Base Stations/Handset Firmware Update

Via TFTP

Contents

Document History

Revision	Author	Issue Date	Comments
0.1	MYA	10-Jun-2010	Initial Version
0.2	PAL	08-Jul-2010	Use screenshots from PC simulation instead of pictures
0.3	MYA/KMR	20-Sep-2010	Updated with new base firmware features v0038
0.4	JMG	01-04-2011	Updated for version 100 (and up)

Introduction: Firmware Upgrades/Downgrades

This step-by-step document describes how to upgrade or downgrade base station(s) and/or handset(s) to the relevant firmware provided by the RTX.

RTX supports and provides to the vendor an interface that performs the following operations related to firmware on the device:

1) Verify whether the new firmware package is compatible with the device.
2) Upgrade the firmware on the device to the new firmware
3) Roll back the firmware on the device to the previous firmware version

Terms & Abbreviations

For the purpose of this document, the following abbreviations hold:

DHCP:	Dynamic Host Configuration Protocol
DNS:	Domain Name Server
HTTP:	Hyper Text Transfer Protocol
IOS:	Internetworking Operating System
NAT:	Network Address Translator
PCMA:	A-law Pulse Code Modulation
PCMU:	mu-law Pulse Code Modulation
SME:	Small and Medium scale Enterprise
STUN:	Session Traversal Utilities for NAT

References

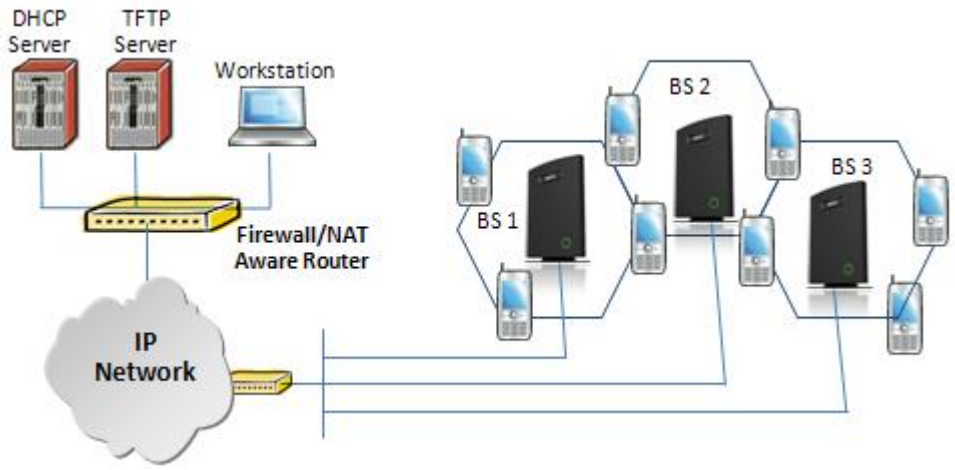
[1]: Adding Multiple Base stations to the Network Version 0.4
[2]:

Network Dimensioning

In principle, a number of hardware and software components should be available or be satisfied before base station/handset update can be possible.

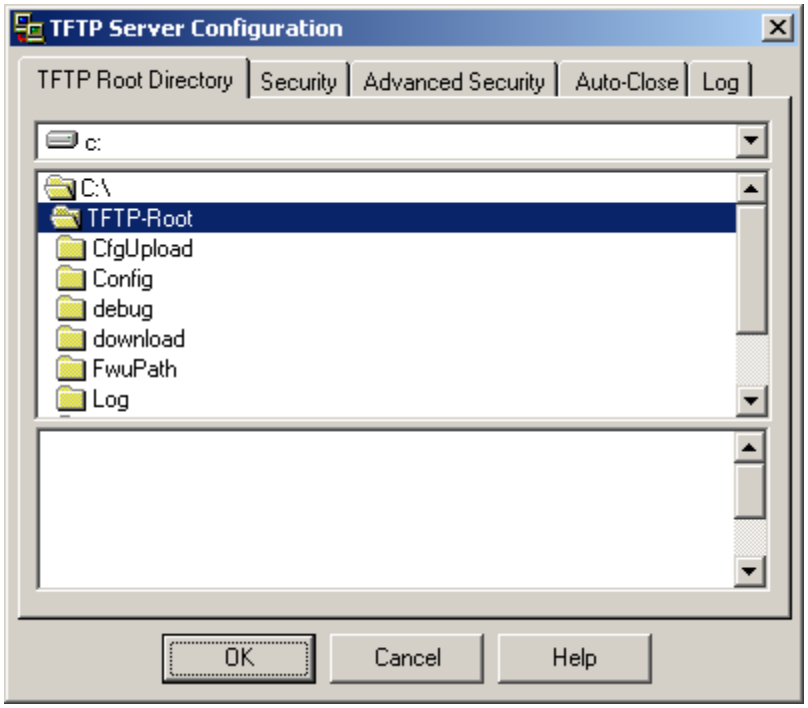
The minimum hardware and software components that are required to be able update via TFTP include the following (but not limited to):

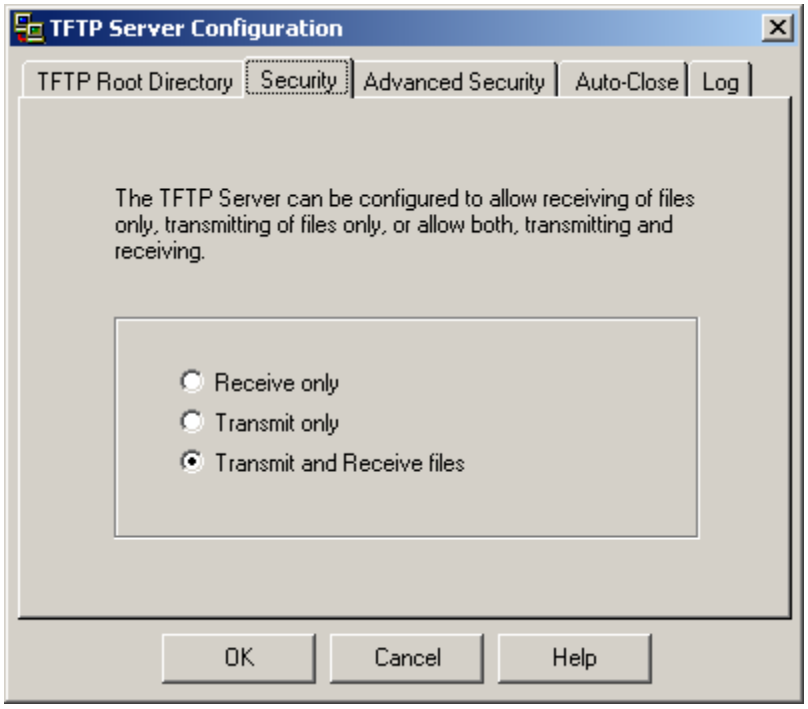
- Standard SIP Nodes (i.e. handsets)
- Base stations
- TFTP Server (Several Windows and Linux applications are available)
- DHCP Server (Several Windows and Linux applications are available)
- Workstation (for e.g. Normal terminal or PC)
- Any standard browser (for e.g. firefox)
- Public/Private Network



TFTP Configuration from “SolarWinds” TFTP Server

Create the following relevant folders as shown in the snap shots and choose defaults settings for the remaining options.





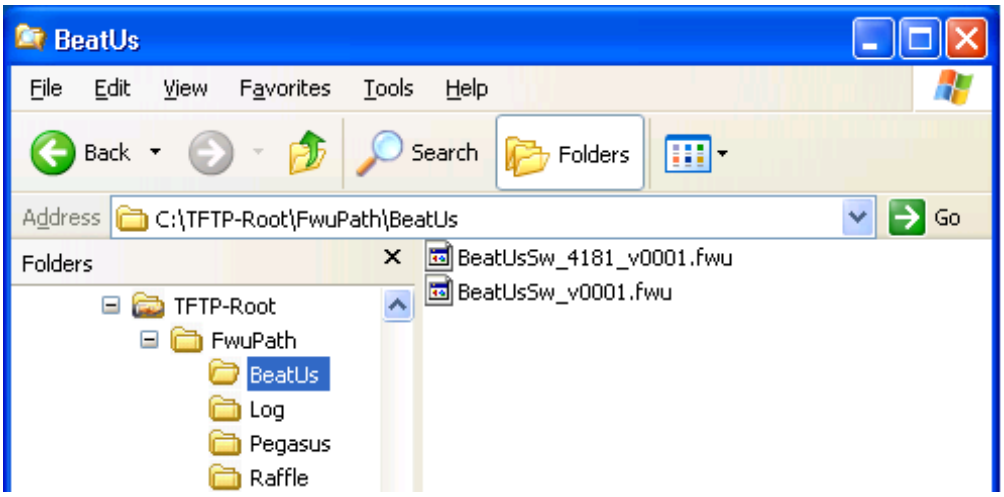
Create Firmware Directories

STEP 1 For Umber base firmware update make a folder named "**BeatUs**" in the TFTP-Root and place the fwu file/files (Firmware) in this folder. The base firmware must be renamed to "**BeatUsSw_v00xx.fwu**" or "**BeatUsSw_4181_v00xx.fwu**".
The admin from the service provider's side must create the relevant firmware directory in the server where both old and new firmware(s) can be placed in it. (See the STEP above)
The firmware directory or path should be **\<Server>\<FwuPath>\BeatUs\,** where **<Server>** is usually the root directory of the server (for e.g. **C:\TFTP-Root**) and **<FwuPath>** is a folder within the **<Server>** that contains the **BeatUs** directory.

STEP 2 For Umber handset firmware update, make a folder named "**Pegasus**" in the TFTP-Root and place the fwu file/files (Firmware) in this folder. The handset firmware must be renamed to "**PegasusSw_v00xx.fwu**" or "**PegasusSw_4181_v00xx.fwu**".
F or Raffle handset firmware update, make a folder named "**Raffle**" in the TFTP-Root and place the fwu file/files (Firmware) in this folder. The base firmware must be renamed to "**Raffle_v00xx.fwu**".
The firmware directory or path should be **\<Server>\<FwuPath>\Pegasus\ (or \Raffle\),** where **<Server>** is usually the root directory of the server (for e.g. **C:\TFTP-Root**) and **<FwuPath>** is a folder within the **<Server>** that contains the **Pegasus (or Raffle)** directory.

IMPORTANT:

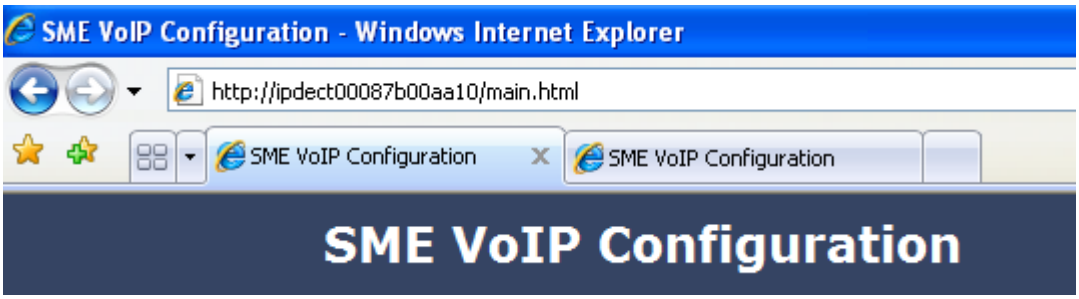
The **BeatUs, Pegasus, Raffle** directory names cannot be changed.



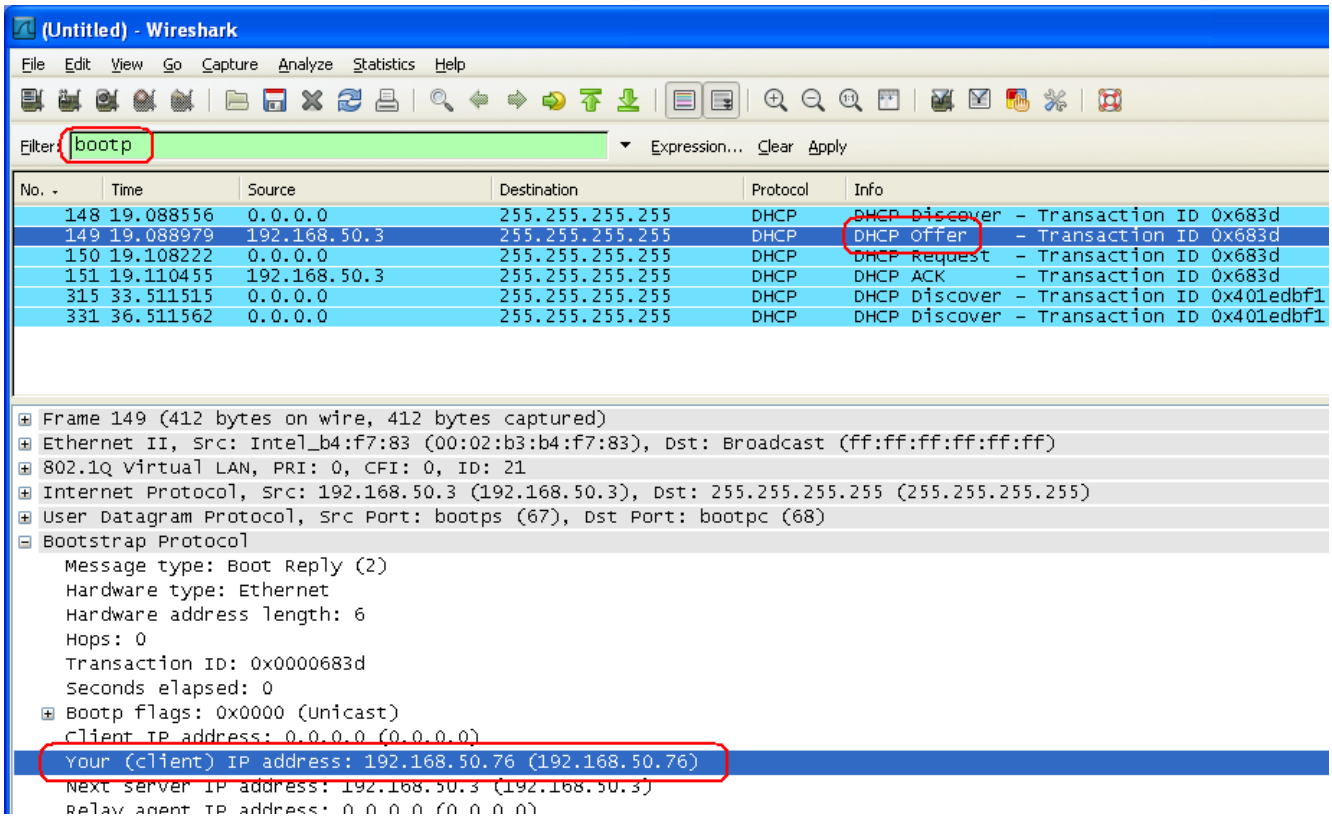
Login to Base SME Configuration Interface

STEP 3 Connect the Base station to a private network via standard Ethernet cable (CAT-5).

STEP 4 Open any standard browser and enter the address:
http://ipdect<MAC-Address-Base-Station>
for e.g. http://ipdect00087B00AA10. This will retrieve the HTTP Web Server page from the base station with hardware address **00087B00AA10**.

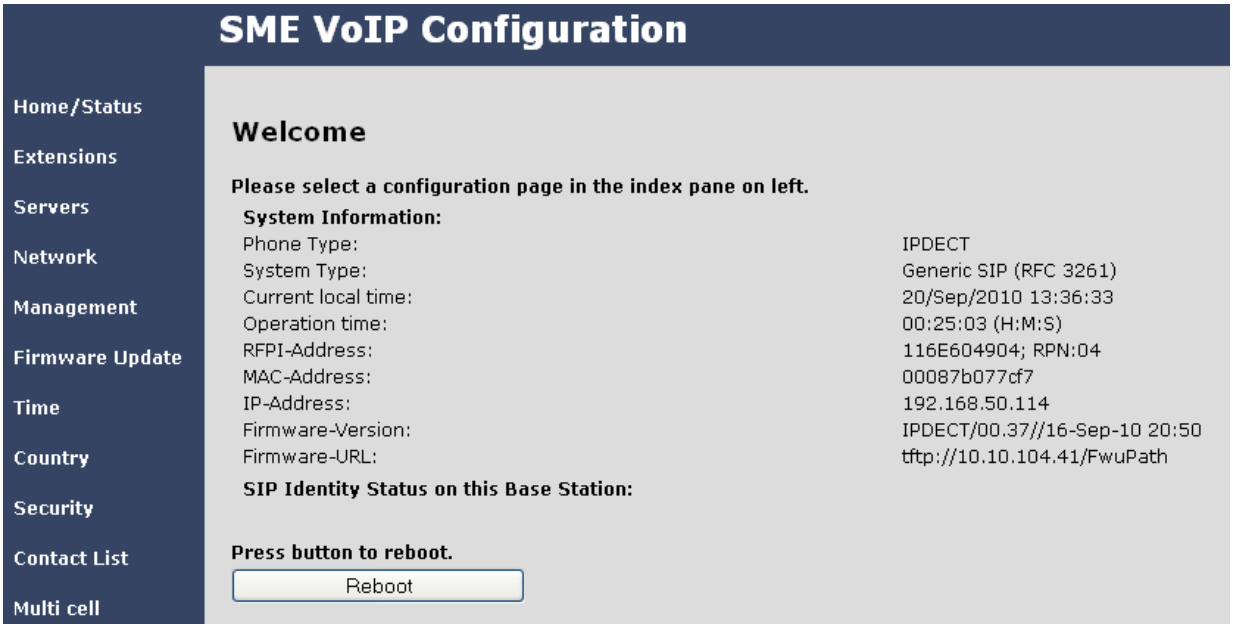


STEP 5 You can also use a sniffer like Wireshark (freeware program) to identify which IP the base has received.
Below is shown how to see which IP address the base has received from the DHCP server. In the example we start the trace and filter on "**bootp**". Then we power up the base which is connected to the same network as the sniffer (wireshark). After a short while an offer is given by the DHCP server, and it is possible to see that the base received the IP address 192.168.50.76



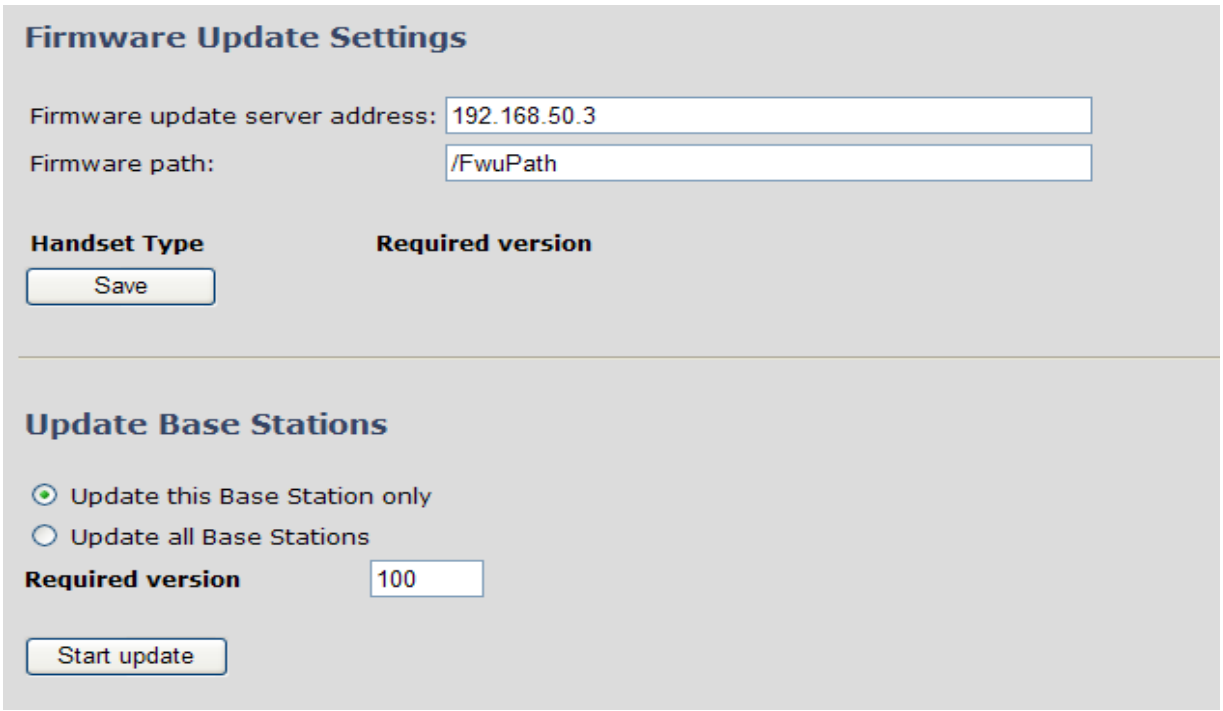
STEP 6 On the Login page, enter your authenticating credentials (i.e. username and password). Click **OK** button.

STEP 7 Once you have authenticated, the browser will display front end of the SME Configuration Interface. The front end will show relevant information of the base station.



Firmware Update Settings

STEP 8 Scroll down and Click on **Firmware Update** url link in the **SME VoIP Configuration Interface** to view the **Firmware Update Settings** page.



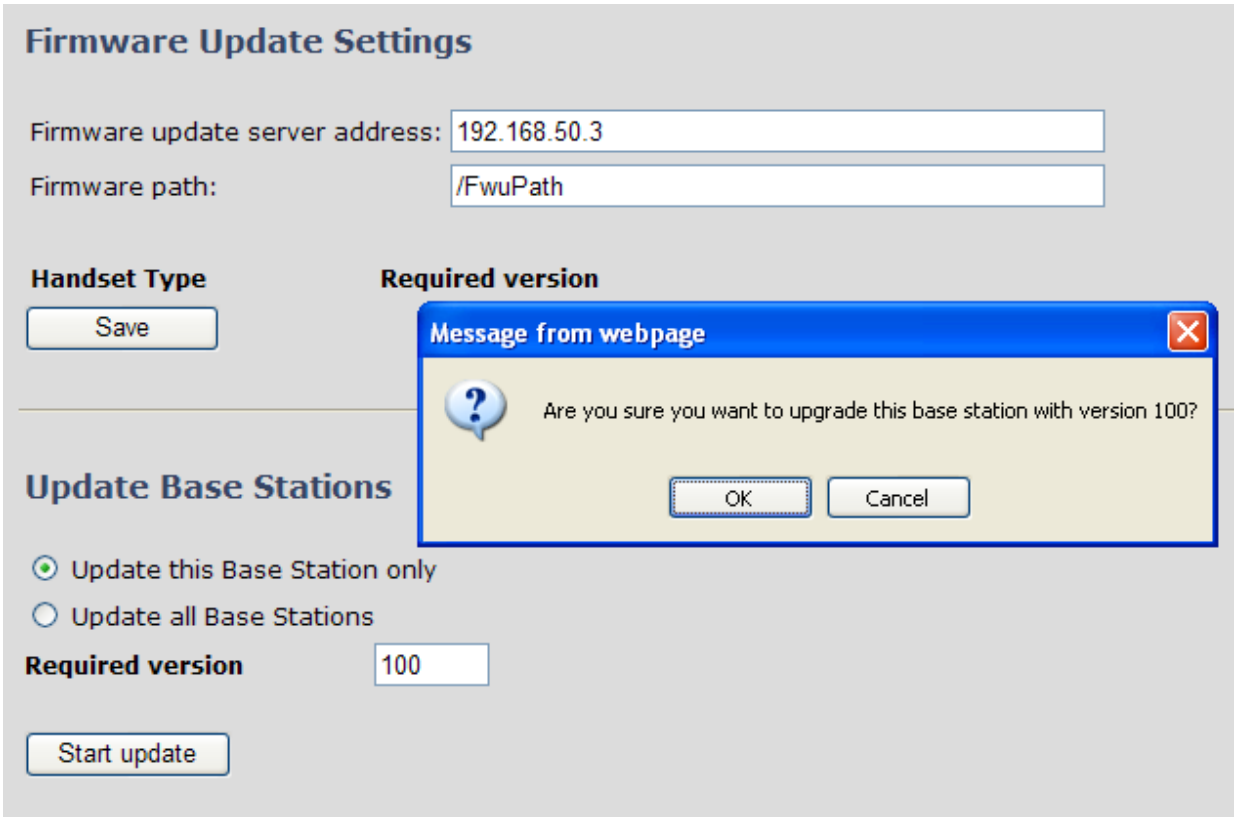
Parameters	Description
Firmware Update Settings	
Firmware update server address	This is the IP address of server where the firmware is located. Currently, only 32-bit is supported (i.e. IPv4 – **<aaa.bbb.ccc.ddd>**)
Firmware path	The firmware is found at the **\<Server>\<FwuPath>\BeatUs** directory found in the FTP or TFTP server. The **<Server>** is usually the root directory of the server created by the administrator and should NOT be specified. The **<FwuPath>** is a folder within the **<Server>** that contains the **BeatUs** directory. This MUST be specified. By default the **…\BeatUs** is hard-coded into the firmware. Therefore it should not be specified in the firmware path. Example of firmware path is **\HQ_Office**, **\South_Office**, or **\FwuPath**, etc. in that manner.
Update Base Stations/Handsets	
Required Version	This is 8-bit value. Usually the firmware filename is **BeatUsSw_v00XX.fwu**. The administrator has to enter for e.g. numerical value **XX**, where XX is a positive integer.

STEP 9 On the **Firmware Update Settings** page enter the relevant parameters as described in the table above.
Next, Click on **Save** button to keep the modified parameters into the base station.

Base Station(s) Firmware Upgrade

STEP 10 On the **Firmware Update Settings** page > scroll down to the **Update Base Stations** section > Enter the relevant firmware version (for e.g. **11**) of the base station to upgrade or to downgrade.
It is possible to upgrade a single base station and/or several base stations > the admin should choose right the radio button.

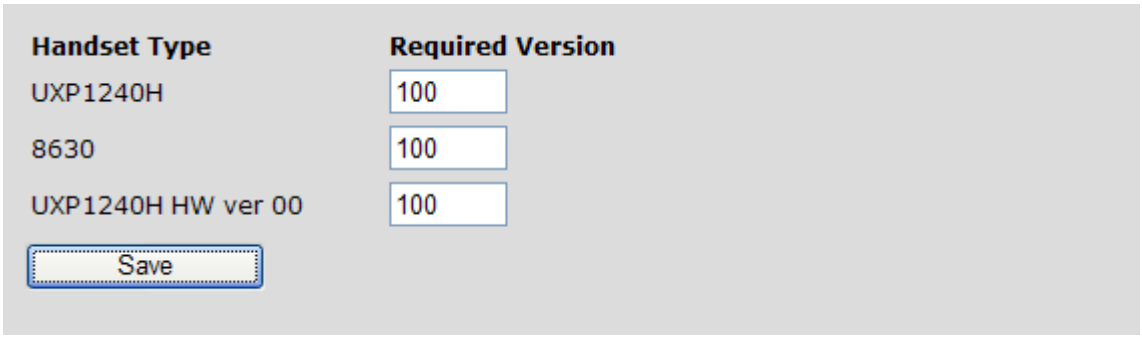
STEP 11 Still on the same **Update Base Stations** section > choose **Start update** button > select **OK** button from the dialog window to start the update/downgrade procedure.
The relevant base station(s) will automatically reboot and retrieve the firmware specified from the server and update itself accordingly.



NOTE All on-going voice calls are dropped from the base station(s) immediately the firmware update procedure starts.

Handset (s) Firmware Upgrade

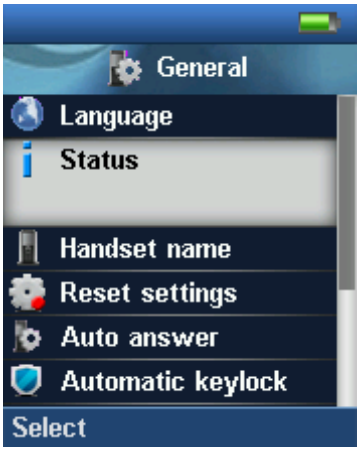
STEP 12 In the **Handset Type** section on the **Firmware Update Settings** page > Enter the relevant handset firmware (for e.g. 100) to upgrade or downgrade > press **Save** button, and after "**The parameters are successfully saved**" the process of updating all handsets in the private network are initialized.

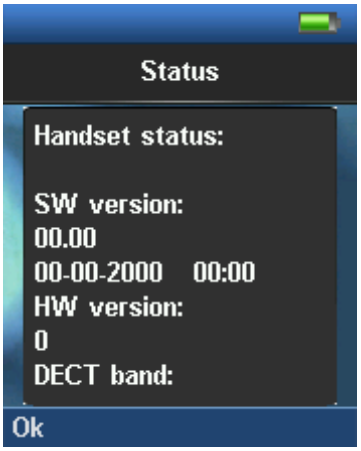


It will take up to 3 hours before the handset has downloaded the software. When the software is transferred to the handset the old software version will swap with the new version, when the handset is placed in the handset charger cradle. During software swap the handset top LED will flash in red and green colors.
In case "Required version:" is set to "0" the handset FWU is disabled.

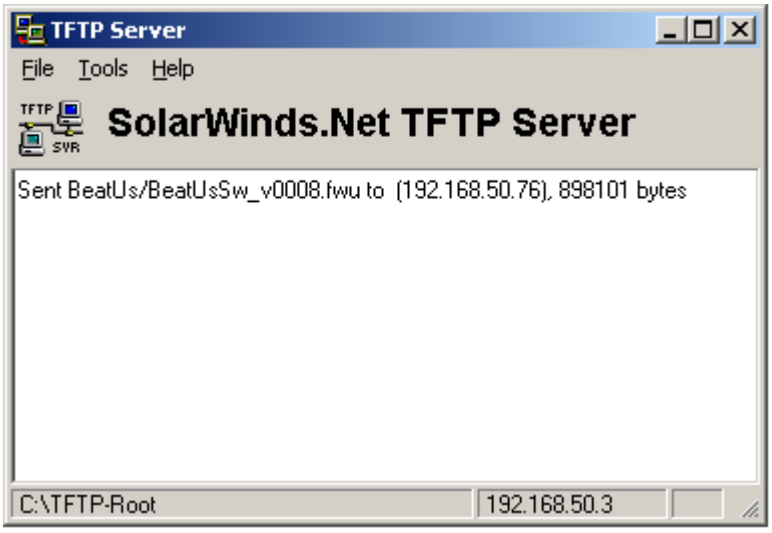
Verification of Firmware Upgrade

STEP 13 From the Handset **Menu** navigate to **Settings** > Scroll down to **Status** this will list some information including Base station and Handset firmware versions.

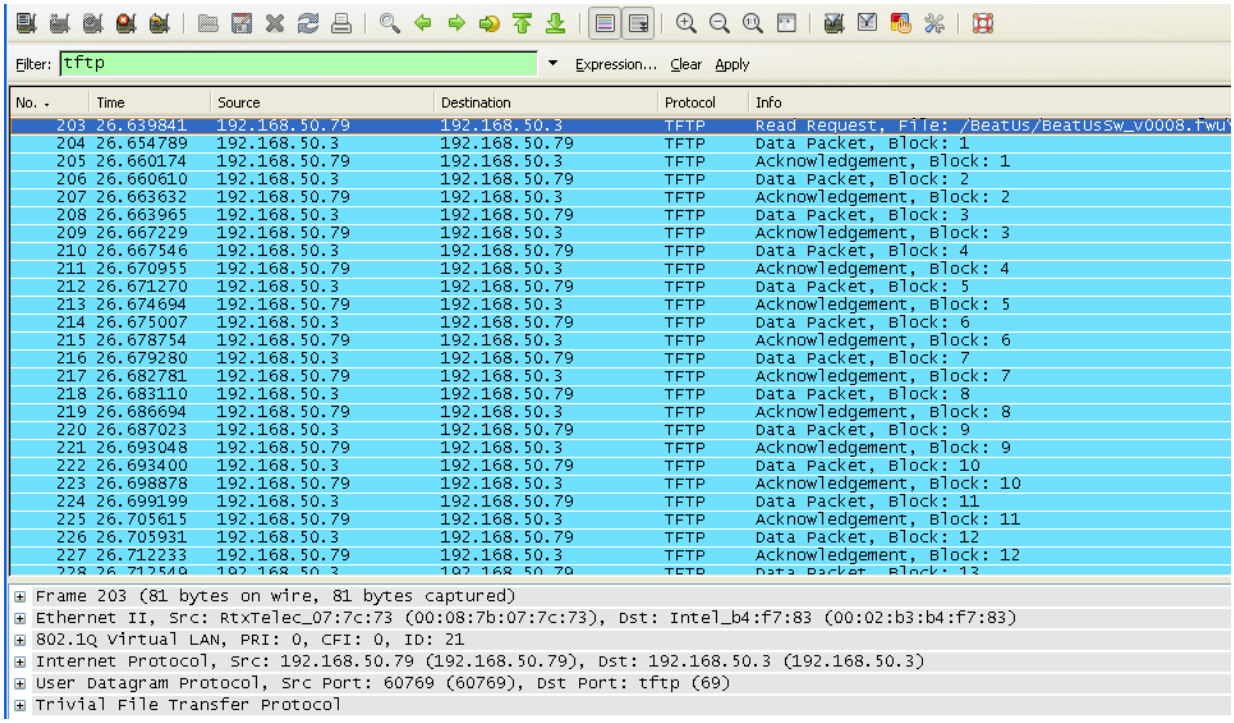




STEP 14 Now the download should be initiated and it should be stated in the log window of the TFTP server:



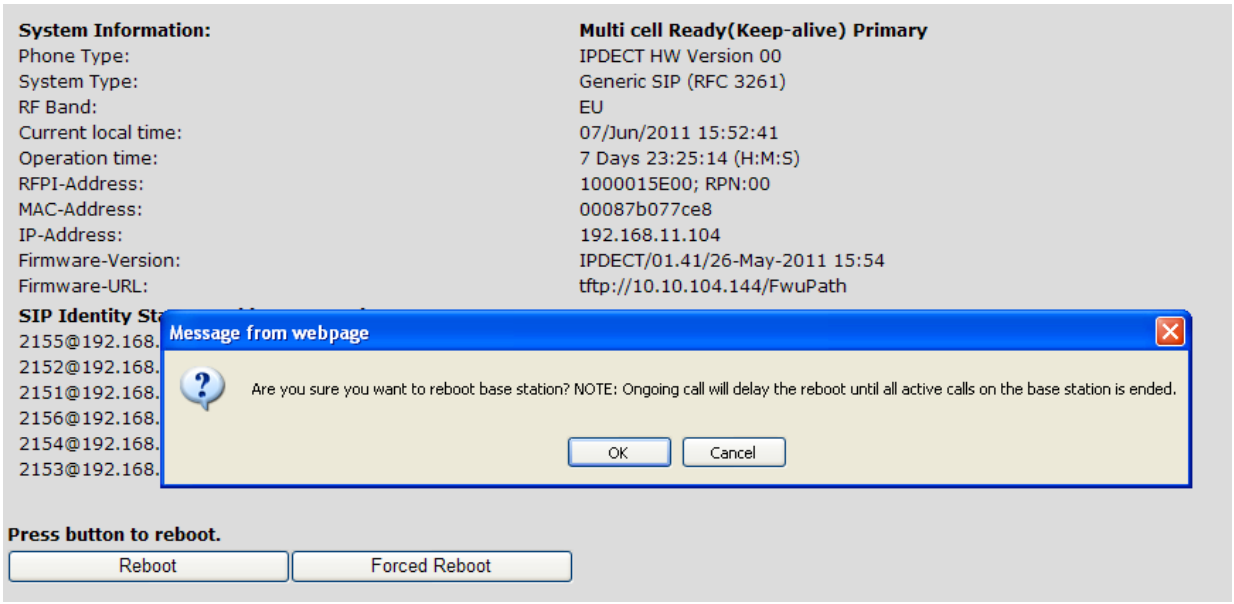
STEP 15 During the download, the Wireshark shows the download as shown below:



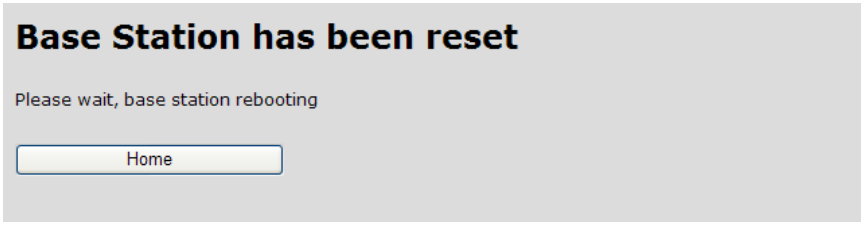
Reboot the Base station(s)

NOTE These steps below should only be performed when certain conditions are met.

STEP 16 In principle the base station(s) should reboot automatically when the when the **Start update** button is selected > to begin the firmware update procedure.
If for some unknown reasons the base station does restart, then the admin must manually reboot the base station so the firmware update process can begin in the base station.
Make sure the URL is shown on the page before rebooting the base station.



Click **OK** button from the dialog window. A successful restart of the base stations will lead to a display of the page: **Base Station has been reset**. The firmware update is now in progress.



STEP 17 Wait about 3-5 minutes, Reboot the base station.

The base station will now be updated (base LED will flash). The software version number on the start page should be changed to the new version number.

The message "**Base FWU ended with exit code -2101**" is shown in the debug log and the new firmware will be running after a restart of the base station.