

## Signed Firmware

### White Paper

**June 14, 2019**

**Version 1.0**



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## 1. Introduction

Updating a piece of software or firmware is no longer the simple process it was 10 or 20 years ago. In the modern world, downloading software, firmware, or any other file can be a vector for hackers to deliver malware, Trojans or worse. That's why Apacer developed a Signed Firmware method for delivering safe, authorized firmware updates that users will never need to worry about.

This white paper will outline the methods Apacer uses to protect its downloadable firmware updates, and the process for users to safely access firmware updates online.

## 2. Updating A Drive's Firmware

### 2.1 Ensuring The Firmware Is Suitable

In most situations, an update to a drive's firmware will not be a common occurrence. However, when it is necessary to carry such an operation out, the user must take care to ensure that the firmware is updated in a secure way.

In particular, the user should pay attention to three crucial details. First of all, the code must be genuine code supplied by Apacer and it is verified with the correct digital signature. Second of all, the code has the correct security information and is compatible with the drive in question. Finally, the new code is chronologically compatible with the old code.

If all three conditions are satisfied, the firmware can be safely updated.

### 2.2 Compatibility

Only certain versions of Apacer drives are compatible with the signed firmware protocol. If a user wishes to enquire about whether or not a particular drive is compatible with this protocol, they should contact a sales representative.

### 2.3 The Updating Process

The process of a signed firmware update is as follows.

First, the Apacer firmware team creates a firmware bin file, after extensive testing at our factory in Taipei.

This file is uploaded to our secure server. At this time, the firmware file is packaged with a special handshake protocol which includes an encryption key. This will allow for verification of the firmware by the drive in future.

Once the firmware download file is virtually packaged in this way, it is made available to our users.

When a user wishes to update the firmware on their Apacer drive, they download the firmware bin file. First, the drive will validate the special handshake and encryption key that is part of the package. If it fails to validate properly for some reason, the update process will be halted. If, instead, the encryption key is valid, the drive will proceed to unpack the firmware. Then, after a further check to ensure the new firmware is compatible with the drive in question, the drive will carry out the firmware updating process, which may take a few minutes.

The process is illustrated in Figure 1 below.

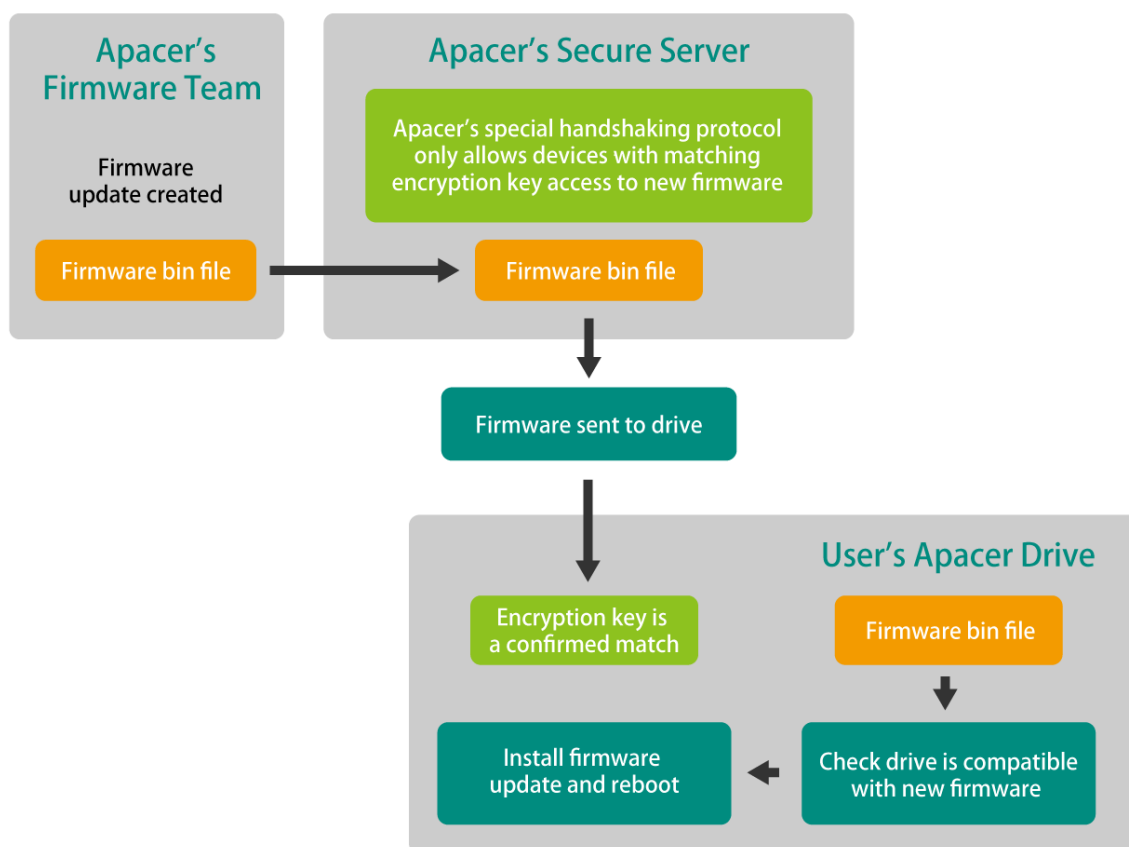


Figure 1: Process for Receiving, Confirming and Installing Signed Firmware

### 3. Conclusion

Apacer's signed firmware technology is a simple and reliable way for users to be sure that their Apacer drives only install valid and authentic firmware created by Apacer's professional firmware team. The process of downloading signed firmware generally happens without the user noticing what's going on in the drive, but it's important for all users to know that their firmware update is as secure as any other component in the drive production and maintenance process.

## Revision History

Revision	Description	Date
1.0	Official release	6/14/2019

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