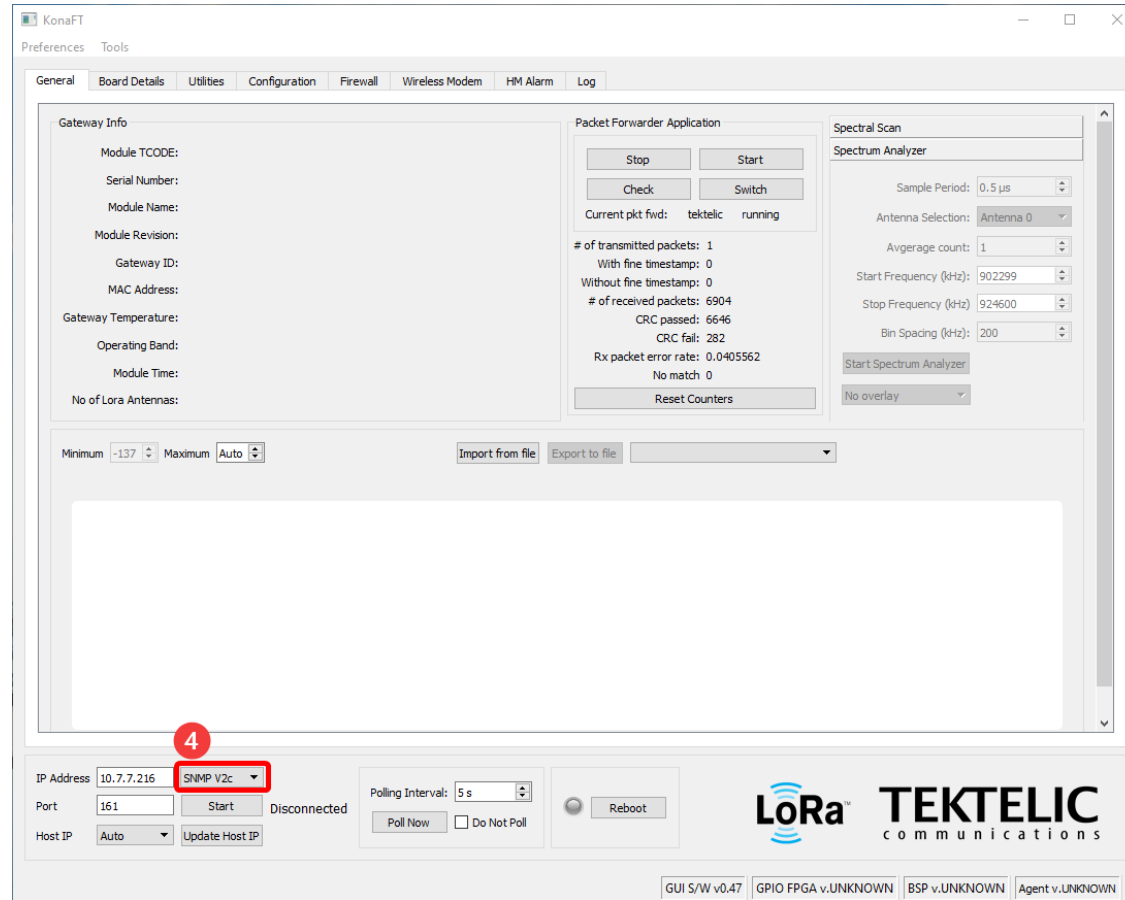


Figure-2 SNMP Drop-down menu

Uploading Upgrade Files

1. Go to Tools → File Transfer
2. Click on Browse and select the upgrade package.
 - a. **DESELECT** the decompress checkbox if you access the gateway via admin account.
3. Upon selecting the file to be uploaded to the Gateway, click Upload
4. A prompt will ask for a username and password. See below for details.

Username	Password	Notes
root	9-Digit Serial number of the Gateway (i.e. 1618B0052)	<ul style="list-style-type: none">• Applies to gateways with serial numbers that start with 21 and below.
admin	9-Digit Serial number of the Gateway (i.e. 1618B0052)	<ul style="list-style-type: none">• Commonly found on older ENTERPRISE gateways.
admin	Random string of characters provided on the test report. Contact Support	<ul style="list-style-type: none">• Applies to gateways with serial numbers that start with 22 and above.• Some units in this category may still have root as the user and the serial number as the default password.

Table-2 Username and Password

NOTE: If the password is not on the test report, [contact Tektelic Support](#) and provide the following:

- T-code (i.e. **T000XXYY**) and serial number (i.e. **1212A3434**)

Uploading Upgrade Files (Continued)

5. As upgrade file will start uploading on the GW, you can monitor the status of upload shown in Figure-3.
6. After upload finishes, **wait for 2-3 minutes** as the uploaded zip file will be unzipped on the Gateway.

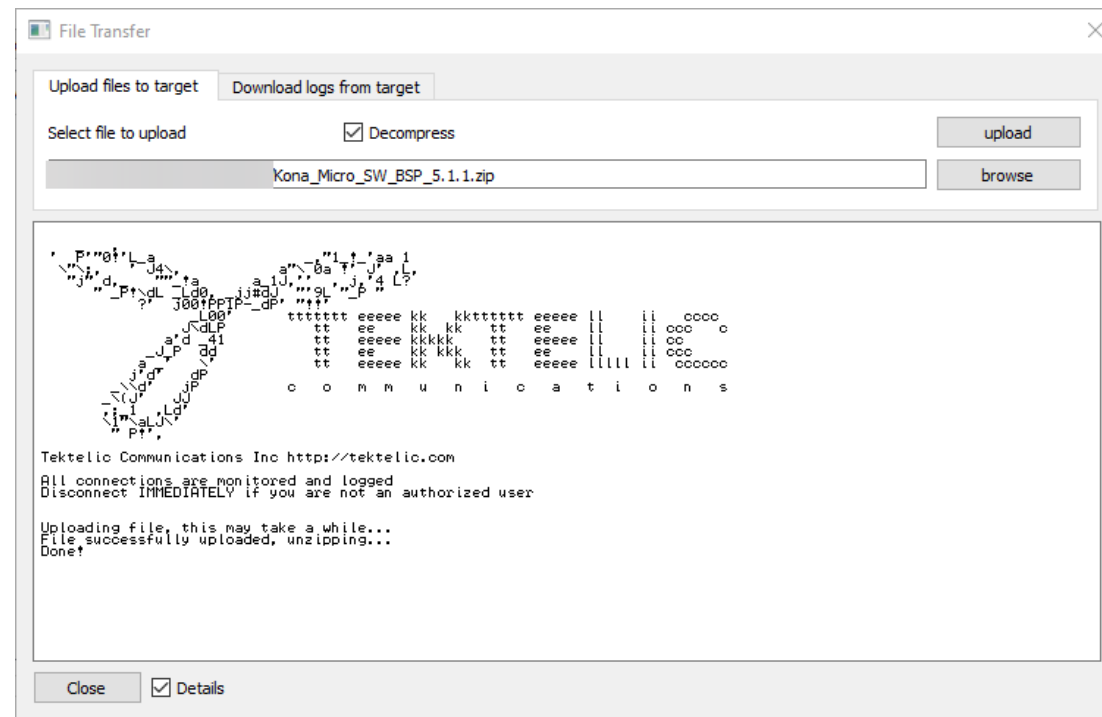


Figure-3 File Transfer

Uploading Upgrade Files (Continued)

Gateways that use the **admin credentials** to access the gateway have additional steps to perform, as **the admin account does not have sufficient permissions** to administrate and maintain the gateway.

1. Login to the gateway via SSH.
2. Create a new folder: `sudo mkdir /lib/firmware/bsp`
3. Unzip the uploaded upgrade package: `sudo unzip /dev/shm/<upgrade-package-name>.zip -d /lib/firmware/bsp`
4. (Optional) Remove the upgrade package to conserve space: `sudo rm /dev/shm/<upgrade-package-name>.zip`

Editing Configuration File

1. Once the package has been successfully uploaded, go to **Board Details** → **SW Management** tab
2. Find **Upgrade Servers** as shown in Figure-4.
3. Click on **Read Server Config** to see if the configuration file has any existing entries.
4. Verify the existing entries according to the following slides, or add them if they do not exist via **Add Entry**.
5. Click on **Write Server Config** to save these changes
6. Click on **Read Server Config** to verify the saved changes

Editing Configuration File (Continued)

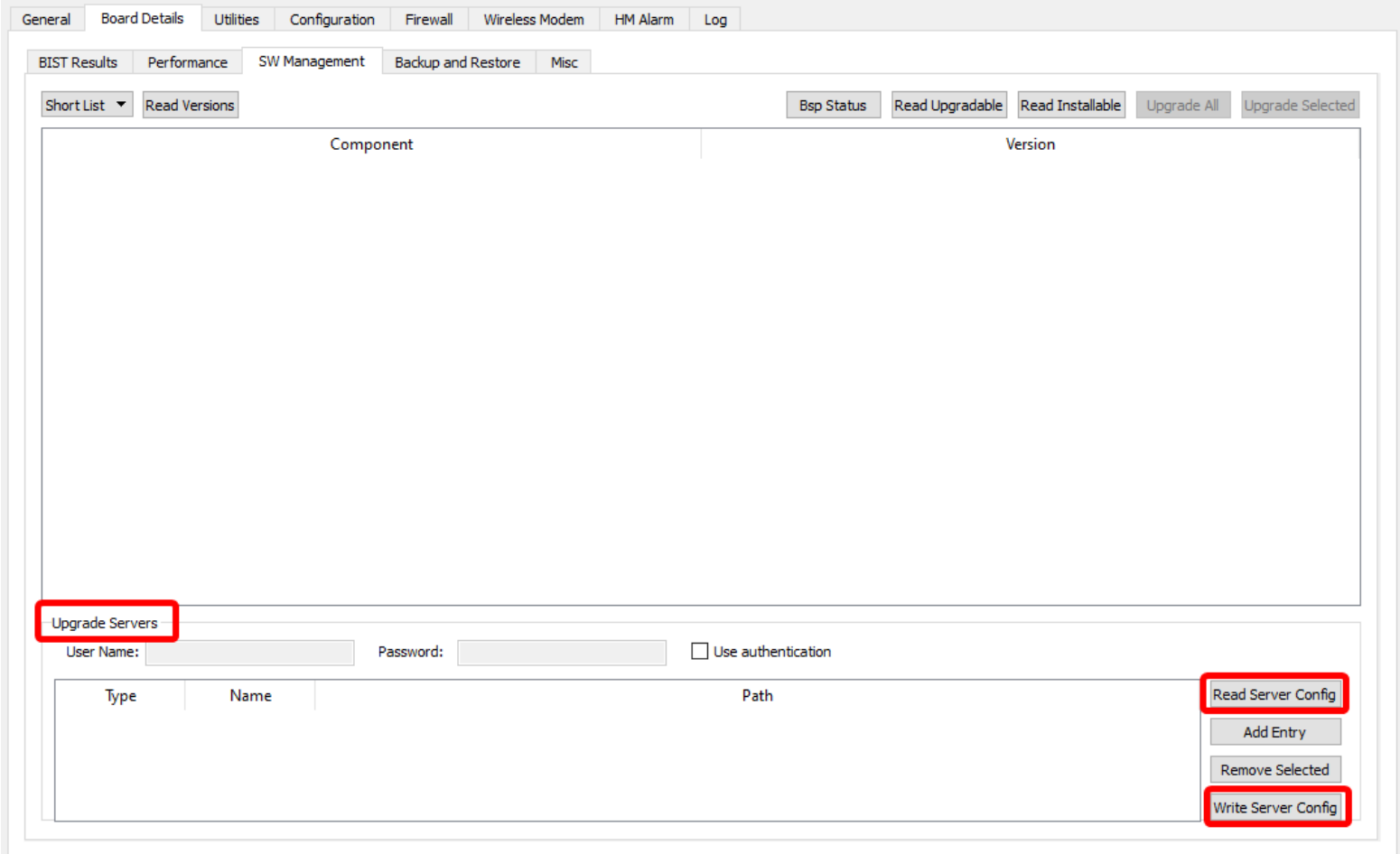


Figure-4 Upgrade Servers

Editing Configuration File (Continued)

The following entries are used when upgrading gateways to:

- Kona Micro BSP **older than or equal to 3.3.6**, Kona Enterprise BSP **older than or equal to 1.1.4**
- Kona Macro BSP **older than or equal to 4.3.5**, Kona Mega BSP **older than or equal to 4.3.7**

Type	Name	Path
src/gz	bsp	file:///lib/firmware/bsp/bsp
src/gz	gpio-fpga	file:///lib/firmware/bsp/gpio-fpga

Table-3 Upgrade Servers Entries for Kona Micro and Kona Enterprise Gateways upgrading to BSPs **older than or equal to 3.3.6 / 1.1.4**

Type	Name	Path
src/gz	bsp	file:///lib/firmware/bsp/bsp
src/gz	fe-fpga	file:///lib/firmware/bsp/fe-fpga
src/gz	gpio-fpga	file:///lib/firmware/bsp/gpio-fpga

Table-4 Upgrade Servers Entries for Kona Macro and Kona Mega Gateways upgrading to BSPs **older than or equal to 4.3.5 / 4.3.7**

Editing Configuration File (Continued)

The following entries are used when upgrading gateways to:

- Kona Micro BSP **newer than or equal to 3.3.7**, Kona Enterprise BSP **newer than or equal to 2.0.1**

Type	Name	Path
src/gz	bsp	file:///lib/firmware/bsp/bsp
src/gz	gpio-fpga	file:///lib/firmware/bsp/gpio-fpga
src/gz	networking-extra	file:///lib/firmware/bsp/networking-extra
src/gz	python-extra	file:///lib/firmware/bsp/python-extra
src/gz	utils	file:///lib/firmware/bsp/utils
src/gz	webserver	file:///lib/firmware/bsp/webserver

Table-5 Upgrade Servers Entries for Kona Micro and Kona Enterprise Gateways upgrading to BSPs **newer than or equal to 3.3.7 / 2.0.1**

Editing Configuration File (Continued)

The following entries are used when upgrading gateways to:

- Kona Macro BSP **newer than or equal to 4.3.6**, Kona Mega BSP **newer than or equal to 4.3.8**

Type	Name	Path
src/gz	bsp	file:///lib/firmware/bsp/bsp
src/gz	gpio-fpga	file:///lib/firmware/bsp/gpio-fpga
src/gz	fe-fpga	file:///lib/firmware/bsp/fe-fpga
src/gz	networking-extra	file:///lib/firmware/bsp/networking-extra
src/gz	python-extra	file:///lib/firmware/bsp/python-extra
src/gz	utils	file:///lib/firmware/bsp/utils
src/gz	webserver	file:///lib/firmware/bsp/webserver

Table-6 Upgrade Servers Entries for Kona Macro and Kona Mega Gateways upgrading to BSPs **newer than or equal to 4.3.6 / 4.3.8**

Initiating BSP Upgrade - Legacy

This slide is intended for upgrading gateways v2.x.x to v3.y.y (on Kona Macro and Mega) and v1.x.x to v2.y.y (on Kona Micro). **For upgrading gateways in *any other case*, proceed to the next slide for the standard method.**

1. Go to the **SW Management** tab.
2. Click on **Read Upgradable** option. It will list down all the packages which needs to be upgraded shown in Figure-5.
3. **A prompt showing for BSP Upgrade Detected** will appear. Click **NO**.
4. Find **opkg-arch-config** and **tektelic-upgrade** packages and click on **Upgrade Selected** option.
5. **Upgrade status message will be displayed on the same screen.** Upon successful upgrade of the package, **a message Software upgrade succeeded will be displayed.**
6. Click on **Read Upgradable** option again. Prompt showing for **BSP Upgrade Detected** will appear. Click **YES** to initiate the BSP upgrade process.
7. While BSP is upgrading, **Upgrade status message will display the status of the process shown** in Figure-6.
8. If you need to upgrade the gateway further, proceed to the next slide.

Note: BSP Upgrade may take up to 15-30 minutes.

Initiating BSP Upgrade - Standard

This slide will detail the standard method for upgrading gateways.

1. Go to the **SW Management** tab.
2. Click on **Read Upgradable** option. It will list down all the packages which needs to be upgraded shown in Figure-5.
 - If no packages appear, ensure the [files have been uploaded](#) to the location [corresponding to the paths specified](#).
 - By default, KonaFT will upload the files to **/lib/firmware/bsp/**
 - To verify the location of files, you will need to SSH into the GW.
3. A prompt showing the title **BSP Upgrade Detected** will appear. Click on **YES** to initiate the upgrade process of BSP on the GW.
4. While BSP is upgrading, Upgrade status message will display the status of the process as shown in Figure-6.

Note: BSP Upgrade may take up to 15-30 minutes.

Initiating BSP Upgrade (Continued)

The screenshot shows a software management interface with several tabs: BIST Results, Performance, SW Management, Backup and Restore, and Misc. Under the SW Management tab, there are buttons for 'Short List', 'Read Versions', 'Special packages detected, bulk upgrade/install operations disabled', 'Bsp Status', 'Read Upgradable', 'Read Installable', 'Upgrade All', and 'Upgrade Selected'. The 'Read Upgradable' button is highlighted with a red box.

	Component	Current Version	New Version
50	ntp	4.2.8p13-r0-tektelic2	4.2.8p13-r0-tektelic6
51	tektelic-add-users	1.3-r3	1.5-r24
52	syslog-ng	3.19.1-r0.arago0-tektelic0	3.19.1-r0.arago0-tektelic7
53	kona-network-monitor	0.19-r6	0.33-r19
54	curl	7.64.1-r0	7.64.1-r0.tektelic0
55	strongswan-plugin-nonce	5.7.1-r0.arago4	5.9.8-r0.arago4-tektelic1
56	libopkg1	1:0.4	1:0.4.0-r0-tektelic2
57	tektelic-hw-reset-tool	1.0.0	2.1.1-r0
58	packagegroup-core-boot	1.0-r	1.0-r17-tektelic2
59	kernel-devicetree	1:3.1	1:5.10.82-r16
60	tektelic-system-monitor	0.14-r5	2:0.25.0-r1

A dialog box titled 'BSP Upgrade Detected' is overlaid on the table. It contains a question mark icon and the text: 'BSP Upgrade has been detected. Would you like to upgrade now?'. There are two buttons: 'Yes' (highlighted with a red box) and 'No'.

Figure-5 BSP Upgrade Prompt

Initiating BSP Upgrade (Continued)

Preferences Tools

General Board Details Utilities Configuration Firewall Wireless Modem HM Alarm Log

BIST Results Performance SW Management Backup and Restore Misc

Short List Read Versions **Special packages detected, bulk upgrade/install operations disabled** Bsp Status Read Upgradable Read Installable Upgrade All Upgrade Selected

Component	Current Version	New Version
50 ntp	4.2.8p13-r0-tektelic2	4.2.8p13-r0-tektelic6
51 tektelic-add-users	1.3-r3	1.5-r24
52 syslog-ng	3.19.1-r0.arago0-tektelic0	3.19.1-r0.arago0-tektelic7
53 kona-network-monitor	0.19-r6	0.33-r19
54 curl	7.64.1-r0	7.64.1-r0.tektelic0
55 strongswan-plugin-nonce	5.7.1-r0.arago4	5.9.8-r0.arago4-tektelic1
56 libopkg1	1:0.4.0-r0-tektelic2	2.1.1-r0
57 tektelic-hw-reset-tool	1.0-r17-tektelic2	1:5.10.82-r16
58 packagegroup-core-boot	2:0.25.0-r1	
59 kernel-devicetree		
60 tektelic-system-monitor		

Upgrade Servers

User Name: Password: Use authentication

Type	Name	Path
------	------	------

Read Server Config Add Entry Remove Selected Write Server Config

IP Address: 10.7.7.225 SNMP V2c Port: 161 Stop Connected Polling Interval: 5 s Reboot Poll Now Do Not Poll

LoRa TEKTELIC communications

Upgrading BSP from 3.0.4-r5 to 5.1.1-r8 Do not turn off your board The board may reboot several times GUI S/W v0.47 GPIO FPGA v 0x5007.30 BSP v 3.0.4 Agent v0.51

Figure-6 BSP Upgrade Status

Initiating BSP Upgrade (Continued)

Upon the successful completion of the BSP upgrade, **BSP Upgrade Succeeded** message will be shown.

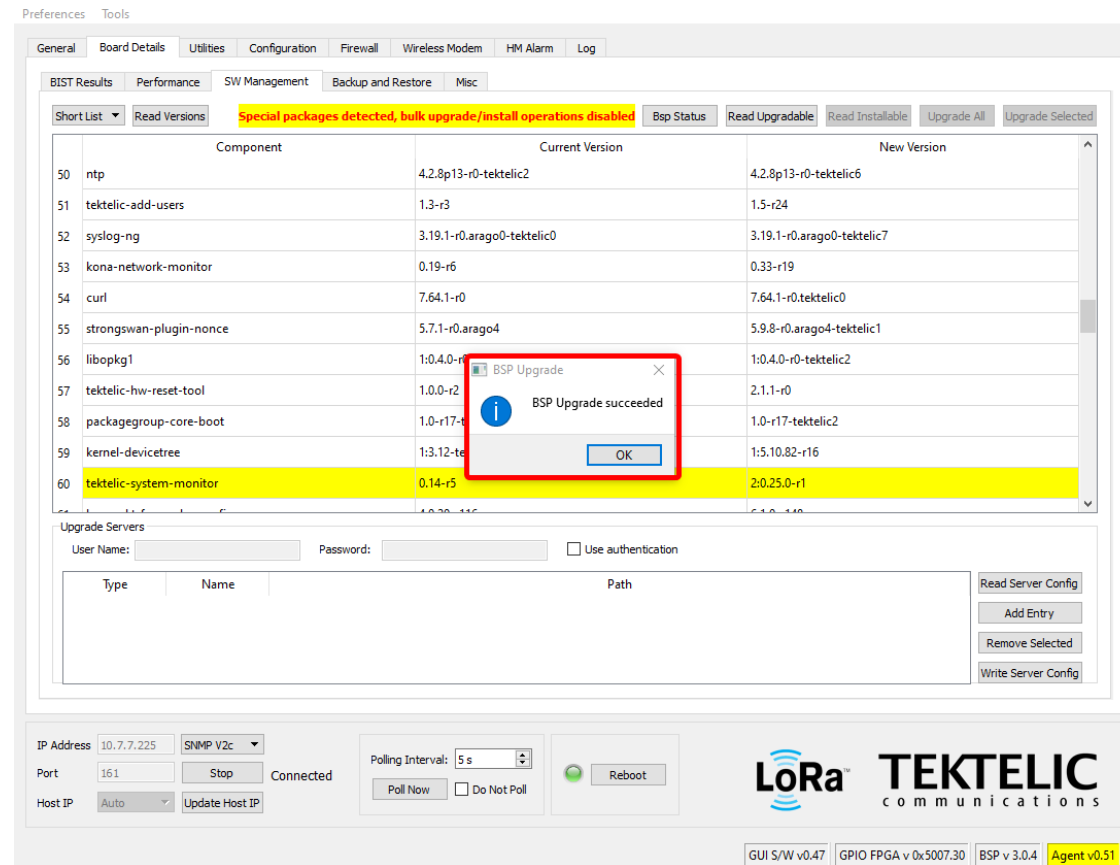


Figure-7 BSP Upgrade Success Status

Installation of Geo-location features

NOTE for Kona Gateways with Geo-location features:

- Starting from BSP 4.3.X, all BSP upgrade packages will include the files required for the Geo-location feature. If you require files from a lower BSP version, please raise a ticket on <https://supporthub.tektelic.com/>
- After the upgrade files are uploaded to the gateway, below is the high-level procedure to install geo-location features.
 1. Use this guide and follow all the steps to upgrade BSP.
 2. Click the **Read Installable** button located near the **Read Upgradable** button in the top right.
 3. Select the row with “gl” as the package name, then click **Install Selected** to install the package.
 4. Install Success message will appear on bottom left corner upon successful installation.

Installation of Geo-location features

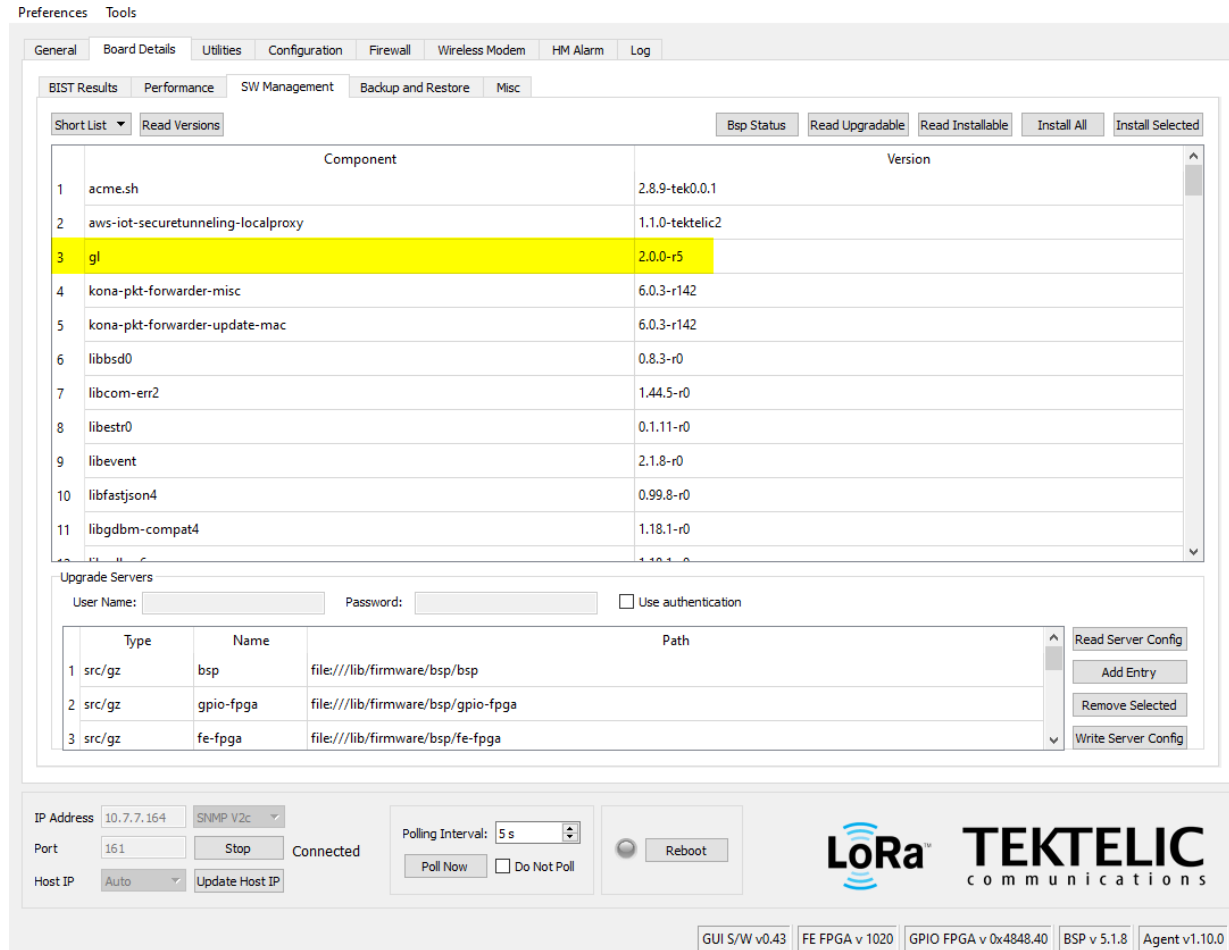


Figure-8 Geolocation package

Conserving Gateway Space

When a gateway requires multiple BSP upgrades, you will need to remove the upgrade files and backup created. This will ensure that the gateway will have enough space to create a backup and perform the upgrade. **If the gateway does not have enough space to perform an upgrade, the upgrade will throw an error and will not proceed.**

Because each new BSP release may contain new versions of the packages, they will not overwrite existing upgrade files. Hence, we will always recommend removing upgrade package and associated files.

This section will cover how to remove the following:

- Gateway upgrade files
- Gateway backups

Conserving Gateway Space (Files)

The files and upgrade package can only be removed through SSH.

When a package is uploaded through KonaFT, the package is uploaded to the directory `/dev/shm`

- **If the Decompress option is ticked**, the gateway will automatically remove the upgrade package.
- To remove the upgrade package, run the following command: `sudo rm /dev/shm/<upgrade-package-name>.zip`

All BSP upgrade files can be found in the following folder: `/lib/firmware/bsp`

- To remove the upgrade files, run the following command: `sudo rm -rf /lib/firmware/bsp`

Conserving Gateway Space (Backups)

Backups are always created as part of the BSP upgrade process. When doing multiple intermediate upgrades, backups should also be removed to conserve space.

Backups can be removed through 2 methods: SSH or KonaFT.

SSH:

1. Log into the gateway via SSH.
2. See the list of available backups: `ls /backup`
3. Remove backups as desired: `sudo rm -rf /backup/<Three digit backup index>`

KonaFT:

1. Connect to the gateway.
2. In the top row of tabs, select **Board Details**.
3. In the row of tabs slightly below, select **Backup and Restore**.
4. Under Restore, select **Update Table**.
5. A list of backups will now appear. Click one and then select **Delete Selected** to delete the backup.

Conserving Gateway Space (Backups)

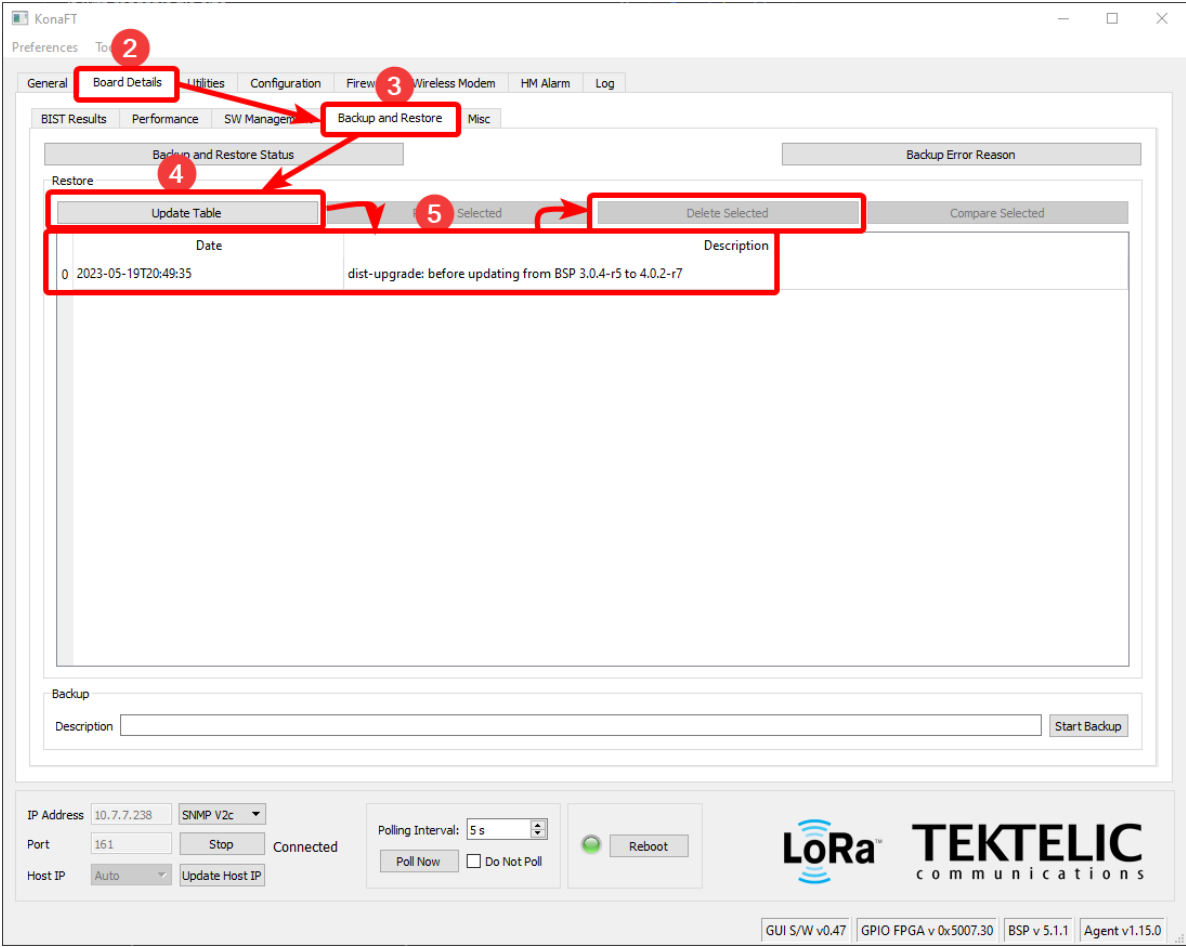


Figure-9 Deleting Backups

Best-In-Class, Carrier Grade &
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Sensors & Applications