

# Application Note

*Firmware WebUpdate for AVL devices*

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## Revision History

Date	Rev.	Comments
August 2012	1.0.0	Initial version.
October 2014	1.0.1	Updated chapter 2.2 – Upgrading an AVL device with firmware version 2.10.0_rc8 and later.
October 2019	A	Initial Lantronix document. Added Lantronix document part number, logo, contact information, and links.

For the latest revision of this product document, please check our online documentation at [www.lantronix.com/support/documentation](http://www.lantronix.com/support/documentation).

## Table of Contents

<b>1</b>	<b>INTRODUCTION.....</b>	<b>5</b>
1.1	FEATURES OF FIRMWARE WEBUPDATE.....	5
1.2	WAYS OF COMMUNICATION .....	5
1.3	UPDATE FILE TYPES .....	6
<b>2</b>	<b>ACTIVATION.....</b>	<b>7</b>
2.1	FIRMWARE VERSIONS AVL_2.9.0 .....	7
2.2	FIRMWARE VERSION AVL_2.10.0_RC8 AND LATER .....	7
<b>3</b>	<b>UPDATE PROCEDURE.....</b>	<b>8</b>
3.1	STARTING UPDATE MODE.....	8
3.2	STOPPING WEBUPDATE.....	8

# 1 INTRODUCTION

Firmware WebUpdate is an advanced method to perform a remote firmware upgrade over the air (without the requirement of a direct serial connection). Firmware WebUpdates are automatically performed using TCP connections (no serial line option or CSD versions are planned). The WebUpdate itself can be initiated via any available textual user interface (i.e. serial, TCP, CSD, SMS).

## 1.1 Features of Firmware WebUpdate

- Full automatic firmware upgrade
- No (external) server applications required
- Requires read access via HTTP to the firmware update file on your Web Server
- Update automatically starts after device resets / shuts down/starts up
- Size restriction for the firmware (max. 1,5MB uncompressed binary)
- Compressed firmware data can be used, reducing traffic cost/update time
- Runs completely in background - device can be used meanwhile

During the update process, the device can still be used for other Tasks (i.e. executing alarms, sending system messages etc..)

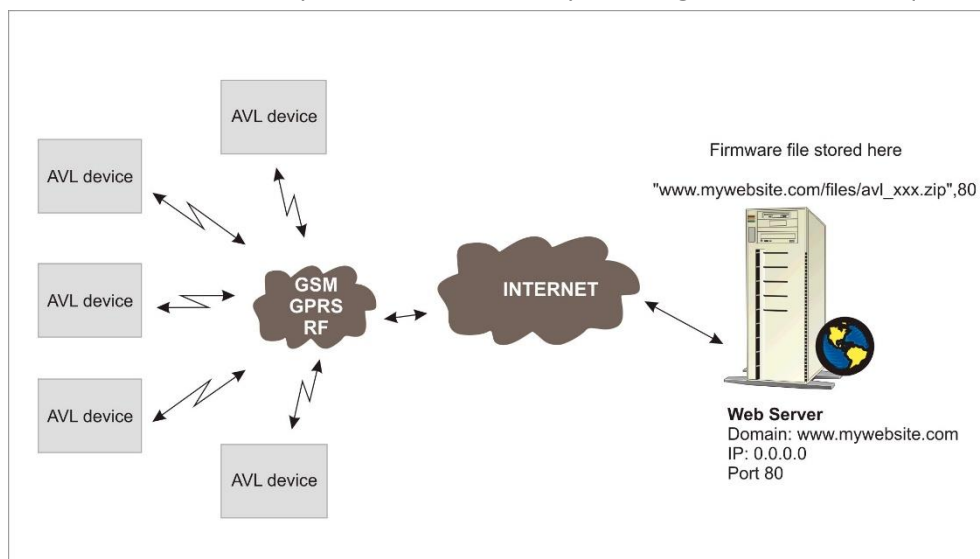
## 1.2 Ways of communication

Basically any type of communication can be used to initiate a WebUpdate which is able to execute a PFAL command. The PFAL command itself consists of:

- The address of the web server (URL/domain name of the server)
- The port number over which the communication runs (usually port 80)
- The file name (the specific file name of the firmware to upgrade to)

### Restrictions:

- The address of the Web Server and the port number should not exceed 100 characters (i.e. `www.mydomain.com/firmwares,80`).
- The file name of the firmware may not be renamed freely - the original file name is required.



## 1.3 Update File Types

Two types of files can be used to update the firmware.

### 1.3.1 Compressed firmware

Compressed (gzip) binary firmware can be used to update the device firmware. The name usually ends with .ZIP. Note that the name of the firmware file may not be changed, it must be uploaded "AS IS" on your Web Server.

**Advantage:**

- Less data to transfer as it is compressed (this saves usually up to 50%).
  - Less costs for data transmission.
- Remote update procedure is faster.

Example Naming Scheme: "avl\_2.9.1\_rc11-fw.c12\_2391-.zip"

### 1.3.2 Uncompressed firmware

Uncompressed binary firmware.

The file can be easily retrieved by simply uncompressing (extracting) the file from the ZIP archive mentioned above. It is contained within the compressed firmware mentioned above. Note that the file name of the uncompressed firmware file may not be changed, copy and paste "AS IS" on your Web Server.

Example naming scheme: "avl2.9.1\_rc11-fw.r,F824.bin"

## 2 ACTIVATION

### 2.1 Firmware versions avl\_2.9.0

The firmware WebUpdate feature is under test within 2.9.0 release versions. In order to activate WebUpdate functionality, a configuration setting is required.

You may choose one of 2 settings listed below.

Note: A device reset is required to activate the configuration setting.

#### 2.1.1 Semi automatic mode (only for firmware revision 2.9.0)

```
$PFAL,Cnf.Set,DEVICE.TCP.WEBUPDATE=1
```

- WebUpdate will never start a GPRS connection itself.
- only an existing GPRS connection will be used for downloading update files.

#### 2.1.2 Full automatic mode (only for firmware revision 2.9.0)

```
$PFAL,Cnf.Set,DEVICE.TCP.WEBUPDATE=2
```

- WebUpdate will automatically start GPRS connections whenever required.
- until the firmware update has been completed, GPRS sessions are started anytime. This cannot be prevented by using alarms.
- GPRS sessions are closed automatically just if firmware update succeeds (by resetting the device). If the download fails (i.e. server not available, DNS entry invalid, crc data errors etc), the GPRS connection remains active (until GPRS timeout).

#### Disadvantages / risks:

- In case of a server failure (or a non accessible file which might easily result from a mistyped file name), the device performs download attempts forever, keeping the connection open, causing a huge amount of traffic.
- This mode is NOT recommended for regular use.
- User control is required for stopping malfunctional downloads manually.

### 2.2 Firmware version avl\_2.10.0\_rc8 and later

Since firmware version "avl\_2.10.0\_rc8" the WebUpdate became standard, it does not need to be activated anymore. If the device is running with firmware 2.10.0\_rc8 and you want to upgrade the device to a higher firmware version, no DEVICE.TCP.WEBUPDATE configuration setting is required anymore. However, the WebUpdate needs a GPRS connectivity. Finally send the PFAL command to the device and wait until the Webupdate completes:

```
$PFAL,SYS.WebUpdate.Start,"www.mydomain.com/firmware_file_name.zip",80
```

to check the state of the firmware update, execute the command:

```
$PFAL,SYS.WebUpdate.State
```

The device reports the state in %.

## 3 UPDATE PROCEDURE

This chapter describes the steps in details how to perform a (remote) web firmware update.

### 3.1 Starting Update mode

The firmware WebUpdate itself can be started regardless and completely independent of the current GPRS status. Start up information is stored permanently which assures resuming WebUpdates automatically anytime - even after device reset and device shutdown / power off.

A started WebUpdate is activated immediately as soon as a GPRS connection is established.

**Command syntax:** \$PFAL,SYS.WebUpdate.Start,"<file\_url>"{,<port>}

<file\_url>      Enclosed in quotation marks, it specifies the URL + file name (may include subdirectories separated with /)  
i.e. www.mywebsite.com/avl\_2.9.0\_rc11-fw.c12\_2391-.zip

{<port>}      Optional port number (default port is 80). Communication port for HTTP protocol (usually 80)

**Example:**

```
$PFAL,SYS.WebUpdate.Start,"www.lantronix.com/download/firmware/avl\_2.9.0\_rc11-fw.c12\_0C26-.zip",80
```

**Notes:**

- It is not recommended to use another remote update when running a WebUpdate.

### 3.2 Stopping WebUpdate

Using this command, an ongoing WebUpdate can be stopped anytime. Note that already downloaded data will be erased and is not available for other WebUpdates.

**Command:** \$PFAL,SYS.WebUpdate.Stop