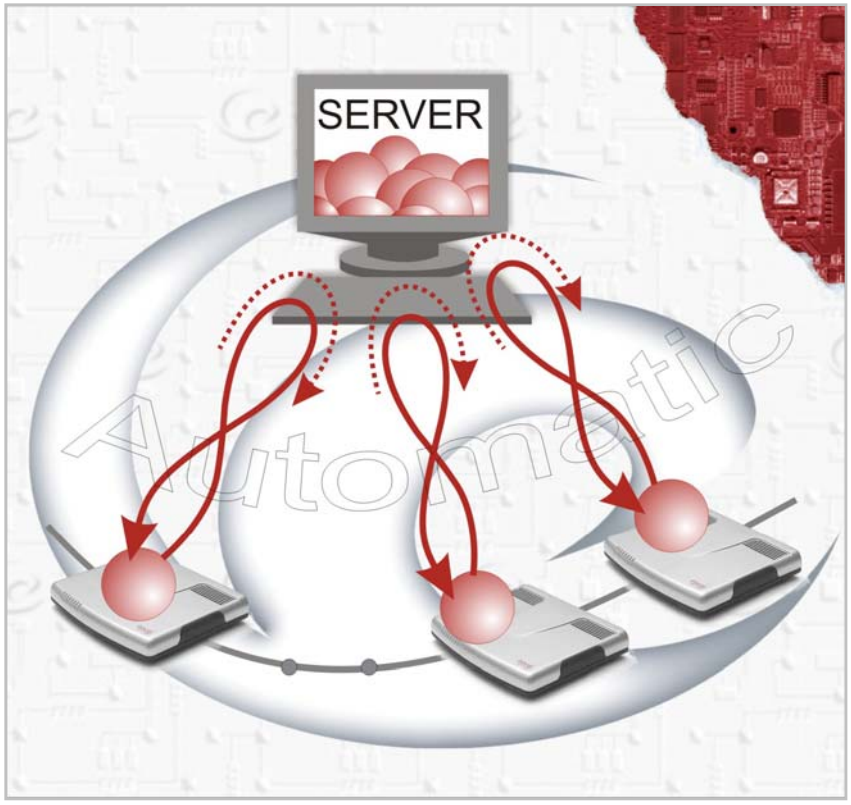
Automatic Firmware Update



Revision: 2.0

Abstract: **This document describes the configuration and use of the Automatic Firmware Update service of the Quadro.**

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Document Revision History

Revision	Date	Revision	Applicable to SW	Applicable to models
1.0	13-Sep-06	Initial release	4.1.x	All Quadro models
1.1	24-Jan-07	Edits	4.1.x	All Quadro models
1.2	26-Feb-07	Updated for SW 4.1.19	4.1.x	All Quadro models
2.0	29-Sep-08	Updated for SW 5.0.x	5.0.x	All Quadro models

Introduction

This document describes the configuration and use of the Automatic Firmware Update service of the Quadro.

1 Requirements and Preparations

- The Quadro is connected to the network and all network settings are properly configured.
- SOHO-SW 5.0.x and higher is running on the Quadro.

2 Conventions Used in This Document

The following conventions are used in this document:

- The word 'server' implies a TFTP, FTP, HTTP or HTTPS server. Whether the server is TFTP, FTP, HTTP or HTTPS it is indicated by the **Update Method** specified on the **System→Configuration Management→*Automatic Firmware Update*** page (see Service Activation on the Quadro).
- File and folder names are *italicized*.
- File contents appear in `this style`.
- The names of Quadro GUI pages and settings are highlighted in **bold**.
- The numerical values used as examples are in blue.

  Please note: The numerical values used in this document are for the purpose of an example only. For a correct functionality, they must be changed to appropriate values.

The screenshots in this document were taken from SW 5.0.12.

3 Functional Description

The **Automatic Firmware Update** service allows the administrator to configure Quadros to regularly check a specified server for new firmware and, if available, either to notify or update the firmware immediately. To utilize this service, the Quadro will need to be configured to check and/or get the recommended firmware from the Auto Update Server (FTP, TFTP, HTTP, HTTPS). The simplest method is to use Epygi's public FTP server.

The Automatic Firmware Update can also be used when the Quadro is not on the public internet or if the administrator wishes to control the firmware updates by using their own Auto Update Server (FTP, TFTP, HTTP, HTTPS). For this method, the administrator would need to create an *auto-update* folder in the root directory of a company Auto Update Server. The *auto-update* folder, or a firmware directory, will store the needed firmware files and some supplementary text files. See Create a Firmware Directory.

After the firmware directory is created, the next step will be to activate and configure the service on the Quadro. See Service Activation on the Quadro. Once configured, the service will require minor maintenance to keep the Quadro's firmware up-to-date. See Updating the *auto-update* Directory.

4 Create a Firmware Directory

The firmware directory will contain Quadro firmware files and one or more configuration files (see 4.1) in text format created by the system administrator. These files are used to automatically identify specific Quadro firmware version and the path of the firmware file.

Please note: It is not required to create a firmware directory, if Epygi's public FTP server is to be used for firmware update. See Service Activation on the Quadro.

The firmware directory should be created in the root directory of the server (TFTP, FTP, HTTP or HTTPS) and must be named *auto-update* (lower case and with a hyphen).

Please note: If a TFTP server is used, make sure that Quadros and the server reside on the same network. TFTP is not a NAT-aware protocol and cannot be used as an update method if a Quadro is located behind a NAT router.

4.1 Create Firmware Directory Files

The Firmware directory contains three types of files:

1. Files with a *redirect* extension. These files are in text format and are used to specify a server to which a Quadro with a specified MAC address should be redirected. A MAC address is specified in the file name. See *Redirect* Files.
2. Files with a *conf* extension. These files are in text format and are used to specify a firmware file that Quadros of a specific model or MAC address should download. Depending on the file name, there can be three types of *conf* files. See *Conf* Files.
3. Files with a *bin* extension. These are Quadro firmware files available at Epygi's Technical Support WEB portal.

The *redirect* and *conf* files are text files. They can be created and edited with any text editor. When creating files of these types, ensure that the file is saved with a *redirect* or *conf* extension.

The content and the purpose of each file type are described below.

4.1.1 *Redirect* Files

File name format:

Quadro_MAC_Address.redirect. For example: *00f3b0029500.redirect.*

Content:

```
redirectServerName=192.168.0.83
redirectServerPort=68
redirectMethod=tftp
```

Content Description:

- `redirectServerName` is a IP address or a hostname of the server to which the Quadro is redirected.
- `redirectServerPort` is a listening port of the redirect server.
- `redirectMethod` is a connection method that is used to download the firmware file after the Quadro connected to the redirect server. It can be *tftp*, *ftp*, *http* or *https*.

Purpose:

The file is used to redirect a Quadro with the specified MAC address to another server.

4.1.2 *Conf* Files

File name format:

- *Quadro_MAC.conf.* For example *00f3b0029500.conf,* or
- *Quadro_Model.conf.* For example *quadro4x-16x.conf,* or
- *global.conf*

Content:

```
firmwareVersion=4.1.1
firmware=SW-SOHO-0401-0100.bin
```

Content Description:

- `firmwareVersion` is a version of the firmware.
- `firmware is` a file name of a firmware file. It must match the file name of the corresponding *bin* file placed in the *auto-update* directory.

Purpose:

The *conf* files indicate the firmware that a specified Quadro should download.

- ***Quadro_MAC.conf*** specifies the firmware that the Quadro with a specified MAC address will download when connected to the server.

  Usage Example: If several Quadro IP-PBXs and one QuadroE1/T1 are set up on the network, specify the firmware file for Quadro IP-PBXs in the *global.conf* file (explained below) and the firmware file for the QuadroE1/T1 in the *Quadro_MAC.conf* where the *Quadro_MAC* is the QuadroE1/T1's MAC address.

- ***Quadro_Model.conf*** specifies the firmware that the Quadro of a specified model will download when connected to the server. The *Quadro_Model* can be any of the following predefined words:
  - *quadro2x.conf* for Quadro2x models.
  - *quadro4x-16x.conf* for Quadr4x and Quadro16x models and their flavours (Quadro4xi, Quadro16xi, etc.).
  - *quadrofxogw.conf* for QuadroFXO models.
  - *quadroisdngw.conf* for QuadroISDN models.
  - *quadrogateway.conf* for QuadroE1/T1 models.
  - *quadrocs.conf* for QuadroCS (conference server) models.
  - quadromgw.conf for QuadroM E1/T1 gateways.
  - quadromippbx.conf for QuadroM IP PBXs.

  Usage Example: If several Quadro IP-PBXs and several QuadroE1/T1s are set up on the network, create a *global.config* file to indicate the firmware for the Quadro IP-PBXs and a *quadrogateway.conf* file to indicate the firmware for QuadroE1/T1s. It is also possible to create a *global.config* file to indicate the firmware for QuadroE1/T1s and a *quadro4x-16x.conf* (or *quadro2x.conf)* file to indicate the firmware for Quadro IP-PBXs.

- ***global.conf*** specifies the firmware that the Quadro devices that have no *conf* files with their MAC address or model should download when connected to the server.

  Usage Example: This file is usually used to indicate the firmware of the main model used on the network. For example, if the majority of the Quadro devices on the network are of the Quadro4x model and there are a few Quadro2x's, then it is better to have *global.conf* indicate the firmware for *Quadro4x* devices and create *quadro2x.conf* to indicate the firmware for Quadro2x's.

4.2 Search for the Required *conf* File

When a Quadro connects to the server, it searches for a necessary firmware file. The search is completed strictly in the following order:

1. The Quadro will try to find a *.redirect* file with its MAC address. If the file is found, the Quadro is redirected to the specified server and the following steps are skipped. Otherwise step 2 follows.
2. The Quadro will try to find a *.conf* file with its MAC address. If the file is found, the Quadro checks the firmware version (see below). Otherwise step 3 follows.
3. The Quadro will try to find a *.conf* with its model. If the file is found, the Quadro checks the firmware version. Otherwise step 4 follows.
4. The Quadro will try to find the *global.conf*. If the file is found, the Quadro checks the firmware version. Otherwise it disconnects from the server.

For example, a Quadro4x with the MAC address of *00f3b0029500* will download *image2.bin* when it connects to an *auto-update* directory containing the files listed in Table 1.

Table 1

File name	File content
00f3b0029500.conf	`firmwareVersion=4.1.3` `firmware=image2.bin`
quadro4x-16x.conf	`firmwareVersion=4.1.3` `firmware=image1.bin`
global.conf	`firmwareVersion=4.1.3` `firmware=image.bin`
Firmware files	
image.bin image1.bin image2.bin	

4.3 Firmware Version Checking

After the Quadro finds the appropriate *conf* file, it executes firmware version checking. This may be a one-step or two-step procedure depending on whether the Quadro is configured to *check-and-notify* or to *check-and-update* as described below:

- In case of *check-and-notify*, the Quadro compares the current firmware version with the firmware version indicated in the *conf* file. If the version in the *conf* file is higher, the Quadro will generate a corresponding event. See Choosing the Notification Method.
- In case of *check-and-update*, the Quadro compares the current firmware version with the firmware version indicated in the *conf* file. If the version in the *conf* file is higher, it downloads the firmware file. After the download is completed, the Quadro will compare the current firmware version with the firmware version indicated in the downloaded *bin* file. The firmware update starts only if these two versions are different, otherwise the Quadro reboots without updating the firmware.

4.4 Updating the *auto-update* Directory

Once the *auto-update* appropriate directory for your Quadro network is created, a few minor modifications will be required each time new firmware is placed in it.

After placing new firmware in the *auto-update* folder, follow these steps:

1. Change the firmware version in the appropriate *conf* files.
2. Update firmware file path if needed.

5 Service Activation on the Quadro

The following step-by-step instructions describe how to activate the **Automatic Firmware Update** service on the Quadro:

1. Log into the Quadro as the administrator.
2. Go to **System->Configuration Management->Automatic Firmware Update** (see Figure 1).

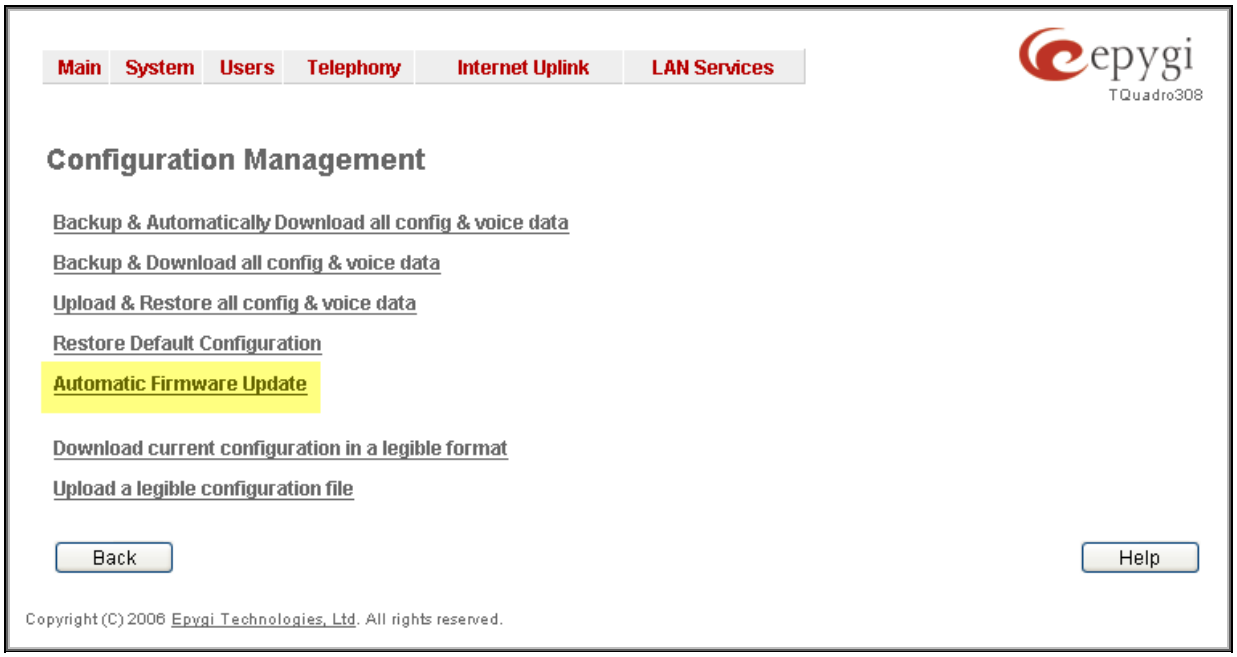

Figure 1 Configuration Management Page

3. On the **Automatic Firmware Update** page (see Figure 2):
   - Select the **Enable Automatically Firmware Update** checkbox to activate the service.
   - Select the Server Configuration type. The following options are available:
     a) **Assign automatically via DHCP**. Select this option if the Quadro obtains the TFTP configuration parameters automatically from the DHCP server.
     b) **Assign manually**. Select this option to manually configure the server parameters.
        - **Server Name** - the server's IP address or hostname.
        - **Server Port** - the server's listening port.
        - **Update Method** - the server's type.
        - **User Name** and **Password –** the authentication username and password to connect to the server.

     Please note: In order to use Epygi's public ftp server leave the **Server Name**, **Server Port**, **Update Method, User Name** and **Password** text fields to their default values (*ftp.epygi.com*, *21* and *ftp* respectively, use blank for username and password).

     Please note: If the **Update Method** is set to ***ftp*** but no **User Name** and **Password** are specified, the Quadro will try to connect with the ***anonymous*** (no password) username.

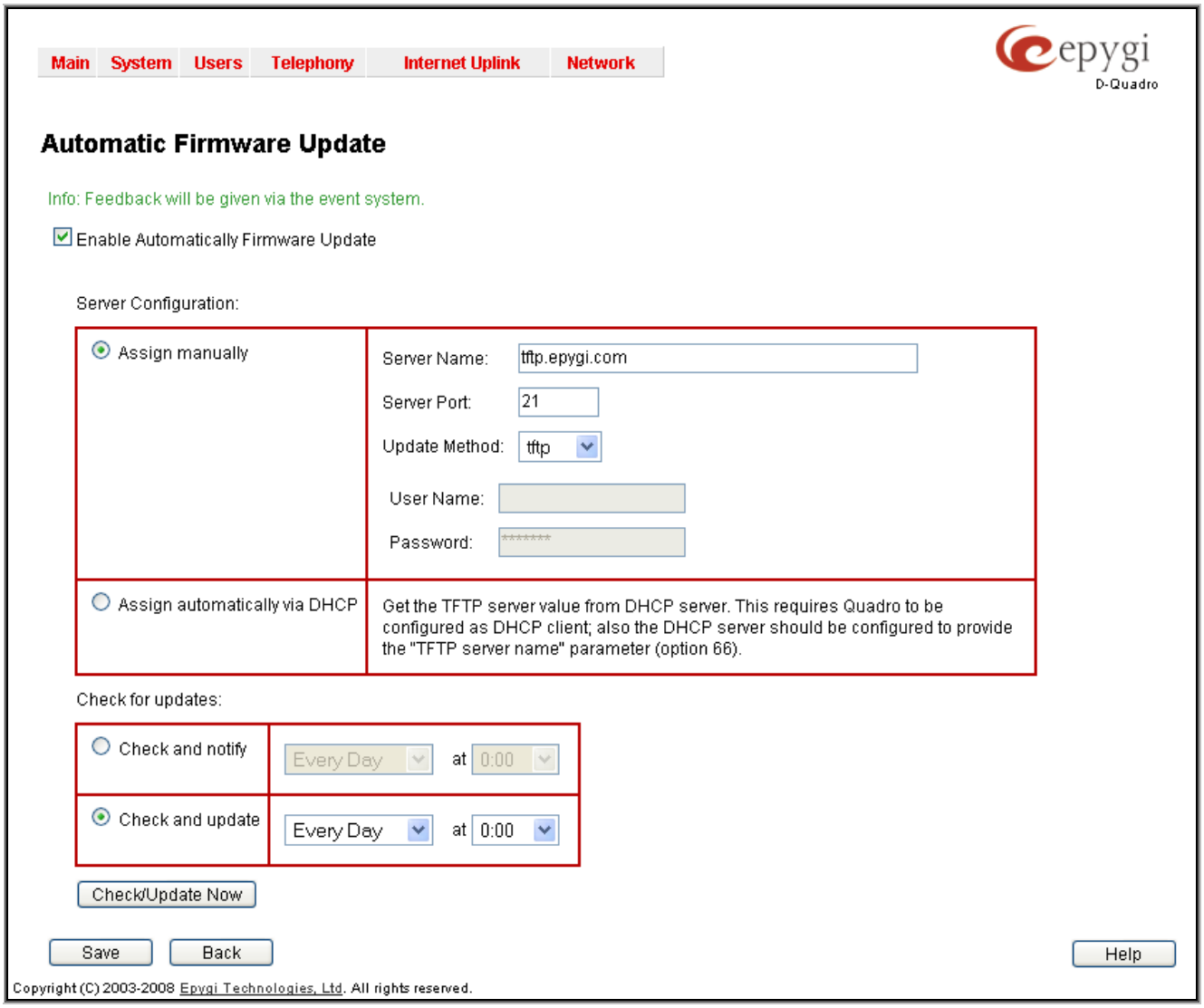

Figure 2 Automatic Firmware Update Page

- Select an action the Quadro should execute when an update is detected on the server and choose a day and time for a regular check. To set the time, use the drop-down lists next to the desired option. The following options are available:

  a) **Check and notify**. This option configures the Quadro to automatically check for a new update and, if available, notify by generating an event. You may choose the notification method (by email, flashing LED, etc.) from the **Event Settings** page. See Choosing the Notification Method.

  b) **Check and update**. This option configures the Quadro to automatically check for a new update and, if available, update the firmware immediately.

  Please note: **The Check/Update Now** button will **Check and Notify** whether the new firmware is available OR it will **Check** and perform the firmware **Update** depending on the selected radio button.

4. Press the **Save** button to submit the changes or use **Back** to abort the selected action.

5.1 Choosing the Notification Method

When the Quadro executes an action related to the Automatic Firmware Update (checks for a new update, updates the firmware, etc.), it generates events. These are **update** and **update failure** events generated by the System application (see Figure 3).

By default, almost all events are notified by displaying the **Please check your pending events** link on all WEB pages of the Quadro and adding a record to the **System Event** table. To choose another notification method, follow these steps:

1. Choose **Events** from the **System** menu and click on the **Event Settings** tab.
2. On the **Event Settings** page, select the checkboxes associated with events named **update** and **update failure** (the System application) and click **Edit** (see Figure 3).

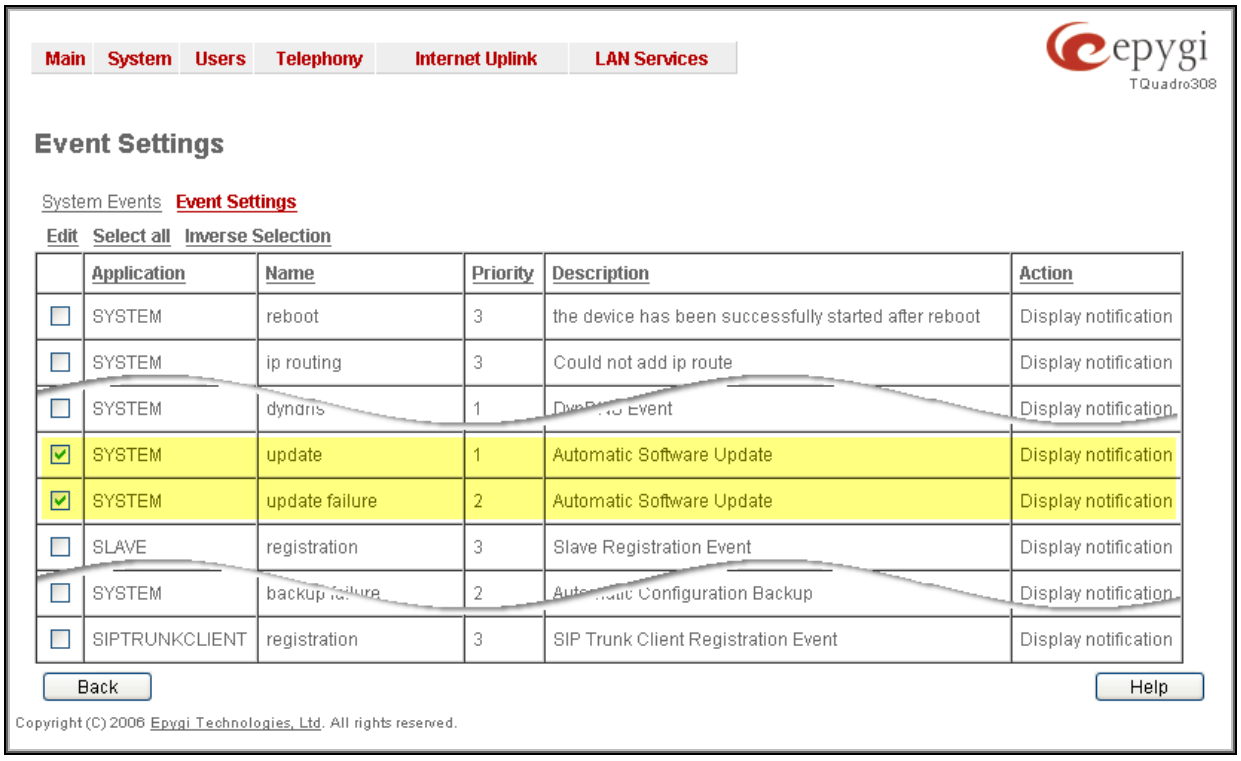

Figure 3 Event Settings page

3. On the **Edit Event Settings** page, select your desired notification method (see Figure 4). For more information on event notification methods, see Manual II: Administrator's Guide for the corresponding device and release.
4. Click the **Save** button to submit the changes.

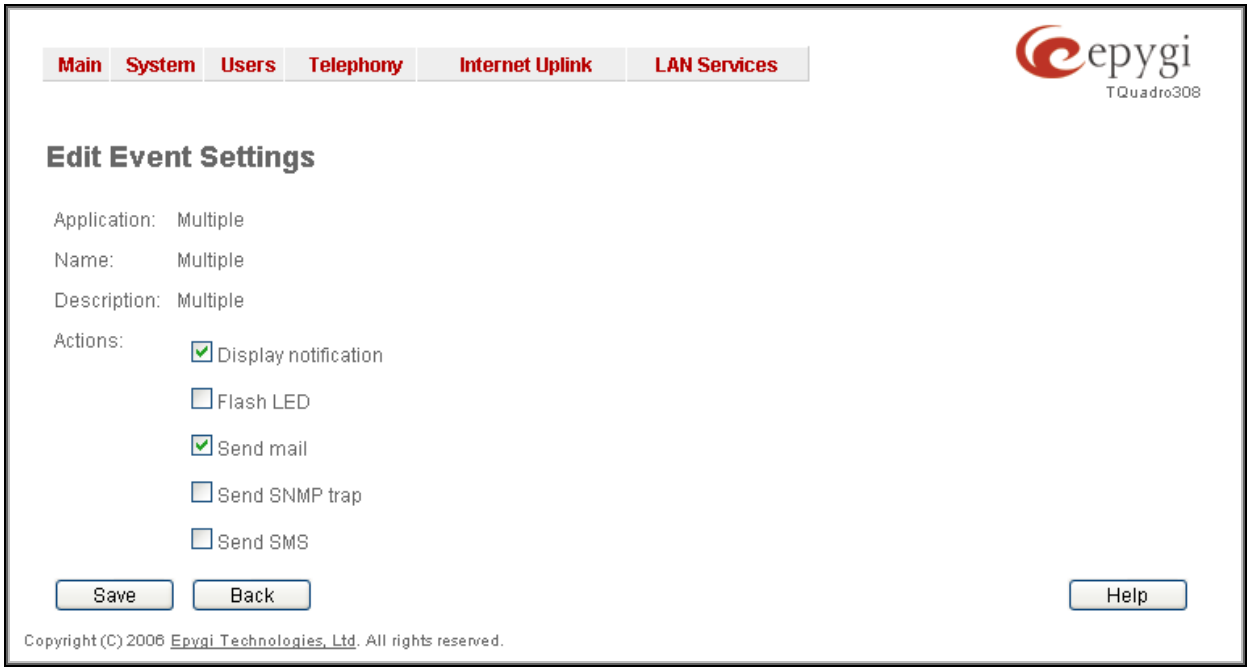

Figure 4 Edit Event Settings page

6 Event Notification

You will get feedback of **Check and Update** action as a notification (one or more) in the **System**->**Events** section (depending on the chosen settings mail, SMS, Flash LED, SNMP notification will be generated) (see Figure 4).

If the **Check and notify** option has been chosen, the notifications will be the following:
"No new firmware update is available" or "New firmware version x.x.x (e.g. 5.0.12) is available".

If the **Check and update** option has been chosen, the notifications will be the following:

1. "Downloading new firmware version x.x.x".
2. "Installing new firmware version x.x.x".
3. "New firmware version x.x.x (e.g. 5.0.12) installed" (see Figure 5).

The 3rd notification is the final one, which will remain on the system; the others will be deleted automatically.

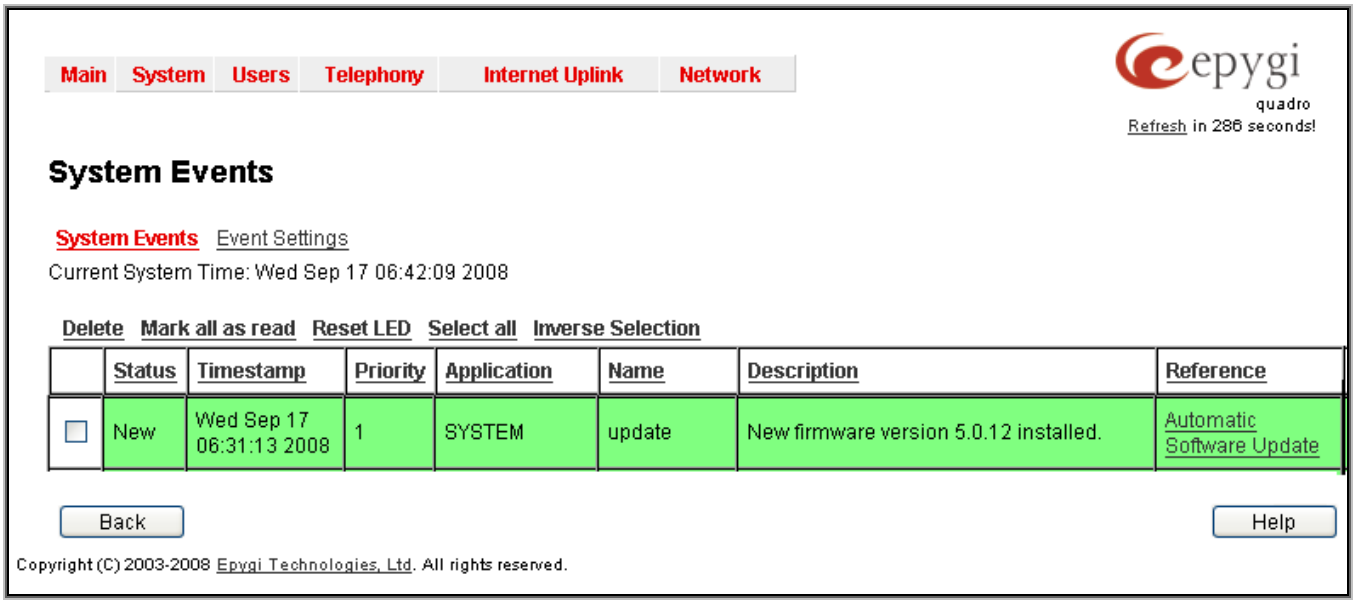

Figure 5 System Events page

Please note: The feedback of automatic firmware update functionality is shown in the system events only.

Please note: If the system fails to check and update firmware the "Automatic firmware update failed" notification will be displayed in the **System**->**Events** section.