

NetClock 9400  
System Software  
**Version 5.2.0**  
Upgrade Instructions



Date: February 10th, 2015  
[www.spectracomcorp.com](http://www.spectracomcorp.com)



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# SPECTRACOM LIMITED WARRANTY

## Five Year Limited Warranty

Spectracom, a business of the Orolia Group, warrants each new standard product to be free from defects in material, and workmanship for five years after shipment in most countries where these products are sold, EXCEPT AS NOTED BELOW (the "Warranty Period" and "Country Variances").

## Warranty Exceptions

This warranty shall not apply if the product is used contrary to the instructions in its manual or is otherwise subjected to misuse, abnormal operations, accident, lightning or transient surge, or repairs or modifications not performed by Spectracom authorized personnel. Items with a variance to the Five Year Warranty Period are as follows:

## 90 Days Warranty

TimeKeeper Software

## One Year Limited Warranty

Timeview Analog Clock  
Path Align-R Products  
Bus-level Timing Boards  
IRIG-B Distribution Amplifiers

## Two Year Limited Warranty

Rubidium Oscillators  
Epsilon Board EBO3  
Epsilon Clock 1S, 2S/2T, 3S, 31M  
Epsilon SSU  
Power Adaptors  
Digital and IP/POE Clocks  
WiSync Wireless Clock Systems and IPSync IP Clocks

Rapco 1804, 2804, 186x, 187x, 188x, 189x, 2016, 900 series

## Three Year Limited Warranty

Pendulum Test & Measurement Products GPS-12R, CNT-9x, 6688/6689, GPS-88/89, DA-35/36, GPS/GNSS Simulators

## Country Variances

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## Warranty Exclusions

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Extended warranties can be purchased for additional periods beyond the standard warranty. Contact Spectracom no later than the last year of the standard warranty for extended coverage.

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Spectracom's obligation under this warranty is limited to the cost of in-factory repair or replacement, at Spectracom's option, of the defective product or the product's defective component. Spectracom's Warranty does not cover any costs for installation, reinstallation, removal or shipping and handling costs of any warranted product. If in Spectracom's sole judgment, the defect is not covered by the Spectracom Limited Warranty, unless notified to the contrary in advance by customer, Spectracom will make the repairs or replace components and charge its then current price, which the customer agrees to pay.

In all cases, the customer is responsible for all shipping and handling expenses in returning product to Spectracom for repair or evaluation. Spectracom will pay for standard return shipment via common carrier. Expediting or special delivery fees will be the responsibility of the customer.

### Warranty Procedure

Spectracom highly recommends that prior to returning equipment for service

work, our technical support department be contacted to provide troubleshooting assistance while the equipment is still installed. If equipment is returned without first contacting the support department and "no problems are found" during the repair work, an evaluation fee may be charged.

Spectracom shall not have any warranty obligations if the procedure for warranty claims is not followed. Customer must notify Spectracom of a claim, with complete information regarding the claimed defect. A Return Authorization (RMA) Number issued by Spectracom is required for all returns.

Returned products must be returned with a description of the claimed defect, the RMA number, and the name and contact information of the individual to be contacted if additional information is required by Spectracom. Products being returned on an RMA must be properly packaged with transportation charges prepaid.



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## Upgrade Preparation

Chapter 1 guides you through the steps necessary to prepare the upgrade.

**This Chapter includes the following topics:**

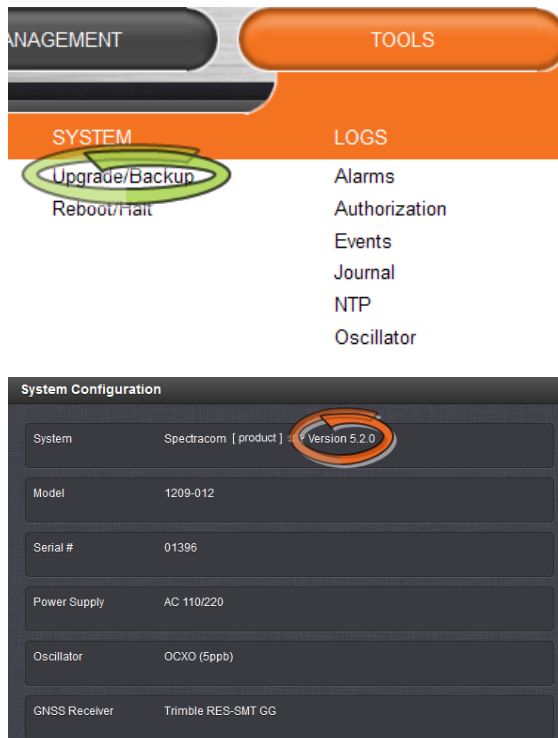
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## 1.1 Determining the Current System Software

First, determine which system software version is currently installed on your NetClock 9400:

### 1.1.1 Using Version 5.1.2 and Above

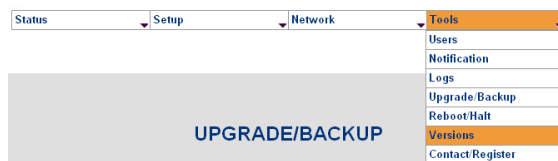
1. In the NetClock 9400 Web User Interface (Web UI), navigate to **Tools > System > Upgrade/Backup**.



2. Take note of the system software version number.

### 1.1.2 Using Version 5.0.2 and Below ("Old Style" Web UI)

1. In the Web UI, navigate to **Tools > Versions**.



MODEL AND SERIAL NUMBER	
Model Number	1200-123
Serial Number	000000

SYSTEM VERSION	
Archive Version	Spectracom [product] Version 5.0.2
KTS Version	SW V3.0.2 FPGA 00 V0113
Slot 1 Version	Empty
Slot 2 Version	Empty
Slot 3 Version	Empty
Slot 4 Version	Empty
Slot 5 Version	Empty
Slot 6 Version	Empty
Options	

FPGA AND FIRMWARE VERSION	
Run-time Firmware Image	3.02
Run-time FPGA Image	3.02
Boot Loader	2.10
Compressed FPGA Image	2.10

2. Take note of the Archive Version number.

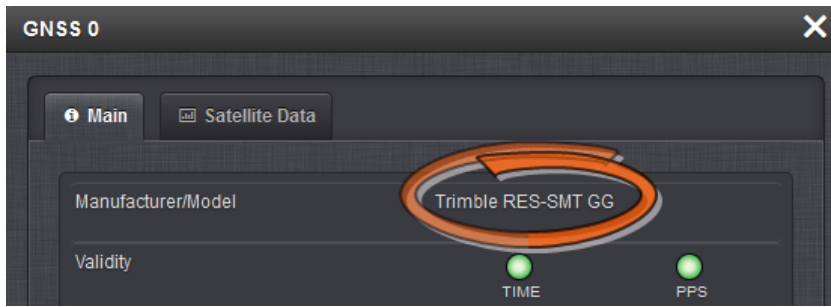
## 1.2 Determining the GNSS Receiver

Next, you need to determine which type of GNSS receiver is installed in your NetClock 9400.



**NOTE** - If the default Web UI of your unit is blue/white (rather than dark grey), your unit has a **Res-T** receiver.

1. If your Web UI is dark grey (see illustration below), navigate to **Interfaces** -> **GNSS 0**. The first line item under the default **Main** tab will report the GNSS receiver Model that is installed in your NetClock 9400. The example shown in the illustration below shows a **"RES-SMT GG"** receiver.



2. Take note of the receiver type installed in your unit.

## 1.3 Determining the Correct Upgrade Procedure

The **Version 5.2.0 Upgrade Bundle** you are about to install includes a **firmware update (Version 1.0.7)** for the **GNSS receiver** in your NetClock 9400. Units shipped since 1 April 2014 typically have a "RES-SMT-GG" GNSS receiver installed, for which the **Version 1.0.7 firmware update** has been designed.



**NOTE** - If your unit is equipped with a GNSS receiver different than the "RES-SMT-GG" receiver, the firmware update will be skipped automatically.

In order for the **firmware update** to be applied to the GNSS receiver during the NetClock 9400 system software upgrade process, the starting system software version must be **Version 5.1.5 or higher**.

This requirement results in three possible scenarios:

- I. Your NetClock 9400 has **system software version 5.1.5 or higher installed**.  
In this case, the receiver firmware update will be automatically applied during the system software upgrade process. After completion of all necessary steps outlined in CHAPTER 1, proceed to "Upgrading from V. ≥5.1.2 to V. 5.2.0" on page 24.
- II. The system software installed on your NetClock 9400 is **version 5.1.4 or below, but is at least version 5.0.2**:  
In this case, the system software does not need to be updated first to version 5.1.5, before updating to version 5.2.0. Instead, the same version 5.2.0 update process must be performed **a second time**, with the second update process only applying the firmware update to the RES-SMT-GG receiver (if installed); see also "Required Repeat of Ver. 5.2.0 Update Process" on page 23.  
The second time performing the same update process does require the update file to be uploaded into the time server again, but does not require the **Force Update** checkbox be enabled, as the rest of the update process does not need to be performed again

(NetClock 9400 will already be at Version 5.2.0 at that time).

After completion of all necessary steps outlined in CHAPTER 1, proceed to "Upgrading from V. 5.0.2 to V. 5.2.0" on page 18.

- III. If the currently installed software version is **versions 5.0.1 or below**: You must install Version 5.0.2 first. Please visit the Spectracom web page [SecureSync and NetClock 9400 Software Upgrade](#), in order to receive the corresponding upgrade bundle.

## 1.4 Freeing up Disk Space

NetClock 9400 uses a Compact Flash (CF) memory card for storing logs, configurations and software. Over time, the Compact Flash card can contain many log entries and any previous software update files retained from earlier software updates.

If the CF card usage is higher than normal when a software update is performed, this can potentially result in the loss of some or all of the unit's configurations upon completion of the software update process or may prevent the update from being able to begin. It may be necessary for the unit's logs and previous update files to be deleted before performing software updates.

The logs can be backed-up to a single bundled file and then extracted before deleting them, if required by your organization. The processes to easily delete logs and previous Update files before updating the software is described within.



**NOTE** - An available CLI command (`df -h`) can be used to read what percentage of the CF card is currently in use, to determine if the logs and update files should be deleted. In general, if the CF card usage is more than around 70 % or so, the logs and any previous software update files should be deleted to ensure there is plenty of space in the CF card to persist the config files and to be able to perform the upgrade.

To determine the usage, login to the CLI (telnet or ssh) and at the command prompt, type: `df -h` <enter> (as shown below). The "Use%" column in the "/dev/hda1" row will indicate the CF card usage (65 % in this example, which indicates the logs and any previous Update files don't need to be deleted before performing the update process).

```
padmin@Spectracom - $ df -h
filesystem      Size  Used Avail Use% Mounted on
ootfs           963M  588M  326M  65% /
dev/hda1        963M  588M  326M  65% /
evtmpfs         248M    0  248M   0% /dev
mpfs            248M  396K  247M   1% /run
hm              248M    0  248M   0% /dev/shm
padmin@Spectracom - $
```

### 1.4.1 Archiving and Deleting Log Files

If the disk usage is higher than around 70 %, Spectracom recommends the logs (and update files that may have been previously applied) be deleted before performing the system software upgrade to prevent possible loss of configuration data during the software update process.

As an option, the logs can also be **backed-up before deletion**: The logs can be bundled into a single file, and then transferred to your PC, all from within the Web UI.

1. The log bundling and deleting is controlled in the **Management > "Log Configuration"** page. To save the logs to a PC before deleting them, on the left side of the page, click on **Save and download all Logs**. This generates a single bundled file of the logs. Select where to save this file on your PC.  
Alternatively, the logs can also be deleted under **Management > Log Configuration**. On the left side of the page, click on **Clear all Logs**.

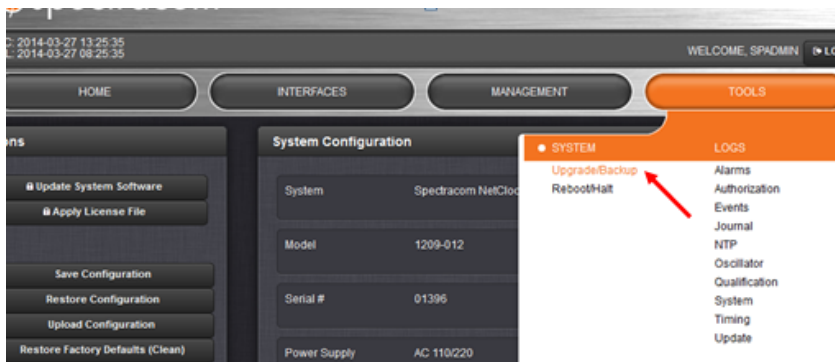
The logs have now been deleted.

### 1.4.2 Deleting Previous Update Files

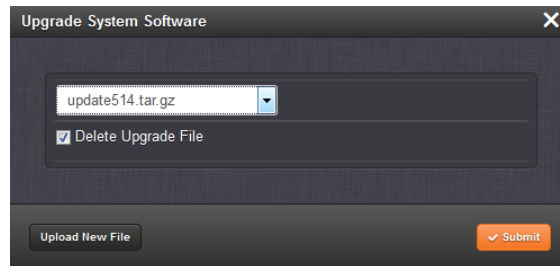
Previous Update files are stored in the `home/spectracom` directory and can be individually deleted using the Web UI (they are not used by the system after the update has been applied).

To delete each update file:

1. Open the Web UI, and login. Then, navigate to the **Tools > Upgrade/Backup** (see illustration below).



2. Click on the button **Update System Software** in the top-left corner of the **Upgrade/Backup** page, in order to open the window **Upgrade System Software** (see illustration below).



3. The drop-down list will display each update file currently stored in the Compact Flash Card. Select the file to be deleted, and check the **Delete Upgrade File** checkbox. Then click **Submit**.
4. Repeat this process to delete any other listed update file.

## 1.5 Downloading the Upgrade Software Bundle

The version 5.2.0 system software upgrade (as well as previous versions 5.0.2 and 4.8.9, as needed) can be downloaded from the Spectracom Corporate website, see:

[Spectracom Corporate website/Support page for NetClock](#)

1. Download the file onto your PC, and note the location.

## 1.6 Option-Specific Steps

With certain options (see below), the corresponding procedures described below must be carried out when upgrading **from Versions 5.0.2 or higher to Version 5.2.0**.

These instructions apply only, if one or several of these options are installed:

- » 10/100 PTP Option
- » Gigabit Ethernet Option

Please note that these option-related procedures **must be carried out only once**, i.e. if you have previously upgraded your system from Version 5.0.2 to, e.g. 5.1.5, you can skip this section.

When there are software updates that need to be automatically applied to the 10/100 PTP Option during the upgrade process, the upgrade process will take an additional 5 to 7 minutes longer, for each 10/100 PTP Option Module that is installed.

### 1.6.1 Gigabit Ethernet Option



**NOTE** - This section is not applicable when previously upgrading from versions 5.1.2 and above and the Ethernet ports have already been enabled by a user.

#### Important Notices when upgrading from version 5.0.2

When updating from versions prior to 5.1.2 with this Option installed, Eth1, Eth2 and Eth3 will all be disabled (not accessible by the network) upon applying this software update. If you are connected to one of these three ports to perform the update process, the time server will not be accessible once the update has completed. Further below is information about two different methods to enable each of these three Interfaces as desired, after applying the software update.

Because the three interfaces are disabled once the software update has completed, the network settings will appear to have been lost during the update. However, the settings do actually persist through the update process. All of the settings will be present again, once each interface is individually enabled.

If the software was previously updated to versions 5.1.2 or higher, the three Ethernet ports will be in the same state (enabled or disabled) as they were before applying this update.

System software version 5.1.2 added a new feature which allows unused Ethernet interfaces (Eth1, Eth2 and/or Eth3) of the Gigabit Option, if installed, to be disabled via software for security purposes. Note this change does not apply to the base Ethernet port, "Eth0", which cannot be disabled.

After applying this software update from version 5.0.2, all three of these Ethernet interfaces will be disabled. If any or all three of these interfaces are currently being used, after applying the software update (or if it's desired to start using any of these three interfaces at a later date) the desired Ethernet interface(s) needs to be enabled. Until the interfaces have been enabled by a user, they will be inaccessible to the network.

Each of the three Ethernet interfaces can be enabled as desired, via either the web browser (using the "base" Ethernet interface "Eth0") or by issuing a specific command with a CLI connection (telnet or SSH).

#### Enabling each interface using a CLI connection

After creating a CLI connection (using either telnet or SSH) the command to enable each desired interface is as follows: portset x on (where x is the Ethernet interface number - 1, 2, or 3 - for the interface you wish to enable).

An example of enabling Interface "Eth1" is shown below:

```
padmin@Spectracom ~ $ portset 1 on
padmin@Spectracom ~ $
```

#### Enabling each interface using a web browser connection

To enable each desired Interface using the web browser, login to the browser using Eth0 (this interface is not disabled during the update). Navigate to the **Management** -> **Network** page of



the Web UI. This will open a page displaying all four Ethernet interfaces (Eth0 through Eth3). The Status of Eth1 through Eth3 will be displayed as “DISABLED”.

For each Interface you wish to enable, click on the corresponding **Gear** button (center of the three buttons in that row). In the next screen that opens, click on the checkbox at the top of the page (as shown below). Then press either the **Apply** or **Submit** button to enable the interface. The port will now have the previous configuration as before the update was applied and will be accessible to the network.



The screenshot shows a dark-themed dialog box titled "Edit Ethernet Port Settings" with a close button (X) in the top right corner. The dialog contains the following configuration options:

- ☒ Enable eth1
- Domain:
- DNS Primary:
- DNS Secondary:
- ☒ Enable DHCPv4
- ☐ Enable DHCPv6
- ☐ Enable SLAAC
- IPv6 Gateway:

Below these options is a table for IPv6 addresses:

IPv6 ADDRESS	PREFIX	DESCRIPTION
fe80::20c:ecff:fe05:44e	64	link-local unicast address

At the bottom of the dialog, there is an "Edit IPv6 Address" button on the left, and "✓ Apply" and "✓ Submit" buttons on the right.

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## Upgrade Procedure

After completion of all preparation steps, the actual upgrade will be performed. Chapter 2 will guide you through the procedure.

Depending on which software version is currently installed in your NetClock 9400, proceed either to:

- » "Upgrading from V. 5.0.2 to V. 5.2.0" on the next page,
- » or to "Upgrading from V.  $\geq 5.1.2$  to V. 5.2.0" on page 24.

**This Chapter includes the following topics:**

2.1 Upgrading from V. 5.0.2 to V. 5.2.0 .....	18
2.1.1 Required Repeat of Ver. 5.2.0 Update Process .....	23
2.1.2 Confirming Successful Installation .....	23
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## 2.1 Upgrading from V. 5.0.2 to V. 5.2.0

The software upgrade process is performed using a Windows PC that is either on the same network as the NetClock 9400 appliance, or is connected directly to the NetClock 9400 via a network cable.



**NOTE** - In order to perform the software upgrade, the Web UI of the unit to be upgraded must be accessible from this particular PC.

Once you downloaded the upgrade file onto a network PC, you can then transfer the file onto your NetClock 9400 unit, using the unit's Web UI.

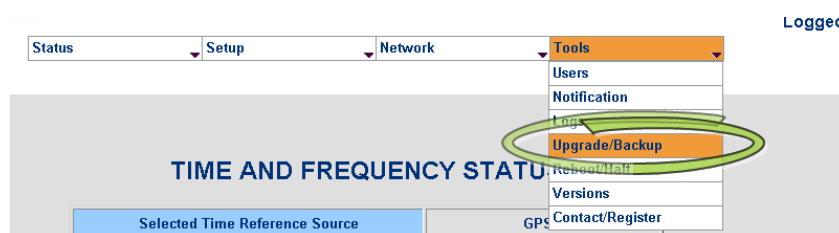


**NOTE** - Alternatively, you can also upgrade via Command Line Interface: In this case, the file must be transferred manually, using FTP/SFTP, to the NetClock 9400 directory `home/spectracom`.

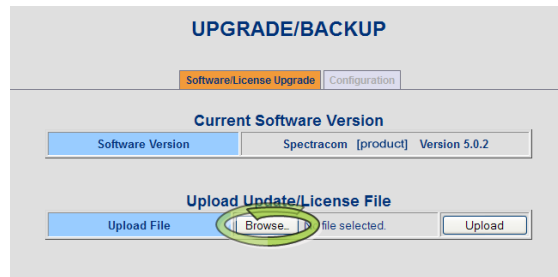
During the time that the file is being uploaded into NetClock 9400, the unit will remain fully functional and accessible for other network PC's.

Once the file transfer is complete, NetClock 9400 is performing the software upgrade ("Upgrade System"), during which the unit is configured: Normally, all current NetClock 9400-configurations are automatically saved and restored as part of the update process. During the "Upgrade System" process, the front panel LCDs will go blank, and the unit will not be operational until the upgrade process has completed.

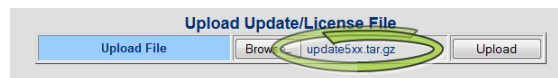
1. Download the NetClock 9400 upgrade file (`update520.tar.gz`) from the Spectracom website—see also "Downloading the Upgrade Software Bundle" on page 13—to an accessible directory on your local Windows machine (such as `C : /Temp`).
2. Open the Web UI, and login. Then navigate to **Tools > Upgrade/Backup**.



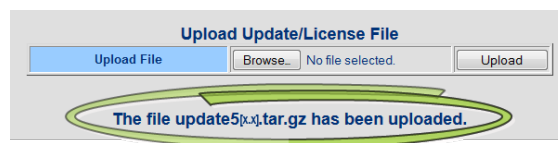
3. Ensure the **Software/License Upgrade** tab is orange (Orange indicates the tab is selected). Either click in the blank text box located next to **Upload File**, or select **Browse** to be able to select the update file (see illustration below).



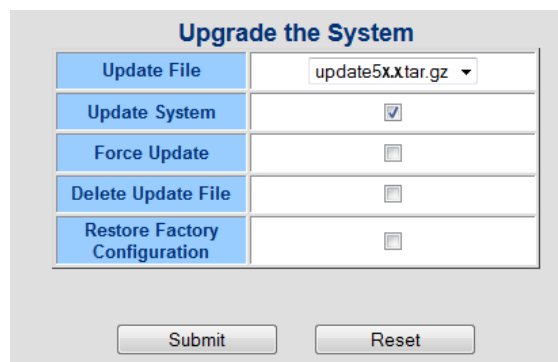
4. Use the Windows® Explorer to navigate to the location on your network PC where the update file (update520.tar.gz) was stored earlier (such as C : /Temp), and select it. Once the path appears in the text field (see illustration below), click the **Upload** button.



5. The file upload process may take several minutes. Once the file has been uploaded, the message "The file updatexxx.tar.gz has been uploaded." (where xxx is the new version being applied) will be displayed underneath the field **Upload Update/License File**:



6. Now refer to the bottom of this page, under the title **Upgrade the System**. Ensure the correct file name (update520.tar.gz) is selected in the box next to **Update File**.



Upgrade the System	
Update File	update5x.xtar.gz ▼
Update System	<input checked="" type="checkbox"/>
Force Update	<input type="checkbox"/>
Delete Update File	<input type="checkbox"/>
Restore Factory Configuration	<input type="checkbox"/>

Submit Reset

7. Check the box next to **Update System** to install the software update.

Other available checkboxes:



**NOTE** - To perform the software update from an earlier software version to the latest version, only the checkbox next to **Update System** should be selected.

- » **Force Update:** When checked, will force the software to install all packages, even if it is already at the current revision, or (for example, it is desired to install version 5.2.0, even though version 5.2.0 is already installed). The software will reinstall over the previously installed packages.

USE CASE: This checkbox must be selected if it is ever desired to downgrade to a previous software version.

- » **Delete Update File:** When checked, will remove the Archive file that was uploaded into the unit. Note that this will not remove the file from your PC, just from NetClock 9400.



**NOTE** - If it is desired to remove the update file from the unit after completion of the upgrade process, note that the "Delete the Update File" checkbox should not be selected at the same time as the "Update System" checkbox. This process should be performed any time after the System Update process has been completed.

- » **Restore Factory Configuration:** When checked, will return NetClock 9400 to its original factory configuration.

USE CASE: This checkbox should be selected if it is ever desired to downgrade to a previous version (such as back to version 5.0.2, for instance).

During the System Upgrade you will see an analysis screen (as shown in the illustration below).



**NOTE** - If the unit has had any previous software updates applied and if any of the earlier upgrade files have not since been deleted from the unit, a Web UI screen may momentarily indicate the Upgrade process is "Complete". This does not affect the software update process and the analysis screen will be displayed shortly thereafter.

UPGRADE STATUS				
Analyzing...				
Package	Old Version	New Version	Action	Status
Application	5.1.5	-	-	Analyzing
Timing FW	3.17	-	-	Analyzing
Timing FPGA	3.17	-	-	Analyzing
OC 1 ID 1F HW 01	0101	-	-	Analyzing
OC 2 ID 06 HW 02	0000	-	-	Analyzing
OC 3 ID FF HW FF	0000	-	-	Analyzing
OC 4 ID 01 HW 01	0103	-	-	Analyzing
OC 5 ID 12 HW 01	0105	-	-	Analyzing
OC 6 ID 02 HW 01	0114	-	-	Analyzing
Licensing	-	-	-	Analyzing
GNSS	0000	-	-	-
OC 5 FW	B127	-	-	Analyzing



**NOTE** - "OC" being displayed in the bottom rows refers to OPTIONS which may or may not be installed in your unit.

UPGRADE STATUS				
Analyzing...				
Package	Old Version	New Version	Action	Status
Application	5.0.2	5.17	Upgrade Needed	In Progress
Timing FW	3.17	3.17	No Upgrade Needed	Completed
Timing FPGA	3.17	3.17	No Upgrade Needed	Completed
OC 1 ID 1F	0101	1.01	No Upgrade Needed	Completed
OC 2 ID 06	0000	-	No Upgrade Available	Completed
OC 3 ID FF	0000	-	No Upgrade Available	Completed
OC 4 ID 01	0103	1.03	No Upgrade Needed	Completed
OC 5 ID 12	0105	1.05	No Upgrade Needed	Completed
OC 6 ID 02	0114	1.14	No Upgrade Needed	Completed
Licensing	-	-	No Upgrade Available	Completed
GNSS	0000	-	No Upgrade Available	Completed
OC 5 FW	B127	B127	No Upgrade Needed	Completed



**Caution:** Do not close the Web UI, or attempt to reboot the unit. The installation is in progress and may take several minutes to complete.

NetClock 9400 will reboot itself during the update process, as shown in the following screenshot:

UPGRADE STATUS				
Analyzing...				
Package	Old Version	New Version	Action	Status
Application	5.0.2	5.17	Upgrade Needed	In Progress
Timing FW	3.17	3.17	No Upgrade Needed	Completed
Timing FPGA	3.17	3.17	No Upgrade Needed	Completed
OC 1 ID 1F	0101	1.01	No Upgrade Needed	Completed
OC 2 ID 06	0000	-	No Upgrade Available	Completed
OC 3 ID FF	0000	-	No Upgrade Available	Completed
OC 4 ID 01	0103	1.03	No Upgrade Needed	Completed
OC 5 ID 12	0105	1.05	No Upgrade Needed	Completed
OC 6 ID 02	0114	1.14	No Upgrade Needed	Completed
Licensing		-	No Upgrade Available	Completed
GNSS	0000	-	No Upgrade Available	Completed
OC 5 FW	B127	B127	No Upgrade Needed	Completed

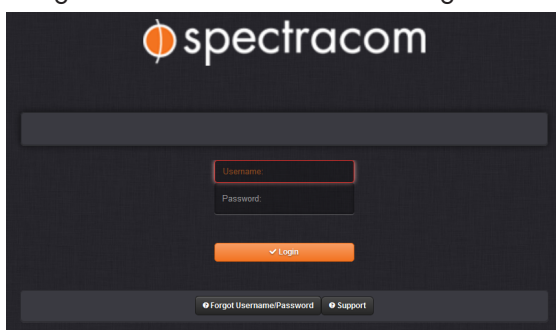


**NOTE** - If using a DHCP assigned IP address (instead of having a statically assigned IP address), the unit's IP address may change once the update has completed (it may be re-assigned a different IP address by the DHCP server). Automatic Reloading of the Web UI will not work if the address has been changed by the DHCP server. Therefore, a new web browser connection using the newly assigned IP address will need to be opened.

If the front panel LCD is configured to display network settings, the LCD window will show the newly assigned IP address.

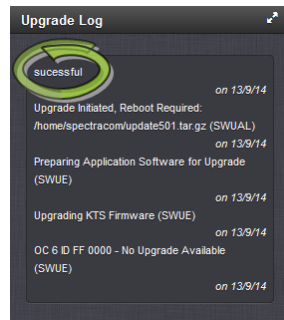
When using a static-assigned IP address (or if the DHCP server did not assign a new IP address after the reboot), and as long the Web UI did not time-out during the update process (if it times-out, press the F5 key to refresh the connection), once the update is complete, you will now see the main page of the "new" Web UI design.

If you need to reconnect to the Web UI at any point, the login screen for the new Web UI design will now look like the following:



With the new Web UI design, the **Upgrade Log** with is located in the upper-right corner of the **Home** page. The top of this log should indicate "Successful".





### 2.1.1 Required Repeat of Ver. 5.2.0 Update Process

**IMPORTANT:** The upgrade process must be performed a second time, if:

- » you are upgrading **from a software version 5.1.4** or lower (as described in this chapter)
- » and if your unit is equipped with a **RES-SMT-GG receiver**.

This is required to update the receiver firmware.

(If the pre-upgrade software was version 5.1.5 or higher, or if a receiver other than RES-SMT-GG is installed, the update process does not need to be repeated.)

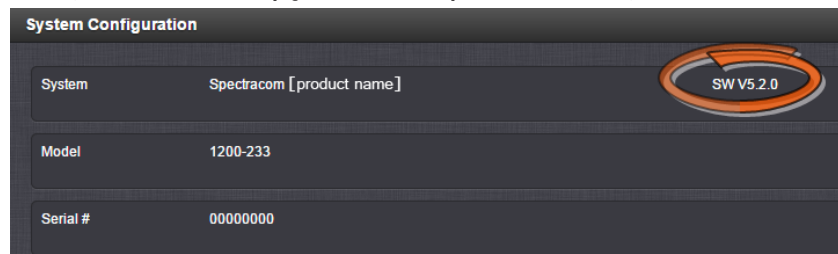


**Caution:** Note the second time performing the same update process does require the update file be uploaded into the unit again. The checkbox **Force Update** must NOT be checked.

With `update520.tar.gz` in the update drop-down list after re-loading the update file, just select **Perform Upgrade** again and click **Submit**. The second time through the update process will be faster than the first time, as the receiver is the only item updated.

### 2.1.2 Confirming Successful Installation

Navigate to **Tools > Upgrade/Backup**. The following information should now be displayed:



## 2.2 Upgrading from V. ≥5.1.2 to V. 5.2.0

The software upgrade process is performed using a Windows PC that is either on the same network as the NetClock 9400 appliance, or is connected directly to the NetClock 9400 via a network cable.



**NOTE** - In order to perform the software upgrade, the Web UI of the unit to be upgraded must be accessible from this particular PC.

Once you downloaded the upgrade file onto a network PC, you can then transfer the file onto your NetClock 9400 unit, using the unit's Web UI.

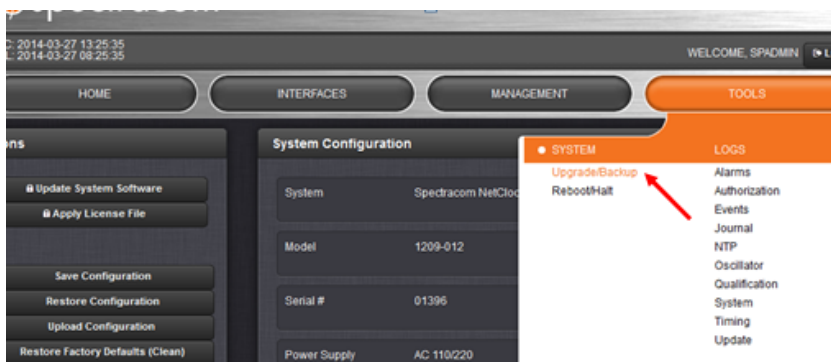


**NOTE** - Alternatively, you can also upgrade via Command Line Interface: In this case, the file must be transferred manually, using FTP/SFTP, to the NetClock 9400 directory `home/spectracom`.

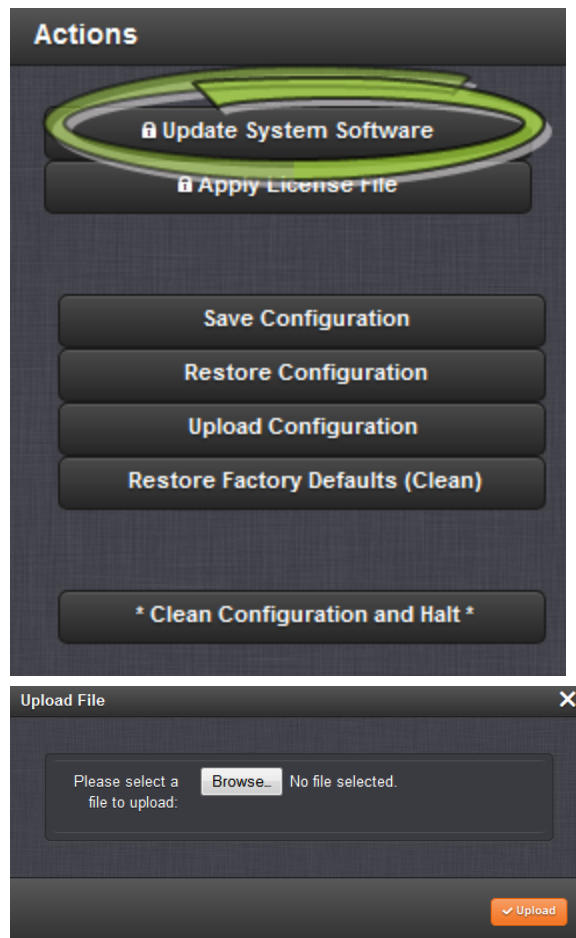
During the time that the file is being uploaded into NetClock 9400, the unit will remain fully functional and accessible for other network PC's.

Once the file transfer is complete, NetClock 9400 is performing the software upgrade ("Upgrade System"), during which the unit is configured: Normally, all current NetClock 9400-configurations are automatically saved and restored as part of the update process. During the "Upgrade System" process, the front panel LCDs will go blank, and the unit will not be operational until the upgrade process has completed.

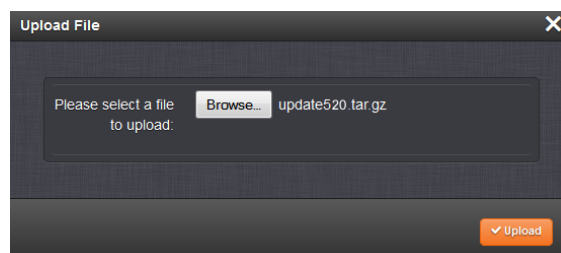
1. Download the NetClock 9400 upgrade file (`update520.tar.gz`) from the Spectracom website—see also "Downloading the Upgrade Software Bundle" on page 13—to an accessible directory on your local Windows machine (such as `C : /Temp`).
2. Open the Web UI, and login. Then navigate to **Tools > Upgrade/Backup**.



3. Click the button **Update System Software** in the top-left corner of the **Upgrade/Backup** page:

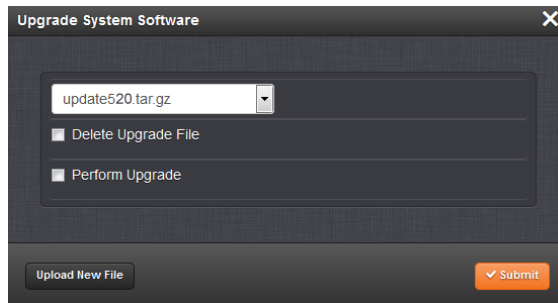


4. Click **Browse...**, and navigate to the location to which you previously saved the update file (`update520.tar.gz`) on your PC (such as `C:/Temp`). Select the file. The file name will appear next to the **Browse...** button.
5. Click **Upload**.

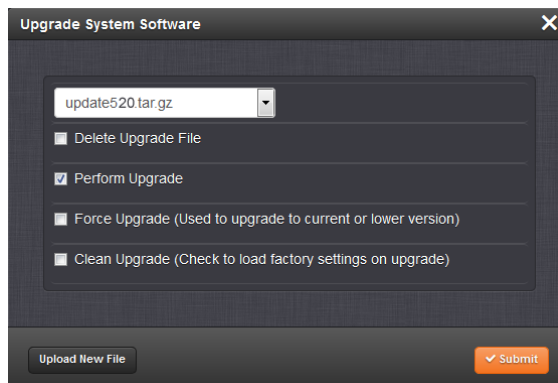
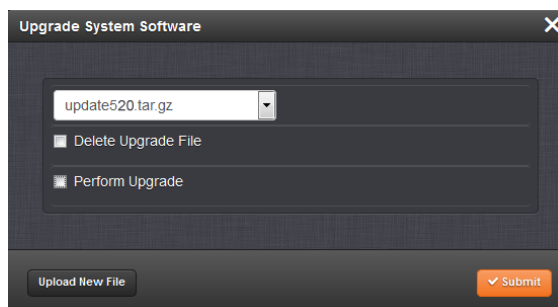


6. The file upload process may take several minutes. Once the file has been uploaded into your NetClock 9400, the directory of `updatexxx.tar.gz` (where `xxx` is the version) will be listed in the "File" dropdown, (The "down arrow" to the right-side of this field

may need to be clicked, in order to see the file, if previous update files have been uploaded).



7. Ensure the correct file name (`update520.tar.gz`) is selected in the “File” drop-down field.
8. Check the box next to **Perform Upgrade** to install the software update (or to downgrade to an earlier version).  
Once this checkbox has been selected, two other checkboxes (**Force Upgrade** and **Clean Upgrade**) will become visible towards the bottom of the window. Note that these two checkboxes do not need to be selected for a standard upgrade to a newer version.



- » **Force Upgrade** — When checked, will force the software to install all update packages, even if it is already at the current revision, (for example, it is desired to install version 5.2.0, even though version 5.2.0 is already installed). The software will reinstall over the

previously installed packages.

USE CASE: This checkbox needs be selected if it is ever desired to downgrade to a previous version of Software.

- » **Clean Upgrade** — When checked, will return the NetClock 9400 to its original factory configuration for the version of software being installed. (The **Force Upgrade** checkbox will be automatically selected when the **Clean Upgrade** checkbox is selected.)



**NOTE** - To perform a standard software upgrade, i.e. from an earlier software version to the latest version, only the checkbox **Perform Upgrade** needs to be selected.

Upgrade Status				
In Progress				
Analyzing...				
PACKAGE	OLD VERSION	NEW VERSION	ACTION	STATUS
Application	5.1.6	-	-	In Progress
Timing FW	3.17	-	-	In Progress
Timing FPGA	3.17	-	-	In Progress
OC 1 ID 1F HW 01	0101	-	-	In Progress
OC 2 ID 06 HW 02	0000	-	-	In Progress
OC 3 ID FF HW FF	0000	-	-	In Progress
OC 4 ID 01 HW 01	0103	-	-	In Progress
OC 5 ID 12 HW 01	0105	-	-	In Progress
OC 6 ID 02 HW 01	0114	-	-	In Progress
Licensing	-	-	-	In Progress
GNSS	0000	-	-	In Progress
OC 5 FW	B127	-	-	In Progress

During the System Upgrade process, the **Upgrade Log** window on the right-side of the browser will periodically have new entries asserted, indicating the update process is progressing.



**Caution:** Do not close the Web UI, or attempt to reboot the unit. The installation is in progress and may take several minutes to complete.

The **Upgrade Status** window will remain displayed during the upgrade progress, as long the browser is not refreshed (such as by pressing the keyboard F5 key, for instance) or as long as the web browser background is not clicked. If the page happens to be refreshed or the background clicked during the next few minutes while the update is being performed (causing the **Status** window to disappear), this **Status** window cannot be re-opened. However, the software update will continue to be performed with the window closed (the **Upgrade Status** window and the Web UI being open are not required for the update to be performed). The **Status** window will periodically report status change updates.



**NOTE** - If using a DHCP assigned IP address (instead of the unit having a statically assigned IP address), the IP address may change once the update has completed (it may be re-assigned a different IP address by the DHCP server).

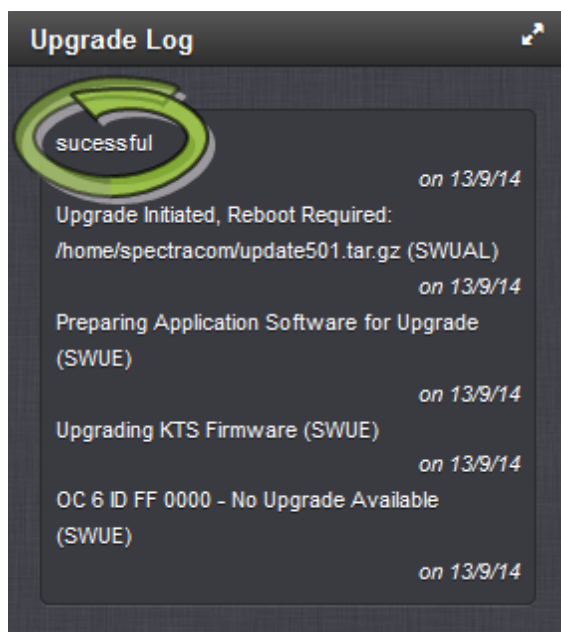
Automatic Reloading of the web page will not work if the address has been changed by the DHCP server. Therefore, a new web browser connection using the newly assigned IP address will need to be opened.

If the front panel LCD is configured to display network settings, the LCD window will show the newly assigned IP address.

When using a static-assigned IP address (or if the DHCP server did not assign a new IP address after the reboot), and as long the web browser didn't time-out during the update process (if it times-out, press the F5 key to refresh the connection), once the update is complete, you will now see the main page of the new web browser design.

### Upgrade Log

The **Upgrade Log** is located in the upper-right corner of the **Tools > Upgrade/Backup** page of the Web UI. After completion of the upgrade process, the top of this log should indicate "Successful".



### 2.2.1 Potential Need to Repeat Ver. 5.2.0 Update Process

**IMPORTANT:** The upgrade process must be performed a second time, if:

- » you are upgrading from a software version 5.1.4 or lower
- » and if your unit is equipped with a RES-SMT-GG receiver.

This is required to update the receiver firmware.

(If the pre-upgrade software was version 5.1.5 or higher, or if a receiver other than RES-SMT-GG is installed, the update process does not need to be repeated.)



**Caution:** Note the second time performing the same update process does require the update file be uploaded into the time server again. The checkbox **Force Update** must NOT be checked.


With `update520.tar.gz` in the update drop-down list after re-loading the update file, just select **Perform Upgrade** again and click **Submit**. The second time through the update process will be faster than the first time, as the receiver is the only item updated.

### 2.2.2 Confirming Successful Installation



**NOTE** - You will need to log into the Web UI, using your login account information

Navigate to **Tools > Upgrade/Backup**. The following information should now be displayed:

System Configuration	
System	Spectracom [product name] 
Model	1200-233
Serial #	00000000



## Appendix

This Chapter includes the following topics:

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## 3.1 Upgrading via CLI

It is possible to perform a software upgrade via a Command Line Interface, rather than using the Web UI, for example for scripting software updates.

Starting in Archive software version 4.8.8, the software update can be initiated using a CLI command (issued via telnet, SSH or the front panel Serial port), instead of using the web browser, if desired. This entails performing an FTP/SCP transfer of the software update file into NetClock 9400's `/home/spectracom` directory and then issuing the `sysupgrade` CLI command to initiate the software upgrade.



**NOTE - IMPORTANT:** When transferring the update file using either FTP or SCP (instead of uploading it using the web browser), make sure the Update file is transferred using BINARY mode (SCP transfer is preferred, because it always transfers using Binary mode). Otherwise, this file will likely be altered during the file transfer, preventing the updater from being able to extract it. The following error message will be asserted into the Update log if the Update file is altered/can't be extracted: "ERROR (-1) - Failure while unpacking Upgrade Bundle (SWUE)".

The syntax for issuing the `sysupgrade` command is:

- » **Standard upgrade** (Such as upgrading versions 4.8.8 to 4.8.9 for example): "`sysupgrade`" followed by the upgrade file name (Example: `sysupgrade update489.tar.gz`).
- » **Forced upgrade** (Such as downgrading versions 4.8.9 to 4.8.8 for example, but can also be used with Standard upgrades, also): "`sysupgrade force`" followed by the upgrade file name (Example: `sysupgrade force update489.tar.gz`).
- » **Clean upgrade** (Such as first performing a Forced upgrade from 4.8.8 to 4.8.9, for example. Then automatically resetting the NTP server back to factory default settings and deleting all log files): "`sysupgrade clean`" followed by the upgrade file name (Example: `sysupgrade clean update489.tar.gz`).

## 3.2 Saving/restoring configuration files

### Important note about saving/restoring configuration files

Due to fairly significant changes to the system configuration files from system software versions prior to version .20, it is not recommended to perform a configuration restore with 5.2.0 software installed, from a configuration save that was performed in a NetClock 9400 with versions

4.8.9 or earlier installed. If a configuration restore from versions 4.8.9 or below software is performed on a version 5.x.x time server, a 'clean' will be required to be performed via the front panel keypad thereafter to reset the NTP server to the factory default settings for the installed version.

In general, due to possible changes to configuration files from one version to another, if you wish to have a configuration backup file saved, we recommend performing a new "configuration save" after each new software update is performed, to replace the earlier configuration bundle. This will ensure that if a configuration restore is performed, the configs in the captured file will be identical to the ones in the NTP server.

### 3.3 Software Update Log entries

Software update log entries, such as upgrades that have already been performed, or an error occurring during the update process, are placed in the **Update Log** (**Tools > Logs** page of the Web UI). Please refer to this log if you have any problems with the software update process (such as if the message "Upgrade Failure" is displayed, for instance).

### 3.4 Downgrading the SW to a Previous Version

If desired, the software can be downloaded to previous versions 5.0.0 or higher (it is not recommended to downgrade to versions 4.8.9 or below from versions 5.0.0 and above). The downgrade process is the same as an upgrade, except an earlier version update bundle is selected during the process and the update needs to be "Force Updated" (to override the version checking that normally occurs).



**NOTE** - Due to incompatibilities between later and earlier configuration files, a "Clean Upgrade" is also required to be performed during the software "downgrade" process (the unit will need to be reconfigured as desired, once it's been downgraded to the desired, earlier version).



**NOTE** - You will not be able to apply a Saved configuration file from a later version of software to any earlier, downgraded version of software to restore the

configurations. However, a saved config file previously performed when it was at the earlier version can be safely re-applied as desired to restore configs.

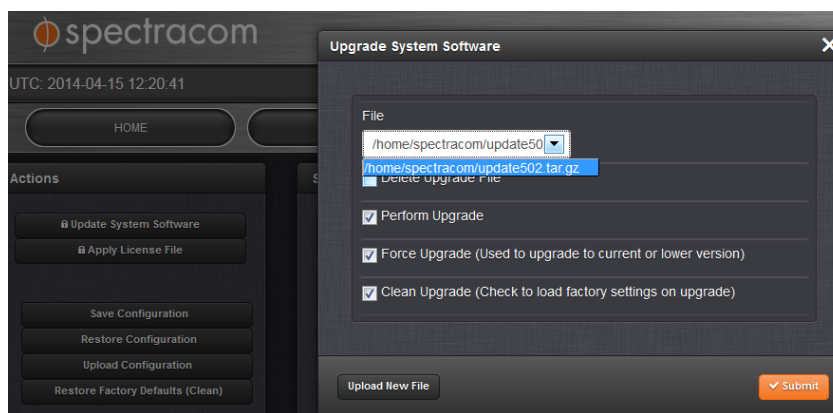
## Downgrading to an earlier version using the newer (black/charcoal background) Web UI:

To simultaneously downgrade and 'Restore Factory Configuration':

1. Navigate to the **Tools > Upgrade/Backup** page.
2. Press **Update System software** (on the left side of the screen, under **Actions**).
3. Verify the desired update bundle you wish to downgrade to is in the **File** drop-down. If not, press **Upload New File** and browse to where the earlier update bundle is stored. Upload the bundle into the unit.
4. Select the **Perform Upgrade** checkbox in the menu that opens, which will expand the menu down to display two additional checkboxes.
5. Select the desired Update bundle version which you wish to downgrade to.
6. Select also the **Force Upgrade** and **Clean Upgrade** checkboxes, before clicking **Submit** (as shown in the screenshot below) to begin the downgrade. The software downgrade will take several minutes to complete.



**NOTE** - If the software was downgraded back to a version prior to version 5.1.0, the "classic interface" will be displayed after logging back in, once the downgrade has completed.



7. Once downgraded, reconfigure the unit's settings as desired, or restore a previously Saved config file from the version the software has been downgraded to.

### Downgrading to an earlier version using the "classic interface" Web UI

To simultaneously downgrade and **Restore Factory Configuration**, in addition to selecting the **Update System**, and **Force Update** checkboxes, also select the **Restore Factory Configuration** checkbox before clicking **Submit** (as shown in the screenshot below). The software downgrade will take several minutes to complete.

The **Restore Factory Configuration** checkbox resets all of the unit's configurations back to the factory default settings.



**NOTE** - If the software was downgraded back to a version prior to version 5.1.2, the "classic" interface will be displayed after logging back in, once the downgrade has completed.

UPGRADE/BACKUP	
Software/License Upgrade   Configuration	
Current Software Version	
Software Version	Spectracom NetClock 9483 Version 5.0.0
Upload Update/License File	
Upload File	Browse... Upload
Upgrade the System	
Update File	update409.tar.gz
Update System	<input checked="" type="checkbox"/>
Force Update	<input checked="" type="checkbox"/>
Delete Update File	<input type="checkbox"/>
Restore Factory Configuration	<input checked="" type="checkbox"/>

Select the "Update System", the "Force Update" and the "Restore Factory Configuration" check-boxes when downgrading to any previous version (such as downgrading from version 5.0.2 to version 4.8.9, for example).

Reconfigure the settings as desired, or restore a previously Saved config file from the version the software has just been downgraded to.

## 3.5 "Upgrade Failure" (V. 5.0.2 to V. 5.2.0)

If the Update process returns "Upgrade Failure" (as shown below), the software update process was not successful.

UPGRADE STATUS				
Upgrade Failure				
Package	Old Version	New Version	Action	Status
Application SW	-	-	-	Analyzing
Timing SW	-	-	-	Analyzing

If this happens, review the entries in the Update and System logs.

Applying the same version already installed or downgrading to an earlier version of software without select the “Force Update” checkbox, in addition to selecting the “Update System” checkbox can cause the upgrade to fail. Make sure to select “Force update when applying the same or earlier version of software.

The Update log may contain the following entry: “Error (-1) Failure while unpacking Upgrade Bundle” / “Problem unpacking NWP bundle” \*as shown below):

**LOG FILES**

Timestamps are in system timescale (UTC)

Event	Alarms	Oscillator	GPS Qualification	NTP	Journal	Authentication	Update	Timing	System
Nov 11 17:15:50 PSC-SecureSync PSC-SecureSync: [sw-upgrade] SW Upgrade Error (8) (SWUE)									
Nov 11 17:15:49 PSC-SecureSync PSC-SecureSync: [spupdate] ERROR (-1) - Failure while unpacking Upgrade Bundle (SWUE)									
Nov 11 17:15:49 PSC-SecureSync PSC-SecureSync: [spupdate] ERROR (-1) - Problem unpacking NWP bundle (SWUE)									
Nov 11 17:14:51 PSC-SecureSync PSC-SecureSync: [spupdate] Starting Update (SWUE)									
Nov 8 22:35:22 PSC-SecureSync PSC-SecureSync: [sw-upgrade] SW Upgrade Error (8) (SWUE)									
Nov 8 22:35:21 PSC-SecureSync PSC-SecureSync: [spupdate] ERROR (-1) - Failure while unpacking Upgrade Bundle (SWUE)									
Nov 8 22:35:21 PSC-SecureSync PSC-SecureSync: [spupdate] ERROR (-1) - Problem unpacking NWP bundle (SWUE)									
Nov 8 22:34:25 PSC-SecureSync PSC-SecureSync: [spupdate] Starting Update (SWUE)									
Nov 8 22:28:04 PSC-SecureSync PSC-SecureSync: [sw-upgrade] SW Upgrade Error (8) (SWUE)									

Likely causes for this error message in the Update log

- » The update file may be corrupt (preventing it from being able to be extracted in the time server). Run MD5 checker against the update file to verify file integrity. Spectracom provides the MD5 file for each software update file.
- » Too many Update Bundles are stored in the time server. Delete previous update bundles (such as update489, for instance).

Once a software update has been applied, the update bundle can be deleted (the bundles only need to be stored in the time server to alleviate the need to transfer them again to perform a software downgrade. Otherwise, they can be safely deleted without affecting the time server). Having too many upgrade files saved can prevent the update file being applied from being able to extract.

To delete earlier update files, select each one individually in the drop-down, check only the “Delete Update File” checkbox in the screen where you normally select “Update File”. Then press Submit. This will delete the selected update file. Then run the update process again.

**UPGRADE/BACKUP**

Software/License Upgrade
Configuration

**Current Software Version**

Software Version	Spectracom NetClock 9483 Version 5.0.0
------------------	--

**Upload Update/License File**

Upload File

Browse...

Upload

**Upgrade the System**

Update File	update489 tar.gz
Update System	<input checked="" type="checkbox"/>
Force Update	<input checked="" type="checkbox"/>
Delete Update File	<input type="checkbox"/>
Restore Factory Configuration	<input checked="" type="checkbox"/>

### 3.6 “Upgrade Failure” (V. ≥5.1.2 to V. 5.2.0)

If the Update process returns “Upgrade Failure” (as shown below), the software update process was not successful. Note that starting the update process again after it is already been started will result in an “upgrade failure” of the subsequent update process, while the first one is still being performed in the background.

Upgrade Status				
In Progress				
Upgrade Failure				
PACKAGE	OLD VERSION	NEW VERSION	ACTION	STATUS
Application SW	-	-	-	In Progress
Timing SW	-	-	-	In Progress
Timing FPGA	-	-	-	In Progress
OC 1	-	-	-	In Progress
OC 2	-	-	-	In Progress
OC 3	-	-	-	In Progress
OC 4	-	-	-	In Progress
OC 5	-	-	-	In Progress
OC 6	-	-	-	In Progress
Licensing	-	-	-	In Progress

If this happens, review the entries in the Update and System logs.

1. The time server may be retaining earlier upgrade bundle files which were applied and are no longer needed. Previous update bundles should be deleted. For more information, see "Deleting Previous Update Files" on page 12.
2. Applying the same version already installed or downgrading to an earlier version of software without select the "Force Update" checkbox, in addition to also selecting both the "Force Upgrade" and "Clean Upgrade" checkboxes can cause the upgrade to fail. Make sure to select the "Perform Upgrade", "Force Upgrade" and "Clean Upgrade" checkboxes when applying the same or earlier version of software.
3. The Update log may contain the following entry: "Error (-1) Failure while unpacking Upgrade Bundle" / "Problem unpacking NWP bundle"

Likely causes for this error message in the Update log

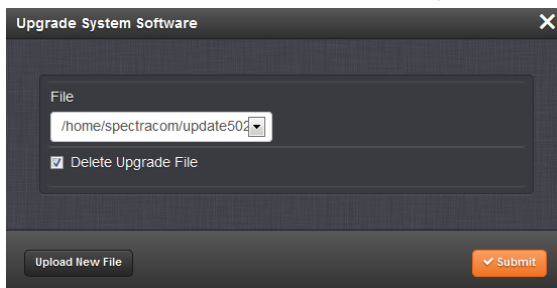
- » The update file may be corrupt (preventing it from being able to be extracted in the time server). Run MD5 checker against the update file to verify file integrity. Spectracom provides the MD5 file for each software update file.



- » Too many Update Bundles are stored in the time server. Delete previous update bundles (such as update489, for instance).

Once a software update has been applied, the update bundle can be deleted (the bundles only need to be stored in the time server to alleviate the need to transfer them again to perform a software downgrade. Otherwise, they can be safely deleted without affecting the time server). Having too many upgrade files saved can prevent the update file being applied from being able to extract.

To delete earlier update files, select each one individually in the drop-down, check only the checkbox **Delete Upgrade File** in the screen where you normally select "Update File". Then click Submit. This will delete the selected update file. Then run the update process again.



## 3.7 Technical Support

To request technical support, please go to the ["Support" page](#) of the Spectracom Corporate website, where you can also find additional technical documentation.

Phone support is available during regular office hours under the telephone numbers listed below. To speed up the diagnosis of your NetClock 9400, please send us the current product configuration (see "Option Card Identification" on page 1 to find out which option cards are installed in your unit), and the events log (see "Saving and Downloading Logs" on page 1). Thank you for your cooperation.

### 3.7.1 Regional Contact

Spectracom operates globally and has offices in several locations around the world. Our main offices are listed below:

Country	Location	Phone
China	Beijing	+86-10-8231 9601

Country	Location	Phone
France	Les Ulis, Cedex	+33 (0)1 6453 3980
UK	Basingstoke, Hampshire	+44 (0)1256 303630
USA	Rochester, NY	+1.585.321.5800

**Table 3-1:** Spectracom contact information

Additional regional contact information can be found on the [Contact page](#) of the Spectracom corporate website.